AECOM

URS Corporation North Carolina
1600 Perimeter Park Drive, Suite 400
Morrisville NC 27560

919.461.1100 tel
919.461.1415 fax

October 27, 2015

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

Re: Semi-Annual Groundwater
Compliance Monitoring Results (August 2015)
Permit No. 24-02
International Paper, Riegelwood, North Carolina
AECOM Project No. 60402440

Dear Ms. Coverdale:

URS Corporation (URS), an AECOM company, has prepared the attached North Carolina Department of Environment and Natural Resources (NCDENR) Environmental Monitoring Reporting Form and tables presenting the results of the 2015 first semi-annual groundwater compliance monitoring event in the vicinity of the International Paper Riegelwood Mill solid waste landfill. The sampling activities were conducted in accordance with NCDENR Division of Waste Management Solid Waste Section requirements for groundwater monitoring.

The sampling event was conducted on August 5, 2015. The sampling event included the collection of four of five water samples associated with the leachate collection system, designated Primary Cell 1, Primary Cell 2, Secondary Cell 2 and Under-Drain. The Secondary liner section for Cell 1 was dry and therefore not sampled. Concurrently, groundwater samples from monitoring wells MW-1A, MW-1B, MW-4A, MW-5A, MW-7A, and MW-8A were collected. All samples were submitted to Accutest Laboratories in Orlando, Florida (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 – Landfill Cell 1 Analysis Results
- Figure 1 – Site Map
- Figure 2 – Liner System Schematic

- Appendix A – Data Validation Checklist with Qualified Results
- Appendix B – Field Activity Documentation

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

PRELIMINARY ANALYSIS of the CAUSE and SIGNIFICANCE of EACH VALUE EXCEEDING NC2L GROUNDWATER STANDARDS

Wells MW-1A and MW-1B are up-gradient background wells indicating natural conditions. Iron, Manganese, and Vanadium were detected at concentrations above NC2L groundwater standards in one or more of these wells, indicating that these metals are naturally present in groundwater at elevated concentrations. The pH measured in MW-1A was measured to be 4.05 standard units, consistent with previous historic results, indicating that shallow groundwater is naturally acidic.

Vanadium was detected in all monitoring wells except MW-8A, with all detections exceeding the NC2L standard. Historically, vanadium has been detected most frequently in the background wells and MW-7A, indicating that it is naturally occurring.

Iron was detected in five of six monitoring wells above the groundwater standard. The results were within the historic range of results for this naturally occurring mineral. Manganese was detected in four of the six wells at concentrations exceeding the NC2L standard, continuing a general decreasing trend of manganese concentrations.

Besides the results discussed above, the pH in well MW-4A was found to be 4.89 and in well MW-8A at 6.36, which is below the groundwater standard range of 6.5 – 8.5 standard units. 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.

Three wells were found to have Total Dissolved Solids (TDS) above 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 was found to have an exceedance of the 2L standard for Arsenic at a level slightly lower than the February result for this well. Arsenic is demonstrated to be naturally occurring by historic results in the background wells where it has been detected as high as 31 µg/L in MW-1A and 300 µg/L in MW-1B. Well MW-8A: Sulfate was detected above the 2L groundwater standard. Sulfate has historically been detected at similar levels in this well.

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 5-6, 2015

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: 10/27/2015

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

TABLES

TABLE 1
SEMI-ANNUAL GROUNDWATER ANALYSIS RESULTS
INTERNATIONAL PAPER
RIEGELWOOD, NORTH CAROLINA
AUGUST 2015 EVENT

		Monitoring Well:	MW-1A		MW-1B		MW-4A		MW-5A		MW-7A		MW-8A		2L	
		Collection Date:	8/5/2015		8/5/2015		8/5/2015		8/6/2015		8/5/2015		8/5/2015			
Method	Parameter	Units	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	*Standard*	*SWSL*
SW-846 6010C	Arsenic	ug/l	1.3	U	1.3	U	1.3	U	1.3	U	22		1.3	U	10	10
SW-846 6010C	Barium	ug/l	108	J	23.5	J	38.4	J	110	J	36.6	J	49.4	J	700	100
SW-846 6010C	Cadmium	ug/l	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.3	JB	2	1
SW-846 6010C	Chromium	ug/l	1	U	1	U	1.5	JB	5.5	J	10		1	U	10	10
SW-846 6010C	Copper	ug/l	1	U	1	U	1	U	1	U	1.5	JB	1	U	1,000	10
SW-846 6010C	Iron	ug/l	1330		889		6550		160	J	20500		26400		300	300
SW-846 6010C	Lead	ug/l	1.1	U	1.1	U	2.6	J	1.1	U	7.4		6.9		15	10
SW-846 6010C	Manganese	ug/l	13.2	J	56.2		29.8		185		184		1330	J	50	50
SW-846 6010C	Selenium	ug/l	2.9	U	2.9	U	3.4	JB	2.9	U	2.9	U	2.9	U	20	10
SW-846 6010C	Silver	ug/l	0.7	U	0.7	U	0.7	U	0.7	U	0.7	U	0.7	U	20	10
SW-846 6010C	Vanadium	ug/l	4.2	J	3.4	J	9	J	13.5	J	26.8	J	0.6	U	0.3 (I)	25
SW-846 6010C	Zinc	ug/l	7.6	J	4.8	J	9.9	J	4.4	U	9.2	J	10.2	J	1,000	10
SW-846 7470A	Mercury	ug/l	0.03	U	0.03	U	0.03	U	0.033	J	0.03	U	0.03	U	1	0.2
EPA 120.1	Specific Conductance	umhos/cm	162		295		211		2300		1070		1080		NE	NE
EPA 300.0	Chloride	mg/l	6.9		7.4		27.5		178		99.7		4.1	J	250	NE
EPA 300.0	Fluoride	mg/l	0.095	J	0.069	J	0.06	U	0.64	J	0.3	U	0.38	J	2	2,000
EPA 300.0	Nitrate	mg/l	0.05	U	0.05	U	0.05	U	0.25	UJ	0.25	U	0.25	U	10	10,000
EPA 300.0	Sulfate	mg/l	53.4		17.4		37.9		53.6		35.4		436		250	250,000
EPA 365.3	Orthophosphate	mg/l	NA		NA		NA		NA		NA		NA		NE	NE
SM 5220C	Chemical oxygen demand	mg/l	5.3	UJ	5.3	U	26.5		119		62.7		14.5	J	NE	NE
SM 2540C	Total Dissolved Solids	mg/l	139		229		170		1480		766		900		500	NE
SM 4500H	pH	s.u.	4.05	J	6.61	J	4.89	J	6.62	J	7.08	J	6.36	J	6.5-8.5	NE
SM 5210B	Biochemical oxygen demand	mg/l	2	UJ	2	UJ	2	UJ	20	U	2	UJ	0.24	J	NE	NE
SM 5310B	Total Organic Carbon	mg/l	1.8		1.3		8.5		51.7		19.4		3.3		NE	NE
SW-846 9020B	Total Organic Halides	mg/l	0.29	J	0.038	UJ	0.33	J	1.5	J	0.09	J	0.31	J	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

NA = Not analyzed

NE = Not Established

s.u. = Standard unit

mg/L = Milligrams per Liter

ug/L = Micrograms per Liter

umhos/cm = Micromhos per centimeter

Qualifiers (Q):

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

TABLE 2
HISTORICAL GROUNDWATER ANALYSIS RESULTS
INTERNATIONAL PAPER
RIEGELWOOD NORTH CAROLINA

PARAMETER	MONITORING WELL MW-1A																								
	1997	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009	
	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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

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 = Biochemical 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
HISTORICAL GROUNDWATER ANALYSIS RESULTS
INTERNATIONAL PAPER
RIEGELWOOD NORTH CAROLINA

PARAMETER	MONITORING WELL MW-1A												2L Std	SWSL
	2010		2011		2012		2013		2014		2015			
	MAR	AUG	FEB	AUG	FEB	AUG	FEB	AUG	FEB	AUG	FEB	AUG		
BOD, mg/L	2 U	2 U	2 U	2 U	4 U	4 UJ	39.4 J	4 U	2 U	47 UJ	4 U	2 UJ	NE	NE
COD, mg/L	25 U	25 U	4 J	51	16 U	16 U	16 U	16 U	34	16 U	5.3 U	5.3 UJ	NE	NE
TOX, mg/L	3.8	0.1 U	0.0214 B	0.12	0.1 U	0.1 UJ	0.08 U	0.43	0.08 U	0.1 U	0.14 J	0.29 J	NE	NE
TOC, as C, mg/L	0.05 U	22.3	1.8	1.7	2.4	1.8	27.5	2.1	2	2.1	2.3	1.8	NE	NE
TDS, mg/L	64	82	83	90	90	96	85	94	93	97	130	139	500	NE
pH, s.u.	4 J	4.5 J	4.1 J	4.85 J	4.34 J	4.4 J	4.37 J	4.49 J	4.39 J	4.45 J	4.12 J	4.05 J	6.5-8.5	NE
Conductivity, umohs/cm	177	159	153	150	159	151	146	148	152	155	167	162	NE	NE
Sulfate, mg/L	46.1	42	46	47.4	43.2	49.5	51 J	47.1	45.6	50.4	89.6 J	53.4	250	250
Chloride, as Cl, mg/L	8.2	10	9.25	8.84	11.4	8.19	6.73	7.73	7.53	6.1	6.7	6.9	250	NE
Fluoride, as F, mg/L	0.1 U	0.1 U	0.13 J	0.2 J	0.18 J	0.18 J	0.17 J	0.19 J	0.2	0.14 J	0.15 BJ	0.095 J	2	2
Nitrate, as NO3-N, mg/L	0.1 U	0.1 U	0.19 J	0.04 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.05 UJ	0.05 U	10	10
Arsenic, as As, mg/L	0.0027 U	0.0027 U	0.003 U	0.0043 B	0.0061 J	0.0042 J	0.004 J	0.004 J	0.0036 U	0.0036 U	0.0014 BJ	0.0013 U	0.010	0.010
Barium, as Ba, mg/L	0.106	0.104	0.099	0.109	0.104	0.105	0.111	0.1	0.106	0.106	0.118 J	0.108 J	0.700	0.100
Cadmium, as Cd, mg/L	0.0005 U	0.0005 U	0.001 U	0.0001 B	0.0002 U	0.0002 U	0.00017 U	0.00017 U	0.00017 U	0.00017 U	0.0002 U	0.0002 U	0.002	0.001
Chromium, as Cr, mg/L	0.00046 B	0.00053 J	0.001 U	0.001 U	0.00071 J	0.0005 U	0.00041 U	0.00079 BJ	0.0052 BJ	0.00041 U	0.001 U	0.001 U	0.010	0.010
Copper, as Cu, mg/L	0.0003 U	0.0003 U	0.002 U	0.0004 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	1	0.010
Iron, as Fe, mg/L	0.969	1.65	0.78	1.64	0.909	1.34	0.865	2.83	0.803	1.36	0.916	1.33	0.300	0.300
Lead, as Pb, mg/L	0.004 U	0.004 U	0.002 U	0.0007 U	0.004 U	0.004 U	0.0033 U	0.0033 U	0.0033 U	0.0033 U	0.0011 U	0.0011 U	0.015	0.010
Manganese, as Mn, mg/L	0.0146	0.0139	0.012	0.015	0.014	0.014	0.015	0.013	0.014	0.013	0.0145 J	0.0132 J	0.050	0.050
Mercury, as Hg, mg/L	0.00007 U	0.00007 U	0.00008 U	0.00002 U	0.00002 U	0.000012 BJ	0.000012 U	0.000012 U	0.000012 U	0.000012 U	0.00003 U	0.00003 U	0.001	0.0002
Selenium, as Se, mg/L	0.0038 U	0.0038 U	0.005 U	0.004 U	0.007 U	0.007 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U	0.0029 U	0.0029 U	0.020	0.010
Silver, as Ag, mg/L	0.0001 U	0.0001 U	0.001 U	0.0006 U	0.002 U	0.002 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U	0.0007 U	0.0007 U	0.020	0.010
Vanadium, mg/L	0.0041 J	0.0051	0.002 U	0.0043 J	0.0037 J	0.002 U	0.002 J	0.024	0.0066 J	0.0073 JB	0.0049 J	0.0042 J	0.0003 (I)	0.025
Zinc, as Zn, mg/L	0.0065 B	0.0017 J	0.004 J	0.0039 J	0.0054 BJ	0.0044 BJ	0.0067 BJ	0.018 BJ	0.015 BJ	0.0066 JB	0.0053 J	0.0076 J	1	0.010

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INTERNATIONAL PAPER
RIEGELWOOD NORTH CAROLINA

PARAMETER	MONITORING WELL MW-1B																								
	1997	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009	
	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
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
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
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
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
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
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
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
Sulfate, 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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

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INTERNATIONAL PAPER
RIEGELWOOD NORTH CAROLINA

PARAMETER	MONITORING WELL MW-1B												2L Std	SWSL
	2010		2011		2012		2013		2014		2015			
	MAR	AUG	FEB	AUG	FEB	AUG	FEB	AUG	FEB	AUG	FEB	AUG		
BOD, mg/L	2 U	2 U	2 U	2 U	4 U	4 UJ	32.2 J	4 U	2 U	47 UJ	4 U	2 UJ	NE	NE
COD, mg/L	25 U	25 U	4 J	2 J	16 U	16 U	16 U	16 U	16 U	23	14.9 J	5.3 U	NE	NE
TOX, mg/L	5	0.1 U	0.0186 B	0.0982	0.1 U	0.1 U	0.078 J	0.27	0.08 U	0.1 U	0.18 J	0.038 UJ	NE	NE
TOC, as C, mg/L	0.4	10.8	1.8	1.7	1.9	2.1	42.3	1.8	2	1.5	1.9	1.3 B	NE	NE
TDS, mg/L	228	282	269	317	238	271	290	203	240	171	197	229	500	NE
pH, s.u.	7.4 J	7.2 J	6.85 J	7.75 J	7.63 J	7.43 J	7.43 J	6.93 J	7.49 J	6.98 J	6.74 J	6.61 J	6.5-8.5	NE
Conductivity, umohs/cm	431	506	424	522	363	393	439	316	355	238	291	295	NE	NE
Sulfate, mg/L	22.2	26.1	27.5	24.4	20.2	27.2	22	15.1	19.6	14.5	20.7 J	17.4	250	250
Chloride, as Cl, mg/L	8.9	8.4	6.19	5.28	9.32	8.79	10	8.69	8.43	7	7.5	7.4	250	NE
Fluoride, as F, mg/L	0.11	0.1 U	0.13 J	0.25	0.19 J	0.16 J	0.15 J	0.18 J	0.17 J	0.11 J	0.07 BJ	0.069 J	2	2
Nitrate, as NO3-N, mg/L	0.1 U	0.1 U	0.19 J	0.2	0.18 J	0.18 J	0.17 J	0.16 J	0.24	0.03 UJ	0.061 J	0.05 U	10	10
Arsenic, as As, mg/L	0.0097	0.0075	0.003 U	0.0076 B	0.0072 J	0.0071 J	0.006 J	0.0062 J	0.0057 J	0.0036 U	0.0013 U	0.0013 U	0.010	0.010
Barium, as Ba, mg/L	0.016	0.0261	0.022	0.032	0.017	0.021	0.022	0.027	0.019	0.015	0.0207 J	0.0235 J	0.700	0.100
Cadmium, as Cd, mg/L	0.0005 U	0.0005 U	0.001 U	0.00007 U	0.0002 U	0.0002 U	0.00017 U	0.00017 U	0.00017 U	0.00017 U	0.0002 U	0.0002 U	0.002	0.001
Chromium, as Cr, mg/L	0.0004 U	0.0004 U	0.001 U	0.001 U	0.0007 J	0.00099 BJ	0.00061 J	0.0011 BJ	0.00078 BJ	0.00041 U	0.001 U	0.001 U	0.010	0.010
Copper, as Cu, mg/L	0.0003 U	0.0003 U	0.002 U	0.0004 U	0.002 U	0.002 U	0.002 U	0.002 U	0.0035 J	0.002 U	0.001 U	0.001 U	1	0.010
Iron, as Fe, mg/L	4.64	2.53	0.94	1.76	0.851	1.47	1.47	2.19	1.08	0.751	0.256 J	0.889	0.300	0.300
Lead, as Pb, mg/L	0.004 U	0.004 U	0.002 U	0.0007 U	0.004 U	0.004 U	0.0033 U	0.0033 U	0.0033 U	0.0033 U	0.0011 U	0.0011 U	0.015	0.010
Manganese, as Mn, mg/L	0.0984	0.0794	0.045	0.081	0.043	0.094	0.083	0.142	0.081	0.033	0.0144 J	0.056	0.050	0.050
Mercury, as Hg, mg/L	0.00007 U	0.00007 U	0.00008 U	0.00002 U	0.00002 U	0.000012 U	0.000012 U	0.000012 U	0.000012 U	0.000012 U	0.00003 U	0.00003 U	0.001	0.0002
Selenium, as Se, mg/L	0.0038 U	0.0038 U	0.005 U	0.004 U	0.007 U	0.007 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U	0.0029 U	0.0029 U	0.020	0.010
Silver, as Ag, mg/L	0.0001 U	0.0001 U	0.001 U	0.0006 U	0.002 U	0.002 U	0.0012 U	0.0012 J	0.0017 J	0.0012 U	0.0007 U	0.0007 U	0.020	0.010
Vanadium, mg/L	0.0019 J	0.0016 J	0.002 U	0.002 U	0.0021 J	0.0039 J	0.0045 J	0.0047 J	0.0056 J	0.0032 JB	0.0025 J	0.0034 J	0.0003 (I)	0.025
Zinc, as Zn, mg/L	0.003 B	0.0004 U	0.004 J	0.0072 J	0.002 U	0.002 U	0.0014 U	0.0014 U	0.0045 BJ	0.0014 U	0.0044 U	0.0048 J	1	0.010

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INTERNATIONAL PAPER
RIEGELWOOD NORTH CAROLINA

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	1997	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009	
	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
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
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
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
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
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
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
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
Sulfate, 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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

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RIEGELWOOD NORTH CAROLINA

PARAMETER	MONITORING WELL MW-4A												2L Std	SWSL
	2010		2011		2012		2013		2014		2015			
	MAR	AUG	FEB	AUG	FEB	AUG	FEB	AUG	FEB	AUG	FEB	AUG		
BOD, mg/L	2 U	2 UJ	2 U	2 U	4 U	4 UJ	26.8 J	4 U	2 U	47 UJ	4 U	2 UJ	NE	NE
COD, mg/L	25 U	25 U	17 J	9 J	16 U	16 U	16 U	21	25	36	24.8	26.5	NE	NE
TOX, mg/L	8.8	0.1	0.586	0.018 U	0.1 U	0.1 U	0.08 U	0.45	0.08 U	0.1 U	0.24 J	0.33 J	NE	NE
TOC, as C, mg/L	0.5	13.2	7.6	4.8	3.9	3.6	16.3	7.1	7.8	8.3	11.6	8.5	NE	NE
TDS, mg/L	174	183	270	152	134	106	114	220	204	193	182	170	500	NE
pH, s.u.	5.1 J	4.9 J	4.41 J	4.49 J	4.74 J	5.15 J	4.77 J	5.69 J	4.97 J	5.68 J	4.85 J	4.89 J	6.5-8.5	NE
Conductivity, umohs/cm	339	311	436	245	210	158	175	342	307	285	261	211	NE	NE
Sulfate, mg/L	84.1	64.2 J	113	58	53.1	39.6	45	85.7	79.4	57.6	53.1	37.9	250	250
Chloride, as Cl, mg/L	28.9	33.2	50.5	26.4	22.2	16.1	17.9	35.6	34.3	35.8	44.9	27.5	250	NE
Fluoride, as F, mg/L	0.14	0.1 U	0.14 J	0.17 J	0.16 J	0.14 J	0.14 J	0.16 J	0.16 J	0.1 J	0.085 BJ	0.06 U	2	2
Nitrate, as NO3-N, mg/L	0.1 U	0.1 U	0.04 U	0.04 U	0.03 U	0.03 U	0.03 U	0.16 J	0.03 U	0.03 U	0.05 U	0.05 U	10	10
Arsenic, as As, mg/L	0.0027 U	0.0028 J	0.003 U	0.0035 B	0.0045 J	0.004 U	0.0036 U	0.0036 U	0.0036 U	0.0036 U	0.0013 U	0.0013 U	0.010	0.010
Barium, as Ba, mg/L	0.0579	0.0728	0.11	0.059	0.042	0.033	0.042	0.077	0.07	0.053	0.0546 J	0.0384 J	0.700	0.100
Cadmium, as Cd, mg/L	0.0005 U	0.0005 U	0.001 U	0.0012 J	0.0002 U	0.0002 U	0.00017 U	0.00019 BJ	0.00021 J	0.00017 U	0.0002 U	0.0002 U	0.002	0.001
Chromium, as Cr, mg/L	0.00098 B	0.0004 U	0.001 B	0.001 U	0.0005 U	0.0005 U	0.00041 U	0.00099 BJ	0.00071 BJ	0.00068 J	0.0016 BJ	0.0015 JB	0.010	0.010
Copper, as Cu, mg/L	0.0003 U	0.0003 U	0.002 U	0.0017 B	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	1	0.010
Iron, as Fe, mg/L	5.32	8.81	7.5	5.91	4.05	7.03	1.26	10.8	12.6	15.6	7.94	6.55	0.300	0.300
Lead, as Pb, mg/L	0.004 U	0.004 U	0.002 U	0.0007 U	0.004 U	0.004 U	0.0033 U	0.0033 U	0.0033 U	0.0033 U	0.0011 U	0.0026 J	0.015	0.010
Manganese, as Mn, mg/L	0.0501	0.0577	0.088	0.052	0.049	0.038	0.046	0.077	0.06	0.055	0.0341	0.0298	0.050	0.050
Mercury, as Hg, mg/L	0.00007 U	0.00014 J	0.00008 U	0.00002 U	0.00002 U	0.000012 U	0.000012 U	0.000012 U	0.000012 U	0.000052 J	0.00003 U	0.00003 U	0.001	0.0002
Selenium, as Se, mg/L	0.0038 U	0.0038 U	0.005 U	0.004 U	0.007 U	0.007 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U	0.0029 U	0.0034 JB	0.020	0.010
Silver, as Ag, mg/L	0.0001 U	0.0001 U	0.001 U	0.0006 U	0.002 U	0.002 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U	0.0007 U	0.0007 U	0.020	0.010
Vanadium, mg/L	0.0011 J	0.002 J	0.002 U	0.002 U	0.002 U	0.002 U	0.0016 U	0.0016 U	0.009 J	0.0045 JB	0.007 J	0.009 J	0.0003 (I)	0.025
Zinc, as Zn, mg/L	0.0239	0.0112	0.034	0.017 J	0.0072 BJ	0.0025 BJ	0.0048 BJ	0.01 BJ	0.014 BJ	0.0045 JB	0.0049 J	0.0099 J	1	0.010

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INTERNATIONAL PAPER
RIEGELWOOD NORTH CAROLINA

PARAMETER	MONITORING WELL MW-5A																								
	1997	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009	
	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
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
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
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
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
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
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
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
Sulfate, 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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

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	MAR	AUG	FEB	AUG	FEB	AUG	FEB	AUG	FEB	AUG	FEB	AUG		
BOD, mg/L	10.9	6.3	5.3	2.5	3.8	4.1 J	33.8 J	4 U	3.3 J	47 UJ	16.9	20 U	NE	NE
COD, mg/L	138	114	124	94	131	98 J	155	105	214	139	182 J	119	NE	NE
TOX, mg/L	41.1	0.8	3.36	0.982	0.7	0.5	1.1	1	0.91	0.84	2.3 J	1.5 J	NE	NE
TOC, as C, mg/L	0.8	46.6	45.4	30.8	44.8	30.7	158	35.6	45.6	42.1	58 J	51.7	NE	NE
TDS, mg/L	840	1150	894	934	1320	1110	1250	1000	1260	1270	1660	1480	500	NE
pH, s.u.	6.7 J	6.8 J	6.71 J	7.3 J	6.94 J	6.94 J	6.91 J	6.9 J	7.28 J	7.17 J	6.63 J	6.62 J	6.5-8.5	NE
Conductivity, umohs/cm	1700	1600	1580	1660	2190	1770	2020	1660	2040	2050	2470	2300	NE	NE
Sulfate, mg/L	5 U	568	5.19	1.15	12.8	1.12	11	118	90.8	141	64.4 J	53.6	250	250
Chloride, as Cl, mg/L	177	234	175	141	278	188	234	129	207	165	221	178	250	NE
Fluoride, as F, mg/L	0.1 U	0.1 U	0.1 J	0.19 J	0.18 J	0.17 J	0.15 J	0.19 J	0.16 J	0.11 J	1 J	0.64 J	2	2
Nitrate, as NO3-N, mg/L	0.1 U	0.1 U	0.04 U	0.2 J	0.03 U	0.15 J	0.19 J	0.16 J	0.03 U	0.03 U	0.5 U	0.25 UJ	10	10
Arsenic, as As, mg/L	0.0027 U	0.0031 J	0.003 U	0.0067 B	0.0092 J	0.0058 J	0.0054 J	0.0053 J	0.0058 J	0.0036 U	0.0015 BJ	0.0013 U	0.010	0.010
Barium, as Ba, mg/L	0.0975	0.13	0.11	0.102	0.141	0.114	0.134	0.137	0.133	0.165	0.141 J	0.11 J	0.700	0.100
Cadmium, as Cd, mg/L	0.0005 U	0.0005 U	0.001 U	0.00007 U	0.00037 BJ	0.0002 U	0.0034 J	0.00017 U	0.00017 U	0.00019 JB	0.0002 U	0.0002 U	0.002	0.001
Chromium, as Cr, mg/L	0.0036 J	0.0033 J	0.004 B	0.0018 J	0.0047 J	0.0022 BJ	0.0056 J	0.0027 BJ	0.0031 BJ	0.0035 J	0.0071 J	0.0055 J	0.010	0.010
Copper, as Cu, mg/L	0.0003 U	0.0003 U	0.002 U	0.00049 B	0.0046 J	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.001 U	0.001 U	1	0.010
Iron, as Fe, mg/L	0.762	0.608	0.53	0.261	0.308	0.138	0.306	1.23	0.8	0.443	0.269 J	0.16 J	0.300	0.300
Lead, as Pb, mg/L	0.004 U	0.004 U	0.002 B	0.0007 U	0.004 U	0.004 U	0.0033 U	0.0033 U	0.0033 U	0.0033 U	0.0011 U	0.0011 U	0.015	0.010
Manganese, as Mn, mg/L	0.278	0.332	0.33	0.227	0.251	0.244	0.226	0.425	0.461	0.303	0.199	0.185	0.050	0.050
Mercury, as Hg, mg/L	0.00007 U	0.00007 U	0.00008 U	0.00002 U	0.00002 U	0.000012 U	0.000012 U	0.000012 U	0.000012 U	0.000012 U	0.00003 U	0.000033 J	0.001	0.0002
Selenium, as Se, mg/L	0.0038 U	0.0038 U	0.005 U	0.004 U	0.007 U	0.007 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U	0.0029 U	0.0029 U	0.020	0.010
Silver, as Ag, mg/L	0.0001 U	0.0001 U	0.001 U	0.001 B	0.002 U	0.002 U	0.0012 U	0.0013 J	0.0023 J	0.0012 U	0.0007 U	0.0007 U	0.020	0.010
Vanadium, mg/L	0.0096	0.0077	0.005 J	0.0024 J	0.002 U	0.002 U	0.0097 J	0.0016 U	0.014 J	0.0016 U	0.0167 J	0.0135 J	0.0003 (I)	0.025
Zinc, as Zn, mg/L	0.004 B	0.0004 U	0.007 J	0.008 J	0.004 BJ	0.002 U	0.0018 BJ	0.0014 U	0.0058 BJ	0.0014 U	0.0051 J	0.0044 U	1	0.010

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TABLE 2
HISTORICAL GROUNDWATER ANALYSIS RESULTS
INTERNATIONAL PAPER
RIEGELWOOD NORTH CAROLINA

PARAMETER	MONITORING WELL MW-7A																								
	1997	1998		1999		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009	
	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
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
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
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
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
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
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
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
Sulfate, 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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

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RIEGELWOOD NORTH CAROLINA

PARAMETER	MONITORING WELL MW-7A												2L Std	SWSL
	2010		2011		2012		2013		2014		2015			
	MAR	AUG	FEB	AUG	FEB	AUG	FEB	AUG	FEB	AUG	FEB	AUG		
BOD, mg/L	2 U	15 J	5.1	5.5	2.9	4 UJ	50.9 J	4 U	6.4 J	47 UJ	4 U	2 UJ	NE	NE
COD, mg/L	117	126	69	91	48	71	49	53	75	61	99.4	62.7	NE	NE
TOX, mg/L	45.4	1.1	0.449	0.442	0.4	0.7	0.6	0.96	0.28	0.45	1.3 J	0.09 J	NE	NE
TOC, as C, mg/L	1	55.4	26.7	27.2	17.1	23.8	100	18.4	22.4	22.6	35.7	19.4	NE	NE
TDS, mg/L	1250	1190	770	1030	680	1080	848	690	1010	818	1100	766	500	NE
pH, s.u.	6.9 J	6.9 J	6.86 J	7.25 J	7.25 J	7.06 J	7.12 J	7.17 J	7.48 J	7.48 J	6.94 J	7.08 J	6.5-8.5	NE
Conductivity, umohs/cm	2410	1980	1300	1750	1070	1640	1240	1120	1540	1240	1580	1070	NE	NE
Sulfate, mg/L	76.2	56	57.3	80.1	58.3	55.5	50.1	36	45.5	50.3	86.6	35.4	250	250
Chloride, as Cl, mg/L	223	227	144	186	114	196	141	119	180	128	176	99.7	250	NE
Fluoride, as F, mg/L	0.13	0.1 U	0.17 J	0.2	0.21	0.18 J	0.18 J	0.26	0.18 J	0.15 J	0.3 U	0.3 U	2	2
Nitrate, as NO3-N, mg/L	0.1 U	0.1 U	0.19 J	0.2	0.18 J	0.03 U	0.17 J	0.14 J	0.15 J	0.03 UJ	0.25 U	0.25 U	10	10
Arsenic, as As, mg/L	0.0165	0.0146	0.029	0.02	0.023	0.015	0.013	0.016	0.02	0.023	0.0237	0.022	0.010	0.010
Barium, as Ba, mg/L	0.0497	0.0433	0.06	0.052	0.029	0.038	0.036	0.032	0.04	0.038	0.0679 J	0.0366 J	0.700	0.100
Cadmium, as Cd, mg/L	0.0005 U	0.0005 U	0.001 U	0.0011 J	0.00032 BJ	0.0002 U	0.001 J	0.0002 BJ	0.00056 J	0.00023 JB	0.0002 U	0.0002 U	0.002	0.001
Chromium, as Cr, mg/L	0.003 J	0.0033 J	0.005 B	0.0038 J	0.0097 J	0.0021 BJ	0.006 J	0.0027 BJ	0.0019 BJ	0.0028 J	0.0036 J	0.010	0.010	0.010
Copper, as Cu, mg/L	0.0003 U	0.0003 U	0.002 U	0.0011 B	0.002 J	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.0025 BJ	0.0015 JB	1	0.010
Iron, as Fe, mg/L	24.9	16	40	19.7	16.2	13.4	14.5	12.4	22.9	21.9	39.8	20.5	0.300	0.300
Lead, as Pb, mg/L	0.004 U	0.004 U	0.003 B	0.0007 U	0.004 U	0.004 U	0.0033 U	0.0033 U	0.0033 U	0.0033 U	0.01 U	0.0074	0.015	0.010
Manganese, as Mn, mg/L	0.505	0.398	0.31	0.374	0.18	0.301	0.232	0.211	0.337	0.209	0.376	0.184	0.050	0.050
Mercury, as Hg, mg/L	0.00007 U	0.00007 U	0.00008 U	0.00002 U	0.00002 U	0.000012 U	0.000016 J	0.000012 U	0.000012 U	0.000039 J	0.00003 U	0.00003 U	0.001	0.0002
Selenium, as Se, mg/L	0.0038 U	0.0038 U	0.005 U	0.004 U	0.007 U	0.007 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U	0.0029 U	0.0029 U	0.020	0.010
Silver, as Ag, mg/L	0.0001 U	0.0001 U	0.001 U	0.0006 U	0.002 U	0.002 U	0.0012 U	0.0012 U	0.0016 J	0.0012 U	0.0007 U	0.0007 U	0.020	0.010
Vanadium, mg/L	0.0111	0.0126	0.013 J	0.0075 J	0.016 J	0.002 J	0.01 J	0.0055 J	0.012 J	0.014 J	0.0191 J	0.0268 J	0.0003 (I)	0.025
Zinc, as Zn, mg/L	0.0054 B	0.0004 U	0.011 J	0.023	0.0045 BJ	0.002 U	0.0031 BJ	0.0014 U	0.0064 BJ	0.0034 JB	0.0044 U	0.0092 J	1	0.010

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	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
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
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
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
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
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
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
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
Sulfate, 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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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
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

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Qualifiers (Q):
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TABLE 2
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INTERNATIONAL PAPER
RIEGELWOOD NORTH CAROLINA

PARAMETER	MONITORING WELL MW-8A											2L Std	SWSL
	2010		2011	2012		2013		2014		2015			
	MAR	AUG	FEB	FEB	AUG	FEB	AUG	FEB	AUG	FEB	AUG		
BOD, mg/L	2 U	2 UJ	2 U	4 U	4 UJ	26.1 J	4 U	2 U	47 UJ	4 U	0.24 J	NE	NE
COD, mg/L	25 U	25 U	13 J	16 U	22	16 U	16 U	21	16 U	12.4 J	14.5 J	NE	NE
TOX, mg/L	7.7	0.1 U	0.271	0.1 U	0.1 U	0.08 U	0.61	0.08 U	0.1 U	0.27 J	0.31 J	NE	NE
TOC, as C, mg/L	0.4	17	3.4	3.3	3.9	66.8	4	3.1	3.7	3.1	3.3	NE	NE
TDS, mg/L	580	998	495	872	1210	511	836	620	896	627	900	500	NE
pH, s.u.	6.9 J	6.7 J	6.87 J	6.84 J	6.68 J	7.02 J	6.64 J	7.47 J	6.9 J	6.64 J	6.36 J	6.5-8.5	NE
Conductivity, umohs/cm	836	1250	739	1070	1360	747	1060	827	1040	808	1080	NE	NE
Sulfate, mg/L	233	259	156	422	631	131	424	228	448	252 J	436	250	250
Chloride, as Cl, mg/L	5 U	6.7	3.68	3.36	5.02	2.2	3.45	3.22	4.1	3.3	4.1 J	250	NE
Fluoride, as F, mg/L	0.1 U	0.1 U	0.19 J	0.23	0.51	0.22	0.36	0.27	0.29	0.3 U	0.38 J	2	2
Nitrate, as NO3-N, mg/L	0.1 U	0.1 U	0.04 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.03 U	0.05 U	0.25 U	10	10
Arsenic, as As, mg/L	0.0046 J	0.0073	0.003 U	0.011	0.009 J	0.0051 J	0.0071 J	0.0067 J	0.0036 U	0.0013 U	0.0013 U	0.010	0.010
Barium, as Ba, mg/L	0.0494	0.0578	0.072	0.042	0.046	0.041	0.056	0.028	0.044	0.0306 J	0.049 J	0.700	0.100
Cadmium, as Cd, mg/L	0.0005 U	0.0005 U	0.001 U	0.00021 BJ	0.0002 U	0.00017 U	0.00017 U	0.0042 J	0.00045 JB	0.002 J	0.0003 JB	0.002	0.001
Chromium, as Cr, mg/L	0.00063 B	0.00041 J	0.001 B	0.0005 U	0.0005 U	0.00041 U	0.00041 U	0.0011 BJ	0.00041 U	0.001 U	0.001 U	0.010	0.010
Copper, as Cu, mg/L	0.0003 U	0.0003 U	0.002 U	0.0022 J	0.002 U	0.002 U	0.002 U	0.0034 J	0.002 U	0.0032 BJ	0.001 U	1	0.010
Iron, as Fe, mg/L	1.68	16.4	0.95	7.15	38.9	2.67	30	9.47	15.9	3.27	26.4	0.300	0.300
Lead, as Pb, mg/L	0.004 U	0.004 U	0.002 B	0.004 U	0.004 U	0.0033 U	0.0033 U	0.0033 U	0.0033 U	0.0011 U	0.0069	0.015	0.010
Manganese, as Mn, mg/L	0.0547	1.03	0.024	0.673	1.67	0.082	1.19	0.132	1.08	0.196	1.33 J	0.050	0.050
Mercury, as Hg, mg/L	0.00007 U	0.00007 U	0.00008 U	0.00002 U	0.000012 U	0.000012 U	0.000012 U	0.000012 U	0.00002 J	0.00003 U	0.00003 U	0.001	0.0002
Selenium, as Se, mg/L	0.0038 U	0.0038 U	0.005 U	0.007 U	0.007 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U	0.0029 U	0.0029 U	0.020	0.010
Silver, as Ag, mg/L	0.0001 U	0.00024 J	0.001 U	0.002 U	0.002 U	0.0012 U	0.0024 J	0.003 J	0.0014 J	0.0007 U	0.0007 U	0.020	0.010
Vanadium, mg/L	0.00084 J	0.0002 U	0.002 U	0.002 U	0.002 U	0.0016 U	0.0016 U	0.0051 J	0.0016 U	0.0006 BJ	0.0006 U	0.0003 (I)	0.025
Zinc, as Zn, mg/L	0.0085 B	0.0066 J	0.009 J	0.0036 BJ	0.002 U	0.0033 BJ	0.012 BJ	0.018 BJ	0.0064 JB	0.0107 J	0.0102 J	1	0.010

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HISTORICAL GROUNDWATER ANALYSIS RESULTS
INTERNATIONAL PAPER
RIEGELWOOD NORTH CAROLINA

PARAMETER	PRIMARY LEACHATE COLLECTION SYSTEM														2L Std	SWSL
	2009		2010		2011		2012		2013		2014		2015			
	FEB	AUG	MAR	AUG	FEB	AUG	FEB	AUG	FEB	AUG	FEB	AUG	FEB	AUG		
BOD, mg/L	5.5 J	33.6 J	300 J	30 J	437 J	409	440	164 J	1110	773	525 J	120 J	31.3	130 J	NE	NE
COD, mg/L	366	862	2210	1230	3500	900 J	2660 J	1290	1610 J	1730	1350	1130	218	1150	NE	NE
TOX, mg/L	0.27	2	0.8	1.4	3.06	1.8 U	0.5	1.4	1.6 J	7.4	0.46	0.9	0.34 J	1 J	NE	NE
TOC, as C, mg/L	179	292	437	510	0.5 J	0.5 J	1100 J	0.09 U	819 J	388	1.3	28.1	54.2	864	NE	NE
TDS, mg/L	3870	5100	8470	7120	2030	10600	15300	7510	6660	13600	8290	7040	2720	7150	500	NE
pH, s.u.	7 J	7.2 J	8.3 J	7.2 J	7.26 J	7.5 J	7.72 J	7.4 J	7.54 J	7.56 J	7.88 J	7.89 J	7.29 J	7.48 J	6.5-8.5	NE
Conductivity, umohs/cm	5220	6150	10600	8600	12300	12300	15200	10000	10800	14800	9830	7920	2850	9460	NE	NE
Sulfate, mg/L	623	344	1580	39.5	1820	1070	4940	1480	1620	2110	884	484	731 J	394	250	250
Chloride, as Cl, mg/L	119	153	347	255	165	176	190	151	153	182	154	164	25.2	163	250	NE
Fluoride, as F, mg/L	0.13	0.19	0.1 U	0.4 U	0.6 U	0.6 U	0.3 U	13.3	0.07 U	0.2 U	0.2 U	0.07 U	0.6 U	1.7 J	2	2
Nitrate, as NO3-N, mg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.04 U	0.8 U	0.6 U	0.03 U	0.2 U	0.3 U	0.3 U	0.2 U	0.5 U	0.5 UJ	10	10
Orthophosphate, as PO4 , mg/L	0.28 J	1.3	3.8	0.51	0.03 U	2.35	1.1 J	1.5	1.1	2	1.8	1.12	0.24	2.5 J	NE	NE
Arsenic, as As, mg/L	0.0293	0.137	0.163	0.19	0.22	0.228 J	0.162 J	0.174	0.145	0.179 J	0.155	0.116 J	0.0238 J	0.15	0.010	0.010
Barium, as Ba, mg/L	0.207	0.21	0.113	0.251	0.87	0.26 J	0.148 J	0.201	0.205	0.22 J	0.201	0.201 J	0.0822 J	0.216	0.700	0.100
Cadmium, as Cd, mg/L	0.0005 U	0.0005 U	0.00054 J	0.0005 U	0.004 J	0.00014 UJ	0.00094 UJ	0.0002 U	0.00017 U	R	0.00028 J	0.00053 JB	0.001 U	0.0002 U	0.002	0.001
Chromium, as Cr, mg/L	0.0186	0.094	0.12	0.128	0.31	0.174 J	0.152 J	0.135	0.14	0.151 J	0.13	0.101 J	0.0461 J	0.153	0.010	0.010
Copper, as Cu, mg/L	0.0003 U	0.0003 U	0.0223	0.0003 U	0.043	0.0008 UJ	0.05 J	0.002 U	0.0086 J	R	0.002 U	R	0.0407 J	0.001 U	1	0.010
Iron, as Fe, mg/L	NA	7.98	6.95	10.1	862	5.8 J	11.2 J	7.99	8.88	6.97 J	8.19	4.24 J	15	5.19	0.300	0.300
Lead, as Pb, mg/L	0.004 U	0.004 U	0.004 U	0.004 U	0.067	0.0014 UJ	0.0083 J	0.005 J	0.0033 U	R	0.0033 U	0.0035 J	0.0055 U	0.0017 JB	0.015	0.010
Manganese, as Mn, mg/L	0.681	0.52	0.451	0.5	2.1	0.449 J	0.264 J	0.376	0.468	0.365 J	0.377	0.373 J	0.354	0.345	0.050	0.050
Mercury, as Hg, mg/L	0.00097	0.00022	0.0029	0.00015 J	0.0061	0.00018 J	0.0008	0.000094 UJ	0.00014	0.00011 J	0.00007 J	0.000048 J	0.00023 J	0.000073 J	0.001	0.0002
Selenium, as Se, mg/L	NA	0.0038 U	0.0041 J	0.0038 U	0.01 U	0.008 UJ	0.007 UJ	0.007 U	0.0062 U	R	0.0062 U	R	0.015 U	0.0071 JB	0.020	0.010
Silver, as Ag, mg/L	0.0013 U	0.00073 J	0.0013 J	0.0015 J	0.002 U	0.0026 UJ	0.0026 J	0.002 U	0.0016 J	0.0022 J	0.0036 J	0.0022 J	0.0035 U	0.0007 U	0.020	0.010
Vanadium, mg/L	NA	0.667	1.17	0.828	3.9	2.47 J	2.07 J	1.36	1.58	1.81 J	1.28	0.8 J	0.367	1.16	0.0003 (I)	0.025
Zinc, as Zn, mg/L	0.0142	0.0319	0.162	0.0004 U	2	0.028 J	0.0947 J	0.1	0.028	0.059 J	0.02 U	0.018 J	0.101	0.0261	1	0.010

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TABLE 2
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INTERNATIONAL PAPER
RIEGELWOOD NORTH CAROLINA

PARAMETER	PRIMARY LEACHATE COLLECTION SYSTEM 2														2L Std	SWSL
	2009		2010		2011		2012		2013		2014		2015			
	FEB	AUG	MAR	AUG	FEB	AUG	FEB	AUG	FEB	AUG	MAY	AUG	FEB	AUG		
BOD, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	194 J	138	19.8	8.3	NE	NE
COD, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2280	366	82	198	NE	NE
TOX, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.41	0.47	0.26 J	0.67 J	NE	NE
TOC, as C, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	914	12.6	25.1	61.5	NE	NE
TDS, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3040	1340 J	949	1730	500	NE
pH, s.u.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.52 J	7.12 J	6.5 J	6.54 J	6.5-8.5	NE
Conductivity, umohs/cm	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2630	1700	1200	2390	NE	NE
Sulfate, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.7	9.7	274 J	590	250	250
Chloride, as Cl, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	82.3	74.1	49.1	88.1	250	NE
Fluoride, as F, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.02 U	0.02 U	0.3 U	0.6 U	2	2
Nitrate, as NO3-N, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.03 UJ	0.03 U	8.7	0.5 UJ	10	10
Orthophosphate, as PO4 , mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.02 UJ	0.02 U	0.043 J	0.044 J	NE	NE
Arsenic, as As, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.02	0.017	0.0019 JB	0.0091 J	0.010	0.010
Barium, as Ba, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.331	0.119	0.0786 J	0.116 J	0.700	0.100
Cadmium, as Cd, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00022 JB	0.00027 JB	0.0002 U	0.0002 U	0.002	0.001
Chromium, as Cr, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00092 JB	0.015	0.0054 J	0.0041 J	0.010	0.010
Copper, as Cu, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.002 J	0.0022 J	0.0061 J	0.0013 JB	1	0.010
Iron, as Fe, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	26.9	18.5	3.26	15.4	0.300	0.300
Lead, as Pb, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0033 U	0.0045 J	0.0011 U	0.0043 J	0.015	0.010
Manganese, as Mn, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.26	0.376	0.142	0.193	0.050	0.050
Mercury, as Hg, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.000069 J	0.000077 J	0.00003 U	0.000034 J	0.001	0.0002
Selenium, as Se, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0062 U	0.0062 U	0.0029 U	0.0031 J	0.020	0.010
Silver, as Ag, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0017 J	0.0012 U	0.0007 U	0.0007 U	0.020	0.010
Vanadium, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.017 J	0.018 J	0.0148 J	0.0085 J	0.0003 (I)	0.025
Zinc, as Zn, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.009 J	0.0078 JB	0.0236	0.005 J	1	0.010

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INTERNATIONAL PAPER
RIEGELWOOD NORTH CAROLINA

PARAMETER	SECONDARY LEACHATE COLLECTION SYSTEM														2L Std	SWSL
	2009		2010		2011		2012		2013		2014		2015			
	FEB	AUG	MAR	AUG	FEB	AUG	FEB	AUG	FEB	AUG	MAY	AUG	FEB	AUG		
BOD, mg/L	5.2 J	3.6 J	5.7	6.6	11.6	4.3	9	6.9 J	34.8 J	15.9	25.9 J	47 UJ	5.9	NA	NE	NE
COD, mg/L	121	148	124	119	133	147	164	170	113	328	166	129	127	NA	NE	NE
TOX, mg/L	0.13	1.6	0.6	0.2	0.488	0.746	0.1 U	0.8	0.22	0.9	0.08 U	0.1 U	0.22 J	NA	NE	NE
TOC, as C, mg/L	106	42.5	40.8	50.2	38.7	37.9	35.9	35.1	192	37.4	42.5	36.8	35.5	NA	NE	NE
TDS, mg/L	2010	2200	1940	1600	674	1320	1660	1590	1420	1560	1870	1730	2180	NA	500	NE
pH, s.u.	6.8 J	6.7 J	6.6 J	6.5 J	6.58 J	6.88 J	6.42 J	6.55 J	6.76 J	6.3 J	5.78 J	6.23 J	3.17 J	NA	6.5-8.5	NE
Conductivity, umohs/cm	3040	2870	3060	2290	2000	1920	2250	2080	1960	2100	2350	2400	2490	NA	NE	NE
Sulfate, mg/L	166	112	5 UJ	162	74.3	30.2	666	258	73.7	575	1020	912	1350 J	NA	250	250
Chloride, as Cl, mg/L	53	52.7	48.8	40.7	34.7	35.3	38.7	40.4	40.5	43.1	38	43.3	51.5	NA	250	NE
Fluoride, as F, mg/L	0.66	0.85	0.58	0.1 U	0.51	0.52	0.51	0.61	0.5	0.51	1.5 J	0.35	1.2 U	NA	2	2
Nitrate, as NO3-N, mg/L	0.1 U	0.1 U	0.1 U	0.1 U	0.21	0.04 U	0.03 U	0.03 U	0.03 U	0.03 U	0.3 U	0.03 U	0.5 U	NA	10	10
Orthophosphate, as PO4 , mg/L	1.2	2.1	1.8	1.9	1.39	2.28	0.02 U	0.06 J	1.07	2.1	0.2 U	0.02 U	1.6	NA	NE	NE
Arsenic, as As, mg/L	0.0027 U	0.0027 U	0.0068	0.0053	0.003 U	0.0046 U	0.037	0.01	0.0036 U	0.0036 U	0.0092 J	0.0073 J	0.0101	NA	0.010	0.010
Barium, as Ba, mg/L	0.06	0.068	0.058	0.0421	0.031	0.038	0.074	0.065	0.029	0.03	0.031	0.028	0.0271 J	NA	0.700	0.100
Cadmium, as Cd, mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.001 U	0.00007 U	0.0011 UJ	0.00025 UJ	0.00017 U	0.00031 U	0.00017 U	0.00033 JB	0.0002 U	NA	0.002	0.001
Chromium, as Cr, mg/L	0.0106	0.0071	0.0103	0.0076	0.023	0.05	0.08	0.088	0.024	0.207	1.75	0.424	2.26	NA	0.010	0.010
Copper, as Cu, mg/L	0.00043 J	0.0003 U	0.00052 J	0.0004 J	0.002 U	0.00069 U	0.0077 J	0.0061 J	0.002 U	0.002 U	0.014	0.002 U	0.0106 J	NA	1	0.010
Iron, as Fe, mg/L	NA	1.78	0.409	2.65	2.1	2.78	149	37.4	2.96	1.11	22.7	19.8	52.5	NA	0.300	0.300
Lead, as Pb, mg/L	0.004 U	0.004 U	0.004 U	0.004 U	0.002 U	0.0007 U	0.004 U	0.0048 J	0.0033 U	0.0033 U	0.0033 U	0.0033 U	0.01 U	NA	0.015	0.010
Manganese, as Mn, mg/L	0.647	0.510	0.478	0.301	0.32	0.394	1.21	0.716	0.421	0.516	1.15	0.934	2.04	NA	0.050	0.050
Mercury, as Hg, mg/L	0.00076	0.00007 U	0.00007 U	0.00007 U	0.00008 UJ	0.00002 U	0.00002 U	0.000012 U	0.000012 U	0.000012 U	0.000012 U	0.000012 U	0.00003 U	NA	0.001	0.0002
Selenium, as Se, mg/L	NA	0.0038 U	0.0038 U	0.0038 U	0.005 U	0.004 U	0.007 U	0.007 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U	0.0029 U	NA	0.020	0.010
Silver, as Ag, mg/L	0.00056 U	0.00023 J	0.0001 U	0.00012 J	0.001 U	0.0006 U	0.002 U	0.002 U	0.0012 U	0.0012 U	0.0012 U	0.0012 U	0.0007 U	NA	0.020	0.010
Vanadium, mg/L	NA	0.0146	0.0231	0.0154	0.02	0.016 J	0.018 J	0.023	0.021	0.023	0.032	0.022	0.0269 J	NA	0.0003 (I)	0.025
Zinc, as Zn, mg/L	0.0097 J	0.0079 Q	0.0067 U	0.003 J	0.035	0.0078 J	0.398	0.035	0.025	0.0014 U	0.052	0.051	0.364	NA	1	0.010

NOTES:
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 i
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 = Biochemical 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
Q	The analyte was not Not present above the associated level, blank contamination exists
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	SECONDARY LEACHATE COLLECTION SYSTEM 2														2L Std	SWSL
	2009		2010		2011		2012		2013		2014		2015			
	FEB	AUG	MAR	AUG	FEB	AUG	FEB	AUG	FEB	AUG	MAY	AUG	FEB	AUG		
BOD, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	13.8	15.6	NE	NE
COD, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	114	130	NE	NE
TOX, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.28 J	0.65 J	NE	NE
TOC, as C, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	39.1	50.3	NE	NE
TDS, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1950	2440	500	NE
pH, s.u.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.25 J	7.02 J	6.5-8.5	NE
Conductivity, umohs/cm	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2490	3170	NE	NE
Sulfate, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	98.9 J	154	250	250
Chloride, as Cl, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	36.7	50.4	250	NE
Fluoride, as F, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.34 JB	0.6 U	2	2
Nitrate, as NO3-N, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.5 U	0.5 UJ	10	10
Orthophosphate, as PO4 , mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.27	0.12 J	NE	NE
Arsenic, as As, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0013 U	0.0013 U	0.010	0.010
Barium, as Ba, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.08	0.606	0.700	0.100
Cadmium, as Cd, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0002 U	0.0002 U	0.002	0.001
Chromium, as Cr, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0024 J	0.0036 J	0.010	0.010
Copper, as Cu, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0558	0.054	1	0.010
Iron, as Fe, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.07	0.737	0.300	0.300
Lead, as Pb, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0018 J	0.0032 J	0.015	0.010
Manganese, as Mn, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.737	0.522	0.050	0.050
Mercury, as Hg, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.00003 U	0.00003 U	0.001	0.0002
Selenium, as Se, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0029 U	0.0029 U	0.020	0.010
Silver, as Ag, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0007 U	0.0007 U	0.020	0.010
Vanadium, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0073 J	0.0078 J	0.0003 (I)	0.025
Zinc, as Zn, mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.168	0.0808	1	0.010

NOTES:
< Symbol = Below Laboratory Detectable Limits
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TABLE 2
HISTORICAL GROUNDWATER ANALYSIS RESULTS
INTERNATIONAL PAPER
RIEGELWOOD NORTH CAROLINA

PARAMETER	UNDER-DRAIN LEACHATE COLLECTION SYSTEM														2L Std	SWSL
	2009		2010		2011		2012		2013		2014		2015			
	FEB	AUG	MAR	AUG	FEB	AUG	FEB	AUG	FEB	AUG	MAY	AUG	FEB	AUG		
BOD, mg/L	6.3 J	3.6 J	3 J	11 J	6.4	2 U	4.9	85.6 J	43.4 J	8.3	23.3 J	410 J	4 U	10.6	NE	NE
COD, mg/L	277	290	109	307	193	242	203	227	197	403	204	244	164	178	NE	NE
TOX, mg/L	0.28	3	0.7	0.5	0.6	0.368	0.6	1.4	0.73	2.8	0.47	0.65	0.77 J	0.76 J	NE	NE
TOC, as C, mg/L	157	105	47.9	82.9	59.2	56.9	57.7	56.2	229	58	55.3	53.6	51.3	52.5	NE	NE
TDS, mg/L	2920	2990	1260	2950	1360	1940	2140	2230	2180	1980	2120	1820	2210	2050	500	NE
pH, s.u.	6.8 J	6.8 J	6.5 J	6.7 J	6.91 J	7.01 J	6.97 J	6.91 J	6.89 J	6.83 J	7.34 J	7.17 J	6.97 J	6.74 J	6.5-8.5	NE
Conductivity, umohs/cm	4370	3880	2970	4230	3200	2950	3200	3020	3020	2900	3030	2760	2610	2780	NE	NE
Sulfate, mg/L	7.7	6.9	238	7.9	197	137	167	143	158	142	135	115	101 J	90.8	250	250
Chloride, as Cl, mg/L	239	221	102	264	246	231	256	244	232	212	233	206	214	209	250	NE
Fluoride, as F, mg/L	0.18	0.19	0.12	0.1 U	0.13 J	0.2	0.2	0.19 J	0.18 J	0.23	0.32 J	0.14 J	0.39 JB	0.3 U	2	2
Nitrate, as NO3-N, mg/L	0.1 U	0.1 U	0.41	0.1 U	0.04 U	0.04 U	0.16 J	0.03 U	0.03 U	0.03 U	0.06 U	0.03 U	0.5 U	0.25 UJ	10	10
Orthophosphate, as PO4 , mg/L	0.51	0.42	0.13 J	0.27	0.03 U	0.574	0.04 J	0.04 J	0.02 U	0.02 U	0.04 U	0.02 U	0.7	0.46	NE	NE
Arsenic, as As, mg/L	0.0074	0.0054	0.004 J	0.0078	0.13	0.012	0.011	0.011	0.011	0.017	0.0071 J	0.0056 J	0.0016 JB	0.0013 U	0.010	0.010
Barium, as Ba, mg/L	0.105	0.11	0.0762	0.101	2	0.123	0.128	0.13	0.237	0.164	0.111	0.165	0.128 J	0.126 J	0.700	0.100
Cadmium, as Cd, mg/L	0.0005 U	0.0005 U	0.0005 U	0.0005 U	0.004 J	0.00007 U	0.00028 UJ	0.0002 U	0.00017 U	0.00074 U	0.00017 U	0.00041 JB	0.0002 U	0.0002 U	0.002	0.001
Chromium, as Cr, mg/L	0.0316	0.0326	0.0116	0.0313	0.34	0.019	0.02	0.024	0.03	0.049	0.015 U	0.027	0.0164	0.0186	0.010	0.010
Copper, as Cu, mg/L	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.002 J	0.0008 U	0.0024 J	0.016	0.002 U	0.018	0.0024 J	0.0036 J	0.0011 JB	0.0012 JB	1	0.010
Iron, as Fe, mg/L	NA	12	12.4	9.02	978	13.1	9.96	31.6	140	246	9.96	33.6	9.6	8.48	0.300	0.300
Lead, as Pb, mg/L	0.004 U	0.004 U	0.004 U	0.004 U	0.062	0.0007 U	0.004 U	0.004 U	0.0033 U	0.0033 U	0.0033 U	0.0033 U	0.0011 U	0.0011 U	0.015	0.010
Manganese, as Mn, mg/L	0.614	0.68	0.78	0.578	1.9	0.778	0.781	0.743	0.878	0.8050001	0.757	0.772	0.744	0.726	0.050	0.050
Mercury, as Hg, mg/L	0.00082	0.00007 U	0.00014 J	0.00007 U	0.0016 U	0.00007 J	0.00004 J	0.000078 UJ	0.000057 J	0.00025	0.00002 J	0.000076 J	0.00003 U	0.00003 U	0.001	0.0002
Selenium, as Se, mg/L	NA	0.0038 U	0.0038 U	0.0038 U	0.005 U	0.004 U	0.007 U	0.007 U	0.0062 U	0.0062 U	0.0062 U	0.0062 U	0.0029 U	0.0029 JB	0.020	0.010
Silver, as Ag, mg/L	0.00095 U	0.00042 J	0.0001 U	0.00029 J	0.001 U	0.0006 U	0.002 U	0.002 U	0.0012 U	0.0055 J	0.0019 J	0.0012 U	0.0007 U	0.0007 U	0.020	0.010
Vanadium, mg/L	NA	0.081	0.0281	0.0754	1.4	0.043	0.04	0.044	0.103	0.092	0.048	0.069	0.0367 J	0.0394 J	0.0003 (I)	0.025
Zinc, as Zn, mg/L	0.0004 U	0.0004 U	0.0082 U	0.0004 U	0.33	0.015 J	0.0038 UJ	0.0021 UJ	0.011 J	0.0043 U	0.013 U	0.0061 JB	0.0044 U	0.0155 J	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 i
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s.u. = Standard units
TDS = Total Dissolved Solids
TOC = Total organic carbon
TOX = Total organic halides
umohs/cm = micromhos per centimeter

Qualifiers (Q):

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TABLE 3
NEW LANDFILL CELL 1 and 2 ANALYSIS RESULTS
INTERNATIONAL PAPER
RIEGELWOOD, NORTH CAROLINA
AUGUST 2015 EVENT

		Client Sample ID:	Primary Leachate Collection System-Cell 1		Primary Leachate Collection System-Cell 2		Secondary Leachate Collection System-Cell 1		Secondary Leachate Collection System-Cell 2		Under-Drain Leachate Collection System-Cell 1			
		Collect Date:	8/6/2015		8/6/2015		-		8/6/2015		8/6/2015		*2L*	
Method	Parameter	Units	Value	Q	Value	Q	Value	Q	Value	Q	Value	Q	*Standard*	*SWSL*
SW-846 6010C	Arsenic	ug/l	150		9.1	J	NS		1.3	U	1.3	U	10	10
SW-846 6010C	Barium	ug/l	216		116	J	NS		606		126	J	700	100
SW-846 6010C	Cadmium	ug/l	0.2	U	0.2	U	NS		0.2	U	0.2	U	2	1
SW-846 6010C	Chromium	ug/l	153		4.1	J	NS		3.6	J	18.6		10	10
SW-846 6010C	Copper	ug/l	1	U	1.3	JB	NS		54		1.2	JB	1,000	10
SW-846 6010C	Iron	ug/l	5190		15400		NS		737		8480		300	300
SW-846 6010C	Lead	ug/l	1.7	JB	4.3	J	NS		3.2	J	1.1	U	15	10
SW-846 6010C	Manganese	ug/l	345		193		NS		522		726		50	50
SW-846 6010C	Selenium	ug/l	7.1	JB	3.1	J	NS		2.9	U	2.9	JB	20	10
SW-846 6010C	Silver	ug/l	0.7	U	0.7	U	NS		0.7	U	0.7	U	20	10
SW-846 6010C	Vanadium	ug/l	1160		8.5	J	NS		7.8	J	39.4	J	0.3 (I)	25
SW-846 6010C	Zinc	ug/l	26.1		5	J	NS		80.8		15.5	J	1,000	10
SW-846 7470A	Mercury	ug/l	0.073	J	0.034	J	NS		0.03	U	0.03	U	1	0.2
EPA 120.1	Specific Conductance	umhos/cm	9460		2390		NS		3170		2780		NE	NE
EPA 300.0	Chloride	mg/l	163		88.1		NS		50.4		209		250	NE
EPA 300.0	Fluoride	mg/l	1.7	J	0.6	U	NS		0.6	U	0.3	U	2	2
EPA 300.0	Nitrate	mg/l	0.5	UJ	0.5	UJ	NS		0.5	UJ	0.25	UJ	10	10
EPA 300.0	Sulfate	mg/l	394		590		NS		154		90.8		250	250
EPA 365.3	Orthophosphate	mg/l	2.5	J	0.044	J	NS		0.12	J	0.46		NE	NE
SM 5220C	Chemical oxygen demand	mg/l	1150		198		NS		130		178		NE	NE
SM 2540C	Total Dissolved Solids	mg/l	7150		1730		NS		2440		2050		500	NE
SM 4500H	pH	s.u.	7.48	J	6.54	J	NS		7.02	J	6.74	J	6.5-8.5	NE
SM 5210B	Biochemical oxygen demand	mg/l	130	J	8.3		NS		15.6		10.6		NE	NE
SM 5310B	Total Organic Carbon	mg/l	864		61.5		NS		50.3		52.5		NE	NE
SW-846 9020B	Total Organic Halides	mg/l	1	J	0.67	J	NS		0.65	J	0.76	J	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

mg/L = Milligrams per Liter

NE = Not Established

NS = Not Sampled

s.u. = Standard unit

ug/L = Micrograms per Liter

umhos/cm = Micromhos per centimeter

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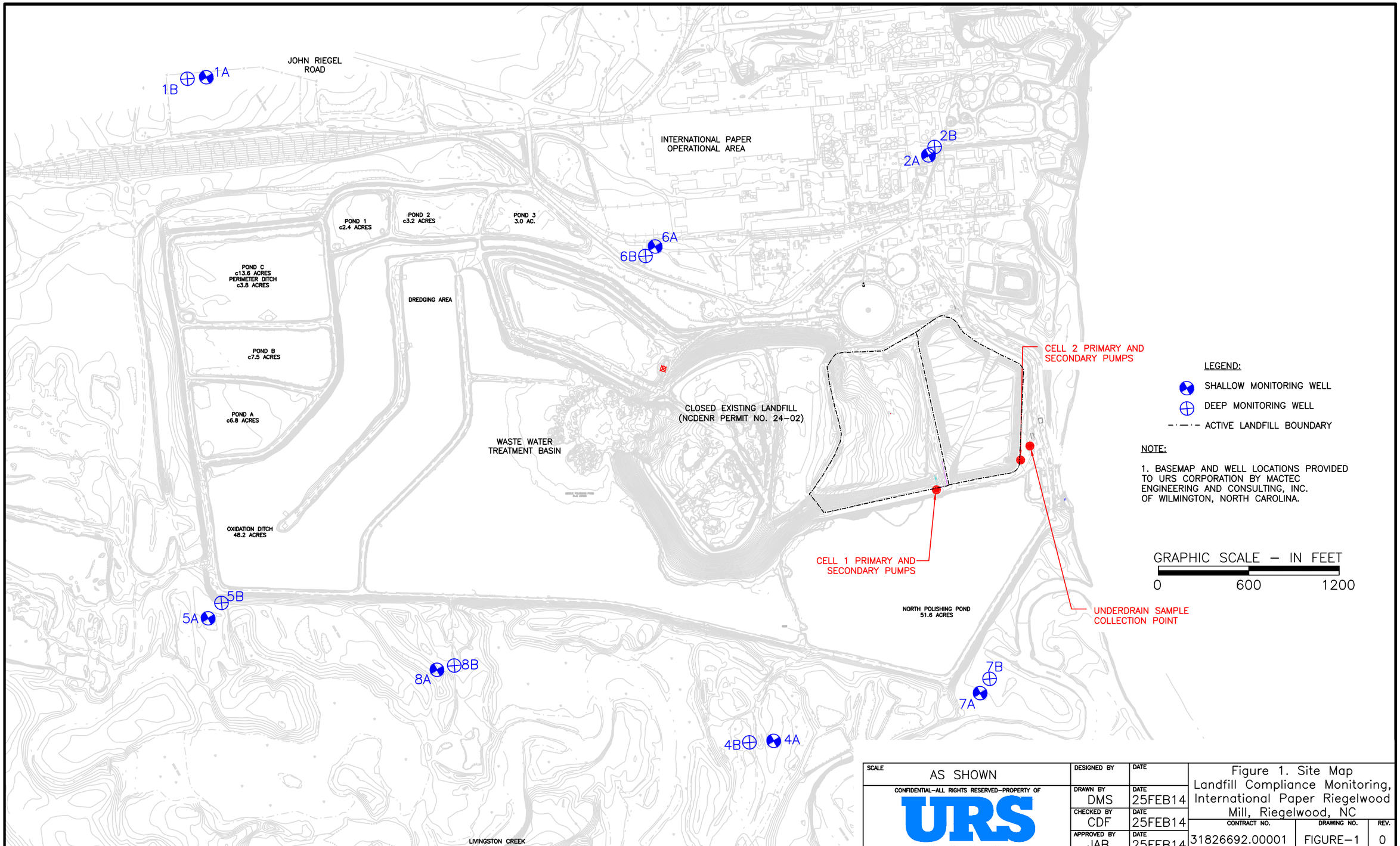
FIGURES



SCALE	DESIGNED BY	DATE	Figure 1. Site Map Landfill Compliance Monitoring, International Paper Riegelwood Mill, Riegelwood, NC		
AS SHOWN					
CONFIDENTIAL–ALL RIGHTS RESERVED–PROPERTY OF URS RDU, NORTH CAROLINA 27560	DRAWN BY DMS	DATE 25FEB14			
	CHECKED BY CDF	DATE 25FEB14	CONTRACT NO. 31826692.00001	DRAWING NO. FIGURE–1	REV. 0
	APPROVED BY JAB	DATE 25FEB14			

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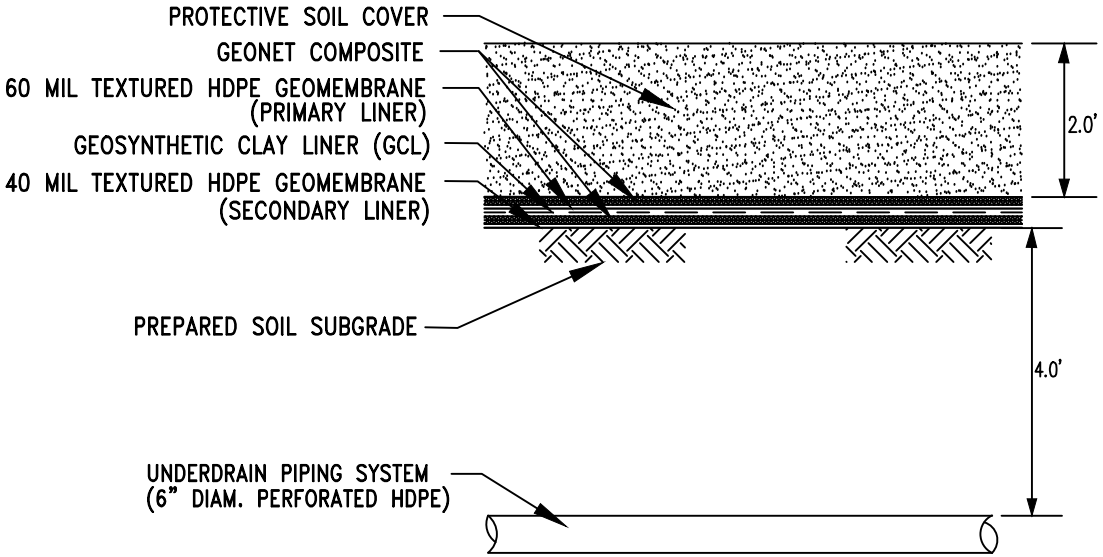

SCALE	DESIGNED BY	DATE	Figure 2. Base Liner System Landfill Compliance Monitoring, International Paper Riegelwood Mill, Riegelwood, NC		
AS SHOWN					
CONFIDENTIAL–ALL RIGHTS RESERVED–PROPERTY OF URS RDU, NORTH CAROLINA 27560	DRAWN BY DMS	DATE 25FEB14			
	CHECKED BY CDF	DATE 25FEB14	CONTRACT NO.	DRAWING NO.	REV.
	APPROVED BY JAB	DATE 25FEB14	31826692.00001	FIGURE–2	0

APPENDIX A

DATA VALIDATION CHECKLIST

WITH QUALIFIED RESULTS

Data Validation Checklist
Organic and Inorganic Analyses

Project:	IP – Riegelwood, NC (Landfill Monitoring)	Project No:	60401631; 31830231.00001
Work Order:	FA26624 and FA26678	Methods:	EPA Methods 120.1 (Specific Conductance), 300.0 (Chloride, Fluoride, Nitrate, and Sulfate), 365.3 (Orthophosphate), 6010C (ICP Metals[1]), 7470A (Mercury), and 9020B (TOX); Standard Methods 2540C (Total Dissolved Solids), 4500-H + B (pH), 5210B (BOD), 5220C (COD), and 5310B (TOC)
Laboratory:	Accutest SE,[2] Orlando, FL	Associated Sample IDs:	MW-1A, MW-1B, MW-4A, MW-5A, MW-7A, MW-8A, Primary-1, Primary-2, Secondary-2, & Underdrain
Sample Matrix:	Water	Date(s) Sampled:	08/05/2015 & 08/06/2015
Reviewer:	Kelly Brannigan, AECOM	Date:	09/08/2015
Concurrence[3]:	Nicole Lancaster, AECOM	Date:	10/06/2015

Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
1. Were holding times met?	✓			• 6010C: ≤180 days	
	✓			• 7470A: ≤ 28 days	
	✓			• 120.1: ≤ 28 days	
		✓		• 300: o ≤ 48 hours (Nitrate). Samples MW-5A, PRIMARY-1, PRIMARY-2, SECONDARY-2, UNDERDRAIN (FA26678-1 through FA26678-5, respectively) were analyzed beyond holding time for Nitrate. Sample results are estimated (J/UJ). o ≤ 28 days (Chloride, Fluoride, and Sulfate).	J/UJ
		✓		• 365.3: ≤ 48 hours. Samples PRIMARY-1, PRIMARY-2, SECONDARY-2, and UNDERDRAIN (FA26678-2 through FA26678-4, respectively) were analyzed beyond holding time.	J/UJ
		✓		• 4500: ≤15 minutes. Samples were analyzed more than 15 minutes after sample collection. J-flag positive results.	J
	✓			• 2540C: ≤7 days	
	✓			• 5210B: ≤ 48 hours and after 5-day (±6 hours) incubation period.	
	✓			• 5220C: ≤ 28 days	
	✓			• 5310B: ≤ 28 days	

[1] As, Ba, Cd, Cr, Cu, Fe, Pb, Mn, Se, Ag, V, and Zn
[2] Accutest SE subcontracted all TOX sample analyses to Accutest of Dayton, New Jersey
[3] Independent Technical Reviewer

Data Validation Checklist (Continued)

Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
	✓			• 9020B: ≤ 28 days	
2. Were sample storage and preservation requirements met?	✓			• Temperatures of sample containers upon receipt at Accutest, SE were 3.0, 3.2, 2.8, and 3.0°C (≤6°C). • Temperatures of sample containers upon receipt at Accutest, NJ were 3.0 and 2.7°C (≤6°C).	
	✓			• Upon receipt at the laboratory, Accutest filtered the sample provided for the orthophosphate analysis of PRIMARY-1, PRIMARY-2, SECONDARY-2, and UNDERDRAIN. Qualification of data is warranted, as samples were analyzed beyond 48 hours of collection.	J/UJ
	✓			• The laboratory verified that all samples were properly preserved in the field.	
3. Was a method blank analyzed with each batch?	✓			• 120.1: GN67418 and GN67427	
	✓			• 2540C: GN67436 and GN67466	
	✓			• 4500: GN67417, GN67423, and GN67425	
	✓			• 5210B: GP26448 and GP26457	
	✓			• 7470A: MP29243 and MP29256	
	✓			• 6010C: MP29252 and MP29254	
	✓			• 5220C: GP26484, GP26485, and GP26488	
	✓			• 300: GP26450 and GP26456	
	✓			• 365.3: GP26464 and GP26468	
	✓			• 5310B: GP26460 and GP26470	
	✓			• 9020B: GP91371 and GP91456	
4. Were target analytes reported in the method/calibration blank above the Detection Limit (DL)?	✓			• 6010C: **Refer to Attachment A** (Blank Contamination Evaluation) • 7470A: **Refer to Attachment A** (Blank Contamination Evaluation) • CCB1, 5310B: Total Organic Carbon @ 0.28 I mg/L (RL 1.0, MDL 0.23)	
5. Were target analytes reported in field blank analyses (e.g., trip, ~~ambient, field, or equipment~~) above the DL?			✓		
6. Were analytes detected in samples at concentrations similar to that observed in the blanks?	✓			Blank contamination action levels (BCALs): • Arsenic @ 4.5 µg/L (0.90 x 5) • Barium @ 1.0 µg/L (0.20 x 5) • Cadmium @ 0.50 µg/L (0.10 x 5) • Chromium @ 2.0 µg/L (0.40 x 5) • Copper @ 1.5 µg/L (0.30 x 5) • Iron @ 102.5 µg/L (20.5 x 5) • Lead @ 2.0 µg/L (0.40 x 5) • Manganese @ 1.0 µg/L (0.20 x 5) • Selenium @ 9.5 µg/L (1.9 x 5)	B

Data Validation Checklist (Continued)

Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
				• Total Organic Carbon @ 1.4 mg/L (0.28 x 5) • Vanadium @ 1.0 µg/L (0.20 x 5) • Zinc @ 4.0 µg/L (0.80 x 5) Detected sample results that were less than the BCAL have been B-flagged.	
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?	✓			• 120.1: GN67418 and GN67427	
	✓			• 2540C: GN67436 and GN67466	
	✓			• 4500: GN67417, GN67423, and GN67425	
	✓			• 5210B: GP26448 and GP26457	
	✓			• 7470A: MP29243 and MP29256	
	✓			• 6010C: MP29252 and MP29254	
	✓			• 5220C: GP26484, GP26485, and GP26488	
	✓			• 300: GP26450 and GP26456	
	✓			• 365.3: GP26464 and GP26468	
	✓			• 5310B: GP26460 and GP26470	
	✓			• 9020B: GP91371 and GP91456	
10. Were LCS recoveries within lab/project[4] specifications?	✓				
11. Were LCS/LCSD RPD within lab specifications?			✓	LCS only for all analyses	

[4] LCS recovery is to be within 60-140% of the true value

Data Validation Checklist (Continued)

Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
12. Was a MS/MSD pair analyzed with each batch?			✓	• 120.1: None	
			✓	• 2540C: None	
			✓	• 4500: None	
			✓	• 5210B: None	
	✓			• 7470A: FA26624-1 (MW-1A) and FA26732-1 (Batch), MS/MSD	
	✓			• 6010C: FA26624-5 (MW-8A) and FA26717-11 (Batch), MS/MSD	
	✓			• 5220C: FA26624-1 (MW-1A), FA26672-1 (Batch), and FA26678-1 (MW-5A), MS/MSD	
	✓			• 300: FA26624-1 (MW-1A), FA26624-1 (MW-1A), and FA26680-4 (Batch), MS/MSD	
	✓			• 365.3: FA26680-4 (Batch) and FA26749-4F (Batch), MS/MSD	
	✓			• 5310B: FA26624-1 (MW-1A) and FA26763-1 (Batch), MS/MSD	
	✓			• 9020B: JC1466-1 (Batch) and JC1794-1 (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-14 (FA26624-1), 5220C: COD @ 86.8 %R (87-122%R). UJ-flag	UJ
15. Were laboratory criteria met for precision during the MS/MSD analysis? *Only QC results for project samples are evaluated.*	✓				
16. Was a serial dilution conducted on each inorganic batch?	✓			• 7470A: o MP29243: FA26624-1 (MW-1A) o MP29256: FA26732-1 (Batch) • 6010C: o MP29252: FA26624-5 (MW-8A) o MP29254: FA26717-11 (Batch)	
17. Is the serial dilution parent sample a project-specific sample?	✓	✓			
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.*		✓		• MW-8A (FA26624-5), 6010C: o Cadmium @ 100.0%RPD (≤10%RPD) o Lead @ 37.7%RPD (≤10%RPD) o Zinc @ 48.0%RPD (≤10%RPD) Qualification of data is not warranted due to low initial sample concentration.	
19. Was a post-digestion spike analysis conducted whenever the MS or serial dilution results did not meet QC limits?	✓			6010C: • MP29252: FA26624-5 (MW-8A) • MP29254: FA26717-11 (Batch)	
20. Were laboratory/project specifications met during the PDS analysis?		✓		MW-8A (FA26624-5), 6010C: Manganese @ 135.2%R	J

Data Validation Checklist (Continued)

Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
Only QC results for project samples are evaluated.				(80-120%R). J-flag	
21. Was a laboratory duplicate analyzed with each batch?		✓		See below.	
22. Is the laboratory duplicate sample a project-specific sample?		✓		• 9020B: JC1466-1 (Batch) and JC1794-1 (Batch)	
			✓	• 300: None	
			✓	• 4500: None	
			✓	• 5220C: None	
			✓	• 5310B: None	
	✓	✓		• 7470A: FA26624-1 (MW-1A) and FA26732-1 (Batch)	
	✓	✓		• 6010C: MP29252: FA26624-5 (MW-8A) and FA26717-11 (Batch)	
	✓	✓		• 5210B: FA26624-1 (MW-1A) and FA26673-1 (Batch)	
	✓			• 2540C: FA26624-2 (MW-1B) and FA26678-5 (UNDERDRAIN)	
	✓			• 120.1: FA26624-1 (MW-1A) and FA26678-1 (MW-5A)	
	✓	✓		• 4500: FA26624-1 (MW-1A), FA26667-1 (Batch), and FA26678-4 (SECONDARY-2)	
23. Does laboratory duplicate results meet lab specifications? *Only QC results for project samples are evaluated.*		✓		• MW-8A (FA26624-1), 6010C: Selenium @ 200.0%RPD (0-20). • MW-1A (FA26624-1), SM 5210: BOD @ 100.0%RPD (0-30%RPD) Qualification of data is not warranted due to low sample and duplicate concentrations.	
24. Were initial and continuing calibration standards analyzed at the lab/project-specified frequency for each instrument?	✓			The evaluation was based on available calibration data that was included in the laboratory reports (i.e. EPA Methods 120.1, 300, 410.4, 6010, and 7470 and SM 4500-H 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?	✓			6010 only	
28. Were TIC reported and were reported results qualified as estimated concentrations?			✓		
29. Were laboratory-generated Corrective Action Reports (i.e., QCER) issued? If yes, summarize contents or attach copy of the report.		✓			
30. Were lab comments included in report? If yes, summarize contents or attach a copy of the narrative.	✓			9020B: Second column analysis indicated possible matrix interference and possible high bias during all samples analyses for total organic halides. J-flag Refer to **Attachment B** (Case Narratives) for additional comments included in laboratory reports.	J

Data Validation Checklist (Continued)

Review Questions	Yes	No	N/A	Samples (Analytes) Affected/Comments	Flag
Comments:					
All sample concentrations that are less than the Reporting Limit (RL), but greater than the Method Detection Limit (MDL), are estimated (J).					
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 C)**. In performing the data evaluation, the AECOM's 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
B Blank contamination exists
UJ Not detected and the detection limit is estimated
R Unusable data

ATTACHMENT A

BLANK CONTAMINATION EVALUATION

Evaluation of Blank Contamination **Attachment A**

			MA12579						MA12581					
Analyte	**RL**	**MB**	**MB**	**ICB1**	**CCB4**	**CCB5**	**CCB6**	**CCB7**	**CCB8**	**ICB**	**CCB4**	**CCB5**	**Max. Amount Detected**	**Action Level**
SW-846 6010C														
Arsenic	10			0.20	0.40	0.30		0.90	0.40			0.50	0.90	4.5
Barium	200	0.10		0.20			0.10				0.20	0.20	0.20	1.0
Cadmium	5.0						0.10	0.10	0.10				0.10	0.5
Chromium	10		0.30		0.30	0.20	0.40	0.20	0.20				0.40	2.0
Copper	25	0.40	0.20		0.20	0.10	0.30	0.20	0.20	0.20	0.30	0.10	0.30	1.5
Iron	300	6.5		1.1	9.8	8.6	13.5	12.4	20.5	2.0	1.2		20.5	102.5
Lead	5.0	0.50	0.20	0.10	0.40		0.40		0.40	0.40			0.40	2.0
Manganese	15		0.20		0.10		0.20	0.10	0.10				0.20	1.0
Selenium	10	1.8	1.9	1.3	1.8	1.8	0.10	1.0	1.0		1.1	1.1	1.9	9.5
Vanadium	50				0.10	0.20	0.10	0.20	0.20	0.10		0.20	0.20	1.0
Zinc	20	0.80	0.80						0.20				0.80	4.0

			MA12573				MA12580					
Analyte	**RL**	**MB**	**ICB1**	**CCBQ**	**CCB2**	**CCB3**	**ICB**	**CCB1**	**CCB2**	**CCB3**	**Max. Amount Detected**	**Action Level**
SW-846 7470A												
Mercury	0.50										0.00	0.0

CCB - Continuing calibration blank
ICB - Initial calibration blank
MB - Method Blank
RL - Reporting limit

All results micrograms per liter (µg/L), unless indicated otherwise. A blank cell indicates that the analyte was not detected.

ATTACHMENT B

CASE NARRATIVES

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, INC. **Job No:** FA26624

Site: IP; Riegelwood, NC **Report Date** 8/26/2015 3:19:45 PM

5 Samples were collected on 08/05/2015 and were received at Accutest SE on 08/06/2015 properly preserved, at 3 Deg. C and intact. These Samples received an Accutest job number of FA26624. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Metals By Method SW846 6010C

Matrix: AQ **Batch ID:** MP29252

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA26624-5DUP, FA26624-5MS, FA26624-5MSD, FA26624-5PS, FA26624-5SDL were used as the QC samples for metals.

RPD(s) for Duplicate for Selenium are outside control limits for sample MP29252-D1. RPD acceptable due to low duplicate and sample concentrations.

RPD(s) for Serial Dilution for Cadmium, Lead, Zinc are outside control limits for sample MP29252-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

MP29252-PS1 for Manganese: Spike recovery indicates matrix interference and/or outside control limits due to high level in sample relative to spike amount.

Metals By Method SW846 7470A

Matrix: AQ **Batch ID:** MP29243

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA26624-1DUP, FA26624-1MS, FA26624-1MSD, FA26624-1SDL were used as the QC samples for metals.

Wet Chemistry By Method EPA 120.1

Matrix: AQ **Batch ID:** GN67418

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA26624-1DUP was used as the QC samples for Specific Conductivity.

Wet Chemistry By Method EPA 300/SW846 9056A

Matrix: AQ **Batch ID:** GP26450

All samples were prepped within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA26624-1MS, FA26624-1MSD were used as the QC samples for Fluoride, Nitrogen, Nitrate, Sulfate, Chloride.

Wet Chemistry By Method SM2540 C-11

Matrix: AQ **Batch ID:** GN67436

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA26624-2DUP was used as the QC samples for Solids, Total Dissolved.

Wet Chemistry By Method SM4500H B-11/SW9040C

Matrix: AQ **Batch ID:** GN67417

Sample(s) FA26624-1DUP were used as the QC samples for pH.

FA26624-1 for pH: Field analysis required. Received out of hold time and analyzed by request.

FA26624-2 for pH: Field analysis required. Received out of hold time and analyzed by request.

FA26624-3 for pH: Field analysis required. Received out of hold time and analyzed by request.

FA26624-4 for pH: Field analysis required. Received out of hold time and analyzed by request.

FA26624-5 for pH: Field analysis required. Received out of hold time and analyzed by request.

Wet Chemistry By Method SM5210 B-11

Matrix: AQ **Batch ID:** GP26448

All samples were prepped within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA26624-1DUP was used as the QC samples for BOD, 5 Day.

RPD(s) for Duplicate for BOD, 5 Day are outside control limits for sample GP26448-D1. RPD acceptable due to low duplicate and sample concentrations.

FA26624-1 for BOD, 5 Day: Oxygen depletion outside of method acceptance criteria at the dilutions analyzed.

FA26624-2 for BOD, 5 Day: Oxygen depletion outside of method acceptance criteria at the dilutions analyzed.

FA26624-3 for BOD, 5 Day: Oxygen depletion outside of method acceptance criteria at the dilutions analyzed.

FA26624-4 for BOD, 5 Day: Oxygen depletion outside of method acceptance criteria at the dilutions analyzed.

FA26624-5 for BOD, 5 Day: Oxygen depletion outside of method acceptance criteria at the dilutions analyzed.

Wet Chemistry By Method SM5220 C-11

Matrix: AQ **Batch ID:** GP26484

All samples were prepped within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA26624-1MSD, FA26624-1MS were used as the QC samples for Chemical Oxygen Demand.

Matrix Spike Recovery(s) for Chemical Oxygen Demand are outside control limits. Spike recovery indicates possible matrix interference. For method performance in a clean matrix, refer to Blank Spike.

Wet Chemistry By Method SM5310 B-11/SW9060A

Matrix: AQ **Batch ID:** GP26460

All samples were prepped within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA26624-1MS, FA26624-1MSD were used as the QC samples for Total Organic Carbon.

Wet Chemistry By Method SW846 9020B M

Matrix: AQ **Batch ID:** N: GP91371

FA26624-1 for Total Organic Halides: Analysis performed at Accutest Laboratories, Dayton, NJ.

FA26624-2 for Total Organic Halides: Analysis performed at Accutest Laboratories, Dayton, NJ.

FA26624-3 for Total Organic Halides: Analysis performed at Accutest Laboratories, Dayton, NJ.

FA26624-4 for Total Organic Halides: Analysis performed at Accutest Laboratories, Dayton, NJ.

Wet Chemistry By Method SW846 9020B M

Matrix: AQ **Batch ID:** N: GP91456

FA26624-5 for Total Organic Halides: Analysis performed at Accutest Laboratories, Dayton, NJ.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are used

Narrative prepared by:

_____ Date: August 26, 2015

Lovelie Metzgar, QA Officer (signature on file)

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, INC. **Job No:** FA26678

Site: IP; Riegelwood, NC **Report Date:** 8/26/2015 3:55:19 PM

5 Sample(s) were collected on 08/06/2015 and were received at Accutest SE on 08/07/2015 properly preserved, at 2.8 Deg. C and intact. These Samples received an Accutest job number of FA26678. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Metals By Method SW846 6010C

Matrix: AQ **Batch ID:** MP29252

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA26624-5DUP, FA26624-5MS, FA26624-5MSD, FA26624-5PS, FA26624-5SDL were used as the QC samples for metals.

RPD(s) for Duplicate for Selenium are outside control limits for sample MP29252-D1. RPD acceptable due to low duplicate and sample concentrations.

RPD(s) for Serial Dilution for Cadmium, Lead, Zinc are outside control limits for sample MP29252-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

MP29252-PS1 for Manganese: Spike recovery indicates matrix interference and/or outside control limits due to high level in sample relative to spike amount.

Matrix: AQ **Batch ID:** MP29254

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA26717-11DUP, FA26717-11MS, FA26717-11MSD, FA26717-11PS, FA26717-11SDL were used as the QC samples for metals.

Metals By Method SW846 7470A

Matrix: AQ **Batch ID:** MP29256

All samples were digested within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA26732-1MS, FA26732-1MSD, FA26732-1SDL, FA26732-1DUP were used as the QC samples for metals.

Matrix Spike Duplicate Recovery(s) for Mercury are outside control limits. Probable cause is due to matrix interference.

RPD(s) for Duplicate for Mercury are outside control limits for sample MP29256-D1. RPD acceptable due to low duplicate and sample concentrations.

RPD(s) for Serial Dilution for Mercury are outside control limits for sample MP29256-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Wet Chemistry By Method EPA 120.1

Matrix: AQ **Batch ID:** GN67427

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA26678-1DUP were used as the QC samples for Specific Conductivity.

Wet Chemistry By Method EPA 300/SW846 9056A

Matrix: AQ **Batch ID:** GP26456

All method blanks for this batch meet method specific criteria.

Sample(s) FA26680-4MS, FA26680-4MSD were used as the QC samples for Chloride, Fluoride, Nitrogen, Nitrate, Sulfate.

FA26678-1 for Fluoride: Dilution required due to matrix interference.

FA26678-1 for Nitrogen, Nitrate: Sample analyzed beyond hold time. Dilution required due to matrix interference.

FA26678-2 for Fluoride: Dilution required due to matrix interference.

FA26678-2 for Nitrogen, Nitrate: Sample analyzed beyond hold time. Dilution required due to matrix interference.

FA26678-3 for Fluoride: Dilution required due to matrix interference.

FA26678-3 for Nitrogen, Nitrate: Sample analyzed beyond hold time. Dilution required due to matrix interference.

FA26678-4 for Fluoride: Dilution required due to matrix interference.

FA26678-4 for Nitrogen, Nitrate: Sample analyzed beyond hold time. Dilution required due to matrix interference.

FA26678-5 for Fluoride: Dilution required due to matrix interference.

FA26678-5 for Nitrogen, Nitrate: Sample analyzed beyond hold time. Dilution required due to matrix interference.

Wet Chemistry By Method EPA 365.3

Matrix: AQ **Batch ID:** GP26464

All samples were prepped within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA26680-4MS were used as the QC samples for Phosphate, Ortho.

GP26464-MB1 for Phosphate, Ortho: Insufficient sample for MSD.

Matrix: AQ **Batch ID:** GP26468

All method blanks for this batch meet method specific criteria.

Sample(s) FA26749-4FMS, FA26749-4FMSD were used as the QC samples for Phosphate, Ortho.

The following samples were prepped outside of holding time for method EPA 365.3: FA26678-2, FA26678-3, FA26678-4 Sample analyzed beyond hold time.

Wet Chemistry By Method SM2540 C-11

Matrix: AQ **Batch ID:** GN67466

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA26678-5DUP were used as the QC samples for Solids, Total Dissolved.

Wet Chemistry By Method SM4500H B-11/SW9040C

Matrix: AQ **Batch ID:** GN67423

Sample(s) FA26667-1DUP were used as the QC samples for pH.

FA26678-1 for pH: Field analysis required. Received out of hold time and analyzed by request.

FA26678-2 for pH: Field analysis required. Received out of hold time and analyzed by request.

FA26678-3 for pH: Field analysis required. Received out of hold time and analyzed by request.

Matrix: AQ **Batch ID:** GN67425

Sample(s) FA26678-4DUP were used as the QC samples for pH.

FA26678-4 for pH: Field analysis required. Received out of hold time and analyzed by request.

FA26678-5 for pH: Field analysis required. Received out of hold time and analyzed by request.

Wet Chemistry By Method SM5210 B-11

Matrix: AQ **Batch ID:** GP26457

All samples were prepped within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA26673-1DUP were used as the QC samples for BOD, 5 Day.

RPD(s) for Duplicate for BOD, 5 Day are outside control limits for sample GP26457-D1. Probable cause is due to sample non-homogeneity.

Wet Chemistry By Method SM5210 B-11

Matrix: AQ **Batch ID:** GP26457

GP26457-D1 for BOD, 5 Day: Outside control limits.

FA26678-2 for BOD, 5 Day: Oxygen depletion outside of method acceptance criteria at the dilutions analyzed.

Wet Chemistry By Method SM5220 C-11

Matrix: AQ **Batch ID:** GP26484

All samples were prepped within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA26624-1MSD, FA26624-1MS were used as the QC samples for Chemical Oxygen Demand.

Matrix Spike Recovery(s) for Chemical Oxygen Demand are outside control limits. Spike recovery indicates possible matrix interference. % RPD was within control limit for MS/MSD.

Matrix: AQ **Batch ID:** GP26485

All samples were prepped within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA26672-1MSD, FA26672-1MS were used as the QC samples for Chemical Oxygen Demand.

Matrix Spike Recovery(s) for Chemical Oxygen Demand are outside control limits. Spike recovery indicates possible matrix interference. % RPD was within control limit for MS/MSD.

Matrix: AQ **Batch ID:** GP26488

All samples were prepped within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA26678-1MS, FA26678-1MSD were used as the QC samples for Chemical Oxygen Demand.

Wet Chemistry By Method SM5310 B-11/SW9060A

Matrix: AQ **Batch ID:** GP26470

All samples were prepped within the recommended method holding time.

All samples were analyzed within the recommended method holding time.

All method blanks for this batch meet method specific criteria.

Sample(s) FA26763-1MSD, FA26763-1MS were used as the QC samples for Total Organic Carbon.

Matrix Spike Recovery(s) for Total Organic Carbon are outside control limits. Spike recovery indicates possible matrix interference. % RPD was within control limit for MS/MSD.

Wet Chemistry By Method SW846 9020B M

Matrix: AQ **Batch ID:** N: GP91456

FA26678-1 for Total Organic Halides: Analysis performed at Accutest Laboratories, Dayton, NJ.

FA26678-2 for Total Organic Halides: Analysis performed at Accutest Laboratories, Dayton, NJ.

FA26678-3 for Total Organic Halides: Analysis performed at Accutest Laboratories, Dayton, NJ.

FA26678-4 for Total Organic Halides: Analysis performed at Accutest Laboratories, Dayton, NJ.

FA26678-5 for Total Organic Halides: Analysis performed at Accutest Laboratories, Dayton, NJ.

Accutest Laboratories Southeast (ALSE) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALSE and as stated on the COC. ALSE certifies that the data meets the Data Quality Objectives for precision, accuracy and completeness as specified in the ALSE Quality Manual except as noted above. This report is to be used in its entirety. ALSE is not responsible for any assumptions of data quality if partial data packages are use.

Narrative prepared by:

_____ Date: August 26, 2015

Kim Benham, Client Services (signature on file)

ATTACHMENT C

QUALIFIED SAMPLE RESULTS

Report of Analysis

Client Sample ID:	MW-1A		
Lab Sample ID:	FA26624-1	Date Sampled:	08/05/15
Matrix:	AQ - Ground Water	Date Received:	08/06/15
		Percent Solids:	n/a
Project:	IP; Riegelwood, NC		

4.1

4

Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	1.3 U	10	1.3	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Barium	108 J	200	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Cadmium	0.20 U	5.0	0.20	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Chromium	1.0 U	10	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Copper	1.0 U	25	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Iron	1330	300	17	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Lead	1.1 U	5.0	1.1	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Manganese	13.2 J	15	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Mercury	0.030 U	0.50	0.030	ug/l	1	08/07/15	08/07/15	JL	SW846 7470A [1]	SW846 7470A [3]
Selenium	2.9 U	10	2.9	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Silver	0.70 U	10	0.70	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Vanadium	4.2 J	50	0.60	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Zinc	7.6 J	20	4.4	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA12573
(2) Instrument QC Batch: MA12579
(3) Prep QC Batch: MP29243
(4) Prep QC Batch: MP29252

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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

Report of Analysis

Client Sample ID:	MW-1A		
Lab Sample ID:	FA26624-1	Date Sampled:	08/05/15
Matrix:	AQ - Ground Water	Date Received:	08/06/15
		Percent Solids:	n/a
Project:	IP; Riegelwood, NC		

4.1

4

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
BOD, 5 Day [a]	2.0 ~~J~~ UJ	4.0	2.0	mg/l	2	08/11/15 10:06	DM	SM5210 B-11
Chemical Oxygen Demand	5.3 U	20	5.3	mg/l	1	08/13/15 16:05	FN	SM5220 C-11
Chloride	6.9	2.0	0.80	mg/l	1	08/06/15 13:52	VK	EPA 300/SW846 9056A
Fluoride	0.095 J	0.20	0.060	mg/l	1	08/06/15 13:52	VK	EPA 300/SW846 9056A
Nitrogen, Nitrate	0.050 U	0.10	0.050	mg/l	1	08/06/15 13:52	VK	EPA 300/SW846 9056A
Solids, Total Dissolved	139	100	10	mg/l	1	08/10/15 13:20	KC	SM2540 C-11
Specific Conductivity	162	1.0	1.0	umhos/cm	1	08/06/15 14:20	DM	EPA 120.1
Sulfate	53.4	2.0	0.60	mg/l	1	08/06/15 13:52	VK	EPA 300/SW846 9056A
Total Organic Carbon	1.8	1.0	0.23	mg/l	1	08/10/15 22:21	EC	SM5310 B-11/SW9060A
Total Organic Halides [b]	0.29 J	0.050	0.038	mg/l	1	08/21/15	ANJ	SW846 9020B M
pH [c]	4.05 J			su	1	08/06/15 16:00	DM	SM4500H B-11/SW9040C

(a) Oxygen depletion outside of method acceptance criteria at the dilutions analyzed.
(b) Analysis performed at Accutest Laboratories, Dayton, NJ.
(c) Field analysis required. Received out of hold time and analyzed by request.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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

Report of Analysis

Client Sample ID:	MW-1B		
Lab Sample ID:	FA26624-2	**Date Sampled:**	08/05/15
Matrix:	AQ - Ground Water	**Date Received:**	08/06/15
		Percent Solids:	n/a
Project:	IP; Riegelwood, NC		

Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	1.3 U	10	1.3	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Barium	23.5 J	200	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Cadmium	0.20 U	5.0	0.20	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Chromium	1.0 U	10	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Copper	1.0 U	25	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Iron	889	300	17	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Lead	1.1 U	5.0	1.1	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Manganese	56.2	15	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Mercury	0.030 U	0.50	0.030	ug/l	1	08/07/15	08/07/15	JL	SW846 7470A [1]	SW846 7470A [3]
Selenium	2.9 U	10	2.9	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Silver	0.70 U	10	0.70	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Vanadium	3.4 J	50	0.60	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Zinc	4.8 J	20	4.4	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA12573
(2) Instrument QC Batch: MA12579
(3) Prep QC Batch: MP29243
(4) Prep QC Batch: MP29252

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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

Report of Analysis

Client Sample ID:	MW-1B		
Lab Sample ID:	FA26624-2	Date Sampled:	08/05/15
Matrix:	AQ - Ground Water	Date Received:	08/06/15
		Percent Solids:	n/a
Project:	IP; Riegelwood, NC		

4.2 4

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
BOD, 5 Day [a]	2.0 ~~U~~ UJ	4.0	2.0	mg/l	2	08/11/15 10:06	DM	SM5210 B-11
Chemical Oxygen Demand	5.3 U	20	5.3	mg/l	1	08/13/15 16:05	FN	SM5220 C-11
Chloride	7.4	2.0	0.80	mg/l	1	08/06/15 14:08	VK	EPA 300/SW846 9056A
Fluoride	0.069 J	0.20	0.060	mg/l	1	08/06/15 14:08	VK	EPA 300/SW846 9056A
Nitrogen, Nitrate	0.050 U	0.10	0.050	mg/l	1	08/06/15 14:08	VK	EPA 300/SW846 9056A
Solids, Total Dissolved	229	100	10	mg/l	1	08/10/15 13:20	KC	SM2540 C-11
Specific Conductivity	295	1.0	1.0	umhos/cm	1	08/06/15 14:20	DM	EPA 120.1
Sulfate	17.4	2.0	0.60	mg/l	1	08/06/15 14:08	VK	EPA 300/SW846 9056A
Total Organic Carbon	1.3 B	1.0	0.23	mg/l	1	08/08/15 18:34	EC	SM5310 B-11/SW9060A
Total Organic Halides [b]	0.038 UJ	0.050	0.038	mg/l	1	08/21/15	ANJ	SW846 9020B M
pH [c]	6.61 J			su	1	08/06/15 16:00	DM	SM4500H B-11/SW9040C

(a) Oxygen depletion outside of method acceptance criteria at the dilutions analyzed.
(b) Analysis performed at Accutest Laboratories, Dayton, NJ.
(c) Field analysis required. Received out of hold time and analyzed by request.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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

Report of Analysis

Client Sample ID:	MW-4A		
Lab Sample ID:	FA26624-3	**Date Sampled:**	08/05/15
Matrix:	AQ - Ground Water	**Date Received:**	08/06/15
		Percent Solids:	n/a
Project:	IP; Riegelwood, NC		

4.3

4

Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	1.3 U	10	1.3	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Barium	38.4 J	200	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Cadmium	0.20 U	5.0	0.20	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Chromium	1.5 J B	10	~~1.0~~ 1.5	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Copper	1.0 U	25	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Iron	6550	300	17	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Lead	2.6 J	5.0	1.1	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Manganese	29.8	15	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Mercury	0.030 U	0.50	0.030	ug/l	1	08/07/15	08/07/15	JL	SW846 7470A [1]	SW846 7470A [3]
Selenium	3.4 J B	10	~~2.9~~ 3.4	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Silver	0.70 U	10	0.70	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Vanadium	9.0 J	50	0.60	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Zinc	9.9 J	20	4.4	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA12573
(2) Instrument QC Batch: MA12579
(3) Prep QC Batch: MP29243
(4) Prep QC Batch: MP29252

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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

Report of Analysis

4.3
4

Client Sample ID:	MW-4A		
Lab Sample ID:	FA26624-3	Date Sampled:	08/05/15
Matrix:	AQ - Ground Water	Date Received:	08/06/15
		Percent Solids:	n/a
Project:	IP; Riegelwood, NC		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
BOD, 5 Day [a]	2.0 ~~U~~ U5	4.0	2.0	mg/l	2	08/11/15 10:06	DM	SM5210 B-11
Chemical Oxygen Demand	26.5	20	5.3	mg/l	1	08/13/15 16:05	FN	SM5220 C-11
Chloride	27.5	2.0	0.80	mg/l	1	08/06/15 14:24	VK	EPA 300/SW846 9056A
Fluoride	0.060 U	0.20	0.060	mg/l	1	08/06/15 14:24	VK	EPA 300/SW846 9056A
Nitrogen, Nitrate	0.050 U	0.10	0.050	mg/l	1	08/06/15 14:24	VK	EPA 300/SW846 9056A
Solids, Total Dissolved	170	100	10	mg/l	1	08/10/15 13:20	KC	SM2540 C-11
Specific Conductivity	211	1.0	1.0	umhos/cm	1	08/06/15 14:20	DM	EPA 120.1
Sulfate	37.9	2.0	0.60	mg/l	1	08/06/15 14:24	VK	EPA 300/SW846 9056A
Total Organic Carbon	8.5	1.0	0.23	mg/l	1	08/08/15 18:53	EC	SM5310 B-11/SW9060A
Total Organic Halides [b]	0.33 J	0.050	0.038	mg/l	1	08/21/15	ANJ	SW846 9020B M
pH [c]	4.89 J			su	1	08/06/15 16:00	DM	SM4500H B-11/SW9040C

(a) Oxygen depletion outside of method acceptance criteria at the dilutions analyzed.
(b) Analysis performed at Accutest Laboratories, Dayton, NJ.
(c) Field analysis required. Received out of hold time and analyzed by request.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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

Report of Analysis

Client Sample ID:	MW-7A		
Lab Sample ID:	FA26624-4	Date Sampled:	08/05/15
Matrix:	AQ - Ground Water	Date Received:	08/06/15
		Percent Solids:	n/a
Project:	IP; Riegelwood, NC		

4.4

4

Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	22.0	10	1.3	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Barium	36.6 J	200	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Cadmium	0.20 U	5.0	0.20	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Chromium	10.0	10	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Copper	1.5 J B	25	~~1.0~~ 1.5	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Iron	20500	300	17	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Lead	7.4	5.0	1.1	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Manganese	184	15	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Mercury	0.030 U	0.50	0.030	ug/l	1	08/07/15	08/07/15	JL	SW846 7470A [1]	SW846 7470A [3]
Selenium	2.9 U	10	2.9	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Silver	0.70 U	10	0.70	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Vanadium	26.8 J	50	0.60	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Zinc	9.2 J	20	4.4	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA12573
(2) Instrument QC Batch: MA12579
(3) Prep QC Batch: MP29243
(4) Prep QC Batch: MP29252

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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

Report of Analysis

Client Sample ID:	MW-7A		
Lab Sample ID:	FA26624-4	Date Sampled:	08/05/15
Matrix:	AQ - Ground Water	Date Received:	08/06/15
		Percent Solids:	n/a
Project:	IP; Riegelwood, NC		

4.4 4

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
BOD, 5 Day [a]	2.0 ~~U~~ UJ	4.0	2.0	mg/l	2	08/11/15 10:06	DM	SM5210 B-11
Chemical Oxygen Demand	62.7	20	5.3	mg/l	1	08/13/15 16:05	FN	SM5220 C-11
Chloride	99.7	10	4.0	mg/l	5	08/06/15 15:13	VK	EPA 300/SW846 9056A
Fluoride	0.30 U	1.0	0.30	mg/l	5	08/06/15 15:13	VK	EPA 300/SW846 9056A
Nitrogen, Nitrate	0.25 U	0.50	0.25	mg/l	5	08/06/15 15:13	VK	EPA 300/SW846 9056A
Solids, Total Dissolved	766	100	10	mg/l	1	08/10/15 13:20	KC	SM2540 C-11
Specific Conductivity	1070	1.0	1.0	umhos/cm	1	08/06/15 14:20	DM	EPA 120.1
Sulfate	35.4	10	3.0	mg/l	5	08/06/15 15:13	VK	EPA 300/SW846 9056A
Total Organic Carbon	19.4	1.0	0.23	mg/l	1	08/08/15 19:13	EC	SM5310 B-11/SW9060A
Total Organic Halides [b]	0.090 J	0.050	0.038	mg/l	1	08/21/15	ANJ	SW846 9020B M
pH [c]	7.08 J			su	1	08/06/15 16:00	DM	SM4500H B-11/SW9040C

(a) Oxygen depletion outside of method acceptance criteria at the dilutions analyzed.
(b) Analysis performed at Accutest Laboratories, Dayton, NJ.
(c) Field analysis required. Received out of hold time and analyzed by request.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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

Report of Analysis

4.5

4

Client Sample ID:	MW-8A		
Lab Sample ID:	FA26624-5	Date Sampled:	08/05/15
Matrix:	AQ - Ground Water	Date Received:	08/06/15
		Percent Solids:	n/a
Project:	IP; Riegelwood, NC		

Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	1.3 U	10	1.3	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Barium	49.4 J	200	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Cadmium	0.30 J B	5.0	~~0.20~~ 0.30	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Chromium	1.0 U	10	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Copper	1.0 U	25	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Iron	26400	300	17	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Lead	6.9	5.0	1.1	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Manganese	1330 J	15	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Mercury	0.030 U	0.50	0.030	ug/l	1	08/07/15	08/07/15	JL	SW846 7470A [1]	SW846 7470A [3]
Selenium	2.9 U	10	2.9	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Silver	0.70 U	10	0.70	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Vanadium	0.60 U	50	0.60	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]
Zinc	10.2 J	20	4.4	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA12573
(2) Instrument QC Batch: MA12579
(3) Prep QC Batch: MP29243
(4) Prep QC Batch: MP29252

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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

Report of Analysis

4.5 4

Client Sample ID:	MW-8A		
Lab Sample ID:	FA26624-5	Date Sampled:	08/05/15
Matrix:	AQ - Ground Water	Date Received:	08/06/15
		Percent Solids:	n/a
Project:	IP; Riegelwood, NC		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
BOD, 5 Day [a]	0.24 ~~J~~ J	4.0	2.0	mg/l	2	08/11/15 10:06	DM	SM5210 B-11
Chemical Oxygen Demand	14.5 J	20	5.3	mg/l	1	08/13/15 16:05	FN	SM5220 C-11
Chloride	4.1 J	10	4.0	mg/l	5	08/06/15 15:29	VK	EPA 300/SW846 9056A
Fluoride	0.38 J	1.0	0.30	mg/l	5	08/06/15 15:29	VK	EPA 300/SW846 9056A
Nitrogen, Nitrate	0.25 U	0.50	0.25	mg/l	5	08/06/15 15:29	VK	EPA 300/SW846 9056A
Solids, Total Dissolved	900	100	10	mg/l	1	08/10/15 13:20	KC	SM2540 C-11
Specific Conductivity	1080	1.0	1.0	umhos/cm	1	08/06/15 14:20	DM	EPA 120.1
Sulfate	436	10	3.0	mg/l	5	08/06/15 15:29	VK	EPA 300/SW846 9056A
Total Organic Carbon	3.3	1.0	0.23	mg/l	1	08/08/15 19:32	EC	SM5310 B-11/SW9060A
Total Organic Halides [b]	0.31 J	0.20	0.15	mg/l	4	08/24/15	ANJ	SW846 9020B M
pH [c]	6.36 J			su	1	08/06/15 16:00	DM	SM4500H B-11/SW9040C

(a) Oxygen depletion outside of method acceptance criteria at the dilutions analyzed.
(b) Second column analysis indicates possible matrix interference and possible high bias. Analysis performed at Accutest Laboratories, Dayton, NJ.
(c) Field analysis required. Received out of hold time and analyzed by request.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-5A		
Lab Sample ID:	FA26678-1	Date Sampled:	08/06/15
Matrix:	AQ - Ground Water	Date Received:	08/07/15
		Percent Solids:	n/a
Project:	IP; Riegelwood, NC		

Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	1.3 U	10	1.3	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Barium	110 J	200	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Cadmium	0.20 U	5.0	0.20	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Chromium	5.5 J	10	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Copper	1.0 U	25	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Iron	160 J	300	17	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Lead	1.1 U	5.0	1.1	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Manganese	185	15	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Mercury	0.033 J	0.50	0.030	ug/l	1	08/11/15	08/11/15	JL	SW846 7470A [2]	SW846 7470A [4]
Selenium	2.9 U	10	2.9	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Silver	0.70 U	10	0.70	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Vanadium	13.5 J	50	0.60	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Zinc	4.4 U	20	4.4	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA12579
(2) Instrument QC Batch: MA12580
(3) Prep QC Batch: MP29252
(4) Prep QC Batch: MP29256

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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

Accutest Laboratories

Report of Analysis

Client Sample ID:	MW-5A		
Lab Sample ID:	FA26678-1	Date Sampled:	08/06/15
Matrix:	AQ - Ground Water	Date Received:	08/07/15
		Percent Solids:	n/a
Project:	IP; Riegelwood, NC		

4.1

4

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
BOD, 5 Day	< 20	20	20	mg/l	10	08/12/15 15:20	DM	SM5210 B-11
Chemical Oxygen Demand	119	20	5.3	mg/l	1	08/14/15 15:37	FN	SM5220 C-11
Chloride	178	50	20	mg/l	25	08/07/15 21:31	VK	EPA 300/SW846 9056A
Fluoride [a]	0.64 ~~J~~ J	1.0	0.30	mg/l	5	08/10/15 18:36	VK	EPA 300/SW846 9056A
Nitrogen, Nitrate [b]	0.25 ~~U~~ UJ	0.50	0.25	mg/l	5	08/10/15 18:36	VK	EPA 300/SW846 9056A
Solids, Total Dissolved	1480	200	20	mg/l	1	08/12/15 17:05	KC	SM2540 C-11
Specific Conductivity	2300	1.0	1.0	umhos/cm	1	08/07/15 14:50	LE	EPA 120.1
Sulfate	53.6	10	3.0	mg/l	5	08/10/15 18:36	VK	EPA 300/SW846 9056A
Total Organic Carbon	51.7	1.0	0.23	mg/l	1	08/12/15 18:07	EC	SM5310 B-11/SW9060A
Total Organic Halides [c]	1.5 J	0.20	0.15	mg/l	4	08/24/15	ANJ	SW846 9020B M
pH [d]	6.62 J			su	1	08/07/15 14:01	LE	SM4500H B-11/SW9040C

(a) Dilution required due to matrix interference.
(b) Sample analyzed beyond hold time. Dilution required due to matrix interference.
(c) Second column analysis indicates possible matrix interference and possible high bias. Analysis performed at Accutest Laboratories, Dayton, NJ.
(d) Field analysis required. Received out of hold time and analyzed by request.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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

Accutest Laboratories

Report of Analysis

Client Sample ID:	PRIMARY-1		
Lab Sample ID:	FA26678-2	Date Sampled:	08/06/15
Matrix:	AQ - Ground Water	Date Received:	08/07/15
		Percent Solids:	n/a
Project:	IP; Riegelwood, NC		

4.2

4

Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	150	10	1.3	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Barium	216	200	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Cadmium	0.20 U	5.0	0.20	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Chromium	153	10	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Copper	1.0 U	25	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Iron	5190	300	17	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Lead	1.7 J B	~~5.0~~ 5.0	~~1.1~~ 1.7	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Manganese	345	15	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Mercury	0.073 J	0.50	0.030	ug/l	1	08/11/15	08/11/15	JL	SW846 7470A [2]	SW846 7470A [4]
Selenium	7.1 J B	10	~~2.9~~ 7.1	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Silver	0.70 U	10	0.70	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Vanadium	1160	50	0.60	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Zinc	26.1	20	4.4	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA12579
(2) Instrument QC Batch: MA12580
(3) Prep QC Batch: MP29252
(4) Prep QC Batch: MP29256

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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

Accutest Laboratories

Report of Analysis

Client Sample ID:	PRIMARY-1		
Lab Sample ID:	FA26678-2	Date Sampled:	08/06/15
Matrix:	AQ - Ground Water	Date Received:	08/07/15
		Percent Solids:	n/a
Project:	IP; Riegelwood, NC		

4.2

4

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
BOD, 5 Day [a]	>130 J	40	40	mg/l	1	08/12/15 15:20	DM	SM5210 B-11
Chemical Oxygen Demand	1150	20	5.3	mg/l	1	08/13/15 16:05	FN	SM5220 C-11
Chloride	163	100	40	mg/l	50	08/07/15 21:47	VK	EPA 300/SW846 9056A
Fluoride [b]	1.7 ~~J~~ J	2.0	0.60	mg/l	10	08/10/15 18:53	VK	EPA 300/SW846 9056A
Nitrogen, Nitrate [c]	0.50 ~~U~~ U	1.0	0.50	mg/l	10	08/10/15 18:53	VK	EPA 300/SW846 9056A
Phosphate, Ortho [d]	2.5 J	0.50	0.10	mg/l	5	08/12/15 10:05	DM	EPA 365.3
Solids, Total Dissolved	7150	1000	100	mg/l	1	08/12/15 17:05	KC	SM2540 C-11
Specific Conductivity	9460	1.0	1.0	umhos/cm	1	08/07/15 14:50	LE	EPA 120.1
Sulfate	394	100	30	mg/l	50	08/07/15 21:47	VK	EPA 300/SW846 9056A
Total Organic Carbon	864	1.0	0.23	mg/l	1	08/12/15 18:26	EC	SM5310 B-11/SW9060A
Total Organic Halides [e]	1.0 J	0.20	0.15	mg/l	4	08/24/15	ANJ	SW846 9020B M
pH [f]	7.48 J			su	1	08/07/15 14:01	LE	SM4500H B-11/SW9040C

(a) Oxygen depletion outside of method acceptance criteria at the dilutions analyzed.
(b) Dilution required due to matrix interference.
(c) Sample analyzed beyond hold time. Dilution required due to matrix interference.
(d) Sample analyzed beyond hold time.
(e) Second column analysis indicates possible matrix interference and possible high bias. Analysis performed at Accutest Laboratories, Dayton, NJ.
(f) Field analysis required. Received out of hold time and analyzed by request.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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

Accutest Laboratories

Report of Analysis

4.3

4

Client Sample ID:	PRIMARY-2		
Lab Sample ID:	FA26678-3	Date Sampled:	08/06/15
Matrix:	AQ - Ground Water	Date Received:	08/07/15
		Percent Solids:	n/a
Project:	IP; Riegelwood, NC		

Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	9.1 J	10	1.3	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Barium	116 J	200	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Cadmium	0.20 U	5.0	0.20	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Chromium	4.1 J	10	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Copper	1.3 J B	25	~~1.0~~ 1.3	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Iron	15400	300	17	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Lead	4.3 J	5.0	1.1	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Manganese	193	15	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Mercury	0.034 J	0.50	0.030	ug/l	1	08/11/15	08/11/15	JL	SW846 7470A [2]	SW846 7470A [4]
Selenium	3.1 J	10	2.9	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Silver	0.70 U	10	0.70	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Vanadium	8.5 J	50	0.60	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Zinc	5.0 J	20	4.4	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA12579
(2) Instrument QC Batch: MA12580
(3) Prep QC Batch: MP29252
(4) Prep QC Batch: MP29256

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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

Accutest Laboratories

Report of Analysis

4.3

4

Client Sample ID:	PRIMARY-2		
Lab Sample ID:	FA26678-3	Date Sampled:	08/06/15
Matrix:	AQ - Ground Water	Date Received:	08/07/15
		Percent Solids:	n/a
Project:	IP; Riegelwood, NC		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
BOD, 5 Day	8.3	8.0	8.0	mg/l	4	08/12/15 15:20	DM	SM5210 B-11
Chemical Oxygen Demand	198	20	5.3	mg/l	1	08/14/15 15:37	FN	SM5220 C-11
Chloride	88.1	50	20	mg/l	25	08/07/15 22:03	VK	EPA 300/SW846 9056A
Fluoride [a]	0.60 U	2.0	0.60	mg/l	10	08/10/15 19:09	VK	EPA 300/SW846 9056A
Nitrogen, Nitrate [b]	0.50 ~~U~~ UJ	1.0	0.50	mg/l	10	08/10/15 19:09	VK	EPA 300/SW846 9056A
Phosphate, Ortho [c]	0.044 ~~J~~ J	0.10	0.020	mg/l	1	08/12/15 10:05	DM	EPA 365.3
Solids, Total Dissolved	1730	200	20	mg/l	1	08/12/15 17:05	KC	SM2540 C-11
Specific Conductivity	2390	1.0	1.0	umhos/cm	1	08/07/15 14:50	LE	EPA 120.1
Sulfate	590	50	15	mg/l	25	08/07/15 22:03	VK	EPA 300/SW846 9056A
Total Organic Carbon	61.5	1.0	0.23	mg/l	1	08/12/15 19:09	EC	SM5310 B-11/SW9060A
Total Organic Halides [d]	0.67 J	0.20	0.15	mg/l	4	08/24/15	ANJ	SW846 9020B M
pH [e]	6.54 J			su	1	08/07/15 14:01	LE	SM4500H B-11/SW9040C

(a) Dilution required due to matrix interference.
(b) Sample analyzed beyond hold time. Dilution required due to matrix interference.
(c) Sample analyzed beyond hold time.
(d) Second column analysis indicates possible matrix interference and possible high bias. Analysis performed at Accutest Laboratories, Dayton, NJ.
(e) Field analysis required. Received out of hold time and analyzed by request.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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

Accutest Laboratories

Report of Analysis

Client Sample ID:	SECONDARY-2		
Lab Sample ID:	FA26678-4	Date Sampled:	08/06/15
Matrix:	AQ - Ground Water	Date Received:	08/07/15
		Percent Solids:	n/a
Project:	IP; Riegelwood, NC		

Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	1.3 U	10	1.3	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Barium	606	200	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Cadmium	0.20 U	5.0	0.20	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Chromium	3.6 J	10	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Copper	54.0	25	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Iron	737	300	17	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Lead	3.2 J	5.0	1.1	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Manganese	522	15	1.0	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Mercury	0.030 U	0.50	0.030	ug/l	1	08/11/15	08/11/15	JL	SW846 7470A [2]	SW846 7470A [4]
Selenium	2.9 U	10	2.9	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Silver	0.70 U	10	0.70	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Vanadium	7.8 J	50	0.60	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]
Zinc	80.8	20	4.4	ug/l	1	08/10/15	08/10/15	LM	SW846 6010C [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA12579
(2) Instrument QC Batch: MA12580
(3) Prep QC Batch: MP29252
(4) Prep QC Batch: MP29256

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result >= MDL but < RL

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

Accutest Laboratories

Report of Analysis

Client Sample ID:	SECONDARY-2		
Lab Sample ID:	FA26678-4	Date Sampled:	08/06/15
Matrix:	AQ - Ground Water	Date Received:	08/07/15
		Percent Solids:	n/a
Project:	IP; Riegelwood, NC		

4.4

4

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
BOD, 5 Day	15.6	8.0	8.0	mg/l	4	08/12/15 15:20	DM	SM5210 B-11
Chemical Oxygen Demand	130	20	5.3	mg/l	1	08/13/15 16:05	FN	SM5220 C-11
Chloride	50.4	20	8.0	mg/l	10	08/10/15 19:57	VK	EPA 300/SW846 9056A
Fluoride [a]	0.60 U	2.0	0.60	mg/l	10	08/10/15 19:57	VK	EPA 300/SW846 9056A
Nitrogen, Nitrate [b]	0.50 ~~U~~ J	1.0	0.50	mg/l	10	08/10/15 19:57	VK	EPA 300/SW846 9056A
Phosphate, Ortho [c]	0.12 J	0.10	0.020	mg/l	1	08/12/15 10:05	DM	EPA 365.3
Solids, Total Dissolved	2440	200	20	mg/l	1	08/12/15 17:05	KC	SM2540 C-11
Specific Conductivity	3170	1.0	1.0	umhos/cm	1	08/07/15 14:50	LE	EPA 120.1
Sulfate	154	50	15	mg/l	25	08/07/15 22:51	VK	EPA 300/SW846 9056A
Total Organic Carbon	50.3	1.0	0.23	mg/l	1	08/12/15 19:39	EC	SM5310 B-11/SW9060A
Total Organic Halides [d]	0.65 J	0.20	0.15	mg/l	4	08/24/15	ANJ	SW846 9020B M
pH [e]	7.02 J			su	1	08/07/15 15:40	LE	SM4500H B-11/SW9040C

(a) Dilution required due to matrix interference.
(b) Sample analyzed beyond hold time. Dilution required due to matrix interference.
(c) Sample analyzed beyond hold time.
(d) Second column analysis indicates possible matrix interference and possible high bias. Analysis performed at Accutest Laboratories, Dayton, NJ.
(e) Field analysis required. Received out of hold time and analyzed by request.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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

Accutest Laboratories

Report of Analysis

4.5

4

Client Sample ID:	UNDERDRAIN		
Lab Sample ID:	FA26678-5	Date Sampled:	08/06/15
Matrix:	AQ - Ground Water	Date Received:	08/07/15
		Percent Solids:	n/a
Project:	IP; Riegelwood, NC		

Total Metals Analysis

Analyte	Result	RL	MDL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	1.3 U	10	1.3	ug/l	1	08/11/15	08/11/15	LM	SW846 6010C [2]	SW846 3010A [3]
Barium	126 J	200	1.0	ug/l	1	08/11/15	08/11/15	LM	SW846 6010C [2]	SW846 3010A [3]
Cadmium	0.20 U	5.0	0.20	ug/l	1	08/11/15	08/11/15	LM	SW846 6010C [2]	SW846 3010A [3]
Chromium	18.6	10	1.0	ug/l	1	08/11/15	08/11/15	LM	SW846 6010C [2]	SW846 3010A [3]
Copper	1.2 J B	25	~~1.0~~ 1.2	ug/l	1	08/11/15	08/11/15	LM	SW846 6010C [2]	SW846 3010A [3]
Iron	8480	300	17	ug/l	1	08/11/15	08/11/15	LM	SW846 6010C [2]	SW846 3010A [3]
Lead	1.1 U	5.0	1.1	ug/l	1	08/11/15	08/11/15	LM	SW846 6010C [2]	SW846 3010A [3]
Manganese	726	15	1.0	ug/l	1	08/11/15	08/11/15	LM	SW846 6010C [2]	SW846 3010A [3]
Mercury	0.030 U	0.50	0.030	ug/l	1	08/11/15	08/11/15	JL	SW846 7470A [1]	SW846 7470A [4]
Selenium	2.9 J B	10	~~2.9~~ 2.9	ug/l	1	08/11/15	08/11/15	LM	SW846 6010C [2]	SW846 3010A [3]
Silver	0.70 U	10	0.70	ug/l	1	08/11/15	08/11/15	LM	SW846 6010C [2]	SW846 3010A [3]
Vanadium	39.4 J	50	0.60	ug/l	1	08/11/15	08/11/15	LM	SW846 6010C [2]	SW846 3010A [3]
Zinc	15.5 J	20	4.4	ug/l	1	08/11/15	08/11/15	LM	SW846 6010C [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA12580
(2) Instrument QC Batch: MA12581
(3) Prep QC Batch: MP29254
(4) Prep QC Batch: MP29256

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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

Accutest Laboratories

Report of Analysis

4.5

4

Client Sample ID:	UNDERDRAIN		
Lab Sample ID:	FA26678-5	Date Sampled:	08/06/15
Matrix:	AQ - Ground Water	Date Received:	08/07/15
		Percent Solids:	n/a
Project:	IP; Riegelwood, NC		

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
BOD, 5 Day	10.6	4.0	4.0	mg/l	2	08/12/15 15:20	DM	SM5210 B-11
Chemical Oxygen Demand	178	20	5.3	mg/l	1	08/14/15 15:37	FN	SM5220 C-11
Chloride	209	50	20	mg/l	25	08/07/15 23:08	VK	EPA 300/SW846 9056A
Fluoride [a]	0.30 U	1.0	0.30	mg/l	5	08/10/15 20:14	VK	EPA 300/SW846 9056A
Nitrogen, Nitrate [b]	0.25 ~~U~~ UJ	0.50	0.25	mg/l	5	08/10/15 20:14	VK	EPA 300/SW846 9056A
Solids, Total Dissolved	2050	200	20	mg/l	1	08/12/15 17:05	KC	SM2540 C-11
Specific Conductivity	2780	1.0	1.0	umhos/cm	1	08/07/15 14:50	LE	EPA 120.1
Sulfate	90.8	50	15	mg/l	25	08/07/15 23:08	VK	EPA 300/SW846 9056A
Total Organic Carbon	52.5	1.0	0.23	mg/l	1	08/12/15 20:08	EC	SM5310 B-11/SW9060A
Total Organic Halides [c]	0.76 J	0.20	0.15	mg/l	4	08/24/15	ANJ	SW846 9020B M
pH [d]	6.74 J			su	1	08/07/15 15:40	LE	SM4500H B-11/SW9040C

(a) Dilution required due to matrix interference.
(b) Sample analyzed beyond hold time. Dilution required due to matrix interference.
(c) Second column analysis indicates possible matrix interference and possible high bias. Analysis performed at Accutest Laboratories, Dayton, NJ.
(d) Field analysis required. Received out of hold time and analyzed by request.

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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

Accutest Laboratories

Report of Analysis

Client Sample ID:	UNDERDRAIN		
Lab Sample ID:	FA26678-5F	Date Sampled:	08/06/15
Matrix:	AQ - Groundwater Filtered	Date Received:	08/07/15
		Percent Solids:	n/a
Project:	IP; Riegelwood, NC		

4.6 4

General Chemistry

Analyte	Result	RL	MDL	Units	DF	Analyzed	By	Method
Phosphate, Ortho	0.46	0.10	0.020	mg/l	1	08/07/15 15:15	DM	EPA 365.3

RL = Reporting Limit
MDL = Method Detection Limit

U = Indicates a result < MDL
J = Indicates a result > = MDL but < RL

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

APPENDIX B

FIELD ACTIVITY DOCUMENTATION

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: IP Riegelwood Landfill

PROJECT NO. 31830291

SAMPLE NO. MW-1A

WELL NO. MW-1A

DATE/TIME COLLECTED 8-5-15 @ 1300

PERSONNEL JEFF SCHLUTER, Duncan Briley

SAMPLE METHOD Peristaltic pump with 1/8" tubing

SAMPLE MEDIA: Groundwater

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 40ml Amber	HCL	TOC
2 ~~1~~ - 1L Poly	None	TDS, BOD, pH, Cond, Cl, F, NO3, SO4
1 ~~250~~ Amber	H2SO4	TOX
1 - 500ml Poly	HNO3	Total Metals 6010C/7470A
1 - 125ml Poly	H2SO4	COD
1 - 250mL Poly	NONE	OPO4

WELL PURGING DATA

Date 8-5-15

Time Started 1239

Time Completed 1300

Well Depth (ft. BTOC) 29.50

Depth to Water (ft BTOC) 14.75

Actual Purge (liters) 5.0

Purge rate (liters/min) 0.33

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1242	1.0	14.75	23.12	0.155	1.27	2.54	330.1	18.8
1245	2.0	14.72	22.68	0.152	0.53	2.48	332.4	5.80
1248	3.0	14.73	22.88	0.153	0.33	2.73	317.2	4.81
1251	4.0	14.73	21.87	0.150	0.27	2.88	311.5	1.39
1254	5.0	14.74	21.90	0.150	0.24	2.59	326.6	1.23

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

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: IP Riegelwood Landfill

PROJECT NO. 31830291

SAMPLE NO. MW-1B

WELL NO. MW-1B

DATE/TIME COLLECTED 8-5-15 @ 1305

PERSONNEL J. Schlafer, Duncan Briley

SAMPLE METHOD Peristaltic pump with 1/8" tubing

SAMPLE MEDIA: Groundwater

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 40ml Amber	HCL	TOC
2 - 1L Poly	None	TDS, BOD, pH, Cond, Cl, F, NO3, SO4
1 - 1L Amber	H2SO4	TOX
1 - 500ml Poly	HNO3	Total Metals 6010C/7470A
1 - 125ml Poly	H2SO4	COD
1 - 250 mL Poly	NONE	OPO4

WELL PURGING DATA

Date 8-5-15

Time Started 1240

Time Completed 1320

Well Depth (ft. BTOC) 50'

Depth to Water (ft BTOC) 14.18

Actual Purge (liters) 5.4

Purge rate (liters/min) .300

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1240	—	14.18	—	—	—	—	—	—
1246	1.8	16.10	21.38	0.256	6.80	6.57	81.3	9.44
1249	2.7	16.87	21.79	0.258	6.67	6.56	83.0	8.61
1252	3.6	17.63	21.99	0.263	6.51	6.57	84.8	7.21
1255	4.5	18.60	22.46	0.266	6.39	6.57	86.3	6.32
1258	5.4	19.53	22.21	0.269	6.25	6.57	88.8	4.86

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. 31830291

SAMPLE NO. MW-4A

WELL NO. MW-4A

DATE/TIME COLLECTED 8-5-15/1530

PERSONNEL JEFF SCHLUTER, Duncan Briley

SAMPLE METHOD Peristaltic pump with 1/8" tubing

SAMPLE MEDIA: Groundwater

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 40ml Amber	HCL	TOC
2 - 1L Poly	None	TDS, BOD, pH, Cond, Cl, F, NO3, SO4
1 - 1L Amber	H2SO4	TOX
1 - 500ml Poly	HNO3	Total Metals 6010C/7470A
1 - 125ml Poly	H2SO4	COD
1-250mL Poly	NONE	OPOL

WELL PURGING DATA

Date 2-25-15

Time Started 1510

Time Completed 1530

Well Depth (ft. BTOC) 11.9

Depth to Water (ft BTOC) 5.82

Actual Purge (liters) 4.50

Purge rate (liters/min) 0.25

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1510	0	-	-	-	-	-	-	-
1516	1.50	6.02	24.41	0.176	1.08	4.91	-19.6	5.69
1519	2.25	5.98	24.19	0.174	1.25	4.89	-24.0	3.40
1522	3.00	6.00	24.12	0.174	1.28	4.89	-27.1	3.48
1525	3.75	6.03	24.23	0.176	1.27	4.89	-26.9	2.19
1528	4.50	6.04	23.91	0.176	1.22	4.85	-32.9	2.04

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. 3183029 (

SAMPLE NO. MW-5A

WELL NO. MW-5A

DATE/TIME COLLECTED 8-6-15/0925

PERSONNEL JEFF SCHLUTER
Duncan Briley

SAMPLE METHOD Peristaltic pump with 1/8" tubing

SAMPLE MEDIA: Groundwater

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 40ml Amber	HCL	TOC
1 - 1L Poly	None	TDS, BOD, pH, Cond, Cl, F, NO3, SO4
1 - 1L Amber	H2SO4	TOX
1 - 500ml Poly	HNO3	Total Metals 6010C/7470A
1 - 125ml Poly	H2SO4	COD
~~1-250mL Poly~~	~~None~~	~~OPO4~~ JHS

WELL PURGING DATA

Date 8-6-15

Time Started 0900

Time Completed 0925

Well Depth (ft. BTOC) 20'

Depth to Water (ft BTOC) 10.34'

Actual Purge (liters) 5.0

Purge rate (liters/min) 0.33

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
0900	0.0	10.34	–	–	–	–	–	–
0906	2.0	10.35	21.99	2.180	0.33	6.77	-155.9	50.1
0909	3.0	10.35	21.90	2.171	0.32	6.77	-171.9	11.1
0912	4.0	10.35	21.90	2.168	0.40	6.77	-174.6	4.59
0915	5.0	10.35	21.97	2.168	0.34	6.77	-178.1	3.51

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. 31830291

SAMPLE NO. MW-7A

WELL NO. MW-7A

DATE/TIME COLLECTED 8-5-15 / 1435

PERSONNEL Jeff Schlueter, Duncan Briley

SAMPLE METHOD Peristaltic pump with 1/8" tubing

SAMPLE MEDIA: Groundwater

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 40ml Amber	HCL	TOC
1 - 1L Poly	None	TDS, BOD, pH, Cond, Cl, F, NO3, SO4
1 - 1L Amber	H2SO4	TOX
1 - 500ml Poly	HNO3	Total Metals 6010C/7470A
1 - 125ml Poly	H2SO4	COD
1-250 ml Poly	NONE	OPO4

WELL PURGING DATA

Date: 8-5-15

Time Started: 1410

Time Completed: 1435

Well Depth (ft. BTOC): 13.00

Depth to Water (ft BTOC): 4.31

Actual Purge (liters): 5.25

Purge rate (liters/min): 0.25

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1410	0.0	4.31	-	-	-	-	-	-
1416	1.5	5.90	22.90	0.874	0.33	6.41	-64.8	19.7
1419	2.25	6.29	23.24	0.845	0.36	6.50	-51.7	22.3
1422	3.0	6.94	23.18	0.767	0.20	6.73	-76.1	31.2
1425	3.75	7.25	23.09	0.744	0.18	6.79	-83.5	17.3
1428	4.50	7.42	22.98	0.738	0.18	6.80	-85.0	15.2
1431	5.25	7.61	23.08	0.720	0.19	6.84	-75.5	13.3

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. 31830291

SAMPLE NO. MW-8A

WELL NO. MW-8A

DATE/TIME COLLECTED 8-5-15/1630

PERSONNEL JEFF SCHLUTER, Duncan Briley

SAMPLE METHOD Peristaltic pump with 1/8" tubing

SAMPLE MEDIA: Groundwater

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 40ml Amber	HCL	TOC
1 - 1L Poly	None	TDS, BOD, pH, Cond, Cl, F, NO3, SO4
1 - 1L Amber	H2SO4	TOX
1 - 500ml Poly	HNO3	Total Metals 6010C/7470A
1 - 125ml Poly	H2SO4	COD
1 - 250mL Poly	None	OPO4

WELL PURGING DATA

Date 8-5-15

Time Started 1610

Time Completed 1630

Well Depth (ft. BTOC) 12.50

Depth to Water (ft BTOC) 4.34

Actual Purge (liters) 0.25

Purge rate (liters/min) 3.75

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1610	0	4.34	–	–	–	–	–	–
1616	1.50	4.66	21.86	1.050	2.01	6.77	-114.5	41.9
1619	2.25	5.04	21.68	1.047	0.96	6.77	-121.5	69.1
1622	3.00	5.26	21.95	1.052	1.05	6.78	-124.2	61.1
1625	3.75	5.41	21.98	1.051	1.00	6.77	-121.0	37.6

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. 31830291

SAMPLE NO. Primary -1

WELL NO. Primary-1

DATE/TIME COLLECTED 8/6/15 @ 1100

PERSONNEL Duncan Briley

SAMPLE METHOD Peristaltic pump with 1/8" tubing

SAMPLE MEDIA: Groundwater

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 40ml Amber	HCL	TOC
4 - 1L Poly	None	TDS, BOD, pH, Cond, Cl, F, NO3, SO4
1 - 1L Amber	H2SO4	TOX
1 - 500ml Poly	HNO3	Total Metals 6010C/7470A
1 - 125ml Poly	H2SO4	COD

WELL PURGING DATA

Date 8/6/15

Time Started 1055

Time Completed 1105

Well Depth (ft. BTOC) NA

Depth to Water (ft BTOC) NA

Actual Purge (liters) NA

Purge rate (liters/min) NA

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1100	–	–	29.27	10.12	0.16	7.66	-445.8	21.3

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. 31830291

SAMPLE NO. Secondary -1

WELL NO. Secondary -1

DATE/TIME COLLECTED 8/6/15 @ ~~1120~~

PERSONNEL Duncan Briley

SAMPLE METHOD Peristaltic pump with 1/8" tubing

SAMPLE MEDIA: Groundwater

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 40ml Amber	HCL	TOC
1 - 1L Poly	None	TDS, BOD, pH, Cond, Cl, F, NO3, SO4
1 - 1L Amber	H2SO4	TOX
1 - 500ml Poly	HNO3	Total Metals 6010C/7470A
1 - 125ml Poly	H2SO4	COD

WELL PURGING DATA

Date 8/6/15

Time Started 1110

Time Completed 1130

Well Depth (ft. BTOC) NA

Depth to Water (ft BTOC) NA

Actual Purge (liters) NA

Purge rate (liters/min) NA

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1120	—	—						

NOT collected. Dry

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

* NOT COLLECTED, NO Volume in Secondary -1

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: IP Riegelwood Landfill

PROJECT NO. 31830291

SAMPLE NO. Primary - 2

WELL NO. Primary - 2

DATE/TIME COLLECTED 8/6/15 @ 1015

PERSONNEL Duncan Briley

SAMPLE METHOD Peristaltic pump with 1/8" tubing

SAMPLE MEDIA: Groundwater

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 40ml Amber	HCL	TOC
2 - 1L Poly	None	TDS, BOD, pH, Cond, Cl, F, NO3, SO4
1 - 1L Amber	H2SO4	TOX
1 - 500ml Poly	HNO3	Total Metals 6010C/7470A
1 - 125ml Poly	H2SO4	COD

WELL PURGING DATA

Date 8/6/15

Time Started 1010

Time Completed 1025

Well Depth (ft. BTOC) NA

Depth to Water (ft BTOC) NA

Actual Purge (liters) NA

Purge rate (liters/min) NA

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1015	NA	NA	30.19	2.700	9.87	6.67	-91.9	34.7

FIELD EQUIPMENT AND CALIBRATION

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

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: IP Riegelwood Landfill

PROJECT NO. 3B3029 1

SAMPLE NO. Secondary - 2

WELL NO. Secondary -2

DATE/TIME COLLECTED 8/6/15 @ 1035

PERSONNEL Duncan Briley

SAMPLE METHOD Peristaltic pump with 1/8" tubing

SAMPLE MEDIA: Groundwater

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 40ml Amber	HCL	TOC
2 - 1L Poly	None	TDS, BOD, pH, Cond, Cl, F, NO3, SO4
1 - 1L Amber	H2SO4	TOX
1 - 500ml Poly	HNO3	Total Metals 6010C/7470A
1 - 125ml Poly	H2SO4	COD

WELL PURGING DATA

Date 8/6/15

Time Started 1030

Time Completed 1640

Well Depth (ft. BTOC) NA

Depth to Water (ft BTOC) NA

Actual Purge (liters) NA

Purge rate (liters/min) NA

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
1035	—	—	28.94	3.447	2.56	7.041	-174.7	10.7

FIELD EQUIPMENT AND CALIBRATION

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

GENERAL COMMENTS

WATER SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: IP Riegelwood Landfill

PROJECT NO. 31830291

SAMPLE NO. Underdrain

WELL NO. Underdrain

DATE/TIME COLLECTED 8/6/15 @ 0950

PERSONNEL Duncan Briley

SAMPLE METHOD Peristaltic pump with 1/8" tubing

SAMPLE MEDIA: Groundwater

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
2 - 40ml Amber	HCL	TOC
4 - 1L Poly	None	TDS, BOD, pH, Cond, Cl, F, NO3, SO4
1 - 1L Amber	H2SO4	TOX
1 - 500ml Poly	HNO3	Total Metals 6010C/7470A
1 - 125ml Poly	H2SO4	COD
1-250 ml Poly	NONE	OPO4

WELL PURGING DATA

Date 8/6/15

Time Started 0945

Time Completed 1000

Well Depth (ft. BTOC) NA

Depth to Water (ft BTOC) NA

Actual Purge (liters) NA

Purge rate (liters/min) NA

FIELD MEASUREMENTS

Time	Amount Purged (Liters)	Depth to Water (ft)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	pH	Redox (mV)	Turbidity (NTUs)
0950	—	—	26.59	3.160	3.07	6.81	-133.0	19.5

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

Accutest Laboratories Southeast
Chain of Custody

ACCUTEST LABORATORIES

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 • FAX: 407-425-0707
www.accutest.com

Accutest JOB # PAGE 1 OF 1

Accutest Quote # SKIFF#

Client / Reporting Information

Company Name: AECOM
Address: 1600 Perimeter Park Dr. Ste 400
City: Morrisville State: NC Zip: 27560
Project Contact: martin.neyens-lee@aecom.com E-mail:
Phone#: 919-461-1100
Sampler(s) Name(s) (Printed): Jeff Schlotter

Project Information

Project Name: IP Riegelwood - Landfill
Street: John L. Riegel
City: Riegelwood State: NC
Project #: 31830291
Fax #: -
Client Purchase Order #:

Analytical Information

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe

Accutest Sample #	Field ID / Point of Collection	Collection DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NAOH+ZNAC	DI WATER	MEOH	TOC	BOD	TOX	SUM CHL, SO4, NO3, F, TKN, P	COD	Metals + Hg	O&G					LAB USE ONLY
	MW-1A	8-5	1300	JS	GW	8		3	2		1	2				2	1	1	1	1	1	1					
	MW-1B	8-5	1305	DB	GW	8		3	2		1	2				2	1	1	1	1	1	1					
	MW-4A	8-5	1530	DB	GW	8		3	2		1	2				2	1	1	1	1	1	1					
	~~MW-5A~~																										
	MW-7A	8-5	1435	JS	GW	8		3	2		1	2				2	1	1	1	1	1	1					
	MW-8A	8-5	1630	JS	GW	8		3	2		1	2				2	1	1	1	1	1	1					

TURNAROUND TIME (Business Days)

Approved By: / Rush Code

- [x] 10 Days Standard
- [ ] 7 Day RUSH
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [ ] OTHER

Emergency or Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

NOTE: See [illegible] request included

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished by :	Date Time:	Received By:
1 [signature]	8-5 1830	2 Fedex WIL	3		4
Relinquished by:	**Date Time:**	**Received By:**	**Relinquished by:**	**Date Time:**	**Received By:**
5		6	7		8

Lab Use Only: Custody Seal in Place: Y N Temp Blank Provided: Y N Preserved where Applicable: Y N Total # of Coolers: Cooler Temperature (s) Celsius:

Accutest Laboratories Southeast
Chain of Custody

ACCUTEST LABORATORIES

4405 Vineland Road, Suite C-15 Orlando, Fl 32811
TEL. 407-425-6700 • FAX: 407-425-0707
www.accutest.com

Accutest JOB # PAGE 1 OF 1

Accutest Quote # SKIFF#

Client / Reporting Information

Company Name: AECOM
Address: 11000 Perimeter Park Dr
City: Morrisville State: NC Zip:
Project Contact: Martha.meyers-lee@aecom.com E-mail:
Phone#: 919-461 1100
Sampler(s) Name(s) (Printed): Duncan Bailey / Jeff Schluter

Project Information

Project Name: JP Riegelwood - Landfill
Street: John L. Riegel
City: Riegelwood State: NC
Project #: 318302911
Fax #: –
Client Purchase Order #: –

Analytical Information

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe

Accutest Sample #	Field ID / Point of Collection	Date	Time	Sampled By	Matrix	Total # of Bottles	Other	None	HCl	NaOH	HNO3	H2SO4	NaOH+ZnAc	DI Water	MeOH	TOC	BOD	TOX	SW846 (Cl, SO4, NO3, F, TDS)	COD	Alkalinity + Hg	OPO4					Lab Use Only
	MW-5A	8/6	0925	JS	GW	7		2	2		1	2				2	1	1	1	1	1						
	Primary-1	8/6	1100	DB/JS	GW	7		2	2		1	2				2	1	1	1	1	1	*					
	~~Secondary-1~~	8/6		DB/JS	GW	7		2	2		1	2				2	1	1	1	1	1	*	NOT COLLECTED				
	Primary-2	8/6	1015	DB/JS	GW	7		2	2		1	2				2	1	1	1	1	1	*					
	Secondary-2	8/6	1035	DB/JS	GW	7		2	2		1	2				2	1	1	1	1	1	*					
	Underdrain	8/6	0950	DB/JS	GW	~~0958~~		3	2		1	2				2	1	1	1	1	1	1					

TURNAROUND TIME (Business Days)

Approved By: / Rush Code

- [x] 10 Days Standard
- [ ] 7 Day RUSH
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [ ] OTHER

Emergency or Rush T/A Data Available VIA Email or Lablink

Data Deliverable Information

- [ ] COMMERCIAL "A" (RESULTS ONLY)
- [ ] COMMERCIAL "B" (RESULTS PLUS QC)
- [ ] REDT1 (EPA LEVEL 3)
- [ ] FULT1 (EPA LEVEL 4)
- [ ] EDD'S

Comments / Remarks

-See kit request included.

* MW-1A, MW-1B, MW-4A, MW-7A, MW-8A received on 8-6-15 (shipped 8/5) should not be run for analysis OPO4

* Primary-1, ~~Secondary-1~~, Primary-2, Secondary-2 collect OPO4 from EPA 300 bottle

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date Time:	Received By:	Relinquished by :	Date Time:	Received By:
1 [signature]	8/6/15 1745	2 Fedex - WIL	3		4
Relinquished by:	**Date Time:**	**Received By:**	**Relinquished by:**	**Date Time:**	**Received By:**
5		6	7		8

Lab Use Only: Custody Seal in Place: Y N Temp Blank Provided: Y N Preserved where Applicable: Y N Total # of Coolers: Cooler Temperature (s) Celsius:

WX: 92°F, Hi = 99°F. High humidity.

1100: AECOM arrive on site.
- Duncan Briley (DJB)
- Jeff Schlotz (JHS)
- obtain JHS card from contractor gate.

1130: Grab lunch.

1200: Return to site, Contact, Wallace Coverdale to inform on site, Leave voice message. Prep for GW Sample.
- Samples will be collected for:
  - 2-40mL VOA Amber for TOC
  - 1-1L plastic, NONE, for CH_4, SO_4, NO_3F, TDS pH, SLOW
  - 1-250mL Amber w/ H_2SO_4, TOX
  - 1-1L Plastic, NONE, BOD
  - 1-250mL plastic, NONE, OPO4
  - 1-250mL w/ H_2SO_4, COD
  - 1-500mL Plastic w/ HNO_3
- Equipment: 2 peristalic pump, 2-YSI 556 w/ flow cell, 2 HACH Turbidity Meter, 2 100' Solinst WLM, NEW .17 X .25 poly tubing.
- Field parameters of: pH (SU), Temp °C, →

→ COND (mS/cm), DO (mg/L), ORP (mV), Turbidity (NTU) will be collected and recorded on seperate field sheet for each well.
- Well's to be sampled: MW-1A, MW-1B, MW-4A, MW-5A, MW-7A, MW-8A, Cell 1 Primary : Secondary, Cell 2 primary : Secondary, and underdrain.

Well ID	DTW	DTB	NOTES
MW-1A	14.75	29.5	
MW-1B	14.18	50	
MW-4A	5.82	11.9	
MW-4B	3.50	25.17	
MW-5A	10.34	20	
MW-5B	11.14	29	
MW-7A	4.31	13	
MW-7B	3.98	24.73	
MW-8A	4.34	12.51	
MW-8B	3.29	25	

- Samples will be held on ice for shipment to Accutest SE in lab supply Cooler under signed COC, via Fedex Priority overnight out of Wilmington, NC.

1230: Begin GW Sample.

Location Riegelwood, NC Date 8-5-15

Project / Client Landfill

August 2015 GWM

1630: Complete GW sample for the day due to impending T-storm. -DJB/JHS exit Landfill, Site Secure. Mobilize to BP Station.

1730: Samples are packed on ice as previously described. JHS departs for Fedex, Wilmington, NC.

1800: JHS ship d coolers.

Location Riegelwood, NC Date 8-6-15

Project / Client Landfill

August 2015 GWM

0830: AECOM on site.
WX: 80°F, Hi: 93°F.
Task: Complete Landfill GWM, as described on page 40-41 of this book.

0840: Discuss H&S. Mobilize to MW-5A to continue GWM

0945: Enter landfill to collect leachate samples.
NOTE: OPO4 was inadvertently collected for samples MW-1A, MW-1B, MW-4A, MW-7A, MW-8A. DJB will notify lab to not run analysis. Due to lack of ~~500~~ 250mL unpreserved OPO4 bottles DJB will notify lab to collect OPO4 analysis from ESA 300 bottle.

1130: Complete Landfill sampling. Exit Landfill. Will mobilize to main gate. Prep for FD Seep. Samples will be held on ice for shipment.

NOTE: Secondary 1 dry. No sample collected