October 20, 2012

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

Re: Semi-Annual Groundwater
Compliance Monitoring Results (August 2012)
Permit No. 24-02
International Paper, Riegelwood, North Carolina
URS Project No. 31828323

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 2012 second 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 between August 21 and 22, 2012. 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	August 21, 2012

Environmental Status: (Check all that apply)

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

Type of data submitted: (Check all that apply)

☒ Groundwater monitoring data from monitoring wells
☐ 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 — Date: 10/20/12

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 both 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 less than 5 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 all of which were within the historic range of background data, which has been detected as high as 330 ug/L. 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 this well as well as 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: 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.

TABLES

TABLE 1
SEMI-ANNUAL GROUNDWATER ANALYSIS RESULTS
INTERNATIONAL PAPER
RIEGELWOOD, NORTH CAROLINA
AUGUST 2012 EVENT

		Montioring Well:	MW-1A		MW-1B		MW-4A		MW-5A		MW-7A		MW-8B		2L	
		Collection Date:	8/21/12		8/21/12		8/21/12		8/21/12		8/21/12		8/21/12			
Method	Parameter	Units	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Standard	SWSL
SW-846 6010C	Arsenic	ug/l	4.2	J	7.1	J	4	U	5.8	J	15		9	J	10	10
SW-846 6010C	Barium	ug/l	105		21		33		114		38		46		700	100
SW-846 6010C	Cadmium	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	2	1
SW-846 6010C	Chromium	ug/l	0.5	U	0.99	BJ	0.5	U	2.2	BJ	2.1	BJ	0.5	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	1,340		1,470		7,030		138		13,400		38,900		300	300
SW-846 6010C	Lead	ug/l	4	U	4	U	4	U	4	U	4	U	4	U	15	10
SW-846 6010C	Manganese	ug/l	14		94		38		244		301		1,670		50	50
SW-846 6010C	Selenium	ug/l	7	U	7	U	7	U	7	U	7	U	7	U	20	10
SW-846 6010C	Silver	ug/l	2	U	2	U	2	U	2	U	2	U	2	U	20	10
SW-846 6010C	Vanadium	ug/l	2	U	3.9	J	2	U	2	U	2	J	2	U	0.3 (I)	25
SW-846 6010C	Zinc	ug/l	4.4	BJ	2	U	2.5	BJ	2	U	2	U	2	U	1,000	10
SW-846 7470A	Mercury	ug/l	0.012	BJ	0.012	U	0.012	U	0.012	U	0.012	U	0.012	U	1	0.2
EPA 120.1	Specific Conductance	umhos/cm	151		393		158		1770		1640		1360		NE	NE
EPA 300.0	Chloride	ug/l	8,190		8,790		16,100		188,000		196,000		5,020		250,000	NE
EPA 300.0	Fluoride	ug/l	180	J	160	J	140	J	170	J	180	J	510		2,000	2,000
EPA 300.0	Nitrate	ug/l	30	U	180	J	30	U	150	J	30	U	30	U	10,000	10,000
EPA 300.0	Sulfate	ug/l	49,500		27,200		39,600		1,120		55,500		631,000		250,000	250,000
EPA 410.4	Chemical oxygen demand	ug/l	16,000	U	16,000	U	16,000	U	98,000	J	71,000		22,000		NE	NE
SM 2540C	Total Dissolved Solids	ug/l	96,000		271,000		106,000		1,110,000		1,080,000		1,210,000		500,000	NE
SM 4500H	pH	s.u.	4.4	J	7.43	J	5.15	J	6.94	J	7.06	J	6.68	J	6.5-8.5	NE
SM 5210B	Biochemical oxygen demand	ug/l	4,000	UJ	4,000	UJ	4,000	UJ	4,100	J	4,000	UJ	4,000	UJ	NE	NE
SM 5310B	Total Organic Carbon	ug/l	1,800		2,100		3,600		30,700		23,800		3,900		NE	NE
SW-846 9020B	Total Organic Halides	ug/l	100	UJ	100	U	100	U	500		700		100	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

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			
	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		
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	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	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	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	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	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	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	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	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	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	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	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	0.010	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	0.700	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	0.002	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	0.010	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	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	0.300	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	0.015	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	0.050	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	0.001	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	0.020	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	0.020	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	0.0003 (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	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			
	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		
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	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	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	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	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	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	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	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	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	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	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	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	0.010	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	0.700	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	0.002	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	0.010	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	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	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	0.015	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	0.050	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	0.001	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	0.020	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	0.020	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	0.0003 (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	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			
	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		
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	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	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	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	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	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	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	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	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	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	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	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	0.010	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	0.700	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	0.002	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	0.010	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	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	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	0.015	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	0.050	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	0.001	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	0.020	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	0.020	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	0.0003 (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	1	0.010

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TABLE 2 Continued
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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			
	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		
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	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	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	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	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	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	6.5-8.5	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	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	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	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	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	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	0.010	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	0.700	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	0.002	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	0.010	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	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	0.300	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	0.015	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	0.050	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	0.001	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	0.020	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	0.020	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	0.0003 (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	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			
	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		
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	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	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	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	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	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	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	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	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	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	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	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	0.010	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	0.700	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	0.002	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	0.010	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	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	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	0.015	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	0.050	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	0.001	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	0.020	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	0.020	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	0.0003 (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	1	0.010

NOTES:
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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
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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-8A																														2L Std	SWSL
	1997	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010		2011	2012			
	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		
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	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	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	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	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	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	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	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	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	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	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	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	0.010	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	0.700	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	0.002	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	0.010	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	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	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	0.015	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	0.050	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	0.001	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	0.020	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	0.020	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	0.0003 (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	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/
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
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		Client Sample ID:	Primary Leachate Collection System		Secondary Leachate Collection System		Under-Drain Leachate Collection System		2L Standard	SWSL
		Collect Date:	8/22/12		8/22/12		8/22/12			
Method	Parameter	Units	Value	Q	Value	Q	Value	Q		
SW-846 6010C	Arsenic	ug/l	174		10		11		10	10
SW-846 6010C	Barium	ug/l	201		65		130		700	100
SW-846 6010C	Cadmium	ug/l	0.2	U	0.25	BJ	0.2	U	2	1
SW-846 6010C	Chromium	ug/l	135		88		24		10	10
SW-846 6010C	Copper	ug/l	2	U	6.1	J	16		1,000	10
SW-846 6010C	Iron	ug/l	7,990		37,400		31,600		300	300
SW-846 6010C	Lead	ug/l	5	J	4.8	J	4	U	15	10
SW-846 6010C	Manganese	ug/l	376		716		743		50	50
SW-846 6010C	Selenium	ug/l	7	U	7	U	7	U	20	10
SW-846 6010C	Silver	ug/l	2	U	2	U	2	U	20	10
SW-846 6010C	Vanadium	ug/l	1,360		23		44		0.3 (I)	25
SW-846 6010C	Zinc	ug/l	100		35		2.1	BJ	1,000	10
SW-846 7470A	Mercury	ug/l	0.094	BJ	0.012	U	0.078	BJ	1	0.2
EPA 120.1	Specific Conductance	umhos/cm	10,000		2,080		3,020		NE	NE
EPA 300.0	Chloride	ug/l	151,000		40,400		244,000		250,000	NE
EPA 300.0	Fluoride	ug/l	13,300		610		190	J	2,000	2,000
EPA 300.0	Nitrate	ug/l	30	U	30	U	30	U	10,000	10,000
EPA 300.0	Orthophosphate	ug/l	1500		60	J	40	J	NE	NE
EPA 300.0	Sulfate	ug/l	1,480,000		258,000		143,000		250,000	250,000
EPA 410.4	Chemical oxygen demand	ug/l	1,290,000		170,000		227,000		NE	NE
SM 2540C	Total Dissolved Solids	ug/l	7,510,000		1,590,000		2,230,000		500,000	NE
SM 4500H	Laboratory pH	s.u.	7.4	J	6.55	J	6.91	J	6.5-8.5	NE
SM 5210B	Biochemical oxygen demand	ug/l	164,000	J	6,900	J	85,600	J	NE	NE
SM 5310B	Total Organic Carbon	ug/l	90	U	35,100		56,200		NE	NE
SW-846 9020B	Total Organic Halides	ug/l	1,400		800		1,400		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

NE = Not Established

s.u. = Standard unit

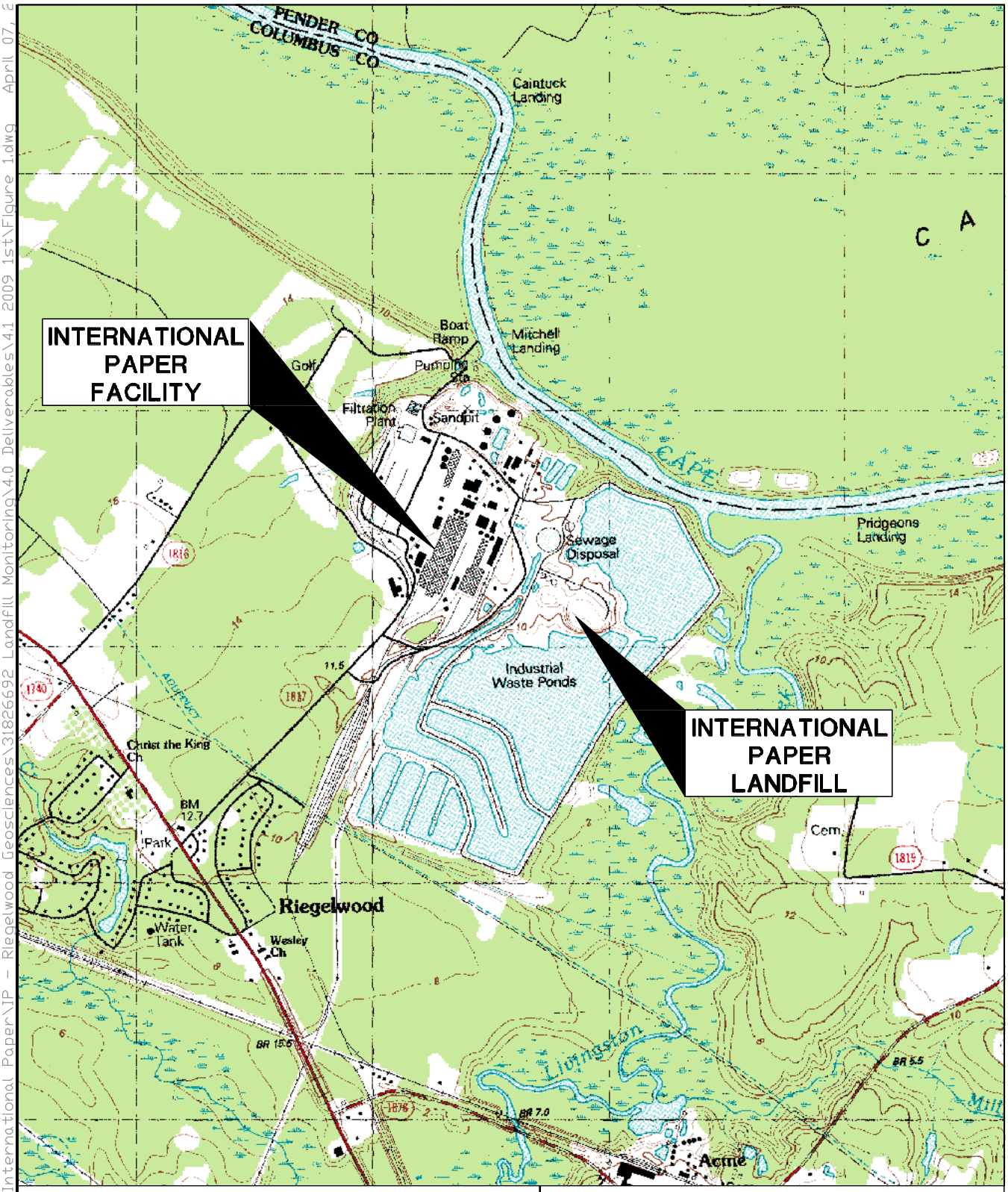
ug/L = Micrograms per Liter

umhos/cm = Micromhos per centimeter

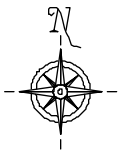
Qualifiers (Q):

U	The analyte was analyzed for, but was not detected above the associated detection limit.
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

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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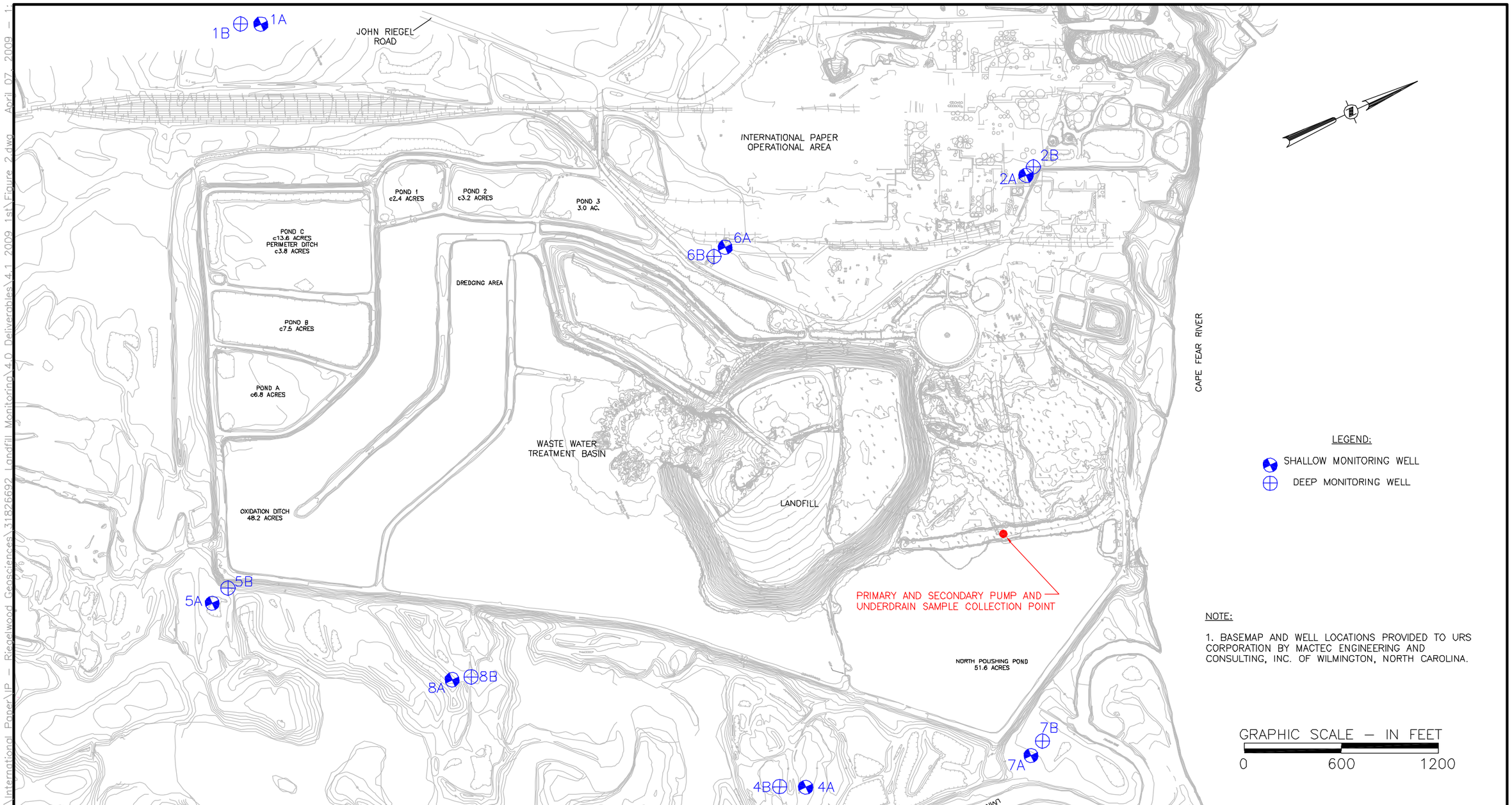

NOTE:

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:	31828323.00001
Work Order:	J1204020 & J1204039	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:	ALS Environmental (Formerly Columbia Analytical Services, Inc.)[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:	8/21/12 – 8/22/12
Reviewer:	Sarah Choyke	Date:	10/4/12
Concurrence[3]:	Martha Meyers-Lee	Date:	10/17/12

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 1.8, 1.4, and 0.2°C (≤6°C).	

[1] As, Ba, Cd, Cr, Cu, Fe, Pb, Mn, Se, Ag, V, and Zn
[2] ALS subcontracted the TOX analysis to Summit Environmental Technologies, Inc. of Cuyahoga Falls, OH. The TOX analysis was conducted under Order numbers 1220313 and 1220315.
[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, Secondary, Under Drain, MW-5A, and MW-7A, were properly preserved in the field.	
		✓		• The pH of the metals bottles provided for Primary, Secondary, Under Drain, 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.	
				• The pH of the COD and TOC bottles provided for Primary was >2 upon receipt at the laboratory. The laboratory adjusted the pH of the sample to ≤2 with the addition of hydrochloric and sulfuric 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-05353-06 & MB-5385-02	
	✓			• EPA 7470: MB-05374-02 & MB-05403-02	
	✓			• EPA 120.1: J1204020-MB1 & J1204039-MB1	
	✓			• EPA 300: J1204020-MB1, J1204020-MB2, & J1204039-MB1	
	✓			• EPA 410.4: J1204020-MB1, J1204039-MB1, & J1204039-MB2	
			✓	• SM 4500-H: Not applicable	
	✓			• SM 2540C: J1204020-MB1 & J1204039-MB1	
	✓			• SM 5210B: J1204020-MB1 & J1204039-MB1	
	✓			• SM 5310B: J1204020-MB1 & J1204039-MB1	
	✓			• EPA 9020B: Blank (Analyzed 08/28/12) & Blank (Analyzed 08/29/12)	
4. Were target analytes reported in the method/calibration blank above the Detection Limit (DL)?	✓			• EPA 6010: ○ MB-05385-02, 8/27/12: Zinc @ 2.660 J µg/L (MRL 20.000, MDL 2.000) ○ CCB, 8/23/12 @ 20:22: • Cadmium @ 0.283 J µg/L (RL 5.000, MDL 0.200) • Chromium @ 0.512 J µg/L (RL 10.000, MDL 0.500)	

Data Validation Checklist (Continued)

Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
	✓			• EPA 7470: ○ CCB-2, 8/24/12 @ 13:51: Mercury @ 0.013 J µg/L (RL 0.100, MDL 0.012) ○ CCB-4, 8/24/12 @ 14:27: Mercury @ 0.019 J µg/L (RL 0.100, MDL 0.012 ○ CCB-1, 8/28/12 @ 13:42: Mercury @ 0.013 J µg/L (RL 0.100, MDL 0.012)	
	✓			• SM 5310B: ○ J1204020-MB1 8/27/12: TOC @ 0.2 J mg/L (RL 1.0, MDL 0.09) ○ J1204039-MB1 8/29/12: 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: • Cadmium @ 1.42 µg/L (0.283 x 5) • Chromium@ 2.56 µg/L (0.512 x 5) • Zinc @ 13.30 µg/L (2.660 x 5) • Mercury @ 0.095 µg/L (0.019 x 5) • TOC @ 1.0 mg/L (0.2 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-05353-05 & LCS-05385-01 (LCS Only)	
	✓			• EPA 7470: LCS-05374-01 & LCS-05403-01 (LCS Only)	
	✓			• EPA 120.1: J1204020-LCS1 & J1204039-LCS1 (LCS only)	
	✓			• EPA 300: J1204020-LCS1, J1204020-LCS2, & J1204039-LCS1 (LCS only)	
	✓			• EPA 410.4: J1204020-LCS1, J1204039-LCS1, & J1204039-LCS2 (LCS only)	
			✓	• SM 4500-H: Not applicable	
	✓			• SM 2540C: J1204020-LCS1 & J1204039-LCS1 (LCS only)	
	✓			• SM 5210B: J1204020-LCS1 & J1204039-LCS1 (LCS only)	

Data Validation Checklist (Continued)

Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
	✓			• SM 5310B: J1204020-LCS1& J1204039-LCS1 (LCS only)	
	✓			• EPA 9020B: LCS (Analyzed 08/28/12) & LCS (Analyzed 08/29/12). (LCS only)	
10. Were LCS recoveries within lab/project[4] specifications?		✓		• SM 5210B: o J1204020-LCS1: BOD @ 61%R (84.5-115). J/UJ o J1204039-LCS1: BOD @ 61%R (84.5-115). J/UJ	J/UJ
11. Were LCS/LCSD RPD within lab specifications?			✓	LCS only	
12. Was a MS/MSD pair analyzed with each batch?	✓			• EPA 6010: Batch Sample[5]	
	✓			• EPA 7470: o J1204020-003 (MW-4A), MS/MSD o J1204039-003 (Under Drain), MS/MSD	
			✓	• EPA 120.1: Not applicable	
	✓			• EPA 300: J1204020-001 (MW-1A), MS only	
	✓			• EPA 410.4: J1204020-004 (MW-5A), MS only	
			✓	• SM 4500-H: Not applicable	
			✓	• SM 2540C: Not applicable	
			✓	• SM 5210B: Not applicable	
	✓			• SM 5310B: Batch sample[5]	
	✓			• EPA 9020B: o Batch TOX082812: 1220313-01 (J1204020-001, MW-1A). MS/MSD o Batch TOX082912: 1220576-01 (Batch). 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 (J1204020-001), 9020B: TOX @ 160 & 82%R (78-116). None, as MSD recovery met control limits.	
15. Were laboratory criteria met for precision during the MS/MSD analysis? *Only QC results for project samples are evaluated.*		✓		MW-1A (J1204020-001), 9020B: TOX @ 64.5%RPD (≤40). UJ ND.	UJ
16. Was a serial dilution conducted on each inorganic batch?	✓			• EPA 6010: Batch sample[5]	

[4] LCS recovery is to be within 60-140% of the true value
[5] Per Craig Myers 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
	✓			• EPA 7470: o J1204020-003 (MW-4A) o J1204039-003 (Under Drain)	
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: J1200974-002 (Secondary)	
	✓			• EPA 7470: o J1204020-003 (MW-4A) o J1204039-003 (Under Drain)	
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: J1204020-001 (MW-1A)	
	✓			• EPA 300: J1204020-001 (MW-1A)	
	✓			• EPA 410.4: J1204020-004 (MW-5A)	
	✓			• SM 4500-H: J1204039-001 (Primary)	
	✓			• SM 2540C: J1204039-001 (Primary)	
	✓			• SM 5210B: J1204020-001 (MW-1A)	
		✓		• SM 5310B: Batch sample[5]	
		✓		o EPA 9020B: Cell Check (Analyzed 08/28/12) & Cell Check (Analyzed 08/29/12)	
23. Does laboratory duplicate results meet lab specifications? *Only QC results for project samples are evaluated.*		✓		MW-5A (J1204020-004), 410.4: COD @ 6%RPD (≤5). J-flag result.	J
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?			✓		

Data Validation Checklist (Continued)

Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
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.	✓			Refer to **Attachment A** (Case Narratives)	

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:

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 NARRATIVES

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	URS Corporation	**Service Request No.:**	J1204020
Project:	IP Riegelwood Landfill	**Date Received:**	8/22/12
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). 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

Six water samples were received for analysis at Columbia Analytical Services on 8/22/12. 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:

No significant data anomalies were noted with this analysis.

General Chemistry Analyses:

Method SM5210B (BOD): The recovery for the Laboratory Control Sample was outside the control criterion. The analysis could not be repeated because holding time for the test had expired. No further corrective action was possible. In our opinion, the impact on the data is minimal as the sample results are comparable to the results obtained in the February 2012 sampling event.

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 410.4 (COD): The relative percent difference for the replicate analysis of COD for sample MW-5A exceeded the 5% criteria as stated in Standard Methods 5220D. There is no RPD criteria stated in EPA Method 410.4.

Subcontracted Analytical Parameters:

The samples were delivered to Summit Environmental in Cuyahoga Falls, OH on 8/24/12 for EPA Method 9020 (TOX) determination. The certified analytical report has been included in its entirety in Appendix A: Subcontracted Analytical Results.

Sample results have been qualified by URS based on data review results, which is modeled after USEPA NFG for Superfund Organic and Inorganic Methods Data Review (EPA, June 08 and Jan 10).

Approved by _____ **Date** 9/10/12

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	URS Corporation	**Service Request No.:**	J1204039
Project:	IP Riegelwood Landfill	**Date Received:**	8/23/12
Sample Matrix:	Water		

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). 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

Three water samples were received for analysis at Columbia Analytical Services on 8/23/12. 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 7470A: The control criteria for the serial dilution analysis of Mercury for sample Underdrain is not applicable. The concentration of the analyte in the parent sample is less than 10x the reporting limit. No further corrective action was required

General Chemistry Analyses:

Method SM5210B (BOD): The recovery for the Laboratory Control Sample was outside the control criterion. The analysis could not be repeated because holding time for the test had expired. No further corrective action was possible. In our opinion, the impact on the data is minimal as the sample results are comparable to the results obtained in the February 2012 sampling event.

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.

Subcontracted Analytical Parameters:

The samples were delivered to Summit Environmental in Cuyahoga Falls, OH on 8/24/12 for EPA Method 9020 (TOX) determination. The certified analytical report has been included in its entirety in Appendix A: Subcontracted Analytical Results.

Sample results have been qualified by URS based on data review results, which is modeled after USEPA NFG for Superfund Organic and Inorganic Methods Data Review (EPA, June 08 and Jan 10).

Approved by _____ **Date** 9/10/12

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.

Sample results have been qualified by URS based on data review results, which is modeled after USEPA NFG for Superfund Organic and Inorganic Methods Data Review (EPA, June 08 and Jan 10).

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.

ATTACHMENT B

QUALIFIED SAMPLE RESULTS

COLUMBIA ANALYTICAL SERVICES, INC

Total Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: URS Corporation **SDG No.:** J1204020 **Method Type:**

Sample ID: J1204020-001 **Client ID:** MW-1A

Matrix: WATER **Date Received:** 8/22/2012 **Level:** LOW

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

Prep Batch ID: 165416 **Prep Date:** 8/23/2012

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Arsenic	7440-38-2	4.2	ug/L	J		P	4.0	1.00	8/23/2012	18:46:15
Barium	7440-39-3	105	ug/L			P	0.30	1.00	8/23/2012	18:46:15
Cadmium	7440-43-9	0.20	ug/L	U		P	0.20	1.00	8/23/2012	18:46:15
Chromium	7440-47-3	0.50	ug/L	U		P	0.50	1.00	8/23/2012	18:46:15
Copper	7440-50-8	2.0	ug/L	U		P	2.0	1.00	8/23/2012	18:46:15
Iron	7439-89-6	1340	ug/L			P	3.0	1.00	8/23/2012	18:46:15
Lead	7439-92-1	4.0	ug/L	U		P	4.0	1.00	8/23/2012	18:46:15
Manganese	7439-96-5	14	ug/L			P	3.0	1.00	8/23/2012	18:46:15
Mercury	7439-97-6	0.012	ug/L	J	B	CV	0.012	1.00	8/24/2012	13:27:05
Selenium	7782-49-2	7.0	ug/L	U		P	7.0	1.00	8/23/2012	18:46:15
Silver	7440-22-4	2.0	ug/L	U		P	2.0	1.00	8/23/2012	18:46:15
Vanadium	7440-62-2	2.0	ug/L	U		P	2.0	1.00	8/23/2012	18:46:15
Zinc	7440-66-6	4.4	ug/L	J	B	P	2.0	1.00	8/23/2012	18:46:15

Comments:

Sample results have been qualified by URS based on data review results, which is modeled after USEPA NFG for Superfund Organic and Inorganic Methods Data Review (EPA, June 08 and Jan 10).

COLUMBIA ANALYTICAL SERVICES, INC

Total Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: URS Corporation **SDG No.:** J1204020 **Method Type:**

Sample ID: J1204020-002 **Client ID:** MW-1B

Matrix: WATER **Date Received:** 8/22/2012 **Level:** LOW

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

Prep Batch ID: 165416 **Prep Date:** 8/23/2012

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Arsenic	7440-38-2	7.1	ug/L	J		P	4.0	1.00	8/23/2012	18:49:56
Barium	7440-39-3	21	ug/L			P	0.30	1.00	8/23/2012	18:49:56
Cadmium	7440-43-9	0.20	ug/L	U		P	0.20	1.00	8/23/2012	18:49:56
Chromium	7440-47-3	0.99	ug/L	J B		P	0.50	1.00	8/23/2012	18:49:56
Copper	7440-50-8	2.0	ug/L	U		P	2.0	1.00	8/23/2012	18:49:56
Iron	7439-89-6	1470	ug/L			P	3.0	1.00	8/23/2012	18:49:56
Lead	7439-92-1	4.0	ug/L	U		P	4.0	1.00	8/23/2012	18:49:56
Manganese	7439-96-5	94	ug/L			P	3.0	1.00	8/23/2012	18:49:56
Mercury	7439-97-6	0.012	ug/L	U		CV	0.012	1.00	8/24/2012	13:29:14
Selenium	7782-49-2	7.0	ug/L	U		P	7.0	1.00	8/23/2012	18:49:56
Silver	7440-22-4	2.0	ug/L	U		P	2.0	1.00	8/23/2012	18:49:56
Vanadium	7440-62-2	3.9	ug/L	J		P	2.0	1.00	8/23/2012	18:49:56
Zinc	7440-66-6	2.0	ug/L	U		P	2.0	1.00	8/23/2012	18:49:56

Comments:

Sample results have been qualified by URS based on data review results, which is modeled after USEPA NFG for Superfund Organic and Inorganic Methods Data Review (EPA, June 08 and Jan 10).

Total Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: URS Corporation **SDG No.:** J1204020 **Method Type:**

Sample ID: J1204020-003 **Client ID:** MW-4A

Matrix: WATER **Date Received:** 8/22/2012 **Level:** LOW

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

Prep Batch ID: 165416 **Prep Date:** 8/23/2012

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Arsenic	7440-38-2	4.0	ug/L	U		P	4.0	1.00	8/23/2012	18:53:37
Barium	7440-39-3	33	ug/L			P	0.30	1.00	8/23/2012	18:53:37
Cadmium	7440-43-9	0.20	ug/L	U		P	0.20	1.00	8/23/2012	18:53:37
Chromium	7440-47-3	0.50	ug/L	U		P	0.50	1.00	8/23/2012	18:53:37
Copper	7440-50-8	2.0	ug/L	U		P	2.0	1.00	8/23/2012	18:53:37
Iron	7439-89-6	7030	ug/L			P	3.0	1.00	8/23/2012	18:53:37
Lead	7439-92-1	4.0	ug/L	U		P	4.0	1.00	8/23/2012	18:53:37
Manganese	7439-96-5	38	ug/L			P	3.0	1.00	8/23/2012	18:53:37
Mercury	7439-97-6	0.012	ug/L	U		CV	0.012	1.00	8/24/2012	13:31:21
Selenium	7782-49-2	7.0	ug/L	U		P	7.0	1.00	8/23/2012	18:53:37
Silver	7440-22-4	2.0	ug/L	U		P	2.0	1.00	8/23/2012	18:53:37
Vanadium	7440-62-2	2.0	ug/L	U		P	2.0	1.00	8/23/2012	18:53:37
Zinc	7440-66-6	2.5	ug/L	J B		P	2.0	1.00	8/23/2012	18:53:37

Comments:

Sample results have been qualified by URS based on data review results, which is modeled after USEPA NFG for Superfund Organic and Inorganic Methods Data Review (EPA, June 08 and Jan 10).

Total Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: URS Corporation **SDG No.:** J1204020 **Method Type:**

Sample ID: J1204020-004 **Client ID:** MW-5A

Matrix: WATER **Date Received:** 8/22/2012 **Level:** LOW

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

Prep Batch ID: 165416 **Prep Date:** 8/23/2012

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Arsenic	7440-38-2	5.8	ug/L	J		P	4.0	1.00	8/23/2012	18:57:59
Barium	7440-39-3	114	ug/L			P	0.30	1.00	8/23/2012	18:57:59
Cadmium	7440-43-9	0.20	ug/L	U		P	0.20	1.00	8/23/2012	18:57:59
Chromium	7440-47-3	2.2	ug/L	J B		P	0.50	1.00	8/23/2012	18:57:59
Copper	7440-50-8	2.0	ug/L	U		P	2.0	1.00	8/23/2012	18:57:59
Iron	7439-89-6	138	ug/L			P	3.0	1.00	8/23/2012	18:57:59
Lead	7439-92-1	4.0	ug/L	U		P	4.0	1.00	8/23/2012	18:57:59
Manganese	7439-96-5	244	ug/L			P	3.0	1.00	8/23/2012	18:57:59
Mercury	7439-97-6	0.012	ug/L	U		CV	0.012	1.00	8/24/2012	13:42:23
Selenium	7782-49-2	7.0	ug/L	U		P	7.0	1.00	8/23/2012	18:57:59
Silver	7440-22-4	2.0	ug/L	U		P	2.0	1.00	8/23/2012	18:57:59
Vanadium	7440-62-2	2.0	ug/L	U		P	2.0	1.00	8/23/2012	18:57:59
Zinc	7440-66-6	2.0	ug/L	U		P	2.0	1.00	8/23/2012	18:57:59

Comments:

Sample results have been qualified by URS based on data review results, which is modeled after USEPA NFG for Superfund Organic and Inorganic Methods Data Review (EPA, June 08 and Jan 10).

Total Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: URS Corporation **SDG No.:** J1204020 **Method Type:**

Sample ID: J1204020-005 **Client ID:** MW-7A

Matrix: WATER **Date Received:** 8/22/2012 **Level:** LOW

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

Prep Batch ID: 165416 **Prep Date:** 8/23/2012

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Arsenic	7440-38-2	15	ug/L			P	4.0	1.00	8/23/2012	19:06:59
Barium	7440-39-3	38	ug/L			P	0.30	1.00	8/23/2012	19:06:59
Cadmium	7440-43-9	0.20	ug/L	U		P	0.20	1.00	8/23/2012	19:06:59
Chromium	7440-47-3	2.1	ug/L	J B		P	0.50	1.00	8/23/2012	19:06:59
Copper	7440-50-8	2.0	ug/L	U		P	2.0	1.00	8/23/2012	19:06:59
Iron	7439-89-6	13400	ug/L			P	3.0	1.00	8/23/2012	19:06:59
Lead	7439-92-1	4.0	ug/L	U		P	4.0	1.00	8/23/2012	19:06:59
Manganese	7439-96-5	301	ug/L			P	3.0	1.00	8/23/2012	19:06:59
Mercury	7439-97-6	0.012	ug/L	U		CV	0.012	1.00	8/24/2012	13:44:31
Selenium	7782-49-2	7.0	ug/L	U		P	7.0	1.00	8/23/2012	19:06:59
Silver	7440-22-4	2.0	ug/L	U		P	2.0	1.00	8/23/2012	19:06:59
Vanadium	7440-62-2	2.0	ug/L	J		P	2.0	1.00	8/23/2012	19:06:59
Zinc	7440-66-6	2.0	ug/L	U		P	2.0	1.00	8/23/2012	19:06:59

Comments:

Sample results have been qualified by URS based on data review results, which is modeled after USEPA NFG for Superfund Organic and Inorganic Methods Data Review (EPA, June 08 and Jan 10).

COLUMBIA ANALYTICAL SERVICES, INC

Total Metals

- 1 -
INORGANIC ANALYSIS DATA PACKAGE

Client: URS Corporation **SDG No.:** J1204020 **Method Type:**

Sample ID: J1204020-006 **Client ID:** MW-8A

Matrix: WATER **Date Received:** 8/22/2012 **Level:** LOW

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

Prep Batch ID: 165416 **Prep Date:** 8/23/2012

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Arsenic	7440-38-2	9.0	ug/L	J		P	4.0	1.00	8/23/2012	19:15:40
Barium	7440-39-3	46	ug/L			P	0.30	1.00	8/23/2012	19:15:40
Cadmium	7440-43-9	0.20	ug/L	U		P	0.20	1.00	8/23/2012	19:15:40
Chromium	7440-47-3	0.50	ug/L	U		P	0.50	1.00	8/23/2012	19:15:40
Copper	7440-50-8	2.0	ug/L	U		P	2.0	1.00	8/23/2012	19:15:40
Iron	7439-89-6	38900	ug/L			P	3.0	1.00	8/23/2012	19:15:40
Lead	7439-92-1	4.0	ug/L	U		P	4.0	1.00	8/23/2012	19:15:40
Manganese	7439-96-5	1670	ug/L			P	3.0	1.00	8/23/2012	19:15:40
Mercury	7439-97-6	0.012	ug/L	U		CV	0.012	1.00	8/24/2012	13:46:40
Selenium	7782-49-2	7.0	ug/L	U		P	7.0	1.00	8/23/2012	19:15:40
Silver	7440-22-4	2.0	ug/L	U		P	2.0	1.00	8/23/2012	19:15:40
Vanadium	7440-62-2	2.0	ug/L	U		P	2.0	1.00	8/23/2012	19:15:40
Zinc	7440-66-6	2.0	ug/L	U		P	2.0	1.00	8/23/2012	19:15:40

Comments:

Sample results have been qualified by URS based on data review results, which is modeled after USEPA NFG for Superfund Organic and Inorganic Methods Data Review (EPA, June 08 and Jan 10).

COLUMBIA ANALYTICAL SERVICES, INC

Total Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: URS Corporation **SDG No.:** J1204039 **Method Type:**

Sample ID: J1204039-001 **Client ID:** Primary

Matrix: WATER **Date Received:** 8/23/2012 **Level:** LOW

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

Prep Batch ID: 165526 **Prep Date:** 8/24/2012

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Arsenic	7440-38-2	174	ug/L			P	4.0	1.00	8/27/2012	15:48:03
Barium	7440-39-3	201	ug/L			P	0.30	1.00	8/27/2012	15:48:03
Cadmium	7440-43-9	0.20	ug/L	U		P	0.20	1.00	8/27/2012	15:48:03
Chromium	7440-47-3	135	ug/L			P	0.50	1.00	8/27/2012	15:48:03
Copper	7440-50-8	2.0	ug/L	U		P	2.0	1.00	8/27/2012	15:48:03
Iron	7439-89-6	7990	ug/L			P	3.0	1.00	8/27/2012	15:48:03
Lead	7439-92-1	5.0	ug/L	J		P	4.0	1.00	8/27/2012	15:48:03
Manganese	7439-96-5	376	ug/L			P	3.0	1.00	8/27/2012	15:48:03
Mercury	7439-97-6	0.094	ug/L	J B		CV	0.012	1.00	8/28/2012	13:21:46
Selenium	7782-49-2	7.0	ug/L	U		P	7.0	1.00	8/27/2012	15:48:03
Silver	7440-22-4	2.0	ug/L	U		P	2.0	1.00	8/27/2012	15:48:03
Vanadium	7440-62-2	1360	ug/L			P	2.0	1.00	8/27/2012	15:48:03
Zinc	7440-66-6	100	ug/L			P	2.0	1.00	8/27/2012	15:48:03

Comments:

Sample results have been qualified by URS based on data review results, which is modeled after USEPA NFG for Superfund Organic and Inorganic Methods Data Review (EPA, June 08 and Jan 10).

Total Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: URS Corporation **SDG No.:** J1204039 **Method Type:**

Sample ID: J1204039-002 **Client ID:** Secondary

Matrix: WATER **Date Received:** 8/23/2012 **Level:** LOW

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

Prep Batch ID: 165526 **Prep Date:** 8/24/2012

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Arsenic	7440-38-2	10	ug/L			P	4.0	1.00	8/27/2012	15:56:44
Barium	7440-39-3	65	ug/L			P	0.30	1.00	8/27/2012	15:56:44
Cadmium	7440-43-9	0.25	ug/L	J	B	P	0.20	1.00	8/27/2012	15:56:44
Chromium	7440-47-3	88	ug/L			P	0.50	1.00	8/27/2012	15:56:44
Copper	7440-50-8	6.1	ug/L	J		P	2.0	1.00	8/27/2012	15:56:44
Iron	7439-89-6	37400	ug/L			P	3.0	1.00	8/27/2012	15:56:44
Lead	7439-92-1	4.8	ug/L	J		P	4.0	1.00	8/27/2012	15:56:44
Manganese	7439-96-5	716	ug/L			P	3.0	1.00	8/27/2012	15:56:44
Mercury	7439-97-6	0.012	ug/L	U		CV	0.012	1.00	8/28/2012	13:23:53
Selenium	7782-49-2	7.0	ug/L	U		P	7.0	1.00	8/27/2012	15:56:44
Silver	7440-22-4	2.0	ug/L	U		P	2.0	1.00	8/27/2012	15:56:44
Vanadium	7440-62-2	23	ug/L			P	2.0	1.00	8/27/2012	15:56:44
Zinc	7440-66-6	35	ug/L			P	2.0	1.00	8/27/2012	15:56:44

Comments:

Sample results have been qualified by URS based on data review results, which is modeled after USEPA NFG for Superfund Organic and Inorganic Methods Data Review (EPA, June 08 and Jan 10).

Total Metals

- 1 -

INORGANIC ANALYSIS DATA PACKAGE

Client: URS Corporation **SDG No.:** J1204039 **Method Type:**

Sample ID: J1204039-003 **Client ID:** Underdrain

Matrix: WATER **Date Received:** 8/23/2012 **Level:** LOW

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

Prep Batch ID: 165526 **Prep Date:** 8/24/2012

Analyte	CAS No.	Concentration	Units	C	Qual	M	DL	Dil	Analytical Date	Analytical Time
Arsenic	7440-38-2	11	ug/L			P	4.0	1.00	8/27/2012	16:05:25
Barium	7440-39-3	130	ug/L			P	0.30	1.00	8/27/2012	16:05:25
Cadmium	7440-43-9	0.20	ug/L	U		P	0.20	1.00	8/27/2012	16:05:25
Chromium	7440-47-3	24	ug/L			P	0.50	1.00	8/27/2012	16:05:25
Copper	7440-50-8	16	ug/L			P	2.0	1.00	8/27/2012	16:05:25
Iron	7439-89-6	31600	ug/L			P	3.0	1.00	8/27/2012	16:05:25
Lead	7439-92-1	4.0	ug/L	U		P	4.0	1.00	8/27/2012	16:05:25
Manganese	7439-96-5	743	ug/L			P	3.0	1.00	8/27/2012	16:05:25
Mercury	7439-97-6	0.078	ug/L	J B		CV	0.012	1.00	8/28/2012	13:26:01
Selenium	7782-49-2	7.0	ug/L	U		P	7.0	1.00	8/27/2012	16:05:25
Silver	7440-22-4	2.0	ug/L	U		P	2.0	1.00	8/27/2012	16:05:25
Vanadium	7440-62-2	44	ug/L			P	2.0	1.00	8/27/2012	16:05:25
Zinc	7440-66-6	2.1	ug/L	J B		P	2.0	1.00	8/27/2012	16:05:25

Comments:

Sample results have been qualified by URS based on data review results, which is modeled after USEPA NFG for Superfund Organic and Inorganic Methods Data Review (EPA, June 08 and Jan 10).

COLUMBIA ANALYTICAL SERVICES, INC.
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Analytical Report

Client: URS Corporation
Project: IP Riegelwood Landfill/31828323.00001
Sample Matrix: Water

Sample Name: MW-1A
Lab Code: J1204020-001

Service Request: J1204020
Date Collected: 8/21/12 1146
Date Received: 8/22/12

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	ND	U J	mg/L	4.0	4.0	2	NA	8/22/12 15:49	
Carbon, Total Organic (TOC)	SM 5310 B	**1.8**		mg/L	1.0	0.09	1	NA	8/27/12 21:23	
Chemical Oxygen Demand, Total	410.4	ND	U	mg/L	20	16	1	8/23/12	8/23/12 14:23	
Chloride	300.0	**8.19**		mg/L	0.50	0.11	1	NA	8/22/12 20:22	
Conductivity at 25 Degrees Celsius	120.1	**151**		µMHOS/cm	1.0	1.0	1	NA	8/28/12 12:11	
Fluoride	300.0	**0.18**	J	mg/L	0.20	0.02	1	NA	8/22/12 20:22	
Nitrate as Nitrogen	300.0	ND	U	mg/L	0.20	0.03	1	NA	8/22/12 20:22	
pH	SM 4500-H+ B	4.40	~~X~~ J	pH Units			1	NA	8/22/12 18:31	H
Solids, Total Dissolved	SM 2540 C	**96**		mg/L	10	10	1	NA	8/23/12 15:16	
Sulfate	300.0	**49.5**		mg/L	0.50	0.18	1	NA	8/22/12 20:22	

Sample results have been qualified by URS based on data review results, which is modeled after USEPA NFG for Superfund Organic and Inorganic Methods Data Review (EPA, June 08 and Jan 10).

COLUMBIA ANALYTICAL SERVICES, INC.
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Analytical Report

Client: URS Corporation
Project: IP Riegelwood Landfill/31828323.00001
Sample Matrix: Water

Service Request: J1204020
Date Collected: 8/21/12 1151
Date Received: 8/22/12

Sample Name: MW-1B
Lab Code: J1204020-002

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	ND	U J	mg/L	4.0	4.0	2	NA	8/22/12 15:49	
Carbon, Total Organic (TOC)	SM 5310 B	**2.1**		mg/L	1.0	0.09	1	NA	8/27/12 21:36	
Chemical Oxygen Demand, Total	410.4	ND	U	mg/L	20	16	1	8/23/12	8/23/12 14:24	
Chloride	300.0	**8.79**		mg/L	0.50	0.11	1	NA	8/22/12 21:07	
Conductivity at 25 Degrees Celsius	120.1	**393**		µMHOS/cm	1.0	1.0	1	NA	8/28/12 12:15	
Fluoride	300.0	**0.16**	J	mg/L	0.20	0.02	1	NA	8/22/12 21:07	
Nitrate as Nitrogen	300.0	**0.18**	J	mg/L	0.20	0.03	1	NA	8/22/12 21:07	
pH	SM 4500-H+ B	7.43	~~X~~ J	pH Units			1	NA	8/22/12 18:34	H
Solids, Total Dissolved	SM 2540 C	**271**		mg/L	10	10	1	NA	8/23/12 15:16	
Sulfate	300.0	**27.2**		mg/L	0.50	0.18	1	NA	8/22/12 21:07	

Sample results have been qualified by URS based on data review results, which is modeled after USEPA NFG for Superfund Organic and Inorganic Methods Data Review (EPA, June 08 and Jan 10).

COLUMBIA ANALYTICAL SERVICES, INC.
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Analytical Report

Client: URS Corporation
Project: IP Riegelwood Landfill/31828323.00001
Sample Matrix: Water

Service Request: J1204020
Date Collected: 8/21/12 1439
Date Received: 8/22/12

Sample Name: MW-4A
Lab Code: J1204020-003

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	ND	U J	mg/L	4.0	4.0	2	NA	8/22/12 15:49	
Carbon, Total Organic (TOC)	SM 5310 B	**3.6**		mg/L	1.0	0.09	1	NA	8/27/12 21:49	
Chemical Oxygen Demand, Total	410.4	ND	U	mg/L	20	16	1	8/23/12	8/23/12 14:24	
Chloride	300.0	**16.1**		mg/L	0.50	0.11	1	NA	8/22/12 21:22	
Conductivity at 25 Degrees Celsius	120.1	**158**		µMHOS/cm	1.0	1.0	1	NA	8/28/12 12:17	
Fluoride	300.0	**0.14**	J	mg/L	0.20	0.02	1	NA	8/22/12 21:22	
Nitrate as Nitrogen	300.0	ND	U	mg/L	0.20	0.03	1	NA	8/22/12 21:22	
pH	SM 4500-H+ B	5.15	X S	pH Units			1	NA	8/22/12 18:39	H
Solids, Total Dissolved	SM 2540 C	**106**		mg/L	10	10	1	NA	8/23/12 15:16	
Sulfate	300.0	**39.6**		mg/L	0.50	0.18	1	NA	8/22/12 21:22	

Sample results have been qualified by URS based on data review results, which is modeled after USEPA NFG for Superfund Organic and Inorganic Methods Data Review (EPA, June 08 and Jan 10).

COLUMBIA ANALYTICAL SERVICES, INC.
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Analytical Report

Client: URS Corporation
Project: IP Riegelwood Landfill/31828323.00001
Sample Matrix: Water

Service Request: J1204020
Date Collected: 8/21/12 1611
Date Received: 8/22/12

Sample Name: MW-5A
Lab Code: J1204020-004

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	**4.1**	J	mg/L	2.0	2.0	1	NA	8/22/12 15:49	
Carbon, Total Organic (TOC)	SM 5310 B	**30.7**		mg/L	1.0	0.09	1	NA	8/27/12 22:03	
Chemical Oxygen Demand, Total	410.4	**98**	J	mg/L	20	16	1	8/23/12	8/23/12 14:25	
Chloride	300.0	**188**		mg/L	0.50	0.11	1	NA	8/22/12 21:36	
Conductivity at 25 Degrees Celsius	120.1	**1770**		µMHOS/cm	1.0	1.0	1	NA	8/28/12 12:19	
Fluoride	300.0	**0.17**	J	mg/L	0.20	0.02	1	NA	8/22/12 21:36	
Nitrate as Nitrogen	300.0	**0.15**	J	mg/L	0.20	0.03	1	NA	8/22/12 21:36	
pH	SM 4500-H+ B	6.94	X J	pH Units			1	NA	8/22/12 18:43	H
Solids, Total Dissolved	SM 2540 C	**1110**		mg/L	20	20	2	NA	8/23/12 15:16	
Sulfate	300.0	**1.12**		mg/L	0.50	0.18	1	NA	8/22/12 21:36	

Sample results have been qualified by URS based on data review results, which is modeled after USEPA NFG for Superfund Organic and Inorganic Methods Data Review (EPA, June 08 and Jan 10).

COLUMBIA ANALYTICAL SERVICES, INC.

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Analytical Report

Client: URS Corporation
Project: IP Riegelwood Landfill/31828323.00001
Sample Matrix: Water

Service Request: J1204020
Date Collected: 8/21/12 1348
Date Received: 8/22/12

Sample Name: MW-7A
Lab Code: J1204020-005

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	ND	U J	mg/L	4.0	4.0	2	NA	8/22/12 15:49	
Carbon, Total Organic (TOC)	SM 5310 B	**23.8**		mg/L	1.0	0.09	1	NA	8/27/12 22:17	
Chemical Oxygen Demand, Total	410.4	**71**		mg/L	20	16	1	8/23/12	8/23/12 14:26	
Chloride	300.0	**196**		mg/L	0.50	0.11	1	NA	8/22/12 21:51	
Conductivity at 25 Degrees Celsius	120.1	**1640**		µMHOS/cm	1.0	1.0	1	NA	8/28/12 12:22	
Fluoride	300.0	**0.18**	J	mg/L	0.20	0.02	1	NA	8/22/12 21:51	
Nitrate as Nitrogen	300.0	ND	U	mg/L	0.20	0.03	1	NA	8/22/12 21:51	
pH	SM 4500-H+ B	7.06	~~X~~ J	pH Units			1	NA	8/22/12 18:46	H
Solids, Total Dissolved	SM 2540 C	**1080**		mg/L	20	20	2	NA	8/23/12 15:16	
Sulfate	300.0	**55.5**		mg/L	0.50	0.18	1	NA	8/22/12 21:51	

Sample results have been qualified by URS based on data review results, which is modeled after USEPA NFG for Superfund Organic and Inorganic Methods Data Review (EPA, June 08 and Jan 10).

COLUMBIA ANALYTICAL SERVICES, INC.
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Analytical Report

Client: URS Corporation
Project: IP Riegelwood Landfill/31828323.00001
Sample Matrix: Water

Service Request: J1204020
Date Collected: 8/21/12 1524
Date Received: 8/22/12

Sample Name: MW-8A
Lab Code: J1204020-006

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	ND	U J	mg/L	4.0	4.0	2	NA	8/22/12 15:49	
Carbon, Total Organic (TOC)	SM 5310 B	**3.9**		mg/L	1.0	0.09	1	NA	8/27/12 22:31	
Chemical Oxygen Demand, Total	410.4	**22**		mg/L	20	16	1	8/23/12	8/23/12 14:27	
Chloride	300.0	**5.02**		mg/L	0.50	0.11	1	NA	8/22/12 22:06	
Conductivity at 25 Degrees Celsius	120.1	**1360**		µMHOS/cm	1.0	1.0	1	NA	8/28/12 12:25	
Fluoride	300.0	**0.51**		mg/L	0.20	0.02	1	NA	8/22/12 22:06	
Nitrate as Nitrogen	300.0	ND	U	mg/L	0.20	0.03	1	NA	8/22/12 22:06	
pH	SM 4500-H+ B	6.68	~~U~~ J	pH Units			1	NA	8/22/12 18:48	H
Solids, Total Dissolved	SM 2540 C	**1210**		mg/L	20	20	2	NA	8/23/12 15:16	
Sulfate	300.0	**631**		mg/L	5.0	1.8	10	NA	8/23/12 19:32	

Sample results have been qualified by URS based on data review results, which is modeled after USEPA NFG for Superfund Organic and Inorganic Methods Data Review (EPA, June 08 and Jan 10).

COLUMBIA ANALYTICAL SERVICES, INC.
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Analytical Report

Client: URS Corporation
Project: IP Riegelwood Landfill/31828323.00001
Sample Matrix: Water

Service Request: J1204039
Date Collected: 8/22/12 1140
Date Received: 8/23/12

Sample Name: Primary
Lab Code: J1204039-001

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	**164**	J	mg/L	2.0	2.0	1	NA	8/24/12 10:00	
Carbon, Total Organic (TOC)	SM 5310 B	ND	U	mg/L	1.0	0.09	1	NA	8/29/12 13:15	
Chemical Oxygen Demand, Total	410.4	**1290**		mg/L	20	16	1	8/28/12	8/28/12 14:46	
Chloride	300.0	**151**		mg/L	5.0	1.1	10	NA	8/23/12 15:47	
Conductivity at 25 Degrees Celsius	120.1	**10000**		µMHOS/cm	1.0	1.0	1	NA	8/28/12 12:29	
Fluoride	300.0	**13.3**		mg/L	2.0	0.2	10	NA	8/23/12 15:47	
Nitrate as Nitrogen	300.0	ND	U	mg/L	0.20	0.03	1	NA	8/23/12 17:02	
Orthophosphate as Phosphorus	300.0	**1.5**		mg/L	1.0	0.2	10	NA	8/23/12 15:47	
pH	SM 4500-H+ B	7.40	~~X~~ J	pH Units			1	NA	8/24/12 13:17	H
Solids, Total Dissolved	SM 2540 C	**7510**		mg/L	100	100	10	NA	8/24/12 14:36	
Sulfate	300.0	**1480**		mg/L	5.0	1.8	10	NA	8/23/12 15:47	

Sample results have been qualified by URS based on data review results, which is modeled after USEPA NFG for Superfund Organic and Inorganic Methods Data Review (EPA, June 08 and Jan 10).

COLUMBIA ANALYTICAL SERVICES, INC.
Now part of the ALS Group
Analytical Report

Client: URS Corporation
Project: IP Riegelwood Landfill/31828323.00001
Sample Matrix: Water

Service Request: J1204039
Date Collected: 8/22/12 1200
Date Received: 8/23/12

Sample Name: Secondary
Lab Code: J1204039-002

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	**6.9**	J	mg/L	2.0	2.0	1	NA	8/24/12 10:00	
Carbon, Total Organic (TOC)	SM 5310 B	**35.1**		mg/L	1.0	0.09	1	NA	8/29/12 13:34	
Chemical Oxygen Demand, Total	410.4	**170**		mg/L	100	80	5	8/31/12	8/31/12 15:40	
Chloride	300.0	**40.4**		mg/L	0.50	0.11	1	NA	8/23/12 16:02	
Conductivity at 25 Degrees Celsius	120.1	**2080**		µMHOS/cm	1.0	1.0	1	NA	8/28/12 12:50	
Fluoride	300.0	**0.61**		mg/L	0.20	0.02	1	NA	8/23/12 16:02	
Nitrate as Nitrogen	300.0	ND	U	mg/L	0.20	0.03	1	NA	8/23/12 16:02	
Orthophosphate as Phosphorus	300.0	**0.06**	J	mg/L	0.10	0.02	1	NA	8/23/12 16:02	
pH	SM 4500-H+ B	6.55	~~X~~ J	pH Units			1	NA	8/24/12 13:28	H
Solids, Total Dissolved	SM 2540 C	**1590**		mg/L	40	40	4	NA	8/24/12 14:36	
Sulfate	300.0	**258**		mg/L	5.0	1.8	10	NA	8/23/12 16:32	

Sample results have been qualified by URS based on data review results, which is modeled after USEPA NFG for Superfund Organic and Inorganic Methods Data Review (EPA, June 08 and Jan 10).

COLUMBIA ANALYTICAL SERVICES, INC.
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Analytical Report

Client: URS Corporation
Project: IP Riegelwood Landfill/31828323.00001
Sample Matrix: Water

Service Request: J1204039
Date Collected: 8/22/12 1120
Date Received: 8/23/12

Sample Name: Underdrain
Lab Code: J1204039-003

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	**85.6**	J	mg/L	2.0	2.0	1	NA	8/24/12 10:00	
Carbon, Total Organic (TOC)	SM 5310 B	**56.2**		mg/L	1.0	0.09	1	NA	8/29/12 13:51	
Chemical Oxygen Demand, Total	410.4	**227**		mg/L	20	16	1	8/28/12	8/28/12 15:00	
Chloride	300.0	**244**		mg/L	5.0	1.1	10	NA	8/23/12 16:47	
Conductivity at 25 Degrees Celsius	120.1	**3020**		µMHOS/cm	1.0	1.0	1	NA	8/28/12 12:54	
Fluoride	300.0	**0.19**	J	mg/L	0.20	0.02	1	NA	8/23/12 16:17	
Nitrate as Nitrogen	300.0	ND	U	mg/L	0.20	0.03	1	NA	8/23/12 16:17	
Orthophosphate as Phosphorus	300.0	**0.04**	J	mg/L	0.10	0.02	1	NA	8/23/12 16:17	
pH	SM 4500-H+ B	6.91	~~X~~ J	pH Units			1	NA	8/24/12 13:33	H
Solids, Total Dissolved	SM 2540 C	**2230**		mg/L	40	40	4	NA	8/24/12 14:36	
Sulfate	300.0	**143**		mg/L	0.50	0.18	1	NA	8/23/12 16:17	

Sample results have been qualified by URS based on data review results, which is modeled after USEPA NFG for Superfund Organic and Inorganic Methods Data Review (EPA, June 08 and Jan 10).

SUMMIT
ENVIRONMENTAL TECHNOLOGIES, INC.
Analytical Laboratories

August 31, 2012

Client: Columbia Analytical
Address: 9143 Phillips Hwy, Ste 200
Jacksonville, FL 32256

Received: 8/24/2012
Project #: J1204020

Client ID#	Lab ID#	Collected	Analyte		Result		Units	Matrix	Method	DF	LOQ	Run	Analyst
J1204020-001	1220313-01	21-Aug-12	TOX	MW-1A	ND	VJ	mg/L	L	9020	1	0.1	28-Aug-12	JRK
J1204020-002	1220313-02	21-Aug-12	TOX	MW-1B	ND		mg/L	L	9020	1	0.1	28-Aug-12	JRK
J1204020-003	1220313-03	21-Aug-12	TOX	MW-4A	ND		mg/L	L	9020	1	0.1	28-Aug-12	JRK
J1204020-004	1220313-04	21-Aug-12	TOX	MW-5A	0.5		mg/L	L	9020	1	0.1	29-Aug-12	JRK
J1204020-005	1220313-05	21-Aug-12	TOX	MW-7A	0.7		mg/L	L	9020	1	0.1	29-Aug-12	JRK
J1204020-006	1220313-06	21-Aug-12	TOX	MW-8A	ND		mg/L	L	9020	1	0.1	28-Aug-12	JRK

Sample results have been qualified by URS based on data review results, which is modeled after USEPA NFG for Superfund Organic and Inorganic Methods Data Review (EPA, June 08 and Jan 10).

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SUMMIT
ENVIRONMENTAL TECHNOLOGIES, INC.
Analytical Laboratories

August 31, 2012

Client: Columbia Analytical
Address: 9143 Phillips Hwy, Ste 200
Jacksonville, FL 32256

Received: 8/24/2012
Project #: J1204039

Client ID#	Lab ID#	Collected	Analyte		Result	Units	Matrix	Method	DF	LOQ	Run	Analyst
J1204039001	1220315-01	22-Aug-12	TOX	Primary	1.4	mg/L	L	9020	1	0.1	28-Aug-12	JRK
J1204039002	1220315-02	22-Aug-12	TOX	Secondary	0.8	mg/L	L	9020	1	0.1	29-Aug-12	JRK
J1204039003	1220315-03	22-Aug-12	TOX	Underdrain	1.4	mg/L	L	9020	1	0.1	29-Aug-12	JRK

Sample results have been qualified by URS based on data review results, which is modeled after USEPA NFG for Superfund Organic and Inorganic Methods Data Review (EPA, June 08 and Jan 10).

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APPENDIX B

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 8-21-12 / 1146

PERSONNEL Jerry Maciejewski, 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	~~H2SO4~~ 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: 8-21-12

Time Started: 1125

Time Completed: 1200

Well Depth (ft. BTOC): 29.50

Depth to Water (ft BTOC): 16.89

Actual Purge (liters): 7 L

Purge rate (liters/min): .33 L/min

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1131	2 L	16.90	21.0	.108	0.87	5.16	164	3.0
1134	3 L	16.90	20.4	.105	0.84	4.23	157	2.7
1137	4 L	16.90	20.2	.104	0.50	4.15	139	0.95
1140	5 L	16.90	20.1	.103	0.38	4.15	125	1.4
1143	6 L	16.90	20.3	.103	0.34	4.15	119	0.65
1146	7 L	16.90	20.3	.103	0.31	4.16	110	0.75

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 8-21-12/1151

PERSONNEL Jerry Maciejewski, 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	~~H2SO4~~ 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: 8-21-12

Time Started: 1130

Time Completed: 1205

Well Depth (ft. BTOC): ~~16.32~~ 50.00

Depth to Water (ft BTOC): 16.32

Actual Purge (liters): 7 L

Purge rate (liters/min): .33 L/min

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1136	2L	17.02	21.4	.298	6.95	7.57	42.2	2.0
1139	3L	17.98	21.4	.275	7.40	7.32	41.5	0.95
1142	4L	18.62	21.1	.276	7.49	7.28	44.9	1.0
1145	5L	19.21	21.3	.277	7.64	7.30	44.5	2.6
1148	6L	19.81	21.2	.281	7.79	7.43	44.0	1.4
1151	7L	20.11	21.4	.283	7.81	7.45	43.9	0.89

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 8-21-12 / 1439

PERSONNEL Jerry Maciejewski, 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	~~H2SO4~~ 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: 8-21-12

Time Started: 1415

Time Completed: 1450

Well Depth (ft. BTOC): 11.90'

Depth to Water (ft BTOC): 7.89'

Actual Purge (liters): 8t

Purge rate (liters/min): .33 t/min

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1421	2t	8.01	21.7	1.223	0.93	5.01	261	14
1424	3t	8.11	21.5	1.107	0.46	4.93	190	12
1427	4t	8.22	21.5	1.096	0.31	4.95	185	11
1430	5t	8.31	21.6	1.118	0.20	4.81	166	12
1433	6t	8.34	21.7	1.115	0.25	4.76	155	14
1436	7t	8.36	21.7	1.121	0.26	4.76	152	15
1439	8t	8.38	21.7	1.128	0.27	4.76	149	14

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

MW-4B = 5.43

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 8-21-12/1611

PERSONNEL Jerry Maciejewski, 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	~~H2SO4~~ 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: 8-21-12

Time Started: 1550

Time Completed: 1630

Well Depth (ft. BTOC): 20'

Depth to Water (ft BTOC): 9.77

Actual Purge (liters): 7L

Purge rate (liters/min): .33 L/min

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1556	2L	9.77	20.8	1.403	0.44	6.47	-47.7	3.8
1559	3L	9.79	20.9	1.381	0.29	6.55	-61.9	4.9
1602	4L	9.81	20.9	1.236	0.22	6.55	-64.7	2.6
1605	5L	9.81	21.0	1.211	0.18	6.55	-69.6	3.1
1608	6L	9.81	21.1	1.209	0.16	6.55	-71.3	2.4
1611	7L	9.81	21.3	1.204	0.15	6.55	-72.4	2.1

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

MW-5B = 10.50

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 8-21-12 1348

PERSONNEL Jerry Maciejewski, 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	~~H2SO4~~ 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: 8-21-12

Time Started: 1330

Time Completed: 1410

Well Depth (ft. BTOC): 13'

Depth to Water (ft BTOC): 6.28'

Actual Purge (liters): 6 L

Purge rate (liters/min): .33 L/min

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1336	2 L	6.84	22.1	1.100	0.89	6.14	-67	24.4
1339	3 L	7.81	22.2	1.052	0.54	6.33	-70	24.9
1342	4 L	8.09	22.3	1.008	0.49	6.43	-65	25.2
1345	5 L	8.34	22.3	1.012	0.52	6.46	-61	26.1
1348	6 L	8.62	22.2	1.009	0.51	6.47	-59	27.0

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

MW-7B = 5.57

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 8-21-12/1524

PERSONNEL Jerry Maciejewski, 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	~~H2SO4~~ 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: 8-21-12

Time Started: 1500

Time Completed: 1540

Well Depth (ft. BTOC): 12.5'

Depth to Water (ft BTOC): 8.29

Actual Purge (liters): 8L

Purge rate (liters/min): .33 L/Min

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1506	2L	8.51	21.3	1.097	0.45	5.82	-68.0	28
1509	3L	8.64	22.0	1.020	0.40	6.07	-73.1	20
1512	4L	8.86	21.8	1.015	0.27	6.20	-78.3	18
1515	5L	9.04	22.1	1.010	0.25	6.23	-77.1	12
1518	6L	9.21	22.0	1.014	0.22	6.26	-79.0	11
1521	7L	9.34	21.9	1.011	0.22	6.27	-81.4	10
1524	8L	9.46	22.0	1.010	0.21	6.28	-83.6	10

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

MW-8B = 7.11

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 8-22-12 / 1120 PERSONNEL Jerry Maciejewski

SAMPLE METHOD bailer Duncan Briley

SAMPLE MEDIA: **Leachate**

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 40ml Amber	~~H2SO4~~ 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 8-22-12

Time Started 1110

Time Completed 1125

Well Depth (ft. BTOC) —

Depth to Water (ft BTOC) 30.65

Actual Purge (liters) —

Purge rate (liters/min) —

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1120	Underdrain	30.65	24.4	2.439	0.51	6.44	-56.7	23

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

Use dedicated Bailer to collect samples

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 8-22-12 1140 PERSONNEL Jerry Maciejewski

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

SAMPLE MEDIA: **Leachate**

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 40ml Amber	~~H2SO4~~ 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 8-22-12

Time Started 1130

Time Completed 1145

Well Depth (ft. BTOC) —

Depth to Water (ft BTOC) —

Actual Purge (liters) —

Purge rate (liters/min) —

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1140	Pump #1	NG	24.8	7.718	0.14	7.48	-323.1	33

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 Primary level reads 19.9

- northern most discharge pipe sample port - use Pump #1 switch - turn to auto and let run for a 1 minute before collecting through sample port

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 8-22-12 / 1200 PERSONNEL Jerry Maciejewski

SAMPLE METHOD Through pumping system Duncan Briley

SAMPLE MEDIA: **Leachate**

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 40ml Amber	~~H2SO4~~ 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 8-22-12

Time Started 1155

Time Completed 1205

Well Depth (ft. BTOC) NG

Depth to Water (ft BTOC) NG

Actual Purge (liters) —

Purge rate (liters/min) —

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	Pump #3	NG	24.0	1.836	0.75	7.01	-236.1	55

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

Secondary level reads 7.1

Southern most discharge pipe sample port - use Pump #3 switch in hand and Petrun for 1-minute before collecting through sample port