INTERNATIONAL PAPER
TICONDEROGA MILL LANDFILL

2019 ANNUAL REPORT FORM

MSW, INDUSTRIAL OR ASH LANDFILL ANNUAL/QUARTERLY REPORT

Submit the Annual Report no later than March 1, 2020.

A. **This annual/quarterly report is for the year of operation from** January 01, 2019 **to** December 31, 2019

B. **Quarterly Report for:** ☐ Quarter 1 ☐ Quarter 2 ☐ Quarter 3 ☐ Quarter 4

SECTION 1 – FACILITY INFORMATION

FACILITY INFORMATION

FACILITY NAME:			
Ticonderoga Mill Landfill			
FACILITY LOCATION ADDRESS:	**FACILITY CITY:**	**STATE:**	**ZIP CODE:**
568 Shore Airport RD	Ticonderoga	NY	12883
FACILITY TOWN:	**FACILITY COUNTY:**	**FACILITY PHONE NUMBER:**	
Ticonderoga	Essex	(518)585-5300	
FACILITY NYS PLANNING UNIT: (A list of NYS Planning Units can be found at the end of this report). Essex County		**NYSDEC REGION #:** 5	

360 PERMIT #:	DATE ISSUED:	DATE EXPIRES:	NYS DEC ACTIVITY CODE OR REGISTRATION NUMBER:
5-1548-00008/00005	11/03/2017	2/29/2028	16N18

FACILITY CONTACT:	☐ public ☒ private	CONTACT PHONE NUMBER:	CONTACT FAX NUMBER:
Hannah Felts		518-585-5393	901-334-3645
CONTACT EMAIL ADDRESS: Hannah.Felts@ipaper.com			

OWNER INFORMATION

OWNER NAME:	OWNER PHONE NUMBER:	OWNER FAX NUMBER:	
International Paper	518-585-5300	901-334-3645	
OWNER ADDRESS:	**OWNER CITY:**	**STATE:**	**ZIP CODE:**
568 Shore Airport Rd	Ticonderoga	NY	12883
OWNER CONTACT:	**OWNER CONTACT EMAIL ADDRESS:**		
Hannah Felts	Hannah.Felts@ipaper.com		

OPERATOR INFORMATION

OPERATOR NAME: ☒ *same as owner*	☐ public ☒ private

PREFERENCES

Preferred address to receive correspondence:	☒ *Facility location address*	☐ *Owner address*
☐ *Other (provide):*		
Preferred email address:	☒ *Facility Contact*	☐ *Owner Contact*
☐ *Other (provide):*		
Preferred individual to receive correspondence:	☒ *Facility Contact*	☐ *Owner Contact*
☐ *Other (provide):*		

Did you operate in 2019? ☒ Yes; Complete this form.

☐ No; Complete and submit Sections 1 and 23. If you no longer plan to operate and wish to relinquish your permit/registration associated with this solid waste management activity, also complete the "Inactive Solid Waste Management Facility or Activity Notification Form" located at: http://www.dec.ny.gov/chemical/52706.html .

SECTION 2 - SITE LIFE

1. Landfill Capacity Utilized Last Year (reporting year).

   a. What is the estimated landfill capacity that was utilized during the reporting year?

   133,710 Cubic Yards of Airspace

   Please do not report units as pounds per cubic yard.

   b. What is the estimated in-situ waste density for the reporting year?

   0.9 Tons/Cubic Yard

2. Remaining Constructed Capacity

   a. What is the remaining capacity of the landfill that is already constructed?

   1,175,012 Cubic Yards of Airspace

   b. What is the estimated remaining life of the constructed capacity?

   10 Years 6 Months

   at 114,658.2 Tons/Year.*

   *Please note that this tonnage rate must include all materials placed in the landfill, i.e., waste, soil, cover, alternative daily covers, etc.

   c. The tonnage rate reported under 2.b. is based on (select one):

   _____ The amount of materials placed in the landfill in the reporting year

   x Estimated future disposal

   _____ Permit limit

   Other (explain): _____

3. Permitted Capacity Still to be Constructed

   a. What is the remaining but not yet constructed landfill capacity that is authorized by a Part 360 permit?

   2,838,373 Cubic Yards of Airspace

   b. What is the projected life of capacity reported in 3.a?

   22 Years 3.6 Months

   at 114,658.2 Tons/Year.*

   *Please note that this tonnage rate must include all materials disposed in the landfill, i.e., waste, and soil and alternative daily covers.

   c. The tonnage rate reported under 3.b. is based on (select one):

   _____ The amount of materials placed in the landfill in the reporting year

   x Estimated future disposal

   _____ Permit limit

   Other (explain): _____

4. Capacity Proposed in a Part 360 Permit Application

What is the capacity of any expansion proposed in a Part 360 permit application that has been submitted to the Department but not authorized by a permit as of the end of the reporting period?

N/A _____ Cubic Yards of Airspace

5. Estimated Potential Future Capacity Not Permitted or in an Application (optional)

What is the estimated capacity of any potential future expansion at the facility that is not yet authorized by a permit or proposed in a Part 360 permit application that has been submitted to the Department?

N/A _____ Cubic Yards of Airspace

SECTION 3 - PRIMARY LEACHATE

Name of off-site leachate treatment facility(s) utilized: N/A

Does the landfill have a constructed liner and a leachate collection system? ☒ Yes ☐ No

Enter the quantity of primary leachate that was collected, removed for on-site and off-site treatment, and recirculated each month, and the corresponding **Acreage, by Cell**:
(Note: For double-lined landfills this should not include the volume of leachate collected from secondary leachate collection and removal systems.)

For **each cell**, please report the **acreage** and the **primary leachate** amount.

	PRIMARY LEACHATE COLLECTED (GALLONS)						PRIMARY LEACHATE TREATED OFF SITE (GALLONS)					
	Area II/III 63.11Acres	Area IV Cell 1 8.29 Acres	Area IV Cell 2 6.7 Acres	Area V Cell 1 5.39 Acres	Area V Cell 2 4.73 Acres	Area V Cell 3 5.22 Acres	Cell 1 ___Acres	Cell 2 ___Acres	Cell 3 ___Acres	Cell 4 ___Acres	Cell 5 ___Acres	Cell 6 ___Acres
January	1,199,587	481,044	448,898	24,489	81,405	184,769	-	-	-	-	-	-
February	811,653	628,400	601,684	13,781	54,766	237,684	-	-	-	-	-	-
March	969,293	630,612	517,171	20,440	49,232	213,030	-	-	-	-	-	-
April	2,269,045	678,959	579,483	29,584	100,029	273,896	-	-	-	-	-	-
May	2,242,567	514,358	495,157	26,736	23,309	184,115	-	-	-	-	-	-
June	1,509,625	516,504	659,233	28,811	50,673	101,964	-	-	-	-	-	-
July	815,789	127,275	212,423	13,503	19,180	23,915	-	-	-	-	-	-
August	478,614	130,338	172,032	15,009	15,138	30,261	-	-	-	-	-	-
September	353,915	73,690	98,644	3,547	14,114	18,624	-	-	-	-	-	-
October	788,243	624,602	640,538	28,849	55,807	144,214	-	-	-	-	-	-
November	1,407,742	997,699	1,085,474	32,343	97,949	285,214	-	-	-	-	-	-
December	1,259,864	438,339	418,626	27,560	64,559	225,732	-	-	-	-	-	-
ANNUAL	14,105,937	5,841,820	5,929,363	264,652	626,161	1,923,418	-	-	-	-	-	-

	PRIMARY LEACHATE RECIRCULATED (GALLONS)						PRIMARY LEACHATE TREATED ON SITE (GALLONS)					
	Cell 1 ___Acres	Cell 2 ___Acres	Cell 3 ___Acres	Cell 4 ___Acres	Cell 5 ___Acres	Cell 6 ___Acres	Area II/III 63.11Acres	Area IV Cell 1 8.29 Acres	Area IV Cell 2 6.7 Acres	Area V Cell 1 5.39 Acres	Area V Cell 2 4.73 Acres	Area V Cell 3 5.22 Acres
January	-	-	None	-	-	-	1,199,587	481,044	448,898	24,489	81,405	184,769
February	-	-	-	-	-	-	811,653	628,400	601,684	13,781	54,766	237,684
March	-	-	-	-	-	-	969,293	630,612	517,171	20,440	49,232	213,030
April	-	-	-	-	-	-	2,269,045	678,959	579,483	29,584	100,029	273,896
May	-	-	-	-	-	-	2,242,567	514,358	495,157	26,736	23,309	184,115
June	-	-	-	-	-	-	1,509,625	516,504	659,233	28,811	50,673	101,964
July	-	-	-	-	-	-	815,789	127,275	212,423	13,503	19,180	23,915
August	-	-	-	-	-	-	478,614	130,338	172,032	15,009	15,138	30,261
September	-	-	-	-	-	-	353,915	73,690	98,644	3,547	14,114	18,624
October	-	-	-	-	-	-	788,243	624,602	640,538	28,849	55,807	144,214
November	-	-	-	-	-	-	1,407,742	997,699	1,085,474	32,343	97,949	285,214
December	-	-	-	-	-	-	1,259,864	438,339	418,626	27,560	64,559	225,732
ANNUAL	-	-	-	-	-	-	14,105,937	5,841,820	5,929,363	264,652	626,161	1,923,418

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	PRIMARY LEACHATE COLLECTED (GALLONS)						PRIMARY LEACHATE TREATED OFF SITE (GALLONS)					
	Area VI 22.93Acres	Cell 2 ___Acres	Cell 3 ___Acres	Cell 4 ___Acres	Cell 5 ___Acres	Cell 6 ___Acres	Cell 1 ___Acres	Cell 2 ___Acres	Cell 3 ___Acres	Cell 4 ___Acres	Cell 5 ___Acres	Cell 6 ___Acres
January	675,954	-	-	-	-	-	-	-	NONE	-	-	-
February	618,589	-	-	-	-	-	-	-	-	-	-	-
March	856,650	-	-	-	-	-	-	-	-	-	-	-
April	1,583,798	-	-	-	-	-	-	-	-	-	-	-
May	1,259,199	-	-	-	-	-	-	-	-	-	-	-
June	2,337,861	-	-	-	-	-	-	-	-	-	-	-
July	632,934	-	-	-	-	-	-	-	-	-	-	-
August	1,566,402	-	-	-	-	-	-	-	-	-	-	-
September	577,365	-	-	-	-	-	-	-	-	-	-	-
October	2,516,609	-	-	-	-	-	-	-	-	-	-	-
November	6,023,503	-	-	-	-	-	-	-	-	-	-	-
December	1,002,838	-	-	-	-	-	-	-	-	-	-	-
ANNUAL	19,651,702	-	-	-	-	-	-	-	-	-	-	-

	PRIMARY LEACHATE RECIRCULATED (GALLONS)						PRIMARY LEACHATE TREATED ON SITE (GALLONS)					
	Cell 1 ___Acres	Cell 2 ___Acres	Cell 3 ___Acres	Cell 4 ___Acres	Cell 5 ___Acres	Cell 6 ___Acres	Area VI 22.93 Acres	Cell 2 ___Acres	Cell 3 ___Acres	Cell 4 ___Acres	Cell 5 ___Acres	Cell 6 ___Acres
January	-	-	-	-	-	-	675,954	-	-	-	-	-
February	-	-	-	-	-	-	618,589	-	-	-	-	-
March	-	-	-	-	-	-	856,650	-	-	-	-	-
April	-	-	-	-	-	-	1,583,798	-	-	-	-	-
May	-	-	-	-	-	-	1,259,199	-	-	-	-	-
June	-	-	-	-	-	-	2,337,861	-	-	-	-	-
July	-	-	-	-	-	-	632,934	-	-	-	-	-
August	-	-	-	-	-	-	1,566,402	-	-	-	-	-
September	-	-	-	-	-	-	577,365	-	-	-	-	-
October	-	-	-	-	-	-	2,516,609	-	-	-	-	-
November	-	-	-	-	-	-	6,023,503	-	-	-	-	-
December	-	-	-	-	-	-	1,002,838	-	-	-	-	-
ANNUAL	-	-	-	-	-	-	19,651,702	-	-	-	-	-

Submit (attached to this form) a copy of the maintenance logs which document compliance with the Operation and Maintenance Manual's schedule for the routine annual flushing and inspection of the primary leachate collection and removal system. List required submissions that have been attached to this form or the reason for not attaching a required piece of information:

Annual flushing of primary leachate collection piping in Areas II/III, IV, V & VI was conducted in November 2019. See attached document.

Submit (attached to this form) a tabulated compilation of the semi-annual primary leachate quality data collected throughout the year including a summary comparing this year's data with the previous year's data and a summary discussion of results. This list should identify sample location(s) and method of analysis. List required submissions that have been attached to this form or the reason for not attaching a required piece of information:

See data contained in attached Delaware Engineering Annual Report.

SECTION 4 - SECONDARY LEACHATE

Does landfill have a double liner system with a secondary leachate collection and removal system? ☒ Yes ☐ No

Submit (attached to this form) a tabulated compilation of the semi-annual secondary leachate quality data collected throughout the year including a summary comparing this year's data with all previous years' data and a summary discussion of results. This list should identify sample location(s) and methods of analysis. List required submissions that have been attached to this form or the reason for not attaching a required piece of information:

See data contained in attached Delaware Engineering Annual Report. Double liner system with secondary leachate collection and removal system only present in Areas IV, V, & VI.

Please report total cost for the year, not cost/gal.

Leachate Cost: (including transportation if appropriate) during the calendar year for leachate treatment: $ N/A

Total quantity treated: N/A gal

Enter the quantity of secondary leachate that was collected, removed for on-site and off-site treatment, and recirculated each month, and the corresponding **Acreage, by Cell**:

For **each cell**, please report the **acreage** and the **secondary leachate** amount.

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	SECONDARY LEACHATE COLLECTED (GALLONS)						SECONDARY LEACHATE TREATED OFF SITE (GALLONS)					
	Area IV Cell 1 8.29 Acres	Area IV Cell 2 6.7 Acres	Area V Cell 1 5.39 Acres	Area V Cell 2 4.73 Acres	Area V Cell 3 5.22 Acres	Area VI 22.93 Acres	Cell 1 ___Acres	Cell 2 ___Acres	Cell 3 ___Acres	Cell 4 ___Acres	Cell 5 ___Acres	Cell 6 ___Acres
January	0	0	0	1,225	1,510	0	-	-	-	-	-	-
February	0	0	2,315	806	1,502	39	-	-	-	-	-	-
March	27	55	1,138	1,294	1,717	54	-	-	-	-	-	-
April	0	0	3,007	3,871	3,035	0	-	-	-	-	-	-
May	0	0	3,622	4,911	2,718	0	-	-	-	-	-	-
June	43	238	2,378	1,607	1,592	56	-	-	-	-	-	-
July	0	0	857	0	0	0	-	-	-	-	-	-
August	0	0	1,722	0	0	3,038	-	-	-	-	-	-
September	40	65	33	56	36	844	-	-	-	-	-	-
October	0	14	264	2,630	1,483	2,718	-	-	-	-	-	-
November	0	805	2,046	4,002	3,033	1,065	-	-	-	-	-	-
December	43	281	2,774	2,454	3,050	1,125	-	-	-	-	-	-
ANNUAL	153	1,458	20,156	22,856	19,676	8,939	-	-	-	-	-	-

	SECONDARY LEACHATE RECIRCULATED (GALLONS)						SECONDARY LEACHATE TREATED ON SITE (GALLONS)					
	Cell 1 ___Acres	Cell 2 ___Acres	Cell 3 ___Acres	Cell 4 ___Acres	Cell 5 ___Acres	Cell 6 ___Acres	Area IV Cell 1 8.29 Acres	Area IV Cell 2 6.7 Acres	Area V Cell 1 5.39 Acres	Area V Cell 2 4.73 Acres	Area V Cell 3 5.22 Acres	Area VI 22.93Acres
January	-	-	NONE	-	-	-	0	0	0	1,225	1,510	0
February	-	-	-	-	-	-	0	0	2,315	806	1,502	39
March	-	-	-	-	-	-	27	55	1,138	1,294	1,717	54
April	-	-	-	-	-	-	0	0	3,007	3,871	3,035	0
May	-	-	-	-	-	-	0	0	3,622	4,911	2,718	0
June	-	-	-	-	-	-	43	238	2,378	1,607	1,592	56
July	-	-	-	-	-	-	0	0	857	0	0	0
August	-	-	-	-	-	-	0	0	1,722	0	0	3,038
September	-	-	-	-	-	-	40	65	33	56	36	844
October	-	-	-	-	-	-	0	14	264	2,630	1,483	2,718
November	-	-	-	-	-	-	0	805	2,046	4,002	3,033	1,065
December	-	-	-	-	-	-	43	281	2,774	2,454	3,050	1,125
ANNUAL	-	-	-	-	-	-	153	1,458	20,156	22,856	19,676	8,939

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	SECONDARY LEACHATE COLLECTED (GALLONS)						SECONDARY LEACHATE TREATED OFF SITE (GALLONS)					
	Area IV LB 0.43 Acres	Area IV Cell 2 6.7 Acres	Cell 3 ___Acres	Cell 4 ___Acres	Cell 5 ___Acres	Cell 6 ___Acres	Cell 1 ___Acres	Cell 2 ___Acres	Cell 3 ___Acres	Cell 4 ___Acres	Cell 5 ___Acres	Cell 6 ___Acres
January	0	0					-	-	-	-	-	-
February	0	0					-	-	-	-	-	-
March	0	0					-	-	-	-	-	-
April	0	0					-	-	-	-	-	-
May	0	0					-	-	-	-	-	-
June	0	0					-	-	-	-	-	-
July	0	0					-	-	-	-	-	-
August	0	0					-	-	-	-	-	-
September	0	130					-	-	-	-	-	-
October	0	0					-	-	-	-	-	-
November	0	0					-	-	-	-	-	-
December	0	0					-	-	-	-	-	-
ANNUAL	0	130					-	-	-	-	-	-

	SECONDARY LEACHATE RECIRCULATED (GALLONS)						SECONDARY LEACHATE TREATED ON SITE (GALLONS)					
	Cell 1 ___Acres	Cell 2 ___Acres	Cell 3 ___Acres	Cell 4 ___Acres	Cell 5 ___Acres	Cell 6 ___Acres	Area IV LB 0.43 Acres	Area IV Cell 2 6.7 Acres	Cell 3 ___Acres	Cell 4 ___Acres	Cell 5 ___Acres	Cell 6 ___Acres
January	-	-	-	-	-	-	0	0				
February	-	-	-	-	-	-	0	0				
March	-	-	-	-	-	-	0	0				
April	-	-	-	-	-	-	0	0				
May	-	-	-	-	-	-	0	0				
June	-	-	-	-	-	-	0	0				
July	-	-	-	-	-	-	0	0				
August	-	-	-	-	-	-	0	0				
September	-	-	-	-	-	-	0	130				
October	-	-	-	-	-	-	0	0				
November	-	-	-	-	-	-	0	0				
December	-	-	-	-	-	-	0	0				
ANNUAL	-	-	-	-	-	-	0	130				

SECTION 5 – BENEFICIAL USE DETERMINATION MATERIALS AND ALTERNATIVE OPERATING COVER MATERIALS

For each type of waste material that the Department has approved for use as alternative operating cover (AOC), intermediate cover, or other landfill material, provide the annual weight in tons, use (i.e., operating cover, intermediate cover, etc.), and source of material. (If material is from a solid waste facility also provide facility name, address, NYS Planning Unit, County/ Province, and State/Country.) **Refer to the list of NYS Planning Units that can be found at the end of this report.**

Type of Solid Waste	Weight (tons/year)	Use	NYS Planning Unit (See Attached List of NYS Planning Units)	County or Province	State or Country	Source (Facility and Address)
Aggregate/Concrete						
Contaminated Soil						
Foundry Sand						
Glass						
Industrial Waste (specify)						
MSW Ash						
Wood Ash	3,348	Alternative Sludge Bulking Material	Essex County	Essex County	NY	International Paper, 568 Shore Airport Rd, Ticonderoga, NY
Paper Mill Sludge						
Processed C&D						
Waste Tire-Derived Aggregate /						
Waste Tires						
Other (specify) Flume Grit	10,340	Alternative Daily Trash Cover	Essex County	Essex County	NY	International Paper, 568 Shore Airport Rd, Ticonderoga, NY
Total AOC	10,340					
Total Beneficial Use Determination Materials	13,688					

Percent Alternative Operating Cover (AOC) Calculation

AOC Calculations: Total Tons AOC/Total Tons Waste Disposed x 100 = 16.4%

Please note the calculation **is**: Tons AOC (from table above)/Tons Solid Waste (from table in Section 6) x 100 and **Not**: Tons AOC / (Tons Solid Waste + AOC) x 100

SECTION 6 - SOLID WASTE DISPOSED

Provide the tonnages of solid waste disposed. Exclude Beneficial Use Material amounts reported in Section 5 and Recyclable Material amounts reported in Section 8. Specify the methods used to measure the quantities disposed and the percentages measured by each method:

0 % Scale Weight

100 % Truck Count

0 % Estimated

0 % Other (Specify: _____)

Type of Solid Waste	January (tons)	February (tons)	March (tons)	April (tons)	May (tons)	June (tons)	July (tons)
Asbestos							
Ash (Coal)							
Ash (MSW Energy Recovery)							
Construction & Demolition Debris (mixed)							
Industrial Waste (Including Industrial Process Sludges)	5,628	4,735	6,647	8,708	4,083	4,333	4,627
Mixed Municipal Solid Waste (Residential, Institutional & Commercial)							
Oil/Gas Drilling Waste							
Petroleum Contaminated Soil							
Sewage Treatment Plant Sludge							
Treated Regulated Medical Waste							
Emergency Authorization Waste (Storm Debris)							
Other (specify)							
Total Tons Disposed	5,628	4,735	6,647	8,708	4,083	4,333	4,627

SECTION 6 - SOLID WASTE DISPOSED (continued)

Type of Solid Waste	Tip Fee ($/Ton)	August (tons)	September (tons)	October (tons)	November (tons)	December (tons)	Total Year (tons)	Daily Avg. (tons)
Asbestos								
Ash (Coal)								
Ash (MSW Energy Recovery)								
Construction & Demolition Debris (mixed)								
Industrial Waste (Including Industrial Process Sludges)	N/A	3,593	5,431	5,145	4,312	5,734	62,975	172.5
Mixed Municipal Solid Waste (Residential, Institutional & Commercial)								
Oil/Gas Drilling Waste								
Petroleum Contaminated Soil								
Sewage Treatment Plant Sludge								
Treated Regulated Medical Waste								
Emergency Authorization Waste (Storm Debris)								
Other (specify)								
Total Tons Disposed		3,593	5,431	5,145	4,312	5,734	62,975	172.5

SECTION 7 – SERVICE AREA OF SOLID WASTE RECEIVED

Please identify where the waste is coming from. The total tons received reported below should equal the total tons received in Section 6 (Solid Waste Disposed). DO NOT REPORT IN CUBIC YARDS!

- If the waste ***WAS*** received from another solid waste management facility, please write in the name *and* address of the facility along with the appropriate state, county and planning unit/municipality.
- If the waste ***WAS NOT*** received from another solid waste management facility, please write in "***Direct Haul***" along with the appropriate state, county and planning unit/municipality where the waste was generated.

Specify transport method and percentages of total waste transported by each:

100 % Road 0 % Rail 0 % Water 0 % Other (specify:_____)

Explain which waste types and service areas below are included in these transport methods Only Industrial Waste transported to the Landfill from International Paper, Ticonderoga, NY

SERVICE AREA OF SOLID WASTE RECEIVED					
TYPE OF SOLID WASTE	**SOLID WASTE MANAGEMENT FACILITY FROM WHICH IT WAS RECEIVED (Name & Address) OR "Direct Haul"**	**SERVICE AREA STATE OR COUNTRY**	**SERVICE AREA COUNTY OR PROVINCE**	**SERVICE AREA NYS PLANNING UNIT (See Attached List of NYS Planning Units)**	**TONS RECEIVED**
Asbestos					
Ash (Coal)					
Ash (MSW Energy Recovery)					
Construction & Demolition Debris (mixed)					

SERVICE AREA OF SOLID WASTE RECEIVED					
TYPE OF SOLID WASTE	SOLID WASTE MANAGEMENT FACILITY FROM WHICH IT WAS RECEIVED (Name & Address) OR "Direct Haul"	SERVICE AREA STATE OR COUNTRY	SERVICE AREA COUNTY OR PROVINCE	SERVICE AREA NYS PLANNING UNIT (See Attached List of NYS Planning Units)	TONS RECEIVED
Industrial Waste (Including Industrial Process Sludges)	Direct Haul	NY	Essex County	Essex County	62,975
Mixed Municipal Solid Waste (Residential, Institutional & Commercial)					
Oil/Gas Drilling Waste					
Petroleum Contaminated Soil					
Sewage Treatment Plant Sludge					
Treated Regulated Medical Waste (TRMW)*					
Emergency Authorization Waste (Storm Debris)					
Other (specify)					
				TOTAL RECEIVED (tons):	62,975

* List generators that provide you Certificates of Treatment forms and quantities of TRMW from each N/A

Reprinted (12/19)

SECTION 8 –LANDFILL RECYCLABLE & RECOVERED MATERIALS

Is your facility also a permitted or registered Recyclables Handling & Recovery Facility?

☐ Yes; Complete Section 9 for material recovered from the mixed solid waste stream. Complete a Recyclables Handling & Recovery Facility (RHRF) form for material received as source separated. The RHRF form is located at: http://www.dec.ny.gov/chemical/52706.html .

■ No; Complete Section 9 for material recovered from the mixed solid waste stream and for material received as source separated.

A. Service Area of Recyclable Material Received

Please identify where the recyclable materials are coming from. DO NOT REPORT IN CUBIC YARDS!

- If the materials ***WERE*** received from another solid waste management facility, please write in the name and address of the facility along with the appropriate state, county and planning unit/municipality.
- If the materials ***WERE NOT*** received from another solid waste management facility, please write in "***Direct Haul***" along with the appropriate state, county and planning unit/municipality where the recyclables were generated.

Specify transport method, list type of material(s) and percentages of total waste transported by each:

_____% Road: Waste Type(s):_____ _____% Rail: Waste Type(s):_____

_____% Water: Waste Type(s):_____ _____% Other (specify: _____): Waste Type(s):_____

SERVICE AREA OF RECYCLABLE MATERIAL RECEIVED					
MATERIAL	SOLID WASTE MANAGEMENT FACILITY FROM WHICH IT WAS RECEIVED (Name & Address) OR "Direct Haul"	SERVICE AREA STATE OR COUNTRY	SERVICE AREA COUNTY OR PROVINCE	SERVICE AREA NYS PLANNING UNIT (See Attached List of NYS Planning Units)	TONS RECEIVED
Commingled Containers (metal, glass, plastic)					
Commingled Paper (all grades)					
Single Stream (total)					
Brush, Branches, Trees, & Stumps					
Food Scraps					
Yard Waste (curbside)					
Other (specify)					
				TOTAL RECEIVED (tons):	None

SECTION 8 – LANDFILL RECYCLABLE & RECOVERED MATERIALS

B. Material Recovered

Identify the name of the destination facility to which the material was sent from your facility, the corresponding State/Country, the County/Province, the NYS Planning Unit, and the amount of material transported. **Refer to the list of NYS Planning Units that can be found at the end of this report.** DO NOT REPORT IN CUBIC YARDS!

Specify transport method and percentages of total material transported by each:

100 % Road 0 % Rail 0 % Water 0 % Other (specify: _____)

Explain which materials and destinations below are included in these transport methods All materials below were generatad at International Paper, Pulp & Paper mill in Ticonderoga, NY and recovered at mill for recycling.

PAPER RECOVERED					
RECOVERED MATERIAL	**DESTINATION (Name & Address)**	**DESTINATION STATE OR COUNTRY**	**DESTINATION COUNTY OR PROVINCE**	**DESTINATION NYS PLANNING UNIT (See Attached List of NYS Planning Units)**	**TONS RECOVERED (out of facility)**
Commingled Paper (all grades)					
Corrugated Cardboard	Perkins Recycling, Corinth Rd., Queensbury, NY	NY	Warren County	Warren County	215.1
	Northstar Recycling Company	MA	Hampden	N/A	889.7
Junk Mail					
Magazines					
Newspaper					
Office Paper	Perkins Recycling, Corinth Rd., Queensbury, NY	NY	Warren County	Warren County	272.08
	Northstar Recycling Company	MA	Hampden	N/A	1,695.1
Paperboard / Boxboard					
Other Paper (specify)					
TOTAL PAPER RECOVERED (tons):					3,072

SECTION 8 – LANDFILL RECYCLABLE & RECOVERED MATERIALS (continued)

B. Material Recovered

GLASS RECOVERED					
RECOVERED MATERIAL	DESTINATION (Name & Address)	DESTINATION STATE OR COUNTRY	DESTINATION COUNTY OR PROVINCE	DESTINATION NYS PLANNING UNIT (See Attached List of NYS Planning Units)	TONS RECOVERED (out of facility)
Container Glass					
Industrial Scrap Glass					
Other Glass (specify)					
				TOTAL GLASS RECOVERED (tons):	

METAL RECOVERED					
RECOVERED MATERIAL	DESTINATION (Name & Address)	DESTINATION STATE OR COUNTRY	DESTINATION COUNTY OR PROVINCE	DESTINATION NYS PLANNING UNIT (See Attached List of NYS Planning Units)	TONS RECOVERED (out of facility)
Aluminum Foil / Trays					
Bulk Metal (from MSW)					
Bulk Metal (from CD debris)					
Enameled Appliances / White Goods					
Industrial Scrap Metal	NH Kelman, Geer St., Glens Falls, NY	NY	Warren County	Warren County	191.56
Tin & Aluminum Containers					
Other Metal (specify)					
				TOTAL METAL RECOVERED (tons):	191.56

SECTION 8 – LANDFILL RECYCLABLE & RECOVERED MATERIALS (continued)

B. Material Recovered

PLASTIC RECOVERED					
RECOVERED MATERIAL	DESTINATION (Name & Address)	DESTINATION STATE OR COUNTRY	DESTINATION COUNTY OR PROVINCE	DESTINATION NYS PLANNING UNIT (See Attached List of NYS Planning Units)	TONS RECOVERED (out of facility)
Mixed Plastic (#1 - #7)					
PET (plastic #1)					
HDPE (plastic #2)					
Other Rigid Plastics (#3 - #7)					
Industrial Scrap Plastic					
Plastic Film & Bags					
Other Plastics (specify)					
				TOTAL PLASTIC RECOVERED (tons):	None

SECTION 8 – LANDFILL RECYCLABLE & RECOVERED MATERIALS (continued)

B. Material Recovered

MIXED MATERIAL RECOVERED					
RECOVERED MATERIAL	DESTINATION (Name & Address)	DESTINATION STATE OR COUNTRY	DESTINATION COUNTY OR PROVINCE	DESTINATION NYS PLANNING UNIT (See Attached List of NYS Planning Units)	TONS RECOVERED (out of facility)
Commingled Containers (metal, glass, plastic)					
Commingled Paper & Containers					
Single Stream (total)					
Other (specify)					
				TOTAL MIXED MATERIAL RECOVERED (tons):	None

SECTION 8 – LANDFILL RECYCLABLE & RECOVERED MATERIALS (continued)

B. Material Recovered

MISCELLANEOUS MATERIAL RECOVERED					
RECOVERED MATERIAL	DESTINATION (Name & Address)	DESTINATION STATE OR COUNTRY	DESTINATION COUNTY OR PROVINCE	DESTINATION NYS PLANNING UNIT (See Attached List of NYS Planning Units)	TONS RECOVERED (out of facility)
Electronics					
Textiles					
Brush, Branches, Trees, & Stumps					
Food Scraps					
Yard Waste (curbside)					
Other (specify)					
Wood Bark	International Paper, 568 Shore Airport Rd, Ticonderoga, NY	NY	Essex	Essex County	109,665
				TOTAL MISCELLANEOUS MATERIAL RECOVERED (tons):	109,665

VOLUME TO WEIGHT CONVERSION FACTORS

MATERIAL	EQUIVALENT		MATERIAL	EQUIVALENT		MATERIAL	EQUIVALENT	
GLASS – whole bottles	1 cubic yard	0.35 tons	GLASS - crushed mechanically	1 cubic yard	0.88 tons	ALUMINUM – cans – whole	1 cubic yard	0.03 tons
GLASS - semi crushed	1 cubic yard	0.70 tons	GLASS - uncrushed manually	55 gallon drum	0.16 tons	ALUMINUM – cans – flattened	1 cubic yard	0.125 tons
PAPER - high grade loose	1 cubic yard	0.18 tons	PLASTIC – PET – whole	1 cubic yard	0.015 tons			
PAPER - high grade baled	1 cubic yard	0.36 tons	PLASTIC – PET – flattened	1 cubic yard	0.04 tons			
PAPER - mixed loose	1 cubic yard	0.15 tons	PLASTIC – PET – baled	1 cubic yard	0.38 tons	WHITE GOODS - uncompacted	1 cubic yard	0.10 tons
NEWSPRINT - loose	1 cubic yard	0.29 tons	PLASTIC – styrofoam	1 cubic yard	0.02 tons	WHITE GOODS - compacted	1 cubic yard	0.5 tons
NEWSPRINT - compacted	1 cubic yard	0.43 tons	PLASTIC – HDPE – whole	1 cubic yard	0.012 tons			
CORRUGATED – loose	1 cubic yard	0.015 tons	PLASTIC – HDPE – flattened 1	1 cubic yard	0.03 tons			
CORRUGATED - baled	1 cubic yard	0.55 tons	PLASTIC – HDPE – baled	1 cubic yard	0.38 tons	FERROUS METAL - cans whole	1 cubic yard	0.08 tons
			PLASTIC – mixed (grocery bags)	45 gallon bag	0.01 tons	FERROUS METAL - cans	1 cubic yard	0.43 tons

SECTION 9 – UNAUTHORIZED SOLID WASTE

Has unauthorized solid waste been received at the facility during the reporting period?

☐ Yes ■ No If yes, give information below for each incident (attach additional sheets if necessary):

Date Received	Type Received	Date Disposed	Disposal Method & Location

Radiation Monitoring

Does your facility use a fixed radiation monitor? _____ Yes ___■___ No

Identify Manufacturer _____ and Model _____ of fixed unit.

Does your facility use a portable radiation monitor? _____ Yes ___■___ No

Identify Manufacturer _____ and Model _____ of portable unit.

If the radiation monitors have been triggered give information below for each incident:

Incident Number	Received		Hauler	Origin	Truck Number	Reading	Disposal Status	Removed	
	Date	Time						Date	Time

SECTION 10 - WASTE IN PLACE Sheet 1 of 4

Summary by Waste Type and Year

Include all active and inactive sections of the landfill. Report waste disposed annually by type, if known, in tons per year. Report total waste disposed, if breakdown of types is not available. In the case where more than one landfill section operated in a given year identify each separately, if known. If the annual amount is not available, report the quantities for a range of years. If you include amounts from old, closed landfills then clearly identify them on the table and explain below. In each row, report quantities disposed each year (or group of years if individual years unknown) for each waste type. Report cumulative WIP at bottom (sum of annual quantities disposed). Add additional sheets as necessary.

Year	MSW (tons)	Asbestos Waste (tons)	Ash (tons)	C&D Debris (tons)	**Industrial Waste (tons)	Petroleum Contaminated Soil (tons)	Sewage Treatment Plant Sludge (tons)	Other (tons)	Year(s) Total (tons)	Identify Landfill Section(s) Used
1988-1999					1,639,000				1,639,000	Area II/III
1999					30,915				30,915	Area V
2000					83,831				83,831	Area V
2001					73,324				73,324	Area V
2002					131,129				131,129	Area V
2003					127,246				127,246	Area V
2004					3,780				3,780	Area IV
2004					176,603				176,603	Area V
2005					78,624				78,624	Area IV
2005					70,632				70,632	Area V
WIP Cumulative Total	See sheet 4	by waste	type & year.							

Overall in place volume 4,376,145 cubic yards

Method for determining waste composition, if known. Truck counts of waste types & waste generation locations.

Explain if closed landfills are included above Closure of Area II/III completed in 1999. Closure of Area V completed in 2013.

** includes waste, waste bulking & road building materials.

SECTION 10 - WASTE IN PLACE Sheet 2 of 4

Summary by Waste Type and Year

Include all active and inactive sections of the landfill. Report waste disposed annually by type, if known, in tons per year. Report total waste disposed, if breakdown of types is not available. In the case where more than one landfill section operated in a given year identify each separately, if known. If the annual amount is not available, report the quantities for a range of years. If you include amounts from old, closed landfills then clearly identify them on the table and explain below. In each row, report quantities disposed each year (or group of years if individual years unknown) for each waste type. Report cumulative WIP at bottom (sum of annual quantities disposed). Add additional sheets as necessary.

Year	MSW (tons)	Asbestos Waste (tons)	Ash (tons)	C&D Debris (tons)	**Industrial Waste (tons)	Petroleum Contaminated Soil (tons)	Sewage Treatment Plant Sludge (tons)	Other (tons)	Year(s) Total (tons)	Identify Landfill Section(s) Used
2006					58,191				58,191	Area IV
2006					59,251				59,251	Area V
2007					62,663				62,663	Area IV
2007					49,892				49,892	Area V
2008					62,652				62,652	Area IV
2008					26,086				26,086	Area V
2009					61,145				61,145	Area IV
2009					20,163				20,163	Area V
2010					109,985				109,985	Area IV
2010					16,784				16,784	Area V
WIP Cumulative Total	See sheet 4	by waste	type & year.							

Overall in place volume _____ cubic yards

Method for determining waste composition, if known. _____

Explain if closed landfills are included above _____

** includes waste, waste bulking & road building materials.

SECTION 10 - WASTE IN PLACE Sheet 3 of 4

Summary by Waste Type and Year

Include all active and inactive sections of the landfill. Report waste disposed annually by type, if known, in tons per year. Report total waste disposed, if breakdown of types is not available. In the case where more than one landfill section operated in a given year identify each separately, if known. If the annual amount is not available, report the quantities for a range of years. If you include amounts from old, closed landfills then clearly identify them on the table and explain below. In each row, report quantities disposed each year (or group of years if individual years unknown) for each waste type. Report cumulative WIP at bottom (sum of annual quantities disposed). Add additional sheets as necessary.

Year	MSW (tons)	Asbestos Waste (tons)	Ash (tons)	C&D Debris (tons)	**Industrial Waste (tons)	Petroleum Contaminated Soil (tons)	Sewage Treatment Plant Sludge (tons)	Other (tons)	Year(s) Total (tons)	Identify Landfill Section(s) Used
2011					59,144				59,144	Area IV
2011					21,297				21,297	Area V
2012					63,183				63,183	Area IV
2012					43,945				43,945	Area V
2013					79,636				79,636	Area IV
2013					35,225				35,225	Area V
2014					100,609				100,609	Area IV
2014					8,321				8,321	Area VI
2015					54,493				54,493	Area IV
2015					63,400				63,400	Area VI
WIP Cumulative Total	See sheet 4	By Waste	Type & Year							

Overall in place volume _____ cubic yards

Method for determining waste composition, if known. _____

Explain if closed landfills are included above _____

** includes waste, waste bulking & road building materials.

SECTION 10 - WASTE IN PLACE Sheet 4 of 4

Summary by Waste Type and Year

Include all active and inactive sections of the landfill. Report waste disposed annually by type, if known, in tons per year. Report total waste disposed, if breakdown of types is not available. In the case where more than one landfill section operated in a given year identify each separately, if known. If the annual amount is not available, report the quantities for a range of years. If you include amounts from old, closed landfills then clearly identify them on the table and explain below. In each row, report quantities disposed each year (or group of years if individual years unknown) for each waste type. Report cumulative WIP at bottom (sum of annual quantities disposed). Add additional sheets as necessary.

Year	MSW (tons)	Asbestos Waste (tons)	Ash (tons)	C&D Debris (tons)	**Industrial Waste (tons)	Petroleum Contaminated Soil (tons)	Sewage Treatment Plant Sludge (tons)	Other (tons)	Year(s) Total (tons)	Identify Landfill Section(s) Used
2016					14,054				14,054	Area IV
2016					103,181				103,181	Area VI
2017					11,549				11,549	Area IV
2017					95,362				95,362	Area VI
2018					23,401				23,401	Area IV
2018					100,568				100,568	Area VI
2019					23,230				23,230	Area IV
2019					97,109				97,109	Area VI
					-				-	
					-				-	
WIP Cumulative Total					3,938,602					

Overall in place volume _____ cubic yards

Method for determining waste composition, if known. _____

Explain if closed landfills are included above _____

** includes waste, waste bulking & road building materials.

Waste Summary by Landfill Section **Sheet 1 of 3**

Provide waste in place information for all landfill sections.

Number of landfill sections: 4

Original* section used (years) from 1979 to 1999 Area II/III

Section Footprint 63.11 acres

Capped with approved final cover system Yes X No _____

Percent capped 100

Waste in Place: 1,639,000** Tons _____ Cubic Yards, if known

if known

Next* section used (years) from 1999 to 2013 Area V

Section Footprint 15.34 acres

Capped with approved final cover system Yes X No _____

Percent capped 100

Waste in Place: 965,321 Tons 1,072,579 Cubic Yards,

****1988-1999 time period, no waste in place records for 1979-1987 time period.**

* If there are additional landfill sections, phases or cells, please provide the same waste in place information on additional sheets and attach to form.

SECTION 11 - LANDFILL GAS

Does the landfill have a landfill gas collection & control system?
Yes ____ No ____ If Yes: Active ___ Passive ___

Number of gas wells: _____

Total landfill footprint acreage _____

Total landfill acreage from which gas is collected _____

Landfill sections from which gas is collected _____

Landfill acreage from which gas is collected for energy recovery _____

Measured Methane Generation Rate*, k _____

Measured Potential Methane Generation Capacity*, L_o _____ m^3/Mg

NMOC Concentration* _____ ppmv as hexane

Does the landfill require a Title V Permit? Yes _____ No _____

Name of Landfill Gas Recovery (gas to energy or other use) Facility: _____

* Note: If Concentration NMOC, Lo and k are not known or included, default values will be used to calculate the NMOCs emissions from the Landfill.

Provide waste in place information for all landfill sections.

Number of landfill sections: ____

Original* section used (years) from _____ to _____

Section Footprint _____ acres

Capped with approved final cover system Yes _____ No _____

Percent capped _____

Waste in Place: _____ Tons _____ Cubic Yards, if known

Next* section used (years) from 2004 to 2020 Area IV

Section Footprint 14.99 acres

Capped with approved final cover system Yes _____ No X

Percent capped 0

Waste in Place: 866,339 Tons 962,599 Cubic Yards, if known

* If there are additional landfill sections, phases or cells, please provide the same waste in place information on additional sheets and attach to form.

SECTION 11 - LANDFILL GAS

Does the landfill have a landfill gas collection & control system?
Yes ____ No ____ If Yes: Active ___ Passive ___

Number of gas wells: _____

Total landfill footprint acreage _____

Total landfill acreage from which gas is collected _____

Landfill sections from which gas is collected _____

Landfill acreage from which gas is collected for energy recovery _____

Measured Methane Generation Rate*, k _____

Measured Potential Methane Generation Capacity*, L_o _____ m^3/Mg

NMOC Concentration* _____ ppmv as hexane

Does the landfill require a Title V Permit? Yes _____ No _____

Name of Landfill Gas Recovery (gas to energy or other use) Facility: _____

* Note: If Concentration NMOC, Lo and k are not known or included, default values will be used to calculate the NMOCs emissions from the Landfill.

Provide waste in place information for all landfill sections.

Number of landfill sections: ____

Original* section used (years) from _____ to _____

Section Footprint _____ acres

Capped with approved final cover system Yes _____ No _____

Percent capped _____

Waste in Place: _____ Tons _____ Cubic Yards, if known

Next* section used (years) from 2014 to 2020 Area VI

Section Footprint 22.93 acres

Capped with approved final cover system Yes _____ No X

Percent capped 0

Waste in Place: 467,942 Tons 519,935 Cubic Yards, if known

* If there are additional landfill sections, phases or cells, please provide the same waste in place information on additional sheets and attach to form.

SECTION 11 - LANDFILL GAS

Does the landfill have a landfill gas collection & control system?
Yes ____ No X If Yes: Active ___ Passive ___

Number of gas wells: _____

Total landfill footprint acreage _____

Total landfill acreage from which gas is collected _____

Landfill sections from which gas is collected _____

Landfill acreage from which gas is collected for energy recovery _____

Measured Methane Generation Rate*, k _____

Measured Potential Methane Generation Capacity*, L_o _____ m^3/Mg

NMOC Concentration* _____ ppmv as hexane

Does the landfill require a Title V Permit? Yes _____ No _____

Name of Landfill Gas Recovery (gas to energy or other use) Facility: _____

* Note: If Concentration NMOC, Lo and k are not known or included, default values will be used to calculate the NMOCs emissions from the Landfill.

Flare N/A

Open and Enclosed Flares located at the Landfill and the Landfill Gas Recovery Facility:

Number of Flares: 0

Type of Flare: Opened Flare _____ Enclosed Flare _____

Please report units in cubic feet

Quantity of Gas Collected and Flared Annually 0 _____ cubic feet
Flare Hours of Operation per Year _____ hours/year
Methane Percentage in Landfill Gas before flaring _____ %
Methane Destruction efficiency _____ %

Candlestick Flares:

Number of Candlestick Flares 0
Estimate of Gas Flared Candlestick Flare 0 _____ cubic feet

Gas To Energy N/A

Please report units in cubic feet

Number of Internal Combustion Engines: 0

Quantity of Gas collected for Internal Combustion Engine Annually 0 _____ cubic feet
Methane Destruction efficiency _____ %
Methane Percentage in Landfill Gas before combustion _____ %
Utility Company Receiving Electricity _____

Gas Processed for Use (Other than gas to electricity)

Quantity of Gas Collected for Processing 0 _____ cubic feet
Methane Percentage in Landfill Gas before processing _____ %
On-site or Off-site User of Gas _____

Landfill Gas Recovery Facility/Landfill Data

Facility Contact _____ Phone # (____)____-_____

Contact e-mail address _____ Fax # (____)____-_____

Operation and maintenance cost for calendar year: $_____

Does the LGRF experience shut downs: _____Yes _____No

If yes, indicate reasons for shut downs. List required submissions that have been attached to this form or the reasons for not attaching a required piece of information:

_____

_____

_____

_____

Year landfill opened: _____ Anticipated landfill closure date: _____

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Results of Condensate Sampling

Submit (attached to this form) condensate quality monitoring results accomplished in accordance with condensate sampling. List submissions (required by this section) that have been attached to this form or the reasons for not attaching a required piece of information:

N/A

Landfill Gas Utilized For Energy Recovery N/A

Provide the following information for the landfill gas recovered for energy. **DO NOT INCLUDE THE GAS FLARED!**

	Landfill Gas Collected for Energy Recovery (Cubic Feet)	Steam* Generated (Cubic Feet)	Total Electricity* Generated for onsite and offsite use (K.W.H.)	Total Gas Processed for use other than electricity generation (Cubic Feet)	Condensate Generated (Gallons)	Facility Operation (Hours)
January						
February						
March						
April						
May						
June						
July						
August						
September						
October						
November						
December						
ANNUAL TOTAL						

* Provide where applicable.

Normal Weekdays of Operation _____ Normal Hours of Operation_____

Electricity Generated and used/marketed offsite _____KWH
Electricity Generated and used onsite _____ KWH
Gas Processed and used/marketed offsite _____ cubic feet
Gas Processed and used onsite _____ cubic feet

Describe the collection, storage, treatment and disposal techniques used in managing the condensate:

Reprinted (12/19)

SECTION 12 - COST ESTIMATES AND FINANCIAL ASSURANCE DOCUMENTS

Are there required cost estimates and financial assurance documents for closure and post-closure care?

■ Yes ☐ No If yes, attach additional sheets reflecting annual adjustments for inflation and any changes to the Closure Plan?

SECTION 13 – PROBLEMS

Were any problems encountered during the reporting period (e.g., specific occurrences which have led to changes in facility procedures)?

■ Yes ☐ No If yes, attach additional sheets identifying each problem and the methods for resolution of the problem.

SECTION 14 – CHANGES

Were there any changes from approved reports, plans, specifications, and permit conditions?

☐ Yes ■ No If yes, attach additional sheets identifying changes with a justification for each change.

SECTION 11 – LANDFILL OPERATOR TRAINING

Name of trained landfill operator: Dave Ross

Name and location of training course: NYS Landfill Operator Certification Training, Niagara Fall, NY

Date completed: 3/15/2016

SECTION 16 - ANALYTICAL RESULTS

Submit (attached to this form) tables showing the sample collection date, the analytical results [including all peaks even if below the Method Detection Limits (MDL)], designation of upgradient wells and location number for each environmental monitoring point sampled, applicable water quality standards, and groundwater protection standards if established, MDL's, and Chemical Abstracts Service (CAS) numbers on all parameters. List submissions (required by this section) that have been attached to this form or the reasons for not attaching a required piece of information:

Not applicable for Annual Report.

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SECTION 17 - COMPARING DATA

Submit (attached to this form) tables or graphical representations comparing current water quality with existing water quality and with upgradient water quality. These comparisons may include Piper diagrams, Stiff diagrams, tables, or other analyses. List submissions (required by this section) that have been attached to this form or the reasons for not attaching a required piece of information:

Not applicable for Annual Report

SECTION 18 - DISCUSSION OF RESULTS

Submit (attached to this form) a summary of any contraventions of State water quality standards, significant increases in concentrations above existing water quality, any exceedances of groundwater protection standards, and discussion of results, and any proposed modifications to the sampling and analysis schedule necessary to meet the Existing, Operational and Contingency water quality monitoring requirements. List submissions (required by this section) that have been attached to this form or the reasons for not attaching a required piece of information:

See attached Delaware Engineering Report

SECTION 19 - DATA QUALITY ASSESSMENT

Submit (attached to this form) any required data quality assessment reports. List submissions (required by this section) that have been attached to this form or the reasons for not attaching a required piece of information:

Not applicable for Annual Report

SECTION 20 - SUMMARIES OF MONITORING DATA

Submit (attached to this form) a summary of the water quality information presented in Sections 16 and 17 for the year of operation for which the Annual Report is made, noting any changes in water quality which have occurred throughout the year. List submissions (required by this section) that have been attached to this form or the reasons for not attaching a required piece of information:

See attached Delaware Engineering Report

SECTION 21 - SURFACE IMPOUNDMENTS

Does this landfill have a surface impoundment?

☒ Yes ☐ No If yes, repeat Sections 15 through 18 above for Quarterly Reports and Section 19 above for Annual report. Attach additional submissions required by this section.

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SECTION 22 - PERMIT/CONSENT ORDER REPORTING REQUIREMENTS

Are there any additional permit/consent order reporting requirements not covered by the previous sections of this form?

☐ Yes ■ No If yes, attach additional sheets identifying the reporting requirements with their respective responses.

SECTION 23 - SIGNATURE AND DATE BY OWNER OR OPERATOR

Owner or Operator must sign, date and submit one completed form to the appropriate Regional Office (See attachment for Regional Office addresses, email addresses and Materials Management Contacts).

The Owner or Operator must also submit one copy by email, fax or mail to:

New York State Department of Environmental Conservation
Division of Materials Management
Bureau of Solid Waste Management
625 Broadway
Albany, New York 12233-7260
Fax 518-402-9041
Email address: SWMFannualreport@dec.ny.gov

I certify, under penalty of law, that the data and other information identified in this report have been prepared under my direction and supervision in compliance with a system designed to ensure that qualified personnel properly and accurately gather and evaluate this information. I am aware that any false statement I make in such report is punishable pursuant to section 71-2703(2) of the Environmental Conservation Law and section 210.45 of the Penal Law.

Timothy P. Stocker
Signature

2/26/2020
Date

Timothy P. Stocker
Name (Print or Type)

Mill Manager
Title (Print or Type)

Tim.Stocker@ipaper.com
Email (Print or Type)

568 Shore Airport Rd
Address

Ticonderoga
City

New York 12883
State and Zip

(518) 585-5300
Phone Number

ATTACHMENTS: ☒ YES ☐ NO
(Please check appropriate line)

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INTERNATIONAL PAPER

INTERNAL MEMORANDUM

TICONDEROGA MILL

TO: Hannah Felts DATE: January 31th, 2020

FROM: Dave Ross, General Services Manager

SUBJECT: **2019 Annual Leachate Flushing**

Flushing of the landfill's primary leachate collection system for 2019 was completed on November 4 and November 5, 2019. North American Industrial Services provided jet rodding service for this year's routine maintenance in flushing the primary leachate collection system pipes. Access was gained utilizing the clean-out risers identified on our site map drawings. The flushing of the leachate collection system consisted of jet rodding all primary leachate collection pipes for Areas 4, 5, & 6, and the toe drain system for Areas 2 & 3.

If you have any questions regarding the 2019 cleaning, please contact me.

David Ross

ATTACHMENT FOR SECTION 3

INTERNATIONAL PAPER

INTERNAL MEMORANDUM
Ticonderoga Mill

TO: File
FROM: Hannah Felts
DATE: February 24, 2020
CC:

SUBJECT: **Section 12 – Cost Estimates and Financial Assurance Documents**

Updated cost estimates for closure and post-closure care are attached. Financial assurance documents will be submitted under separate cover from International Paper's corporate office in Memphis, TN.

Attachment for Section 12

INTERNATIONAL PAPER
TICONDEROGA MILL LANDFILL

AREA 4 CELLS 1 & 2 CLOSURE COST ESTIMATE

Dec-19

Item No.	Description	Est. Quantity	Unit	Unit Cost	Total Cost
1	**MOBILIZATION & DEMOBILIZATION**				
a	Mobilization and Demobilization	1	LS	$300,834	$300,834
b	Engineer's Field Trailer	1	LS	$38,916	$38,916
c	Contractor Survey	1	LS	$46,282	$46,282
d	Contractor Health & Safety Officer	1	LS	$36,692	$36,692
		Sub-Total	$422,724.60		
2	**Site Preparation**				
a	Subgrade preparation	1	LS	$69,423	$69,423
b	Toe Sand	5,700	CY	$8	$44,364
c	Bulking & Wicks	1	LS	$93,663	$93,663
d	Expose liner run-out for cap tie-in	3,300	LF	$16	$53,477
e	Stormwwater Management	1	LS	$54,017	$54,017
		Sub-Total	$207,451.11		
3	**Gas Vent System**				
a	Furnish and Install HDPE Gas Pipe (trench, fabric & stone)	9,000	LF	$33	$295,222
b	Furnish and Install Gas Vent GDL	756,200	SF	$1	$603,725
c	Furnish and Install PVC Vents with stainless steel screens	16	EA	$2,224	$35,580
		Sub-Total	$934,527.84		
4	**40 mill Textured LLDPE**	756,200	SF	$1	$504,487
5	**Furnish and Install ADS Advanatage Edge 12"**	3,300	LF	$11	$36,692
6	**Furnish and Install Cap Drain GDL**	756,200	SF	$1	$588,568
7	**Install 18-inch thick BPL/Topsoil Layer**	46,120	CY	$11	$512,804
8	**Install Tack-on Swales**	15,107	CY	$14	$218,365
9	**Perimeter Road w/Swale (south side road)**	1,500	LF	$9	$13,176
10	**Furnish and Install Cap access Road**	650	LF	$39	$25,295
11	**Leachate Basin Closure**	1	LS	$70,222	$70,222
12	**Seed, Fertilize and Mulch**	18	ACRES	$3,558	$64,045
13	**Erosion Control Mat**	5	ACRES	$13,343	$66,713
14	**Riprap Downchutes**	400	CY	$41	$16,274
			ESTIMATED COST:		**$3,788,838**
			CONTINGENCY (10%):		**$378,884**
			TOTAL CLOSURE COST:		**$4,167,722**

NOTES:

1. Total landfill area = 15.5 acres
2. Total leachate basin area = 0.43 acres

Attachment for Section 12

INTERNATIONAL PAPER
TICONDEROGA MILL LANDFILL

AREA 4 CELLS 1 & 2 POST-CLOSURE COST ESTIMATE

DECEMBER 2019

Item	Description	Est. Quantity	Unit	Unit Cost	Annual Cost
1	**Environmental Monitoring Program** (includes groundwater MW, surface water, underdrain and primary/secondary leachate sampling)	1	LS	$92,758	$92,758
2	**Landfill Gas Migration Monitoring** (4 events per year at 8 man hours per event)	32	HRS/YR	$80	$2,544
3	**Leachate Collection System Flow Rate Monitoring** (12 months at 12 man hours per month)	144	HRS/YR	$80	$11,448
4	**Leachate Management** Leachate generation is based on a running average from 2010 to 2015 for Area 4 Cells 1 & 2 (11,546,555 gallons per year or 744,939 gal/ac/yr and reduced by 95% due to capping)	5.77	100,000 GAL/YR	$157	$906
5	**Site Inspection** **a.** Monthly inspection for leachate management system and landfill passive gas venting system (12 months at 4 man hours per month)	48	HRS/YR	$80	$3,816
	b. Quarterly inspection of landfill cover system, surface water management system, site controls, site roads and support structures. Also includes inspection after a 5-year storm event or 1/5 inspections per year. (4.2 inspections per year at 8 man hours per inspection)	33.6	HRS/YR	$80	$2,671
6	**Site Maintenance** **a. Leachate collection, removal and transmission system** **i.** Pump replacement: Replace each of the primary and secondary pumps every 10 years (8 pumps = $50,100)	0.10	LS/YR	$54,017	$5,402
	ii. Meters/controls replacement: Replace each cell control panel once during the 30 year monitoring period (2 panels 30 yrs = 0.07 panels/yr)	0.07	EA/YR	$21,607	$1,440
	iii. System flushing: Once per year.	1	LS	$5,135	$5,135
	b. Surface Water Management System **i.** Sedimentation Basin Cleaning: Sedimentation removal every 5 years. Assume 5,000 square feet at 1 foot deep= 185 cy (185cy / 5yr = 37 cy/yr)	37	CY/YR	$11	$409
	ii. Drainage Conveyance System Cleaning: Clean ditches and drainage features every 5 years (Assume 3,000 lf / 5 yr = 600 lf/yr)	600	LF/YR	$4	$2,182
	iii. Drainage system regrading and repair: repair or replace 1% of the system per year. Work includes regrading, ditch lining material replacement, basin discharge structure repairs etc. (Assume 3,000 lf X 1% = 30 lf/yr)	30	LF/YR	$29	$861
	c. Final Cover System **i.** Final grade: Assume yearly differential settlement repair requirements of 1.5 feet over 10% of capped area during the 30 year period (10% x 15.5ac=1.55ac X 1.5 ft = 125 cy over 30 yrs)	125	CY/YR	$16	$2,026
	ii Seed and fertilize; line item 6.c.i (1.55ac /30 yr = 0.05 ac/yr)	0.05	ACRE/YR	$1,989	$103
	iii. Permanent Vegetation: Re-seed 10% of total capped area during the 30 year period (1.55ac /30 yr = 0.05 ac/yr)	0.05	ACRE/YR	$1,989	$103
	iv. Mowing: Mow once per year.	1	LS	$2,628	$2,628
	d. Gas Venting System Repairs (Assume 1 vents / 5 years = 0.20 vents/yr)	1	EA/YR	$1,061	$212
	e. Perimeter Fence System Repair (50 linear feet per year)	50	LF	$21	$1,026
	f. Groundwater Monitoring Well Repair (Assume 1 well /10 years = 0.10 well/yr)	0.10	EA/YR	$8,288	$83
7	**Post-Closure Registration Report** (Assume every 5 years = 0.2 report / yr)	0.20	EA/YR	$6,393	$256
				TOTAL ESTIMATED COST:	**$136,010**
				CONTINGENCY (10%):	**$13,601**
				TOTAL ANNUAL COST:	**$149,611**

NOTES:

1. Total landfill area Cells 1 & 2 = 15.5 acres.
2. This cost estimate assumes that the leachate basin has been decommissioned during closure and no longer in use.

Attachment F for Section 12

INTERNATIONAL PAPER
TICONDEROGA MILL LANDFILL

AREA 5 CELLS 1, 2 & 3 POST-CLOSURE COST ESTIMATE

DECEMBER 2019

Item	Description	Est. Quantity	Unit	Unit Cost	Annual Cost
1	**Environmental Monitoring Program** (includes groundwater MW, surface water, underdrain and primary/secondary leachate sampling)	1	LS	$98,883	$98,883
2	**Landfill Gas Migration Monitoring** (4 events per year at 8 man hours per event)	32	HRS/YR	$80	$2,544
3	**Leachate Collection System Flow Rate Monitoring** (12 months at 12 man hours per month)	144	HRS/YR	$80	$11,448
4	**Leachate Management** Leachate generation is based on a running average from 2010 to 2015 for Area 5 Cells 1, 2 & 3 (6,647,395 gallons per year or 434,470 gal/ac/yr and reduced by 95% due to capping)	3.32	100,000 GAL/YR	$157	$521
5	**Site Inspection** a. Monthly inspection for leachate management system and landfill passive gas venting system (12 months at 4 man hours per month)	48	HRS/YR	$80	$3,816
	b. Quarterly inspection of landfill cover system, surface water management system, site controls, site roads and support structures. Also includes inspection after a 5-year storm event or 1/5 inspections per year. (4.2 inspections per year at 8 man hours per inspection)	33.6	HRS/YR	$80	$2,671
6	**Site Maintenance** **a. Leachate collection, removal and transmission system** i. Pump replacement: Replace each of the primary and secondary pumps every 10 years (12 pumps = $75,150)	0.10	LS/YR	$81,025	$8,103
	ii. Meters/controls replacement: Replace each cell control panel once during the 30 year monitoring period (3 panels / 30 yr = 0.1 panels/yr)	0.10	EA/YR	$21,607	$2,161
	iii. System flushing: Once per year.	1	LS	$5,135	$5,135
	b. Surface Water Management System i. Sedimentation Basin Cleaning: Sedimentation removal every 5 years. Assume 22,350 square feet at 1 foot deep= 828 cy (828cy / 5 yr = 166 cy/yr)	166	CY/YR	$11	$1,829
	ii. Drainage Conveyance System Cleaning: Clean ditches and drainage features every 5 years (Assume 3,000 lf / 5 yr = 600 lf/yr)	600	LF/YR	$4	$2,182
	iii. Drainage system regrading and repair: repair or replace 1% of the system per year. Work includes regrading, ditch lining material replacement, basin discharge structure repairs etc. (Assume 3,000 lf X 1% = 30 lf/yr).	30	LF/YR	$29	$861
	c. Final Cover System i. Final grade: Assume yearly differential settlement repair requirements of 1.5 feet over 10% of capped area during the 30 year period (10% x 15.3ac=1.53ac X 1.5 ft = 123 cy over 30 yrs)	123	CY/YR	$16	$2,000
	ii Seed and fertilize; line item 6.c.i (1.53ac /30 yr = 0.05 ac/yr)	0.05	ACRE/YR	$1,989	$101
	iii. Permanent Vegetation: Re-seed 10% of total capped area during the 30 year period (1.53ac / 30 yr = 0.05ac/yr)	0.05	ACRE/YR	$1,989	$101
	iv. Mowing: Mow once per year.	1	LS	$2,628	$2,628
	d. Gas Venting System Repairs (Assume 1 vents / 5 years = 0.20 vents/yr)	0.20	EA/YR	$1,061	$212
	e. Perimeter Fence System Repair (50 linear feet per year)	50	LF	$21	$1,026
	f. Groundwater Monitoring Well Repair (Assume 1 well /10 years = 0.10 well/yr)	0.10	EA/YR	$8,288	$829
7	**Post-Closure Registration Report** (Assume every 5 years = 0.2 report / yr)	0.20	EA/YR	$6,393	$1,279
				TOTAL ESTIMATED COST:	**$148,332**
				CONTINGENCY (10%):	**$14,833**
				TOTAL ANNUAL COST:	**$163,165**

NOTES:

1. Total landfill area Cells 1, 2 & 3 = 15.3 acres.

Attachment for Section 12

INTERNATIONAL PAPER
TICONDEROGA MILL LANDFILL

AREA 6 PHASE 1 CLOSURE COST ESTIMATE

DECEMBER 2019

Item No.	Description	Est. Quantity	Unit	Unit Cost	Total Cost
1	**MOBILIZATION & DEMOBILIZATION**				
a	Mobilization and Demobilization	1	LS	$300,834	$300,834
b	Engineer's Field Trailer	1	LS	$38,916	$38,916
c	Contractor Survey	1	LS	$46,282	$46,282
d	Contractor Health & Safety Officer	1	LS	$36,692	$36,692
		Sub-Total	$422,724.60		
2	**Site Preparation**				
a	Subgrade preparation	1	LS	$69,423	$69,423
b	Toe Sand	9,200	CY	$8	$71,606
c	Bulking & Wicks	1	LS	$93,663	$93,663
d	Expose liner run-out for cap tie-in	3,900	LF	$16	$63,200
e	Stormwwater Management	1	LS	$54,017	$54,017
		Sub-Total	$351,909.25		
3	**Gas Vent System**				
a	Furnish and Install HDPE Gas Pipe (trench, fabric & stone)	7,000	LF	$33	$229,617
b	Furnish and Install Gas Vent GDL	651,222	SF	$1	$519,914
c	Furnish and Install PVC Vents with stainless steel screens (1 per	13	EA	$2,224	$28,909
		Sub-Total	$778,440.59		
4	**40 mil Textured LLDPE**	651,222	SF	$1	$434,452
5	**Furnish and Install ADS Advanatage Edge 12"**	3,900	LF	$11	$43,364
6	**Furnish and Install Cap Drain GDL**	651,222	SF	$1	$506,861
7	**Excavate, haul and install 24-inch thick BPL/Topsoil Layer**	41,947	CY	$11	$466,401
8	**Install Tack-on Swales**	15,070	CY	$14	$217,830
9	**Furnish and Install Cap access Road**	650	LF	$39	$25,295
10	**Leachate Basin Closure**	1	LS	$145,846	$145,846
11	**Seed, Fertilize and Mulch**	15	ACRES	$3,558	$53,371
12	**Erosion Control Mat**	5	ACRES	$13,343	$66,713
13	**Riprap Downchutes**	450	CY	$41	$18,308
			ESTIMATED COST:		**$3,531,516**
			CONTINGENCY (10%):		**$353,152**
			TOTAL CLOSURE COST:		**$3,884,667**

NOTES:

1. Total landfill area = 13 acres
2. Total leachate basin area = 1.3 acres

Attachment for Section 12

INTERNATIONAL PAPER
TICONDEROGA MILL LANDFILL

AREA 6 PHASE 1 POST-CLOSURE COST ESTIMATE

DECEMBER 2019

Item	Description	Est. Quantity	Unit	Unit Cost	Annual Cost
1	**Environmental Monitoring Program** (includes groundwater MW, surface water, underdrain and primary/secondary leachate sampling)	1	LS	$90,338	$90,338
2	**Landfill Gas Migration Monitoring** (4 events per year at 8 man hours per event)	32	HRS/YR	$80	$2,544
3	**Leachate Collection System Flow Rate Monitoring** (12 months at 12 man hours per month)	144	HRS/YR	$80	$11,448
4	**Leachate Management** Leachate generation is based on a running average from 2010 to 2015 for Area 4 Cells 1 & 2 (9,684,207gallons per year or 744,939 gal/ac/yr and reduced by 95% due to capping)	4.84	100,000 GAL/YR	$157	$760
5	**Site Inspection** **a.** Monthly inspection for leachate management system and landfill passive gas venting system (12 months at 4 man hours per month)	48	HRS/YR	$80	$3,816
	b. Quarterly inspection of landfill cover system, surface water management system, site controls, site roads and support structures. Also includes inspection after a 5-year storm event or 1/5 inspections per year. (4.2 inspections per year at 8 man hours per inspection)	33.6	HRS/YR	$80	$2,671
6	**Site Maintenance** **a. Leachate collection, removal and transmission system** i. Pump replacement: Replace each of the primary and secondary pumps every 10 years (4 pumps = $31,062)	0.10	LS/YR	$33,491	$3,349
	ii. Meters/controls replacement: Replace the cell control panel once during the 30 year monitoring period (1 panel / 30 yr = 0.033 panels/yr)	0.033	EA/YR	$21,607	$720
	iii. System flushing: Once per year.	1	LS	$5,135	$5,135
	b. Surface Water Management System i. Sedimentation Basin Cleaning: Sedimentation removal every 5 years. Assume 5,000 square feet at 1 foot deep= 185 cy (185cy / 5yr = 37 cy/yr)	37	CY/YR	$11	$409
	ii. Drainage Conveyance System Cleaning: Clean ditches and drainage features every 5 years (Assume 2,000 lf / 5 yr = 400 lf/yr)	400	LF/YR	$4	$1,455
	iii. Drainage system regrading and repair: repair or replace 1% of the system per year. Work includes regrading, ditch lining material replacement, basin discharge structure repairs etc. (Assume 2,000 lf X 1% = 20 lf/yr)	20	LF/YR	$29	$574
	c. Final Cover System i. Final grade: Assume yearly differential settlement repair requirements of 1.5 feet over 10% of capped area during the 30 year period (10% x 13ac=1.3ac X 1.5 ft = 105 cy over 30 yrs)	105	CY/YR	$16	$1,699
	ii Seed and fertilize; line item 6.c.i (1.3ac /30 yr = 0.04 ac/yr)	0.04	ACRE/YR	$1,989	$86
	iii. Permanent Vegetation: Re-seed 10% of total capped area during the 30 year period (1.3ac /30 yr = 0.04 ac/yr)	0.04	ACRE/YR	$1,989	$86
	iv. Mowing: Mow once per year.	1	LS	$2,628	$2,628
	d. Gas Venting System Repairs (Assume 1 vents / 5 years = 0.20 vents/yr)	0.20	EA/YR	$1,061	$212
	e. Perimeter Fence System Repair (50 linear feet per year)	50	LF	$21	$1,026
	f. Groundwater Monitoring Well Repair (Assume 1 well /10 years = 0.10 well/yr)	0.10	EA/YR	$8,288	$829
7	**Post-Closure Registration Report** (Assume every 5 years = 0.2 report / yr)	0.20	EA/YR	$6,393	$1,279
				TOTAL ESTIMATED COST:	**$131,065**
				CONTINGENCY (10%):	**$13,107**
				TOTAL ANNUAL COST:	**$144,172**

NOTES:

1. Total landfill area = 13 acres.
2. This cost estimate assumes that the leachate basin has been decommissioned during closure and no longer in use.

Attachment for section 12

INTERNATIONAL PAPER
TICONDEROGA MILL LANDFILL

AREAS 2 & 3 POST-CLOSURE COST ESTIMATE

DECEMBER 2019

Item	Description	Est. Quantity	Unit	Unit Cost	Annual Cost
1	**Environmental Monitoring Program** (includes groundwater MW, toe drain pump station and east and west underdrain)	1	LS	$33,231	$33,231
2	**Landfill Gas Migration Monitoring** (4 events per year at 8 man hours per event)	32	HRS/YR	$80	$2,544
3	**Leachate Collection System Flow Rate Monitoring** (12 months at 4 man hours per month)	48	HRS/YR	$80	$3,816
4	**Leachate Management** Leachate generation is based on a running average from 2010 to 2015 for Areas II-III (9,583,747 gallons per year)	95.84	100,000 GAL/YR	$157	$15,035
5	**Site Inspection** **a.** Monthly inspection for leachate management system and landfill passive gas venting system (12 months at 4 man hours per month)	48	HRS/YR	$80	$3,816
	b. Quarterly inspection of landfill cover system, surface water management system, site controls, site roads and support structures. Also includes inspection after a 5-year storm event or 1/5 inspections per year. (4.2 inspections per year at 12 man hours per inspection)	50.4	HRS/YR	$80	$4,007
6	**Site Maintenance** **a. Leachate collection, removal and transmission system** **i.** Pump replacement: Replace (2) each pump every 10 years (2 pumps X $7,515=$15,030)	0.1	LS/YR	$16,205	$1,621
	ii. Meters/controls replacement: Replace each cell control panel once during the 30 year monitoring period (1 panel / 30 yr = 0.033 panels/yr)	0.033	EA/YR	$21,607	$720
	iii. System flushing: Once per year.	1	LS	$5,135	$5,135
	b. Surface Water Management System **i.** Sedimentation Basin Cleaning: Sedimentation removal every 5 years. Assume 18,000 square feet at 1 foot deep=667 cy (667cy / 5yr = 133 cy/yr)	133	CY/YR	$11	$1,473
	ii. Drainage Conveyance System Cleaning: Clean ditches and drainage features every 5 years (Assume 5,600 lf / 5 yr = 1,120 lf/yr)	1,120	LF/YR	$4	$4,073
	iii. Drainage system regrading and repair: repair or replace 1% of the system per year. Work includes regrading, ditch lining material replacement, basin discharge structure repairs etc. (Assume 11,000 lf X 1% = 110 lf/yr).	110	LF/YR	$29	$3,158
	c. Final Cover System **i.** Final grade: Assume differential settlement repair requirements of 1.0 feet over 5% of capped area during the 30 year period (5% x 60ac=3ac X 1 ft = 161 cy over 30 yrs)	161	CY/YR	$16	$2,614
	ii Seed and fertilize; line item 6.c.i (3ac /30 yr = 0.10 ac/yr)	0.10	ACRE/YR	$1,989	$199
	iii. Permanent Vegetation: Re-seed 10% of total capped area during the 30 year period (6ac / 30 yr = 0.2 ac/yr)	0.20	ACRE/YR	$1,989	$398
	iv. Mowing: Mow once per year.	1	LS	$10,512	$10,512
	d. Gas Venting System Repairs (Assume 2 vents / 5 years = 0.40 vents/yr)	0.40	EA/YR	$1,061	$425
	e. Perimeter Fence System Repair (100 linear feet per year)	100	LF	$21	$2,053
	f. Groundwater Monitoring Well Repair (Assume 1 well /10 years = 0.10 well/yr)	0.10	EA/YR	$8,288	$829
7	**Post-Closure Registration Report** (Assume every 5 years = 0.2 report / yr)	0.20	EA/YR	$6,393	$1,279
			TOTAL ESTIMATED COST:		**$96,938**
			CONTINGENCY (10%):		**$9,694**
			TOTAL ANNUAL COST:		**$106,632**

NOTES:

1. Total landfill area = 60 acres.

Attachment for Section 12

Net Present Value calculation

Landfill Annual Post-Closure Costs

Using 4.06% for NPV. Rec'd from Irina Sitnitskaya, IP Treasury Dept. on 12/17/19. (may need to contact Michele Scott as a backup)

December 2019 Annual Post-Closure Cost Estimates from Steve Regan/Hannah Felts

Rate =	4.06%	4.06%	4.06%	4.06%
	Area V	Areas II & III	Area IV	Area VI
NPV	(2,801,013)	(1,830,525)	(2,568,335)	(2,474,965)
Y1	(163,165)	(106,632)	(149,611)	(144,172)
Y2	(163,165)	(106,632)	(149,611)	(144,172)
Y3	(163,165)	(106,632)	(149,611)	(144,172)
Y4	(163,165)	(106,632)	(149,611)	(144,172)
Y5	(163,165)	(106,632)	(149,611)	(144,172)
Y6	(163,165)	(106,632)	(149,611)	(144,172)
Y7	(163,165)	(106,632)	(149,611)	(144,172)
Y8	(163,165)	(106,632)	(149,611)	(144,172)
Y9	(163,165)	(106,632)	(149,611)	(144,172)
Y10	(163,165)	(106,632)	(149,611)	(144,172)
Y11	(163,165)	(106,632)	(149,611)	(144,172)
Y12	(163,165)	(106,632)	(149,611)	(144,172)
Y13	(163,165)	(106,632)	(149,611)	(144,172)
Y14	(163,165)	(106,632)	(149,611)	(144,172)
Y15	(163,165)	(106,632)	(149,611)	(144,172)
Y16	(163,165)	(106,632)	(149,611)	(144,172)
Y17	(163,165)	(106,632)	(149,611)	(144,172)
Y18	(163,165)	(106,632)	(149,611)	(144,172)
Y19	(163,165)	(106,632)	(149,611)	(144,172)
Y20	(163,165)	(106,632)	(149,611)	(144,172)
Y21	(163,165)	(106,632)	(149,611)	(144,172)
Y22	(163,165)	(106,632)	(149,611)	(144,172)
Y23	(163,165)	(106,632)	(149,611)	(144,172)
Y24	(163,165)	(106,632)	(149,611)	(144,172)
Y25	(163,165)	(106,632)	(149,611)	(144,172)
Y26	(163,165)	(106,632)	(149,611)	(144,172)
Y27	(163,165)	(106,632)	(149,611)	(144,172)
Y28	(163,165)	(106,632)	(149,611)	(144,172)
Y29	(163,165)	(106,632)	(149,611)	(144,172)
Y30	(163,165)	(106,632)	(149,611)	(144,172)

Dec-19 Total Post-Closure	
$	2,801,013
$	1,830,525
$	2,568,335
$	2,474,965
$	9674838

INTERNATIONAL PAPER

INTERNAL MEMORANDUM
Ticonderoga Mill

TO: File
FROM: Hannah Felts
DATE: February 24, 2020
CC:

SUBJECT: **Section 13 – Problems**

Intermittent problems with stormwater infiltration into secondary leachate collection system from liner perimeter anchor trench areas for closed landfill Area V cells 2 & 3. Monthly reports submitted to NYSDEC Region 5 Raybrook Offices in 2019.

INTERNATIONAL PAPER, TICONDEROGA MILL

2019 AREA II / III, AREA IV, AREA V AND AREA VI LANDFILL ANNUAL REPORT

Prepared for:

INTERNATIONAL PAPER, TICONDEROGA MILL
568 SHORE AIRPORT ROAD
TICONDEROGA, NEW YORK 12883

Prepared by:

DELAWARE ENGINEERING, D. P.C.
28 MADISON AVENUE EXTENSION
ALBANY, NEW YORK 12203

FEBRUARY 2020

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LIST OF APPENDICES

1.0 INTRODUCTION

This report provides the information required for the New York State Department of Environmental Conservation (NYSDEC) Part 360 Solid Waste annual report as stipulated in the NYSDEC permit for the International Paper, Ticonderoga Mill landfill (Permit No. 5-1548-00008/00005). Information on waste types and volumes, leachate volumes, water quality (ground water, surface water and leachate/drain) and landfill volumes are provided.

2.0 2019 WASTE DISPOSAL AND LANDFILL OPERATIONS

The total cubic yards of material transported to the International Paper landfill (Area IV and Area VI) in 2019 was 217,202 cubic yards. Of this total, 77,159 cubic yards was waste. The remaining 140,043 cubic yards was waste bulking material, flume grit daily cover and road building material that was used in landfill operations. A summary of the type and volumes of material transported to the landfill in 2019 is provided in Table 1.

A total of 9,905 cubic yards of ash was beneficially used at the landfill in 2019, in accordance with BUD # 583-5-16, as an alternative to sand for sludge bulking and stabilization. This represents all of the ash generated by the Ticonderoga Mill in 2019. No off-site wood ash was delivered to the landfill in 2019.

The estimated Area IV Cells 1 and 2 air space utilized in 2019 was 25,811 cubic yards. However, approximately 29,000 cubic yards was removed from Area IV for the Area VI Phase II fluff lift. The estimated remaining airspace for Area IV Cells 1 and 2 as of February 2020 is 45,543 cubic yards. This equates to a remaining life of 2.8 years at a fill rate of 16,000 cubic yards per year.

The estimated Area VI air space utilized in 2019 was 107,899 cubic yards. The estimated remaining airspace for Area VI is 1,129,469 cubic yards. This equates to a remaining life of 10.14 years at a fill rate of 111,398 cubic yards per year going to Area VI. The Area VI annual fill rate is assumed to be the average of the combined Area IV, Area V and Area VI fill rate of the last eight years (127,398) with 16,000 cubic yards going to Area IV.

3.0 2019 LEACHATE COLLECTION

A total of 48,416,421 gallons of leachate was collected and pumped to the wastewater treatment plant. In 2019 leachate was pumped from the Area II/III toe drain pump station, the Area V, Cell 1, Cell 2 and Cell 3 primary and secondary leachate sumps, the Area IV, Cell 1 and 2 primary and secondary leachate sumps and the Area VI primary and secondary sumps. The Area V Cell 1, Cell 2 and Cell 3 underdrains, the Area IV Cell 1 and Cell 2 underdrains and the Area VI Cell underdrain discharges were pumped into the Area V Cell 1, Cell 2 and Cell 3, the Area IV Cell 1 and Cell 2 and the Area VI Cell, primary sumps, respectively. Therefore, flows from the underdrains are included in the primary leachate sump totals. All leachate flow volumes were obtained from log sheets, which noted daily totalizer readings from flow meters that measure the flows pumped from the above locations.

Table 2 details the volumes of leachate pumped from each location for each month in 2019. A summary of the annual leachate production by location is presented below.

LOCATION	GALLONS
Area II/III Toe Drain Pump Station	14,105,937
Area V Cell 1 Primary Leachate	264,652
Area V Cell 1 Secondary Leachate	20,156
Area V Cell 2 Primary Leachate	626,161
Area V Cell 2 Secondary Leachate	22,856
Area V Cell 3 Primary Leachate	1,923,418
Area V Cell 3 Secondary Leachate	19,676
Area IV Cell 1 Primary Leachate	5,841,820
Area IV Cell 1 Secondary Leachate	153
Area IV Cell 2 Primary Leachate	5,929,363
Area IV Cell 2 Secondary Leachate	1,458
Area VI Primary Leachate	19,651,702
Area VI Secondary Leachate	8,939
Area VI Leachate Basin Secondary	130
Total	48,416,421

4.0 WATER QUALITY DATA

This section provides a summary of the 2019 Area II/III, Area IV, Area V and Area VI ground water, leachate, underdrain and surface water data. Environmental monitoring locations, analytical results and trend graphs have been provided in the quarterly reports that have been previously submitted to NYSDEC.

From Area II/III, surface water (North Surface Water and South Surface Water) and leachate samples were collected quarterly from the locations stipulated in the Area II/III environmental monitoring plan (EMP) (May 1996, Revised December 1996). Samples from the east and west underdrains were collected quarterly and composited into a single sample for analysis. Pursuant to the NYSDEC approved Part 360 variance, ground water samples from the Area II/III monitoring wells were collected and analyzed semi-annually (March 2019 and September 2019).

The east/west underdrain and the Area II/III leachate samples were collected using dedicated containers. The Area II/III leachate sample was collected from the toe drain pump station located at the north end of the closed landfill. The north surface water and south surface water samples were collected using dedicated laboratory containers. All ground water samples were collected using the micro-purging technique, as detailed in the Ticonderoga Mill Site Analytical Plan (May 1996, Revised October 2012).

Except as noted in subsequent sections of this report, ground water samples from landfill Area IV and Area V were collected from the monitoring wells presented in the Area IV/Area V EMP (December 1999) and samples from landfill Area VI were collected from the monitoring wells and the surface water sample locations presented in the Area VI EMP (December 2014). Samples were collected from the Area IV Cell 1 primary and secondary leachate, the Area IV Cell 2 primary and secondary leachate and the Area IV Cell 1 and Area IV Cell 2 underdrains. Samples were collected

from the Area V Cell 1, Cell 2 and Cell 3 primary and secondary leachate, and the Area V Cell 1 and Cell 3 underdrains. There was no flow in the Cell 2 underdrain in 2019. The samples collected from the Area V Cell 1 and Cell 2 primary leachate collection systems were composited into a single sample for analysis. In 2019 samples were collected from the Area VI primary and secondary leachate, the Area VI underdrain and the Area VI leachate basin underdrain.

4.1 Area II/III

All samples associated with the Area II/III monitoring program were analyzed for the site-specific parameters listed below.

SITE SPECIFIC PARAMETERS

FIELD PARAMETERS:

- Eh
- pH
- Specific Conductance
- Temperature
- Turbidity
- Dissolved Oxygen (Surface Water Only)

LEACHATE INDICATORS:

- Alkalinity
- Ammonia
- Biochemical Oxygen Demand (BOD)
- Chemical Oxygen Demand (COD)
- Chloride
- Hardness
- Total Phenols
- Sulfate
- Total Dissolved Solids (TDS)
- Total Organic Carbon (TOC)
- Total Kjeldahl Nitrogen (TKN)

METALS:

- Cadmium
- Calcium
- Iron
- Lead
- Magnesium
- Manganese
- Potassium
- Sodium

- Chromium (Leachate Only)

Volatile Organics:

- Benzene, Toluene, Total Xylenes, Ethyl benzene, Acetone, 2-butanone, Carbon disulfide and 4-methyl-2-pentanone.

4.1.1 Area II/III 2019 Ground Water Analytical Data

Ground water samples were collected in March and September 2019 from the following Area II/III monitoring wells.

- Shallow Overburden: GM-2S, GM-3S, GM-4S and GM-5S
- Deep Overburden: GM-2D, GM-3D, GM-4D.
- Bedrock: GM-13BR, GM-14BR and upgradient well TB-44-83

For each monitoring well the 2019 data and the parameters with concentrations at or above the NYS ground water standard are provided in Appendix A. Trend graphs for the site-specific leachate indicator parameters were previously provided in the September 2019 quarterly report.

4.1.1.1 2019 Shallow Overburden Ground Water Data

The March and September 2019 Area II/III shallow overburden ground water results were generally consistent with historical data. Ground water from the shallow overburden monitoring wells downgradient of Areas II/III continue to exhibit concentrations of landfill related parameters (iron, magnesium, sodium, sulfate and TDS) that are above the NYS ground water standards. Trend graphs of the site specific leachate indicator parameters (calcium, iron, magnesium, potassium, sodium, sulfate and TDS) for monitoring wells GM-2S, GM-3S and GM-4S do not indicate any current consistently increasing trend in concentration.

There is a potential increasing trend in the GM-3S and GM-5S ammonia concentration and the GM-5S chloride and potassium concentrations, however there is no corresponding increase in the BOD, COD and TOC concentrations, which are leachate indicator parameters (including ammonia) that typically do not have high background concentrations.

4.1.1.2 2019 Deep Overburden Ground Water Analytical Data

Ground water from the deep overburden monitoring wells downgradient of Areas II/III continue to exhibit concentrations of landfill related parameters (iron, magnesium, sodium, sulfate and TDS) that are above the NYS ground water standards. There is a potential increasing trend in the GM-2D ammonia, calcium, manganese, potassium, sodium, sulfate and TDS concentrations, although the manganese concentration appears to have stabilized. The potential increasing trends and the GM-2D benzene, the GM-3D alkalinity and the GM-4D EWQCV exceedances are not considered related to landfill Area IV, Area V or Area VI and are most likely an Area II/III landfill historical impact on ground water quality. The reported GM-3D ground water pH is not considered related to any landfill activities and most likely is caused by the deterioration of the cement/bentonite grout used in the well construction.

4.1.1.3 2019 Bedrock Ground Water Analytical Data

Ground water from monitoring wells GM-13BR and GM-14BR continue to exhibit site specific leachate indicator parameter concentrations that are elevated with respect to the NYS ground water standards. With the potential exception of ammonia, there is no increasing trend in the GM-14BR ground water concentrations of the site-specific leachate indicator parameters. The GM-13BR ammonia, BOD and manganese potential increasing trends and the GM-13BR manganese and TKN and the GM-14BR TKN exceedances of the respective pooled inter-well EWQCVS are not considered related to landfills Area IV, Area V or Area VI.

4.1.2 Area II/III 2019 Leachate/Underdrain Analytical Data

Consistent with the requirements of the EMP, samples were collected from the east and west underdrains and the leachate sump. Flow in the center underdrain was insufficient in 2019 for sample collection. Statistical data for the 2019 Area II/III leachate and the east/west drain data, and a complete listing of the 2019 Area II/III leachate and east/west drain data are presented in Appendix C-1 and Appendix C-2, respectively.

Review of the leachate and the underdrain 2019 data and trend graphs of historical data (December 2019 Landfill, Fourth Quarter Report) indicate that the 2019 data are generally consistent with historical values.

4.2 Landfill Area IV

Landfill Area IV operational samples were collected quarterly from the Area IV Cell 1 and Area IV Cell 2 ground water monitoring locations detailed in the approved EMP (December 1999), the Area IV Cell 1 and Cell 2 primary and secondary leachate and the Area IV Cell 1 and Area IV Cell 2 underdrains. The December 2019 Area IV primary and secondary leachate samples were analyzed for the Part 360 expanded parameters.

4.2.1 Ground Water Analytical Data

Pursuant to the approved EMP, the Area IV ground water monitoring network consists of the following monitoring wells:

- Shallow Overburden: Upgradient MW-03-1S: Downgradient MW-96-1S, MW-96-2S, MW-03-8S, GM-96-11S
- Deep Overburden: Upgradient MW-03-1D: Downgradient MW-96-1D, MW-96-2D, GM-11D, MW-03-8D
- Bedrock: Upgradient TB-44-83: Downgradient MW-96-1BR, MW-96-2BR, MW-03-8BR, GM-96-11BR

A statistical summary of the Area IV 2019, shallow overburden, deep overburden and bedrock ground water data are provided in Appendix D-1, D-2 and D-3, respectively. Tables presenting the historical data for each monitoring well that highlights the parameters with concentrations at or above the NYSDEC ground water standard or the EWQCV and trend graphs of historical data for

the site-specific leachate indicator parameters (calcium, iron, magnesium, potassium, sodium, sulfate and TDS) were provided in the December 2019 quarterly monitoring report. A summary of the 2019 ground water analytical data is provided in the following sections.

4.2.1.1 Area IV Shallow Overburden Ground Water Analytical Data

The MW-96-1S, MW-96-2S, MW-03-8S and the GM-96-11S chloride EWQCV exceedances and the potential MW-96-1S chloride and sodium, MW-96-2S calcium, chloride and sodium and the MW-03-8S chloride increasing concentration trends are not considered related to an Area IV impact on ground water quality. The Area IV Cell 1 and Cell 2 underdrain chloride concentration and the Area IV Cell 1 and Cell 2 underdrain concentrations (except ammonia in the Area IV Cell 1 underdrain) of the leachate indicator parameters not normally present in ground water at elevated concentrations (ammonia, BOD, COD and TOC) area stable and generally consistent with pre-operational data. The exceedances/increasing trends are most likely related to temporal variability, historical ground water impacts from landfill Areas II/III, physical disturbance of soils during Area IV landfill construction and/or a reduction in the ground water recharge rate associated with the construction of the Area IV landfill and the closing of landfill Areas II/III.

Following, is a summary of the 2019 ground water monitoring wells that exhibited parameter concentrations above either the EWQCV or the NYS ground water standard. Parameters that exceeded the EWQCV are in bold and are boxed in if they exceeded the NYS ground water standard.

MW-96-1S

Date			**Mar-19**	**Jun-19**	**Sep-19**	**Dec-19**
Area IV/V Leachate Indicators	**EWQCV**	**NYS Ground Water Standard**				
Alkalinity (mg/L)	397		DRY	**400**	DRY	280
Chemical Oxygen Demand (COD) (mg/L)	13.52	NS	DRY	7	DRY	**16**
Chloride (mg/L)	7.07	250	DRY	**82.1**	DRY	**102**
Total Dissolved Solids (TDS) (mg/L)	1,285	500	DRY	730	DRY	365
Area IV/V Routine Metals						
Iron (µg/L)	5,693	300	DRY	43.3	DRY	462
Magnesium (µg/L)	126,201	35,000 (GV)	DRY	63,200	DRY	48,100
Sodium (µg/L)	Trend	20,000	DRY	44,000	DRY	40,100
Field or Physical						
Turbidity (NTU)	310	5	DRY	42	DRY	62

The 2019 MW-96-1S EWQCV and NYS ground water standard exceedances are not considered an Area IV landfill related impact on ground water quality. The MW-96-1S concentration of the other leachate indicator parameters not normally present at elevated concentrations in ground water (ammonia, BOD and TOC) were less than the respective EWQCVs. The Area IV Cell 1 and Cell 2 leachate action leakage rates have been consistently low and with the exception of the Area IV Cell 1 underdrain ammonia concentration, the Area IV Cell 1 and Area IV Cell 2 underdrain concentrations of parameters not normally present in ground water at elevated concentrations (ammonia, BOD, COD, and TOC) are stable and generally consistent with historical data.

MW-96-2S

Date			Mar-19	Jun-19	Sep-19	Dec-19
Area IV/V Leachate Indicators	**EWQCV**	**NYS Ground Water Standard**				
Chloride (mg/L)	8.2	250	3.33	DRY	**357 S**	**393**
Total Dissolved Solids (TDS) (mg/L)	1,774	500	245	DRY	1,040	920
Total Organic Carbon (TOC) (mg/L)	4.35	NS	**5.5**	DRY	**4.7**	4.2
Area IV/V Routine Metals						
Iron (µg/L)	1,126.1	300	1,080	DRY	329	516
Magnesium (µg/L)	Trend	35,000 (GV)	41,400	DRY	86,600	78,600
Sodium (µg/L)	55,458	20,000	12,600	DRY	**71,900**	**80,300**
Field or Physical						
Turbidity (NTU)	310	5	60	DRY		35

The 2019 MW-96-2S EWQCV and NYS ground water standard exceedances are not considered an Area IV landfill related impact on ground water quality. With the exception of TOC the MW-96-2S concentration of the other leachate indicator parameters not normally present at elevated concentrations in ground water (ammonia, BOD, COD and TOC) were less than the respective EWQCVs. There is no consistent increasing trend in the MW-96-2S TOC concentration.

MW-03-8S

Date			Mar-19	Jun-19	Sep-19	Dec-19
Area IV/V Leachate Indicators	**EWQCV**	**NYS Ground Water Standard**				
Ammonia (mg/L)	0.056	2	0.3	**0.1**	<0.1	**0.1**
Chemical Oxygen Demand (COD) (mg/L)	20.0	NS	9	**68**	<5.0	5
Chloride (mg/L)	4.8	250	12.3	**13.7**	**11.5**	**11.4**
Sulfate (mg/L)	Trend	250	2,130	2,590	2,410	2,070
Total Dissolved Solids (TDS) (mg/L)	Trend	500	3,250	3,850	4,210	3,620
Area IV/V Routine Metals						
Iron (µg/L)	722.8	300	1,540	59.8	363	84.4
Magnesium (µg/L)	Trend	35,000 (GV)	452,000	537,000	519,000	398,000
Sodium (µg/L)	Trend	20,000	90,300	87,100	87,800	62,300
Area IV/V Field Parameters						
Turbidity (NTU)	41	5	5	11	12	2

There is no current increasing trend in the MW-03-8S ground water ammonia, BOD, calcium, COD, iron, magnesium, potassium, sodium, sulfate, TDS and TOC concentrations and a potential increasing trend in the chloride concentration. The source of the chloride increasing trend is not believed to be related to Area IV landfill operations. The chloride concentration in the Area IV underdrains has been consistent with pre-operational data.

GM-96-11S

Date	EWQCV	NYS Ground Water Standard	Mar-19	Jun-19	Sep-19	Dec-19
Parameter (Unit)						
Alkalinity (mg/L)	603	NS	510	Dry	**610**	430
Ammonia (mg/L)	0.088	2	<0.1	Dry	**1.2**	<0.1
Chloride (mg/L)	16.1	250	**23.3**	Dry	**182**	**80.1**
Sulfate (mg/L)	Trend	250	94.2	Dry	151	54.6
Total Dissolved Solids (TDS) (mg/L)	Trend	500	630	Dry	990	635
Total Kjeldahl Nitrogen (TKN) (mg/L)	0.58	NS	<1.0	Dry	**1.7**	<1.0
Total Phenols (mg/L)	0.027	0.001	<0.004	Dry	0.023	<0.004
Area IV/V Routine Metals						
Iron (µg/L)	1,729.0	300	177	Dry	1,420	225
Magnesium (µg/L)	Trend	35,000 (GV)	71,400	Dry	140,000	65,100
Sodium (µg/L)	Trend	20,000	17,600	Dry	49,900	52,400
Field or Physical						
Turbidity (NTU)	175	5	35	Dry		42

There is no increasing trend in the concentration of the parameters that exceeded the EWQCVs or the NYS ground water standards. With the exception of the September 2019 ammonia concentration the concentration of the leachate indicator parameters not normally present at elevated concentrations in ground water (ammonia, BOD, COD and TOC) were less than the respective EWQCVs and depict no current consistent increasing trend.

4.2.1.2 Area IV Deep Overburden Ground Water Analytical Data

The 2019 Area IV deep overburden ground water exceedances of the EWQCVs and the NYS ground water standards and the potential increasing trend in the MW-96-1D ammonia and the MW-96-2D chloride concentrations are not considered related to Area IV landfill operations. The Area IV Cell 1 and Cell 2 action leakage rates are low and the Area IV Cell 1 and Cell 2 underdrain BOD, COD and TOC concentrations and the Area IV Cell 2 underdrain ammonia concentration are generally consistent with historical data. The Area IV deep overburden ground water data trends are most likely related to temporal variability, historical ground water impacts from landfill Areas II/III, physical disturbance of soils during Area IV/V landfill construction and/or a reduction in the ground water recharge rate associated with the construction of the Area IV landfill and the closing of landfill Areas II/III.

MW-96-1D

Date	EWQCV	NYS Ground Water Standard	Mar-19	Jun-19	Sep-19	Dec-19
Area IV/V Leachate Indicators						
Alkalinity (mg/L)	697	NS	660	**730**	608	650
Ammonia (mg/L)	0.25	2	**0.5**	**1.4**	<0.1	**1.8**
Chemical Oxygen Demand (COD) (mg/L)	11.5	NS	5	7	9	**18**
Hardness (mg/L)	5,037	NS	4,029	**6,860**	**5,902**	**7,050**
Sulfate (mg/L)	Trend	250	4,570	5,970	4,050	6,580

Total Dissolved Solids (TDS) (mg/L)	Trend	500	5,600	9,340	6,400	9,570
Total Kjeldahl Nitrogen (TKN) (mg/L)	1.4	NS	<1.0	**1.7**	<1.0	<1.0
Total Phenols (mg/L)	0.033	0.001	<0.004	<0.004	0.005	<0.004
Area IV/V Routine Metals						
Iron (µg/L)	1,287.8	300	**1,300**	76.9	**2,630**	127
Magnesium (µg/L)	Trend	35,000 (GV)	804,000	1,400,000	1,200,000	1,470,000
Manganese (µg/L)	450.4	300	435	**641**	389	**451**
Potassium (µg/L)	15,920	NS	**17,200**	**28,600**	**20,900**	**26,200**
Sodium (µg/L)	Trend	20,000	146,000	249,000	220,000	253,000
Field or Physical						
Conductivity (µmhos/cm)	6,347	NS	5,630	**7,890**	**6,400**	**7,960**
pH (s.u.)	6.57 - 7.35	6.5 - 8.5	7.01	**6.35**	**6.55**	6.82
Turbidity (NTU)	166	5	112	109	145	**224**

There is a potential slight increasing trend in the MW-96-1D ammonia concentration and no current increasing trend in the other parameters above the EWQCVs or the NYS ground water standards. The 2019 MW-96-1D EWQCV and NYS ground water standard exceedances and the potential increasing ammonia concentration are not considered indicative of an Area IV landfill related impact on ground water quality.

MW-96-2D

Date			**Mar-19**	**Jun-19**	**Sep-19**	**Dec-19**
Area IV/V Leachate Indicators	**EWQCV**	**NYS Ground Water Standard**				
Alkalinity	431	NS	410	**450**	430	400
Chloride (mg/L)	2.0	250	**8.78**	**9.34**	**48.7**	**10.9**
Sulfate (mg/L)	823	250	709	**851**	688	776
Total Dissolved Solids (TDS) (mg/L)	1,479	500	1,340	**1,610**	1,440	1,380
Area IV/V Routine Metals						
Calcium (µg/L)	120,428	NS	105,000	**121,000**	110,000	108,000
Iron (µg/L)	253.33	300	**267**	<100	31.6	43.1
Magnesium (µg/L)	Trend	35,000 (GV)	243,000	229,000	211,000	221,000
Manganese (µg/L)	87.07	300	**95.6**	63.8	66.4	71.5
Potassium (µg/L)	11,074	NS	**13,200**	**12,300**	**12,700**	**11,400**
Sodium (µg/L)	43,386	20,000	42,800	43,200	41,400	40,000

The 2019 reported MW-96-2D ground water exceedances of the NYS ground water standards and the EWQCVs and the potential increasing trend in the ground water chloride concentration are not considered related to Area IV landfill operations. The concentrations of other leachate indicator parameters that are not naturally present in ground water at high background concentrations (ammonia, BOD, COD, and TOC) were less than the EWQCVs.

MW-03-8D

Date			Mar-19	Jun-19	Sep-19	Dec-19
Parameter (Unit)	**EWQCV**	**NYS Ground Water Standard**				
Area IV/V Leachate Indicators						
Sulfate (mg/L)	Trend	250	1,340	1,390	1,270	1,120
Total Dissolved Solids (TDS) (mg/L)	Trend	500	2,240	2,320	2,340	2,250
Area IV/V Routine Metals						
Iron (µg/L)	1,724	300	**1,850**	69.4	926	52
Magnesium (µg/L)	Trend	35,000 (GV)	311,000	247,000	299,000	311,000
Manganese (µg/L)	296.8	300	**626**	132	150	121
Potassium (µg/L)	9,442	NS	**22,200**	6,470	**15,600**	**10,300**
Sodium (µg/L)	Trend	20,000	68,100	49,000	63,000	61,400
Area IV/V Field Parameters						
Turbidity (NTU)	92	5	**186**	79	58	89

The 2019 MW-03-8D ground water EWQCV and NYS ground water standard exceedances are most likely related to temporal variability, historical ground water impacts from landfill Area II/III, physical disturbance of soils during Area IV landfill construction and/or a reduction in the ground water recharge rate associated with the construction of the Area IV landfill and the closing of landfill Area II/III. The concentrations of leachate indicator parameters that are not naturally present in ground water at high background concentrations (ammonia BOD, COD, and TOC) were generally consistent with Area IV pre-operational data.

GM-11D

Date			Mar-19	Jun-19	Sep-19	Dec-19
Parameter (Unit)	**EWQCV**	**NYS Ground Water Standard**				
Area IV/V Leachate Indicators						
Alkalinity (mg/L)	462	NS	460	**470**	430	420
Sulfate (mg/L)	Trend	250	803	907	588	919
Total Dissolved Solids (TDS) (mg/L)	Trend	500	1,380	2,060	1,260	1,560
Total Kjeldahl Nitrogen (TKN) (mg/L)	0.278	NS	**1.1**	<1.0	**2.5**	<1.0
Total Phenols (mg/L)	0.033	0.001	<0.004	<0.004	0.005	<0.004
Area IV/V Routine Metals						
Iron (µg/L)	Trend	300	9,480	30,200	3,550	23,600
Magnesium (µg/L)	Trend	35,000 (GV)	200,000	240,000	190,000	202,000
Potassium (µg/L)	4,788	NS	4,310	**5,170**	**4,970**	4,120
Sodium (µg/L)	58,347	20,000	43,100	46,700	42,800	42,700
Area IV/V Field Parameters						
Turbidity (NTU)	150	5	21	60	51	48

There is no current increasing trend in the GM-11D ground water concentration of the landfill leachate indicator parameters. The GM-11D ground water concentrations of leachate indicator parameters that are not naturally present in ground water at high background concentrations (ammonia BOD, COD, and TOC) were generally consistent with Area IV historical data.

UPGRADIENT MW-03-1D

Date			**Mar-19**	**Jun-19**	**Sep-19**	**Dec-19**
Parameter (Unit)	**EWQCV**	**NYS Ground Water Standard**				
Area IV/V Leachate Indicators						
Total Dissolved Solids (TDS) (mg/L)	1,333	500	575	510	575	480
Total Kjeldahl Nitrogen (TKN) (mg/L)	1.4	NS	<1.0	**2.5**	1.1	<1.0
Area IV/V Routine Metals						
Iron (µg/L)	704	300	528	101	**814**	175
Magnesium (µg/L)	184,064	35,000 (GV)	83,000	92,300	87,600	88,500
Potassium (µg/L)	10,855	NS	**13,400**	6,700	5,960	5,930
Sodium (µg/L)	52,854	20,000	24,600	19,100	20,200	17,400
Area IV/V Field Parameters						
pH (s.u.)	6.54 - 9.16	6.5 - 8.5	7.45	7.46	6.62	**6.08**
Turbidity (NTU)	532	5	187	65	82	311

Consistent with historical data the 2019 concentrations of iron, magnesium, sodium and TDS were higher than the respective ground water standard/guidance value in at least one sample in 2019.

4.2.1.3 Area IV Bedrock Ground Water Analytical Data

There is a potential increasing trend in the GM-96-11BR ground water alkalinity, ammonia, magnesium, sulfate and TDS concentrations, the MW-03-8BR ground water potassium concentration and the MW-96-1BR COD concentration. The reported MW-96-1BR, MW-96-2BR, MW-03-8BR and GM-96-11BR exceedances of the ground water EWQCVs and the MW-96-1BR, MW-03-8BR and GM-96-11BR increasing concentration trends are not considered an Area IV landfill related impact on ground water quality. The Area IV Cell 1 and Cell 2 leachate action leakage rates have been consistently low and with the exception of the Area IV Cell 1 underdrain ammonia concentration, the Area IV Cell 1 and Area IV Cell 2 underdrain concentrations of parameters not normally present in ground water at elevated concentrations (ammonia, BOD, COD, and TOC) are stable and generally consistent with historical data. Any changes in the ground water chemistry of these monitoring wells is most likely related to a combination of temporal variability and historical ground water impacts from landfill Areas II/III, physical disturbance of soils during Area IV landfill construction and/or a reduction in the ground water recharge rate associated with the construction of the Area IV landfill and the closing of landfill Areas II/III.

MW-96-1BR

Date			**Mar-19**	**Jun-19**	**Sep-19**	**Dec-19**
Area IV/V Leachate Indicators	**EWQCV**	**NYS Ground Water Standard**				
Ammonia (mg/L)	0.26	2	**0.4**	**0.4**	<0.1	**0.3**
Chemical Oxygen Demand (COD) (mg/L)	6.6	NS	**7**	**7**	**13**	**42**
Sulfate (mg/L)	Trend	250	2,900	2,830	2,630	2,820
Total Dissolved Solids (TDS) (mg/L)	Trend	500	4,340	4,340	4,340	4,290

Area IV/V Routine Metals						
Iron (µg/L)	1,200	300	**6,260**	367	**1,720**	999
Magnesium (µg/L)	Trend	35,000 (GV)	594,000	456,000	639,000	591,000
Sodium (µg/L)	Trend	20,000	112,000	79,600	119,000	105,000
Field or Physical						
Conductivity (µmhos/cm)	4,443	NS	**4,540**	4,400	70	**4,500**
Turbidity (NTU)	36	5	7	3	**360**	5

There is a potential increasing trend in the MW-96-1BR ground water COD concentration. The reported MW-96-1BR exceedances of the ground water EWQCVs and the potential increasing trend in the ground water COD concentration are not considered an Area IV landfill related impact on ground water quality. The Area IV Cell 1 and Cell 2 action leakage rates are extremely low and the Area IV Cell 1 and Cell 2 underdrain COD concentrations are stable and consistent with pre-operational data.

MW-96-2BR

Date			**Mar-19**	**Jun-19**	**Sep-19**	**Dec-19**
Area IV/V Leachate Indicators	**EWQCV**	**NYS Ground Water Standard**				
Ammonia (mg/L)	0.26	2	**0.3**	0.2	<0.1	<0.1
Hardness (mg/L)	2,037	NS	**2,574**	**2,384**	**2,260**	**2,350**
Sulfate (mg/L)	Trend	250	2,080	2,250	1,900	2,060
Total Dissolved Solids (TDS) (mg/L)	Trend	500	3,330	3,500	3,170	3,130
Area IV/V Routine Metals						
Iron (µg/L)	348.7	300	110	315	36.6	33.7
Magnesium (µg/L)	Trend	35,000 (GV)	447,000	382,000	391,000	403,000
Sodium (µg/L)	Trend	20,000	94,100	77,600	87,600	83,600
Field or Physical						
Conductivity (µmhos/cm)	3,298	NS	**3,580**	27	**3,650**	**3,300**
pH (s.u.)	6.80 - 8.26	6.5 - 8.5	6.76	7.23	**6.61**	7.31
Turbidity (NTU)	51	5	2	**248**	0	0

The MW-96-2BR ground water concentrations of the leachate indicator parameters (ammonia, BOD, COD and TOC) that are not naturally present in ground water at elevated concentrations are generally stable. The 2019 MW-96-2BR parameters with ground water exceedances of the NYS ground water standards and the EWQCVs are not considered related to Area IV landfill operations.

MW-03-8BR

Date			**Mar-19**	**Jun-19**	**Sep-19**	**Dec-19**
Parameter (Unit)						
Area IV/V Leachate Indicators	**EWQCV**	**NYS Ground Water Standard**				
Alkalinity (mg/L)	248	NS	**330**	**340**	**330**	**320**

Biochemical Oxygen Demand (BOD) (mg/L)	4.9	NS	**7**	<4.0	<4.0	<4.0
Hardness (mg/L)	371	NS	**531**	**550**	**541**	**505**
Sulfate (mg/L)	327	250	**349**	**383**	**334**	314
Total Dissolved Solids (TDS) (mg/L)	629	500	**750**	**820**	**760**	**770**
Area IV/V Routine Metals						
Calcium (µg/L)	54,901	NS	**57,300**	**66,000**	**59,000**	**57,000**
Iron (µg/L)	408.5	300	**784**	244	88.4	213
Magnesium (µg/L)	64,472	35,000 (GV)	**94,300**	**93,900**	**95,500**	**88,100**
Potassium (µg/L)	5,190	NS	**23,500**	**11,300**	**14,500**	**9,680**
Sodium (µg/L)	Trend	20,000	77,600	65,400	76,000	58,900
Area IV/V Field Parameters					0	
Conductivity (µmhos/cm)	780	NS	**1,220**	**1,220**	**1,290**	**1,230**

There is no increasing trend in the MW-03-8BR ground water BOD concentration. With the exception of March 2019 BOD concentration, the concentrations of leachate parameters not normally present in ground water at high concentrations (ammonia, BOD, COD and TOC) were generally consistent with historical data. There is no increasing trend in the concentration of the parameters detected above the EWQCVS in the 2019 MW-03-8BR ground water samples. The MW-03-8BR parameter concentrations above the EWQCV and the potential potassium increasing trend are most likely not related to an Area IV landfill derived impact on ground water quality. The Area IV Cell 1 and Cell 2 leachate action leakage rates have been consistently low and with the exception of the Area IV Cell 1 underdrain ammonia concentration, the Area IV Cell 1 and Area IV Cell 2 underdrain concentrations of parameters not normally present in ground water at elevated concentrations (ammonia, BOD, COD, and TOC) are stable and generally consistent with historical data.

GM-96-11BR

Date			**Mar-19**	**Jun-19**	**Sep-19**	**Dec-19**
Parameter (Unit)	**EWQCV**	**NYS Ground Water Standard**				
Area IV/V Leachate Indicators						
Alkalinity (mg/L)	395	NS	**460**	**440**	**440**	390
Ammonia (mg/L)	0.035	2	**1.2**	**0.2**	**0.4**	**0.2**
Hardness (mg/L)	1,155	NS	878	**1,282**	**5,404**	**1,324**
Sulfate (mg/L)	Trend	250	967	1,010	972	1,020
Total Dissolved Solids (TDS) (mg/L)	Trend	500	1,720	1,850	1,820	1,730
Total Kjeldahl Nitrogen (TKN) (mg/L)	0.312	NS	**1.7**	<1.0	**1.1**	<1.0
Total Phenols (mg/L)	0.055	0.001	<0.004	<0.004	<0.004	0.007
Area IV/V Routine Metals						
Calcium (µg/L)	159,931	NS	**204,000**	**164,000**	**179,000**	**174,000**
Iron (µg/L)	110.39	300	**3,190**	**2,170**	**2,550**	**5,650**
Magnesium (µg/L)	184,249	35,000 (GV)	**212,000**	**212,000**	**224,000**	**216,000**
Manganese (µg/L)	5.72	300	**145**	**117**	**111**	**84.7**
Sodium (µg/L)	Trend	20,000	64,700	56,300	66,900	53,500
Area IV/V Field Parameters						
Conductivity (µmhos/cm)	1,881	NS	**2,230**	**2,220**	**2,310**	**2,300**
pH (s.u.)	6.99 - 8.83	6.5 - 8.5	7.07	7.22	**6.69**	7.1

Turbidity (NTU)	40	5	7	**19**	10	**67**

The GM-96-11BR EWQCV exceedances and the potential increasing GM-96-11BR ground water alkalinity, ammonia, magnesium, sulfate and TDS concentrations are not considered related to Area IV landfill operations. The Area IV Cell 1 and Cell 2 leachate action leakage rates have been consistently low and with the exception of the Area IV Cell 1 underdrain ammonia concentration, the Area IV Cell 1 and Area IV Cell 2 underdrain concentrations of parameters not normally present in ground water at elevated concentrations (ammonia, BOD, COD, and TOC) are stable and generally consistent with historical data.

4.2.2 Area IV Cell 1 and Area IV Cell 2 Landfill Underdrain Water Quality Data

A statistical summary of the Area IV Cell 1 and Area IV Cell 2 underdrain 2019 analytical data is presented in Appendix E. Tables presenting the 2019 data and the historical data and trend graphs of the site specific leachate indicator parameters were presented in the December 2019 Quarterly Landfill Monitoring Report.

There is no increasing trend in the Area IV Cell 1 and Area IV Cell 2 underdrain BOD, COD, calcium, iron, magnesium, manganese, potassium, sodium, sulfate, TDS and TOC concentrations or the Area IV Cell 2 underdrain ammonia, chloride and TKN concentrations. The concentration of these parameters is generally stable. The Area IV Cell 1 and the Area IV Cell 2 underdrain EWQCV exceedances and the increasing Area IV Cell 1 underdrain alkalinity and ammonia concentrations are not considered related to Area IV landfill operations. The action leakage rate for the Area IV Cell 1 and Cell 2 primary liners has been consistently low. The Area IV Cell 2 underdrain concentrations of the other site specific leachate indicator parameters not normally present in ground water at elevated concentrations (ammonia, BOD, COD, TOC) were consistent with pre-operational data, as were the Area IV Cell 1 underdrain BOD, COD and TOC concentrations. The Area IV Cell 1 underdrain ammonia increasing concentration trend began in 2012. The reported Area IV Cell 1 EWQCV exceedances and the Area IV Cell 1 alkalinity and ammonia increasing concentration trend are most likely related to temporal variability, changes in recharge to the shallow overburden associated with the construction of landfill Area IV and the closing of landfill Areas II/III and historical landfill Area II/III impacts on ground water quality. Underdrain existing water quality data consisted of four samples that were collected over a four-month period (one each month) and may not adequately depict the potential temporal variability in the underdrain ground water quality.

4.2.2.1 Area IV Cell 1 Underdrain Ground Water Quality Data

Date			**Mar-19**	**Jun-19**	**Sep-19**	**Dec-19**
Parameter (Unit)						
Area IV/V Leachate Indicators	**EWQCV**	**NYSDEC Ground Water Standard**				
Alkalinity (mg/L)	630	NS	**640**	**700**	**660**	590
Ammonia (mg/L)	0.058	2	**0.7**	**1**	**0.8**	**1.2**
Sulfate (mg/L)	Trend	250	5,290	5,570	5,270	5,410
Total Dissolved Solids (TDS) (mg/L)	Trend	500	8,040	7,980	8,090	7,690
Total Phenols (mg/L)	0.027	0.001	<0.004	<0.004	<0.004	0.008

Area IV/V Routine Metals						
Iron (µg/L)	1,836	300	1,500	718	779	443
Magnesium (µg/L)	Trend	35,000 (GV)	1,390,000	1,070,000	1,190,000	1,070,000
Manganese (µg/L)	598	300	**715**	**605**	**662**	**610**
Potassium (µg/L)	22,141	NS	**28,000**	**24,700**	**23,800**	**23,200**
Sodium (µg/L)	Trend	20,000	236,000	175,000	203,000	171,000
Field or Physical						
Turbidity (NTU)	251	5	0.1	8	0	1

Historically, ground water samples from the Area IV Cell 1 underdrain have consistently exhibited manganese (Since June 2006), potassium (Since March 2007), iron (Since December 2007) and TKN (Since September 2007) concentrations above the respective EWQCVs. TOC concentrations have sporadically exceeded the EWQCV since March 2006. There is no current significant increasing trend in the iron, manganese, potassium, TKN and TOC concentrations.

Area IV Cell 1 underdrain trend graphs for calcium, iron, magnesium, manganese, potassium, sodium, sulfate, and TDS, indicate that the concentration of these parameters are stable. There is a potential increasing trend in the alkalinity and ammonia concentrations. With the exception of ammonia, the Area IV Cell 1 underdrain concentration of other site specific leachate indicator parameters not normally present in ground water at elevated concentrations (ammonia, BOD, COD, TOC) were generally consistent with pre-operational data. The reported 2019 exceedances of the EWQCVs and the potential increasing trend in alkalinity and ammonia concentrations most likely reflect a combination of temporal variation (the EWQ analysis for the Area IV Cell 1 underdrain is based on four samples collected once a month for four consecutive months), existing groundwater contamination from closed landfill Area II/III, a change in ground water chemistry related to physical disturbance of soils during construction of the Area IV landfill and a reduction in the ground water recharge rate associated with the construction of the Area IV landfill and closing of landfill Area II/III.

4.2.2.2 Area IV Cell 2 Underdrain Ground Water Quality Data

DATE			**Mar-19**	**Jun-19**	**Sep-19**	**Dec-19**
Area IV/V Leachate Indicators	**EWQCV**	**NYSDEC Ground Water Standard**				
Ammonia (mg/L)	0.12	2	<0.1	<0.1	**0.2**	<0.1
Chloride (mg/L)	5.2	250	**5.42**	**5.73**	4.92	**5.74**
Hardness (mg/L)	2,209	NS	**2,339**	1,615	2,042	1,900
Sulfate (mg/L)	Trend	250	1,600	1,660	1,790	1,690
Total Dissolved Solids (TDS) (mg/L)	Trend	500	2,760	2,780	3,080	2,780
Total Kjeldahl Nitrogen (TKN) (mg/L)	0.52	NS	<1.0	<1.0	**3.9**	<1.0
Total Phenols (mg/L)	0.027	0.001	<0.004	<0.004	<0.004	0.007
Area IV/V Routine Metals						
Magnesium (µg/L)	Trend	35,000 (GV)	432,000	298,000	389,000	357,000
Sodium (µg/L)	Trend	20,000	83,200	53,900	73,400	65,600
Field or Physical						
Turbidity (NTU)	25	5	0	1.2	2	15

The Area IV Cell 2 underdrain concentrations of the other site specific leachate indicator parameters not normally present in ground water at elevated concentrations (ammonia, BOD, COD, TOC) were generally consistent with pre-operational data.

The reported 2019 exceedances of the EWQCVs most likely reflect a combination of temporal variation (the EWQ analysis for the Area IV Cell 2 underdrain is based on four samples collected once a month for four consecutive months), existing groundwater contamination from closed landfill Area II/III, a change in ground water chemistry related to physical disturbance of soils during construction of the Area IV landfill and a reduction in the ground water recharge rate associated with the construction of the Area IV landfill and closing of landfill Area II/III. There is no current increasing trend in the Area IV Cell 2 underdrain concentrations of ammonia, BOD, COD, calcium, chloride, hardness, iron, magnesium, manganese, potassium, sodium, sulfate, TDS and TOC.

4.2.3 Area IV Cell 1 and Cell 2 Primary and Secondary Leachate Analytical Data

A statistical summary of the 2019 Area IV primary and secondary leachate data is presented in Appendix F-1 and the 2019 data are provided in Appendix F-2. The March, June and September 2019 samples were analyzed for the NYS Part 360 baseline parameters and the December 2019 samples were analyzed for the Part 360 expanded parameters.

Consistent with historical data, acetone was detected in the December 2019 Area IV Cell 2 primary leachate sample. No chlorinated dioxins/furans, herbicides, pesticides, PCBs or semi-volatile organics were detected in the December 2019 Area IV primary or secondary leachate samples.

4.3 Landfill Area V

From Area V, samples were collected from the ground water monitoring locations detailed in the approved EMP (December 1999), the south surface water, north surface water, the combined Area V Cell 1 and Area V Cell 2 primary leachate, the Area V Cell 3 primary leachate, the Area V secondary leachates, and the Area V Cell 1 and Cell 3 underdrains. There was no flow in the Area V Cell 2 underdrain in 2019. The samples collected from the Area V Cell 1 and Cell 2 primary leachate collection systems in 2019 were composited into a single sample for analysis as specified in the approved EMP. The December 2019 Area V primary and secondary leachate samples were analyzed for the Part 360 expanded parameters.

4.3.1 Ground Water Analytical Data

Pursuant to the approved EMP, the Area V ground water monitoring well network consists of the following monitoring wells:

- Shallow Overburden: MW-96-3S, MW-96-4S and GM-10S.
- Deep Overburden: GM-10D, MW-96-3D, MW-96-4D and MW-01-16D
- Bedrock: GM-96-10BR, MW-96-3BR, MW-96-4BR and MW-01-16BR

A statistical summary of the 2019 shallow overburden, 2019 deep overburden and 2019 bedrock ground water data are provided in Appendix D-1, D-2 and D-3, respectively. Tables presenting the historical data for each monitoring well that highlights the parameters with concentrations at or above the NYSDEC ground water standard or the EWQCV and trend graphs for the landfill leachate indicator parameters were provided in the December 2019 quarterly report. A discussion of the 2019 ground water analytical data is provided in the following text.

4.3.1.1 Area V 2019 Shallow Overburden Ground Water Analytical Data

There is no current increasing trend in the MW-96-3S, MW-96-4S and GM-10S ground water calcium, iron, magnesium, potassium, sodium, sulfate and TDS concentration. The GM-10S ammonia, hardness and TKN EWQCV exceedances are most likely related to temporal variability, historical ground water impacts from landfill Areas II/III, physical disturbance of soils during Area IV/V landfill construction and/or a reduction in the ground water recharge rate associated with the construction of the Area IV/V landfills and the closing of landfill Areas II/III.

MW-96-3S

DATE			**Mar-19**	**Jun-19**	**Sep-19**	**Dec-19**
Area V Leachate Indicator Parameters	**EWQCV**	**NYS Ground Water Standard**				
Sulfate (mg/L)	Trend	250	3,140	Dry		2,980
Total Dissolved Solids (TDS) (mg/L)	Trend	500	4,850	Dry		4,490
Area V Metals						
Iron (µg/L)	750	300 *	309	Dry	124	**918**
Magnesium (µg/L)	Trend	35,000 (GV)	687,000	Dry	721,000	843,000
Sodium (µg/L)	Trend	20,000	115,000	Dry	114,000	135,000
Field or Physical						
Turbidity (NTU)	41	5	20	Dry		**107**

There is no increasing trend in the MW-96-3S concentration of the site specific leachate indicator parameters. The concentration of the other parameters not naturally present at high concentrations in ground water (ammonia, COD, BOD, and TOC) were consistent with Area IV historical data.

MW-96-4S

Date			**Mar-19**	**Jun-19**	**Sep-19**	**Dec-19**
Parameter (Unit)	**EWQCV**	**NYS Ground Water Standard**				
Area V Leachate Indicator Parameters						
Sulfate (mg/L)	Trend	250	1,180	DRY	DRY	DRY
Total Dissolved Solids (TDS) (mg/L)	Trend	500	2,120	DRY	DRY	DRY
Total Kjeldahl Nitrogen (TKN) (mg/L)	0.47	NS	**1.1**	DRY	DRY	DRY
Area V Metals						
Iron (µg/L)	390	300 *	303	DRY	DRY	DRY

Magnesium (µg/L)	Trend	35,000 (GV)	344,000	DRY	DRY	DRY
Sodium (µg/L)	Trend	20,000	82,800	DRY	DRY	DRY
Field or Physical						
Turbidity (NTU)	21	5	**61**	DRY	DRY	DRY

There is no current increasing trend in the MW-96-4S ground water concentration of the site specific parameters (calcium, iron, magnesium, potassium, sodium, sulfate, TDS) or the concentration of parameters not normally present in ground water at elevated concentrations (ammonia, BOD, COD, TOC) . The reported 2019 MW-96-4D TKN EWQCV exceedance is not considered related to ongoing Area IV landfill operations or the closed Area V landfill.

GM-10S

Date			**Mar-19**	**Jun-19**	**Sep-19**	**Dec-19**
Parameter (Unit)	**EWQCV**	**NYS Ground Water Standard**				
Area V Leachate Indicator Parameters						
Alkalinity (mg/L)	780	NS	560	DRY		600
Ammonia (mg/L)	0.28	2	**0.5**	DRY		**0.7**
Hardness (mg/L)	4,909	NS	4,601	DRY	**4,943**	4,437
Sulfate (mg/L)	Trend	250	3,920	DRY		4,090
Total Dissolved Solids (TDS) (mg/L)	Trend	500	5,950	DRY		5,970
Total Kjeldahl Nitrogen (TKN) (mg/L)	0.58	NS	<1.0			**1.1**
Area V Metals				DRY		
Magnesium (µg/L)	Trend	35,000 (GV)	782,000	DRY	884,000	797,000
Sodium (µg/L)	Trend	20,000	157,000	DRY	157,000	148,000
Field or Physical						
Turbidity (NTU)	131	5	11	DRY		81

There is no current increasing trend in the GM-10S ground water concentration of the site specific parameters (calcium, iron, magnesium, potassium, sodium, sulfate, TDS). The reported GM-10S EWQCV exceedances are not considered related to ongoing Area IV landfill operations or the closed Area V landfill. With the exception of ammonia, the concentration of the other landfill parameters (BOD, COD,TOC) not normally present at elevated concentrations were generally consistent with historical data and the there is no increasing trend in the ammonia, BOD, COD or TOC concentrations.

4.3.1.2 Area V 2019 Deep Overburden Ground Water Analytical Data

There is an increasing trend in the GM-10D ground water calcium, hardness, magnesium, manganese, sulfate and TDS concentrations and the MW-96-3D sodium concentration. There is no current increasing trend in the ground water concentration of any site specific leachate indicator parameter in ground water from monitoring wells MW-96-4D and MW-01-16D. The GM-10D, MW-96-3D and MW-96-4D parameter concentrations that were reported above the respective EWQCVs and the GM-10D and MW-96-3D parameters that exhibit an increasing trend are not considered to represent a significant impact on ground water quality related to the Area V landfill operations. The GM-10D, MW-96-3D, MW-96-4D and MW-01-16D concentrations of leachate indicator parameters (ammonia, BOD, COD and TOC) that are not normally present in ground

water at high background concentrations were generally consistent with historical data and were less than the EWQCVs. The changes in the ground water chemistry may reflect a change related to physical disturbance of soils during landfill construction, a reduction in the ground water recharge rate associated with the construction of the Area IV/V landfills and the closing of landfill Areas II/III and/or related to existing groundwater contamination from closed landfill Area II/III.

MW-96-3D

Date			**Mar-19**	**Jun-19**	**Sep-19**	**Dec-19**
Area V Leachate Indicator Parameters	**EWQCV**	**NYS Ground Water Standard**				
Sulfate (mg/L)	413	250	**737**	**754**	**670**	**684**
Total Dissolved Solids (TDS) (mg/L)	1,336	500	**1,490**	**1,440**	**1,380**	1,260
Total Phenols (mg/L)	0.02	0.001	<0.004	<0.004	<0.004	0.009
Area V Metals						
Calcium (µg/L)	194,000	NS	**204,000**	160,000	177,000	192,000
Iron (µg/L)	Trend	300 *	786	46.5	680	6,110
Magnesium (µg/L)	161,000	35,000 (GV)	**162,000**	152,000	**171,000**	**165,000**
Manganese (µg/L)	412	300 *	224	129	206	343
Sodium (µg/L)	34,000	20,000	**42,600**	**40,400**	**44,800**	**41,600**
Field Parameters						
Conductivity (µmhos/cm)	1,792	NS	**1,890**	**1,960**	**1,930**	**1,970**
pH (s.u.)	6.37-8.19	6.5 - 8.5	6.96	6.4	6.82	6.8
Turbidity (NTU)	344	5	8	3	16	**500**

There is currently a potential slight increasing trend in the MW-96-3D sodium concentration, although the concentration has appeared to stabilize. The reported MW-96-3D NYS ground water standard and EWQCV exceedances and the potential increasing trend in the sodium concentration are not considered related to Area IV or Area V landfill operations. The MW-96-3D ground water concentrations of other leachate indicator parameters (ammonia, BOD, COD, and TOC) not normally present in ground water at high concentrations were consistent with historical data.

MW-96-4D

Date			**Mar-19**	**Jun-19**	**Sep-19**	**Dec-19**
Area V Leachate Indicator Parameters	**EWQCV**	**NYS Ground Water Standard**				
Sulfate (mg/L)	Trend	250	475	75.5	440	165
Total Dissolved Solids (TDS) (mg/L)	Trend	500	1,030	550	970	440
Total Kjeldahl Nitrogen (TKN) (mg/L)	0.49	NS	<1.0	**2.5**	**1.1**	**1.1**
Area V Metals						
Iron (µg/L)	810	300 *	536	94.4	**4,290**	576
Magnesium (µg/L)	Trend	35,000 (GV)	72,800	30,200	78,500	70,200
Sodium (µg/L)	Trend	20,000	31,600	8,310	21,300	19,900
Field or Physical						
Turbidity (NTU)	61	5	23	**133**	**106**	**101**

There is no consistent increasing trend in the MW-96-4D ground water iron and TKN concentrations. The MW-96-4D EWQCV exceedances are not considered an Area IV or Area V landfill related impact on ground water quality. The concentration of other leachate indicator parameters (ammonia, BOD, COD and TOC) that are not naturally present in ground water at high background concentrations were less than the EWQCVs and do not exhibit any increasing concentration trend.

GM-10D

Date			**Mar-19**	**Jun-19**	**Sep-19**	**Dec-19**
Parameter (Unit)	**EWQCV**	**NYS Ground Water Standard**				
Area V Leachate Indicator Parameters						
Chloride (mg/L)	80.9	250	**99.8**	**100**	**100**	71.9
Hardness (mg/L)	1,650	NS	**2,215**	**1,919**	1,535	**3,225**
Sulfate (mg/L)	450	250	**1,290**	**1,540**	**753**	**1,890**
Total Dissolved Solids (TDS) (mg/L)	1,385	500	**2,640**	**3,040**	**2,060**	**3,770**
Total Phenols (mg/L)	0.02	0.001	<0.004	<0.004	<0.004	0.006
Area V Metals						
Calcium (µg/L)	132,000	NS	**259,000**	**201,000**	**206,000**	**273,000**
Iron (µg/L)	Trend	300 *	2,370	69.4	1,790	401
Magnesium (µg/L)	Trend	35,000 (GV)	381,000	345,000	248,000	615,000
Manganese (µg/L)	60	300 *	**170**	**157**	**188**	**203**
Sodium (µg/L)	80,000	20,000	**105,000**	**90,900**	**86,600**	**130,000**
Field or Physical						
pH (s.u.)	6.2-7.9	6.5 - 8.5	6.61	6.49	6.82	6.81
Turbidity (NTU)	89	5	**168**	**158**	**212**	**259**

GM-10D calcium (since March 1998), chloride (since December 2000), hardness (since December 2001), manganese (since December 2003), sodium (since December 2005) sulfate (since March 2006) and TDS (since December 2003) values have periodically exceeded the respective EWQCVs. Although the GM-10D chloride and manganese concentrations were above the respective EWQCVs, the concentrations were below the respective NYS ground water standards.

There is a potential increasing trend in the GM-10D ground water calcium, hardness, magnesium, manganese, sulfate and TDS concentrations. The potential increasing trend is not considered an Area IV or Area V related impact on ground water quality. The concentration of other leachate indicator parameters (ammonia, BOD, COD and TOC) that are not normally present in ground water at high background concentrations were generally consistent with historical data and were less than the EWQCVs.

MW-01-16D

Date			**Mar-19**	**Jun-19**	**Sep-19**	**Dec-19**
Parameter (Unit)	**EWQCV**	**NYS Ground Water Standard**				
Area V Leachate Indicator Parameters						

Total Kjeldahl Nitrogen (TKN) (mg/L)	0.58	NS	<1.0	**2.2**	<1.0	**1.1**
Area V Metals						
Iron (µg/L)	Trend	300 *	390	35.6	189	22.8
Magnesium (µg/L)	Trend	35,000 (GV)	68,800	61,800	81,800	67,500
Field or Physical						
Turbidity (NTU)	10	5	2	3	**19**	0

The 2019 TKN EWQCV exceedances are not considered an Area IV or Area V related impact on ground water quality. There is no consistent increasing trend in the MW-01-16D TKN concentration and there is no apparent increasing trend in the concentration of other leachate indicator parameters (ammonia, BOD, COD and TOC) that are not naturally present in ground water at high background concentrations and the 2019 concentrations were consistent with historical data.

4.3.1.3 Area V 2019 Bedrock Ground Water Analytical Data

Trend graphs do not indicate any apparent significant increasing trend in the concentration of the landfill leachate indicator parameters in ground water from monitoring wells MW-96-3BR, MW-96-4BR and MW-01-16BR. The GM-96-10BR, MW-96-3BR and MW-01-16BR EWQCV exceedances and the potential increasing GM-96-10BR ground water calcium, manganese sulfate, and TKN concentrations are not considered related to Area IV or Area V landfill operations. With the exception of the December 2019 BOD concentration, the GM-96-10BR, MW-96-3BR and MW-01-16BR concentrations of site specific leachate indicator parameters not normally present in ground water at elevated concentrations (ammonia, BOD, COD, and TOC) were generally consistent with historical data.

MW-96-3BR

Date			**Mar-19**	**Jun-19**	**Sep-19**	**Dec-19**
Area V Leachate Indicator Parameters	**EWQCV**	**NYS Ground Water Standard**				
Hardness (mg/L)	700	NS	501	437	**970**	508
Sulfate (mg/L)	321	250	150	144	**652**	142
Total Dissolved Solids (TDS) (mg/L)	1,022	500	690	640	**1,370**	560
Total Kjeldahl Nitrogen (TKN) (mg/L)	0.74	NS	<1.0	<1.0	**1.7**	<1.0
Area V Metals						
Calcium (µg/L)	91,800	NS	69,500	61,000	**169,000**	70,000
Iron (µg/L)	Trend	300 *	59.6	36.9	1,160	536
Magnesium (µg/L)	116,000	35,000 (GV)	79,500	69,500	**133,000**	81,200
Sodium (µg/L)	47,260	20,000	32,800	27,500	38,100	28,800
Field or Physical						
Conductivity (µmhos/cm)	1,646	NS	986	961	**1,970**	1,040
Turbidity (NTU)	115	5	0	0	1	7

Consistent with pre-operational data, the 2019 ground water samples from monitoring well MW-96-3BR continued to exhibit magnesium, sodium and TDS concentrations that were higher than

the respective NYS ground water standards/guidance value. The reported September 2019 MW-96-3D EWQCV exceedances are not considered an Area IV or Area V landfill related impact on ground water quality. The 2019 concentration of the leachate indicator parameters (ammonia, BOD, COD and TOC) that are not naturally present in ground water at high background concentrations were consistent with pre-operational data.

MW-96-4BR

Date			**Mar-19**	**Jun-19**	**Sep-19**	**Dec-19**
Parameter (Unit)	**EWQCV**	**NYSDEC Ground Water Standard**				
Area V Leachate Indicator Parameters						
Sulfate (mg/L)	Trend	250	308	299	287	375
Total Dissolved Solids (TDS) (mg/L)	Trend	500	755	760	740	725
Total Phenols (mg/L)	0.04	0.001	<0.004	<0.004	<0.004	0.008
Area V Metals						
Iron (µg/L)	760	300 *	574	25.9	**1,590**	358
Magnesium (µg/L)	Trend	35,000 (GV)	101,000	83,200	84,800	93,700
Sodium (µg/L)	48,000	20,000	52,600	44,000	46,800	44,400
Area V Volatile Organics						
Field or Physical						
Turbidity (NTU)	30.8	5	2	16	4	16

Consistent with pre-operational and historical operational data the 2019 MW-96-4BR ground water samples continue to exhibit iron, magnesium, sodium, sulfate and TDS concentrations above the respective NYS ground water standards/guidance value. The December 2019 total phenols concentration was higher than the NYS ground water standard but less than the EWQCV.

The reported 2019 MW-96-4BR September iron EWQCV exceedance is not considered related to Area IV or Area V landfill operations. The concentration of parameters (ammonia, BOD, COD and TOC) not typically found at elevated concentrations in ground water were less than the respective EWQCVs.

GM-96-10BR

Parameter (Unit)	**EWQCV**	**NYSDEC Ground Water Standard**				
Area V Leachate Indicator Parameters						
Alkalinity (mg/L)	684	NS	660	**700**	640	600
Biochemical Oxygen Demand (BOD) (mg/L)	4.3	NS	<4.0	<4.0	<4.0	**6**
Chloride (mg/L)	51	250	**119**	**122**	**107**	**105**
Hardness (mg/L)	889	NS	**1,270**	**1,092**	**1,131**	**988**
Sulfate (mg/L)	266	250	**388**	**400**	**382**	**329**

Total Dissolved Solids (TDS) (mg/L)	1,028	500	**1,360**	**1,390**	**1,660**	**1,280**
Area V Metals						
Iron (µg/L)	Trend	300 *	1,120	256	144	134
Magnesium (µg/L)	159,000	35,000 (GV)	**168,000**	**163,000**	**173,000**	150,000
Manganese (µg/L)	64	300 *	**114**	**90.9**	**89.6**	**89.7**
Sodium (µg/L)	45,000	20,000	**76,600**	**58,600**	**73,600**	**47,800**
Field Parameters						
Turbidity (NTU)	27	5		8	9	0

Consistent with historical data the 2019 ground water samples from monitoring well GM-96-10BR continued to exhibit magnesium, sodium, sulfate and TDS concentrations that were higher than both the respective NYS ground water standards/guidance value and the respective EWQCVs.

With the exception of calcium, manganese, sulfate and TKN which exhibit potential increasing trends, the GM-96-10BR ground water concentration of the landfill leachate parameters are currently generally stable and there is no current significant increasing trend in the concentration of these parameters. The GM-96-10BR potential increasing concentrations and the reported 2019 EWQCV exceedances are not considered related to Area IV or Area V landfill operations. With the exception of the December 2019 BOD concentration, the 2019 concentrations of site specific leachate indicator parameters not normally present in ground water at elevated concentrations (ammonia, BOD, COD, and TOC) were less than the EWQCVs. There is no increasing trend in the GM-96-10BR BOD concentration.

MW-01-16BR

Date			**Mar-19**	**Jun-19**	**Sep-19**	**Dec-19**
Parameter (Unit)	**EWQCV**	**NYS Ground Water Standard**				
Area V Leachate Indicator Parameters						
Sulfate (mg/L)	Trend	250	502	467	438	395
Total Dissolved Solids (TDS) (mg/L)	Trend	500	1,030	990	990	1,010
Total Kjeldahl Nitrogen (TKN) (mg/L)	1.38	NS	<1.0	1.1	1.1	**3.1**
Area V Metals						
Iron (µg/L)	Trend	300 *	5,150	287	254	423
Magnesium (µg/L)	Trend	35,000 (GV)	148,000	139,000	136,000	135,000
Sodium (µg/L)	Trend	20,000	42,500	39,300	39,000	38,400

Consistent with historical data the 2019 ground water samples from monitoring well MW-01-16BR continued to exhibit iron, magnesium, sodium, sulfate and TDS concentrations that were higher than the NYS ground water standards/guidance value. Trend graphs indicate that the 2019 MW-01-16BR ground water data were generally consistent with historical ground water data.

The December 2019 MW-01-16BR TKN concentration exceeded the EWQCV. There is no increasing trend in the MW-01-16BR ground water TKN concentration and the reported value is

not considered related to an Area IV or Area V landfill related impact on ground water quality. The concentrations of site specific leachate indicator parameters not normally present in ground water at elevated concentrations (ammonia, BOD, COD, and TOC) were consistent with historical data.

4.3.2 Area V Cell 1, Cell 2 and Cell 3 Underdrain Ground Water Quality

A statistical summary of the Area V Cell 1 and Area V Cell 3 underdrain 2019 analytical data is presented in Appendix E. Tables presenting the 2019 analytical data and trend graphs of the site specific leachate indicator parameters were presented in the December 2019 Quarterly Landfill Monitoring Report. There was no flow in the Cell 2 underdrain during the 2019 monitoring events.

4.3.2.1 Area V Cell 1 Underdrain Data

Date			**Mar-19**	**Jun-19**	**Sep-19**	**Dec-19**
Area V Leachate Indicator Parameters	**EWQCV**	**NYSDEC Ground Water Standard**				
Alkalinity (mg/L)	1,354	NS	**1,380**	**1,510**	**1,410**	1,180
Ammonia (mg/L)	0.49	2	0.3	**0.6**	**1.3**	**0.6**
Chemical Oxygen Demand (COD) (mg/L)	20.04	NS	**42**	5	6	<5.0
Sulfate (mg/L)	Trend	250	2,960	2,890	2,800	2,710
Total Dissolved Solids (TDS) (mg/L)	Trend	500	5,160	5,260	5,290	4,740
Total Kjeldahl Nitrogen (TKN) (mg/L)	0.89	NS	**1.1**	<1.0	**1.1**	<1.0
Total Phenols (mg/L)	0.014	0.001	<0.004	<0.004	<0.004	0.005
Area V Metals						
Iron (µg/L)	Trend	300 *	120	483	4,640	343
Magnesium (µg/L)	Trend	35,000 (GV)	923,000	714,000	704,000	862,000
Manganese (µg/L)	8,333	300 *	949	1,770	915	503
Sodium (µg/L)	Trend	20,000	141,000	103,000	109,000	123,000
Field or Physical						
Turbidity (NTU)	5	5	0	7.7	44	20

Consistent with pre-operational data and/or historical operational data, the 2019 samples collected from the Area V Cell 1 underdrain continue to exhibit iron, magnesium, manganese, sodium, sulfate and TDS concentrations that were above the respective NYS ground water standards/guidance value. The ammonia concentrations have been erratic since an increase in 2012. There is no increasing trend in the COD and TKN concentrations There is a potential increasing trend in the Area V Cell 1 underdrain alkalinity and potassium concentrations.

The Area V Cell 1 underdrain EWQCV exceedances are potentially related to several factors including temporal variation, historical ground water impacts from closed landfill Area II/III, a change in the ground water chemistry associated with a reduction in ground water recharge rates caused by the construction of the Area V landfill and physical disturbance of soils during landfill construction and closing of the Area II/III.

4.3.2.2 Area V Cell 3 Underdrain Data

Date			**Mar-19**	**Jun-19**	**Sep-19**	**Dec-19**
Area V Leachate Indicator Parameters	**EWQCV**	**NYSDEC Ground Water Standard**				
Alkalinity (mg/L)	413	NS	**590**	**580**	**590**	**540**
Biochemical Oxygen Demand (BOD) (mg/L)	2.8	NS	**25**	**23**	**3.1**	**3.6**
Chemical Oxygen Demand (COD) (mg/L)	22	NS	**37**	**26**	<5.0	11
Sulfate (mg/L)	Trend	250	1,360	1,260	1,230	1,300
Total Dissolved Solids (TDS) (mg/L)	Trend	500	2,380	2,380	2,160	2,250
Area V Metals						
Iron (µg/L)	Trend	300	5,600	4,540	5,000	12,200
Magnesium (µg/L)	Trend	35,000 (GV)	330,000	334,000	351,000	328,000
Manganese (µg/L)	2,262.9	300	491	341	350	464
Sodium (µg/L)	Trend	20,000	63,800	61,800	68,300	60,300
Field or Physical						
Turbidity (NTU)	22	5	4	8.7	0	**346**

Consistent with the Area V Cell 3 pre-operational data, samples collected from the Area V Cell 3 underdrain consistently exhibited iron, magnesium, manganese, sodium, sulfate and TDS concentrations that were above the respective NYS ground water standards/guidance value. The 2019 BOD concentrations and the March and June 2019 COD concentrations exceeded the EWQCVs. There is no consistent increasing trend in the BOD and COD concentrations.

There is a potential slight increasing trend in the Area V Cell 3 underdrain alkalinity and magnesium concentrations. The potential increasing alkalinity and magnesium concentrations and the 2019 EWQCV exceedances are potentially related to several factors including temporal variation, historical ground water impacts from landfill Area II/III, physical disturbance of soils during construction of landfill Area V and a reduction in ground water recharge rates associated with the construction of the Area V landfill and the closing of landfill Area II/III.

4.3.3 Area V Primary and Secondary Leachate Analytical Data

The Area V combined Cell 1 and Area V Cell 2 primary leachate data, the individual Area V Cell 3 primary leachate data and the individual Area V Cell 1, Cell 2 and Cell 3 secondary leachate collection system data are presented in Appendix F. A statistical summary of the 2019 Area V leachate data is presented in Appendix F-1 and the 2019 data are provided in Appendix F-2.

The March, June and September 2019 Area V primary and secondary leachate samples were analyzed for the Part 360 baseline parameters. The December 2019 Area V primary and secondary leachate samples were analyzed for the Part 360 expanded parameters. During each quarterly sampling event the samples collected from the Area V Cell 1 and Cell 2 primary leachate collection systems were composited into a single sample for analysis.

No chlorinated dioxins or furans, herbicides, pesticides, semi-volatile organics or PCBs were detected in any of the Area V December 2019 leachate samples. In September and December 2019 samples were collected from the Area VI leachate basin underdrain

4.4 Landfill Area VI

Samples were collected from the ground water monitoring locations detailed in the approved EMP (December 2014), the north surface water, the northwest surface water, the west ravine surface water, the Area VI underdrain and the Area VI primary and secondary leachate.

Trend graphs for the ground water monitoring well data and historical data tables were provided in the December 2019 quarterly report.

4.4.1 Area VI Ground Water Analytical Data

The Area VI ground water monitoring network consists of the following monitoring wells:

- Shallow Overburden: Downgradient MW-A612-3S, MW-A606-4S, MW-A612-5S.
- Deep Overburden: Upgradient MW-03-1D: Downgradient: MW-A606-1D, MW-A606-2D, MW-A612-3D, MW-A606-4D, MW-A612-5D.
- Bedrock: Upgradient TB-44-83: Downgradient MW-A606-1BR, MW-A606-2BR, MW-A612-3BR, MW-A606-4BR, MW-A612-5BR.

A statistical summary of the Area VI 2019, shallow overburden, deep overburden and bedrock ground water data are provided in Appendix D-1, D-2 and D-3, respectively. Tables presenting the historical data for each monitoring well that highlights the parameters with concentrations at or above the NYS ground water standard or the EWQCV and trend graphs of historical data for the site-specific leachate indicator parameters (calcium, iron, magnesium, potassium, sodium, sulfate and TDS) were provided in the December 2019 quarterly monitoring report. A summary of the 2019 ground water analytical data is provided in the following sections.

4.4.1.1 Area VI Shallow Overburden Ground Water Analytical Data

Ground water monitoring wells MW-A612-3S, MW-A606-4S and MW-A612-5S monitor shallow overburden ground water quality downgradient of the Area VI landfill.

MW-A612-3S

Date			**Mar-19**	**Jun-19**	**Sep-19**	**Dec-19**
Area IV/V Leachate Indicators	**EWQCV**	**NYS Ground Water Standard**				
Alkalinity (mg/L)	491	NS	470	**560**	**550**	440
Chloride (mg/L)	2.63	250	**5.13**	<2.0	<2.0	<2.0

Sulfate (mg/L)	4,345	250	1,220	747	1,230	1,340
Total Dissolved Solids (TDS) (mg/L)	5,856	500	2,160	1,520	2,340	2,390
Area IV/V Routine Metals						
Iron (ug/L)	1,132.58	300 *	132	92.9	225	394
Magnesium (ug/L)	1,125,427	35,000 (GV)	251,000	196,000	225,000	255,000
Sodium (ug/L)	192,098	20,000	47,100	42,700	46,100	50,700
Field or Physical						
Turbidity (NTU)	36	5	20	40		**69**

Consistent with pre-operational data the 2019 iron, magnesium, sodium, sulfate and TDS concentrations exceeded the respective NYS ground water standards/guidance value. The 2019 alkalinity and chloride EWQCV exceedances are not considered landfill related. There is no increasing trend in the alkalinity and chloride concentrations. There is no increasing trend in the MW-A612-3S ground water concentration of the leachate indicator parameters (ammonia, BOD, COD, TOC) not normally present in ground water at high concentrations.

MW-A606-4S

Date			Mar-19	Jun-19	Sep-19	Dec-19
Area IV/V Leachate Indicators	**EWQCV**	**NYS Ground Water Standard**				
Sulfate (mg/L)	1,442	250	438	399	550	632
Total Dissolved Solids (TDS) (mg/L)	2,187	500	930	900	1,210	1,210
Area IV/V Routine Metals						
Iron (ug/L)	Trend	300 *	685	42.9	1,800	1,740
Magnesium (ug/L)	412,945	35,000 (GV)	162,000	117,000	142,000	161,000
Manganese (ug/L)	Trend	300 *	124	11.7	369	287
Sodium (ug/L)	144,301	20,000	4,660	42,400	43,700	47,700
Field or Physical						0
Turbidity (NTU)	999	5	23	33	53	184

Consistent with pre-operational data the 2019 iron, magnesium, sodium, sulfate and TDS concentrations generally exceeded the respective NYS ground water standards/guidance value as did the September 2019 manganese concentration. There is no increasing trend in the MW-A606-4S ground water concentration of the leachate indicator parameters.

MW-A612-5S

Date			**Mar-19**	**Jun-19**	**Dec-19**
Area IV/V Leachate Indicators	**EWQCV**	**NYS Ground Water Standard**			
Sulfate (mg/L)	30	250	**38**	25	Dry
Total Dissolved Solids (TDS) (mg/L)	452	500	**470**	345	Dry
Area IV/V Routine Metals					

Magnesium (ug/L)	55,686	35,000 (GV)	48,100	51,300	Dry
Field or Physical					
Turbidity (NTU)	80	5	6	4	Dry

The March 2019 sulfate and TDS EWQCV exceedances are not considered related to Area VI landfill operations the concentration of leachate indicator parameters (ammonia, BOD, COD and TOC) not normally present at high concentrations in ground water were generally consistent with pre-operational data The EWQV exceedances are most likely related to several factors including temporal variation, historical ground water impacts from landfill Area II/III and physical disturbance of soils and a reduction in the ground water recharge rate associated with the construction of landfill Area VI.

4.4.1.2 Area VI Deep Overburden Ground Water Analytical Data

There is no consistent increasing trend in the MW-A606-1D, MW-A606-2D, MW-A612-3D, MW-A606-4D and MW-A612-5D ground water concentration of the site specific leachate indicator parameters. With the exception of the December 2019 MW-A606-2D ground water COD and the MW-A612-5D TOC concentrations, the concentration of leachate indicator parameters (ammonia, BOD, COD and TOC) not normally present at high concentrations in ground water were generally consistent with pre-operational data. There is no increasing trend in the MW-A606-2D ground water COD and MW-A612-5D TOC concentrations. The NYS ground water standard and EWQCV exceedances are potentially related to temporal variability, historical ground water impacts from landfill Areas II/III and physical disturbance of soils and a reduction in ground water recharge related to the Area VI landfill construction.

MW-A606-1D

Date			Mar-19	Jun-19	Sep-19	Dec-19
Area IV/V Leachate Indicators	**EWQCV**	**NYS Ground Water Standard**				
Total Phenols (mg/L)	0.023	0.001	<0.004	0.004	<0.004	<0.007 J
Area IV/V Routine Metals						
Magnesium (ug/L)	85,017	35,000 (GV)	34,200	32,100	40,400	33,700
Sodium (ug/L)	139,375	20,000	25,200	24,800	31,500	25,200
Field or Physical						
Turbidity (NTU)	4.25	5	5	10	0	0

The 2019 MW-A606-1D ground water samples continue to exhibit magnesium and sodium concentrations that were higher than the respective NYS ground water standards/guidance value. The June 2019 total phenol exceedance is not related to landfill operations. The concentrations of site specific leachate indicator parameters not naturally present in ground water at elevated concentrations (ammonia, BOD, COD, and TOC) were generally consistent with pre-operational data.

MW-A606-2D

Date			Mar-19	Jun-19	Sep-19	Dec-19
Area IV/V Leachate Indicators	**EWQCV**	**NYS Ground Water Standard**				
Alkalinity (mg/L)	735	NS	**800**	**740**	710	670
Chemical Oxygen Demand (COD) (mg/L)	14	NS	<5.0	<5.0	<5.0	**45**
Sulfate (mg/L)	4,665	250	2,120	1,470	934	1,810
Total Dissolved Solids (TDS) (mg/L)	5,990	500	3,640	2,660	1,800	3,140
Area IV/V Routine Metals						
Magnesium (ug/L)	1,248,982	35,000 (GV)	454,000	257,000	382,000	356,000
Manganese (ug/L)	1,057.30	300 *	129	252	255	352
Sodium (ug/L)	210,657	20,000	75,500	51,600	61,700	62,500
Field or Physical						
Turbidity (NTU)	144	5	9	2	50	88

Consistent with pre-operational data the 2019 ground water from MW-A606-2D continued to exhibit magnesium, manganese (December 2019), sodium, sulfate and TDS concentrations above the respective NYS ground water standards/guidance value. The December 2019 COD concentration was greater than the EWQCV.

There is no consistent increasing trend in the MW-A606-2D concentration of these parameters or the other site-specific leachate indicator parameters. The MW-A606-2D EWQCV exceedances are not considered related to Area VI landfill operations. There is no consistent increasing trend in the COD concentration and the concentrations of the other site specific leachate indicator parameters not naturally present in ground water at elevated concentrations (ammonia, BOD and TOC) were generally consistent with pre-operational data.

MW-A612-3D

Date			Mar-19	Jun-19	Sep-19	Dec-19
Area IV/V Leachate Indicators	**EWQCV**	**NYS Ground Water Standard**				
Alkalinity (mg/L)	411	NS	**440**	**440**	**450**	390
Sulfate (mg/L)	2,803	250	1,970	2,060	2,000	2,020
Total Dissolved Solids (TDS) (mg/L)	4,302	500	3,070	3,210	3,240	3,150
Area IV/V Routine Metals						
Iron (ug/L)	692.05	300 *	266	99.9	197	440
Magnesium (ug/L)	890,774	35,000 (GV)	485,000	385,000	395,000	448,000
Manganese (ug/L)	571.57	300 *	377	385	406	429
Sodium (ug/L)	143,360	20,000	80,400	59,400	62,000	68,200
Field or Physical						
Turbidity (NTU)	71	5	22	4	5	49

Consistent with pre-operational data, the 2019 iron, magnesium, manganese, sodium, sulfate and

TDS concentrations were generally higher than the respective NYS ground water standards/guidance value. The March, June and September 2019 alkalinity concentrations exceeded the EWQCV. There is no apparent increasing trend in the MW-A612-3D ground water alkalinity concentration.

The alkalinity EWQCV exceedances are not related to Area VI landfill operations. There is no consistent increasing trend in the MW-A612-3D concentration of these parameters or the other site-specific leachate indicator parameters. The concentrations of site specific leachate indicator parameters not naturally present in ground water at elevated concentrations (ammonia, BOD, COD, and TOC) were generally consistent with pre-operational data.

MW-A606-4D

Date			Mar-19	Jun-19	Sep-19	Dec-19
Area IV/V Leachate Indicators	**EWQCV**	**NYS Ground Water Standard**				
Sulfate (mg/L)	1,839	250	650	629	637	607
Total Dissolved Solids (TDS) (mg/L)	2,438	500	1,240	1,300	1,270	1,170
Total Phenols (mg/L)	0.0079	0.001	<0.004	<0.004	< 0.006 J	0.004
Area IV/V Routine Metals						
Iron (ug/L)	526.63	300 *	345	127	499	376
Magnesium (ug/L)	454,229	35,000 (GV)	181,000	164,000	180,000	180,000
Manganese (ug/L)	520.73	300 *	377	126	333	295
Sodium (ug/L)	82,257	20,000	35,000	34,100	35,000	34,300
Field or Physical						
Turbidity (NTU)	700	5	8	14.5	9	30

Consistent with pre-operational data, the 2019 ground water from MW-A606-4D continued to exhibit iron, magnesium, manganese (December 2019), sodium, sulfate and TDS concentrations that were generally higher than the respective NYS ground water standards/guidance value. The December 2019 total phenols concentration was higher than the NYS ground water standard but was less than the EWQCV.

There is no increasing trend in the MW-A606-4D concentration of the site specific leachate indicator parameters and the concentrations of site specific leachate indicator parameters not naturally present in ground water at elevated concentrations (ammonia, BOD, COD and TOC) were generally consistent with pre-operational data and/or early operational data.

MW-A612-5D

Date			Mar-19	Jun-19	Dec-19
Area IV/V Leachate Indicators	**EWQCV**	**NYS Ground Water Standard**			
Alkalinity (mg/L)	392	NS	390	**400**	40 S
Chloride (mg/L)	2.64	250	2.11	**3.76**	**11.8**

Total Organic Carbon (TOC) (mg/L)	5.03	NS	2.1	1.1	**7.6**
Area IV/V Routine Metals					
Iron (ug/L)	692.05	300 *	345	23	12.6
Lead (ug/L)	2.2	25	<2.5	<2.5	**3.04**
Magnesium (ug/L)	Trend	35,000 (GV)	56,100	56,000	58,700
Field or Physical					
Conductivity umhos/cm)	719	NS	695	**730**	691
Turbidity (NTU)	75	5	28	5	8

Consistent with pre-operational data, the 2019 magnesium concentration and the March iron concentration were higher than the NYS ground water standard/guidance value. Historically, MW-A612-5D chloride concentrations have periodically exceeded the EWQCV standard. Lead and TOC concentrations have generally been below the EWQCV. There is no consistent increasing trend in the MW-A612-5D ground water alkalinity, chloride, lead and TOC concentrations. The concentrations of site specific leachate indicator parameters not naturally present in ground water at elevated concentrations (ammonia, BOD and COD) were generally consistent with pre-operational data and/or early operational data.

4.4.1.3 Area VI Bedrock Ground Water Analytical Data

There is no consistent increasing trend in the MW-A606-1BR, MW-A606-2BR, MW-A612-3BR and MW-A606-4BR ground water concentration of the site specific leachate indicator parameters. The MW-A MW-A606-1BR, MW-A606-2BR, MW-A612-3BR and the MW-A612-5BR 2019 EWQCV exceedances and the MW-A606-2BR ground water chloride increasing trend and the MW-A612-5BR ground water calcium, COD, chloride, hardness, magnesium, TDS and TOC increasing trends are not considered related to Area VI landfill operations. With the exception of chloride, there is no increasing trend in the Area VI underdrain concentration of these parameters. The EWQCV exceedances and the increasing concentration trends are most likely related to a combination of temporal variability and historical ground water impacts from landfill Areas II/III, physical disturbance of soils during Area VI landfill construction and/or a reduction in the ground water recharge rate associated with the construction of the Area VI landfill.

MW-A606-1BR

Date			Mar-19	Jun-19	Sep-19	Dec-19
Area IV/V Leachate Indicators	**EWQCV**	**NYSDEC Ground Water Standard**				
Total Dissolved Solids (TDS) (mg/L)	1,107	500	940	965	905	940
Total Kjeldahl Nitrogen (TKN) (mg/L)	3.15	NS	<1.0	<1.0	<1.0	**7.6**
Area IV/V Routine Metals						
Iron (µg/L)	Trend	300 *	647	212	116	350
Magnesium (µg/L)	117,942	35,000 (GV)	68,700	60,600	62,200	67,000
Sodium (µg/L)	Trend	20,000	139,000	131,000	114,000	131,000

Consistent with pre-operational data, the 2019 iron, magnesium, sodium and TDS concentrations

were generally higher than the respective NYS ground water standards/guidance value. The December TKN concentration exceeded the EWQCV. Trend graphs do not indicate any consistent increasing trend in the MW-A606-1BR concentration of these parameters. The concentrations of site-specific leachate indicator parameters not naturally present in ground water at elevated concentrations (ammonia, BOD, COD, and TOC) were consistent with pre-operational data.

MW-A606-2BR

Date			Mar-19	Jun-19	Sep-19	Dec-19
Area IV/V Leachate Indicators	**EWQCV**	**NYSDEC Ground Water Standard**				
Chloride (mg/L)	9.65	250	**15.5**	**15.1**	**15**	**20.3**
Sulfate (mg/L)	1,009	250	431	436	393	461
Total Dissolved Solids (TDS) (mg/L)	1,380	500	990	1,060	940	1,100
Total Organic Carbon (TOC) (mg/L)	2.71	NS	1.7	1.4	**3.2**	2.1
Area IV/V Routine Metals						
Magnesium (ug/L)	176,419	35,000 (GV)	143,000	129,000	128,000	144,000
Sodium (ug/L)	34,127	20,000	31,500	28,600	29,000	30,900
Field or Physical						
Conductivity umhos/cm)	1,872	NS	1,440	**2,940**	1,460	1,490
Turbidity (NTU)	6	5	0	5	0	**17**

Consistent with pre-operational data, the 2019 magnesium, sodium, sulfate and TDS concentrations were generally higher than the respective NYS ground water standards/ guidance value. The 2019 chloride concentrations and the September 2019 TOC concentration were higher than the EWQCVs. The chloride concentrations were less than the NYS ground water standard. There is a potential increasing trend in the MW-A606-2BR chloride concentration. There is no consistent increasing trend in the concentration of the other site-specific leachate indicator parameters not naturally present in ground water at elevated concentrations (ammonia, BOD, COD and TOC).

MW-A612-3BR

Date			Mar-19	Jun-19	Sep-19	Dec-19
Area IV/V Leachate Indicators	**EWQCV**	**NYSDEC Ground Water Standard**				
Sulfate (mg/L)	2,039	250	669	652	652	1,020
Total Dissolved Solids (TDS) (mg/L)	2,917	500	1,320	1,290	1,370	1,780
Area IV/V Routine Metals						
Iron (ug/L)	2,227.08	300 *	251	**4,220**	1,160	838
Magnesium (ug/L)	510,127	35,000 (GV)	157,000	130,000	133,000	160,000
Sodium (ug/L)	94,837	20,000	36,000	35,200	38,100	41,300
Field or Physical						
Turbidity (NTU)	78	5	12	3	1	17

Consistent with pre-operational data, the 2019 iron, magnesium, sodium, sulfate and TDS concentrations were generally higher than the respective NYS ground water standards/ guidance value. The June 2019 iron value exceeded the EWQCV. There is no increasing trend in the MW-A612-3BR concentrations of the site-specific leachate indicator parameters. The concentrations of site-specific leachate indicator parameters not naturally present in ground water at elevated concentrations (ammonia, BOD, COD, and TOC) were consistent with pre-operational data.

MW-A606-4BR

Date			Mar-19	Jun-19	Sep-19	Dec-19
Area IV/V Leachate Indicators	**EWQCV**	**NYSDEC Ground Water Standard**				
Sulfate (mg/L)	613	250	440	459	438	434
Total Dissolved Solids (TDS) (mg/L)	1,192	500	965	1,080	1,050	955
Area IV/V Routine Metals						
Magnesium (ug/L)	221,087	35,000 (GV)	149,000	137,000	144,000	140,000
Sodium (ug/L)	78,611	20,000	41,300	42,200	44,600	41,300
Field or Physical						
Turbidity (NTU)	36	5	1	5	0	16

Consistent with pre-operational data, the 2019 iron (June) magnesium, sodium, sulfate and TDS concentrations were generally higher than the respective NYS ground water standards/guidance value. There is no consistent increasing trend in the MW-A606-4BR concentration of the specific leachate indicator parameters and there is no increasing trend in the concentrations of the leachate indicator parameters not naturally present in ground water at elevated concentrations (ammonia, BOD, COD, and TOC).

MW-A612-5BR

Date			Mar-19	Jun-19	Sep-19	Dec-19
Area IV/V Leachate Indicators	**EWQCV**	**NYSDEC Ground Water Standard**				
Chemical Oxygen Demand (COD) (mg/L)	209.79	NS	185	172	193	**293**
Chloride (mg/L)	339.12	250	**535**	**502**	**515**	**452**
Hardness (mg/L)	1,220	NS	**1,527**	**1,550**	**1,277**	**1,599**
Total Dissolved Solids (TDS) (mg/L)	2,467	500	2,400	2,140	**2,550**	2,260
Total Organic Carbon (TOC) (mg/L)	77.97	NS	**80.6**	71.9	62.7	69.7
Area IV/V Routine Metals						
Calcium (ug/L)	218,916	NS	**298,000**	**331,000**	**235,000**	**312,000**
Iron (ug/L)	6,262.63	300 *	1,280	1,100	1,740	1,460
Magnesium (ug/L)	163,603	35,000 (GV)	**190,000**	**176,000**	**168,000**	**199,000**
Sodium (ug/L)	517,116	20,000	216,000	256,000	241,000	250,000
Field or Physical						
Turbidity (NTU)	18	5	**32**	**23**		**20**

Consistent with pre-operational data, the 2019 iron, magnesium, sodium and TDS concentrations were generally higher than the respective NYS ground water standards/guidance value. The 2019 calcium, chloride, hardness and magnesium concentrations were higher than the respective EWQCVs. The chloride concentrations were also higher than the NYS ground water standards. There is an increasing trend in the MW-A612-5BR ground water chloride concentration.

There is an increasing trend in the MW-A612-5BR calcium, chloride, COD, magnesium, TDS and TOC concentrations. The increasing trends are not considered related to Area VI landfill operations. There is no increasing trend in the Area VI underdrain concentration of these parameters.

The MW-A612-5BR exceedances of the EWQCVs and the increasing concentration trends are not considered related to Area VI landfill operations and are potentially related to temporal variability, historical ground water impacts from landfill Area II/III and physical disturbance of soils and a reduction in ground water recharge related to the Area VI landfill construction.

4.4.2 Area VI Landfill Underdrain Data

Historical analytical data and trend graphs for the Area VI underdrain were provided in the December 2019 Quarterly Report. A statistical summary of the 2019 data is provided in Appendix E.

Date			**Mar-19**	**Jun-19**	**Sep-19**	**Dec-19**
Area IV/V Leachate Indicators	**EWQCV**	**NYSDEC Ground Water Standard**				
Chloride (mg/L)	2.68	250	4.16	**5.78**	**5.59**	**5.53**
Total Dissolved Solids (TDS) (mg/L)	901	500	700	710	590	735
Area IV/V Routine Metals						
Magnesium (ug/L)	122,608	35,000 (GV)	108,000	88,100	91,100	100,000
Sodium (ug/L)	45,411	20,000	34,700	29,800	31,800	33,200
Field or Physical						
Turbidity (NTU)	17	5	0	1.8	1	7

Consistent with pre-operational data, the Area VI landfill underdrain magnesium, sodium and TDS concentrations were higher than the NYS ground water standards, however all concentrations were less than the respective EWQCVs. The 2019 chloride concentrations were consistently higher than the EWQCV but were below the NYS ground water standards. There is no increasing trend in the Area VI underdrain ground water calcium, iron, magnesium, manganese, potassium, sodium, sulfate or TDS concentrations and a potential increasing trend in the chloride concentration.

The Area VI landfill underdrain exceedance of the chloride EWQCV and the potential increasing trend in the chloride concentration are not considered related to Area VI landfill operations and is potentially related to temporal variability, historical ground water impacts from landfill Area II/III and physical disturbance of soils and a reduction in ground water recharge related to the Area VI landfill construction. The Area VI underdrain concentrations of site-specific leachate indicator

parameters not naturally present in ground water at elevated concentrations (ammonia, BOD, COD, and TOC) were consistent with pre-operational data

4.4.3 Area VI Leachate Basin Underdrain

DATE			**Sep-19**	**Dec-19**
Area IV/V Leachate Indicators	**EWQCV**	**NYSDEC Ground Water Standard**		
Total Dissolved Solids (TDS) (mg/L)	1,002	500	500	525
Area IV/V Routine Metals				
Iron (µg/L)	9,853.68	300 *	1,380	211
Magnesium (µg/L)	99,175	35,000 (GV)	54,600	54,200
Field or Physical				
Turbidity (NTU)	576	5	35	3

Operational collection of samples from the Area VI leachate basin underdrain commenced in September 2019. Consistent with pre-operational data, the Area VI leachate basin underdrain iron, magnesium and TDS concentrations were higher than the NYS ground water standard, but were less than the respective EWQCVs.

4.4.4 Area VI Leachate Data

The Area VI primary and secondary leachate data were analyzed for the Part 360 baseline parameters in March, June and September 2019 and for the Part 360 expanded parameters in December 2019. Trend graphs for the site specific leachate indicator parameters were provided in the December 2019 Quarterly Report. A statistical summary of the 2019 data is provided in Appendix F-1.

The 2019 Area VI primary and secondary leachate data were consistent with historical Area IV and Area V primary and secondary leachate data. Consistent with historical leachate data the following volatile organic compounds were reported in the 2019 Area VI leachate samples.

Area VI Primary Leachate:

Acetone: March, June and September.
2-butanone: March, June and September
Toluene: September

Area VI Secondary Leachate:

Acetone: September

With the exception of 2,4-dimethyphenol and 4-methylphenol/3-methylphenol (which are detected as a single compound) in the Area VI primary leachate sample no semi-volatile organics, pesticides/PCBs, herbicides or chlorinated dioxins/furans were detected in any of the Area IV, Area V or Area VI primary or secondary leachate samples. The detection of phenolic type

compounds in leachate is consistent with the Area IV and Area V primary leachate data for new leachate.

4.5 2019 Surface Water Analytical Data

Surface water samples were collected quarterly from the north surface water (NSW) location on Five-Mile Creek located north and east of closed landfill Area II/III, from the south surface water (SSW) location on the unnamed stream located south of landfill Area IV and V, from the west ravine surface water sample (WRSW) located in the ravine west of landfill Area VI upstream of the NSW sampling location and from the northwest surface water (NWSW) location on Five Mile Creek upstream from where the West Ravine sample flows into Five Mile Creek. Samples were not collected from the NSW, NWSW or the WRSW in March 2019 due to accessibility concerns.

Statistical information for the 2019 analytical data is provided in Appendix B-1. The 2019 data and exceedances of NYSDEC surface water standards are included in Appendix B-2.

Consistent with historical data during at least one sampling event the NSW, WRSW and SSW iron values, the SSW and WRSW magnesium concentrations and the SSW manganese, sulfate and TDS concentrations exceeded the NYS surface water standards/guidance values. The December 2019 NSW and WRSW total phenols concentrations exceeded the NYS surface water standard.

Trend graphs (2019 Quarterly Report) indicate that the 2019 SSW, NSW, NWSR and WRSW analytical results are generally consistent with historical data.

5.0 AREA IV AND AREA VI AIR SPACE UTILIZATION

A summary of the Area IV airspace volume (cubic yards) utilized in 2019 is provided in Table 3. The airspace utilized in 2019 for Area IV was estimated based on the in-place volume calculated from a comparison of the topographic maps generated from flights on 12/13/2018 and 11/30/2019.

As shown in Table 3, the estimated Area IV Cells 1 and 2 air space utilized in 2019 was 25,811 cubic yards. The estimated remaining airspace for Area IV Cells 1 and 2 as of February 2020 is 45,543 cubic yards, which includes the 29,000 cubic yards removed from Area IV and placed in Area VI. This equates to a remaining life of 2.8 years at a fill rate of 16,000 cubic yards per year, assuming the future Area IV fill rate is similar to the 2019 fill rate.

The remaining life of Area IV Cells 1 and 2 is based on a revised Top of Waste grading plan that incorporates 25 percent side slopes (versus 20 percent in the original Part 360 Application) and changing from a 5-foot thick soil-based barrier system to a 1.5-foot thick HDPE/geosynthetics based barrier system (see Table 3, Note 2). These changes are consistent with the NYSDEC-approved design changes made for Area V in 2007 and maximum side slopes up to 3H:1V described in the Vertical Landfill Layout and Setbacks section of the Engineering Report included in the 1997 Part 360 Permit Renewal Application approved by the NYSDEC.

As shown in Table 4, the estimated Area VI air space utilized in 2019 was 107,899 cubic yards. The estimated remaining airspace for Area VI as of December 18, 2019 is 1,129,469 cubic yards. This equates to a remaining life of 10.14 years at a fill rate of 111,398 cubic yards per year going

to Area VI. The Area VI annual fill rate is assumed to be the average of the combined Area IV, Area V and Area VI fill rate of the last eight years (127,398 cubic yards) with 16,000 cubic yards going to Area IV. The remaining life of Area VI, Phase 1 and Phase II is based on the interim top of waste grading plan provided in the facility's revised O&M Plan.

6.0 AREA V LANDFILL REMEDIAL ACTIVITIES

In 2019, International Paper continued to pump water from the two anchor trench standpipes installed north and south of the Area V Cell 2 landfill riser vaults to attempt to reduce liner system leakage from stormwater infiltration into the Cell 2 secondary leachate collection system. Both of the standpipes have pumps that operate automatically to maintain the water level below the floor of the anchor trench in front of the riser vault. All of the water pumped from the anchor trench standpipes discharges into Cell 2 via nearby primary leachate cleanout pipes. The automatic pumping systems in both standpipes worked well controlling the anchor trench water levels; however, a step change reduction in the liner system leakage rate has not occurred.

In 2019, International Paper continued to pump water from the dewatering standpipe at the Area V Cell 2 leachate pump vaults. The ground water from this pumping system is discharged into the Cell 2 primary leachate collection sump.

In 2019, International Paper continued to pump water from the Area V Cell 3 west anchor trench standpipe to keep water levels below the liner system in front of the vault. Groundwater pumped from the standpipe discharges to Cell 3 via a nearby primary leachate cleanout pipe.

7.0 SUMMARY

The total cubic yards of material transported to the International Paper landfill (Area IV and Area VI) in 2019 was 217,202 cubic yards. Of this total, 77,159 cubic yards was waste. The remaining 140,043 cubic yards was waste bulking material, flume grit daily cover and road building material that was used in landfill operations. A summary of the type and volumes of material transported to the landfill in 2019 is provided in Table 1.

A total of 9,905 cubic yards of ash was beneficially used at the landfill in 2019, in accordance with BUD # 583-5-16, as an alternative to sand for sludge bulking and stabilization. This represents all of the ash generated by the Ticonderoga Mill in 2019. No off-site wood ash was delivered to the landfill in 2019.

The estimated Area IV Cells 1 and 2 air space utilized in 2019 was 25,811 cubic yards. However, approximately 29,000 cubic yards was removed from Area IV for the Area VI Phase II fluff lift. The estimated remaining airspace for Area IV Cells 1 and 2 as of February 2020 is 45,543cubic yards. This equates to a remaining life of 2.8 years at a fill rate of 16,000 cubic yards per year.

The estimated Area VI air space utilized in 2019 was 107,899 cubic yards. The estimated remaining airspace for Area VI is 1,129,469 cubic yards. This equates to a remaining life of 10.14 years at a fill rate of 111,398 cubic yards per year going to Area VI. The Area VI annual fill rate is assumed to be the average of the combined Area IV, Area V and Area VI fill rate of the last

eight years (127,398) with 16,000 cubic yards going to Area IV.

A total of 48,416,421 gallons of leachate was collected and pumped to the wastewater treatment plant. In 2019 leachate was pumped from the Area II/III toe drain pump station, Area V, Cell 1, Cell 2 and Cell 3 primary and secondary leachate sumps, the Area IV, Cell 1 and 2 primary and secondary leachate sumps and the Area VI primary and secondary sumps. The Area V Cell 1, Cell 2 and Cell 3 underdrains, the Area IV Cell 1 and Cell 2 underdrains and the Area VI Cell underdrain discharges were pumped into the Area V Cell 1, Cell 2 and Cell 3, the Area IV Cell 1 and Cell 2 and the Area VI Cell, primary sumps, respectively. Therefore, flows from the underdrains are included in the primary leachate sump totals. All leachate flow volumes were obtained from log sheets, which noted daily totalizer readings from flow meters that measure the flows pumped from the above locations.

The ground water and landfill underdrain analytical data indicate that the Area IV and Area VI landfill operations and the closed Area V landfill have not had a significant impact on ground water quality. Although the concentration of some parameters have exceeded the respective EWQCVs in some downgradient monitoring wells and the landfill cell underdrains, the observed changes in ground water quality are potentially related to several factors:

- temporal variation;
- a reduction in ground water recharge rates associated with the construction of new landfill cells and the closing of landfill Area II/III/Area V;
- physical disturbance of soils during landfill construction, and
- historical ground water impacts from closed landfill Area II/III.

TABLES

TABLE 2
INTERNATIONAL PAPER
TICONDEROGA MILL LANDFILL

2019 LEACHATE GENERATION SUMMARY
(GALLONS PER MONTH)

MONTH	AREA II/III	AREA IV-CELL 1			AREA IV-CELL 2			Area IV - LB		AREA V-CELL 1			AREA V-CELL 2			AREA V-CELL 3			AREA VI-CELL			Area VI - LB		TOTAL FLOW	
	Primary	Primary	Secondary	ALR	Primary	Secondary	ALR	Secondary	ALR	Primary	Secondary	ALR	Primary	Secondary	ALR	Primary	Secondary	ALR	Primary	Secondary	ALR	Secondary	ALR	Primary	Secondary
January	1,199,587	481,044	0	0.0	448,898	0	0.0	0.0	0.0	24,489	0	0.0	81,405	1,225	8.6	184,769	1,510	9.6	675,954	0	0.0	0.0	0.0	3,096,146	2,735
February	811,653	628,400	0	0.0	601,684	0	0.0	0.0	0.0	13,781	2,315	14.3	54,766	806	5.7	237,684	1,502	9.6	618,589	39	0.1	0.0	0.0	2,966,557	4,662
March	969,293	630,612	27	0.1	517,171	55	0.3	0.0	0.0	20,440	1,138	7.0	49,232	1,294	9.1	213,030	1,717	11.0	856,650	54	0.1	0.0	0.0	3,256,428	4,285
April	2,269,045	678,959	0	0.0	579,483	0	0.0	0.0	0.0	29,584	3,007	18.6	100,029	3,871	27.3	273,896	3,035	19.4	1,583,798	0	0.0	0.0	0.0	5,514,794	9,913
May	2,242,567	514,358	0	0.0	495,157	0	0.0	0.0	0.0	26,736	3,622	22.4	23,309	4,911	34.6	184,115	2,718	17.4	1,259,199	0	0.0	0.0	0.0	4,745,441	11,251
June	1,509,625	516,504	43	0.2	659,233	238	1.2	0.0	0.0	28,811	2,378	14.7	50,673	1,607	11.3	101,964	1,592	10.2	2,337,861	56	0.2	0.0	0.0	5,204,671	5,914
July	815,789	127,275	0	0.0	212,423	0	0.0	0.0	0.0	13,503	857	5.3	19,180	0	0.0	23,915	0	0.0	632,934	0	0.0	0.0	0.0	1,845,019	857
August	478,614	130,338	0	0.0	172,032	0	0.0	0.0	0.0	15,009	1,722	12.1	15,138	0	0.0	30,261	0	0.0	1,566,402	3,038	8.2	0.0	0.0	2,407,794	4,760
September	353,915	73,690	40	0.2	98,644	65	0.3	0.0	3.3	3,547	33	0.2	14,114	56	0.4	18,624	36	0.2	577,365	844	1.2	130.0	3.3	1,139,899	1,204
October	788,243	624,602	0	0.0	640,538	14	0.1	0.0	0.0	28,849	264	1.9	55,807	2,630	18.5	144,214	1,483	9.5	2,516,609	2,718	4.0	0.0	0.0	4,798,862	7,109
November	1,407,742	997,699	0	0.0	1,085,474	805	4.0	0.0	0.0	32,343	2,046	14.4	97,949	4,002	28.2	285,214	3,033	19.4	6,023,503	1,065	1.6	0.0	0.0	9,929,924	10,951
December	1,259,864	438,339	43	0.2	418,626	281	1.4	0.0	0.0	27,560	2,774	19.6	64,559	2,454	17.3	225,732	3,050	19.5	1,002,838	1,125	1.7	0.0	0.0	3,437,518	9,727
Totals	**14,105,937**	**5,841,820**	**153**	**n/a**	**5,929,363**	**1,458**	**n/a**	**0**	**n/a**	**264,652**	**20,156**	**n/a**	**626,161**	**22,856**	**n/a**	**1,923,418**	**19,676**	**n/a**	**19,651,702**	**8,939**	**n/a**	**130**	**n/a**	**48,343,053**	**73,368**

Notes: 1. ALR (Action Leakage Rate) units are gallons/acre/day computed for each month.

2. Waste placement in Area VI Cell started on September 11, 2014.

TABLE 1
2019 WASTE HAULAGE TO LANDFILL
INTERNATIONAL PAPER, TICONDEROGA, NEW YORK

	PRIMARY SLUDGE (CY)	SECONDARY SLUDGE (CY)	RECAUST WASTE (CY)	FLUME GRIT (CY)	TRASH (CY)	SMI PCC GRIT (CY)	MILL ASH (used for bulking) (CY)	SAND (CY)	GRAVEL (CY)	STONE (CY)	FLUME GRIT/DAILY COVER (CY)	OFF SITE WOOD ASH (CY)	TOTAL (CY)	TOTAL WASTE ONLY (CY)
JANUARY	2,280	3,420	580	0	288	120	994	6,692	0	14	860	0	15,248	6,688
FEBRUARY	1,720	2,980	580	0	315	80	966	8,428	0	0	860	0	15,929	5,675
MARCH	2,200	4,540	620	0	339	200	1,008	13,244	14	14	780	0	22,959	7,899
1st Quarter Total	**6,200**	**10,940**	**1,780**	**0**	**942**	**400**	**2,968**	**28,364**	**14**	**28**	**2,500**	**0**	**54,136**	**20,262**
TONS/CY	0.86	0.86	1.00	1.00	0.15	1.00	0.34	1.50	1.50	1.50	1.00	0.38		
TONS	**5,313**	**9,376**	**1,780**	**0**	**141**	**400**	**1,003**	**42,546**	**21**	**42**	**2,500**	**0**	**63,122**	**17,010**
APRIL	3,320	5,840	760	0	388	40	525	13,020	0	0	1,560	0	25,453	10,348
MAY	1,730	2,000	0	450	2,507	60	175	10,346	1,904	0	1,100	0	20,272	6,747
JUNE	2,020	2,640	240	0	261	60	770	8,120	182	378	760	0	15,431	5,221
2nd Quarter Total	**7,070**	**10,480**	**1,000**	**450**	**3,156**	**160**	**1,470**	**31,486**	**2,086**	**378**	**3,420**	**0**	**61,156**	**22,316**
TONS/CY	0.86	0.86	1.00	1.00	0.15	1.00	0.34	1.50	1.50	1.50	1.00	0.38		
TONS	**6,059**	**8,981**	**1,000**	**450**	**473**	**160**	**497**	**47,229**	**3,129**	**567**	**3,420**	**0**	**71,966**	**17,124**
JULY	2,180	2,240	660	0	258	140	707	9,226	0	0	820	0	16,231	5,478
AUGUST	1,480	1,800	580	0	279	160	707	9,436	0	42	920	0	15,404	4,299
SEPTEMBER	2,660	2,300	960	0	267	180	798	9,240	0	0	980	0	17,385	6,367
3rd Quarter Total	**6,320**	**6,340**	**2,200**	**0**	**804**	**480**	**2,212**	**27,902**	**0**	**42**	**2,720**	**0**	**49,020**	**16,144**
TONS/CY	0.86	0.86	1.00	1.00	0.15	1.00	0.34	1.50	1.50	1.50	1.00	0.38		
TONS	**5,416**	**5,433**	**2,200**	**0**	**121**	**480**	**748**	**41,853**	**0**	**63**	**2,720**	**0**	**59,034**	**13,650**
OCTOBER	2,160	3,360	320	0	630	0	840	10,948	0	0	460	0	18,718	6,470
NOVEMBER	940	3,420	440	0	237	100	1,281	9,590	0	28	620	0	16,656	5,137
DECEMBER	3,100	2,960	380	0	270	120	1,134	8,890	0	42	620	0	17,516	6,830
4th Quarter Total	**6,200**	**9,740**	**1,140**	**0**	**1,137**	**220**	**3,255**	**29,428**	**0**	**70**	**1,700**	**0**	**52,890**	**18,437**
TONS/CY	0.86	0.86	1.00	1.00	0.15	1.00	0.34	1.50	1.50	1.50	1.00	0.38		
TONS	**5,313**	**8,347**	**1,140**	**0**	**171**	**220**	**1,100**	**44,142**	**0**	**105**	**1,700**	**0**	**62,238**	**15,191**
ANNUAL TOTAL CY	**25,790**	**37,500**	**6,120**	**450**	**6,039**	**1,260**	**9,905**	**117,180**	**2,100**	**518**	**10,340**	**0**	**217,202**	**77,159**
ANNUAL TOTAL TONS	**22,102**	**32,138**	**6,120**	**450**	**906**	**1,260**	**3,348**	**175,770**	**3,150**	**777**	**10,340**	**0**	**256,360**	**62,975**

	CY	TONS
TOTAL WASTE HAULAGE TO LANDFILL:	**77159**	**62975**
TOTAL WASTE BULKING, TRASH DAILY COVER AND ROAD BUILDING MATERIALS HAULED TO LANDFILL:	**140043**	**193385**
TOTAL WASTE, WASTE BULKING, TRASH DAILY COVER AND ROAD BUILDING MATERIALS HAULAGE TO LANDFILL:	**217202**	**256360**

TABLE 3

INTERNATIONAL PAPER
INDUSTRIAL LANDFILL CAPACITY ANALYSIS
AREA IV, Cells 1 & 2

(All values in cubic yards)

AIRSPACE UTILIZATION

YEAR	TOTAL
2004 FILL VOLUME	4,200
2005 FILL VOLUME	87,360
2006 FILL VOLUME	64,657
2007 FILL VOLUME	69,626
2008 FILL VOLUME	69,613
2009 FILL VOLUME	67,939
2010 FILL VOLUME	122,205
2011 FILL VOLUME	65,716
2012 FILL VOLUME	70,203
2013 FILL VOLUME	88,484
2014 FILL VOLUME	111,788
2015 FILL VOLUME	60,548
2016 FILL VOLUME	15,616
2017 FILL VOLUME	12,832
2018 FILL VOLUME	26,001
2019 FILL VOLUME (see note 1)	25,811
Total	**962,599**

REMAINING LANDFILL LIFE - AREA IV CELLS 1 & 2

AREA IV LANDFILL TOTAL CAPACITY (see note 2)	903,000	CYS
LANDFILL CAPACITY AS OF February 2020 (see note 3)	45,543	CYS
LANDFILL CAPACITY CONSUMED AS OF 12/18/2019	94.96	%
ESTIMATED ANNUAL FILL RATE (see note 4)	16,000	CYS/YR
REMAINING LIFE AS OF 12/18/2019	2.8	YEARS
LANDFILL CAPACITY EXHAUSTED (see note 5)	**December 2020**	

NOTES:

1. 2019 fill rate derived by comparing Quantum Spatial topographic maps of Area IV generated from flights on 12/13/18 and 11/30/19
2. Area IV capacity is based on a comparison of the Top of Soil Drainage Layer and the revised Top of Waste grading plan approved by NYSDEC in February 2007, which incorporates 25% side slopes, revised ridgeline and an increase in final elevation of waste by 3.5 ft. due to change from clay cap (5ft thick) to HDPE/geosynthetic cap (1.5 ft thick).
3. Area IV remaining capacity based on a comparison of 11/30/19 topo and the Top of Waste grading plan and material removed from Area IV for fluff lift in Area VI in 2020
4. Annual fill rate assumed to be similar to 2016 fill rate of 16,000 CYS
5. Life of Area IV will be extended now that Area VI Phase 1 landfill is operational.

TABLE 4

INTERNATIONAL PAPER
INDUSTRIAL LANDFILL CAPACITY ANALYSIS
AREA VI, Phase 1

(All values in cubic yards)

AIRSPACE UTILIZATION

YEAR	TOTAL
2014 FILL VOLUME	9,246
2015 FILL VOLUME	70,444
2016 FILL VOLUME	114,646
2017 FILL VOLUME	105,958
2018 FILL VOLUME	111,742
2019 FILL VOLUME (see note 1)	107,899
Total	519,935

REMAINING LANDFILL LIFE

AREA VI LANDFILL TOTAL CAPACITY (see note 2)	1,678,404	CYS
LANDFILL CAPACITY AS OF February 2020 See Note	1,129,469	CYS
LANDFILL CAPACITY CONSUMED AS OF 12/18/2019	32.7	%
FILL RATE WHILE AREA IV IS OPEN (see note 3)	111,398	CYS/YR
YEARS OF OPERATIONS AT 111,398 CYS/YR	10.14	YEARS
LANDFILL CAPACITY EXHAUSTED	**April 2030**	

NOTES:

1. 2019 fill rate derived by comparing Quantum Spatial topographic maps of Area VI generated from flight on 12/13/18 and 11/30/19. And 29,000 cubic yards in 2020 from Area IV for Area VI fluff Lift. International Paper initiated placing waste in Area VI on 9/11/14.
2. Area VI capacity is based on a comparison of the Top of Soil Drainage Layer and the Area VI Phase II interim Grading Plan
3. Annual fill rate for Area VI assumed to be the average of the last eight years which is equal to 127,398 cys/yr with

APPENDIX A

AREA II/III 2019 GROUND WATER ANALYTICAL DATA AND 2019 GROUND WATER STANDARD EXCEEDENCES

Appendix A
International Paper Ticonderoga Mill Landfill Area II and III
2019 Area II/III Groundwater Analytical Data

			Area II/III Shallow Overburden Data					Area II/III Deep Overburden Data				Area II/III Bedrock Data			
Sampling Point	Date	NYS Ground Water Standard	GM-2S	GM-3S	GM-4S	GM-5S	Comparison Value	GM-2D	GM-3D	GM-4D	Comparison Value	GM-13BR	GM-14BR	TB-44-83	Comparison Value
Alkalinity (mg/L)	Mar-19	NS	430	600	670	740	1,102	420	**1,500**	220	1,046	130	52	260	841
Ammonia (mg/L)	Mar-19	2	0.4	0.7	0.2	0.7	3.7**	0.6	0.2	1.7	2.7 **	1.1	1	<0.1	1.3 **
Biochemical Oxygen Demand (BOD) (mg/L)	Mar-19	NS	<4.0	<4.0	<4.0	<4.0	13**	<4.0	<4.0	<4.0	7 **	<4.0	5	3.5	8.5 **
Chemical Oxygen Demand (COD) (mg/L)	Mar-19	NS	8	10	6	34	57.4	17	7	20	108	13	7	13	52.3
Chloride (mg/L)	Mar-19	250	11.7	13.4	<2.0	**69.5**	33	18	22.1	10.1	58.1	9.02	12.2	6.23	26
Hardness (mg/L)	Mar-19	NS	5,404	5,684	2,248	7,492	11,055	4,272	1,548	3,921	12,038	3,864	661	292	8,046
Sulfate (mg/L)	Mar-19	250	2,350	5,250	1,230	7,570	***	4,380	290	6,830	***	3,540	1,150	67.8	***
Total Dissolved Solids (TDS) (mg/L)	Mar-19	500	3,570	7,630	2,210	11,200	***	6,640	1,700	9,590	***	4,540	1,620	555	***
Total Kjeldahl Nitrogen (TKN) (mg/L)	Mar-19	NS	<1.0	<1.0	1.1	<1.0	1.9	2	<1.0	<1.0	2.9	**2.8**	**2.2**	**1.4**	1
Total Organic Carbon (TOC) (mg/L)	Mar-19	NS	3.8	4.2	3.3	11.6	22	4.1	3.6	3.8	24.6	2.5	1.1	4.4	24
Total Phenols (mg/L)	Mar-19	0.001	<0.004	<0.004	<0.004	<0.004	0.13**	<0.004	<0.004	<0.004	0.02 **	<0.004	<0.004	<0.004	0.025 **
Cadmium (µg/L)	Mar-19	5	<2.1	<2.1	<2.1	<2.1	5**	<2.1	<2.1	<2.1	5 **	<2.1	<2.1	<2.1	5 **
Calcium (µg/L)	Mar-19	NS	358,000	441,000	165,000	409,000	***	390,000	612,000	318,000	***	237,000	215,000	50,000	***
Iron (µg/L)	Mar-19	300*	1,430	31.3	349	<100	***	13,000	281	8,050	***	8,440	220	641	***
Lead (µg/L)	Mar-19	25	<2.5	<2.5	<2.5	<2.5	5**	<2.5	<2.5	<2.5	PQL	<2.5	<2.5	<2.5	5 **
Magnesium (µg/L)	Mar-19	35,000 (GV)	1,100,000	1,110,000	446,000	1,570,000	***	801,000	5,000	760,000	***	795,000	30,100	40,700	***
Manganese (µg/L)	Mar-19	300*	124	5.79	48.3	55.7	250	354	8.06	80.1	730	**382**	47	138	160
Potassium (µg/L)	Mar-19	NS	38,600	39,700	24,500	82,800	***	20,200	20,200	23,600	***	21,900	14,000	2,280	***
Sodium (µg/L)	Mar-19	20,000	210,000	234,000	151,000	366,000	***	149,000	71,500	241,000	***	166,000	107,000	13,300	***
2-Butanone (µg/L)	Mar-19	50 (GV)	<10	<10	<10	<10	1 PQL	<10	<10	<10	1 PQL	<10	<10	<10	1 PQL
4-Methyl 2-pentanone (µg/L)	Mar-19	NS	<10	<10	<10	<10	N/A	<10	<10	<10	N/A	<10	<10	<10	N/A
Acetone (µg/L)	Mar-19	50 (GV)	<10	<10	<10	<10	N/A	<10	<10	<10	N/A	<10	<10	<10	N/A
Benzene (µg/L)	Mar-19	1	<5.0	<5.0	<5.0	<5.0	1 PQL	<5.0	<5.0	<5.0	1 PQL	<5.0	<5.0	<5.0	1 PQL
Carbon disulfide (µg/L)	Mar-19	60 GV	<5.0	<5.0	<5.0	<5.0	N/A	<5.0	<5.0	<5.0	N/A	<5.0	<5.0	<5.0	N/A
Ethyl benzene (µg/L)	Mar-19	5	<5.0	<5.0	<5.0	<5.0	1 PQL	<5.0	<5.0	<5.0	1 PQL	<5.0	<5.0	<5.0	1 PQL
Toluene (µg/L)	Mar-19	5	<5.0	<5.0	<5.0	<5.0	1 PQL	<5.0	<5.0	<5.0	13.7	<5.0	<5.0	<5.0	1 PQL
Xylene (total) (µg/L)	Mar-19	5	<10	<10	<10	<10	1 PQL	<10	<10	<10	1 PQL	<10	<10	<10	1 PQL
Conductivity (µmhos/cm)	Mar-19	NS	3,730	6,540	2,160	6,270	13,080	4,910	6,050	5,340	12,642	4,790	1,630	339	5,916
pH (s.u.)	Mar-19	6.5-8.5	6.98	6.97	7.46	6.89	6.0-8.04	6.92	**12.22**	6.91	5.91 - 8.19	7.99	7.76	6.46	5.81 - 8.48
Redox (mV)	Mar-19	NS					N/A				N/A				N/A
Temperature (deg C)	Mar-19	NS	9.9	10	9	9.7	N/A	9.8	9.6	9.5	N/A	9.6	9.5	9.8	N/A
Turbidity (NTU)	Mar-19	5	1	1	9	3	247	321	3	157	1,084	21	0	30	393
Alkalinity (mg/L)	Sep-19	NS	440	520	690	760	1,102	600	**1,270**	580	1,046	100	210	610	841
Ammonia (mg/L)	Sep-19	2	<0.1	1.3	<0.1	1.6	3.7**	0.2	0.1	3.2	2.7 **	1	0.8	<0.1	1.3 **
Biochemical Oxygen Demand (BOD) (mg/L)	Sep-19	NS	3.97	2.1	<4.0	<4.0	13**	<4.0	<4.0	2.1	7 **	**11**	5	<4.0	8.5 **
Chemical Oxygen Demand (COD) (mg/L)	Sep-19	NS	8	9	<5.0	17	57.4	15	9	16	108	19	34	<1.0	52.3
Chloride (mg/L)	Sep-19	250	9.02	11.7	<2.0	**35.8**	33	23.4	19.5	10	58.1	8.46	2.47	17	26
Hardness (mg/L)	Sep-19	NS	3,359	5,516	1,484	7,643	11,055	4,608	1,406	6,534	12,038	2,844	747	658	8,046
Sulfate (mg/L)	Sep-19	250	2,370	5,030	1,010	7,260	***	3,640	223	7,380	***	3,190	759	121	***
Total Dissolved Solids (TDS) (mg/L)	Sep-19	500	3,940	7,920	1,990	11,400	***	6,060	1,610	11,500	***	4,760	1,110	840	***
Total Kjeldahl Nitrogen (TKN) (mg/L)	Sep-19	NS	<1.0	<1.0	<1.0	<1.0	1.9	<1.0	<1.0	**3.4**	2.9	**2.2**	**2**	**2**	1
Total Organic Carbon (TOC) (mg/L)	Sep-19	NS	3.2	4.7	2.3	7.7	22	4.7	2.8	5	24.6	2.5	2.7	2.1	24
Total Phenols (mg/L)	Sep-19	0.001	<0.004	<0.004	<0.004	<0.004	0.13**	<0.004	<0.004	<0.004	0.02 **	<0.004	<0.004	<0.004	0.025 **
Cadmium (µg/L)	Sep-19	5	<1.0	<1.0	<1.0	<1.0	5**	<1.0	<1.0	<1.0	5 **	<1.0	<1.0	<1.0	5 **
Calcium (µg/L)	Sep-19	NS	336,000	429,000	92,000	421,000	***	375,000	547,000	419,000	***	149,000	173,000	93,000	***
Iron (µg/L)	Sep-19	300*	372	394	118	11.3	***	11,200	3,170	16,100	***	45,600	364	1,680	***
Lead (µg/L)	Sep-19	25	<2.8	<2.8	<2.8	<2.8	5**	<2.8	<2.8	<2.8	PQL	<2.8	<2.8	<2.8	5 **
Magnesium (µg/L)	Sep-19	35,000 (GV)	612,000	1,080,000	305,000	140,000	***	892,000	10,000	1,330,000	***	601,000	76,500	103,000	***

Appendix A
International Paper Ticonderoga Mill Landfill Area II and III
2019 Area II/III Groundwater Analytical Data

			Area II/III Shallow Overburden Data					Area II/III Deep Overburden Data				Area II/III Bedrock Data			
Sampling Point	Date	NYS Ground Water Standard	GM-2S	GM-3S	GM-4S	GM-5S	Comparison Value	GM-2D	GM-3D	GM-4D	Comparison Value	GM-13BR	GM-14BR	TB-44-83	Comparison Value
Manganese (µg/L)	Sep-19	300*	51.1	15.1	18.5	44.4	250	366	87.6	214	730	**696**	29.3	99.9	160
Potassium (µg/L)	Sep-19	NS	24,900	36,800	17,800	45,500	***	17,800	16,700	22,600	***	19,500	10,400	6,620	***
Sodium (µg/L)	Sep-19	20,000	116,000	226,000	103,000	380,000	***	166,000	48,200	376,000	***	115,000	95,200	35,100	***
2-Butanone (µg/L)	Sep-19	50 (GV)	<10	<10	<10	<10	1 PQL	<10	<10	<10	1 PQL	<10	<10	<5.0	1 PQL
4-Methyl 2-pentanone (µg/L)	Sep-19	NS	<10	<10	<10	<10	N/A	<10	<10	<10	N/A	<10	<10	<10	N/A
Acetone (µg/L)	Sep-19	50 (GV)	<10	<10	<10	<10	N/A	<10	<10	<10	N/A	<10	<10	7 JS	N/A
Benzene (µg/L)	Sep-19	1	<5.0	<5.0	<5.0	<5.0	1 PQL	**2 J**	<5.0	<5.0	1 PQL	<5.0	<5.0	<5.0	1 PQL
Carbon disulfide (µg/L)	Sep-19	60 GV	<5.0	<5.0	<5.0	<5.0	N/A	<5.0	<5.0	<5.0	N/A	<5.0	<5.0	<5.0	N/A
Ethyl benzene (µg/L)	Sep-19	5	<5.0	<5.0	<5.0	<5.0	1 PQL	<5.0	<5.0	<5.0	1 PQL	<5.0	<5.0	<5.0	1 PQL
Toluene (µg/L)	Sep-19	5	<5.0	<5.0	<5.0	<5.0	1 PQL	<5.0	<5.0	<5.0	13.7	<5.0	<5.0	<5.0	1 PQL
Xylene (total) (µg/L)	Sep-19	5	<10	<10	<10	<10	1 PQL	<10	<10	<10	1 PQL	<10	<10	<10	1 PQL
Conductivity (µmhos/cm)	Sep-19	NS	5,290	6,900	2,230	7,800	13,080	4,010	6,180	1,400	12,642	4,860	1,620	1,320	5,916
pH (s.u.)	Sep-19	6.5-8.5	7.11	6.82	6.95	6.86	6.0-8.04	6.94	**10.17**	6.82	5.91 - 8.19	7.39	7.82	6.7	5.81 - 8.48
Redox (mV)	Sep-19	NS	-80	-9	-38	57	N/A	110	-57	-59	N/A	-274	-304	31	N/A
Temperature (deg C)	Sep-19	NS	11.2	-104	11	11	N/A	11	11	11.7	N/A	12	12.2	10	N/A
Turbidity (NTU)	Sep-19	5	181	0	3	0	247	10	567	112	1,084	26.7	0	6	393

Notes
1) < indicates not detected at or above the listed value
2) NS indicates that no standard has been promulgated.
3) * indicates that the sum of these two analytes may not exceed 500 ug/L
4) GV indicates that the value listed is a guidance value rather than a standard.
5) PQL indicates that all of the existing water quality results were non-detect and the practical quantitation limit (PQL) has been listed as the comparison value.
6) N/A indicates not applicable.
7) Values in bold typeface exceeded the Pooled Interwell Existing Water Quality Comparison Value.
8) Values outlined in bold exceeded the applicable NYSDEC ground water standard/guidance value.
9) ** indicates that 49% of the results were non-detect and a non-parametric prediction limit has been listed as the comparison value.
10) EWQCV is the Existing Water Quality Comparison Value
11) "J" indicates estimated concentration based on data validation or concentration below the PQL but above the instrument detection limit
12) *** Indicates parameter will be evaluated by trend analysis

APPENDIX B

2019 SURFACE WATER ANALYTICAL INFORMATION

APPENDIX B-1

2019 SURFACE WATER ANALYTICAL STATISTICAL DATA

APPENDIX B-1
INTERNATIONAL PAPER, TICONDEROGA MILL, LANDFILL
2019 SURFACE WATER ANALTYICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Northwest Surface Water								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	3	0.0%	160	150	36.055513	130	200
Ammonia	mg/L	3	100.0%	0.05	0.05	0	ND	ND
Biochemical Oxygen Demand (BOD)	mg/L	3	100.0%	2	2	0	ND	ND
Bromide	mg/L	3	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	3	33.3%	8.833333	11	5.575243	ND	13
Chloride	mg/L	3	0.0%	21.766667	17.2	8.700766	16.3	31.8
Hardness	mg/L	3	0.0%	170.33333	158	30.435725	148	205
Sulfate	mg/L	3	0.0%	20.666667	22.4	5.60476	14.4	25.2
Total Dissolved Solids (TDS)	mg/L	3	0.0%	236.66667	200	76.865684	185	325
Total Kjeldahl Nitrogen (TKN)	mg/L	3	66.7%	0.7	0.5	0.34641	ND	1.1
Total Organic Carbon (TOC)	mg/L	3	0.0%	3.266667	3.6	0.945163	2.2	4
Total Phenols	mg/L	3	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	3	100.0%	0.683333	0.5	0.317543	ND	ND
Calcium	ug/L	3	0.0%	48033.33	43900	7420.467	43600	56600
Iron	ug/L	3	0.0%	229.33333	228	30.022214	200	260
Lead	ug/L	3	100.0%	1.35	1.4	0.086603	ND	ND
Magnesium	ug/L	3	0.0%	12203.33	11800	3015.3	9410	15400
Manganese	ug/L	3	0.0%	30.566667	25.5	9.21213	25	41.2
Potassium	ug/L	3	0.0%	1370	1110	512.15232	1040	1960
Sodium	ug/L	3	0.0%	15966.67	13500	4534.681	13200	21200
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	3	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	3	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	3	100.0%	5	5	0	ND	ND
Acetone	ug/L	3	100.0%	5	5	0	ND	ND
Benzene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	3	100.0%	2.5	2.5	0	ND	ND

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INTERNATIONAL PAPER, TICONDEROGA MILL, LANDFILL
2019 SURFACE WATER ANALTYICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Toluene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	3	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	3	0.0%	436	369	120.40349	364	575
pH	s.u.	3	0.0%	7.59	7.8	0.913291	6.59	8.38
Redox	mV	3	0.0%	155	190	66.775744	78	197
Temperature	deg C	3	0.0%	13.043333	17	9.569516	2.13	20
Turbidity	NTU	3	0.0%	19.333333	22	12.220202	6	30
Water Quality Indicators								
Dissolved Oxygen	mg/L	3	0.0%	13.81	15.27	5.46819	7.76	18.4
West Ravine Surface Water								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	2	0.0%	300	300	70.710678	250	350
Ammonia	mg/L	2	100.0%	0.05	0.05	0	ND	ND
Biochemical Oxygen Demand (BOD)	mg/L	2	100.0%	2	2	0	ND	ND
Bromide	mg/L	2	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	2	0.0%	19.5	19.5	2.12132	18	21
Chloride	mg/L	2	0.0%	4.105	4.105	1.308148	3.18	5.03
Hardness	mg/L	2	0.0%	334.5	334.5	55.861436	295	374
Sulfate	mg/L	2	0.0%	55.85	55.85	31.890516	33.3	78.4
Total Dissolved Solids (TDS)	mg/L	2	0.0%	392.5	392.5	95.459415	325	460
Total Kjeldahl Nitrogen (TKN)	mg/L	2	100.0%	0.5	0.5	0	ND	ND
Total Organic Carbon (TOC)	mg/L	2	0.0%	4.55	4.55	1.484924	3.5	5.6
Total Phenols	mg/L	2	50.0%	0.0035	0.0035	0.002121	ND	0.005
Area IV/V Routine Metals								
Cadmium	ug/L	2	100.0%	0.775	0.775	0.388909	ND	ND
Calcium	ug/L	2	0.0%	74300	74300	7071.068	69300	79300
Iron	ug/L	2	0.0%	362.5	362.5	6.363961	358	367
Lead	ug/L	2	50.0%	2.04	2.04	1.117229	ND	2.83
Magnesium	ug/L	2	0.0%	36200	36200	9333.81	29600	42800
Manganese	ug/L	2	0.0%	66.9	66.9	26.728636	48	85.8
Potassium	ug/L	2	0.0%	1955	1955	403.05087	1670	2240
Sodium	ug/L	2	0.0%	12175	12175	4419.417	9050	15300
Area IV/V Routine VOAs								

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2019 SURFACE WATER ANALTYICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
1,1-Dichloroethane	ug/L	2	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	2	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	2	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	2	100.0%	5	5	0	ND	ND
Acetone	ug/L	2	100.0%	5	5	0	ND	ND
Benzene	ug/L	2	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	2	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	2	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	2	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	2	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	2	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	2	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	2	0.0%	347.00027	347.00027	490.73173	0.000533	694
pH	s.u.	2	0.0%	4.145004	4.145004	5.86191	0.000008	8.29
Redox	mV	2	0.0%	97.500034	97.500034	137.88578	0.000067	195
Temperature	deg C	2	0.0%	9.50195	9.50195	13.432271	0.0039	19
Turbidity	NTU	2	0.0%	82.0835	82.0835	115.84743	0.167	164
Water Quality Indicators								
Dissolved Oxygen	mg/L	1	0.0%	12.3	12.3	NaN	12.3	12.3
North Surface Water								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	3	0.0%	170	160	26.457513	150	200
Ammonia	mg/L	3	100.0%	0.05	0.05	0	ND	ND
Biochemical Oxygen Demand (BOD)	mg/L	3	100.0%	2	2	0	ND	ND
Bromide	mg/L	3	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	3	0.0%	7.333333	8	1.154701	6	8
Chloride	mg/L	3	0.0%	21.2	17.8	6.326927	17.3	28.5
Hardness	mg/L	3	0.0%	186.66667	189	31.564748	154	217
Sulfate	mg/L	3	0.0%	29.933333	29.9	9.450044	20.5	39.4
Total Dissolved Solids (TDS)	mg/L	3	0.0%	238.33333	210	90.875373	165	340
Total Kjeldahl Nitrogen (TKN)	mg/L	3	100.0%	0.5	0.5	0	ND	ND
Total Organic Carbon (TOC)	mg/L	3	0.0%	4	4	1.3	2.7	5.3
Total Phenols	mg/L	3	66.7%	0.003667	0.002	0.002887	ND	0.007

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2019 SURFACE WATER ANALTYICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Area IV/V Routine Metals				0	0	0	ND	0
Cadmium	ug/L	3	100.0%	0.683333	0.5	0.317543	ND	ND
Calcium	ug/L	3	0.0%	50200	50600	6309.517	43700	56300
Iron	ug/L	3	0.0%	267	263	35.171011	234	304
Lead	ug/L	3	100.0%	1.35	1.4	0.086603	ND	ND
Magnesium	ug/L	3	0.0%	14900	15200	3958.535	10800	18700
Manganese	ug/L	3	0.0%	34.3	34.8	11.558114	22.5	45.6
Potassium	ug/L	3	0.0%	1375.667	1210	502.42048	977	1940
Sodium	ug/L	3	0.0%	16466.67	15900	3583.76	13200	20300
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	3	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	3	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	3	100.0%	5	5	0	ND	ND
Acetone	ug/L	3	100.0%	5	5	0	ND	ND
Benzene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	3	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	3	0.0%	442	390	96.192515	383	553
pH	s.u.	3	0.0%	7.803333	7.79	0.090738	7.72	7.9
Redox	mV	3	0.0%	138.66667	112	65.225251	91	213
Temperature	deg C	3	0.0%	13.083333	16	9.709317	2.25	21
Turbidity	NTU	3	0.0%	23.666667	16	16.862186	12	43
Water Quality Indicators								
Dissolved Oxygen	mg/L	3	0.0%	13.133333	13.5	3.265476	9.7	16.2
South Surface Water								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	340	375	174.54703	100	510
Ammonia	mg/L	4	75.0%	0.0875	0.05	0.075	ND	0.2

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Biochemical Oxygen Demand (BOD)	mg/L	4	0.0%	14.25	13	8.883505	6	25
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	0.0%	37.75	39.5	14.930394	20	52
Chloride	mg/L	4	25.0%	6.77	3.74	8.038466	ND	18.6
Hardness	mg/L	4	0.0%	620	706	304.05811	201	867
Sulfate	mg/L	4	0.0%	287.15	331.5	142.80181	86.6	399
Total Dissolved Solids (TDS)	mg/L	4	0.0%	775	902.5	351.25964	275	1020
Total Kjeldahl Nitrogen (TKN)	mg/L	4	50.0%	1.1	0.95	0.734847	ND	2
Total Organic Carbon (TOC)	mg/L	4	0.0%	12.425	10.7	7.94077	4.8	23.5
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	92625	103250	39546.12	37000	127000
Iron	ug/L	4	0.0%	1143.75	743.5	1289.974	178	2910
Lead	ug/L	4	75.0%	2.4275	1.4	2.15616	ND	5.66
Magnesium	ug/L	4	0.0%	94375	109050	50022.69	26400	133000
Manganese	ug/L	4	0.0%	542	280.5	539.04051	257	1350
Potassium	ug/L	4	0.0%	4110	2515	3507.05	2050	9360
Sodium	ug/L	4	0.0%	25072.5	24250	16165.18	6490	45300
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	1098.75	1225	505.08044	385	1560

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2019 SURFACE WATER ANALTYICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
pH	s.u.	4	0.0%	7.4525	7.375	0.343936	7.15	7.91
Redox	mV	4	0.0%	67	145	185.40406	-206	184
Temperature	deg C	4	0.0%	12.9925	13.835	5.749918	6.3	18
Turbidity	NTU	4	0.0%	310.75	109.5	463.81561	24	1000
Water Quality Indicators								
Dissolved Oxygen	mg/L	1	0.0%	13.5	13.5	NaN	13.5	13.5

Note:The statistics are replaced by the corresponding minimum variance unbiased estimates for the log normal distribution.

APPENDIX B-2

2019 SURFACE WATER STANDARD ANALYTICAL DATA AND STANDARD EXCEEDENCES

Appendix B-2
International Paper, Ticonderoga Mill
2019 Annual Report
2019 North Surface Water Analytical Data and Surface Water Standard Exceedences

Parameter	NYSDEC Surface Water Standard	Mar-19	Jun-19	Sep-19	Dec-19
Part 360 Leachate Indicator					
Alkalinity (mg/L)	NS	Not Sampled	160	200	150
Ammonia (mg/L)*	*	Not Sampled	<0.1	<0.1	<0.1
Biochemical Oxygen Demand (BOD) (mg/L)	NS	Not Sampled	<4.0	<4.0	<4.0
Bromide	2 H(WS)t	Not Sampled	<1.0	<1.0	<1.0
Chemical Oxygen Demand (COD) (mg/L)	NS	Not Sampled	6	8	8
Chloride (mg/L)	250 H(WS)t	Not Sampled	17.3	28.5	17.8
Hardness (mg/L)	NS	Not Sampled	154	217	189
Sulfate (mg/L)	250 H(WS)t	Not Sampled	20.5	39.4	29.9
Total Dissolved Solids (TDS) (mg/L)	500	Not Sampled	210	340	165
Total Kjeldahl Nitrogen (TKN) (mg/L)	NS	Not Sampled	<1.0	<1.0	<1.0
Total Organic Carbon (TOC) (mg/L)	NS	Not Sampled	5.3	4	2.7
Total Phenols (mg/L)	0.001	Not Sampled	<0.004	<0.004	0.007
Part 360 Metal					
Cadmium (µg/L)**	**	Not Sampled	<2.1	<1.0	<1.0
Calcium (µg/L)	NS	Not Sampled	44,000	56,000	51,000
Iron (µg/L)	300	Not Sampled	304	234	263
Lead (µg/L)***	***	Not Sampled	<2.5	<2.8	<2.8
Magnesium (µg/L)	35,000 H(WS)t	Not Sampled	10,800	18,700	15,200
Manganese (µg/L)	300 H(WS)t	Not Sampled	45.6	22.5	34.8
Potassium (µg/L)	NS	Not Sampled	977	1,940	1,210
Sodium (µg/L)	NS	Not Sampled	13,200	20,300	15,900
Part 360 Volatile Organics					
1,1-Dichloroethane (µg/L)	5 H(WS)t	Not Sampled	<5.0	<5.0	<5.0
2-Butanone (µg/L)	50 (GV) H(WS)t	Not Sampled	<10	<10	<10
4-Isopropyl toluene (µg/L)	5 H(WS)t	Not Sampled	<5.0	<5.0	<5.0
4-Methyl 2-pentanone (µg/L)	NS	Not Sampled	<10	<10	<10
Acetone (µg/L)	50 (GV) H(WS)t	Not Sampled	<10	<10	<10
Benzene (µg/L)	1 H(WS)t	Not Sampled	<5.0	<5.0	<5.0
Carbon disulfide (µg/L)	60 GVt	Not Sampled	<5.0	<5.0	<5.0
Chloroform (µg/L)	7 H(WS)t	Not Sampled	<5.0	<5.0	<5.0
Ethyl benzene (µg/L)	5 H(WS)t	Not Sampled	<5.0	<5.0	<5.0
Methylene Chloride (µg/L)	5 H(WS)t	Not Sampled	<5.0	<5.0	<5.0
Toluene (µg/L)	5 (GV) H(WS)t	Not Sampled	<5.0	<5.0	<5.0
Xylene (total) (µg/L)	5 H(WS)t*****	Not Sampled	<10	<10	<10
Field or Physical					
Conductivity (µmhos/cm)	NS	Not Sampled	383	553	390
Dissolved Oxygen (mg/L)	not < 4.0	Not Sampled	7.79	16.2	7.72
pH (s.u.)	6.5 - 8.5	Not Sampled	213	7.9	91
Redox (mV)	NS	Not Sampled	21	112	2.25
Temperature (Deg. C.)	NS	Not Sampled	16	16	43
Turbidity (NTU)	****	Not Sampled	9.7	12	13.5

Notes:

1) < indicates that the parameter was not detected at or above the reporting limit indicated.
2) (A) indicates aquatic based standard.
3) H(WS) indicates human health based standard.
4) * Aquatic ammonia standard based on pH and temperature. North Surface Water/South Surface Water
5) ** Aquatic standard based on hardness North/South Surface Water; human health based standard is 5 µg/L.
6) *** Aquatic standard based on hardness North/South Surface Water; human health based standard is 50 µg/L. South/North Surface Water Standard
7) **** No increase that will cause a substantial visible contrast to natural conditions.
8) NS indicates that no standard has been promulgated.
9) Values outlined in bold exceeded the applicable NYSDEC surface water standard/guidance value.
10)***** Indicates applies to the sum of the isomers
11) "t" indicates standard based on Class A and AA type suface water
12) "J" Indicates estimated concentration below the PQL but above the instrument detection limit, or based on data validation.

Appendix B-2
International Paper, Ticonderoga Mill
2019 Annual Report
2019 South Surface Water Analytical Data and NYS Surface Water Standard Exceedences

Parameter	NYSDEC Surface Water Standard	Mar-19	Jun-19	Sep-19	Dec-19
Part 360 Leachate Indicator					
Alkalinity (mg/L)	NS	100	410	510	340
Ammonia (mg/L)*	*	0.2	<0.1	<0.1	<0.1
Biochemical Oxygen Demand (BOD) (mg/L)	NS	6	8	18 S	25 J
Bromide (mg/L)	2 H(WS)t	<1.0	<1.0	<1.0	<1.0
Chemical Oxygen Demand (COD) (mg/L)	NS	31	20	52 J	48 J
Chloride (mg/L)	250 H(WS)t	2.68	<2.0	18.6	4.8
Hardness (mg/L)	NS	201	592	867	820
Sulfate (mg/L)	250 H(WS)t	86.6	284	379	399
Total Dissolved Solids (TDS) (mg/L)	500	275	785	1,020	1,020
Total Kjeldahl Nitrogen (TKN) (mg/L)	NS	1.4	2	<1.0	<1.0
Total Organic Carbon (TOC) (mg/L)	NS	9.6	11.8	23.5 J	4.8
Total Phenols (mg/L)	0.001	<0.004	<0.004	<0.004	<0.004
Part 360 Metal					
Cadmium (µg/L)**	**	<2.1	<2.1	<1.0	<1.0
Calcium (µg/L)	NS	37,000	94,000	127,000	113,000
Iron (µg/L)	300	2,910	178	1,300	187
Lead (µg/L)***	***	5.66	<2.5	<2.8	<2.8
Magnesium (µg/L)	35,000 H(WS)t	26,400	87,100	133,000	131,000
Manganese (µg/L)	300 H(WS)t	257	260	1,350	301
Potassium (µg/L)	NS	2,470	2,050	9360 J	2,560
Sodium (µg/L)	NS	6,490	20,500	45,300	28,000
Part 360 Volatile Organics					
1,1-Dichloroethane (µg/L)	5 H(WS)t	<5.0	<5.0	<5.0	<5.0
2-Butanone (µg/L)	50 (GV) H(WS)t	<10	<10	<10	<10
4-Isopropyl toluene (µg/L)	5 H(WS)t	<5.0	<5.0	<5.0	<5.0
4-Methyl 2-pentanone (µg/L)	NS	<10	<10	<10	<10
Acetone (µg/L)	50 (GV) H(WS)t	<10	<10	<10	<10
Benzene (µg/L)	1 H(WS)t	<5.0	<5.0	<5.0	<5.0
Carbon disulfide (µg/L)	60 GVt	<5.0	<5.0	<5.0	<5.0
Chloroform (µg/L)	7 H(WS)t	<5.0	<5.0	<5.0	<5.0
Ethyl benzene (µg/L)	5 H(WS)t	<5.0	<5.0	<5.0	<5.0
Methylene Chloride (µg/L)	5 H(WS)t	<5.0	<5.0	<5.0	<5.0
Toluene (µg/L)	5 (GV) H(WS)t	<5.0	<5.0	<5.0	<5.0
Xylene (total) (µg/L)	5 H(WS)t*****	<10	<10	<10	<10
Field or Physical					
Conductivity (µmhos/cm)	NS	385	1,150	1,560	1,300
pH (s.u.)	6.5 - 8.5	7.52	7.91	13.5	7.15
Redox (mV)	NS		184	7.23	108
Temperature (Deg. C.)	NS	10.1	17.57	182	6.3
Turbidity (NTU)	****	1,000	50	15	169
Dissolved Oxygen (mg/L)	not < 4.0			24	

Notes:

1) < indicates that the parameter was not detected at or above the reporting limit indicated.
2) (A) indicates aquatic based standard.
3) H(WS) indicates human health based standard.
4) * Aquatic ammonia standard based on pH and temperature. North Surface Water/South Surface Water
5) ** Aquatic standard based on hardness North/South Surface Water; human health based standard is 5 µg/L.
6) *** Aquatic standard based on hardness North/South Surface Water; human health based standard is 50 µg/L. South/North Surface Water Standard
7) **** No increase that will cause a substantial visible contrast to natural conditions.
8) NS indicates that no standard has been promulgated.
9) Values outlined in bold exceeded the applicable NYSDEC surface water standard/guidance value.
10) R indicates data rejected and unusable.
11)***** Indicates applies to the sum of the isomers
12) "t" indicates standard based on Class A and AA type suface water
13) "J" Indicates estimated concentration below the PQL but above the instrument detection limit, or based on data validation.

Appendix B-2
International Paper, Ticonderoga Mill
2019 Annual Report
2019 Northwest Surface Water Analytical Data and NYS Surface Water Standard Exceedances

Parameter	NYSDEC Surface Water Standard	Mar-19	Jun-19	Sep-19	Dec-19
Part 360 Leachate Indicator					
Alkalinity (mg/L)	NS	Not Sampled	150	200	130
Ammonia (mg/L)*	*	Not Sampled	<0.1	<0.1	<0.1
Biochemical Oxygen Demand (BOD) (mg/L)	NS	Not Sampled	<4.0	<4.0	<4.0
Bromide (mg/L)	2 H(WS)t	Not Sampled	<1.0	<1.0	<1.0
Chemical Oxygen Demand (COD) (mg/L)	NS	Not Sampled	<5.0	11	13
Chloride (mg/L)	250 H(WS)t	Not Sampled	17.2	31.8	16.3
Hardness (mg/L)	NS	Not Sampled	148	205	158
Sulfate (mg/L)	250 H(WS)t	Not Sampled	14.4	25.2	22.4
Total Dissolved Solids (TDS) (mg/L)	500	Not Sampled	185	325	200
Total Kjeldahl Nitrogen (TKN) (mg/L)	NS	Not Sampled	<1.0	1.1	<1.0
Total Organic Carbon (TOC) (mg/L)	NS	Not Sampled	3.6	4	2.2
Total Phenols (mg/L)	0.001	Not Sampled	<0.004	<0.004	<0.004
Part 360 Metal					
Cadmium (µg/L)**	**	Not Sampled	<2.1	<1.0	<1.0
Calcium (µg/L)	NS	Not Sampled	44,000	57,000	44,000
Iron (µg/L)	300	Not Sampled	260	200	228
Lead (µg/L)***	***	Not Sampled	<2.5	<2.8	<2.8
Magnesium (µg/L)	35,000 H(WS)t	Not Sampled	9,410	15,400	11,800
Manganese (µg/L)	300 H(WS)t	Not Sampled	41.2	25.5	25
Potassium (µg/L)	NS	Not Sampled	1,110	1,960	1,040
Sodium (µg/L)	NS	Not Sampled	13,200	21,200	13,500
Part 360 Volatile Organics					
1,1-Dichloroethane (µg/L)	5 H(WS)t	Not Sampled	<5.0	<5.0	<5.0
2-Butanone (µg/L)	50 (GV) H(WS)t	Not Sampled	<10	<10	<10
4-Isopropyl toluene (µg/L)	5 H(WS)t	Not Sampled	<5.0	<5.0	<5.0
4-Methyl 2-pentanone (µg/L)	NS	Not Sampled	<10	<10	<10
Acetone (µg/L)	50 (GV) H(WS)t	Not Sampled	<10	<10	<10
Benzene (µg/L)	1 H(WS)t	Not Sampled	<5.0	<5.0	<5.0
Carbon disulfide (µg/L)	60 GVt	Not Sampled	<5.0	<5.0	<5.0
Chloroform (µg/L)	7 H(WS)t	Not Sampled	<5.0	<5.0	<5.0
Ethyl benzene (µg/L)	5 H(WS)t	Not Sampled	<5.0	<5.0	<5.0
Methylene Chloride (µg/L)	5 H(WS)t	Not Sampled	<5.0	<5.0	<5.0
Toluene (µg/L)	5 (GV) H(WS)t	Not Sampled	<5.0	<5.0	<5.0
Xylene (total) (µg/L)	5 H(WS)t*****	Not Sampled	<10	<10	<10
Field or Physical					
Conductivity (µmhos/cm)	NS	Not Sampled	364	575	369
pH (s.u.)	6.5 - 8.5	Not Sampled	8.38	18.4	7.8
Redox (mV)	NS	Not Sampled	190	6.59	78
Temperature (Deg. C.)	NS	Not Sampled	20	197	2.13
Turbidity (NTU)	****	Not Sampled	22	17	30
Dissolved Oxygen (mg/L)	not < 4.0	Not Sampled	7.76	6	15.27

Notes:

1) < indicates that the parameter was not detected at or above the reporting limit indicated.
2) (A) indicates aquatic based standard.
3) H(WS) indicates human health based standard.
4) * Aquatic ammonia standard based on pH and temperature. North Surface Water/South Surface Water
5) ** Aquatic standard based on hardness North/South Surface Water; human health based standard is 5 µg/L.
6) *** Aquatic standard based on hardness North/South Surface Water; human health based standard is 50 µg/L. South/North Surface Water Standard
7) **** No increase that will cause a substantial visible contrast to natural conditions.
8) NS indicates that no standard has been promulgated.
9) Values outlined in bold exceeded the applicable NYSDEC surface water standard/guidance value.
10) R indicates data rejected and unusable.
11)***** Indicates applies to the sum of the isomers
12) "t" indicates standard based on Class A and AA type suface water
13) "J" Indicates estimated concentration below the PQL but above the instrument detection limit, or based on data validation.

Appendix B-2
International Paper, Ticonderoga Mill
2019 Annual Report
2019 West Ravine Analytical Data and NYS Surface Water Standard Exceedances

Parameter	NYSDEC Surface Water Standard	Mar-19	Jun-19	Sep-19	Dec-19
Part 360 Leachate Indicator					
Alkalinity (mg/L)	NS	Not Sampled	350	Dry	250
Ammonia (mg/L)*	*	Not Sampled	<0.1	Dry	<0.1
Biochemical Oxygen Demand (BOD) (mg/L)	NS	Not Sampled	<4.0	Dry	<4.0
Bromide (mg/L)	2 H(WS)t	Not Sampled	<1.0	Dry	<1.0
Chemical Oxygen Demand (COD) (mg/L)	NS	Not Sampled	21	Dry	18
Chloride (mg/L)	250 H(WS)t	Not Sampled	5.03	Dry	3.18
Hardness (mg/L)	NS	Not Sampled	374	Dry	295
Sulfate (mg/L)	250 H(WS)t	Not Sampled	78.4	Dry	33.3
Total Dissolved Solids (TDS) (mg/L)	500	Not Sampled	460	Dry	325
Total Kjeldahl Nitrogen (TKN) (mg/L)	NS	Not Sampled	<1.0	Dry	<1.0
Total Organic Carbon (TOC) (mg/L)	NS	Not Sampled	5.6	Dry	3.5
Total Phenols (mg/L)	0.001	Not Sampled	<0.004	Dry	0.005
Part 360 Metal					
Cadmium (µg/L)**	**	Not Sampled	<2.1	Dry	<1.0
Calcium (µg/L)	NS	Not Sampled	79,000	Dry	69,000
Iron (µg/L)	300	Not Sampled	367	Dry	358
Lead (µg/L)***	***	Not Sampled	<2.5	Dry	2.83
Magnesium (µg/L)	35,000 H(WS)t	Not Sampled	42,800	Dry	29,600
Manganese (µg/L)	300 H(WS)t	Not Sampled	85.8	Dry	48
Potassium (µg/L)	NS	Not Sampled	2,240	Dry	1,670
Sodium (µg/L)	NS	Not Sampled	15,300	Dry	9,050
Part 360 Volatile Organics					
1,1-Dichloroethane (µg/L)	5 H(WS)t	Not Sampled	<5.0	Dry	<5.0
2-Butanone (µg/L)	50 (GV) H(WS)t	Not Sampled	<10	Dry	<10
4-Isopropyl toluene (µg/L)	5 H(WS)t	Not Sampled	<5.0	Dry	<5.0
4-Methyl 2-pentanone (µg/L)	NS	Not Sampled	<10	Dry	<10
Acetone (µg/L)	50 (GV) H(WS)t	Not Sampled	<10	Dry	<10
Benzene (µg/L)	1 H(WS)t	Not Sampled	<5.0	Dry	<5.0
Carbon disulfide (µg/L)	60 GVt	Not Sampled	<5.0	Dry	<5.0
Chloroform (µg/L)	7 H(WS)t	Not Sampled	<5.0	Dry	<5.0
Ethyl benzene (µg/L)	5 H(WS)t	Not Sampled	<5.0	Dry	<5.0
Methylene Chloride (µg/L)	5 H(WS)t	Not Sampled	<5.0	Dry	<5.0
Toluene (µg/L)	5 (GV) H(WS)t	Not Sampled	<5.0	Dry	<5.0
Xylene (total) (µg/L)	5 H(WS)t*****	Not Sampled	<10	Dry	<10
Field or Physical					
Conductivity (µmhos/cm)	NS	Not Sampled	694	Dry	533
pH (s.u.)	6.5 - 8.5	Not Sampled	8.29	Dry	7.8
Redox (mV)	NS	Not Sampled	195	Dry	67
Temperature (Deg. C.)	NS	Not Sampled	19	Dry	3.9
Turbidity (NTU)	****	Not Sampled	164	Dry	167
Dissolved Oxygen (mg/L)	not < 4.0	Not Sampled	12.3	Dry	

Notes:

1) < indicates that the parameter was not detected at or above the reporting limit indicated.
2) (A) indicates aquatic based standard.
3) H(WS) indicates human health based standard.
4) * Aquatic ammonia standard based on pH and temperature. North Surface Water/South Surface Water
5) ** Aquatic standard based on hardness North/South Surface Water; human health based standard is 5 µg/L.
6) *** Aquatic standard based on hardness North/South Surface Water; human health based standard is 50 µg/L. South/North Surface Water Standard
7) **** No increase that will cause a substantial visible contrast to natural conditions.
8) NS indicates that no standard has been promulgated.
9) Values outlined in bold exceeded the applicable NYSDEC surface water standard/guidance value.
10) R indicates data rejected and unusable.
11)***** Indicates applies to the sum of the isomers
12) "t" indicates standard based on Class A and AA type suface water
13) "J" Indicates estimated concentration below the PQL but above the instrument detection limit, or based on data validation.

APPENDIX C

AREA II/III 2019 LEACHATE AND EAST/WEST DRAIN DATA

APPENDIX C-1

LEACHATE AND EAST/WEST DRAIN 2019 ANALYTICAL STATISTICAL DATA

APPENDIX C-1
INTERNATIONAL PAPER, TICONDEROGA MILL LANDFILL
2019 AREA 2/3 LEACHATE & EAST/WEST DRAIN ANALTYICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
A23Leachate								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	1902.5	2030	518.74046	1190	2360
Ammonia	mg/L	4	0.0%	79.375	82.05	33.861519	38.4	115
Biochemical Oxygen Demand (BOD)	mg/L	4	25.0%	6	6.5	2.160247	ND	8
Chemical Oxygen Demand (COD)	mg/L	4	0.0%	116.5	120.5	46.865055	63	162
Chloride	mg/L	4	0.0%	86.325	90.25	32.106425	46.8	118
Hardness	mg/L	4	0.0%	1140.5	1143.5	227.75499	913	1362
Sulfate	mg/L	4	0.0%	216	189	79.682704	158	328
Total Dissolved Solids (TDS)	mg/L	4	0.0%	1887.5	1940	525.69795	1260	2410
Total Kjeldahl Nitrogen (TKN)	mg/L	4	0.0%	88.6	91	42.837056	34.4	138
Total Organic Carbon (TOC)	mg/L	4	0.0%	50.075	49	23.077749	24.4	77.9
Total Phenols	mg/L	4	25.0%	0.005	0.0045	0.002944	ND	0.009
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	186000	179000	22090.72	168000	218000
Iron	ug/L	4	0.0%	5202.5	5540	1807.215	2900	6830
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	164750	165500	45660.89	120000	208000
Manganese	ug/L	4	0.0%	680	649	118.94537	583	839
Potassium	ug/L	4	0.0%	80200	78050	35386.72	44700	120000
Sodium	ug/L	4	0.0%	285250	295000	117264.3	152000	399000
Area IV/V Routine VOAs								
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	75.0%	7.25	5	4.5	ND	14
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	3330	3270	915.67826	2310	4470
pH	s.u.	4	0.0%	6.7475	6.825	0.663394	5.88	7.46

APPENDIX C-1
INTERNATIONAL PAPER, TICONDEROGA MILL LANDFILL
2019 AREA 2/3 LEACHATE & EAST/WEST DRAIN ANALTYICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Redox	mV	4	0.0%	13.75	16	13.022417	-4	27
Temperature	deg C	4	0.0%	14.825	15.2	1.488568	12.9	16
Turbidity	NTU	4	0.0%	49.5	50	18.138357	27	71
Part 360 Baseline Metals								
Chromium (Total)	ug/L	4	50.0%	5.3675	5.78	2.540438	ND	7.91
Unclassified				0	0	0	ND	0
Phosphorous as P	mg/L	2	0.0%	0.14	0.14	0.014142	0.13	0.15
East/West Drain								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	482.5	485	71.355915	400	560
Ammonia	mg/L	4	50.0%	0.125	0.125	0.086603	ND	0.2
Biochemical Oxygen Demand (BOD)	mg/L	4	50.0%	2.25	2.15	0.331662	ND	2.7
Bromide	mg/L	1	100.0%	0.5	0.5	NaN	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	0.0%	11.5	12	1.732051	9	13
Chloride	mg/L	4	0.0%	21.325	20.3	6.93127	14.8	29.9
Hardness	mg/L	4	0.0%	1491.25	1346	440.57794	1145	2128
Sulfate	mg/L	4	0.0%	1157.5	1017.5	456.99198	775	1820
Total Dissolved Solids (TDS)	mg/L	4	0.0%	2062.5	1875	705.09456	1430	3070
Total Kjeldahl Nitrogen (TKN)	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Total Organic Carbon (TOC)	mg/L	4	0.0%	6.325	6.55	0.629153	5.4	6.8
Total Phenols	mg/L	4	75.0%	0.00325	0.002	0.0025	ND	0.007
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	167500	150500	43562.22	137000	232000
Iron	ug/L	4	0.0%	4097.25	571.5	7272.749	246	15000
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	261000	236000	81894.24	195000	377000
Manganese	ug/L	4	0.0%	204.2	195.5	155.43753	44.8	381
Potassium	ug/L	4	0.0%	5515	5020	1270.184	4630	7390
Sodium	ug/L	4	0.0%	65775	59650	24423.95	44100	99700
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	1	100.0%	2.5	2.5	NaN	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	1	100.0%	2.5	2.5	NaN	ND	ND

APPENDIX C-1
INTERNATIONAL PAPER, TICONDEROGA MILL LANDFILL
2019 AREA 2/3 LEACHATE & EAST/WEST DRAIN ANALTYICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	1	100.0%	2.5	2.5	NaN	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	1	100.0%	2.5	2.5	NaN	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	2023.75	2095	1431.848	215	3690
pH	s.u.	4	0.0%	6.715	6.735	0.65709	5.92	7.47
Redox	mV	4	0.0%	9.75	38.5	146.99291	-194	156
Temperature	deg C	4	0.0%	13.125	12.1	4.196328	9.6	18.7
Turbidity	NTU	4	0.0%	32.75	17.5	40.9176	4	92

Note:The statistics are replaced by the corresponding minimum variance unbiased estimates for the log normal distribution.

APPENDIX C-2

LEACHATE AND EAST/WEST DRAIN 2019 ANALYTICAL DATA

Appendix C-2
International Paper, Ticonderoga Mill
2019 Anual Report
Area II/III Leachate and East/West Underdrain
2019 Analytical Data

Parameter	Area II/III Leachate				East/West Drain			
	Mar-19	Jun-19	Sep-19	Dec-19	Mar-19	Jun-19	Sep-19	Dec-19
Field or Physical								
Conductivity (µmhos/cm)	3,560	2,980	4,470	2,310	215	2,310	3,690	1,880
pH (s.u.)	7.46	6.98	6.67	5.88	7.47	6.95	6.52	5.92
Redox (mV)		14	-4	27		50	156	27
Temperature (deg C)	12.9	16	16	14.4	9.6	14	18.7	10.2
Turbidity (NTU)	53	47	71	27	92	7	4	28
Part 360 Leachate Indicator								
Alkalinity (mg/L)	2,360	1,860	2,200	1,190	450	520	560	400
Ammonia (mg/L)	97.5	66.6	115	38.4	0.2	<0.1	0.2	<0.1
Biochemical Oxygen Demand (BOD) (mg/L)	8	6	7	<6.0	2.7	2.3	<4.0	<4.0
Chemical Oxygen Demand (COD) (mg/L)	149	92	162	63	13	12	12	9
Chloride (mg/L)	106	74.5	118	46.8	23.9	16.7	29.9	14.8
Hardness (mg/L)	1,362	978	1,309	913	1,432	1,260	2,128	1,145
Sulfate (mg/L)	328	158	218	160	1,050	985	1,820	775
Total Dissolved Solids (TDS) (mg/L)	2,220	1,660	2,410	1,260	1,930	1,820	3,070	1,430
Total Kjeldahl Nitrogen (TKN) (mg/L)	83.4	138	98.6	34.4	<1.0	<1.0	<1.0	<1.0
Total Organic Carbon (TOC) (mg/L)	58	40	77.9	24.4	6.5	6.6	6.8	5.4
Total Phenols (mg/L)	0.005	0.004	0.009	<0.004	<0.004	<0.004	<0.004	0.007
Part 360 Metal								
Cadmium (µg/L)	<2.1	<2.1	<1.0	<1.0	<2.1	<2.1	<1.0	<1.0
Calcium (µg/L)	218,000	0.176	182,000	168,000	147,000	0.154	232,000	137,000
Chromium (Total) (µg/L)	<10	7.91	6.56	<4.0		NR		NR
Iron (µg/L)	4,640	6440	6,830	2,900	15,000	811	246	332
Lead (µg/L)	<2.5	<2.5	<2.8	<2.8	<2.5	<2.5	<2.8	<2.8
Magnesium (µg/L)	200,000	131,000	208,000	120,000	259,000	213,000	377,000	195,000
Manganese (µg/L)	839	703	595	583	381	284	44.8	107
Potassium (µg/L)	99,300	56,800	120,000	44,700	5,180	4,860	7,390	4,630
Sodium (µg/L)	399,000	223,000	367,000	152,000	66,500	52,800	99,700	44,100
Part 360 Volatile Organics								
2-Butanone (µg/L)	<10	<10	<10	<10	<10	<10	<10	<10
4-Methyl 2-pentanone (µg/L)	<10	<10	<10	<10	<10	<10	<10	<10
Acetone (µg/L)	<10	<10	14	<10	<10	<10	<10	<10
Benzene (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Carbon disulfide (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Ethyl benzene (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Toluene (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Xylene (total) (µg/L)	<10	<10	<10	<10	<10	<10	<10	<10
Leachate Indicator/Inorganic Parameters								
Total Phosphate (as P) (mg/L)	0.13	0.15						

NR Indicates analysis not required

APPENDIX D

2019

AREA IV, AREA V AND AREA VI

GROUND WATER ANALYTICAL STATISTICAL DATA

APPENDIX D-1

SHALLOW OVERBURDEN STATISTICAL DATA

APPENDIX D-1
INTERNATIONAL PAPER, TICONDEROGA MILL LANDFILL
2019 SHALLOW OVERBURDEN GROUND WATER ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
GM-10S								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	2	0.0%	580	580	28.28427	560	600
Ammonia	mg/L	2	0.0%	0.6	0.6	0.141421	0.5	0.7
Biochemical Oxygen Demand (BOD)	mg/L	2	100.0%	2	2	0	ND	ND
Bromide	mg/L	2	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	2	0.0%	9	9	1.414214	8	10
Chloride	mg/L	2	0.0%	8.52	8.52	0.509117	8.16	8.88
Hardness	mg/L	3	0.0%	4660.333	4601	258.1653	4437	4943
Sulfate	mg/L	2	0.0%	4005	4005	120.2082	3920	4090
Total Dissolved Solids (TDS)	mg/L	2	0.0%	5960	5960	14.14214	5950	5970
Total Kjeldahl Nitrogen (TKN)	mg/L	2	50.0%	0.8	0.8	0.424264	ND	1.1
Total Organic Carbon (TOC)	mg/L	3	0.0%	3.666667	3.8	0.321455	3.3	3.9
Total Phenols	mg/L	2	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	3	100.0%	0.683333	0.5	0.317543	ND	ND
Calcium	ug/L	3	0.0%	513000	522000	46162.76	463000	554000
Iron	ug/L	3	0.0%	201	175	59.43063	159	269
Lead	ug/L	3	100.0%	1.35	1.4	0.086603	ND	ND
Magnesium	ug/L	3	0.0%	821000	797000	55072.68	782000	884000
Manganese	ug/L	3	0.0%	4.303333	3.4	2.586162	2.29	7.22
Potassium	ug/L	3	0.0%	41300	40800	5566.866	36000	47100
Sodium	ug/L	3	0.0%	154000	157000	5196.152	148000	157000
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	3	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	3	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	3	100.0%	5	5	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Acetone	ug/L	3	100.0%	5	5	0	ND	ND
Benzene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	3	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	2	0.0%	3885	3885	1534.422	2800	4970
pH	s.u.	2	0.0%	6.71	6.71	0.014142	6.7	6.72
Redox	mV	2	0.0%	209	209	22.62742	193	225
Temperature	deg C	2	0.0%	10.8	10.8	0.707107	10.3	11.3
Turbidity	NTU	2	0.0%	46	46	49.49748	11	81
GM-96-11S								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	3	0.0%	516.6667	510	90.185	430	610
Ammonia	mg/L	3	66.7%	0.433333	0.05	0.663953	ND	1.2
Biochemical Oxygen Demand (BOD)	mg/L	3	66.7%	4.333333	2	4.041452	ND	9
Bromide	mg/L	3	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	3	0.0%	14.33333	11	9.451631	7	25
Chloride	mg/L	3	0.0%	95.13333	80.1	80.41097	23.3	182
Hardness	mg/L	3	0.0%	698	565	283.9137	505	1024
Sulfate	mg/L	3	0.0%	99.93333	94.2	48.45507	54.6	151
Total Dissolved Solids (TDS)	mg/L	3	0.0%	751.6667	635	206.4179	630	990
Total Kjeldahl Nitrogen (TKN)	mg/L	3	66.7%	0.9	0.5	0.69282	ND	1.7
Total Organic Carbon (TOC)	mg/L	3	0.0%	3.466667	3.4	0.11547	3.4	3.6
Total Phenols	mg/L	3	66.7%	0.009	0.002	0.012124	ND	0.023

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Area IV/V Routine Metals								
Cadmium	ug/L	3	100.0%	0.683333	0.5	0.317543	ND	ND
Calcium	ug/L	3	0.0%	127700	109000	44967.43	95100	179000
Iron	ug/L	3	0.0%	607.3333	225	704.1991	177	1420
Lead	ug/L	3	100.0%	1.35	1.4	0.086603	ND	ND
Magnesium	ug/L	3	0.0%	92166.67	71400	41544.47	65100	140000
Manganese	ug/L	3	0.0%	36.4	12.2	43.04637	10.9	86.1
Potassium	ug/L	3	0.0%	4773.333	3720	2353.94	3130	7470
Sodium	ug/L	3	0.0%	39966.67	49900	19410.39	17600	52400
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	3	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	3	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	3	100.0%	5	5	0	ND	ND
Acetone	ug/L	3	100.0%	5	5	0	ND	ND
Benzene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	3	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	2	0.0%	1130	1130	56.56854	1090	1170
pH	s.u.	2	0.0%	6.92	6.92	0.098995	6.85	6.99
Redox	mV	2	0.0%	148	148	35.35534	123	173
Temperature	deg C	2	0.0%	10.5	10.5	1.131371	9.7	11.3
Turbidity	NTU	2	0.0%	38.5	38.5	4.949747	35	42

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
MW-03-8S								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	395	400	17.32051	370	410
Ammonia	mg/L	4	25.0%	0.1375	0.1	0.110868	ND	0.3
Biochemical Oxygen Demand (BOD)	mg/L	4	100.0%	2	2	0	ND	ND
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	25.0%	21.125	7	31.36446	ND	68
Chloride	mg/L	4	0.0%	12.225	11.9	1.062623	11.4	13.7
Hardness	mg/L	4	0.0%	2887	2946.5	401.7819	2351	3304
Sulfate	mg/L	4	0.0%	2300	2270	243.5843	2070	2590
Total Dissolved Solids (TDS)	mg/L	4	0.0%	3732.5	3735	403.0199	3250	4210
Total Kjeldahl Nitrogen (TKN)	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Total Organic Carbon (TOC)	mg/L	4	0.0%	2.125	2.15	0.320156	1.8	2.4
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	371000	380000	64802.26	286000	438000
Iron	ug/L	4	0.0%	511.8	223.7	699.1212	59.8	1540
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	476500	485500	63846.17	398000	537000
Manganese	ug/L	4	0.0%	28.6	24.1	11.91945	20.1	46.1
Potassium	ug/L	4	0.0%	24475	22600	5119.489	20700	32000
Sodium	ug/L	4	0.0%	81875	87450	13122.09	62300	90300
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	3862.5	3925	338.6616	3400	4200
pH	s.u.	4	0.0%	7	6.995	0.086023	6.91	7.1
Redox	mV	4	0.0%	90	76.5	56.43285	41	166
Temperature	deg C	4	0.0%	13.2	12.4	2.663331	11	17
Turbidity	NTU	4	0.0%	7.5	8	4.795832	2	12
MW-96-1S								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	2	0.0%	340	340	84.85281	280	400
Ammonia	mg/L	2	100.0%	0.05	0.05	0	ND	ND
Biochemical Oxygen Demand (BOD)	mg/L	2	100.0%	2	2	0	ND	ND
Bromide	mg/L	2	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	2	0.0%	11.5	11.5	6.363961	7	16
Chloride	mg/L	2	0.0%	92.05	92.05	14.07143	82.1	102
Hardness	mg/L	2	0.0%	443	443	55.15433	404	482
Sulfate	mg/L	2	0.0%	45.8	45.8	14.5664	35.5	56.1
Total Dissolved Solids (TDS)	mg/L	2	0.0%	547.5	547.5	258.094	365	730
Total Kjeldahl Nitrogen (TKN)	mg/L	2	100.0%	0.5	0.5	0	ND	ND
Total Organic Carbon (TOC)	mg/L	2	0.0%	4	4	1.131371	3.2	4.8
Total Phenols	mg/L	2	100.0%	0.002	0.002	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Area IV/V Routine Metals								
Cadmium	ug/L	2	100.0%	0.775	0.775	0.388909	ND	ND
Calcium	ug/L	2	0.0%	85600	85600	4242.641	82600	88600
Iron	ug/L	2	0.0%	252.65	252.65	296.0656	43.3	462
Lead	ug/L	2	100.0%	1.325	1.325	0.106066	ND	ND
Magnesium	ug/L	2	0.0%	55650	55650	10677.31	48100	63200
Manganese	ug/L	2	0.0%	15.14	15.14	12.10567	6.58	23.7
Potassium	ug/L	2	0.0%	6030	6030	2927.422	3960	8100
Sodium	ug/L	2	0.0%	42050	42050	2757.716	40100	44000
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	2	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	2	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	2	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	2	100.0%	5	5	0	ND	ND
Acetone	ug/L	2	100.0%	5	5	0	ND	ND
Benzene	ug/L	2	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	2	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	2	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	2	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	2	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	2	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	2	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	2	0.0%	946.5	946.5	103.9447	873	1020
pH	s.u.	2	0.0%	6.84	6.84	0.084853	6.78	6.9
Redox	mV	2	0.0%	219	219	86.26703	158	280
Temperature	deg C	2	0.0%	10.065	10.065	0.473762	9.73	10.4
Turbidity	NTU	2	0.0%	52	52	14.14214	42	62

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
MW-96-2S								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	3	0.0%	293.3333	290	5.773503	290	300
Ammonia	mg/L	3	100.0%	0.05	0.05	0	ND	ND
Biochemical Oxygen Demand (BOD)	mg/L	3	100.0%	2	2	0	ND	ND
Bromide	mg/L	3	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	3	0.0%	14	15	3.605551	10	17
Chloride	mg/L	3	0.0%	251.11	357	215.3374	3.33	393
Hardness	mg/L	3	0.0%	551.3333	658	200.5426	320	676
Sulfate	mg/L	3	0.0%	25	27.1	8.545759	15.6	32.3
Total Dissolved Solids (TDS)	mg/L	3	0.0%	735	920	428.5732	245	1040
Total Kjeldahl Nitrogen (TKN)	mg/L	3	100.0%	0.5	0.5	0	ND	ND
Total Organic Carbon (TOC)	mg/L	3	0.0%	4.8	4.7	0.655744	4.2	5.5
Total Phenols	mg/L	3	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	3	100.0%	0.683333	0.5	0.317543	ND	ND
Calcium	ug/L	3	0.0%	107333.3	128000	41101.5	60000	134000
Iron	ug/L	3	0.0%	641.6667	516	390.9531	329	1080
Lead	ug/L	3	100.0%	1.35	1.4	0.086603	ND	ND
Magnesium	ug/L	3	0.0%	68866.67	78600	24120.81	41400	86600
Manganese	ug/L	3	0.0%	29.46667	31.3	6.83691	21.9	35.2
Potassium	ug/L	3	0.0%	6656.667	6530	1404.291	5320	8120
Sodium	ug/L	3	0.0%	54933.33	71900	36901.54	12600	80300
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	3	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	3	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	3	100.0%	5	5	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Acetone	ug/L	3	100.0%	5	5	0	ND	ND
Benzene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	3	100.0%	5	5	0	ND	ND
Field or Physical				0	0	0	ND	0
Conductivity	umhos/cm	2	0.0%	1225	1225	813.1728	650	1800
pH	s.u.	2	0.0%	7.25	7.25	0.028284	7.23	7.27
Redox	mV	2	0.0%	195	195	39.59798	167	223
Temperature	deg C	2	0.0%	10.65	10.65	0.636396	10.2	11.1
Turbidity	NTU	2	0.0%	47.5	47.5	17.67767	35	60
MW-96-3S								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	2	0.0%	595	595	49.49748	560	630
Ammonia	mg/L	2	0.0%	0.25	0.25	0.070711	0.2	0.3
Biochemical Oxygen Demand (BOD)	mg/L	2	100.0%	2	2	0	ND	ND
Bromide	mg/L	2	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	2	0.0%	8.5	8.5	3.535534	6	11
Chloride	mg/L	2	100.0%	1	1	0	ND	ND
Hardness	mg/L	3	0.0%	3728.333	3583	396.5064	3425	4177
Sulfate	mg/L	2	0.0%	3060	3060	113.1371	2980	3140
Total Dissolved Solids (TDS)	mg/L	2	0.0%	4670	4670	254.5584	4490	4850
Total Kjeldahl Nitrogen (TKN)	mg/L	2	100.0%	0.5	0.5	0	ND	ND
Total Organic Carbon (TOC)	mg/L	3	0.0%	3.433333	3.3	0.416333	3.1	3.9
Total Phenols	mg/L	2	100.0%	0.002	0.002	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Area IV/V Routine Metals								
Cadmium	ug/L	3	100.0%	0.683333	0.5	0.317543	ND	ND
Calcium	ug/L	3	0.0%	255666.7	246000	24006.94	238000	283000
Iron	ug/L	3	0.0%	450.3333	309	415.4399	124	918
Lead	ug/L	3	100.0%	1.35	1.4	0.086603	ND	ND
Magnesium	ug/L	3	0.0%	750333.3	721000	82032.51	687000	843000
Manganese	ug/L	3	0.0%	31.03	17.4	30.43708	9.79	65.9
Potassium	ug/L	3	0.0%	22600	22300	1473.092	21300	24200
Sodium	ug/L	3	0.0%	121333.3	115000	11846.24	114000	135000
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	3	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	3	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	3	100.0%	5	5	0	ND	ND
Acetone	ug/L	3	100.0%	5	5	0	ND	ND
Benzene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	3	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	2	0.0%	4580	4580	438.4062	4270	4890
pH	s.u.	2	0.0%	7.005	7.005	0.162635	6.89	7.12
Redox	mV	2	0.0%	188	188	5.656854	184	192
Temperature	deg C	2	0.0%	10.25	10.25	0.212132	10.1	10.4
Turbidity	NTU	2	0.0%	63.5	63.5	61.51829	20	107

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
MW-96-4S								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	1	0.0%	430	430	NaN	430	430
Ammonia	mg/L	1	100.0%	0.05	0.05	NaN	ND	ND
Biochemical Oxygen Demand (BOD)	mg/L	1	100.0%	2	2	NaN	ND	ND
Bromide	mg/L	1	100.0%	0.5	0.5	NaN	ND	ND
Chemical Oxygen Demand (COD)	mg/L	1	0.0%	14	14	NaN	14	14
Chloride	mg/L	1	100.0%	1	1	NaN	ND	ND
Hardness	mg/L	1	0.0%	1594	1594	NaN	1594	1594
Sulfate	mg/L	1	0.0%	1180	1180	NaN	1180	1180
Total Dissolved Solids (TDS)	mg/L	1	0.0%	2120	2120	NaN	2120	2120
Total Kjeldahl Nitrogen (TKN)	mg/L	1	0.0%	1.1	1.1	NaN	1.1	1.1
Total Organic Carbon (TOC)	mg/L	1	0.0%	4.2	4.2	NaN	4.2	4.2
Total Phenols	mg/L	1	100.0%	0.002	0.002	NaN	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	1	100.0%	1.05	1.05	NaN	ND	ND
Calcium	ug/L	1	0.0%	71900	71900	NaN	71900	71900
Iron	ug/L	1	0.0%	303	303	NaN	303	303
Lead	ug/L	1	100.0%	1.25	1.25	NaN	ND	ND
Magnesium	ug/L	1	0.0%	344000	344000	NaN	344000	344000
Manganese	ug/L	1	0.0%	16.7	16.7	NaN	16.7	16.7
Potassium	ug/L	1	0.0%	8400	8400	NaN	8400	8400
Sodium	ug/L	1	0.0%	82800	82800	NaN	82800	82800
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	1	100.0%	2.5	2.5	NaN	ND	ND
2-Butanone	ug/L	1	100.0%	5	5	NaN	ND	ND
4-Isopropyl toluene	ug/L	1	100.0%	2.5	2.5	NaN	ND	ND
4-Methyl 2-pentanone	ug/L	1	100.0%	5	5	NaN	ND	ND

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2019 SHALLOW OVERBURDEN GROUND WATER ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Acetone	ug/L	1	100.0%	5	5	NaN	ND	ND
Benzene	ug/L	1	100.0%	2.5	2.5	NaN	ND	ND
Carbon disulfide	ug/L	1	100.0%	2.5	2.5	NaN	ND	ND
Chloroform	ug/L	1	100.0%	2.5	2.5	NaN	ND	ND
Ethyl benzene	ug/L	1	100.0%	2.5	2.5	NaN	ND	ND
Methylene Chloride	ug/L	1	100.0%	2.5	2.5	NaN	ND	ND
Toluene	ug/L	1	100.0%	2.5	2.5	NaN	ND	ND
Xylene (total)	ug/L	1	100.0%	5	5	NaN	ND	ND
Field or Physical								
Conductivity	umhos/cm	1	0.0%	2780	2780	NaN	2780	2780
pH	s.u.	1	0.0%	7.45	7.45	NaN	7.45	7.45
Redox	mV	1	0.0%	195	195	NaN	195	195
Temperature	deg C	1	0.0%	9.1	9.1	NaN	9.1	9.1
Turbidity	NTU	1	0.0%	61	61	NaN	61	61
MW-A606-4S								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	470	460	20	460	500
Ammonia	mg/L	4	75.0%	0.0625	0.05	0.025	ND	0.1
Biochemical Oxygen Demand (BOD)	mg/L	4	100.0%	2	2	0	ND	ND
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	100.0%	2.5	2.5	0	ND	ND
Chloride	mg/L	4	0.0%	9.095	8.655	1.341007	8.07	11
Hardness	mg/L	4	0.0%	887.75	930	153.0324	684	1007
Sulfate	mg/L	4	0.0%	504.75	494	106.2681	399	632
Total Dissolved Solids (TDS)	mg/L	4	0.0%	1062.5	1070	170.7581	900	1210
Total Kjeldahl Nitrogen (TKN)	mg/L	4	75.0%	0.8	0.5	0.6	ND	1.7
Total Organic Carbon (TOC)	mg/L	4	0.0%	1.9	1.75	0.33665	1.7	2.4
Total Phenols	mg/L	4	75.0%	0.00325	0.002	0.0025	ND	0.007

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	115750	122500	26550.27	81000	137000
Iron	ug/L	4	0.0%	1066.975	1212.5	853.4094	42.9	1800
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	145500	151500	21110.82	117000	162000
Manganese	ug/L	4	0.0%	197.925	205.5	160.5674	11.7	369
Potassium	ug/L	4	0.0%	11135	9630	3528.101	8880	16400
Sodium	ug/L	4	0.0%	34615	43050	20096.95	4660	47700
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	1442.5	1445	27.53785	1410	1470
pH	s.u.	4	0.0%	6.9875	6.99	0.202711	6.74	7.23
Redox	mV	4	0.0%	31.25	10.5	130.903	-104	208
Temperature	deg C	4	0.0%	10.65	10.8	0.695222	9.7	11.3
Turbidity	NTU	4	0.0%	73.25	43	74.87935	23	184

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2019 SHALLOW OVERBURDEN GROUND WATER ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
MW-A612-3S								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	505	510	59.1608	440	560
Ammonia	mg/L	4	75.0%	0.0625	0.05	0.025	ND	0.1
Biochemical Oxygen Demand (BOD)	mg/L	4	100.0%	2	2	0	ND	ND
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	75.0%	3.625	2.5	2.25	ND	7
Chloride	mg/L	4	75.0%	2.0325	1	2.065	ND	5.13
Hardness	mg/L	4	0.0%	1471	1532	210.985	1181	1639
Sulfate	mg/L	4	0.0%	1134.25	1225	263.8287	747	1340
Total Dissolved Solids (TDS)	mg/L	4	0.0%	2102.5	2250	400.6973	1520	2390
Total Kjeldahl Nitrogen (TKN)	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Total Organic Carbon (TOC)	mg/L	4	0.0%	2.1	2.05	0.374166	1.7	2.6
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	206750	221000	39634.79	150000	235000
Iron	ug/L	4	0.0%	210.975	178.5	134.007	92.9	394
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	231750	238000	27293.16	196000	255000
Manganese	ug/L	4	0.0%	45.275	50.6	18.66304	20.2	59.7
Potassium	ug/L	4	0.0%	17200	16350	3827.096	13600	22500
Sodium	ug/L	4	0.0%	46650	46600	3291.909	42700	50700
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND

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2019 SHALLOW OVERBURDEN GROUND WATER ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	3	0.0%	2836.667	2890	751.4209	2060	3560
pH	s.u.	3	0.0%	7.11	7.01	0.389744	6.78	7.54
Redox	mV	3	0.0%	17	-10	65.79514	-31	92
Temperature	deg C	3	0.0%	9.966667	10	0.450925	9.5	10.4
Turbidity	NTU	3	0.0%	43	40	24.63737	20	69
MW-A612-5S								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	2	0.0%	390	390	28.28427	370	410
Ammonia	mg/L	2	100.0%	0.05	0.05	0	ND	ND
Biochemical Oxygen Demand (BOD)	mg/L	2	100.0%	2	2	0	ND	ND
Bromide	mg/L	2	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	2	100.0%	2.5	2.5	0	ND	ND
Chloride	mg/L	2	0.0%	3.3	3.3	0.975807	2.61	3.99
Hardness	mg/L	2	0.0%	350	350	5.656854	346	354
Sulfate	mg/L	2	0.0%	31.5	31.5	9.192388	25	38
Total Dissolved Solids (TDS)	mg/L	2	0.0%	407.5	407.5	88.38835	345	470
Total Kjeldahl Nitrogen (TKN)	mg/L	2	100.0%	0.5	0.5	0	ND	ND
Total Organic Carbon (TOC)	mg/L	2	0.0%	1.45	1.45	0.212132	1.3	1.6
Total Phenols	mg/L	2	100.0%	0.002	0.002	0	ND	ND

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2019 SHALLOW OVERBURDEN GROUND WATER ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Area IV/V Routine Metals								
Cadmium	ug/L	2	100.0%	1.05	1.05	0	ND	ND
Calcium	ug/L	2	0.0%	58250	58250	1626.346	57100	59400
Iron	ug/L	2	50.0%	44.05	44.05	8.414571	ND	50
Lead	ug/L	2	100.0%	1.25	1.25	0	ND	ND
Magnesium	ug/L	2	0.0%	49700	49700	2262.742	48100	51300
Manganese	ug/L	2	50.0%	4.945	4.945	3.613316	ND	7.5
Potassium	ug/L	2	0.0%	4330	4330	1923.33	2970	5690
Sodium	ug/L	2	0.0%	14800	14800	282.8427	14600	15000
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	2	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	2	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	2	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	2	100.0%	5	5	0	ND	ND
Acetone	ug/L	2	100.0%	5	5	0	ND	ND
Benzene	ug/L	2	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	2	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	2	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	2	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	2	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	2	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	2	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	2	0.0%	721.5	721.5	2.12132	720	723
pH	s.u.	2	0.0%	7.265	7.265	0.205061	7.12	7.41
Redox	mV	2	0.0%	75.5	75.5	187.3833	-57	208
Temperature	deg C	2	0.0%	10.55	10.55	2.05061	9.1	12
Turbidity	NTU	2	0.0%	5	5	1.414214	4	6

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INTERNATIONAL PAPER, TICONDEROGA MILL LANDFILL

2019 SHALLOW OVERBURDEN GROUND WATER ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max

Note:The statistics are replaced by the corresponding minimum variance unbiased estimates for the log normal distribution.

APPENDIX D-2

DEEP OVERBURDEN 2019 STATISTICAL DATA

APPENDIX D-2
INTERNATIONAL PAPER, TICONDEROGA MILL LANDFILL
2019 DEEP OVERBURDEN GROUND WATER ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
GM-10D								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	630	620	58.878406	570	710
Ammonia	mg/L	4	75.0%	0.1375	0.05	0.175	ND	0.4
Biochemical Oxygen Demand (BOD)	mg/L	4	100.0%	2	2	0	ND	ND
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	25.0%	6.125	7	2.462214	ND	8
Chloride	mg/L	4	0.0%	92.925	99.9	14.016984	71.9	100
Hardness	mg/L	4	0.0%	2223.5	2067	723.37796	1535	3225
Sulfate	mg/L	4	0.0%	1368.25	1415	478.32233	753	1890
Total Dissolved Solids (TDS)	mg/L	4	0.0%	2877.5	2840	718.25599	2060	3770
Total Kjeldahl Nitrogen (TKN)	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Total Organic Carbon (TOC)	mg/L	4	0.0%	4.125	4.1	0.221736	3.9	4.4
Total Phenols	mg/L	4	75.0%	0.003	0.002	0.002	ND	0.006
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	234750	232500	36591.21	201000	273000
Iron	ug/L	4	0.0%	1157.6	1095.5	1099.464	69.4	2370
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	397250	363000	155654.3	248000	615000
Manganese	ug/L	4	0.0%	179.5	179	20.174241	157	203
Potassium	ug/L	4	0.0%	16325	17000	3348.009	12200	19100
Sodium	ug/L	4	0.0%	103125	97950	19564.49	86600	130000
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND

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2019 DEEP OVERBURDEN GROUND WATER ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	3140	3020	488.94444	2690	3830
pH	s.u.	4	0.0%	6.6825	6.71	0.160702	6.49	6.82
Redox	mV	4	0.0%	-4.5	11.5	102.3279	-129	88
Temperature	deg C	4	0.0%	10.685	10.72	0.521121	10.1	11.2
Turbidity	NTU	4	0.0%	199.25	190	46.226796	158	259
GM-11D								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	445	445	23.804761	420	470
Ammonia	mg/L	4	100.0%	0.05	0.05	0	ND	ND
Biochemical Oxygen Demand (BOD)	mg/L	4	100.0%	2	2	0	ND	ND
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	75.0%	3.625	2.5	2.25	ND	7
Chloride	mg/L	4	75.0%	1.26	1	0.52	ND	2.04
Hardness	mg/L	4	0.0%	1129	1096.5	106.96105	1039	1284
Sulfate	mg/L	4	0.0%	804.25	855	153.28704	588	919
Total Dissolved Solids (TDS)	mg/L	4	0.0%	1565	1470	352.2783	1260	2060
Total Kjeldahl Nitrogen (TKN)	mg/L	4	50.0%	1.15	0.8	0.943398	ND	2.5
Total Organic Carbon (TOC)	mg/L	4	0.0%	1.85	1.75	0.310913	1.6	2.3
Total Phenols	mg/L	4	75.0%	0.00275	0.002	0.0015	ND	0.005
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	109500	108000	6806.859	103000	119000
Iron	ug/L	4	0.0%	16707.5	16540	12314.09	3550	30200
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	208000	201000	21969.68	190000	240000
Manganese	ug/L	4	0.0%	130.25	127	32.724863	101	166
Potassium	ug/L	4	0.0%	4642.5	4640	506.31841	4120	5170
Sodium	ug/L	4	0.0%	43825	42950	1924.188	42700	46700
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND

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2019 DEEP OVERBURDEN GROUND WATER ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical				0	0	0	ND	0
Conductivity	umhos/cm	4	0.0%	1885	1895	63.50853	1800	1950
pH	s.u.	4	0.0%	6.96	7.05	0.230362	6.62	7.12
Redox	mV	4	0.0%	9	13	27.141604	-27	37
Temperature	deg C	4	0.0%	10.9	10.85	0.391578	10.5	11.4
Turbidity	NTU	4	0.0%	45	49.5	16.792856	21	60
MW-01-16D								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	417.5	415	33.040379	380	460
Ammonia	mg/L	4	100.0%	0.05	0.05	0	ND	ND
Biochemical Oxygen Demand (BOD)	mg/L	4	100.0%	2	2	0	ND	ND
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	100.0%	2.5	2.5	0	ND	ND
Chloride	mg/L	4	50.0%	3.45	2.43	3.282946	ND	7.94
Hardness	mg/L	4	0.0%	416.25	415	34.759891	377	458
Sulfate	mg/L	4	0.0%	47.6	47	26.421834	24.3	72.1
Total Dissolved Solids (TDS)	mg/L	4	0.0%	430	427.5	38.944405	385	480
Total Kjeldahl Nitrogen (TKN)	mg/L	4	50.0%	1.075	0.8	0.801561	ND	2.2
Total Organic Carbon (TOC)	mg/L	4	0.0%	1.675	1.65	0.206155	1.5	1.9
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	51400	49550	4365.776	48600	57900
Iron	ug/L	4	0.0%	159.35	112.3	171.30724	22.8	390

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	69975	68150	8449.211	61800	81800
Manganese	ug/L	4	25.0%	25.0975	17.7	25.501922	ND	60.1
Potassium	ug/L	4	0.0%	1717.5	1665	303.79544	1440	2100
Sodium	ug/L	4	0.0%	10265	10230	1924.812	8200	12400
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	776.25	741.5	87.834598	716	906
pH	s.u.	4	0.0%	7.27	7.265	0.104243	7.16	7.39
Redox	mV	4	0.0%	66.75	57.5	98.198354	-43	195
Temperature	deg C	4	0.0%	9.125	9.25	0.942956	8	10
Turbidity	NTU	4	0.0%	6	2.5	8.75595	ND	19
MW-03-1D								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	475	490	36.968455	420	500
Ammonia	mg/L	4	100.0%	0.05	0.05	0	ND	ND
Biochemical Oxygen Demand (BOD)	mg/L	4	50.0%	4.4	2.8	3.808762	ND	10
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	25.0%	9.125	9.5	5.864796	ND	15
Chloride	mg/L	4	0.0%	3.2075	2.68	1.25646	2.39	5.08
Hardness	mg/L	4	0.0%	492.25	492	11.70114	480	505
Sulfate	mg/L	4	0.0%	77.9	76.6	3.969047	74.7	83.7

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Total Dissolved Solids (TDS)	mg/L	4	0.0%	535	542.5	47.784237	480	575
Total Kjeldahl Nitrogen (TKN)	mg/L	4	50.0%	1.15	0.8	0.943398	ND	2.5
Total Organic Carbon (TOC)	mg/L	4	0.0%	4.55	2.6	4.687928	1.5	11.5
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	52350	52750	4227.292	47600	56300
Iron	ug/L	4	0.0%	404.5	351.5	330.51727	101	814
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	87850	88050	3821.431	83000	92300
Manganese	ug/L	4	0.0%	34.645	37.9	19.066902	9.38	53.4
Potassium	ug/L	4	0.0%	7997.5	6330	3619.23	5930	13400
Sodium	ug/L	4	0.0%	20325	19650	3073.95	17400	24600
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical				0	0		ND	0
Conductivity	umhos/cm	4	0.0%	930.25	917	29.926298	912	975
pH	s.u.	4	0.0%	6.9025	7.035	0.675	6.08	7.46
Redox	mV	4	0.0%	121.25	146	97.033929	-17	210
Temperature	deg C	4	0.0%	11.195	11.2	0.874128	10.38	12
Turbidity	NTU	4	0.0%	161.25	134.5	113.47944	65	311
MW-03-8D								
Area IV/V Leachate Indicators								

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Alkalinity	mg/L	4	0.0%	457.5	460	22.173558	430	480
Ammonia	mg/L	4	100.0%	0.05	0.05	0	ND	ND
Biochemical Oxygen Demand (BOD)	mg/L	4	100.0%	2	2	0	ND	ND
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	75.0%	4.125	2.5	3.25	ND	9
Chloride	mg/L	4	0.0%	2.82	2.85	0.270062	2.53	3.05
Hardness	mg/L	4	0.0%	1638	1648.5	196.81294	1387	1868
Sulfate	mg/L	4	0.0%	1280	1305	117.4734	1120	1390
Total Dissolved Solids (TDS)	mg/L	4	0.0%	2287.5	2285	49.916597	2240	2340
Total Kjeldahl Nitrogen (TKN)	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Total Organic Carbon (TOC)	mg/L	4	0.0%	2.025	1.9	0.320156	1.8	2.5
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	174750	159000	41612.3	146000	235000
Iron	ug/L	4	0.0%	724.35	497.7	854.15937	52	1850
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	292000	305000	30528.68	247000	311000
Manganese	ug/L	4	0.0%	257.25	141	246.12378	121	626
Potassium	ug/L	4	0.0%	13642.5	12950	6823.481	6470	22200
Sodium	ug/L	4	0.0%	60375	62200	8103.651	49000	68100
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Field or Physical								
Conductivity	umhos/cm	4	0.0%	2722.5	2665	118.42719	2660	2900
pH	s.u.	4	0.0%	7	7.015	0.091287	6.89	7.08
Redox	mV	4	0.0%	117.75	110	76.621907	51	200
Temperature	deg C	4	0.0%	10.65	10.7	0.550757	10	11.2
Turbidity	NTU	4	0.0%	103	84	56.821357	58	186
MW-96-1D								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	662	655	50.622788	608	730
Ammonia	mg/L	4	25.0%	0.9375	0.95	0.803508	ND	1.8
Biochemical Oxygen Demand (BOD)	mg/L	4	100.0%	2	2	0	ND	ND
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	0.0%	9.75	8	5.737305	5	18
Chloride	mg/L	4	0.0%	3.7725	3.745	0.293868	3.5	4.1
Hardness	mg/L	4	0.0%	5960.25	6381	1382.055	4029	7050
Sulfate	mg/L	4	0.0%	5292.5	5270	1180.745	4050	6580
Total Dissolved Solids (TDS)	mg/L	4	0.0%	7727.5	7870	2023.485	5600	9570
Total Kjeldahl Nitrogen (TKN)	mg/L	4	75.0%	0.8	0.5	0.6	ND	1.7
Total Organic Carbon (TOC)	mg/L	4	0.0%	4.675	4.8	0.869387	3.5	5.6
Total Phenols	mg/L	4	75.0%	0.00275	0.002	0.0015	ND	0.005
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	376250	392000	62697.02	288000	433000
Iron	ug/L	4	0.0%	1033.475	713.5	1205.081	76.9	2630
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	1218500	1300000	299080.3	804000	1470000
Manganese	ug/L	4	0.0%	479	443	111.15155	389	641
Potassium	ug/L	4	0.0%	23225	23550	5146.115	17200	28600
Sodium	ug/L	4	0.0%	217000	234500	49564.77	146000	253000
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	6970	7145	1147.025	5630	7960
pH	s.u.	4	0.0%	6.6825	6.685	0.291133	6.35	7.01
Redox	mV	4	0.0%	70.25	22.5	149.64931	-52	288
Temperature	deg C	4	0.0%	10.55	10.6	0.525991	10	11
Turbidity	NTU	4	0.0%	147.5	128.5	53.544374	109	224
MW-96-2D						0		
Area IV/V Leachate Indicators						0		
Alkalinity	mg/L	4	0.0%	422.5	420	22.173558	400	450
Ammonia	mg/L	4	100.0%	0.05	0.05	0	ND	ND
Biochemical Oxygen Demand (BOD)	mg/L	4	75.0%	2.1	2	0.2	ND	2.4
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	75.0%	5.875	2.5	6.75	ND	16
Chloride	mg/L	4	0.0%	19.43	10.12	19.53394	8.78	48.7
Hardness	mg/L	4	0.0%	1207.25	1211	54.303929	1146	1261
Sulfate	mg/L	4	0.0%	756	742.5	73.616121	688	851
Total Dissolved Solids (TDS)	mg/L	4	0.0%	1442.5	1410	118.9888	1340	1610
Total Kjeldahl Nitrogen (TKN)	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Total Organic Carbon (TOC)	mg/L	4	0.0%	2.125	1.9	0.780491	1.5	3.2
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	111000	109000	6976.15	105000	121000
Iron	ug/L	4	25.0%	97.925	46.55	112.9719	ND	267
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	226000	225000	13515.42	211000	243000

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Manganese	ug/L	4	0.0%	74.325	68.95	14.539458	63.8	95.6
Potassium	ug/L	4	0.0%	12400	12500	761.57731	11400	13200
Sodium	ug/L	4	0.0%	41850	42100	1454.877	40000	43200
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical						0		
Conductivity	umhos/cm	4	0.0%	2030	2065	102.9563	1880	2110
pH	s.u.	4	0.0%	7.0775	7.11	0.155858	6.86	7.23
Redox	mV	4	0.0%	171.25	167	47.478943	128	223
Temperature	deg C	4	0.0%	11.315	11.43	0.75337	10.4	12
Turbidity	NTU	4	0.0%	0.75	0.5	0.957427	ND	2
MW-96-3D								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	447.5	455	18.929694	420	460
Ammonia	mg/L	4	100.0%	0.05	0.05	0	ND	ND
Biochemical Oxygen Demand (BOD)	mg/L	4	100.0%	2	2	0	ND	ND
Bromide	mg/L	4	100.0%	1.625	0.5	2.25	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	75.0%	3.625	2.5	2.25	ND	7
Chloride	mg/L	4	75.0%	3.6475	1.795	4.300817	ND	10
Hardness	mg/L	4	0.0%	1125.5	1152	68.694978	1024	1174
Sulfate	mg/L	4	0.0%	711.25	710.5	40.557572	670	754
Total Dissolved Solids (TDS)	mg/L	4	0.0%	1392.5	1410	99.121138	1260	1490
Total Kjeldahl Nitrogen (TKN)	mg/L	4	100.0%	0.5	0.5	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Total Organic Carbon (TOC)	mg/L	4	0.0%	1.4	1.4	0.11547	1.3	1.5
Total Phenols	mg/L	4	75.0%	0.00375	0.002	0.0035	ND	0.009
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	183250	184500	19032.87	160000	204000
Iron	ug/L	4	0.0%	1905.625	733	2821.869	46.5	6110
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	162500	163500	7937.254	152000	171000
Manganese	ug/L	4	0.0%	225.5	215	88.508003	129	343
Potassium	ug/L	4	0.0%	4525	4465	1115.004	3540	5630
Sodium	ug/L	4	0.0%	42350	42100	1864.582	40400	44800
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	1937.5	1945	35.939764	1890	1970
pH	s.u.	4	0.0%	6.745	6.81	0.240763	6.4	6.96
Redox	mV	4	0.0%	61	63.5	63.827894	-10	127
Temperature	deg C	4	0.0%	10.4	10.5	0.711805	9.6	11
Turbidity	NTU	4	0.0%	131.75	12	245.55838	3	500
MW-96-4D								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	395	420	56.862407	310	430
Ammonia	mg/L	4	100.0%	0.05	0.05	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Biochemical Oxygen Demand (BOD)	mg/L	4	75.0%	2.125	2	0.25	ND	2.5
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	0.0%	12.25	12.5	4.112988	7	17
Chloride	mg/L	4	50.0%	2.26	2.165	1.46317	ND	3.71
Hardness	mg/L	4	0.0%	450	479	107.25049	297	545
Sulfate	mg/L	4	0.0%	288.875	302.5	198.62459	75.5	475
Total Dissolved Solids (TDS)	mg/L	4	0.0%	747.5	760	296.0152	440	1030
Total Kjeldahl Nitrogen (TKN)	mg/L	4	25.0%	1.3	1.1	0.848528	ND	2.5
Total Organic Carbon (TOC)	mg/L	4	0.0%	4.025	4.1	0.895824	2.9	5
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	76525	75500	10554.74	66300	88800
Iron	ug/L	4	0.0%	1374.1	556	1956.142	94.4	4290
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	62925	71500	22090.33	30200	78500
Manganese	ug/L	4	0.0%	99.65	67.35	83.203546	40.9	223
Potassium	ug/L	4	0.0%	3657.5	3670	778.51889	2810	4480
Sodium	ug/L	4	0.0%	20277.5	20600	9532.542	8310	31600
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	875	902.5	133.10397	695	1000

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
pH	s.u.	4	0.0%	7.135	7.09	0.304686	6.84	7.52
Redox	mV	4	0.0%	74.5	34	98.861856	9	221
Temperature	deg C	4	0.0%	10	9.95	0.883176	9	11.1
Turbidity	NTU	4	0.0%	90.75	103.5	47.303101	23	133
MW-A606-1D						0		
Area IV/V Leachate Indicators						0		
Alkalinity	mg/L	4	0.0%	395	390	34.156503	360	440
Ammonia	mg/L	4	50.0%	0.15	0.125	0.122474	ND	0.3
Biochemical Oxygen Demand (BOD)	mg/L	4	75.0%	6.5	2	9	ND	20
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	75.0%	4.375	2.5	3.75	ND	10
Chloride	mg/L	4	25.0%	4.5075	4.15	3.183315	ND	8.73
Hardness	mg/L	4	0.0%	372.75	369.5	18.945096	357	395
Sulfate	mg/L	4	0.0%	45.35	47.65	5.279204	37.5	48.6
Total Dissolved Solids (TDS)	mg/L	4	0.0%	417.5	410	23.629078	400	450
Total Kjeldahl Nitrogen (TKN)	mg/L	4	50.0%	1.025	0.95	0.618466	ND	1.7
Total Organic Carbon (TOC)	mg/L	4	0.0%	2.05	1.85	0.896289	1.2	3.3
Total Phenols	mg/L	4	75.0%	0.0025	0.002	0.001	ND	0.004
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	91450	88750	7225.187	86300	102000
Iron	ug/L	4	0.0%	99.625	86.95	74.303897	31.6	193
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	35100	33950	3645.088	32100	40400
Manganese	ug/L	4	50.0%	11.375	10.45	4.722552	ND	17.1
Potassium	ug/L	4	0.0%	1225	710.5	1267.197	369	3110
Sodium	ug/L	4	0.0%	26675	25200	3222.189	24800	31500
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	766.25	774.5	30.225541	726	790
pH	s.u.	4	0.0%	7.1825	7.225	0.125	7	7.28
Redox	mV	4	0.0%	-46	-22.5	87.273516	-169	30
Temperature	deg C	4	0.0%	9.125	9.15	1.963628	6.7	11.5
Turbidity	NTU	4	0.0%	3.75	2.5	4.787136	ND	10
MW-A606-2D								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	730	725	54.772256	670	800
Ammonia	mg/L	4	75.0%	0.0625	0.05	0.025	ND	0.1
Biochemical Oxygen Demand (BOD)	mg/L	4	75.0%	2.5	2	1	ND	4
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	75.0%	13.125	2.5	21.25	ND	45
Chloride	mg/L	4	50.0%	3.185	1.725	3.471297	ND	8.29
Hardness	mg/L	4	0.0%	2301.25	2329	446.55673	1728	2819
Sulfate	mg/L	4	0.0%	1583.5	1640	507.89336	934	2120
Total Dissolved Solids (TDS)	mg/L	4	0.0%	2810	2900	783.24113	1800	3640
Total Kjeldahl Nitrogen (TKN)	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Total Organic Carbon (TOC)	mg/L	4	0.0%	2.75	2.85	0.331662	2.3	3
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	322500	320000	50842.9	269000	381000
Iron	ug/L	4	25.0%	60.35	41.95	46.66894	ND	129
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	362250	369000	81495.91	257000	454000
Manganese	ug/L	4	0.0%	247	253.5	91.356445	129	352
Potassium	ug/L	4	0.0%	16950	16300	1885.913	15600	19600

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2019 DEEP OVERBURDEN GROUND WATER ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Sodium	ug/L	4	0.0%	62825	62100	9798.427	51600	75500
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	2955	3295	1047.234	1490	3740
pH	s.u.	4	0.0%	6.835	6.775	0.189824	6.68	7.11
Redox	mV	4	0.0%	120.75	138.5	83.260135	7	199
Temperature	deg C	4	0.0%	10.375	10.3	0.518813	9.9	11
Turbidity	NTU	4	0.0%	37.25	29.5	39.91136	2	88
MW-A606-4D								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	402.5	400	33.040379	370	440
Ammonia	mg/L	4	100.0%	0.05	0.05	0	ND	ND
Biochemical Oxygen Demand (BOD)	mg/L	4	100.0%	2	2	0	ND	ND
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	100.0%	2.5	2.5	0	ND	ND
Chloride	mg/L	4	0.0%	27.875	18.8	20.528091	15.5	58.4
Hardness	mg/L	4	0.0%	1019	1033.5	41.944408	958	1051
Sulfate	mg/L	4	0.0%	630.75	633	18.043928	607	650
Total Dissolved Solids (TDS)	mg/L	4	0.0%	1245	1255	55.677644	1170	1300
Total Kjeldahl Nitrogen (TKN)	mg/L	4	50.0%	1.25	1.25	0.866025	ND	2
Total Organic Carbon (TOC)	mg/L	4	0.0%	1.55	1.55	0.310913	1.2	1.9
Total Phenols	mg/L	4	50.0%	0.0035	0.003	0.001915	ND	0.006

APPENDIX D-2
INTERNATIONAL PAPER, TICONDEROGA MILL LANDFILL
2019 DEEP OVERBURDEN GROUND WATER ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	117750	117500	4573.474	113000	123000
Iron	ug/L	4	0.0%	336.75	360.5	154.84266	127	499
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	176250	180000	8180.261	164000	181000
Manganese	ug/L	4	0.0%	282.75	314	109.74022	126	377
Potassium	ug/L	4	0.0%	9885	8765	2413.58	8510	13500
Sodium	ug/L	4	0.0%	34600	34650	469.04158	34100	35000
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	1745	1780	77.244202	1630	1790
pH	s.u.	4	0.0%	7.0375	7.11	0.24878	6.7	7.23
Redox	mV	4	0.0%	66.75	25	119.47768	-21	238
Temperature	deg C	4	0.0%	10.8625	10.2	1.621406	9.8	13.25
Turbidity	NTU	4	0.0%	15.375	11.75	10.160176	8	30
MW-A612-3D								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	430	440	27.080128	390	450
Ammonia	mg/L	4	50.0%	0.1	0.075	0.070711	ND	0.2
Biochemical Oxygen Demand (BOD)	mg/L	4	100.0%	2	2	0	ND	ND
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND

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2019 DEEP OVERBURDEN GROUND WATER ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Chemical Oxygen Demand (COD)	mg/L	4	75.0%	5.375	2.5	5.75	ND	14
Chloride	mg/L	4	100.0%	1	1	0	ND	ND
Hardness	mg/L	4	0.0%	2300.5	2256	252.1448	2076	2614
Sulfate	mg/L	4	0.0%	2012.5	2010	37.749172	1970	2060
Total Dissolved Solids (TDS)	mg/L	4	0.0%	3167.5	3180	75	3070	3240
Total Kjeldahl Nitrogen (TKN)	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Total Organic Carbon (TOC)	mg/L	4	0.0%	2.075	2.1	0.15	1.9	2.2
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	215000	208500	24752.1	195000	248000
Iron	ug/L	4	0.0%	250.725	231.5	143.40259	99.9	440
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	428250	421500	46857.05	385000	485000
Manganese	ug/L	4	0.0%	399.25	395.5	23.300572	377	429
Potassium	ug/L	4	0.0%	12875	12550	1144.188	11900	14500
Sodium	ug/L	4	0.0%	67500	65100	9358.775	59400	80400
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical				0	0		ND	0
Conductivity	umhos/cm	4	0.0%	3545	3545	110.30261	3440	3650
pH	s.u.	4	0.0%	7.1	7.1	0.244949	6.8	7.4
Redox	mV	4	0.0%	55.25	58.5	77.05139	-40	144

APPENDIX D-2
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2019 DEEP OVERBURDEN GROUND WATER ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Temperature	deg C	4	0.0%	10.375	10.5	0.75	9.5	11
Turbidity	NTU	4	0.0%	20	13.5	21.023796	4	49
MW-A612-5D								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	3	0.0%	276.66667	390	205.02032	40	400
Ammonia	mg/L	3	100.0%	0.05	0.05	0	ND	ND
Biochemical Oxygen Demand (BOD)	mg/L	3	66.7%	6	2	6.928203	ND	14
Bromide	mg/L	3	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	3	66.7%	4.666667	2.5	3.752777	ND	9
Chloride	mg/L	3	0.0%	5.89	3.76	5.184274	2.11	11.8
Hardness	mg/L	3	0.0%	347.33333	350	7.371115	339	353
Sulfate	mg/L	3	0.0%	28.066667	24.1	9.867286	20.8	39.3
Total Dissolved Solids (TDS)	mg/L	3	0.0%	388.33333	390	47.521925	340	435
Total Kjeldahl Nitrogen (TKN)	mg/L	3	66.7%	0.9	0.5	0.69282	ND	1.7
Total Organic Carbon (TOC)	mg/L	3	0.0%	3.6	2.1	3.5	1.1	7.6
Total Phenols	mg/L	3	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	3	100.0%	0.866667	1.05	0.317543	ND	ND
Calcium	ug/L	3	0.0%	45300	43600	3031.501	43500	48800
Iron	ug/L	3	0.0%	126.86667	23	188.98056	12.6	345
Lead	ug/L	3	66.7%	1.846667	1.25	1.033457	ND	3.04
Magnesium	ug/L	3	0.0%	56933.33	56100	1530.795	56000	58700
Manganese	ug/L	3	0.0%	57.383333	5.98	91.477507	3.17	163
Potassium	ug/L	3	0.0%	5683.333	5850	453.57837	5170	6030
Sodium	ug/L	3	0.0%	10886.67	12300	2535.061	7960	12400
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	3	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	3	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	3	100.0%	5	5	0	ND	ND
Acetone	ug/L	3	100.0%	5	5	0	ND	ND
Benzene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	3	100.0%	2.5	2.5	0	ND	ND

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2019 DEEP OVERBURDEN GROUND WATER ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Ethyl benzene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	3	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	3	0.0%	705.33333	695	21.45538	691	730
pH	s.u.	3	0.0%	7.203333	7.24	0.100167	7.09	7.28
Redox	mV	3	0.0%	47.333333	-18	144.53489	-53	213
Temperature	deg C	3	0.0%	9.9	9.9	0.2	9.7	10.1
Turbidity	NTU	3	0.0%	13.666667	8	12.503333	5	28

Note:The statistics are replaced by the corresponding minimum variance unbiased estimates for the log normal distribution.

APPENDIX D-3

BEDROCK GROUND WATER 2019 STATISTICAL DATA

APPENDIX D-3
INTERNATIONAL PAPER, TICONDEROGA MILL LANDFILL
2019 BEDROCK GROUND WATER ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
GM-96-10BR								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	650	650	41.63332	600	700
Ammonia	mg/L	4	100.0%	0.05	0.05	0	ND	ND
Biochemical Oxygen Demand (BOD)	mg/L	4	75.0%	3	2	2	ND	6
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	0.0%	14.25	14.5	7.804913	7	21
Chloride	mg/L	4	0.0%	113.25	113	8.5	105	122
Hardness	mg/L	4	0.0%	1120.25	1111.5	116.66012	988	1270
Sulfate	mg/L	4	0.0%	374.75	385	31.404617	329	400
Total Dissolved Solids (TDS)	mg/L	4	0.0%	1422.5	1375	165	1280	1660
Total Kjeldahl Nitrogen (TKN)	mg/L	4	50.0%	1.65	1.1	1.603122	ND	3.9
Total Organic Carbon (TOC)	mg/L	4	0.0%	3.625	3.5	0.471699	3.2	4.3
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	178750	167500	36673.11	148000	232000
Iron	ug/L	4	0.0%	413.5	200	474.23588	134	1120
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	163500	165500	9882.645	150000	173000
Manganese	ug/L	4	0.0%	96.05	90.3	11.981235	89.6	114
Potassium	ug/L	4	0.0%	9942.5	9995	1318.746	8280	11500
Sodium	ug/L	4	0.0%	64150	66100	13446.56	47800	76600
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	1980	2010	101.65301	1840	2060
pH	s.u.	4	0.0%	6.6525	6.66	0.110265	6.52	6.77
Redox	mV	4	0.0%	-16.25	-19	87.785249	-114	87
Temperature	deg C	4	0.0%	11.05	11.1	0.8544	10	12
Turbidity	NTU	4	0.0%	5	5.5	4.242641	ND	9
GM-96-11BR								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	432.5	440	29.860788	390	460
Ammonia	mg/L	4	0.0%	0.5	0.3	0.476095	0.2	1.2
Biochemical Oxygen Demand (BOD)	mg/L	4	0.0%	2.975	3	0.899537	2.1	3.8
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	50.0%	5	4.75	2.915476	ND	8
Chloride	mg/L	4	100.0%	1	1	0	ND	ND
Hardness	mg/L	4	0.0%	2222	1303	2130.842	878	5404
Sulfate	mg/L	4	0.0%	992.25	991	26.663021	967	1020
Total Dissolved Solids (TDS)	mg/L	4	0.0%	1780	1775	64.807407	1720	1850
Total Kjeldahl Nitrogen (TKN)	mg/L	4	50.0%	0.95	0.8	0.574456	ND	1.7
Total Organic Carbon (TOC)	mg/L	4	0.0%	2.15	2.05	0.387298	1.8	2.7
Total Phenols	mg/L	4	75.0%	0.00325	0.002	0.0025	ND	0.007
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	180250	176500	17017.15	164000	204000
Iron	ug/L	4	0.0%	3390	2870	1564.353	2170	5650
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	216000	214000	5656.854	212000	224000
Manganese	ug/L	4	0.0%	114.425	114	24.743804	84.7	145
Potassium	ug/L	4	0.0%	17025	17350	1357.387	15200	18200
Sodium	ug/L	4	0.0%	60350	60500	6458.844	53500	66900
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	2265	2265	46.547467	2220	2310
pH	s.u.	4	0.0%	7.02	7.085	0.229347	6.69	7.22
Redox	mV	4	0.0%	-60.25	-101	101.80824	-130	91
Temperature	deg C	4	0.0%	11.065	10.9	1.061869	10.1	12.36
Turbidity	NTU	4	0.0%	25.75	14.5	27.968733	7	67
MW-01-16BR								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	482.5	490	22.173558	450	500
Ammonia	mg/L	4	25.0%	0.1375	0.15	0.075	ND	0.2
Biochemical Oxygen Demand (BOD)	mg/L	4	75.0%	2.05	2	0.1	ND	2.2
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	75.0%	3.375	2.5	1.75	ND	6
Chloride	mg/L	4	75.0%	1.2525	1	0.505	ND	2.01
Hardness	mg/L	4	0.0%	836.75	823	40.549353	807	894
Sulfate	mg/L	4	0.0%	450.5	452.5	45.317399	395	502
Total Dissolved Solids (TDS)	mg/L	4	0.0%	1005	1000	19.148542	990	1030
Total Kjeldahl Nitrogen (TKN)	mg/L	4	25.0%	1.45	1.1	1.135782	ND	3.1
Total Organic Carbon (TOC)	mg/L	4	0.0%	1.475	1.55	0.287228	1.1	1.7
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	104975	103000	6658.516	99900	114000
Iron	ug/L	4	0.0%	1528.5	355	2415.441	254	5150

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	139500	137500	5916.08	135000	148000
Manganese	ug/L	4	0.0%	34.25	34.45	6.338507	26.3	41.8
Potassium	ug/L	4	0.0%	3645	3355	648.61391	3260	4610
Sodium	ug/L	4	0.0%	39800	39150	1838.478	38400	42500
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	1580	1590	55.976185	1510	1630
pH	s.u.	4	0.0%	7.0975	7.13	0.106262	6.95	7.18
Redox	mV	4	0.0%	-24.75	-20.5	18.391574	-50	-8
Temperature	deg C	4	0.0%	9.95	10	0.493288	9.3	10.5
Turbidity	NTU	4	0.0%	1.25	0.5	1.892969	ND	4
MW-03-8BR								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	330	330	8.164966	320	340
Ammonia	mg/L	4	100.0%	0.05	0.05	0	ND	ND
Biochemical Oxygen Demand (BOD)	mg/L	4	75.0%	3.25	2	2.5	ND	7
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	50.0%	6.25	3.75	5.95119	ND	15
Chloride	mg/L	4	25.0%	2.4675	2.455	1.208839	ND	3.96
Hardness	mg/L	4	0.0%	531.75	536	19.44865	505	550
Sulfate	mg/L	4	0.0%	345	341.5	29.108991	314	383

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Total Dissolved Solids (TDS)	mg/L	4	0.0%	775	765	31.091264	750	820
Total Kjeldahl Nitrogen (TKN)	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Total Organic Carbon (TOC)	mg/L	4	50.0%	1.25	0.75	1.190238	ND	3
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	59775	58250	4075.435	56900	65700
Iron	ug/L	4	0.0%	332.35	228.5	308.51768	88.4	784
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	92950	94100	3304.038	88100	95500
Manganese	ug/L	4	0.0%	19.825	18	8.158584	12.3	31
Potassium	ug/L	4	0.0%	14745	12900	6170.691	9680	23500
Sodium	ug/L	4	0.0%	69475	70700	8888.71	58900	77600
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	1240	1225	33.665016	1220	1290
pH	s.u.	4	0.0%	7.57	7.575	0.03559	7.53	7.6
Redox	mV	4	0.0%	130.75	144.5	106.05777	9	225
Temperature	deg C	4	0.0%	11.3275	11.3	1.063183	10.2	12.51
Turbidity	NTU	4	0.0%	0.5	0	1	ND	2
MW-96-1BR								
Area IV/V Leachate Indicators								

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Alkalinity	mg/L	4	0.0%	597.5	600	20.615528	570	620
Ammonia	mg/L	4	25.0%	0.2875	0.35	0.165202	ND	0.4
Biochemical Oxygen Demand (BOD)	mg/L	4	75.0%	2.075	2	0.15	ND	2.3
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	0.0%	17.25	10	16.740669	7	42
Chloride	mg/L	4	0.0%	2.925	2.94	0.143643	2.74	3.08
Hardness	mg/L	4	0.0%	3187	3292.5	398.11472	2618	3545
Sulfate	mg/L	4	0.0%	2795	2825	115.6143	2630	2900
Total Dissolved Solids (TDS)	mg/L	4	0.0%	4327.5	4340	25	4290	4340
Total Kjeldahl Nitrogen (TKN)	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Total Organic Carbon (TOC)	mg/L	4	0.0%	2.525	2.45	0.189297	2.4	2.8
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	75.0%	0.9275	1.05	0.2864	ND	1.11
Calcium	ug/L	4	0.0%	337250	342500	29250.36	298000	366000
Iron	ug/L	4	0.0%	2336.5	1359.5	2673.435	367	6260
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	570000	592500	79107.52	456000	639000
Manganese	ug/L	4	0.0%	33.125	26.55	19.970374	17.5	61.9
Potassium	ug/L	4	0.0%	11575	11750	457.34742	10900	11900
Sodium	ug/L	4	0.0%	103900	108500	17178.67	79600	119000
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Field or Physical								
Conductivity	umhos/cm	4	0.0%	3377.5	4450	2205.786	70	4540
pH	s.u.	4	0.0%	6.8025	6.88	0.325615	6.35	7.1
Redox	mV	4	0.0%	54.75	58.5	28.605069	18	84
Temperature	deg C	4	0.0%	10.4	10.35	0.496655	9.9	11
Turbidity	NTU	4	0.0%	93.75	6	177.50751	3	360
MW-96-2BR								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	380	395	33.665016	330	400
Ammonia	mg/L	4	50.0%	0.15	0.125	0.122474	ND	0.3
Biochemical Oxygen Demand (BOD)	mg/L	4	100.0%	2	2	0	ND	ND
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	100.0%	2.5	2.5	0	ND	ND
Chloride	mg/L	4	0.0%	2.5675	2.4	0.377481	2.34	3.13
Hardness	mg/L	4	0.0%	2392	2367	132.13125	2260	2574
Sulfate	mg/L	4	0.0%	2072.5	2070	143.14911	1900	2250
Total Dissolved Solids (TDS)	mg/L	4	0.0%	3282.5	3250	168.79475	3130	3500
Total Kjeldahl Nitrogen (TKN)	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Total Organic Carbon (TOC)	mg/L	4	0.0%	1.225	1.25	0.206155	1	1.4
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	289250	285500	27378.52	261000	325000
Iron	ug/L	4	0.0%	123.825	73.3	132.24942	33.7	315
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	405750	397000	28814.06	382000	447000
Manganese	ug/L	4	0.0%	15.55	15.05	3.28887	12.4	19.7
Potassium	ug/L	4	0.0%	5042.5	4970	1106.206	3860	6370
Sodium	ug/L	4	0.0%	85725	85600	6932.712	77600	94100
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	2639.25	3440	1748.053	27	3650
pH	s.u.	4	0.0%	6.9775	6.995	0.344807	6.61	7.31
Redox	mV	4	0.0%	78.75	94.5	34.759891	27	99
Temperature	deg C	4	0.0%	10.675	10.65	0.680074	10	11.4
Turbidity	NTU	4	0.0%	62.5	1	123.67026	ND	248
MW-96-3BR								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	427.5	430	12.583057	410	440
Ammonia	mg/L	4	50.0%	0.125	0.125	0.086603	ND	0.2
Biochemical Oxygen Demand (BOD)	mg/L	4	100.0%	2	2	0	ND	ND
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	100.0%	2.5	2.5	0	ND	ND
Chloride	mg/L	4	100.0%	1	1	0	ND	ND
Hardness	mg/L	4	0.0%	492	504.5	37.691732	437	522
Sulfate	mg/L	4	0.0%	143.25	143	5.377422	137	150
Total Dissolved Solids (TDS)	mg/L	4	0.0%	603.75	600	74.98611	525	690
Total Kjeldahl Nitrogen (TKN)	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Total Organic Carbon (TOC)	mg/L	4	25.0%	1.075	1.15	0.419325	ND	1.5
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	67600	69600	4691.126	60600	70600
Iron	ug/L	4	0.0%	223.875	161.3	231.58779	36.9	536
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	78550	80350	6312.158	69500	84000

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Manganese	ug/L	4	0.0%	17.6025	14.13	17.852713	2.75	39.4
Potassium	ug/L	4	0.0%	10422.5	10385	1552.984	8920	12000
Sodium	ug/L	4	0.0%	30350	30550	2603.203	27500	32800
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	1004.25	1008	37.169656	961	1040
pH	s.u.	4	0.0%	7.035	7.125	0.22723	6.7	7.19
Redox	mV	4	0.0%	1.75	-2	102.66247	-87	98
Temperature	deg C	4	0.0%	10.285	10.3	0.751598	9.4	11.14
Turbidity	NTU	4	0.0%	1.75	0	3.5	ND	7
MW-96-4BR								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	330	330	8.164966	320	340
Ammonia	mg/L	4	100.0%	0.05	0.05	0	ND	ND
Biochemical Oxygen Demand (BOD)	mg/L	4	50.0%	2.45	2.25	0.613732	ND	3.3
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	50.0%	6.75	5.25	5.484828	ND	14
Chloride	mg/L	4	100.0%	1	1	0	ND	ND
Hardness	mg/L	4	0.0%	529.75	520	45.951968	491	588
Sulfate	mg/L	4	0.0%	317.25	303.5	39.449335	287	375
Total Dissolved Solids (TDS)	mg/L	4	0.0%	745	747.5	15.811388	725	760
Total Kjeldahl Nitrogen (TKN)	mg/L	4	75.0%	0.8	0.5	0.6	ND	1.7

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Total Organic Carbon (TOC)	mg/L	4	0.0%	2.025	1.85	0.921502	1.1	3.3
Total Phenols	mg/L	4	75.0%	0.0035	0.002	0.003	ND	0.008
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	62800	61500	5136.795	58500	69700
Iron	ug/L	4	0.0%	636.975	466	674.15681	25.9	1590
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	90675	89250	8289.501	83200	101000
Manganese	ug/L	4	25.0%	39.075	25.1	41.158991	ND	98.6
Potassium	ug/L	4	0.0%	3467.5	2355	2255.103	2310	6850
Sodium	ug/L	4	0.0%	46950	45600	3964.425	44000	52600
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	1145.25	1160	122.1894	991	1270
pH	s.u.	4	0.0%	7.0475	7.065	0.218994	6.82	7.24
Redox	mV	4	0.0%	98.25	78	89.604222	20	217
Temperature	deg C	4	0.0%	10.3	9.9	1.16046	9.4	12
Turbidity	NTU	4	0.0%	9.5	10	7.549834	2	16
MW-A606-1BR								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	702.5	715	28.722813	660	720
Ammonia	mg/L	4	100.0%	0.05	0.05	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Biochemical Oxygen Demand (BOD)	mg/L	4	100.0%	2	2	0	ND	ND
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	0.0%	23.25	23	2.217356	21	26
Chloride	mg/L	4	0.0%	103.85	106.5	6.35269	94.4	108
Hardness	mg/L	4	0.0%	583.25	586	28.394542	546	615
Sulfate	mg/L	4	0.0%	84.225	85.5	3.255124	79.4	86.5
Total Dissolved Solids (TDS)	mg/L	4	0.0%	937.5	940	24.664414	905	965
Total Kjeldahl Nitrogen (TKN)	mg/L	4	75.0%	2.275	0.5	3.55	ND	7.6
Total Organic Carbon (TOC)	mg/L	4	0.0%	10.775	11.05	0.877021	9.5	11.5
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	123500	122000	7187.953	117000	133000
Iron	ug/L	4	0.0%	331.25	281	231.3747	116	647
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	64625	64600	3843.935	60600	68700
Manganese	ug/L	4	0.0%	10.72	11.65	6.247794	2.28	17.3
Potassium	ug/L	4	0.0%	10772.5	10145	1579.565	9700	13100
Sodium	ug/L	4	0.0%	128750	131000	10531.7	114000	139000
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	1697.5	1690	34.034296	1670	1740

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
pH	s.u.	4	0.0%	6.9325	6.99	0.160909	6.7	7.05
Redox	mV	4	0.0%	-12	-19.5	61.822326	-75	66
Temperature	deg C	4	0.0%	9.8	9.95	0.33665	9.3	10
Turbidity	NTU	4	0.0%	0.25	0	0.5	ND	1
MW-A606-2BR								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	432.5	430	12.583057	420	450
Ammonia	mg/L	4	100.0%	0.05	0.05	0	ND	ND
Biochemical Oxygen Demand (BOD)	mg/L	4	50.0%	5.5	3.5	5.196152	ND	13
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	50.0%	6.75	4.75	5.894913	ND	15
Chloride	mg/L	4	0.0%	16.475	15.3	2.559134	15	20.3
Hardness	mg/L	4	0.0%	683.25	796.5	280.06949	269	871
Sulfate	mg/L	4	0.0%	430.25	433.5	28.08766	393	461
Total Dissolved Solids (TDS)	mg/L	4	0.0%	1022.5	1025	71.355915	940	1100
Total Kjeldahl Nitrogen (TKN)	mg/L	4	75.0%	0.65	0.5	0.3	ND	1.1
Total Organic Carbon (TOC)	mg/L	4	0.0%	2.1	1.9	0.787401	1.4	3.2
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	97000	94250	11512.6	86500	113000
Iron	ug/L	4	50.0%	52.1	50	26.240173	ND	86.2
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	136000	136000	8679.478	128000	144000
Manganese	ug/L	4	0.0%	14.7575	14.695	8.176765	7.04	22.6
Potassium	ug/L	4	0.0%	10725	10750	411.29876	10200	11200
Sodium	ug/L	4	0.0%	30000	29950	1416.569	28600	31500
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical				0	0	0	ND	0
Conductivity	umhos/cm	4	0.0%	1832.5	1475	738.61921	1440	2940
pH	s.u.	4	0.0%	7.0175	7.075	0.379331	6.52	7.4
Redox	mV	4	0.0%	134	128.5	94.681924	34	245
Temperature	deg C	4	0.0%	10.35	10.25	0.465475	9.9	11
Turbidity	NTU	4	0.0%	5.5	2.5	8.020806	ND	17
MW-A606-4BR								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	482.5	490	22.173558	450	500
Ammonia	mg/L	4	100.0%	0.05	0.05	0	ND	ND
Biochemical Oxygen Demand (BOD)	mg/L	4	100.0%	2	2	0	ND	ND
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	100.0%	2.5	2.5	0	ND	ND
Chloride	mg/L	4	75.0%	2.1825	1	2.365	ND	5.73
Hardness	mg/L	4	0.0%	805.5	801	33.431522	770	850
Sulfate	mg/L	4	0.0%	442.75	439	11.116804	434	459
Total Dissolved Solids (TDS)	mg/L	4	0.0%	1012.5	1007.5	61.98118	955	1080
Total Kjeldahl Nitrogen (TKN)	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Total Organic Carbon (TOC)	mg/L	4	0.0%	1.425	1.4	0.15	1.3	1.6
Total Phenols	mg/L	4	75.0%	0.003	0.002	0.002	ND	0.006
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	87625	86350	5369.28	82600	95200
Iron	ug/L	4	0.0%	151.775	159.75	102.81246	46.6	241
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	142500	142000	5196.152	137000	149000
Manganese	ug/L	4	0.0%	30.625	29.2	8.213962	22.6	41.5
Potassium	ug/L	4	0.0%	13212.5	12100	4680.879	9150	19500

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Sodium	ug/L	4	0.0%	42350	41750	1558.846	41300	44600
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	1472.5	1495	102.10289	1330	1570
pH	s.u.	4	0.0%	7.075	7.21	0.28396	6.65	7.23
Redox	mV	4	0.0%	27	29	17.776389	4	46
Temperature	deg C	4	0.0%	10.725	10.4	1.192686	9.8	12.3
Turbidity	NTU	4	0.0%	5.5	3	7.325754	ND	16
MW-A612-3BR								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	445	455	23.804761	410	460
Ammonia	mg/L	4	75.0%	0.0875	0.05	0.075	ND	0.2
Biochemical Oxygen Demand (BOD)	mg/L	4	100.0%	2	2	0	ND	ND
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	75.0%	4.125	2.5	3.25	ND	9
Chloride	mg/L	4	0.0%	3.63	3.25	0.950824	2.98	5.04
Hardness	mg/L	4	0.0%	1017.25	1002.5	74.006193	950	1114
Sulfate	mg/L	4	0.0%	748.25	660.5	181.34383	652	1020
Total Dissolved Solids (TDS)	mg/L	4	0.0%	1440	1345	229.05603	1290	1780
Total Kjeldahl Nitrogen (TKN)	mg/L	4	75.0%	0.8	0.5	0.6	ND	1.7
Total Organic Carbon (TOC)	mg/L	4	50.0%	0.825	0.8	0.377492	ND	1.2
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	168500	167500	11150.49	156000	183000
Iron	ug/L	4	0.0%	1617.25	999	1775.505	251	4220
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	145000	145000	15684.39	130000	160000
Manganese	ug/L	4	0.0%	27.375	25.6	10.60169	16.7	41.6
Potassium	ug/L	4	0.0%	10600	10600	770.28133	9800	11400
Sodium	ug/L	4	0.0%	37650	37050	2723.356	35200	41300
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	1895	1900	65.574385	1810	1970
pH	s.u.	4	0.0%	6.9075	6.835	0.316267	6.65	7.31
Redox	mV	4	0.0%	-26.25	-35.5	41.572226	-66	32
Temperature	deg C	4	0.0%	10.2	10.2	0.588784	9.6	10.8
Turbidity	NTU	4	0.0%	8.25	7.5	7.544314	1	17
MW-A612-5BR								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	1335	1345	63.50853	1250	1400
Ammonia	mg/L	4	0.0%	0.4	0.3	0.2	0.3	0.7
Biochemical Oxygen Demand (BOD)	mg/L	4	100.0%	2	2	0	ND	ND
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND

APPENDIX D-3
INTERNATIONAL PAPER, TICONDEROGA MILL LANDFILL
2019 BEDROCK GROUND WATER ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Chemical Oxygen Demand (COD)	mg/L	4	0.0%	210.75	189	55.512011	172	293
Chloride	mg/L	4	0.0%	501	508.5	35.37419	452	535
Hardness	mg/L	4	0.0%	1488.25	1538.5	143.99855	1277	1599
Sulfate	mg/L	4	0.0%	31.725	32.5	1.899781	28.9	33
Total Dissolved Solids (TDS)	mg/L	4	0.0%	2337.5	2330	177.08284	2140	2550
Total Kjeldahl Nitrogen (TKN)	mg/L	4	0.0%	2.15	1.95	1.138713	1.1	3.6
Total Organic Carbon (TOC)	mg/L	4	0.0%	71.225	70.8	7.378968	62.7	80.6
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	294000	305000	41593.27	235000	331000
Iron	ug/L	4	0.0%	1395	1370	272.94688	1100	1740
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	183250	183000	13889.44	168000	199000
Manganese	ug/L	4	0.0%	11.9925	8.545	7.913522	7.08	23.8
Potassium	ug/L	4	0.0%	17750	17900	695.22179	16800	18400
Sodium	ug/L	4	0.0%	240750	245500	17613.91	216000	256000
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical				0	0	0	ND	0
Conductivity	umhos/cm	3	0.0%	3411	3410	98.503807	3313	3510
pH	s.u.	3	0.0%	6.73	6.37	0.685055	6.3	7.52
Redox	mV	3	0.0%	-28.66667	-23	32.868425	-64	1

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2019 BEDROCK GROUND WATER ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Temperature	deg C	3	0.0%	10	9.6	0.87178	9.4	11
Turbidity	NTU	3	0.0%	25	23	6.244998	20	32
TB-44-83								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	512.5	590	168.79475	260	610
Ammonia	mg/L	4	75.0%	0.0625	0.05	0.025	ND	0.1
Biochemical Oxygen Demand (BOD)	mg/L	4	25.0%	2.975	3.15	0.741058	ND	3.6
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	0.0%	13.75	12	8.845903	5	26
Chloride	mg/L	4	0.0%	21.9825	19.65	15.16511	6.23	42.4
Hardness	mg/L	4	0.0%	573	662	187.478	292	676
Sulfate	mg/L	4	0.0%	110.95	122.5	29.070202	67.8	131
Total Dissolved Solids (TDS)	mg/L	4	0.0%	726.25	755	124.32317	555	840
Total Kjeldahl Nitrogen (TKN)	mg/L	4	25.0%	1.25	1.25	0.6245	ND	2
Total Organic Carbon (TOC)	mg/L	4	0.0%	3.55	3.55	1.372346	2.1	5
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	83625	93200	22535.36	50000	98100
Iron	ug/L	4	0.0%	671.225	460.5	710.99653	83.9	1680
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	88425	104000	31830.63	40700	105000
Manganese	ug/L	4	0.0%	87.825	95.5	48.192626	22.3	138
Potassium	ug/L	4	0.0%	11270	6750	12203.76	2280	29300
Sodium	ug/L	4	0.0%	32375	35050	13742.24	13300	46100
Area IV/V Routine VOAs				0	0	0	ND	0
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	75.0%	5.5	5	1	ND	7
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	1034.75	1210	479.19751	339	1380
pH	s.u.	4	0.0%	6.805	6.67	0.422493	6.46	7.42
Redox	mV	4	0.0%	135	119.5	118.10447	31	270
Temperature	deg C	4	0.0%	10.1	10	0.34641	9.8	10.6
Turbidity	NTU	4	0.0%	12	9	12.961481	ND	30

Note:The statistics are replaced by the corresponding minimum variance unbiased estimates for the log normal distribution.

APPENDIX E

STATISTICAL SUMMARY OF THE AREA IV, AREA V AND AREA VI

2019 UNDERDRAIN ANALYTICAL DATA

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APPENDIX E
INTERNATIONAL PAPER, TICONDEROGA MILL LANDFILL
2019 UNDERDRAIN ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
A4CELL1UNDER								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	647.5	650	45.734742	590	700
Ammonia	mg/L	4	0.0%	0.925	0.9	0.221736	0.7	1.2
Biochemical Oxygen Demand (BOD)	mg/L	4	75.0%	2.225	2	0.45	ND	2.9
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	0.0%	11.5	11	1.914854	10	14
Chloride	mg/L	4	0.0%	3.76	3.75	0.140238	3.6	3.94
Hardness	mg/L	4	0.0%	5853.25	5613	737.25363	5299	6888
Sulfate	mg/L	4	0.0%	5385	5350	137.96135	5270	5570
Total Dissolved Solids (TDS)	mg/L	4	0.0%	7950	8010	179.07168	7690	8090
Total Kjeldahl Nitrogen (TKN)	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Total Organic Carbon (TOC)	mg/L	4	0.0%	5.4	5.4	0.163299	5.2	5.6
Total Phenols	mg/L	4	75.0%	0.0035	0.002	0.003	ND	0.008
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	401000	385500	45847.57	365000	468000
Iron	ug/L	4	0.0%	860	748.5	451.00407	443	1500
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	1180000	1130000	150996.7	1070000	1390000
Manganese	ug/L	4	0.0%	648	636	51.568724	605	715
Potassium	ug/L	4	0.0%	24925	24250	2140.677	23200	28000
Sodium	ug/L	4	0.0%	196250	189000	30081.83	171000	236000
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND

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INTERNATIONAL PAPER, TICONDEROGA MILL LANDFILL
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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	6870	6875	174.16467	6700	7030
pH	s.u.	4	0.0%	6.735	6.795	0.225462	6.43	6.92
Redox	mV	4	0.0%	81.75	58	81.850982	17	194
Temperature	deg C	4	0.0%	13.38	13.65	1.458858	11.4	14.82
Turbidity	NTU	4	0.0%	2.275	0.55	3.843067	ND	8
A4CELL2UNDER								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	515	520	10	500	520
Ammonia	mg/L	4	75.0%	0.0875	0.05	0.075	ND	0.2
Biochemical Oxygen Demand (BOD)	mg/L	4	100.0%	2	2	0	ND	ND
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	100.0%	2.5	2.5	0	ND	ND
Chloride	mg/L	4	0.0%	5.4525	5.575	0.384827	4.92	5.74
Hardness	mg/L	4	0.0%	1974	1971	301.22306	1615	2339
Sulfate	mg/L	4	0.0%	1685	1675	79.372539	1600	1790
Total Dissolved Solids (TDS)	mg/L	4	0.0%	2850	2780	153.62292	2760	3080
Total Kjeldahl Nitrogen (TKN)	mg/L	4	75.0%	1.35	0.5	1.7	ND	3.9
Total Organic Carbon (TOC)	mg/L	4	0.0%	2.7	2.7	0.08165	2.6	2.8
Total Phenols	mg/L	4	75.0%	0.00325	0.002	0.0025	ND	0.007
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	182000	174500	29495.76	155000	224000
Iron	ug/L	4	25.0%	136.05	128.5	104.42355	ND	244
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	369000	373000	56432.85	298000	432000
Manganese	ug/L	4	75.0%	6.665	7.5	1.67	ND	7.5
Potassium	ug/L	4	0.0%	14425	14150	1645.955	12800	16600
Sodium	ug/L	4	0.0%	69025	69500	12390.42	53900	83200
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	3207.5	3245	239.496	2910	3430
pH	s.u.	4	0.0%	7.0675	7.15	0.408605	6.5	7.47
Redox	mV	4	0.0%	115.75	105.5	100.95337	15	237
Temperature	deg C	4	0.0%	14.54	14.8	1.572599	12.4	16.16
Turbidity	NTU	4	0.0%	4.55	1.6	7.014984	ND	15
A5CELL1UNDER								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	1370	1395	138.32329	1180	1510
Ammonia	mg/L	4	0.0%	0.7	0.6	0.424264	0.3	1.3
Biochemical Oxygen Demand (BOD)	mg/L	4	50.0%	8.25	3.5	10.59481	ND	24
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	25.0%	13.875	5.5	18.807689	ND	42
Chloride	mg/L	4	0.0%	2.5475	2.585	0.215155	2.29	2.73
Hardness	mg/L	4	0.0%	4130.5	4079	427.45253	3694	4670
Sulfate	mg/L	4	0.0%	2840	2845	108.62781	2710	2960
Total Dissolved Solids (TDS)	mg/L	4	0.0%	5112.5	5210	254.47659	4740	5290
Total Kjeldahl Nitrogen (TKN)	mg/L	4	50.0%	0.8	0.8	0.34641	ND	1.1
Total Organic Carbon (TOC)	mg/L	4	0.0%	4.85	4.65	0.58023	4.4	5.7
Total Phenols	mg/L	4	75.0%	0.00275	0.002	0.0015	ND	0.005
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	334000	333500	43688.29	283000	386000
Iron	ug/L	4	0.0%	1396.5	413	2167.494	120	4640

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	800750	788000	108907.8	704000	923000
Manganese	ug/L	4	0.0%	1034.25	932	530.7362	503	1770
Potassium	ug/L	4	0.0%	24100	24400	1792.577	21800	25800
Sodium	ug/L	4	0.0%	119000	116000	16891.81	103000	141000
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	3	0.0%	5030	5020	315.11903	4720	5350
pH	s.u.	3	0.0%	7.136667	7.13	0.230072	6.91	7.37
Redox	mV	4	0.0%	70.75	86	90.389435	-35	146
Temperature	deg C	3	0.0%	12.913333	13.04	2.152797	10.7	15
Turbidity	NTU	3	0.0%	23.9	20	18.461582	7.7	44
A5CELL3UNDER								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	575	585	23.804761	540	590
Ammonia	mg/L	4	50.0%	0.075	0.075	0.028868	ND	0.1
Biochemical Oxygen Demand (BOD)	mg/L	4	0.0%	13.675	13.3	11.951952	3.1	25
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	25.0%	19.125	18.5	15.375169	ND	37
Chloride	mg/L	4	100.0%	1	1	0	ND	ND
Hardness	mg/L	4	0.0%	1781.5	1790	50.810104	1721	1825
Sulfate	mg/L	4	0.0%	1287.5	1280	56.199051	1230	1360

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Total Dissolved Solids (TDS)	mg/L	4	0.0%	2292.5	2315	107.50969	2160	2380
Total Kjeldahl Nitrogen (TKN)	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Total Organic Carbon (TOC)	mg/L	4	0.0%	3.525	3.45	0.499166	3	4.2
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	160000	157500	19916.49	139000	186000
Iron	ug/L	4	0.0%	6835	5300	3602.902	4540	12200
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	335750	332000	10468.21	328000	351000
Manganese	ug/L	4	0.0%	411.5	407	77.090855	341	491
Potassium	ug/L	4	0.0%	6587.5	6335	968.65457	5710	7970
Sodium	ug/L	4	0.0%	63550	62800	3476.109	60300	68300
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	2700	2695	93.452305	2600	2810
pH	s.u.	4	0.0%	6.835	6.905	0.178979	6.57	6.96
Redox	mV	4	0.0%	-38.75	-64.5	132.97713	-167	141
Temperature	deg C	4	0.0%	14.515	14.55	0.826781	13.5	15.46
Turbidity	NTU	4	0.0%	89.675	6.35	170.92032	ND	346
A6LBUnderdrain								
Area IV/V Leachate Indicators								

APPENDIX E
INTERNATIONAL PAPER, TICONDEROGA MILL LANDFILL
2019 UNDERDRAIN ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Alkalinity	mg/L	3	0.0%	423.33333	420	5.773503	420	430
Ammonia	mg/L	3	100.0%	0.083333	0.1	0.028868	ND	ND
Biochemical Oxygen Demand (BOD)	mg/L	3	100.0%	2	2	0	ND	ND
Bromide	mg/L	3	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	3	100.0%	2.5	2.5	0	ND	ND
Chloride	mg/L	3	100.0%	1	1	0	ND	ND
Color	Pt-Co	3	0.0%	7	8	1.732051	5	8
Cyanide	mg/L	3	100.0%	0.005	0.005	0	ND	ND
Hardness	mg/L	3	0.0%	436	431	8.660254	431	446
Nitrate	mg/L	3	33.3%	0.753333	1.12	0.635085	ND	1.12
Sulfate	mg/L	3	0.0%	68.066667	66	3.579572	66	72.2
Total Dissolved Solids (TDS)	mg/L	3	0.0%	516.66667	525	14.433757	500	525
Total Kjeldahl Nitrogen (TKN)	mg/L	3	66.7%	0.8	0.5	0.519615	ND	1.4
Total Organic Carbon (TOC)	mg/L	3	0.0%	2.633333	2.6	0.057735	2.6	2.7
Total Phenols	mg/L	3	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	3	100.0%	0.5	0.5	0	ND	ND
Calcium	ug/L	3	0.0%	85166.67	83400	3059.956	83400	88700
Iron	ug/L	3	0.0%	600.66667	211	674.92247	211	1380
Lead	ug/L	3	100.0%	1.4	1.4	0	ND	ND
Magnesium	ug/L	3	0.0%	54333.33	54200	230.94011	54200	54600
Manganese	ug/L	3	0.0%	81.666667	9.5	124.99633	9.5	226
Potassium	ug/L	3	0.0%	13166.67	13800	1096.966	11900	13800
Sodium	ug/L	3	0.0%	18633.33	18900	461.88022	18100	18900
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	3	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	3	100.0%	5	5	0	ND	ND
4-Methyl 2-pentanone	ug/L	3	100.0%	5	5	0	ND	ND
Acetone	ug/L	3	100.0%	5	5	0	ND	ND
Benzene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	3	100.0%	2.5	2.5	0	ND	ND

APPENDIX E
INTERNATIONAL PAPER, TICONDEROGA MILL LANDFILL
2019 UNDERDRAIN ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Toluene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	3	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	3	0.0%	872.66667	866	11.547005	866	886
pH	s.u.	3	0.0%	7.063333	7.22	0.271355	6.75	7.22
Redox	mV	3	0.0%	-75.66667	-105	50.806824	-105	-17
Temperature	deg C	3	0.0%	10.133333	8.2	3.348632	8.2	14
Turbidity	NTU	3	0.0%	13.666667	3	18.475209	3	35
Part 360 Baseline Metals								
Aluminum	ug/L	3	100.0%	14.7	14.7	0	ND	ND
Antimony	ug/L	3	100.0%	3.35	3.35	0	ND	ND
Arsenic	ug/L	3	33.3%	4.783333	5.85	1.847521	ND	5.85
Barium	ug/L	3	0.0%	45.7	43	4.676537	43	51.1
Beryllium	ug/L	3	100.0%	0.5	0.5	0	ND	ND
Boron	ug/L	3	0.0%	20	18.6	2.424871	18.6	22.8
Chromium (Hexavalent)	mg/L	3	100.0%	0.01	0.01	0	ND	ND
Chromium (Total)	ug/L	3	100.0%	2	2	0	ND	ND
Cobalt	ug/L	3	66.7%	0.83	0.5	0.571577	ND	1.49
Copper	ug/L	3	33.3%	4.296667	5.92	2.811696	ND	5.92
Mercury	ug/L	3	100.0%	0.056667	0.06	0.005774	ND	ND
Nickel	ug/L	3	100.0%	1.35	1.35	0	ND	ND
Selenium	ug/L	3	100.0%	1.75	1.75	0	ND	ND
Silver	ug/L	3	100.0%	4	4	0	ND	ND
Thallium	ug/L	3	33.3%	4.57	5.58	1.749371	ND	5.58
Vanadium	ug/L	3	100.0%	4	4	0	ND	ND
Zinc	ug/L	3	66.7%	5.766667	2.3	6.004443	ND	12.7
Part 360 Baseline Volatile Organics								
1,1,1,2-Tetrachloroethane	ug/L	3	100.0%	3.333333	2.5	1.443376	ND	ND
1,1,1-Trichloroethane	ug/L	3	100.0%	2.5	2.5	0	ND	ND
1,1,2,2-Tetrachloroethane	ug/L	3	100.0%	2.5	2.5	0	ND	ND
1,1,2-Trichloroethane	ug/L	3	100.0%	2.5	2.5	0	ND	ND
1,1-Dichloroethene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
1,2,3-Trichloropropane	ug/L	3	100.0%	3.333333	2.5	1.443376	ND	ND
1,2-Dibromo-3-chloropropane	ug/L	3	100.0%	5	5	0	ND	ND

APPENDIX E
INTERNATIONAL PAPER, TICONDEROGA MILL LANDFILL
2019 UNDERDRAIN ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
1,2-Dibromoethane	ug/L	3	100.0%	3.333333	2.5	1.443376	ND	ND
1,2-Dichlorobenzene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
1,2-Dichloroethane	ug/L	3	100.0%	2.5	2.5	0	ND	ND
1,2-Dichloropropane	ug/L	3	100.0%	2.5	2.5	0	ND	ND
1,3-Dichlorobenzene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
1,4-Dichlorobenzene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
2-Hexanone	ug/L	3	100.0%	5	5	0	ND	ND
Acrylonitrile	ug/L	3	100.0%	12.5	12.5	0	ND	ND
Bromochloromethane	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Bromodichloromethane	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Bromoform	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Bromomethane	ug/L	3	100.0%	5	5	0	ND	ND
Carbon tetrachloride	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Chlorobenzene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Chloroethane	ug/L	3	100.0%	5	5	0	ND	ND
Chloromethane	ug/L	3	100.0%	5	5	0	ND	ND
cis-1,2-Dichloroethene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
cis-1,3-Dichloropropene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Dibromochloromethane	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Dibromomethane	ug/L	3	100.0%	3.333333	2.5	1.443376	ND	ND
Methyl Iodide	ug/L	3	100.0%	5	5	0	ND	ND
Styrene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Tetrachloroethene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
trans-1,2-Dichloroethene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
trans-1,3-Dichloropropene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
trans-1,4-Dichloro-2-butene	ug/L	3	100.0%	5	5	0	ND	ND
Trichloroethene	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Trichlorofluoromethane	ug/L	3	100.0%	2.5	2.5	0	ND	ND
Vinyl Acetate	ug/L	3	100.0%	5	5	0	ND	ND
Vinyl Chloride	ug/L	3	100.0%	5	5	0	ND	ND
Part 360 Expanded VOCs								
2,2-Dichloropropane	ug/L	3	100.0%	2.5	2.5	0	ND	ND
A6UNDERDRAIN								
Area IV/V Leachate Indicators								

APPENDIX E
INTERNATIONAL PAPER, TICONDEROGA MILL LANDFILL
2019 UNDERDRAIN ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Alkalinity	mg/L	4	0.0%	435	430	19.148542	420	460
Ammonia	mg/L	4	100.0%	0.05	0.05	0	ND	ND
Biochemical Oxygen Demand (BOD)	mg/L	4	100.0%	2	2	0	ND	ND
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	75.0%	3.375	2.5	1.75	ND	6
Chloride	mg/L	4	0.0%	5.265	5.56	0.744334	4.16	5.78
Hardness	mg/L	4	0.0%	555	550	50.937871	501	619
Sulfate	mg/L	4	0.0%	207.5	207	11.7047	195	221
Total Dissolved Solids (TDS)	mg/L	4	0.0%	683.75	705	64.209942	590	735
Total Kjeldahl Nitrogen (TKN)	mg/L	4	75.0%	0.8	0.5	0.6	ND	1.7
Total Organic Carbon (TOC)	mg/L	4	0.0%	1.55	1.45	0.331662	1.3	2
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	62850	62750	6335.351	55200	70700
Iron	ug/L	4	25.0%	101.45	109.4	38.328536	ND	137
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	96800	95550	9015.912	88100	108000
Manganese	ug/L	4	0.0%	12.92	11.59	8.943691	4.8	23.7
Potassium	ug/L	4	0.0%	6375	6130	868.50446	5670	7570
Sodium	ug/L	4	0.0%	32375	32500	2085.466	29800	34700
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Isopropyl toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND

APPENDIX E
INTERNATIONAL PAPER, TICONDEROGA MILL LANDFILL
2019 UNDERDRAIN ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Field or Physical								
Conductivity	umhos/cm	4	0.0%	1157.5	1160	29.860788	1120	1190
pH	s.u.	4	0.0%	7.4525	7.445	0.466646	6.91	8.01
Redox	mV	4	0.0%	64.25	107	172.72594	-163	206
Temperature	deg C	4	0.0%	14.995	15.29	2.773704	11.4	18
Turbidity	NTU	4	0.0%	2.45	1.4	3.121431	ND	7

Note:The statistics are replaced by the corresponding minimum variance unbiased estimates for the log normal distribution.

APPENDIX F

2019

AREA IV, AREA V AND AREA VI

PRIMARY AND SECONDARY LEACHATE COLLECTION SYSTEM

ANALYTICAL DATA

APPENDIX F-1

AREA IV, AREA V AND AREA VI PRIMARY AND SECONDARY LEACHATE 2019 STATISTICAL DATA

APPENDIX F-2

AREA IV, AREA V AND AREA VI

PRIMARY AND SECONDARY

2019 LEACHATE ANALYTICAL DATA

APPENDIX F
INTERNATIONAL PAPER, TICONDEROGA MILL LANDFILL
2019 SECONDARY LEACHATE ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
A4CELL1PLEACH								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	3300	3340	2501.52	320	6200
Ammonia	mg/L	4	0.0%	60.825	57.5	38.591309	20.3	108
Biochemical Oxygen Demand (BOD)	mg/L	4	75.0%	11.4	10	2.8	ND	15.6
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	0.0%	297.75	290	90.558913	198	413
Chloride	mg/L	4	0.0%	129.25	131	32.684094	88	167
Color	Pt-Co	4	0.0%	825	725	429.14644	450	1400
Cyanide	mg/L	4	100.0%	0.005	0.005	0	ND	ND
Hardness	mg/L	4	0.0%	1183	1141	313.326241	861	1589
Nitrate	mg/L	4	0.0%	19.01	16.465	20.175105	0.11	43
Sulfate	mg/L	4	0.0%	2057.5	1680	858.889787	1530	3340
Total Dissolved Solids (TDS)	mg/L	4	0.0%	7845	6680	2880.677	5920	12100
Total Kjeldahl Nitrogen (TKN)	mg/L	4	25.0%	62.15	58.8	53.047809	ND	129
Total Organic Carbon (TOC)	mg/L	4	0.0%	117.525	114.5	32.030753	82.1	159
Total Phenols	mg/L	4	50.0%	0.00475	0.003	0.004272	ND	0.011
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	234750	214500	68611.83	176000	334000
Iron	ug/L	4	0.0%	5427.5	4540	3822.036	2130	10500
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	145000	112000	74578.82	100000	256000
Manganese	ug/L	4	0.0%	462.5	475	108.742816	334	566
Potassium	ug/L	4	0.0%	554750	553000	264603.3	308000	805000
Sodium	ug/L	4	0.0%	2320000	2275000	1106195	1300000	3430000
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND

APPENDIX F
INTERNATIONAL PAPER, TICONDEROGA MILL LANDFILL
2019 SECONDARY LEACHATE ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	9852.5	8390	3415.859	7730	14900
pH	s.u.	4	0.0%	7.11	7.105	0.339509	6.7	7.53
Redox	mV	4	0.0%	-130.75	-138.5	32.479481	-157	-89
Temperature	deg C	4	0.0%	13.825	13.6	1.645955	12.1	16
Turbidity	NTU	4	0.0%	36	27	25.232254	17	73
Part 360 Baseline Metals								
Aluminum	ug/L	4	50.0%	180.2625	125.85	213.849586	ND	459
Antimony	ug/L	4	0.0%	23.9	22.9	9.16115	13.9	35.9
Arsenic	ug/L	4	0.0%	38.225	37.2	14.932599	22	56.5
Barium	ug/L	4	0.0%	130.75	127.5	22.779742	109	159
Beryllium	ug/L	4	100.0%	0.85	0.85	0.404145	ND	ND
Boron	ug/L	4	0.0%	368.25	384	139.311103	187	518
Chromium (Hexavalent)	mg/L	4	100.0%	0.01	0.01	0	ND	ND
Chromium (Total)	ug/L	4	50.0%	6.875	5.5	6.022389	ND	14.5
Cobalt	ug/L	4	0.0%	9.82	9.43	2.650522	7.02	13.4
Copper	ug/L	4	25.0%	7.61	7.72	4.586836	ND	12.7
Mercury	ug/L	4	100.0%	0.0525	0.05	0.005	ND	ND
Nickel	ug/L	4	0.0%	31.5	32.7	6.951738	22.2	38.4
Selenium	ug/L	4	100.0%	1.725	1.725	0.028868	ND	ND
Silver	ug/L	4	100.0%	2.925	2.925	1.241303	ND	ND
Thallium	ug/L	4	25.0%	12.7525	7.155	13.464079	ND	32.8
Tin	ug/L	1	100.0%	1.3	1.3	NaN	ND	ND
Vanadium	ug/L	4	0.0%	33.225	31.2	13.831456	19.2	51.3
Zinc	ug/L	4	0.0%	22.15	22	2.629956	19.1	25.5
Part 360 Baseline Volatile Organics								
1,1,1,2-Tetrachloroethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,1,1-Trichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1,2,2-Tetrachloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1,2-Trichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2,3-Trichloropropane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,2-Dibromo-3-chloropropane	ug/L	4	100.0%	5	5	0	ND	ND
1,2-Dibromoethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,2-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND

APPENDIX F
INTERNATIONAL PAPER, TICONDEROGA MILL LANDFILL
2019 SECONDARY LEACHATE ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
1,2-Dichloropropane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,3-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,4-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Hexanone	ug/L	4	100.0%	5	5	0	ND	ND
Acrylonitrile	ug/L	4	100.0%	12.5	12.5	0	ND	ND
Bromochloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromodichloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromoform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromomethane	ug/L	4	100.0%	5	5	0	ND	ND
Carbon tetrachloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroethane	ug/L	4	100.0%	5	5	0	ND	ND
Chloromethane	ug/L	4	100.0%	5	5	0	ND	ND
cis-1,2-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
cis-1,3-Dichloropropene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Dibromochloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Dibromomethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
Methyl Iodide	ug/L	4	100.0%	5	5	0	ND	ND
Styrene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Tetrachloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,2-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,3-Dichloropropene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,4-Dichloro-2-butene	ug/L	4	100.0%	5	5	0	ND	ND
Trichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Trichlorofluoromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Vinyl Acetate	ug/L	4	100.0%	5	5	0	ND	ND
Vinyl Chloride	ug/L	4	100.0%	5	5	0	ND	ND
Phosphorous as P	mg/L	4	0.0%	6.1325	5.35	3.856452	2.63	11.2
A4CELL1SLEACH								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	950	955	45.460606	890	1000
Ammonia	mg/L	4	100.0%	0.05	0.05	0	ND	ND
Biochemical Oxygen Demand (BOD)	mg/L	4	100.0%	2.75	3	0.5	ND	ND
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	0.0%	19.25	19.5	1.707825	17	21
Chloride	mg/L	4	0.0%	29.325	29.55	2.106142	26.6	31.6
Color	Pt-Co	4	0.0%	9.25	10	3.40343	5	12

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Cyanide	mg/L	4	100.0%	0.005	0.005	0	ND	ND
Hardness	mg/L	4	0.0%	750.75	744	37.034893	719	796
Nitrate	mg/L	4	25.0%	0.18	0.195	0.125167	ND	0.31
Sulfate	mg/L	4	0.0%	4807.5	1460	6728.38	1410	14900
Total Dissolved Solids (TDS)	mg/L	4	0.0%	3037.5	3030	87.702147	2940	3150
Total Kjeldahl Nitrogen (TKN)	mg/L	4	50.0%	0.875	0.8	0.45	ND	1.4
Total Organic Carbon (TOC)	mg/L	4	0.0%	8.05	8.25	0.665833	7.1	8.6
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	160750	161000	11954.78	146000	175000
Iron	ug/L	4	0.0%	502.25	503.5	283.771475	157	845
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	84975	86700	4041.761	79000	87500
Manganese	ug/L	4	0.0%	13.905	13.95	3.238328	9.92	17.8
Potassium	ug/L	4	0.0%	62825	62050	5118.838	57600	69600
Sodium	ug/L	4	0.0%	693750	680500	55331.58	644000	770000
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	4147.5	4205	230.56091	3820	4360
pH	s.u.	4	0.0%	6.9925	7.05	0.408197	6.45	7.42
Redox	mV	4	0.0%	14.25	-1.5	50.730497	-28	88
Temperature	deg C	4	0.0%	14.075	14.35	2.956772	10.6	17
Turbidity	NTU	4	0.0%	4.75	3.5	5.123475	ND	12
Part 360 Baseline Metals								
Aluminum	ug/L	4	100.0%	12.525	12.525	2.511474	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Antimony	ug/L	4	100.0%	2.3	2.3	1.212436	ND	ND
Arsenic	ug/L	4	50.0%	3.2325	3.07	0.723066	ND	4.14
Barium	ug/L	4	0.0%	33.75	33.95	2.769476	30.6	36.5
Beryllium	ug/L	4	100.0%	0.85	0.85	0.404145	ND	ND
Boron	ug/L	4	0.0%	34.5	34.75	4.167333	30.1	38.4
Chromium (Hexavalent)	mg/L	4	100.0%	0.01	0.01	0	ND	ND
Chromium (Total)	ug/L	4	50.0%	8.275	6.25	7.929428	ND	18.6
Cobalt	ug/L	4	50.0%	1.1575	1.085	0.171537	ND	1.41
Copper	ug/L	4	0.0%	9.6275	9.445	4.760934	5.12	14.5
Mercury	ug/L	4	100.0%	0.0525	0.05	0.005	ND	ND
Nickel	ug/L	4	0.0%	51.45	52.3	10.013824	38.5	62.7
Selenium	ug/L	4	100.0%	1.725	1.725	0.028868	ND	ND
Silver	ug/L	4	100.0%	2.925	2.925	1.241303	ND	ND
Thallium	ug/L	4	50.0%	6.4575	6.64	3.78152	ND	10
Tin	ug/L	1	100.0%	1.3	1.3	NaN	ND	ND
Vanadium	ug/L	4	100.0%	3.1	3.1	1.03923	ND	ND
Zinc	ug/L	4	25.0%	10.8375	12.9	5.894825	ND	15.1
Part 360 Baseline Volatile Organics								
1,1,1,2-Tetrachloroethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,1,1-Trichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1,2,2-Tetrachloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1,2-Trichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2,3-Trichloropropane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,2-Dibromo-3-chloropropane	ug/L	4	100.0%	5	5	0	ND	ND
1,2-Dibromoethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,2-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2-Dichloropropane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,3-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,4-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Hexanone	ug/L	4	100.0%	5	5	0	ND	ND
Acrylonitrile	ug/L	4	100.0%	12.5	12.5	0	ND	ND
Bromochloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromodichloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromoform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromomethane	ug/L	4	100.0%	5	5	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Carbon tetrachloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroethane	ug/L	4	100.0%	5	5	0	ND	ND
Chloromethane	ug/L	4	100.0%	5	5	0	ND	ND
cis-1,2-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
cis-1,3-Dichloropropene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Dibromochloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Dibromomethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
Methyl Iodide	ug/L	4	100.0%	5	5	0	ND	ND
Styrene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Tetrachloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,2-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,3-Dichloropropene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,4-Dichloro-2-butene	ug/L	4	100.0%	5	5	0	ND	ND
Trichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Trichlorofluoromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Vinyl Acetate	ug/L	4	100.0%	5	5	0	ND	ND
Vinyl Chloride	ug/L	4	100.0%	5	5	0	ND	ND
A4Cell2PLeach								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	4090	3750	1563.458	2660	6200
Ammonia	mg/L	4	0.0%	25.25	19.25	18.567804	11.4	51.1
Biochemical Oxygen Demand (BOD)	mg/L	4	75.0%	11.4	10	2.8	ND	15.6
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	0.0%	292.25	286	72.182061	211	386
Chloride	mg/L	4	0.0%	121.25	118	10.242884	113	136
Color	Pt-Co	4	0.0%	425	400	150	300	600
Cyanide	mg/L	4	100.0%	0.005	0.005	0	ND	ND
Hardness	mg/L	4	0.0%	1210	1250	243.784057	925	1415
Nitrate	mg/L	4	0.0%	16.425	15.07	17.113958	0.06	35.5
Sulfate	mg/L	4	0.0%	966.75	955.5	262.230655	666	1290
Total Dissolved Solids (TDS)	mg/L	4	0.0%	6210	5740	2000.25	4540	8820
Total Kjeldahl Nitrogen (TKN)	mg/L	4	0.0%	65.575	40.9	67.301628	18.5	162
Total Organic Carbon (TOC)	mg/L	4	0.0%	116.775	115	26.08197	87.1	150
Total Phenols	mg/L	4	50.0%	0.00825	0.0035	0.010595	ND	0.024
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Calcium	ug/L	4	0.0%	269500	255500	92385.06	174000	393000
Iron	ug/L	4	0.0%	5485	5060	4189.459	1720	10100
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	130875	112500	47578.66	97500	201000
Manganese	ug/L	4	0.0%	842.5	676.5	608.800186	307	1710
Potassium	ug/L	4	0.0%	342000	319000	107759	239000	491000
Sodium	ug/L	4	0.0%	1650000	1625000	502991.1	1060000	2290000
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	75.0%	5.75	5	1.5	ND	8
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	8082.5	7400	2426.965	6130	11400
pH	s.u.	4	0.0%	7.235	7.225	0.474447	6.68	7.81
Redox	mV	4	0.0%	-59	-75.5	102.035941	-163	78
Temperature	deg C	4	0.0%	14.25	14.7	1.885913	11.6	16
Turbidity	NTU	4	0.0%	17.25	18.5	6.70199	8	24
Part 360 Baseline Metals								
Aluminum	ug/L	4	75.0%	23.625	12.525	23.738734	ND	59.1
Antimony	ug/L	4	0.0%	26.1	27.9	6.67333	16.7	31.9
Arsenic	ug/L	4	0.0%	43.5	39.65	21.381768	23.1	71.6
Barium	ug/L	4	0.0%	125	118.5	22.58318	106	157
Beryllium	ug/L	4	100.0%	0.85	0.85	0.404145	ND	ND
Boron	ug/L	4	0.0%	314.75	305.5	121.445118	184	464
Chromium (Hexavalent)	mg/L	4	100.0%	0.01	0.01	0	ND	ND
Chromium (Total)	ug/L	4	50.0%	5.0475	3.945	3.850328	ND	10.2
Cobalt	ug/L	4	0.0%	12.3525	12.3	2.656381	9.31	15.5
Copper	ug/L	4	25.0%	8.7425	8.035	6.255815	ND	16.6
Mercury	ug/L	4	100.0%	0.0525	0.05	0.005	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Nickel	ug/L	4	0.0%	30.85	29.8	7.152389	23.7	40.1
Selenium	ug/L	4	100.0%	1.725	1.725	0.028868	ND	ND
Silver	ug/L	4	100.0%	2.925	2.925	1.241303	ND	ND
Thallium	ug/L	4	25.0%	12.1925	8.86	11.274672	ND	28.5
Tin	ug/L	1	0.0%	2.94	2.94	NaN	2.94	2.94
Vanadium	ug/L	4	0.0%	31.225	29.3	13.131736	19.9	46.4
Zinc	ug/L	4	0.0%	8.8075	8.905	1.452202	7.12	10.3
Part 360 Baseline Volatile Organics								
1,1,1,2-Tetrachloroethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,1,1-Trichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1,2,2-Tetrachloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1,2-Trichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2,3-Trichloropropane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,2-Dibromo-3-chloropropane	ug/L	4	100.0%	5	5	0	ND	ND
1,2-Dibromoethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,2-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2-Dichloropropane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,3-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,4-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Hexanone	ug/L	4	100.0%	5	5	0	ND	ND
Acrylonitrile	ug/L	4	100.0%	12.5	12.5	0	ND	ND
Bromochloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromodichloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromoform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromomethane	ug/L	4	100.0%	5	5	0	ND	ND
Carbon tetrachloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroethane	ug/L	4	100.0%	5	5	0	ND	ND
Chloromethane	ug/L	4	100.0%	5	5	0	ND	ND
cis-1,2-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
cis-1,3-Dichloropropene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Dibromochloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Dibromomethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
Methyl Iodide	ug/L	4	100.0%	5	5	0	ND	ND
Styrene	ug/L	4	100.0%	2.5	2.5	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Tetrachloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,2-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,3-Dichloropropene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,4-Dichloro-2-butene	ug/L	4	100.0%	5	5	0	ND	ND
Trichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Trichlorofluoromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Vinyl Acetate	ug/L	4	100.0%	5	5	0	ND	ND
Vinyl Chloride	ug/L	4	100.0%	5	5	0	ND	ND
2,2-Dichloropropane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Phosphorous as P	mg/L	4	0.0%	6.0675	4.36	4.325748	3.15	12.4
Volatile Organic Compounds								
Pyridine	ug/L	1	100.0%	2.5	2.5	NaN	ND	ND
A4Cell2SLeach								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	940	1155	453.798781	260	1190
Ammonia	mg/L	4	25.0%	3.3875	0.3	6.343287	ND	12.9
Biochemical Oxygen Demand (BOD)	mg/L	4	75.0%	3.75	3	2.217356	ND	7
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	0.0%	66	23	90.103644	17	201
Chloride	mg/L	4	0.0%	36.125	15.5	42.189207	14.1	99.4
Color	Pt-Co	4	0.0%	74.5	10	130.336743	8	270
Cyanide	mg/L	4	100.0%	0.005	0.005	0	ND	ND
Hardness	mg/L	4	0.0%	593.25	429.5	346.226684	402	1112
Nitrate	mg/L	4	25.0%	8.38	0.05	16.680006	ND	33.4
Sulfate	mg/L	4	0.0%	702.75	644	141.817665	609	914
Total Dissolved Solids (TDS)	mg/L	4	0.0%	2677.5	2105	1188.735	2040	4460
Total Kjeldahl Nitrogen (TKN)	mg/L	4	0.0%	5.325	1.7	7.451342	1.4	16.5
Total Organic Carbon (TOC)	mg/L	4	0.0%	26.9	10.55	34.552086	7.9	78.6
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	143500	107500	76483.11	101000	258000
Iron	ug/L	4	0.0%	728.25	704.5	181.59364	534	970
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	57200	39300	37895.65	36200	114000
Manganese	ug/L	4	0.0%	150.175	34.4	241.99765	18.9	513
Potassium	ug/L	4	0.0%	105850	70750	75592.88	62900	219000

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Sodium	ug/L	4	0.0%	680000	606500	209024.7	520000	987000
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	3852.5	3220	1494.933	2890	6080
pH	s.u.	4	0.0%	6.905	7.08	0.490544	6.19	7.27
Redox	mV	4	0.0%	18.75	14.5	40.656078	-26	72
Temperature	deg C	4	0.0%	15.275	16	1.798842	12.6	16.5
Turbidity	NTU	4	0.0%	7.25	6	2.5	6	11
Part 360 Baseline Metals								
Aluminum	ug/L	4	100.0%	12.525	12.525	2.511474	ND	ND
Antimony	ug/L	4	75.0%	7.3875	2.3	10.919965	ND	23.7
Arsenic	ug/L	4	75.0%	7.6125	2	11.674429	ND	25.1
Barium	ug/L	4	0.0%	84.725	78.7	20.05615	69.5	112
Beryllium	ug/L	4	100.0%	0.85	0.85	0.404145	ND	ND
Boron	ug/L	4	0.0%	306.25	349.5	89.548404	172	354
Chromium (Hexavalent)	mg/L	4	100.0%	0.01	0.01	0	ND	ND
Chromium (Total)	ug/L	4	50.0%	4.02	3.175	2.682275	ND	7.73
Cobalt	ug/L	4	50.0%	2.975	1.15	3.717862	ND	8.55
Copper	ug/L	4	25.0%	5.805	5.11	3.636679	ND	10.7
Mercury	ug/L	4	100.0%	0.0525	0.05	0.005	ND	ND
Nickel	ug/L	4	0.0%	11.2375	8.505	7.20685	6.24	21.7
Selenium	ug/L	4	100.0%	1.725	1.725	0.028868	ND	ND
Silver	ug/L	4	100.0%	2.925	2.925	1.241303	ND	ND
Thallium	ug/L	4	50.0%	11.2125	9.1	10.068629	ND	24.1
Tin	ug/L	1	100.0%	1.3	1.3	NaN	ND	ND
Vanadium	ug/L	4	75.0%	7.575	3.1	9.587622	ND	21.9

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Zinc	ug/L	4	0.0%	8.7975	9.17	1.526595	6.65	10.2
Part 360 Baseline Volatile Organics								
1,1,1,2-Tetrachloroethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,1,1-Trichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1,2,2-Tetrachloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1,2-Trichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2,3-Trichloropropane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,2-Dibromo-3-chloropropane	ug/L	4	100.0%	5	5	0	ND	ND
1,2-Dibromoethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,2-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2-Dichloropropane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,3-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,4-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Hexanone	ug/L	4	100.0%	5	5	0	ND	ND
Acrylonitrile	ug/L	4	100.0%	12.5	12.5	0	ND	ND
Bromochloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromodichloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromoform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromomethane	ug/L	4	100.0%	5	5	0	ND	ND
Carbon tetrachloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroethane	ug/L	4	100.0%	5	5	0	ND	ND
Chloromethane	ug/L	4	100.0%	5	5	0	ND	ND
cis-1,2-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
cis-1,3-Dichloropropene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Dibromochloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Dibromomethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
Methyl Iodide	ug/L	4	100.0%	5	5	0	ND	ND
Styrene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Tetrachloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,2-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,3-Dichloropropene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,4-Dichloro-2-butene	ug/L	4	100.0%	5	5	0	ND	ND
Trichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Trichlorofluoromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Vinyl Acetate	ug/L	4	100.0%	5	5	0	ND	ND
Vinyl Chloride	ug/L	4	100.0%	5	5	0	ND	ND
2,2-Dichloropropane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
A5CELL1/2PLEACH								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	4500	4150	948.683298	3800	5900
Ammonia	mg/L	4	0.0%	185.5	188.5	36.828431	147	218
Biochemical Oxygen Demand (BOD)	mg/L	4	25.0%	14.05	13.2	4.148494	ND	19.8
Bromide	mg/L	4	75.0%	0.725	0.5	0.45	ND	1.4
Chemical Oxygen Demand (COD)	mg/L	4	0.0%	219.5	191.5	85.613472	155	340
Chloride	mg/L	4	0.0%	117.475	110.35	30.860047	92.2	157
Color	Pt-Co	4	0.0%	267.5	260	69.940451	200	350
Cyanide	mg/L	4	100.0%	0.005	0.005	0	ND	ND
Hardness	mg/L	4	0.0%	1531.5	1547.5	351.384405	1184	1847
Nitrate	mg/L	4	0.0%	1.2	0.215	2.040931	0.11	4.26
Sulfate	mg/L	4	0.0%	282.25	266.5	121.672717	178	418
Total Dissolved Solids (TDS)	mg/L	4	0.0%	4477.5	4235	864.344646	3720	5720
Total Kjeldahl Nitrogen (TKN)	mg/L	4	0.0%	145.55	167	84.657801	25.2	223
Total Organic Carbon (TOC)	mg/L	4	0.0%	83.75	73.85	31.501799	58.3	129
Total Phenols	mg/L	4	25.0%	0.03375	0.011	0.051681	ND	0.111
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	112200	108100	27204.41	87600	145000
Iron	ug/L	4	0.0%	1495.475	1543	1208.019	95.9	2800
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	304000	308500	70014.28	232000	367000
Manganese	ug/L	4	0.0%	410.25	383.5	121.263831	295	579
Potassium	ug/L	4	0.0%	357250	354000	24472.77	333000	388000
Sodium	ug/L	4	0.0%	1009250	1017500	261296	762000	1240000
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	7402.5	7105	1476.288	5970	9430
pH	s.u.	4	0.0%	6.935	6.915	0.138203	6.79	7.12
Redox	mV	4	0.0%	-197.5	-191.5	69.082077	-273	-134
Temperature	deg C	4	0.0%	13.65	12.95	3.512359	10.7	18
Turbidity	NTU	4	0.0%	86.5	65	99.550657	3	213
Part 360 Baseline Metals								
Aluminum	ug/L	4	100.0%	12.525	12.525	2.511474	ND	ND
Antimony	ug/L	4	100.0%	2.3	2.3	1.212436	ND	ND
Arsenic	ug/L	4	25.0%	5.355	5.365	2.200583	ND	8.04
Barium	ug/L	4	0.0%	120.45	119	26.783266	92.8	151
Beryllium	ug/L	4	100.0%	0.85	0.85	0.404145	ND	ND
Boron	ug/L	4	0.0%	601.25	640	123.275775	431	694
Chromium (Hexavalent)	mg/L	4	100.0%	0.01	0.01	0	ND	ND
Chromium (Total)	ug/L	4	75.0%	3.7	2.1	3.267007	ND	8.6
Cobalt	ug/L	4	0.0%	13.5875	11.7	6.845482	7.55	23.4
Copper	ug/L	4	75.0%	2.3025	1.675	1.772482	ND	4.81
Mercury	ug/L	4	100.0%	0.0525	0.05	0.005	ND	ND
Nickel	ug/L	4	0.0%	15.105	14.3	5.468708	9.62	22.2
Selenium	ug/L	4	100.0%	1.725	1.725	0.028868	ND	ND
Silver	ug/L	4	100.0%	2.925	2.925	1.241303	ND	ND
Thallium	ug/L	4	100.0%	3.225	3.225	0.779423	ND	ND
Tin	ug/L	1	100.0%	1.3	1.3	NaN	ND	ND
Vanadium	ug/L	4	0.0%	88.275	91.15	16.106184	68.8	102
Zinc	ug/L	4	75.0%	8.35	2.45	11.833357	ND	26.1
Part 360 Baseline Volatile Organics								
1,1,1,2-Tetrachloroethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,1,1-Trichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1,2,2-Tetrachloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1,2-Trichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2,3-Trichloropropane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,2-Dibromo-3-chloropropane	ug/L	4	100.0%	5	5	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
1,2-Dibromoethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,2-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2-Dichloropropane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,3-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,4-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Hexanone	ug/L	4	100.0%	5	5	0	ND	ND
Acrylonitrile	ug/L	4	100.0%	12.5	12.5	0	ND	ND
Bromochloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromodichloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromoform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromomethane	ug/L	4	100.0%	5	5	0	ND	ND
Carbon tetrachloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroethane	ug/L	4	100.0%	5	5	0	ND	ND
Chloromethane	ug/L	4	100.0%	5	5	0	ND	ND
cis-1,2-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
cis-1,3-Dichloropropene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Dibromochloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Dibromomethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
Methyl Iodide	ug/L	4	100.0%	5	5	0	ND	ND
Styrene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Tetrachloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,2-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,3-Dichloropropene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,4-Dichloro-2-butene	ug/L	4	100.0%	5	5	0	ND	ND
Trichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Trichlorofluoromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Vinyl Acetate	ug/L	4	100.0%	5	5	0	ND	ND
Vinyl Chloride	ug/L	4	100.0%	5	5	0	ND	ND
2,2-Dichloropropane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Phosphorous as P	mg/L	4	0.0%	3.4825	3.605	0.591235	2.67	4.05
A5CELL1SECL								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	767.5	770	37.749172	730	800
Ammonia	mg/L	4	0.0%	0.475	0.4	0.236291	0.3	0.8
Biochemical Oxygen Demand (BOD)	mg/L	4	25.0%	5.5	5	3.316625	ND	10

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	0.0%	14.25	15	5.377422	7	20
Chloride	mg/L	4	50.0%	2.96	2.58	2.346742	ND	5.68
Color	Pt-Co	4	0.0%	8.75	9	2.986079	5	12
Cyanide	mg/L	4	100.0%	0.005	0.005	0	ND	ND
Hardness	mg/L	4	0.0%	831.25	817	86.911353	746	945
Nitrate	mg/L	4	100.0%	0.02	0.02	0	ND	ND
Sulfate	mg/L	4	0.0%	142.75	146	34.062443	105	174
Total Dissolved Solids (TDS)	mg/L	4	0.0%	921.25	950	79.726094	805	980
Total Kjeldahl Nitrogen (TKN)	mg/L	4	50.0%	1.3	1.25	0.927362	ND	2.2
Total Organic Carbon (TOC)	mg/L	4	0.0%	5.675	5.4	0.763217	5.1	6.8
Total Phenols	mg/L	4	75.0%	0.0055	0.002	0.007	ND	0.016
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	216000	207000	26407.07	197000	253000
Iron	ug/L	4	0.0%	6692.5	6110	2836.74	3950	10600
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	71050	73050	6217.449	62200	75900
Manganese	ug/L	4	0.0%	1362.5	1415	250.516134	1050	1570
Potassium	ug/L	4	0.0%	4912.5	4525	1157.969	4000	6600
Sodium	ug/L	4	0.0%	30125	30550	6621.367	22700	36700
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical				0	0	0	ND	0
Conductivity	umhos/cm	4	0.0%	1565	1560	135.277493	1420	1720
pH	s.u.	4	0.0%	6.3325	6.33	0.111467	6.2	6.47
Redox	mV	4	0.0%	-76.25	-67.5	48.760469	-136	-34

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Temperature	deg C	4	0.0%	12.875	12.9	2.454078	10.7	15
Turbidity	NTU	4	0.0%	14	2.5	24.698178	ND	51
Part 360 Baseline Metals								
Aluminum	ug/L	4	75.0%	111.35	12.525	199.11056	ND	410
Antimony	ug/L	4	100.0%	2.3	2.3	1.212436	ND	ND
Arsenic	ug/L	4	0.0%	6.7975	6.745	2.787716	3.5	10.2
Barium	ug/L	4	0.0%	26.825	27.05	2.696139	23.4	29.8
Beryllium	ug/L	4	100.0%	0.85	0.85	0.404145	ND	ND
Boron	ug/L	4	75.0%	11.3	8.2	9.892421	ND	25
Chromium (Hexavalent)	mg/L	4	100.0%	0.01	0.01	0	ND	ND
Chromium (Total)	ug/L	4	100.0%	2.05	2.05	0.057735	ND	ND
Cobalt	ug/L	4	75.0%	1.0925	1.05	0.520793	ND	1.77
Copper	ug/L	4	50.0%	3.84	2.785	2.475924	ND	7.49
Mercury	ug/L	4	100.0%	0.0525	0.05	0.005	ND	ND
Nickel	ug/L	4	100.0%	1.2	1.2	0.173205	ND	ND
Selenium	ug/L	4	100.0%	1.725	1.725	0.028868	ND	ND
Silver	ug/L	4	100.0%	2.925	2.925	1.241303	ND	ND
Thallium	ug/L	4	100.0%	3.225	3.225	0.779423	ND	ND
Tin	ug/L	1	100.0%	1.3	1.3	NaN	ND	ND
Vanadium	ug/L	4	100.0%	3.1	3.1	1.03923	ND	ND
Zinc	ug/L	4	75.0%	5.375	2.45	5.95042	ND	14.3
Part 360 Baseline Volatile Organics								
1,1,1,2-Tetrachloroethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,1,1-Trichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1,2,2-Tetrachloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1,2-Trichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2,3-Trichloropropane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,2-Dibromo-3-chloropropane	ug/L	4	100.0%	5	5	0	ND	ND
1,2-Dibromoethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,2-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2-Dichloropropane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,3-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,4-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Hexanone	ug/L	4	100.0%	5	5	0	ND	ND
Acrylonitrile	ug/L	4	100.0%	12.5	12.5	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Bromochloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromodichloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromoform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromomethane	ug/L	4	100.0%	5	5	0	ND	ND
Carbon tetrachloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroethane	ug/L	4	100.0%	5	5	0	ND	ND
Chloromethane	ug/L	4	100.0%	5	5	0	ND	ND
cis-1,2-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
cis-1,3-Dichloropropene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Dibromochloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Dibromomethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
Methyl Iodide	ug/L	4	100.0%	5	5	0	ND	ND
Styrene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Tetrachloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,2-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,3-Dichloropropene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,4-Dichloro-2-butene	ug/L	4	100.0%	5	5	0	ND	ND
Trichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Trichlorofluoromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Vinyl Acetate	ug/L	4	100.0%	5	5	0	ND	ND
Vinyl Chloride	ug/L	4	100.0%	5	5	0	ND	ND
2,2-Dichloropropane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
A5CELL2SECL								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	665	655	47.958315	620	730
Ammonia	mg/L	4	25.0%	0.3875	0.4	0.311916	ND	0.7
Biochemical Oxygen Demand (BOD)	mg/L	4	75.0%	3	3	0.816497	ND	4
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	0.0%	21	17.5	11.916375	11	38
Chloride	mg/L	4	75.0%	1.3275	1	0.655	ND	2.31
Color	Pt-Co	4	0.0%	7	6.5	2.44949	5	10
Cyanide	mg/L	4	100.0%	0.005	0.005	0	ND	ND
Hardness	mg/L	4	0.0%	656.75	637.5	40.9176	634	718
Nitrate	mg/L	4	75.0%	0.0425	0.02	0.045	ND	0.11
Sulfate	mg/L	4	0.0%	76.85	78.2	11.394882	62.1	88.9
Total Dissolved Solids (TDS)	mg/L	4	0.0%	735	745	46.547467	670	780

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Total Kjeldahl Nitrogen (TKN)	mg/L	4	50.0%	1.3	1.25	0.927362	ND	2.2
Total Organic Carbon (TOC)	mg/L	4	0.0%	7.475	6.65	1.961929	6.2	10.4
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	160250	157000	8655.441	154000	173000
Iron	ug/L	4	0.0%	5770	3750	6007.384	1380	14200
Lead	ug/L	4	100.0%	1.275	1.325	0.165831	ND	ND
Magnesium	ug/L	4	0.0%	62225	60100	4842.434	59300	69400
Manganese	ug/L	4	0.0%	428.5	412.5	54.347646	382	507
Potassium	ug/L	4	0.0%	7112.5	6835	2896.128	4380	10400
Sodium	ug/L	4	0.0%	16600	16150	3650.571	13300	20800
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	1220	1190	81.240384	1160	1340
pH	s.u.	4	0.0%	6.5175	6.61	0.280758	6.12	6.73
Redox	mV	4	0.0%	66.75	58.5	56.405526	7	143
Temperature	deg C	4	0.0%	15.025	15.25	1.915507	12.6	17
Turbidity	NTU	4	0.0%	44	37.5	43.335897	2	99
Part 360 Baseline Metals								
Aluminum	ug/L	4	100.0%	12.525	12.525	2.511474	ND	ND
Antimony	ug/L	4	100.0%	2.3	2.3	1.212436	ND	ND
Arsenic	ug/L	4	25.0%	3.895	3.28	1.677786	ND	6.37
Barium	ug/L	4	0.0%	39.225	37.25	4.191559	36.9	45.5
Beryllium	ug/L	4	100.0%	0.85	0.85	0.404145	ND	ND
Boron	ug/L	4	25.0%	9.215	9.93	3.557841	ND	12.7

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Chromium (Hexavalent)	mg/L	4	100.0%	0.01	0.01	0	ND	ND
Chromium (Total)	ug/L	4	100.0%	2.05	2.05	0.057735	ND	ND
Cobalt	ug/L	4	50.0%	1.14	1.055	0.173397	ND	1.4
Copper	ug/L	4	25.0%	9.6375	7.975	8.151419	ND	20.3
Mercury	ug/L	4	100.0%	0.0525	0.05	0.005	ND	ND
Nickel	ug/L	4	25.0%	3.465	3.24	1.993531	ND	6.03
Selenium	ug/L	4	100.0%	1.725	1.725	0.028868	ND	ND
Silver	ug/L	4	75.0%	3.4025	3.88	1.041165	ND	4
Thallium	ug/L	4	100.0%	3.225	3.225	0.779423	ND	ND
Tin	ug/L	1	100.0%	1.3	1.3	NaN	ND	ND
Vanadium	ug/L	4	100.0%	3.1	3.1	1.03923	ND	ND
Zinc	ug/L	4	25.0%	12.275	10.3	10.715526	ND	26.1
Part 360 Baseline Volatile Organics								
1,1,1,2-Tetrachloroethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,1,1-Trichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1,2,2-Tetrachloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1,2-Trichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2,3-Trichloropropane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,2-Dibromo-3-chloropropane	ug/L	4	100.0%	5	5	0	ND	ND
1,2-Dibromoethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,2-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2-Dichloropropane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,3-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,4-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Hexanone	ug/L	4	100.0%	5	5	0	ND	ND
Acrylonitrile	ug/L	4	100.0%	12.5	12.5	0	ND	ND
Bromochloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromodichloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromoform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromomethane	ug/L	4	100.0%	5	5	0	ND	ND
Carbon tetrachloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroethane	ug/L	4	100.0%	5	5	0	ND	ND
Chloromethane	ug/L	4	100.0%	5	5	0	ND	ND
cis-1,2-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
cis-1,3-Dichloropropene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Dibromochloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Dibromomethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
Methyl Iodide	ug/L	4	100.0%	5	5	0	ND	ND
Styrene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Tetrachloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,2-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,3-Dichloropropene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,4-Dichloro-2-butene	ug/L	4	100.0%	5	5	0	ND	ND
Trichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Trichlorofluoromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Vinyl Acetate	ug/L	4	100.0%	5	5	0	ND	ND
Vinyl Chloride	ug/L	4	100.0%	5	5	0	ND	ND
2,2-Dichloropropane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
A5CELL3PLEACH								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	2927.5	2230	2191.885	1250	6000
Ammonia	mg/L	4	0.0%	85.325	55.15	83.014592	27	204
Biochemical Oxygen Demand (BOD)	mg/L	4	0.0%	17.675	14.3	14.265898	5.1	37
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	0.0%	205.5	148.5	162.961141	82	443
Chloride	mg/L	4	0.0%	73.925	55.05	53.695274	35.6	150
Color	Pt-Co	4	0.0%	282.5	215	220.359555	100	600
Cyanide	mg/L	4	100.0%	0.005	0.005	0	ND	ND
Hardness	mg/L	4	0.0%	969.75	982	301.075157	657	1258
Nitrate	mg/L	4	25.0%	5.5725	4.485	6.543248	ND	13.3
Sulfate	mg/L	4	0.0%	439.75	403	166.008785	280	673
Total Dissolved Solids (TDS)	mg/L	4	0.0%	3415	2740	2128.247	1790	6390
Total Kjeldahl Nitrogen (TKN)	mg/L	4	0.0%	139.55	58.25	182.955851	29.7	412
Total Organic Carbon (TOC)	mg/L	4	0.0%	73.8	51.55	57.966945	33.1	159
Total Phenols	mg/L	4	50.0%	0.00675	0.006	0.00562	ND	0.013
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	111575	110500	15235.57	97300	128000
Iron	ug/L	4	0.0%	5542.5	4855	3086.62	2660	9800
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	166000	165500	62455.32	101000	232000

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Manganese	ug/L	4	0.0%	204.5	180.5	72.390147	151	306
Potassium	ug/L	4	0.0%	177050	149000	106689.6	87200	323000
Sodium	ug/L	4	0.0%	628000	354500	638586.5	223000	1580000
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	2726	2925	2057.48	24	5030
pH	s.u.	4	0.0%	7.1175	7.095	0.164595	6.96	7.32
Redox	mV	4	0.0%	-175.25	-192.5	102.886264	-277	-39
Temperature	deg C	4	0.0%	13.95	13.8	2.462384	11.2	17
Turbidity	NTU	4	0.0%	94.75	43	115.158948	27	266
Part 360 Baseline Metals								
Aluminum	ug/L	4	100.0%	12.525	12.525	2.511474	ND	ND
Antimony	ug/L	4	100.0%	2.3	2.3	1.212436	ND	ND
Arsenic	ug/L	4	0.0%	9.7675	9.33	4.383662	5.71	14.7
Barium	ug/L	4	0.0%	95.025	79.5	46.501926	59.1	162
Beryllium	ug/L	4	100.0%	0.85	0.85	0.404145	ND	ND
Boron	ug/L	4	0.0%	189.625	149.5	132.703539	83.5	376
Chromium (Hexavalent)	mg/L	4	100.0%	0.01	0.01	0	ND	ND
Chromium (Total)	ug/L	4	75.0%	3.5575	2.1	2.982039	ND	8.03
Cobalt	ug/L	4	0.0%	16.3	12.21	11.830819	7.38	33.4
Copper	ug/L	4	25.0%	5.88	4.91	4.242193	ND	11.4
Mercury	ug/L	4	100.0%	0.0525	0.05	0.005	ND	ND
Nickel	ug/L	4	0.0%	36.375	25.95	25.823165	19.1	74.5
Selenium	ug/L	4	100.0%	1.725	1.725	0.028868	ND	ND
Silver	ug/L	4	100.0%	2.925	2.925	1.241303	ND	ND
Thallium	ug/L	4	75.0%	5.525	3.225	5.089941	ND	13.1

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Tin	ug/L	1	100.0%	1.3	1.3	NaN	ND	ND
Vanadium	ug/L	4	0.0%	190.5	140.5	125.70468	105	376
Zinc	ug/L	4	75.0%	4.9	2.45	4.93339	ND	12.3
Part 360 Baseline Volatile Organics								
1,1,1,2-Tetrachloroethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,1,1-Trichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1,2,2-Tetrachloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1,2-Trichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2,3-Trichloropropane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,2-Dibromo-3-chloropropane	ug/L	4	100.0%	5	5	0	ND	ND
1,2-Dibromoethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,2-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2-Dichloropropane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,3-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,4-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Hexanone	ug/L	4	100.0%	5	5	0	ND	ND
Acrylonitrile	ug/L	4	100.0%	12.5	12.5	0	ND	ND
Bromochloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromodichloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromoform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromomethane	ug/L	4	100.0%	5	5	0	ND	ND
Carbon tetrachloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroethane	ug/L	4	100.0%	5	5	0	ND	ND
Chloromethane	ug/L	4	100.0%	5	5	0	ND	ND
cis-1,2-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
cis-1,3-Dichloropropene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Dibromochloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Dibromomethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
Methyl Iodide	ug/L	4	100.0%	5	5	0	ND	ND
Styrene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Tetrachloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,2-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,3-Dichloropropene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,4-Dichloro-2-butene	ug/L	4	100.0%	5	5	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Trichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Trichlorofluoromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Vinyl Acetate	ug/L	4	100.0%	5	5	0	ND	ND
Vinyl Chloride	ug/L	4	100.0%	5	5	0	ND	ND
Part 360 Expanded VOCs								
2,2-Dichloropropane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Phosphorous as P	mg/L	4	0.0%	1.4375	1.045	1.196032	0.49	3.17
A5CELL3SECL								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	610	615	61.64414	530	680
Ammonia	mg/L	4	75.0%	0.1125	0.05	0.125	ND	0.3
Biochemical Oxygen Demand (BOD)	mg/L	4	75.0%	2.875	3	0.629153	ND	3.5
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	0.0%	15	12	6.683313	11	25
Chloride	mg/L	4	100.0%	1	1	0	ND	ND
Color	Pt-Co	4	0.0%	8.75	9	2.986079	5	12
Cyanide	mg/L	4	100.0%	0.005	0.005	0	ND	ND
Hardness	mg/L	4	0.0%	677.75	669.5	48.389909	630	742
Nitrate	mg/L	4	50.0%	1.0175	0.555	1.37735	ND	2.94
Sulfate	mg/L	4	0.0%	136	140.5	12.355835	118	145
Total Dissolved Solids (TDS)	mg/L	4	0.0%	732.5	740	76.430797	650	800
Total Kjeldahl Nitrogen (TKN)	mg/L	4	50.0%	1.1	0.95	0.734847	ND	2
Total Organic Carbon (TOC)	mg/L	4	0.0%	7.125	7.05	0.287228	6.9	7.5
Total Phenols	mg/L	4	100.0%	0.002	0.002	0	ND	ND
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	167750	164500	15217.86	153000	189000
Iron	ug/L	4	0.0%	742.5	541.5	715.487945	147	1740
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	62750	62650	3294.946	59900	65800
Manganese	ug/L	4	0.0%	487.75	519	297.238821	133	780
Potassium	ug/L	4	0.0%	6670	6775	548.877643	5990	7140
Sodium	ug/L	4	0.0%	27200	27050	2603.843	24200	30500
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Acetone	ug/L	4	100.0%	5	5	0	ND	ND
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	1315	1285	108.474267	1220	1470
pH	s.u.	4	0.0%	6.4075	6.485	0.411451	5.86	6.8
Redox	mV	4	0.0%	-49	-67	49.913258	-86	24
Temperature	deg C	4	0.0%	13.3	13.05	2.164871	11.1	16
Turbidity	NTU	4	0.0%	0	0	0	ND	0
Part 360 Baseline Metals								
Aluminum	ug/L	4	100.0%	12.525	12.525	2.511474	ND	ND
Antimony	ug/L	4	100.0%	2.3	2.3	1.212436	ND	ND
Arsenic	ug/L	4	25.0%	4.085	3.71	1.54552	ND	6.27
Barium	ug/L	4	0.0%	60.95	61.25	4.847336	55.7	65.6
Beryllium	ug/L	4	100.0%	0.85	0.85	0.404145	ND	ND
Boron	ug/L	4	0.0%	14.725	15.05	3.503689	10.2	18.6
Chromium (Hexavalent)	mg/L	4	100.0%	0.01	0.01	0	ND	ND
Chromium (Total)	ug/L	4	75.0%	7.475	2.1	10.816769	ND	23.7
Cobalt	ug/L	4	25.0%	3.7125	3.03	2.940186	ND	7.74
Copper	ug/L	4	0.0%	6.2225	6.16	1.972467	4.37	8.2
Mercury	ug/L	4	100.0%	0.0525	0.05	0.005	ND	ND
Nickel	ug/L	4	0.0%	5.095	3.305	3.884503	2.87	10.9
Selenium	ug/L	4	100.0%	1.725	1.725	0.028868	ND	ND
Silver	ug/L	4	100.0%	2.925	2.925	1.241303	ND	ND
Thallium	ug/L	4	50.0%	7.1875	7.5	4.608755	ND	11.2
Tin	ug/L	1	100.0%	1.3	1.3	NaN	ND	ND
Vanadium	ug/L	4	100.0%	3.1	3.1	1.03923	ND	ND
Zinc	ug/L	4	0.0%	23.45	22.65	11.439843	12.7	35.8
Part 360 Baseline Volatile Organics								
1,1,1,2-Tetrachloroethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,1,1-Trichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1,2,2-Tetrachloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
1,1,2-Trichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2,3-Trichloropropane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,2-Dibromo-3-chloropropane	ug/L	4	100.0%	5	5	0	ND	ND
1,2-Dibromoethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,2-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2-Dichloropropane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,3-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,4-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Hexanone	ug/L	4	100.0%	5	5	0	ND	ND
Acrylonitrile	ug/L	4	100.0%	12.5	12.5	0	ND	ND
Bromochloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromodichloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromoform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromomethane	ug/L	4	100.0%	5	5	0	ND	ND
Carbon tetrachloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroethane	ug/L	4	100.0%	5	5	0	ND	ND
Chloromethane	ug/L	4	100.0%	5	5	0	ND	ND
cis-1,2-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
cis-1,3-Dichloropropene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Dibromochloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Dibromomethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
Methyl Iodide	ug/L	4	100.0%	5	5	0	ND	ND
Styrene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Tetrachloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,2-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,3-Dichloropropene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,4-Dichloro-2-butene	ug/L	4	100.0%	5	5	0	ND	ND
Trichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Trichlorofluoromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Vinyl Acetate	ug/L	4	100.0%	5	5	0	ND	ND
Vinyl Chloride	ug/L	4	100.0%	5	5	0	ND	ND
2,2-Dichloropropane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
A6PLeach								
Area IV/V Leachate Indicators								

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Alkalinity	mg/L	4	0.0%	3797.5	4250	2215.105	790	5900
Ammonia	mg/L	4	0.0%	99.05	67.9	67.576599	60.4	200
Biochemical Oxygen Demand (BOD)	mg/L	4	0.0%	486.75	530.5	359.545431	64	822
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	0.0%	1015.5	895.5	787.324795	251	2020
Chloride	mg/L	4	0.0%	123.5	115.55	49.272778	77.9	185
Color	Pt-Co	4	0.0%	342.5	375	170.95321	120	500
Cyanide	mg/L	4	25.0%	0.18125	0.23	0.119469	ND	0.26
Hardness	mg/L	4	0.0%	997.75	985.5	262.938998	717	1303
Nitrate	mg/L	4	25.0%	0.045	0.05	0.017321	ND	0.06
Sulfate	mg/L	4	0.0%	298.75	321	118.923995	136	417
Total Dissolved Solids (TDS)	mg/L	4	0.0%	5027.5	5155	2551.919	1870	7930
Total Kjeldahl Nitrogen (TKN)	mg/L	4	0.0%	83.475	68.2	79.516345	4.5	193
Total Organic Carbon (TOC)	mg/L	4	0.0%	257.3	195.65	239.610615	65.9	572
Total Phenols	mg/L	4	0.0%	0.0815	0.074	0.07034	0.011	0.167
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	154500	148000	20485.77	138000	184000
Iron	ug/L	4	0.0%	8752.5	6040	9268.176	1030	21900
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	148625	151500	71662.84	62500	229000
Manganese	ug/L	4	0.0%	707.5	720	255.960283	426	964
Potassium	ug/L	4	0.0%	322850	327000	184066.5	96400	541000
Sodium	ug/L	4	0.0%	1274250	1200000	824499.2	357000	2340000
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
2-Butanone	ug/L	4	25.0%	1169.25	186	2093.736	ND	4300
4-Methyl 2-pentanone	ug/L	4	100.0%	133.75	15	244.348624	ND	ND
Acetone	ug/L	4	25.0%	809.5	316.5	1224.738	ND	2600
Benzene	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
Carbon disulfide	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
Chloroform	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
Ethyl benzene	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
Methylene Chloride	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
Toluene	ug/L	4	75.0%	69.25	12.25	120.587797	ND	250
Xylene (total)	ug/L	4	100.0%	133.75	15	244.348624	ND	ND
Field or Physical								

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Conductivity	umhos/cm	4	0.0%	7062.5	7225	2834.906	3500	10300
pH	s.u.	4	0.0%	7.0675	6.955	0.565649	6.56	7.8
Redox	mV	4	0.0%	-344.75	-344.5	47.640144	-387	-303
Temperature	deg C	4	0.0%	13.9	14.15	3.602777	10.3	17
Turbidity	NTU	4	0.0%	215.25	145	215.478344	49	522
Part 360 Baseline Metals								
Aluminum	ug/L	4	50.0%	410.85	114.35	666.092409	ND	1400
Antimony	ug/L	4	75.0%	3.055	3.35	1.279101	ND	4.27
Arsenic	ug/L	4	0.0%	33.725	34	13.721364	20.1	46.8
Barium	ug/L	4	0.0%	197.75	183.5	43.36185	164	260
Beryllium	ug/L	4	100.0%	0.85	0.85	0.404145	ND	ND
Boron	ug/L	4	0.0%	222	234	70.109438	127	293
Chromium (Hexavalent)	mg/L	4	100.0%	0.01	0.01	0	ND	ND
Chromium (Total)	ug/L	4	75.0%	2.785	2.05	1.504072	ND	5.04
Cobalt	ug/L	4	0.0%	10.8175	7.78	7.882269	5.21	22.5
Copper	ug/L	4	50.0%	6.9	5.775	6.493972	ND	15
Mercury	ug/L	4	75.0%	0.065	0.055	0.023805	ND	0.1
Nickel	ug/L	4	0.0%	22.7	18.55	12.434093	12.8	40.9
Selenium	ug/L	4	100.0%	1.725	1.725	0.028868	ND	ND
Silver	ug/L	4	100.0%	2.925	2.925	1.241303	ND	ND
Thallium	ug/L	4	0.0%	22.025	16.4	15.060849	11.6	43.7
Tin	ug/L	1	100.0%	1.3	1.3	NaN	ND	ND
Vanadium	ug/L	4	50.0%	9.325	8.9	6.187824	ND	15.5
Zinc	ug/L	4	25.0%	19.4175	9.585	24.769912	ND	56.2
Part 360 Baseline Volatile Organics								
1,1,1,2-Tetrachloroethane	ug/L	4	100.0%	133.125	15	244.790514	ND	ND
1,1,1-Trichloroethane	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
1,1,2,2-Tetrachloroethane	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
1,1,2-Trichloroethane	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
1,1-Dichloroethene	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
1,2,3-Trichloropropane	ug/L	4	100.0%	133.125	15	244.790514	ND	ND
1,2-Dibromo-3-chloropropane	ug/L	4	100.0%	133.75	15	244.348624	ND	ND
1,2-Dibromoethane	ug/L	4	100.0%	133.125	15	244.790514	ND	ND
1,2-Dichlorobenzene	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
1,2-Dichloroethane	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
1,2-Dichloropropane	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
1,3-Dichlorobenzene	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
1,4-Dichlorobenzene	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
2-Hexanone	ug/L	4	100.0%	133.75	15	244.348624	ND	ND
Acrylonitrile	ug/L	4	100.0%	333.75	36.25	611.243609	ND	ND
Bromochloromethane	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
Bromodichloromethane	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
Bromoform	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
Bromomethane	ug/L	4	100.0%	133.75	15	244.348624	ND	ND
Carbon tetrachloride	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
Chlorobenzene	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
Chloroethane	ug/L	4	100.0%	133.75	15	244.348624	ND	ND
Chloromethane	ug/L	4	100.0%	133.75	15	244.348624	ND	ND
cis-1,2-Dichloroethene	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
cis-1,3-Dichloropropene	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
Dibromochloromethane	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
Dibromomethane	ug/L	4	100.0%	133.125	15	244.790514	ND	ND
Methyl Iodide	ug/L	4	100.0%	133.75	15	244.348624	ND	ND
Styrene	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
Tetrachloroethene	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
trans-1,2-Dichloroethene	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
trans-1,3-Dichloropropene	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
trans-1,4-Dichloro-2-butene	ug/L	4	100.0%	133.75	15	244.348624	ND	ND
Trichloroethene	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
Trichlorofluoromethane	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
Vinyl Acetate	ug/L	4	100.0%	133.75	15	244.348624	ND	ND
Vinyl Chloride	ug/L	4	100.0%	133.75	15	244.348624	ND	ND
2,2-Dichloropropane	ug/L	4	100.0%	66.875	7.5	122.174312	ND	ND
Phosphorous as P	mg/L	4	0.0%	0.62	0.665	0.203797	0.34	0.81
A6SLeach								
Area IV/V Leachate Indicators								
Alkalinity	mg/L	4	0.0%	732.5	750	65	640	790
Ammonia	mg/L	4	25.0%	0.1625	0.15	0.110868	ND	0.3
Biochemical Oxygen Demand (BOD)	mg/L	4	0.0%	18.775	12	20.23205	3.5	47.6
Bromide	mg/L	4	100.0%	0.5	0.5	0	ND	ND
Chemical Oxygen Demand (COD)	mg/L	4	0.0%	58.25	41.5	54.082499	17	133
Chloride	mg/L	4	0.0%	8.885	8.97	2.206861	6.1	11.5
Color	Pt-Co	4	0.0%	20	15	19.148542	5	45
Cyanide	mg/L	4	100.0%	0.005	0.005	0	ND	ND

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Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Hardness	mg/L	4	0.0%	490.25	485	86.611681	412	579
Nitrate	mg/L	4	75.0%	0.0725	0.035	0.086168	ND	0.2
Sulfate	mg/L	4	0.0%	286.5	305.5	74.128267	182	353
Total Dissolved Solids (TDS)	mg/L	4	0.0%	1137.5	1170	86.554414	1010	1200
Total Kjeldahl Nitrogen (TKN)	mg/L	4	50.0%	5.225	1.1	8.668477	ND	18.2
Total Organic Carbon (TOC)	mg/L	4	0.0%	22	14.4	22.372751	5.6	53.6
Total Phenols	mg/L	4	75.0%	0.003	0.002	0.002	ND	0.006
Area IV/V Routine Metals								
Cadmium	ug/L	4	100.0%	0.775	0.775	0.317543	ND	ND
Calcium	ug/L	4	0.0%	138500	136500	24034.7	117000	164000
Iron	ug/L	4	0.0%	4452	3720	3703.874	858	9510
Lead	ug/L	4	100.0%	1.325	1.325	0.086603	ND	ND
Magnesium	ug/L	4	0.0%	35125	35600	6557.629	27900	41400
Manganese	ug/L	4	0.0%	1840.25	1290.5	2031.428	80	4700
Potassium	ug/L	4	0.0%	11890	11700	2164.347	9460	14700
Sodium	ug/L	4	0.0%	225750	210000	52929.99	184000	299000
Area IV/V Routine VOAs								
1,1-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Butanone	ug/L	4	100.0%	5	5	0	ND	ND
4-Methyl 2-pentanone	ug/L	4	100.0%	5	5	0	ND	ND
Acetone	ug/L	4	75.0%	11	5	12	ND	29
Benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Carbon disulfide	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Ethyl benzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Methylene Chloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Toluene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Xylene (total)	ug/L	4	100.0%	5	5	0	ND	ND
Field or Physical								
Conductivity	umhos/cm	4	0.0%	1807.5	1755	187.327699	1650	2070
pH	s.u.	4	0.0%	6.7975	6.775	0.122848	6.68	6.96
Redox	mV	4	0.0%	-57.75	-108	185.295035	-222	207
Temperature	deg C	4	0.0%	14.9	15.35	3.654221	10.9	18
Turbidity	NTU	4	0.0%	11.25	9	8.539126	4	23
Part 360 Baseline Metals								
Aluminum	ug/L	4	100.0%	12.525	12.525	2.511474	ND	ND
Antimony	ug/L	4	75.0%	3.095	3.35	1.331202	ND	4.43

APPENDIX F
INTERNATIONAL PAPER, TICONDEROGA MILL LANDFILL
2019 SECONDARY LEACHATE ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Arsenic	ug/L	4	25.0%	3.965	3.585	1.614528	ND	6.04
Barium	ug/L	4	0.0%	80.475	76.15	15.038922	67.6	102
Beryllium	ug/L	4	100.0%	0.85	0.85	0.404145	ND	ND
Boron	ug/L	4	25.0%	25.45	29.2	14.855863	ND	39.1
Chromium (Hexavalent)	mg/L	4	100.0%	0.01	0.01	0	ND	ND
Chromium (Total)	ug/L	4	25.0%	174.945	89.39	242.833548	ND	519
Cobalt	ug/L	4	25.0%	11.64	7.805	13.561541	ND	29.9
Copper	ug/L	4	25.0%	6.28	7.045	4.089556	ND	9.98
Mercury	ug/L	4	100.0%	0.0525	0.05	0.005	ND	ND
Nickel	ug/L	4	0.0%	63.465	28.85	85.562474	6.16	190
Selenium	ug/L	4	100.0%	1.725	1.725	0.028868	ND	ND
Silver	ug/L	4	75.0%	3.3875	3.85	1.03471	ND	4
Thallium	ug/L	4	50.0%	10.9475	4.595	13.184626	ND	30.7
Tin	ug/L	1	100.0%	1.3	1.3	NaN	ND	ND
Vanadium	ug/L	4	100.0%	3.1	3.1	1.03923	ND	ND
Zinc	ug/L	4	25.0%	9.3675	9.185	6.478958	ND	16.8
Part 360 Baseline Volatile Organics								
1,1,1,2-Tetrachloroethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,1,1-Trichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1,2,2-Tetrachloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1,2-Trichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,1-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2,3-Trichloropropane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,2-Dibromo-3-chloropropane	ug/L	4	100.0%	5	5	0	ND	ND
1,2-Dibromoethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
1,2-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2-Dichloroethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,2-Dichloropropane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,3-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
1,4-Dichlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
2-Hexanone	ug/L	4	100.0%	5	5	0	ND	ND
Acrylonitrile	ug/L	4	100.0%	12.5	12.5	0	ND	ND
Bromochloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromodichloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromoform	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Bromomethane	ug/L	4	100.0%	5	5	0	ND	ND
Carbon tetrachloride	ug/L	4	100.0%	2.5	2.5	0	ND	ND

APPENDIX F
INTERNATIONAL PAPER, TICONDEROGA MILL LANDFILL
2019 SECONDARY LEACHATE ANALYTICAL DATA STATISTICS

Parameter	Unit	Size	% NDs	Mean	Median	Standard Deviation	Min	Max
Chlorobenzene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Chloroethane	ug/L	4	100.0%	5	5	0	ND	ND
Chloromethane	ug/L	4	100.0%	5	5	0	ND	ND
cis-1,2-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
cis-1,3-Dichloropropene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Dibromochloromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Dibromomethane	ug/L	4	100.0%	4.375	5	1.25	ND	ND
Methyl Iodide	ug/L	4	100.0%	5	5	0	ND	ND
Styrene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Tetrachloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,2-Dichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,3-Dichloropropene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
trans-1,4-Dichloro-2-butene	ug/L	4	100.0%	5	5	0	ND	ND
Trichloroethene	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Trichlorofluoromethane	ug/L	4	100.0%	2.5	2.5	0	ND	ND
Vinyl Acetate	ug/L	4	100.0%	5	5	0	ND	ND
Vinyl Chloride	ug/L	4	100.0%	5	5	0	ND	ND
2,2-Dichloropropane	ug/L	4	100.0%	2.5	2.5	0	ND	ND

Note:The statistics are replaced by the corresponding minimum variance unbiased estimates for the log normal distribution.

APPENDIX F-2

2018 PRIMARY AND SECONDARY LEACHATE DATA INTERNATIONAL PAPER LANDFILL AREAS IV, V AND VI

Parameter	Area V Cell 1/Cell 2 Primary Leachate				Area V Cell 1 Secondary Leachate				Area V Cell 2 Secondary Leachate				Area V Cell 3 Primary Leachate			
	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19
Area IV/V Leachate Indicators																
Alkalinity (mg/L)	3,800	4,100	5,900	4,200	800	730	800	740	620	670	730	640	1,250	3,000	6,000	1,460
Ammonia (mg/L)	218	161	216	147	0.8	0.5	0.3	0.3	0.2	<0.1	0.7	0.6	29	81.3	204	27
Biochemical Oxygen Demand (BOD) (mg/L)	13.8	12.6	<20	19.8	5	10	<4.0	5	<4.0	<6.000	<6.0	4	5.1	19.6	37	9
Bromide (mg/L)	<1.0	<1.0	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chemical Oxygen Demand (COD) (mg/L)	221	162	340	155	15	7	20	15	38	11	20	15	121	176	443	82
Chloride (mg/L)	127	93.7	157	92.2	<2.0	5.68	<2.0	4.16	2.31	<2.0	<2.0	<2.0	35.6	73.5	150	36.6
Color (Pt-Co)	220	200	350	300	5	12	8	10	5	5	8	10	100	250	600	180
Cyanide (µg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Hardness (mg/L)	1,184	1,821	1,847	1,274	849	746	945	785	635	634	718	640	769	1,195	1,258	657
Nitrate (mg/L)	4.26	0.26	0.17	0.11	<0.040	<0.040	<0.04	<0.4	<0.040	<0.040	<0.04	0.11	13.3	<0.04	0.27	8.7
Sulfate (mg/L)	178	418	352	181	169	105	174	123	88.9	81.6	74.8	62.1	408	673	398	280
Total Dissolved Solids (TDS) (mg/L)	4,180	3720	5,720	4290	965	805	980	935	670	740	780	750	1,790	3510	6,390	1,970
Total Kjeldahl Nitrogen (TKN) (mg/L)	174	25.2	223	160	2	<1.0	2.2	<1.0	2	<1.0	2.2	<1.0	29.7	79.5	412	37
Total Organic Carbon (TOC) (mg/L)	80.4	67.3	129	58.3	5.4	5.1	5.4	6.8	6.7	6.2	10.4	6.6	33.1	60.9	159	42.2
Total Phenols (mg/L)	0.111	0.012	<0.004	0.01	<0.004	0.016	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	0.013	0.01	<0.004
Area IV/V Routine Metals																
Cadmium (µg/L)	<2.1	<2.1	<1.0	<1.0	<2.1	<2.1	<1.0	<1.0	<2.1	<2.1	<1.0	<1.0	<2.1	<2.1	<1.0	<1.0
Calcium (µg/L)	92,200	124,000	145,000	87,600	217,000	197,000	253,000	197,000	154,000	156,000	173,000	158,000	100,000	128,000	121,000	97,300
Iron (µg/L)	2,800	2,140	946	95.9	6,690	3,950	10,600	5,530	1,380	5,960	14,200	1,540	2,660	5,630	9,800	4,080
Lead (µg/L)	<2.5	<2.5	<2.8	<2.8	<2.5	<2.5	<2.8	<2.8	<2.1	<2.5	<2.8	<2.8	<2.5	<2.5	<2.8	<2.8
Magnesium (µg/L)	232,000	367,000	361,000	256,000	74,800	62,200	75,900	71,300	60,900	59,300	69,400	59,300	126,000	205,000	232,000	101,000
Manganese (µg/L)	362	579	405	295	1,570	1,050	1,560	1,270	382	416	507	409	154	306	207	151
Potassium (µg/L)	333,000	365,000	388,000	343,000	6,600	4,000	4,670	4,380	8,670	4,380	10,400	5,000	109,000	189,000	323,000	87,200
Sodium (µg/L)	762,000	1,240,000	1,230,000	805,000	36,700	26,500	34,600	22,700	20,800	13,300	18,500	13,800	313,000	223,000	1,580,000	396,000
Area IV/V Routine VOAs																
1,1-Dichloroethane (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Butanone (µg/L)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
4-Methyl 2-pentanone (µg/L)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Acetone (µg/L)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Benzene (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Carbon disulfide (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroform (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Ethyl benzene (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methylene Chloride (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Toluene (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Xylene (total) (µg/L)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Field or Physical																
Conductivity (µmhos/cm)	6,790	5,970	9,430	7,420	1,630	1,420	1,720	1,490	1,160	1,190	1,340	1,190	2,850	5,030	24	3,000
pH (s.u.)	6.79	7.12	6.89	6.94	6.31	6.47	6.2	6.35	6.73	6.52	6.12	6.7	7.32	7.18	7.01	6.96
Redox (mV)		-239	-144	-273		-136	-39	-96		62	7	55		-277	-226	-159
Temperature (deg C)	10.9	18	15	10.7	10.7	15	15	10.8	12.6	17	16	14.5	11.2	17	14.6	13
Turbidity (NTU)	119	11	213	3	2	0	51	3	2	57	99	18	27	59	266	27
Part 360 Baseline Metals																
Aluminum (µg/L)	<20.7	<20.7	<29.4	<29.4	<20.7	<20.7	410	<29.4	<20.7	<20.7	<29.4	<29.4	<20.7	<20.7	<29.4	<29.4
Antimony (µg/L)	<2.5	<2.5	<6.7	<6.7	<2.5	<2.5	<6.7	<6.7	<2.5	<2.5	<6.7	<6.7	<2.5	<2.5	<6.7	<6.7
Arsenic (µg/L)	8.04	5.39	<5.3	5.34	7.4	3.5	10.2	6.09	3.2	3.36	6.37	<5.3	5.71	12.2	14.7	6.46
Barium (µg/L)	134	104	151	92.8	27.8	23.4	26.3	29.8	37.5	37	45.5	36.9	59.1	90.2	162	68.8
Beryllium (µg/L)	<2.4	<2.4	<1.0	<1.0	<2.4	<2.4	<1.0	<1.0	<2.4	<2.4	<1.0	<1.0	<2.4	<2.4	<1.0	<1.0
Boron (ug/L)	690	431	590	694	<7.600	12.1	<8.6	<50.000	9.36	10.5	<8.6	12.7	83.5	192	376	107
Chromium (Hexavalent) (µg/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

APPENDIX F-2

2018 PRIMARY AND SECONDARY LEACHATE DATA INTERNATIONAL PAPER LANDFILL AREAS IV, V AND VI

Parameter	Area V Cell 1/Cell 2 Primary Leachate				Area V Cell 1 Secondary Leachate				Area V Cell 2 Secondary Leachate				Area V Cell 3 Primary Leachate			
	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19
Chromium (Total) (µg/L)	<4.2	<4.2	8.6	<4.0	<4.2	<4.2	<4.0	<4.0	<4.2	<4.2	<4.0	<4.0	<4.2	<4.2	8.03	<4.0
Cobalt (µg/L)	12.3	11.1	23.4	7.55	<2.1	<2.1	1.77	<1.0	<2.1	<2.1	1.06	1.4	7.38	14.9	33.4	9.52
Copper (µg/L)	4.81	<4.6	<2.1	<2.1	<4.6	<4.6	7.49	3.27	11.6	<4.6	4.35	20.3	7.01	<4.6	2.81	11.4
Mercury (µg/L)	<0.1	<0.1	<0.1	<0.12	<0.1	<0.1	<0.1	<0.12	<0.1	<0.1	<0.1	<0.12	<0.1	<0.1	<0.1	<0.12
Nickel (µg/L)	16.3	12.3	22.2	9.62	<2.1	<2.1	<2.7	<2.700	6.03	2.62	<2.7	3.86	19.1	29.9	74.5	22
Selenium (µg/L)	<3.4	<3.4	<3.5	<3.5	<3.4	<3.4	<3.5	<3.5	<3.4	<3.4	<3.5	<3.5	<3.4	<3.4	<3.5	<3.5
Silver (µg/L)	<3.7	<3.7	<8.0	<8.0	<3.7	<3.7	<8.0	<8.0	<3.7	3.76	<8.0	<8.0	<3.7	<3.7	<8.0	<8.0
Thallium (µg/L)	<7.8	<7.8	<5.1	<5.1	<7.8	<7.8	<5.1	<5.1	<7.8	<7.8	<5.1	<5.1	<7.8	13.1	<5.1	<5.1
Vanadium (µg/L)	102	68.8	81.3	101	<4.4	<4.4	<8.0	<8.0	<4.4	<4.4	<8.0	<8.0	105	159	376	122
Zinc (µg/L)	<4.9	<4.9	<4.8	26.1	<4.9	<4.9	14.3	<4.600	26.1	5.4	<4.8	15.2	<4.9	<4.9	<4.8	12.3
Part 360 Baseline Volatile Organics																
1,1,1,2-Tetrachloroethane (µg/L)	<10	<10	<10	<5.0	<10	<10	<10	<5.0	<10	<10	<10	<5.0	<10	<10	<10	<5.0
1,1,1-Trichloroethane (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2,2-Tetrachloroethane (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2-Trichloroethane (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethene (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2,3-Trichloropropane (µg/L)	<10	<10	<10	<5.0	<10	<10	<10	<5.0	<10	<10	<10	<5.0	<10	<10	<10	<5.0
1,2-Dibromo-3-chloropropane (µg/L)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,2-Dibromoethane (µg/L)	<10	<10	<10	<5.0	<10	<10	<10	<5.0	<10	<10	<10	<5.0	<10	<10	<10	<5.0
1,2-Dichlorobenzene (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloroethane (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloropropane (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,3-Dichlorobenzene (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Hexanone (µg/L)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Acrylonitrile (µg/L)	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
Bromochloromethane (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromodichloromethane (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromoform (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromomethane (µg/L)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Carbon tetrachloride (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chlorobenzene (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroethane (µg/L)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Chloromethane (µg/L)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
cis-1,2-Dichloroethene (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
cis-1,3-Dichloropropene (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dibromochloromethane (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dibromomethane (µg/L)	<10	<10	<10	<5.0	<10	<10	<10	<5.0	<10	<10	<10	<5.0	<10	<10	<10	<5.0
Methyl Iodide (µg/L)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Styrene (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Tetrachloroethene (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,2-Dichloroethene (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,3-Dichloropropene (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,4-Dichloro-2-butene (µg/L)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Trichloroethene (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Trichlorofluoromethane (µg/L)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Vinyl Acetate (µg/L)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Vinyl Chloride (µg/L)	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Leachate Indicator/Inorganic Parameters																
Phosphorous as P (mg/L)	4.05	2.67	3.47	3.74									0.84	1.25	3.17	0.49
Part 360 Expanded VOCs																

APPENDIX F-2

2018 PRIMARY AND SECONDARY LEACHATE DATA INTERNATIONAL PAPER LANDFILL AREAS IV, V AND VI

Parameter	Area V Cell 1/Cell 2 Primary Leachate				Area V Cell 1 Secondary Leachate				Area V Cell 2 Secondary Leachate				Area V Cell 3 Primary Leachate			
	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19
1,1-Dichloropropene (µg/L)				<5.0				<5.0				<5.0				<5.0
1,2,4-Trichlorobenzene (µg/L)				<5.0				<5.0				<5.0				<5.0
1,3-Dichloropropane (µg/L)				<5.0				<5.0				<5.0				<5.0
2,2'-oxybis(1-Chloropropane) ug/L)				<5.0				<5.0				<5.0				<5.0
2,2-Dichloropropane (µg/L)				<5.0				<5.0				<5.0				<5.0
Acrolein (µg/L)				<100				<100				<100				<100
Allyl Chloride (µg/L)				<10				<10				<10				<10
Chloroprene (µg/L)				<20				<20				<20				<20
Dichlorodifluoromethane (µg/L)				<10				<10				<10				<10
Ethyl Methacrylate (µg/L)				<10				<10				<10				<10
Hexachlorobutadiene (µg/L)				<5.0				<5.0				<5.0				<5.0
Isobutyl Alcohol (µg/L)				<200				<200				<200				<200
Methacrylonitrile (µg/L)				<100				<100				<100				<100
Methyl Methacrylate (µg/L)				<5.0				<5.0				<5.0				<5.0
Naphthalene (µg/L)				<5.0				<5.0				<5.0				<5.0
Propionitrile (µg/L)				<100				<100				<100				<100
Pesticides																
4,4'-DDD (µg/L)				<0.1				<0.1				<0.1				<0.1
4,4'-DDE (µg/L)				<0.1				<0.1				<0.1				<0.1
4,4'-DDT (µg/L)				<0.1				<0.1				<0.1				<0.1
Aldrin (µg/L)				<0.05				<0.05				<0.05				<0.05
alpha-BHC (µg/L)				<0.05				<0.05				<0.05				<0.05
alpha-Chlordane (µg/L)				<0.05				<0.05				<0.05				<0.05
beta-BHC (µg/L)				<0.05				<0.05				<0.05				<0.05
delta-BHC (µg/L)				<0.05				<0.05				<0.05				<0.05
Diallate (µg/L)				<5.0				<5.0				<5.0				<5.0
Dieldrin (µg/L)				<0.1				<0.1				<0.1				<0.1
Dimethoate (µg/L)				<2.0				<1.0				<1.0				<2.0
Diphenylamine (µg/L)				<5.0				<5.0				<5.0				<5.0
Disulfoton (µg/L)				<2.0				<1.0				<1.0				<2.0
Endosulfan I (µg/L)				<0.05				<0.05				<0.05				<0.05
Endosulfan II (µg/L)				<0.1				<0.1				<0.1				<0.1
Endosulfan Sulfate (µg/L)				<0.1				<0.1				<0.1				<0.1
Endrin (µg/L)				<0.1				<0.1				<0.1				<0.1
Endrin aldehyde (µg/L)				<0.1				<0.1				<0.1				<0.1
Endrin ketone (µg/L)				<0.1				<0.1				<0.1				<0.1
gamma-BHC (Lindane) (µg/L)				<0.05				<0.05				<0.05				<0.05
gamma-Chlordane (µg/L)				<0.05				<0.05				<0.05				<0.05
Heptachlor (µg/L)				<0.05				<0.05				<0.05				<0.05
Heptachlor epoxide (µg/L)				<0.05				<0.05				<0.05				<0.05
Kepone (µg/L)				<5.0				<5.0				<5.0				<5.0
Methoxychlor (µg/L)				<0.05				<0.05				<0.05				<0.05
Methyl parathion (µg/L)				<2.0				<1.0				<1.0				<2.0
Parathion (æg/L)				<2.0				<1.0				<1.0				<2.0
Phorate (µg/L)				<2.0				<1.0				<1.0				<2.0
Pronamide (µg/L)				<5.0				<5.0				<5.0				<5.0
Safrole (µg/L)				<5.0				<5.0				<5.0				<5.0
Thionazin (µg/L)				<2.0				<1.0				<1.0				<2.0
Toxaphene (µg/L)				<0.5				<0.5				<0.5				<0.5
Polychlorinated Biphenyls																
Aroclor 1016 (µg/L)				<0.065				<0.065				<0.065				<0.065

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Parameter	Area V Cell 1/Cell 2 Primary Leachate				Area V Cell 1 Secondary Leachate				Area V Cell 2 Secondary Leachate				Area V Cell 3 Primary Leachate			
	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19
Aroclor 1221 (µg/L)				<0.065				<0.065				<0.065				<0.065
Aroclor 1232 (µg/L)				<0.065				<0.065				<0.065				<0.065
Aroclor 1242 (µg/L)				<0.065				<0.065				<0.065				<0.065
Aroclor 1248 (µg/L)				<0.065				<0.065				<0.065				<0.065
Aroclor 1254 (µg/L)				<0.065				<0.065				<0.065				<0.065
Aroclor 1260 (µg/L)				<0.065				<0.065				<0.065				<0.065
Semi-volatile Organic Compounds																
1,2,4,5-Tetrachlorobenzene (µg/L)				<5.0				<5.0				<5.0				<5.0
1,3-Dinitrobenzene				<5.0				<5.0				<5.0				<5.0
1,4-Naphthoquinone (µg/L)				<5.0				<5.0				<5.0				<5.0
1-Naphthylamine (µg/L)				<5.0				<5.0				<5.0				<5.0
2,3,4,6-Tetrachlorophenol (µg/L)				<5.0				<5.0				<5.0				<5.0
2,4,5-Trichlorophenol (µg/L)				<5.0				<5.0				<5.0				<5.0
2,4,6-Trichlorophenol (µg/L)				<5.0				<5.0				<5.0				<5.0
2,4-Dichlorophenol (µg/L)				<5.0				<5.0				<5.0				<5.0
2,4-Dimethylphenol (µg/L)				<5.0				<5.0				<5.0				<5.0
2,4-Dinitrophenol (µg/L)				<25				<25				<25				<25
2,4-Dinitrotoluene (µg/L)				<5.0				<5.0				<5.0				<5.0
2,6-Dichlorophenol (µg/L)				<5.0				<5.0				<5.0				<5.0
2,6-Dinitrotoluene (µg/L)				<5.0				<5.0				<5.0				<5.0
2-Acetylaminofluorene (µg/L)				<5.0				<5.0				<5.0				<5.0
2-Chloronaphthalene (µg/L)				<5.0				<5.0				<5.0				<5.0
2-Chlorophenol (µg/L)				<5.0				<5.0				<5.0				<5.0
2-Methylnaphthalene (µg/L)				<5.0				<5.0				<5.0				<5.0
2-Methylphenol (µg/L)				<5.0				<5.0				<5.0				<5.0
2-Naphthylamine (µg/L)				<5.0				<5.0				<5.0				<5.0
2-Nitroaniline (µg/L)				<25				<25				<25				<25
2-Nitrophenol (µg/L)				<5.0				<5.0				<5.0				<5.0
3,3'-Dichlorobenzidine (µg/L)				<10				<10				<10				<10
3,3'-Dimethylbenzidine (ug/L)				<5.0				<5.0				<5.0				<5.0
3-Methylcholanthrene (µg/L)				<5.0				<5.0				<5.0				<5.0
3-Nitroaniline (µg/L)				<25				<25				<25				<25
4,6-Dinitro-2-methylphenol (µg/L)				<25				<25				<25				<25
4-Aminobiphenyl (µg/L)				<5.0				<5.0				<5.0				<5.0
4-Bromophenyl phenyl ether (µg/L)				<5.0				<5.0				<5.0				<5.0
4-Chloro-3-methylphenol (µg/L)				<5.0				<5.0				<5.0				<5.0
4-Chloroaniline (µg/L)				<5.0				<5.0				<5.0				<5.0
4-Chlorophenyl phenyl ether (µg/L)				<5.0				<5.0				<5.0				<5.0
4&3-Methylphenol (µg/L)				<5.0				<5.0				<5.0				<5.0
4-Nitroaniline (µg/L)				<25				<25				<25				<25
4-Nitrophenol (µg/L)				<25				<25				<25				<25
5-Nitro-o-toluidine (µg/L)				<5.0				<5.0				<5.0				<5.0
7,12-Dimethylbenz(a)anthracene (µg/L)				<5.0				<5.0				<5.0				<5.0
Acenaphthene (µg/L)				<5.0				<5.0				<5.0				<5.0
Acenaphthylene (µg/L)				<5.0				<5.0				<5.0				<5.0
Acetonitrile (µg/L)				<200				<200				<200				<200
Acetophenone (µg/L)				<5.0				<5.0				<5.0				<5.0
Anthracene (µg/L)				<5.0				<5.0				<5.0				<5.0
Benzo(a)anthracene (µg/L)				<5.0				<5.0				<5.0				<5.0
Benzo(a)pyrene (µg/L)				<5.0				<5.0				<5.0				<5.0
Benzo(b)fluoranthene (µg/L)				<5.0				<5.0				<5.0				<5.0

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Parameter	Area V Cell 1/Cell 2 Primary Leachate				Area V Cell 1 Secondary Leachate				Area V Cell 2 Secondary Leachate				Area V Cell 3 Primary Leachate			
	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19
Benzo(ghi)perylene (µg/L)				<5.0				<5.0				<5.0				<5.0
Benzo(k)fluoranthene (µg/L)				<5.0				<5.0				<5.0				<5.0
bis(2-chloroethoxy) methane (µg/L)				<5.0				<5.0				<5.0				<5.0
bis(2-Chloroethyl) ether (µg/L)				<5.0				<5.0				<5.0				<5.0
bis(2-Ethylhexyl) phthalate (µg/L)				<5.0				<5.0				<5.0				<5.0
Butyl benzyl phthalate (µg/L)				<5.0				<5.0				<5.0				<5.0
Chlorobenzilate (µg/L)				<5.0				<5.0				<5.0				<5.0
Chrysene (µg/L)				<5.0				<5.0				<5.0				<5.0
Di-n-butyl phthalate (µg/L)				<5.0				<5.0				<5.0				<5.0
Di-n-octyl phthalate (µg/L)				<5.0				<5.0				<5.0				<5.0
Dibenz(a,h)anthracene (µg/L)				<5.0				<5.0				<5.0				<5.0
Dibenzofuran (µg/L)				<5.0				<5.0				<5.0				<5.0
Diethyl phthalate (µg/L)				<5.0				<5.0				<5.0				<5.0
Dimethyl phthalate (µg/L)				<5.0				<5.0				<5.0				<5.0
Ethyl methanesulfonate (µg/L)				<5.0				<5.0				<5.0				<5.0
Famphur (µg/L)				<2.0				<1.0				<1.0				<2.0
Fluoranthene (µg/L)				<5.0				<5.0				<5.0				<5.0
Fluorene (µg/L)				<5.0				<5.0				<5.0				<5.0
Hexachlorobenzene (µg/L)				<5.0				<5.0				<5.0				<5.0
Hexachlorocyclopentadiene (µg/L)				<10				<10				<10				<10
Hexachloroethane (µg/L)				<10				<10				<10				<10
Hexachloropropene (µg/L)				<5.0				<5.0				<5.0				<5.0
Indeno(1,2,3-cd)pyrene (µg/L)				<5.0				<5.0				<5.0				<5.0
Isodrin (µg/L)				<5.0				<5.0				<5.0				<5.0
Isophorone (µg/L)				<5.0				<5.0				<5.0				<5.0
Isosafrole (µg/L)				<5.0				<5.0				<5.0				<5.0
Methapyrilene (µg/L)				<5.0				<5.0				<5.0				<5.0
Methyl methanesulfonate (µg/L)				<5.0				<5.0				<5.0				<5.0
N-Nitroso-Di-n-propylamine (µg/L)				<5.0				<5.0				<5.0				<5.0
N-Nitrosodi-n-butylamine (µg/L)				<5.0				<5.0				<5.0				<5.0
N-Nitrosodiethylamine (µg/L)				<5.0				<5.0				<5.0				<5.0
N-Nitrosodimethylamine (µg/L)				<5.0				<5.0				<5.0				<5.0
N-nitrosodiphenylamine (µg/L)				<5.0				<5.0				<5.0				<5.0
N-Nitrosomethyl-ethylamine (µg/L)				<5.0				<5.0				<5.0				<5.0
N-Nitrosopiperidine (µg/L)				<5.0				<5.0				<5.0				<5.0
N-Nitrosopyrrolidine (µg/L)				<5.0				<5.0				<5.0				<5.0
Nitrobenzene (µg/L)				<5.0				<5.0				<5.0				<5.0
o,o,o-Triethylphosphorothioate (µg/L)				<2.0				<1.0				<1.0				<2.0
o-Toluidine (µg/L)				<5.0				<5.0				<5.0				<5.0
p-Phenylenediamine (µg/L)				<5.0				<5.0				<5.0				<5.0
Pentachlorobenzene (µg/L)				<5.0				<5.0				<5.0				<5.0
Pentachloronitrobenzene (µg/L)				<5.0				<5.0				<5.0				<5.0
Pentachlorophenol (µg/L)				<25				<25				<25				<25
Phenacetin (µg/L)				<5.0				<5.0				<5.0				<5.0
Phenanthrene (µg/L)				<5.0				<5.0				<5.0				<5.0
Phenol (µg/L)				<5.0				<5.0				<5.0				<5.0
Pyrene (µg/L)				<5.0				<5.0				<5.0				<5.0
sym-Trinitrobenzene (µg/L)				<5.0				<5.0				<5.0				<5.0
Unclassified																
1,2-Dinitrobenzene (µg/L)				<5.0				<5.0				<5.0				<5.0
p-Aminoazobenzene (µg/L)				<5.0				<5.0				<5.0				<5.0

APPENDIX F-2

2018 PRIMARY AND SECONDARY LEACHATE DATA INTERNATIONAL PAPER LANDFILL AREAS IV, V AND VI

Parameter	Area V Cell 1/Cell 2 Primary Leachate				Area V Cell 1 Secondary Leachate				Area V Cell 2 Secondary Leachate				Area V Cell 3 Primary Leachate			
	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19
Volatile Organic Compounds																
Pyridine (µg/L)				<5.0				<5.0				<5.0				<5.0
Dioxins and Furans																
1,2,3,4,6,7,8,9-OCDD (ng/L)				<50				<50				<50				<50
1,2,3,4,6,7,8,9-OCDF (ng/L)				<50				<50				<50				<50
1,2,3,4,6,7,8-HpCDD (ng/L)				<25				<25				<25				<25
1,2,3,4,6,7,8-HpCDF (ng/L)				<25				<25				<25				<25
1,2,3,4,7,8,9-HpCDF (ng/L)				<25				<25				<25				<25
1,2,3,4,7,8-HxCDD (ng/L)				<25				<25				<25				<25
1,2,3,4,7,8-HxCDF (ng/L)				<25				<25				<25				<25
1,2,3,6,7,8-HxCDD (ng/L)				<25				<25				<25				<25
1,2,3,6,7,8-HxCDF (ng/L)				<25				<25				<25				<25
1,2,3,7,8,9-HxCDD (ng/L)				<25				<25				<25				<25
1,2,3,7,8,9-HxCDF (ng/L)				<25				<25				<25				<25
1,2,3,7,8-PeCDD (ng/L)				<25				<25				<25				<25
1,2,3,7,8-PeCDF (ng/L)				<25				<25				<25				<25
2,3,4,6,7,8-HxCDF (ng/L)				<25				<25				<25				<25
2,3,4,7,8-PeCDF (ng/L)				<25				<25				<25				<25
2,3,7,8-TCDD (ng/L)				<10				<10				<10				<10
2,3,7,8-TCDF (ng/L)				<10				<10				<10				<10
Total HpCDD (ng/L)				<25				<25				<25				<25
Total HpCDF (ng/L)				<25				<25				<25				<25
Total HxCDD (ng/L)				<25				<25				<25				<25
Total HxCDF (ng/L)				<25				<25				<25				<25
Total PeCDD (ng/L)				<25				<25				<25				<25
Total PeCDF (ng/L)				<25				<25				<25				<25
Total TCDD (ng/L)				<10				<10				<10				<10
Total TCDF (ng/L)				<10				<10				<10				<10
Other Part 360 Leachate Indicators																
Sulfide (mg/L)				<0.1				<0.1				<0.1				0.17
Tin (µg/L)				<2.6				<2.6				<2.6				<2.6
Herbicides																
2,4,5-T (µg/L)				<2.0				<2.0				<2.0				<2.0
2,4,5-TP (Silvex) (µg/L)				<2.0				<2.0				<2.0				<2.0
2,4-D (µg/L)				<5.0				<5.0				<5.0				<5.0

APPENDIX F-2

2018 PRIMARY AND SECONDARY LEACHATE DATA INTERNATIONAL PAPER LANDFILL AREAS IV, V AND VI

Parameter		Area V Cell 3 Secondary Leachate				Area IV Cell 1 Primary Leachate				Area IV Cell 1 Secondary Leachate				Area IV Cell 2 Primary Leachate			
		March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19
Area IV/V Leachate Indicators																	
Alkalinity (mg/L)		530	610	680	620	320	4,200	6,200	2,480	950	890	1,000	960	4,300	3,200	6,200	2,660
Ammonia (mg/L)		<0.1	<0.1	0.3	<0.1	40.5	74.5	108	20.3	<0.1	<0.1	<0.1	<0.1	11.4	26.4	51.1	12.1
Biochemical Oxygen Demand (BOD) (mg/L)		<6.0	<4.0	3.5	<6.0	<20	<20	15.6	<20	<6.0	<4.0	<6.0	<6.0	<20	15.6	<20	<20
Bromide (mg/L)		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chemical Oxygen Demand (COD) (mg/L)		25	12	11	12	265	315	413	198	17	20	21	19	277	295	386	211
Chloride (mg/L)		<2.0	<2.0	<2.0	<2.0	125	137	167	88	29	31.6	30.1	26.6	116	120	136	113
Color (Pt-Co)		10	5	8	12	550	900	1400	450	5	12	8	12	500	300	600	300
Cyanide (µg/L)		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Hardness (mg/L)		630	654	742	685	1035	861	1,589	1,247	766	722	796	719	925	1415	1,411	1,089
Nitrate (mg/L)		2.94	1.09	<0.04	<0.4	28.2	4.73	0.11	43	0.31	0.15	0.24	<0.4	26.1	4.04	0.06	35.5
Sulfate (mg/L)		145	143	138	118	1,530	1630	3,340	1,730	1,410	1470	14,900	1,450	1,030	666	1,290	881
Total Dissolved Solids (TDS) (mg/L)		685	650	800	795	6,250	7110	12,100	5,920	3,150	2940	3,050	3,010	6,730	4540	8,820	4,750
Total Kjeldahl Nitrogen (TKN) (mg/L)		1.4	<1.0	2	<1.0	45.9	71.7	129	<4.0	1.4	<1.0	1.1	<1.0	18.5	162	61.6	20.2
Total Organic Carbon (TOC) (mg/L)		7.5	6.9	7.2	6.9	108	121	159	82.1	8.1	8.4	8.6	7.1	110	120	150	87.1
Total Phenols (mg/L)		<0.004	<0.004	<0.004	<0.004	0.004	0.011	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	0.005	0.024	<0.004	<0.004
Area IV/V Routine Metals																	
Cadmium (µg/L)		<2.1	<2.1	<1.0	<1.0	<2.1	<2.1	<1.0	<1.0	<2.1	<2.1	<1.0	<1.0	<2.1	<2.1	<1.0	<1.0
Calcium (µg/L)		153,000	163,000	189,000	166,000	215,000	176,000	214,000	334,000	163,000	159,000	175,000	146,000	174,000	393,000	235,000	276,000
Iron (µg/L)		312	147	1,740	771	2,860	6,220	10,500	2130	845	454	553	157	1,720	7,960	10,100	2,160
Lead (µg/L)		<2.5	<2.5	<2.8	<2.8	<2.5	<2.5	<2.8	<2.8	<2.5	<2.5	<2.8	<2.8	<2.5	<2.5	<2.8	<2.8
Magnesium (µg/L)		59,900	59,900	65,400	65,800	121,000	103,000	256,000	100,000	87,500	79,000	87,400	86,000	119,000	106,000	201,000	97,500
Manganese (µg/L)		133	358	780	680	334	566	538	412	14.4	14	17.8	9.92	307	1,710	770	583
Potassium (µg/L)		7,140	6,460	7,090	5,990	345,000	761,000	805,000	308,000	69,600	57,600	63,500	60,600	341,000	297,000	491,000	239,000
Sodium (µg/L)		27,500	26,600	30,500	24,200	1,440,000	3,430,000	3,110,000	1,300,000	664,000	770,000	697,000	644,000	1,630,000	1,620,000	2,290,000	1,060,000
Area IV/V Routine VOAs																	
1,1-Dichloroethane (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Butanone (µg/L)		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
4-Methyl 2-pentanone (µg/L)		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Acetone (µg/L)		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	8
Benzene (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Carbon disulfide (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroform (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Ethyl benzene (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methylene Chloride (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Toluene (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Xylene (total) (µg/L)		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Field or Physical																	
Conductivity (µmhos/cm)		1,220	1,300	1,470	1,270	7,730	9,000	14,900	7,780	3,820	4,220	4,190	4,360	8,380	6,130	11,400	6,420
pH (s.u.)		6.8	6.63	5.86	6.34	7.53	7.13	6.7	7.08	7.42	7.14	6.45	6.96	7.81	7.09	6.68	7.36
Redox (mV)			-86	-75	-59		-156	-121	-89		-28	88	-2		-163	-99	-52
Temperature (deg C)		11.1	16	14	12.1	13.2	16	14	12.1	12.7	16	17	10.6	11.6	16	15	14.4
Turbidity (NTU)		0	0	0	0	24	30	73	17	3	12	0	4	8	18	24	19
Part 360 Baseline Metals																	
Aluminum (µg/L)		<20.7	<20.7	<29.4	<29.4	<20.7	237	459	<29.4	<20.7	<20.7	<29.4	<29.4	<20.7	<20.7	59.1	<29.4
Antimony (µg/L)		<2.5	<2.5	<6.7	<6.7	24.6	21.2	35.9	13.9	<2.5	<2.5	<6.7	<6.7	31.9	16.7	26.3	29.5
Arsenic (µg/L)		3.55	3.87	6.27	<5.3	31.3	43.1	56.5	22	3.49	4.14	<5.3	<5.3	47.9	23.1	71.6	31.4
Barium (µg/L)		55.7	64.5	65.6	58	159	109	139	116	32.3	30.6	36.5	35.6	106	157	113	124
Beryllium (µg/L)		<2.4	<2.4	<1.0	<1.0	<2.4	<2.4	<1.0	<1.0	<2.4	<2.4	<1.0	<1.0	<2.4	<2.4	<1.0	<1.0
Boron (ug/L)		10.2	18.6	15.8	14.3	349	419	518	187	31.8	37.7	38.4	30.1	354	257	464	184
Chromium (Hexavalent) (µg/L)		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

APPENDIX F-2

2018 PRIMARY AND SECONDARY LEACHATE DATA INTERNATIONAL PAPER LANDFILL AREAS IV, V AND VI

Parameter		Area V Cell 3 Secondary Leachate				Area IV Cell 1 Primary Leachate				Area IV Cell 1 Secondary Leachate				Area IV Cell 2 Primary Leachate			
		March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19
Chromium (Total) (µg/L)		<4.2	<4.2	23.7	<4.0	<4.2	8.9	14.5	<4.0	18.6	<4.2	10.4	<4.0	<4.2	<4.2	10.2	5.79
Cobalt (µg/L)		<2.1	2.11	7.74	3.95	9.19	9.67	13.4	7.02	<2.1	<2.1	1.41	1.12	11.3	13.3	15.5	9.31
Copper (µg/L)		8.2	7.63	4.37	4.69	12.7	<4.6	9.84	5.6	14.5	5.99	12.9	5.12	16.6	<4.6	5.47	10.6
Mercury (µg/L)		<0.1	<0.1	<0.1	<0.12	<0.1	<0.1	<0.1	<0.12	<0.1	<0.1	<0.1	<0.12	<0.1	<0.1	<0.1	<0.12
Nickel (µg/L)		2.87	3.63	10.9	2.98	30.7	34.7	38.4	22.2	50.7	53.9	38.5	62.7	32.5	27.1	40.1	23.7
Selenium (µg/L)		<3.4	<3.4	<3.5	<3.5	<3.4	<3.4	<3.5	<3.5	<3.4	<3.4	<3.5	<3.5	<3.4	<3.4	<3.5	<3.5
Silver (µg/L)		<3.7	<3.7	<8.0	<8.0	<3.7	<3.7	<8.0	<8.0	<3.7	<3.7	<8.0	<8.0	<3.7	<3.7	<8.0	<8.0
Thallium (µg/L)		<7.8	11.1	<5.1	11.2	<7.8	7.83	6.48	32.8	<7.8	9.38	<5.1	10	9.2	8.52	<5.1	28.5
Vanadium (µg/L)		<4.4	<4.4	<8.0	<8.0	26.6	35.8	51.3	19.2	<4.4	<4.4	<8.0	<8.0	38	19.9	46.4	20.6
Zinc (µg/L)		12.7	35.8	30.5	14.8	21.7	22.3	19.1	25.5	<4.9	11	15.1	14.8	9.69	8.12	7.12	10.3
Part 360 Baseline Volatile Organics																	
1,1,1,2-Tetrachloroethane (µg/L)		<10	<10	<10	<5.0	<10	<10	<10	<5.0	<10	<10	<10	<5.0	<10	<10	<10	<5.0
1,1,1-Trichloroethane (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2,2-Tetrachloroethane (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2-Trichloroethane (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethene (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2,3-Trichloropropane (µg/L)		<10	<10	<10	<5.0	<10	<10	<10	<5.0	<10	<10	<10	<5.0	<10	<10	<10	<5.0
1,2-Dibromo-3-chloropropane (µg/L)		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
1,2-Dibromoethane (µg/L)		<10	<10	<10	<5.0	<10	<10	<10	<5.0	<10	<10	<10	<5.0	<10	<10	<10	<5.0
1,2-Dichlorobenzene (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloroethane (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloropropane (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,3-Dichlorobenzene (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Hexanone (µg/L)		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Acrylonitrile (µg/L)		<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
Bromochloromethane (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromodichloromethane (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromoform (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromomethane (µg/L)		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Carbon tetrachloride (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chlorobenzene (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroethane (µg/L)		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Chloromethane (µg/L)		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
cis-1,2-Dichloroethene (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
cis-1,3-Dichloropropene (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dibromochloromethane (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dibromomethane (µg/L)		<10	<10	<10	<5.0	<10	<10	<10	<5.0	<10	<10	<10	<5.0	<10	<10	<10	<5.0
Methyl Iodide (µg/L)		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Styrene (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Tetrachloroethene (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,2-Dichloroethene (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,3-Dichloropropene (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,4-Dichloro-2-butene (µg/L)		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Trichloroethene (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Trichlorofluoromethane (µg/L)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Vinyl Acetate (µg/L)		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Vinyl Chloride (µg/L)		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Leachate Indicator/Inorganic Parameters																	
Phosphorous as P (mg/L)						3.7	7	11.2	2.63					5.28	3.44	12.4	3.15
Part 360 Expanded VOCs																	

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2018 PRIMARY AND SECONDARY LEACHATE DATA INTERNATIONAL PAPER LANDFILL AREAS IV, V AND VI

Parameter		Area V Cell 3 Secondary Leachate				Area IV Cell 1 Primary Leachate				Area IV Cell 1 Secondary Leachate				Area IV Cell 2 Primary Leachate			
		March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19
1,1-Dichloropropene (µg/L)					<5.0				<5.0				<5.0				<5.0
1,2,4-Trichlorobenzene (µg/L)					<5.0				<5.0				<5.0				<5.0
1,3-Dichloropropane (µg/L)					<5.0				<5.0				<5.0				<5.0
2,2'-oxybis(1-Chloropropane) ug/L)					<5.0				<5.0				<5.0				<5.0
2,2-Dichloropropane (µg/L)					<5.0				<5.0				<5.0				<5.0
Acrolein (µg/L)					<100				<100				<100				<100
Allyl Chloride (µg/L)					<10				<10				<10				<10
Chloroprene (µg/L)					<20				<20				<20				<20
Dichlorodifluoromethane (µg/L)					<10				<10				<10				<10
Ethyl Methacrylate (µg/L)					<10				<10				<10				<10
Hexachlorobutadiene (µg/L)					<5.0				<5.0				<5.0				<5.0
Isobutyl Alcohol (µg/L)					<200				<200				<200				<200
Methacrylonitrile (µg/L)					<100				<100				<100				<100
Methyl Methacrylate (µg/L)					<5.0				<5.0				<5.0				<5.0
Naphthalene (µg/L)					<5.0				<5.0				<5.0				<5.0
Propionitrile (µg/L)					<100				<100				<100				<100
Pesticides																	
4,4'-DDD (µg/L)					<0.1				<0.1				<0.1				<0.1
4,4'-DDE (µg/L)					<0.1				<0.1				<0.1				<0.1
4,4'-DDT (µg/L)					<0.1				<0.1				<0.1				<0.1
Aldrin (µg/L)					<0.05				<0.05				<0.05				<0.05
alpha-BHC (µg/L)					<0.05				<0.05				<0.05				<0.05
alpha-Chlordane (µg/L)					<0.05				<0.05				<0.05				<0.05
beta-BHC (µg/L)					<0.05				<0.05				<0.05				<0.05
delta-BHC (µg/L)					<0.05				<0.05				<0.05				<0.05
Diallate (µg/L)					<5.0				<5.0				<5.0				<5.0
Dieldrin (µg/L)					<0.1				<0.1				<0.1				<0.1
Dimethoate (µg/L)					<1.0				<2.0				<1.0				<2.0
Diphenylamine (µg/L)					<5.0				<5.0				<5.0				<5.0
Disulfoton (µg/L)					<1.0				<2.0				<1.0				<2.0
Endosulfan I (µg/L)					<0.05				<0.05				<0.05				<0.05
Endosulfan II (µg/L)					<0.1				<0.1				<0.1				<0.1
Endosulfan Sulfate (µg/L)					<0.1				<0.1				<0.1				<0.1
Endrin (µg/L)					<0.1				<0.1				<0.1				<0.1
Endrin aldehyde (µg/L)					<0.1				<0.1				<0.1				<0.1
Endrin ketone (µg/L)					<0.1				<0.1				<0.1				<0.1
gamma-BHC (Lindane) (µg/L)					<0.05				<0.05				<0.05				<0.05
gamma-Chlordane (µg/L)					<0.05				<0.05				<0.05				<0.05
Heptachlor (µg/L)					<0.05				<0.05				<0.05				<0.05
Heptachlor epoxide (µg/L)					<0.05				<0.05				<0.05				<0.05
Kepone (µg/L)					<5.0				<5.0				<5.0				<5.0
Methoxychlor (µg/L)					<0.05				<0.05				<0.05				<0.05
Methyl parathion (µg/L)					<1.0				<2.0				<1.0				<2.0
Parathion (æg/L)					<1.0				<2.0				<1.0				<2.0
Phorate (µg/L)					<1.0				<2.0				<1.0				<2.0
Pronamide (µg/L)					<5.0				<5.0				<5.0				<5.0
Safrole (µg/L)					<5.0				<5.0				<5.0				<5.0
Thionazin (µg/L)					<1.0				<2.0				<1.0				<2.0
Toxaphene (µg/L)					<0.5				<0.5				<0.5				<0.5
Polychlorinated Biphenyls																	
Aroclor 1016 (µg/L)					<0.065				<0.065				<0.065				<0.065

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Parameter		Area V Cell 3 Secondary Leachate				Area IV Cell 1 Primary Leachate				Area IV Cell 1 Secondary Leachate				Area IV Cell 2 Primary Leachate			
		March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19
Aroclor 1221 (µg/L)					<0.065				<0.065				<0.065				<0.065
Aroclor 1232 (µg/L)					<0.065				<0.065				<0.065				<0.065
Aroclor 1242 (µg/L)					<0.065				<0.065				<0.065				<0.065
Aroclor 1248 (µg/L)					<0.065				<0.065				<0.065				<0.065
Aroclor 1254 (µg/L)					<0.065				<0.065				<0.065				<0.065
Aroclor 1260 (µg/L)					<0.065				<0.065				<0.065				<0.065
Semi-volatile Organic Compounds																	
1,2,4,5-Tetrachlorobenzene (µg/L)					<5.0				<5.0				<5.0				<5.0
1,3-Dinitrobenzene					<5.0				<5.0				<5.0				<5.0
1,4-Naphthoquinone (µg/L)					<5.0				<5.0				<5.0				<5.0
1-Naphthylamine (µg/L)					<5.0				<5.0				<5.0				<5.0
2,3,4,6-Tetrachlorophenol (µg/L)					<5.0				<5.0				<5.0				<5.0
2,4,5-Trichlorophenol (µg/L)					<5.0				<5.0				<5.0				<5.0
2,4,6-Trichlorophenol (µg/L)					<5.0				<5.0				<5.0				<5.0
2,4-Dichlorophenol (µg/L)					<5.0				<5.0				<5.0				<5.0
2,4-Dimethylphenol (µg/L)					<5.0				<5.0				<5.0				<5.0
2,4-Dinitrophenol (µg/L)					<25				<25				<25				<25
2,4-Dinitrotoluene (µg/L)					<5.0				<5.0				<5.0				<5.0
2,6-Dichlorophenol (µg/L)					<5.0				<5.0				<5.0				<5.0
2,6-Dinitrotoluene (µg/L)					<5.0				<5.0				<5.0				<5.0
2-Acetylaminofluorene (µg/L)					<5.0				<5.0				<5.0				<5.0
2-Chloronaphthalene (µg/L)					<5.0				<5.0				<5.0				<5.0
2-Chlorophenol (µg/L)					<5.0				<5.0				<5.0				<5.0
2-Methylnaphthalene (µg/L)					<5.0				<5.0				<5.0				<5.0
2-Methylphenol (µg/L)					<5.0				<5.0				<5.0				<5.0
2-Naphthylamine (µg/L)					<5.0				<5.0				<5.0				<5.0
2-Nitroaniline (µg/L)					<25				<25				<25				<25
2-Nitrophenol (µg/L)					<5.0				<5.0				<5.0				<5.0
3,3'-Dichlorobenzidine (µg/L)					<10				<10				<10				<10
3,3'-Dimethylbenzidine (ug/L)					<5.0				<5.0				<5.0				<5.0
3-Methylcholanthrene (µg/L)					<5.0				<5.0				<5.0				<5.0
3-Nitroaniline (µg/L)					<25				<25				<25				<25
4,6-Dinitro-2-methylphenol (µg/L)					<25				<25				<25				<25
4-Aminobiphenyl (µg/L)					<5.0				<5.0				<5.0				<5.0
4-Bromophenyl phenyl ether (µg/L)					<5.0				<5.0				<5.0				<5.0
4-Chloro-3-methylphenol (µg/L)					<5.0				<5.0				<5.0				<5.0
4-Chloroaniline (µg/L)					<5.0				<5.0				<5.0				<5.0
4-Chlorophenyl phenyl ether (µg/L)					<5.0				<5.0				<5.0				<5.0
4&3-Methylphenol (µg/L)					<5.0				<5.0				<5.0				<5.0
4-Nitroaniline (µg/L)					<25				<25				<25				<25
4-Nitrophenol (µg/L)					<25				<25				<25				<25
5-Nitro-o-toluidine (µg/L)					<5.0				<5.0				<5.0				<5.0
7,12-Dimethylbenz(a)anthracene (µg/L)					<5.0				<5.0				<5.0				<5.0
Acenaphthene (µg/L)					<5.0				<5.0				<5.0				<5.0
Acenaphthylene (µg/L)					<5.0				<5.0				<5.0				<5.0
Acetonitrile (µg/L)					<200				<200				<200				<200
Acetophenone (µg/L)					<5.0				<5.0				<5.0				<5.0
Anthracene (µg/L)					<5.0				<5.0				<5.0				<5.0
Benzo(a)anthracene (µg/L)					<5.0				<5.0				<5.0				<5.0
Benzo(a)pyrene (µg/L)					<5.0				<5.0				<5.0				<5.0
Benzo(b)fluoranthene (µg/L)					<5.0				<5.0				<5.0				<5.0

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Parameter		Area V Cell 3 Secondary Leachate				Area IV Cell 1 Primary Leachate				Area IV Cell 1 Secondary Leachate				Area IV Cell 2 Primary Leachate			
		March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19
Benzo(ghi)perylene (µg/L)					<5.0				<5.0				<5.0				<5.0
Benzo(k)fluoranthene (µg/L)					<5.0				<5.0				<5.0				<5.0
bis(2-chloroethoxy) methane (µg/L)					<5.0				<5.0				<5.0				<5.0
bis(2-Chloroethyl) ether (µg/L)					<5.0				<5.0				<5.0				<5.0
bis(2-Ethylhexyl) phthalate (µg/L)					<5.0				<5.0				<5.0				<5.0
Butyl benzyl phthalate (µg/L)					<5.0				<5.0				<5.0				<5.0
Chlorobenzilate (µg/L)					<5.0				<5.0				<5.0				<5.0
Chrysene (µg/L)					<5.0				<5.0				<5.0				<5.0
Di-n-butyl phthalate (µg/L)					<5.0				<5.0				<5.0				<5.0
Di-n-octyl phthalate (µg/L)					<5.0				<5.0				<5.0				<5.0
Dibenz(a,h)anthracene (µg/L)					<5.0				<5.0				<5.0				<5.0
Dibenzofuran (µg/L)					<5.0				<5.0				<5.0				<5.0
Diethyl phthalate (µg/L)					<5.0				<5.0				<5.0				<5.0
Dimethyl phthalate (µg/L)					<5.0				<5.0				<5.0				<5.0
Ethyl methanesulfonate (µg/L)					<5.0				<5.0				<5.0				<5.0
Famphur (µg/L)					<1.0				<2.0				<1.0				<2.0
Fluoranthene (µg/L)					<5.0				<5.0				<5.0				<5.0
Fluorene (µg/L)					<5.0				<5.0				<5.0				<5.0
Hexachlorobenzene (µg/L)					<5.0				<5.0				<5.0				<5.0
Hexachlorocyclopentadiene (µg/L)					<10				<10				<10				<10
Hexachloroethane (µg/L)					<10				<10				<10				<10
Hexachloropropene (µg/L)					<5.0				<5.0				<5.0				<5.0
Indeno(1,2,3-cd)pyrene (µg/L)					<5.0				<5.0				<5.0				<5.0
Isodrin (µg/L)					<5.0				<5.0				<5.0				<5.0
Isophorone (µg/L)					<5.0				<5.0				<5.0				<5.0
Isosafrole (µg/L)					<5.0				<5.0				<5.0				<5.0
Methapyrilene (µg/L)					<5.0				<5.0				<5.0				<5.0
Methyl methanesulfonate (µg/L)					<5.0				<5.0				<5.0				<5.0
N-Nitroso-Di-n-propylamine (µg/L)					<5.0				<5.0				<5.0				<5.0
N-Nitrosodi-n-butylamine (µg/L)					<5.0				<5.0				<5.0				<5.0
N-Nitrosodiethylamine (µg/L)					<5.0				<5.0				<5.0				<5.0
N-Nitrosodimethylamine (µg/L)					<5.0				<5.0				<5.0				<5.0
N-nitrosodiphenylamine (µg/L)					<5.0				<5.0				<5.0				<5.0
N-Nitrosomethyl-ethylamine (µg/L)					<5.0				<5.0				<5.0				<5.0
N-Nitrosopiperidine (µg/L)					<5.0				<5.0				<5.0				<5.0
N-Nitrosopyrrolidine (µg/L)					<5.0				<5.0				<5.0				<5.0
Nitrobenzene (µg/L)					<5.0				<5.0				<5.0				<5.0
o,o,o-Triethylphosphorothioate (µg/L)					<1.0				<2.0				<1.0				<2.0
o-Toluidine (µg/L)					<5.0				<5.0				<5.0				<5.0
p-Phenylenediamine (µg/L)					<5.0				<5.0				<5.0				<5.0
Pentachlorobenzene (µg/L)					<5.0				<5.0				<5.0				<5.0
Pentachloronitrobenzene (µg/L)					<5.0				<5.0				<5.0				<5.0
Pentachlorophenol (µg/L)					<25				<25				<25				<25
Phenacetin (µg/L)					<5.0				<5.0				<5.0				<5.0
Phenanthrene (µg/L)					<5.0				<5.0				<5.0				<5.0
Phenol (µg/L)					<5.0				<5.0				<5.0				<5.0
Pyrene (µg/L)					<5.0				<5.0				<5.0				<5.0
sym-Trinitrobenzene (µg/L)					<5.0				<5.0				<5.0				<5.0
Unclassified																	
1,2-Dinitrobenzene (µg/L)					<5.0				<5.0				<5.0				<5.0
p-Aminoazobenzene (µg/L)					<5.0				<5.0				<5.0				<5.0

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Parameter		Area V Cell 3 Secondary Leachate				Area IV Cell 1 Primary Leachate				Area IV Cell 1 Secondary Leachate				Area IV Cell 2 Primary Leachate			
		March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19
Volatile Organic Compounds																	
Pyridine (µg/L)					<5.0				<5.0				<5.0				<5.0
Dioxins and Furans																	
1,2,3,4,6,7,8,9-OCDD (ng/L)					<50				<50				<50				<50
1,2,3,4,6,7,8,9-OCDF (ng/L)					<50				<50				<50				<50
1,2,3,4,6,7,8-HpCDD (ng/L)					<25				<25				<25				<25
1,2,3,4,6,7,8-HpCDF (ng/L)					<25				<25				<25				<25
1,2,3,4,7,8,9-HpCDF (ng/L)					<25				<25				<25				<25
1,2,3,4,7,8-HxCDD (ng/L)					<25				<25				<25				<25
1,2,3,4,7,8-HxCDF (ng/L)					<25				<25				<25				<25
1,2,3,6,7,8-HxCDD (ng/L)					<25				<25				<25				<25
1,2,3,6,7,8-HxCDF (ng/L)					<25				<25				<25				<25
1,2,3,7,8,9-HxCDD (ng/L)					<25				<25				<25				<25
1,2,3,7,8,9-HxCDF (ng/L)					<25				<25				<25				<25
1,2,3,7,8-PeCDD (ng/L)					<25				<25				<25				<25
1,2,3,7,8-PeCDF (ng/L)					<25				<25				<25				<25
2,3,4,6,7,8-HxCDF (ng/L)					<25				<25				<25				<25
2,3,4,7,8-PeCDF (ng/L)					<25				<25				<25				<25
2,3,7,8-TCDD (ng/L)					<10				<10				<10				<10
2,3,7,8-TCDF (ng/L)					<10				<10				<10				<10
Total HpCDD (ng/L)					<25				<25				<25				<25
Total HpCDF (ng/L)					<25				<25				<25				<25
Total HxCDD (ng/L)					<25				<25				<25				<25
Total HxCDF (ng/L)					<25				<25				<25				<25
Total PeCDD (ng/L)					<25				<25				<25				<25
Total PeCDF (ng/L)					<25				<25				<25				<25
Total TCDD (ng/L)					<10				<10				<10				<10
Total TCDF (ng/L)					<10				<10				<10				<10
Other Part 360 Leachate Indicators																	
Sulfide (mg/L)					<0.1				0.11				<0.1				<0.1
Tin (µg/L)					<2.6				<2.6				<2.6				2.94
Herbicides																	
2,4,5-T (µg/L)					<2.0				<2.0				<2.0				<2.0
2,4,5-TP (Silvex) (µg/L)					<2.0				<2.0				<2.0				<2.0
2,4-D (µg/L)					<5.0				<5.0				<5.0				<5.0

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2018 PRIMARY AND SECONDARY LEACHATE DATA INTERNATIONAL PAPER LANDFILL AREAS IV, V AND VI

Parameter	Area IV Cell 2 Secondary Leachate				Area VI Primary Leachate				Area VI Secondary Leachate			
	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19
Area IV/V Leachate Indicators												
Alkalinity (mg/L)	1,170	1,190	1,140	260	4,900	5,900	790	3,600	740	760	790	640
Ammonia (mg/L)	<0.1	0.2	0.4	12.9	74	200	61.8	60.4	0.1	0.2	<0.1	0.3
Biochemical Oxygen Demand (BOD) (mg/L)	<6.0	<4.0	<6.0	7	822	746	64	315	6	3.5	47.6	18
Bromide (mg/L)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chemical Oxygen Demand (COD) (mg/L)	27	17	19	201	1,240	2,020	251	551	17	20	133	63
Chloride (mg/L)	15.2	15.8	14.1	99.4	141	185	77.9	90.1	9	8.94	6.1	11.5
Color (Pt-Co)	10	8	10	270	300	500	120	450	5	5	45	25
Cyanide (µg/L)	<0.01	<0.01	<0.01	<0.01	0.25	0.26	<0.01	0.21	<0.01	<0.01	<0.01	<0.01
Hardness (mg/L)	417	402	442	1112	1,303	1,118	717	853	579	550	412	420
Nitrate (mg/L)	0.05	<0.040	0.05	33.4	0.05	<0.040	0.06	0.05	<0.4	<0.040	<0.04	0.05
Sulfate (mg/L)	609	647	641	914	136	417	299	343	291	320	353	182
Total Dissolved Solids (TDS) (mg/L)	2,100	2040	2,110	4,460	5,900	7930	1,870	4,410	1,180	1160	1,200	1010
Total Kjeldahl Nitrogen (TKN) (mg/L)	1.7	1.7	1.4	16.5	79.8	193	56.6	4.5	<1.0	<1.0	1.7	18.2
Total Organic Carbon (TOC) (mg/L)	8	7.9	13.1	78.6	316	572	65.9	75.3	5.6	6.7	53.6	22.1
Total Phenols (mg/L)	<0.004	<0.004	<0.004	<0.004	0.039	0.109	0.011	0.167	<0.004	<0.004	0.006	<0.004
Area IV/V Routine Metals												
Cadmium (µg/L)	<2.1	<2.1	<1.0	<1.0	<2.1	<2.1	<1.0	<1.0	<2.1	<2.1	<1.0	<1.0
Calcium (µg/L)	103,000	101,000	112,000	258,000	144,000	152,000	184,000	138,000	164,000	154,000	119,000	117,000
Iron (µg/L)	970	534	676	733	21,900	8,330	3,750	1,030	858	4,610	9,510	2,830
Lead (µg/L)	<2.5	<2.5	<2.8	<2.8	<2.5	<2.5	<2.8	<2.8	<2.5	<2.5	<2.8	<2.8
Magnesium (µg/L)	39,000	36,200	39,600	114,000	229,000	179,000	62,500	124,000	41,400	39,900	27,900	31300
Manganese (µg/L)	36.1	19	32.7	513	560	880	964	426	80	1,790	4,700	791
Potassium (µg/L)	74,700	62,900	66,800	219,000	364,000	541,000	96,400	290,000	14,700	11,400	12,000	9,460
Sodium (µg/L)	520,000	621,000	592,000	987,000	1,360,000	2,340,000	357,000	1,040,000	184,000	230,000	299,000	190,000
Area IV/V Routine VOAs												
1,1-Dichloroethane (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Butanone (µg/L)	<10	<10	<10	<10	360	4,300	12	<10	<10	<10	<10	<10
4-Methyl 2-pentanone (µg/L)	<10	<10	<10	<10	<50	<1,000	<10	<10	<10	<10	<10	<10
Acetone (µg/L)	<10	<10	<10	<10	600	2,600	33	<10	<10	<10	29	<10
Benzene (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Carbon disulfide (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroform (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Ethyl benzene (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Methylene Chloride (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Toluene (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	12	<5.0	<5.0	<5.0	<5.0	<5.0
Xylene (total) (µg/L)	<10	<10	<10	<10	<50	<1,000	<10	<10	<10	<10	<10	<10
Field or Physical												
Conductivity (µmhos/cm)	2,890	3,130	3,310	6,080	7,890	10,300	3,500	6,560	1,700	1,810	2,070	1,650
pH (s.u.)	7.17	6.99	6.19	7.27	7.8	7.22	6.69	6.56	6.96	6.82	6.73	6.68
Redox (mV)		-26	8	21		-387	-304	-385		-87	-129	-222
Temperature (deg C)	12.6	16	16	16.5	10.3	17	17	11.3	12.7	18	18	10.9
Turbidity (NTU)	6	6	6	11	522	207	49	83	4	23	6	12
Part 360 Baseline Metals												
Aluminum (µg/L)	<20.7	<20.7	<29.4	<29.4	1400	214	<29.4	<29.4	<20.7	<20.7	<29.4	<29.4
Antimony (µg/L)	<2.5	<2.5	<6.7	23.7	<2.5	4.27	<6.7	<6.7	<2.5	4.43	<6.7	<6.7
Arsenic (µg/L)	<2.7	<2.700	<5.3	25.1	23.8	44.2	20.1	46.8	4.45	2.72	<5.3	6.04
Barium (µg/L)	87.6	69.8	69.5	112	173	260	164	194	73.7	78.6	102	67.6
Beryllium (µg/L)	<2.4	<2.4	<1.0	<1.0	<2.4	<2.4	<1.0	<1.0	<2.4	<2.4	<1.0	<1.0
Boron (ug/L)	352	347	354	172	248	293	127	220	29.6	28.8	<8.6	39.1
Chromium (Hexavalent) (µg/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02

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2018 PRIMARY AND SECONDARY LEACHATE DATA INTERNATIONAL PAPER LANDFILL AREAS IV, V AND VI

Parameter	Area IV Cell 2 Secondary Leachate				Area VI Primary Leachate				Area VI Secondary Leachate			
	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19
Chromium (Total) (µg/L)	4.25	<4.2	7.73	<4.0	<4.2	5.04	<4.0	<4.0	5.78	519	<4.0	173
Cobalt (µg/L)	<2.1	<2.1	1.25	8.55	22.5	7.7	7.86	5.21	<2.1	14	29.9	1.61
Copper (µg/L)	6.22	<4.6	4	10.7	15	<4.6	9.25	<2.1	9.04	9.98	5.05	<2.1
Mercury (µg/L)	<0.1	<0.1	<0.1	<0.12	<0.1	0.1	<0.1	<0.12	<0.1	<0.1	<0.1	<0.12
Nickel (µg/L)	10.3	6.71	6.24	21.7	40.9	18.3	12.8	18.8	6.16	190	17.2	40.5
Selenium (µg/L)	<3.4	<3.4	<3.5	<3.5	<3.4	<3.4	<3.5	<3.5	<3.4	<3.4	<3.5	<3.5
Silver (µg/L)	<3.7	<3.7	<8.0	<8.0	<3.7	<3.7	<8.0	<8.0	<3.7	3.7	<8.0	<8.0
Thallium (µg/L)	<7.8	14.3	<5.1	24.1	11.6	20.8	43.7	12	<7.8	<7.8	30.7	5.29
Vanadium (µg/L)	<4.4	<4.4	<8.0	21.9	15.5	13.8	<8.0	<8.0	<4.4	<4.4	<8.0	<8.0
Zinc (µg/L)	9.43	8.91	6.65	10.2	56.2	8.77	10.4	<4.6	5.97	16.8	12.4	<4.6
Part 360 Baseline Volatile Organics												
1,1,1,2-Tetrachloroethane (µg/L)	<10	<10	<10	<5.0	<50	<1000	<10	<5.0	<10	<10	<10	<5.0
1,1,1-Trichloroethane (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2,2-Tetrachloroethane (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2-Trichloroethane (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethene (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2,3-Trichloropropane (µg/L)	<10	<10	<10	<5.0	<50	<1000	<10	<5.0	<10	<10	<10	<5.0
1,2-Dibromo-3-chloropropane (µg/L)	<10	<10	<10	<10	<50	<1000	<10	<10	<10	<10	<10	<10
1,2-Dibromoethane (µg/L)	<10	<10	<10	<5.0	<50	<1000	<10	<5.0	<10	<10	<10	<5.0
1,2-Dichlorobenzene (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloroethane (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloropropane (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,3-Dichlorobenzene (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Hexanone (µg/L)	<10	<10	<10	<10	<50	<1000	<10	<10	<10	<10	<10	<10
Acrylonitrile (µg/L)	<25	<25	<25	<25	<120	<2500	<25	<25	<25	<25	<25	<25
Bromochloromethane (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromodichloromethane (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromoform (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromomethane (µg/L)	<10	<10	<10	<10	<50	<1000	<10	<10	<10	<10	<10	<10
Carbon tetrachloride (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chlorobenzene (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroethane (µg/L)	<10	<10	<10	<10	<50	<1000	<10	<10	<10	<10	<10	<10
Chloromethane (µg/L)	<10	<10	<10	<10	<50	<1000	<10	<10	<10	<10	<10	<10
cis-1,2-Dichloroethene (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
cis-1,3-Dichloropropene (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dibromochloromethane (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Dibromomethane (µg/L)	<10	<10	<10	<5.0	<50	<1000	<10	<5.0	<10	<10	<10	<5.0
Methyl Iodide (µg/L)	<10	<10	<10	<10	<50	<1000	<10	<10	<10	<10	<10	<10
Styrene (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Tetrachloroethene (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,2-Dichloroethene (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,3-Dichloropropene (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,4-Dichloro-2-butene (µg/L)	<10	<10	<10	<10	<50	<1000	<10	<10	<10	<10	<10	<10
Trichloroethene (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Trichlorofluoromethane (µg/L)	<5.0	<5.0	<5.0	<5.0	<25	<500	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Vinyl Acetate (µg/L)	<10	<10	<10	<10	<50	<1000	<10	<10	<10	<10	<10	<10
Vinyl Chloride (µg/L)	<10	<10	<10	<10	<50	<1000	<10	<10	<10	<10	<10	<10
Leachate Indicator/Inorganic Parameters												
Phosphorous as P (mg/L)					0.72	0.61	0.34	0.81				
Part 360 Expanded VOCs												

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2018 PRIMARY AND SECONDARY LEACHATE DATA INTERNATIONAL PAPER LANDFILL AREAS IV, V AND VI

Parameter	Area IV Cell 2 Secondary Leachate				Area VI Primary Leachate				Area VI Secondary Leachate			
	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19
1,1-Dichloropropene (µg/L)				<5.0				<5.0				<5.0
1,2,4-Trichlorobenzene (µg/L)				<5.0				<5.0				<5.0
1,3-Dichloropropane (µg/L)				<5.0				<5.0				<5.0
2,2'-oxybis(1-Chloropropane) ug/L)				<5.0				<5.0				<5.0
2,2-Dichloropropane (µg/L)				<5.0				<5.0				<5.0
Acrolein (µg/L)				<100				<100				<100
Allyl Chloride (µg/L)				<10				<10				<10
Chloroprene (µg/L)				<20				<20				<20
Dichlorodifluoromethane (µg/L)				<10				<10				<10
Ethyl Methacrylate (µg/L)				<10				<10				<10
Hexachlorobutadiene (µg/L)				<5.0				<5.0				<5.0
Isobutyl Alcohol (µg/L)				<200				<200				<200
Methacrylonitrile (µg/L)				<100				<100				<100
Methyl Methacrylate (µg/L)				<5.0				<5.0				<5.0
Naphthalene (µg/L)				<5.0				<5.0				<5.0
Propionitrile (µg/L)				<100				<100				<100
Pesticides												
4,4'-DDD (µg/L)				<0.1				<0.1				<0.1
4,4'-DDE (µg/L)				<0.1				<0.1				<0.1
4,4'-DDT (µg/L)				<0.1				<0.1				<0.1
Aldrin (µg/L)				<0.05				<0.05				<0.05
alpha-BHC (µg/L)				<0.05				<0.05				<0.05
alpha-Chlordane (µg/L)				<0.05				<0.05				<0.05
beta-BHC (µg/L)				<0.05				<0.05				<0.05
delta-BHC (µg/L)				<0.05				<0.05				<0.05
Diallate (µg/L)				<5.0				<5.0				<5.0
Dieldrin (µg/L)				<0.1				<0.1				<0.1
Dimethoate (µg/L)				<1.0				<4.0				<1.0
Diphenylamine (µg/L)				<5.0				<5.0				<5.0
Disulfoton (µg/L)				<1.0				<4.0				<1.0
Endosulfan I (µg/L)				<0.05				<0.05				<0.05
Endosulfan II (µg/L)				<0.1				<0.1				<0.1
Endosulfan Sulfate (µg/L)				<0.1				<0.1				<0.1
Endrin (µg/L)				<0.1				<0.1				<0.1
Endrin aldehyde (µg/L)				<0.1				<0.1				<0.1
Endrin ketone (µg/L)				<0.1				<0.1				<0.1
gamma-BHC (Lindane) (µg/L)				<0.05				<0.05				<0.05
gamma-Chlordane (µg/L)				<0.05				<0.05				<0.05
Heptachlor (µg/L)				<0.05				<0.05				<0.05
Heptachlor epoxide (µg/L)				<0.05				<0.05				<0.05
Kepone (µg/L)				<5.0				<5.0				<5.0
Methoxychlor (µg/L)				<0.05				<0.05				<0.05
Methyl parathion (µg/L)				<1.0				<4.0				<1.0
Parathion (æg/L)				<1.0				<4.0				<1.0
Phorate (µg/L)				<1.0				<4.0				<1.0
Pronamide (µg/L)				<5.0				<5.0				<5.0
Safrole (µg/L)				<5.0				<5.0				<5.0
Thionazin (µg/L)				<1.0				<4.0				<1.0
Toxaphene (µg/L)				<0.5				<0.5				<0.5
Polychlorinated Biphenyls												
Aroclor 1016 (µg/L)				<0.065				<0.065				<0.065

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2018 PRIMARY AND SECONDARY LEACHATE DATA INTERNATIONAL PAPER LANDFILL AREAS IV, V AND VI

Parameter	Area IV Cell 2 Secondary Leachate				Area VI Primary Leachate				Area VI Secondary Leachate			
	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19
Aroclor 1221 (µg/L)				<0.065				<0.065				<0.065
Aroclor 1232 (µg/L)				<0.065				<0.065				<0.065
Aroclor 1242 (µg/L)				<0.065				<0.065				<0.065
Aroclor 1248 (µg/L)				<0.065				<0.065				<0.065
Aroclor 1254 (µg/L)				<0.065				<0.065				<0.065
Aroclor 1260 (µg/L)				<0.065				<0.065				<0.065
Semi-volatile Organic Compounds												
1,2,4,5-Tetrachlorobenzene (µg/L)				<5.0				<5.0				<5.0
1,3-Dinitrobenzene				<5.0				<5.0				<5.0
1,4-Naphthoquinone (µg/L)				<5.0				<5.0				<5.0
1-Naphthylamine (µg/L)				<5.0				<5.0				<5.0
2,3,4,6-Tetrachlorophenol (µg/L)				<5.0				<5.0				<5.0
2,4,5-Trichlorophenol (µg/L)				<5.0				<5.0				<5.0
2,4,6-Trichlorophenol (µg/L)				<5.0				<5.0				<5.0
2,4-Dichlorophenol (µg/L)				<5.0				<5.0				<5.0
2,4-Dimethylphenol (µg/L)				<5.0				**7.6**				<5.0
2,4-Dinitrophenol (µg/L)				<25				<25				<25
2,4-Dinitrotoluene (µg/L)				<5.0				<5.0				<5.0
2,6-Dichlorophenol (µg/L)				<5.0				<5.0				<5.0
2,6-Dinitrotoluene (µg/L)				<5.0				<5.0				<5.0
2-Acetylaminofluorene (µg/L)				<5.0				<5.0				<5.0
2-Chloronaphthalene (µg/L)				<5.0				<5.0				<5.0
2-Chlorophenol (µg/L)				<5.0				<5.0				<5.0
2-Methylnaphthalene (µg/L)				<5.0				<5.0				<5.0
2-Methylphenol (µg/L)				<5.0				<5.0				<5.0
2-Naphthylamine (µg/L)				<5.0				<5.0				<5.0
2-Nitroaniline (µg/L)				<25				<25				<25
2-Nitrophenol (µg/L)				<5.0				<5.0				<5.0
3,3'-Dichlorobenzidine (µg/L)				<10				<10				<10
3,3'-Dimethylbenzidine (ug/L)				<5.0				<5.0				<5.0
3-Methylcholanthrene (µg/L)				<5.0				<5.0				<5.0
3-Nitroaniline (µg/L)				<25				<25				<25
4,6-Dinitro-2-methylphenol (µg/L)				<25				<25				<25
4-Aminobiphenyl (µg/L)				<5.0				<5.0				<5.0
4-Bromophenyl phenyl ether (µg/L)				<5.0				<5.0				<5.0
4-Chloro-3-methylphenol (µg/L)				<5.0				<5.0				<5.0
4-Chloroaniline (µg/L)				<5.0				<5.0				<5.0
4-Chlorophenyl phenyl ether (µg/L)				<5.0				<5.0				<5.0
4&3-Methylphenol (µg/L)				<5.0				**19**				<5.0
4-Nitroaniline (µg/L)				<25				<25				<25
4-Nitrophenol (µg/L)				<25				<25				<25
5-Nitro-o-toluidine (µg/L)				<5.0				<5.0				<5.0
7,12-Dimethylbenz(a)anthracene (µg/L)				<5.0				<5.0				<5.0
Acenaphthene (µg/L)				<5.0				<5.0				<5.0
Acenaphthylene (µg/L)				<5.0				<5.0				<5.0
Acetonitrile (µg/L)				<200				<200				<200
Acetophenone (µg/L)				<5.0				<5.0				<5.0
Anthracene (µg/L)				<5.0				<5.0				<5.0
Benzo(a)anthracene (µg/L)				<5.0				<5.0				<5.0
Benzo(a)pyrene (µg/L)				<5.0				<5.0				<5.0
Benzo(b)fluoranthene (µg/L)				<5.0				<5.0				<5.0

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Parameter	Area IV Cell 2 Secondary Leachate				Area VI Primary Leachate				Area VI Secondary Leachate			
	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19
Benzo(ghi)perylene (µg/L)				<5.0				<5.0				<5.0
Benzo(k)fluoranthene (µg/L)				<5.0				<5.0				<5.0
bis(2-chloroethoxy) methane (µg/L)				<5.0				<5.0				<5.0
bis(2-Chloroethyl) ether (µg/L)				<5.0				<5.0				<5.0
bis(2-Ethylhexyl) phthalate (µg/L)				<5.0				<5.0				<5.0
Butyl benzyl phthalate (µg/L)				<5.0				<5.0				<5.0
Chlorobenzilate (µg/L)				<5.0				<5.0				<5.0
Chrysene (µg/L)				<5.0				<5.0				<5.0
Di-n-butyl phthalate (µg/L)				<5.0				<5.0				<5.0
Di-n-octyl phthalate (µg/L)				<5.0				<5.0				<5.0
Dibenz(a,h)anthracene (µg/L)				<5.0				<5.0				<5.0
Dibenzofuran (µg/L)				<5.0				<5.0				<5.0
Diethyl phthalate (µg/L)				<5.0				<5.0				<5.0
Dimethyl phthalate (µg/L)				<5.0				<5.0				<5.0
Ethyl methanesulfonate (µg/L)				<5.0				<5.0				<5.0
Famphur (µg/L)				<1.0				<4.0				<1.0
Fluoranthene (µg/L)				<5.0				<5.0				<5.0
Fluorene (µg/L)				<5.0				<5.0				<5.0
Hexachlorobenzene (µg/L)				<5.0				<5.0				<5.0
Hexachlorocyclopentadiene (µg/L)				<10				<10				<10
Hexachloroethane (µg/L)				<10				<10				<10
Hexachloropropene (µg/L)				<5.0				<5.0				<5.0
Indeno(1,2,3-cd)pyrene (µg/L)				<5.0				<5.0				<5.0
Isodrin (µg/L)				<5.0				<5.0				<5.0
Isophorone (µg/L)				<5.0				<5.0				<5.0
Isosafrole (µg/L)				<5.0				<5.0				<5.0
Methapyrilene (µg/L)				<5.0				<5.0				<5.0
Methyl methanesulfonate (µg/L)				<5.0				<5.0				<5.0
N-Nitroso-Di-n-propylamine (µg/L)				<5.0				<5.0				<5.0
N-Nitrosodi-n-butylamine (µg/L)				<5.0				<5.0				<5.0
N-Nitrosodiethylamine (µg/L)				<5.0				<5.0				<5.0
N-Nitrosodimethylamine (µg/L)				<5.0				<5.0				<5.0
N-nitrosodiphenylamine (µg/L)				<5.0				<5.0				<5.0
N-Nitrosomethyl-ethylamine (µg/L)				<5.0				<5.0				<5.0
N-Nitrosopiperidine (µg/L)				<5.0				<5.0				<5.0
N-Nitrosopyrrolidine (µg/L)				<5.0				<5.0				<5.0
Nitrobenzene (µg/L)				<5.0				<5.0				<5.0
o,o,o-Triethylphosphorothioate (µg/L)				<1.0				<4.0				<1.0
o-Toluidine (µg/L)				<5.0				<5.0				<5.0
p-Phenylenediamine (µg/L)				<5.0				<5.0				<5.0
Pentachlorobenzene (µg/L)				<5.0				<5.0				<5.0
Pentachloronitrobenzene (µg/L)				<5.0				<5.0				<5.0
Pentachlorophenol (µg/L)				<25				<25				<25
Phenacetin (µg/L)				<5.0				<5.0				<5.0
Phenanthrene (µg/L)				<5.0				<5.0				<5.0
Phenol (µg/L)				<5.0				<5.0				<5.0
Pyrene (µg/L)				<5.0				<5.0				<5.0
sym-Trinitrobenzene (µg/L)				<5.0				<5.0				<5.0
Unclassified												
1,2-Dinitrobenzene (µg/L)				<5.0				<5.0				<5.0
p-Aminoazobenzene (µg/L)				<5.0				<5.0				<5.0

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2018 PRIMARY AND SECONDARY LEACHATE DATA INTERNATIONAL PAPER LANDFILL AREAS IV, V AND VI

Parameter	Area IV Cell 2 Secondary Leachate				Area VI Primary Leachate				Area VI Secondary Leachate			
	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19	March-19	June-19	September-19	December-19
Volatile Organic Compounds												
Pyridine (µg/L)				<5.0				<5.0				<5.0
Dioxins and Furans												
1,2,3,4,6,7,8,9-OCDD (ng/L)				<50				<50				<50
1,2,3,4,6,7,8,9-OCDF (ng/L)				<50				<50				<50
1,2,3,4,6,7,8-HpCDD (ng/L)				<25				<25				<25
1,2,3,4,6,7,8-HpCDF (ng/L)				<25				<25				<25
1,2,3,4,7,8,9-HpCDF (ng/L)				<25				<25				<25
1,2,3,4,7,8-HxCDD (ng/L)				<25				<25				<25
1,2,3,4,7,8-HxCDF (ng/L)				<25				<25				<25
1,2,3,6,7,8-HxCDD (ng/L)				<25				<25				<25
1,2,3,6,7,8-HxCDF (ng/L)				<25				<25				<25
1,2,3,7,8,9-HxCDD (ng/L)				<25				<25				<25
1,2,3,7,8,9-HxCDF (ng/L)				<25				<25				<25
1,2,3,7,8-PeCDD (ng/L)				<25				<25				<25
1,2,3,7,8-PeCDF (ng/L)				<25				<25				<25
2,3,4,6,7,8-HxCDF (ng/L)				<25				<25				<25
2,3,4,7,8-PeCDF (ng/L)				<25				<25				<25
2,3,7,8-TCDD (ng/L)				<10				<10				<10
2,3,7,8-TCDF (ng/L)				<10				<10				<10
Total HpCDD (ng/L)				<25				<25				<25
Total HpCDF (ng/L)				<25				<25				<25
Total HxCDD (ng/L)				<25				<25				<25
Total HxCDF (ng/L)				<25				<25				<25
Total PeCDD (ng/L)				<25				<25				<25
Total PeCDF (ng/L)				<25				<25				<25
Total TCDD (ng/L)				<10				<10				<10
Total TCDF (ng/L)				<10				<10				<10
Other Part 360 Leachate Indicators												
Sulfide (mg/L)				<0.1				0.65				<0.1
Tin (µg/L)				<2.6				<2.6				<2.6
Herbicides												
2,4,5-T (µg/L)				<2.0				<2.0				<2.0
2,4,5-TP (Silvex) (µg/L)				<2.0				<2.0				<2.0
2,4-D (µg/L)				<5.0				<5.0				<5.0