

BIANNUAL SURFACE WATER AND BIOLOGICAL STREAM SAMPLING AROUND RUMPKE AND BOND ROAD LANDFILLS

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Introduction

Hamilton County Public Health conducted biannual sampling of the surface water streams around the Rumpke Colerain Sanitary Landfill on May 27 and October 27, 2020. Additionally, biannual sampling of Bond Road Sanitary Landfill was conducted on June 16 and November 19, 2020.

This report was generated to document completion of portions of the service agreement between the Board of County Commissioners of Hamilton County on behalf of the Hamilton County Solid Waste Management District and the Hamilton County General Health District. Portions of the agreement include:

SCOPE OF SERVICES

VII. Surface Water Testing

- A. Identify surface water that may reasonably be expected to be impacted by a solid waste facility, or an open dump, and is on property adjacent to or within 1,000 feet of property on which a solid waste facility, or an open dump, is located.
- C. Surface water testing for active municipal solid waste landfills shall be conducted twice a year. Testing shall include water sampling for toxic compounds and contamination and macroinvertebrate assays in potentially-affected streams. All surface water testing shall be conducted using Ohio EPA regulations contained in Chapter 3745-1-03 of the Administrative Code as a guideline.

Sampling Locations

Rumpke Colerain Sanitary Landfill, located in Colerain Township, Hamilton County, Ohio, is situated at the northeast intersection of US-27 and Struble Road. The landfill is bordered by Struble Road to the south, US-27 to the west, Bank Road to the northwest and Hughes Road to the east/northeast.

Two sedimentation ponds are located on the site, identified as the NW Pond and SE Pond. The sedimentation ponds collect rainwater run-off from the landfill and settle out the suspended solids/silt prior to discharging into the adjacent streams and creeks.

Generally, two watersheds surround the landfill: the western watershed and the eastern watershed. The NW Pond discharges into the western watershed, while the SE Pond discharges into the eastern watershed. The sampling locations around the landfill consists of the two sedimentation pond outfalls, and their respective upstream and downstream locations (Figure 1).

NW Pond

The discharge/outfall location for the sedimentation pond located on the west/northwest portion of the landfill. The pond discharges into the western

watershed surrounding the landfill where Banklick creek borders the landfill and flows north/northeasterly along Bank Road.

- S-1 The furthest downstream location from the NW Pond outfall at the northern end of the landfill in Banklick creek along Bank Road. This is generally a creek with a series of riffles and pools. The bottom is silty in the pool areas and rocky in the riffle areas.
- S-2 Located downstream from the NW Pond outfall and at the western edge of the landfill, upstream from S-1, in Banklick creek along Bank Road. The sampling location is west of the overpass below the culvert in a small, shallow pool. The bottom is silty in the pool areas and rocky to solid bedrock in the shallow riffle areas.
- S-3 Located upstream, above the NW pond outfall, in an unnamed stream west of Banklick creek. The sampling location is a series of very small, shallow pools and riffles. The bottom is solid rock to rocky with some silt.
- S-11 Located upstream, above the NW pond discharge, in a stream west/southwest of the landfill, across US-27. The stream consists of very small shallow pools. The sampling location was added in 2014 as an additional upstream location.

SE Pond

The discharge/outfall location for the sedimentation pond located on the southeast portion of the landfill. The pond discharges into the eastern watershed surrounding the landfill in an unnamed stream east of the landfill, across Hughes Road.

- S-9 Located upstream, above the SE Pond outfall, and east of the landfill in an unnamed stream east of Hughes Road and west of Buell Road. The sample location consists of a series of very small, shallow pools with a rocky bottom. The sample location was added in 2008 due to the southern expansion of the landfill.
- S-10 Located downstream from the SE Pond outfall, in an unnamed stream east of the landfill. The sample location consists of a series of small, shallow pools with a rocky bottom. The sample location was added in 2008 due to the southern expansion of the landfill.
- S-12 The furthest downstream location from the SE Pond outfall, located at the northern end of the landfill, in an unnamed stream that flows along Buell Road to Crest Road and eventually into Banklick Creek. The sample location was added in 2019 due to the eastern expansion of the landfill and consists of ponding pools and rocky bottom.

Bond Road Sanitary Landfill, located in Whitewater Township, is situated in western Hamilton County, Ohio. The landfill borders Indiana to the west and Bond Road to the north. In 2021, Rumpke purchased 466 acres of land south of the existing landfill for

purposes of future development and improvements to the site. Sampling locations around the Bond Road Sanitary Landfill consists of the following two sites (Figure 2).

- B-1** Located at the east end of the sedimentation pond which discharges to a tributary to Fox Run.
- B-2** Located on the south end of the landfill near the leachate sums. Most water is generated from storm swales from the landfill and is typically dry. This area channels down to an unnamed tributary to Fox Run, which exits the property near the sampling location.

Methods

Surface water sampling was conducted in the Spring and Fall by obtaining grab samples in streams around each of the landfills where possible. Generally, Spring sampling is more influenced by precipitation and Fall sampling is more influenced by groundwater. Efforts are made to collect the samples during low flow times where groundwater contributions are considered to be greater. This monitoring was performed to serve as an indicator of water quality above and below each landfill.

Samples were collected in polyethylene wide-mouth jars ranging in size from 250 mL to 500 mL and two set of hypovials for sampling volatile organic compounds. Depending on the sampling parameter, samples were either unpreserved or preserved with hydrochloric acid, sulfuric acid, nitric acid, or sodium hydroxide (as required). All samples were placed in a cooler on ice. Samples were analyzed by TestAmerica Laboratories. Chain-of-custody protocols were followed. Water temperature was recorded using a Taylor thermometer near the sampling location.

Biological water samples were collected at each of the sampling locations. Biological samples were collected using an aquatic kick net with 1000-micron mesh. A kick technique was used to loosen organisms from riffle areas of the streams and then the area was swept with the net. Hand picking of organisms off the rock surfaces was also employed at the sample locations. Biological samples in need of further observation for identification were placed in appropriately labeled 4 oz. Nalgene wide-mouth jars and preserved in 70% isopropyl alcohol and later identified with the aid of a magnifying glass and a Swift instrument variable magnification (1X-4X) binocular microscope.

Results and Discussion

Water Quality Monitoring

Rumpke Sanitary Landfill

The surface water sampling results from the 2020 sample events are presented in Table 1, which include sampling results dating back to 2010.

The western watershed surrounding the landfill consists of upstream sample locations S-3 and S-11, the NW Pond outfall, and downstream sample locations S-1 and S-2. During both 2020 sampling events, the NW Pond outfall was flowing and sampled. Sampling results comparing the NW Pond outfall with upstream sample locations (S-3 & S-11) and downstream sample locations (S-1 & S-2) are illustrated on Figures 3 & 4 and narrated below:

- Chloride was detected below the secondary maximum contaminant level (SMCL) of 250 mg/l in all sample locations during both 2020 sampling events.
- Sulfate was detected below the SMCL of 250 mg/l in all sample locations during both 2020 sampling events.
- With the exception of the samples collected from the NW Pond outfall during both sampling events and upstream sample S-3 during the May sampling event, all other sample locations were above the SMCL of 500 mg/L for total dissolved solids (TDS) during both 2020 sampling events. All levels were within historical results and consistent based on previous year's results.
- Iron was detected above the SMCL of 0.3 mg/l in the NW Pond outfall and sample locations S-1 and S-2 during both 2020 sampling events and in upstream sample location S-3 during the May 2020 sampling event. Upstream sample location S-11 was below the SMCL for iron during both 2020 sampling events. Based on previous year's sampling results, all iron levels were within historical values.
- Manganese was detected above the SMCL of 0.05 mg/l in downstream sample location S-1 and in the NW Pond outfall sample during both 2020 sampling events, and in upstream location S-3 during the May 2020 sampling event. Sample locations S-2 and S-11 were below the SMCL for manganese during both 2020 sampling events. All manganese levels were within historical values.
- No other parameters were above the MCL/SMCL/Action Level.
- Ammonia was not detected (<0.2 mg/L) in either 2020 sampling events. Less than 1.0 mg/l ammonia is considered usual for natural waters, but it is noteworthy due to landfill's history in July 2004, when a leachate seep was discovered in Banklick creek below S-2 but above S-1. Ammonia was used as an indicator to the seep. Ammonia levels in S-1 have remained below 1 mg/l since corrective action was taken in 2004.

The eastern watershed surrounding the landfill consists of upstream sample location S-9, the SE Pond discharge point, and downstream sample locations S-10 and S-12. During both 2020 sampling events, the SE Pond outfall was flowing and sampled. Sampling results comparing the SE Pond outfall with upstream sample location (S-9) and downstream sample locations (S-10 & S-12) are illustrated on Figures 5 & 6 and narrated below:

- Chloride was detected below the secondary maximum contaminant level (SMCL) of 250 mg/l in sample locations during both 2020 sampling events.

- Sulfate was detected below the SMCL of 250 mg/l in all sample locations during both 2020 sampling events.
- Apart from the samples collected from the SE Pond, all sample locations were above the SMCL of 500 mg/L for total dissolved solids (TDS) during both 2020 sampling events. All levels were within historical results and consistent based on previous year's results.
- Iron was detected above the SMCL of 0.3 mg/l in sample locations S-9, S-10 and S-12 during both 2020 sampling events and in the SE Pond sample location during the October 2020 sampling event. Based on previous year's sampling results, all iron levels were within historical values.
- Manganese was detected above the SMCL of 0.05 mg/l in sample locations S-10 and S-12 during both 2020 sampling events, and in the SE Pond sample location during the October 2020 sampling event. Upstream sample location S-9 was below the SMCL for manganese during both 2020 sampling events. All manganese levels were within historical values.
- No other parameters were above the MCL/SMCL/Action Level.
- Ammonia was not detected (<0.2 mg/L) in either 2020 sampling events.

Bond Road Landfill

Surface water sampling at the Bond Road Landfill was conducted at the B-1 location for both sample periods (Table 2). Manganese was detected above the SMCL of 0.3 mg/L for during both 2020 sampling events. No other parameters were above the MCL/SMCL/Action Level. Additionally, ammonia was not detected (<0.2 mg/L) in either 2020 sampling events.

The B-2 location continues to have no flow. Therefore, a sample was not collected.

The water quality continues to appear acceptable in the sedimentation pond on site. This is reflected in the biological monitoring as well (see below).

Biological Monitoring

Biological organisms can provide an indication of water quality based on their typical habitat requirements. For example, organisms such as isopods (sowbugs) inhabit relatively unpolluted shallows. Amphipods (sideswimmers), plecopterans (stoneflies), ephemeropterans (mayflies), some odonatans (dragonflies and damselflies), trichopterans (caddisflies), and turbellarians (flatworms) need an abundance of dissolved oxygen (DO) to survive and are indicative of good stream quality. Hemipterans (water boatman bugs) and some gastropods (pouch snails) are semi-tolerant to low DO. Dipterans (flies,

mosquitos, and midges) are able to live in low DO environments and are much more tolerant of pollution. Some of these organisms can live in only low current streams; in unpolluted clear waters; occur in debris (masses of leaves and algae); occur under stones; occur in vegetation; occur in mud; found in decaying vegetation; or occur only in ponds. These ecological characteristics can provide an indication of a clean versus a polluted environment. Some organisms have specific physical features such as respiratory tubes (Dipteran larva), which enable those organisms to survive in low DO environments or in highly polluted waters.

Table 3 presents the results of biological monitoring around each licensed landfill over both sampling periods. Data is also presented from the 2010 through 2020 monitoring events for comparison.

Rumpke Sanitary Landfill

The Rumpke landfill streams were biologically monitored two times in 2020. In May, the day was cloudy with a temperature around 66° F. In October, the day was cloudy with a temperature around 48° F.

During both 2020 sampling events, the NW Pond outfall was open and discharging into the western watershed of Banklick creek. The stream flow in upstream sample locations of S-3 and S-11 was low with shallow pools of water in the unnamed streams. And downstream sample locations, S-1 and S-2, along Banklick creek was faster with larger pools of water.

- Caddisfly, mayfly, stone fly and sowbugs were observed in May at upstream sample location S-3, while a salamander, water penny, riffle beetle, caddisfly and sowbugs were observed in October.
- Sample location S-11 was added as a sampling station in 2014 as an upstream sample from the landfill. Stream flow at this location was low with very shallow pools of water. Six types of organisms were observed in May, including caddisfly and sowbugs. Three types of organisms were observed in October, including sowbugs.
- Five types of organisms were identified in May at downstream sample location S-1, while six types of organisms were identified in October. Water pennies, riffle beetle, caddisfly and sowbugs were observed during the sampling events.
- Downstream sample location S-2 recorded six organism types in May, including mayfly and over 100 sowbugs. In October, seven types of organisms were identified, including water pennies, riffle beetle, damselfly, and over 100 sowbugs.

The SE Pond was open and discharging into an unnamed stream within the eastern watershed during both 2020 sampling events. The stream flow in upstream sample locations S-9 was very slow with ponding pools, while downstream sample locations, S-10 and S-12, was moderate with larger pools of water.

- Six types of organisms were identified during the May sampling event at upstream sample location S-9, including water pennies, riffle beetle, caddisfly, mayfly, and sowbugs. In October, three types of organisms were identified, including water pennies and sowbugs.
- Six types of organisms were observed in May at downstream sample location S-10, including water pennies, riffle beetle, caddisfly, mayfly and sowbugs. Three types of organisms were observed in October, including water pennies and sowbugs.
- Downstream sample location S-12 was added as a sampling station in 2019 due to the landfill's eastern expansion. The stream is located downstream from where the eastern expansion of the landfill will exist. Eight types of organisms were observed in May, including water pennies, riffle beetle, caddisfly, mayfly, damselfly and sowbugs. Five types of organisms were observed in October, including water pennies, caddisfly, mayfly and sowbugs.

Bond Road Landfill

The Bond Road landfill sedimentation pond, identified as sample location B-1 was biologically monitored two times in 2020. In June, the day was partly cloudy with a temperature around 70° F. In November, the day was partly cloudy with a temperature around 43° F. Samples are typically taken at the southeast corner of the sedimentation pond and in the dissipater box below the pond. Fish, caddisfly, a dragonfly nymph and pouch snails were observed in June, and a sowbug and pouch snails were observed in November.

A B-2 sample could not be collected during either 2020 sample period because the water was not flowing enough to take a sample.

Conclusions

The results of the water quality and biological monitoring conducted in 2020 at Rumpke Sanitary Landfill and Bond Road Landfill are consistent with past sampling periods with some slight variations in number and types of organisms. The continued presence of certain key organisms in the downstream sample locations indicate a relatively unpolluted environment, although stream conditions and seasons seem to primarily affect the number and types of organisms sampled. Biological sampling conducted around both landfills will continue to develop a baseline for aquatic life in the streams and pond. Continued biological sampling will help determine if conditions stay consistent with the water quality data.



Figure 1
Rumpke Sanitary Landfill



Sampling Locations



Figure 2
Bond Road Landfill



Sampling Locations



Figure 3

Comparison of Western Watershed Sampling Locations

May 27, 2020



→ Surface water flow direction

Red indicates above the MCL/SMCL/Action Level

Upstream Sample Locations

S-11
Chloride: 124 mg/L
Sulfate: 132 mg/L
TDS: 675 mg/L
Iron: 0.29 mg/L
Manganese: 0.0199 mg/L
Ammonia: Non-detect

S-3
Chloride: 83.6 mg/L
Sulfate: 60.8 mg/L
TDS: 490 mg/L
Iron: 3.05 mg/L
Manganese: 0.0958 mg/L
Ammonia: Non-detect

Outfall Location

NW Pond
Chloride: 18.5 mg/L
Sulfate: 142 mg/L
TDS: 347 mg/L
Iron: 4.74 mg/L
Manganese: 0.154 mg/L
Ammonia: Non-detect

Downstream Sample Locations

S-2
Chloride: 229 mg/L
Sulfate: 225 mg/L
TDS: 919 mg/L
Iron: 1.13 mg/L
Manganese: 0.0468 mg/L
Ammonia: Non-detect

S-1
Chloride: 84 mg/L
Sulfate: 176 mg/L
TDS: 530 mg/L
Iron: 1.69 mg/L
Manganese: 0.0969 mg/L
Ammonia: Non-detect



Figure 4

Comparison of Western Watershed Sampling Locations
October 27, 2020



Surface water flow direction

Red indicates above the MCL/SMCL/Action Level

Upstream Sample Locations

S-11
Chloride: 179 mg/L
Sulfate: 204 mg/L
TDS: 809 mg/L
Iron: <0.100 mg/L
Manganese: 0.00727 mg/L
Ammonia: Non-detect

S-3
Chloride: 136 mg/L
Sulfate: 85.3 mg/L
TDS: 626 mg/L
Iron: 0.206 mg/L
Manganese: 0.0174 mg/L
Ammonia: Non-detect

Outfall Location

NW Pond
Chloride: 44.6 mg/L
Sulfate: 175 mg/L
TDS: 384 mg/L
Iron: 1.85 mg/L
Manganese: 0.0583 mg/L
Ammonia: Non-detect

Downstream Sample Locations

S-2
Chloride: 187 mg/L
Sulfate: 240 mg/L
TDS: 680 mg/L
Iron: 1.49 mg/L
Manganese: 0.0387 mg/L
Ammonia: Non-detect

S-1
Chloride: 113 mg/L
Sulfate: 207 mg/L
TDS: 538 mg/L
Iron: 1.47 mg/L
Manganese: 0.0672 mg/L
Ammonia: Non-detect



Figure 5

Comparison of Eastern Watershed Sampling Locations
May 27, 2020



→ Surface water flow direction
Red indicates above the MCL/SMCL/Action Level

Upstream Sample Locations

<u>S-9</u>
Chloride: 85.6 mg/L
Sulfate: 80.6 mg/L
TDS: 557 mg/L
Iron: 0.99 mg/L
Manganese: 0.0275 mg/L
Ammonia: Non-detect

Outfall Location

<u>SE Pond</u>
Chloride: 70.6 mg/L
Sulfate: 128 mg/L
TDS: 444 mg/L
Iron: 0.147 mg/L
Manganese: 0.0419 mg/L
Ammonia: Non-detect

Downstream Sample Locations

<u>S-10</u>
Chloride: 82.4 mg/L
Sulfate: 144 mg/L
TDS: 519 mg/L
Iron: 5.68 mg/L
Manganese: 0.171 mg/L
Ammonia: Non-detect

<u>S-12</u>
Chloride: 72.4 mg/L
Sulfate: 109 mg/L
TDS: 503 mg/L
Iron: 1.99 mg/L
Manganese: 0.0935 mg/L
Ammonia: Non-detect



Figure 6

Comparison of Eastern Watershed Sampling Locations
October 27, 2020



➡ Surface water flow direction
Red indicates above the MCL/SMCL/Action Level

Upstream Sample Locations

S-9
Chloride: 156 mg/L
Sulfate: 75.2 mg/L
TDS: 557 mg/L
Iron: 0.444 mg/L
Manganese: 0.0325 mg/L
Ammonia: Non-detect

Outfall Location

SE Pond
Chloride: 75.8 mg/L
Sulfate: 161 mg/L
TDS: 479 mg/L
Iron: 0.321 mg/L
Manganese: 0.129 mg/L
Ammonia: Non-detect

Downstream Sample Locations

S-10
Chloride: 106 mg/L
Sulfate: 179 mg/L
TDS: 560 mg/L
Iron: 1.52 mg/L
Manganese: 0.0712 mg/L
Ammonia: Non-detect

S-12
Chloride: 109 mg/L
Sulfate: 164 mg/L
TDS: 567 mg/L
Iron: 1.34 mg/L
Manganese: 0.0821 mg/L
Ammonia: Non-detect

Table 1.

*=split samples with OEPA
**=low quality control check
associated with TDS results; suspect results accordingly
Bold Face=at/above the MCL or SMCL

Rumpke Sanitary Landfill Surface Water Sampling Results

BDL=Below Detectable Limits

#=Toluene, all others VOC's BD

ND=Not detected at a concentration greater than the LOQ=Limits of Quantitation
ND/(QC)s=not detected at a concentration greater than the CRBL=Client Required

ND(VOC's)=not detected at a concentration greater than the CRRL=Client Requested Reporting Limit

Table 1.

*=split samples with OEPA
**=low quality control check
associated with TDS results; suspect results accordingly
Bold Face=at/above the MCL or SMCL

Rumpke Sanitary Landfill
Surface Water Sampling Results

Standards		Field Temp. °C	Dissolved Oxygen mg/l	TDS mg/l	NH3 mg/l	NO2 - NO3 mg/l - N	Cl mg/l	SO4 mg/l	COD mg/l	P mg/L	Turb. NTU	Cond. umhos/cm	Bicarb mg/l	T. Alk. mg/l	Carb mg/l	pH	Hg mg/L	Ca mg/l	Fe mg/l	Mg mg/l	K mg/l	Na mg/l	Sb mg/l	As mg/l	Ba mg/l	Be mg/l	Cd mg/l	Cr mg/l	Co mg/l	Cu mg/l	Pb mg/l	Mn mg/l	Ni mg/l	Se mg/l	Ag mg/l	Al mg/l	B mg/l	Sr mg/l	Tl mg/l	V mg/l	Zn mg/l	VOCs
							10										0.002																									
	MCL																																									
	SMCL						500										250	250																								
Action Level																																										
Stream Sample	Date																																									
S-3	6/7/2010	-		868	0.215	0.486	268	68.8	<50.0	-	35	1400	-	286	-	8.13	-	148	1.81	21.8	3.5	149	<0.0002	<0.0002	0.0431	<0.0002	<0.0002	<0.000857	<0.003	0.00116	0.0508	<0.006	<0.002	<0.0001				<0.0002	<0.004	<0.009	BDL	
S-3	10/14/2010	-		1,590	0.278	0.0243	577	227	187	-	400	2550	339	340	<20.0	7.38	<0.0002	183	1.67	30	26	364	0.00025	0.00383	0.0776	<0.0002	<0.0003	<0.002	0.00241	<0.006	0.000981	2.56	<0.009	<0.002	<0.0001	<0.003	<0.016	BDL				
S-3	6/28/2011	18.5		528	0.088	0.304	107	44.7	<50.0	0.253	24	873	243	246	<20.0	8.35	<0.0002	104	1.19	13.6	2.26	62.2	<0.001	<0.01	0.0266	<0.001	<0.001	<0.00553	<0.001	0.0327	<0.006	<0.01	<0.005	<0.001	<0.02	<0.02	BDL					
S-3	10/25/2011	10.2		560	0.053	0.17	112	52.2	<50.0	<0.1	11	875	244	246	<20.0	8.23	<0.0002	106	0.429	13	2.63	71	<0.001	<0.01	0.0241	<0.001	<0.001	<0.005	<0.001	0.0107	<0.005	<0.001	<0.025	<0.02	BDL							
S-3	6/7/2012	13.5		620	0.113	0.237	134	72.8	<50.0	0.172	14	1050	275	278	<10.0	8.14	<0.0002	131	0.735	19.6	2.36	71	<0.001	<0.0035	<0.001	<0.001	<0.005	<0.001	0.0201	<0.006	<0.01	<0.005	<0.025	<0.02	BDL							
S-3	10/25/2012	13.2		856	0.115	0.0276	114	46.8	<50.0	0.126	8.9	1380	318	320	<10.0	7.81	<0.0002	143	0.343	21.7	3.22	145	<0.001	<0.01	0.0394	<0.001	<0.001	<0.005	<0.001	0.0398	<0.007	<0.01	<0.005	<0.001	<0.025	<0.02	BDL					
S-3	6/12/2013	17.7		724	<0.2	0.384	199	66.6	<10.0	0.245	16.9	1260	313	313	-	8.15	<0.0002	118	1.56	17.8	2.68	101	<0.002	<0.005	0.0405	<0.001	<0.00207	<0.001	0.0205	0.0012	0.0486	<0.00213	<0.005	<0.001	<0.002	<0.005	0.0224	BDL				
S-3	10/8/2013	11.9		491	<0.200	0.262	108	44.5	17.9	0.23	11.6	937	233	233	-	8.03	<0.0002	95.4	0.715	12.7	2.54	65.3	<0.002	<0.005	0.0271	<0.001	<0.001	<0.002	<0.001	0.0224	<0.001	<0.002	<0.005	<0.001	<0.002	<0.005	BDL					
S-3	5/21/2014	15.1		9.9	805	<0.200	0.416	203	67.7	23.8	0.197	9.31	1220	278	281	<5.00	8.31	<0.0002	135	1.23	18.2	1.98	89.5	<0.002	<0.005	0.0389	<0.001	<0.001	<0.002	<0.001	0.0377	<0.002	<0.005	<0.001	<0.002	<0.005	<0.020	BDL				
S-3	10/27/2014	10.9		11.3	1,060	<0.200	<0.0500	297	74.3	<10.0	0.15	6.54	1680	344	344	<5.00	7.97	<0.0002	143	0.336	23.3	2.93	175	<0.002	<0.005	0.0387	<0.001	<0.001	<0.002	<0.001	0.0451	<0.002	<0.005	<0.001	<0.002	<0.005	<0.020	BDL				
S-3	6/4/2015	16.2		7.5	838	<0.200	0.665	280	71.3	<10.0	0.179	20.2	1530	269	269	<5.00	8.09	<0.0002	147	0.725	23.5	2.74	138	<0.002	<0.005	0.0425	<0.001	<0.001	<0.00254	<0.001	0.0202	<0.005	<0.001	<0.002	<0.005	<0.020	BDL					
S-3	10/6/2015	14.9	9.4	896	<0.200	0.0879	264	59.5	<10.0	0.192	6.85	1480	387	387	<5.00	7.78	<0.0002	128	0.298	21.1	2.81	139	<0.002	<0.005	0.0345	<0.001	<0.001	<0.002	<0.001	0.067	<0.002	<0.005	<0.001	<0.002	<0.005	<0.020	BDL					
S-3	5/25/2016	15.0	12.0	870	<0.02	<0.61	180	72	10	0.17	17	1300	330	330	<4.0	7.9	<0.0002	150	0.63	24	1.8	97	<0.005	<0.005	0.038	<0.002	<0.002	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.010	BDL						
S-3	11/7/2016	9.7		870	<0.26	<0.45	220	55	20	0.18	5	1000	390	390	<4.0	7.9	<0.0005	140	0.26	24	2.8	130	<0.03	<0.01	<0.0004	<0.005	<0.02	<0.004	<0.025	<0.015	<0.05	<0.05	<0.03	<0.01	<0.2	<0.1	0.55	<0.05	<0.05	BDL		
S-3	6/1/2017	17.5		610	<0.200	0.729	116	72.8	<10.0	0.228	6.57	1010	246	274	<10.0	8.3	<0.0002	133	0.366	17.8	1.91	68.1	<0.002	<0.005	0.0293	<0.001	<0.001	<0.002	<0.001	0.0224	<0.002	<0.005	<0.001	0.232	<0.2	0.453	<0.001	<0.005	<0.020	BDL		
S-3	11/9/2017	6.5		457	<0.200	0.352	84	44.2	12.2	0.158	8.34	796	248	253	<5.00	8.2	<0.0002	94.1	0.443	11.4	1.9	53.4	<0.002	<0.005	0.022	<0.001	<0.002	<0.001	<0.001	0.166	<0.002	<0.005	<0.001	0.456	<0.2	0.296	<0.001	<0.005	<0.020	BDL		
S-3	6/4/2018	15.9		702	<0.200	0.457	190	64.4	11.6	0.195	27.1	1230	294	302	<8.32	8.2	<0.0002	123	0.72	18.6	2.29	101	<0.002	<0.005	0.0335	<0.001	<0.001	<0.002	<0.001	0.0459	<0.002	<0.005	<0.001	0.788	<0.100	0.485	<0.001	<0.005	<0.020	BDL		
S-3	10/30/2018			781	<0.200	0.144	180	68.6	<10.0	0.179	5	1310	340	340	<5.00	8	<0.0002	140	0.228	21.6	2.37	106	<0.002	<0.005	0.0307	<0.001	<0.001	<0.002	<0.001	0.0448	<0.002	<0.005	<0.001	0.288	<0.100	0.546	<0.001	<0.005	<0.020	BDL		
S-3	5/22/2019	15.2		714	<0.200	0.653	139	94.4	<10.0	0.179	9.1	1160	288	299	10.8	8.2	<0.0002	136	0.887	19.7	2.12	71.7	<0.002	<0.005	0.0342	<0.001	<0.001	<0.002	<0.001	0.0347	<0.002	<0.005	<0.001	0.863	<0.100	0.536	<0.001	<0.005	<0.020	BDL		
S-3	11/6/2019	9.5		720	<0.200	0.0548	173	103	<10.0	0.105	4.92	1280	283	283	<5.00	8.1	<0.0002	104	0.181	16.4	2.39	102	<0.002	<0.005	0.024	<0.001	<0.001	<0.002	<0.001	0.0139	<0.002	<0.005	<0.001	0.151	<0.100	0.406	<0.001	<0.005	<0.020	BDL		
S-3	5/27/2020	16.7		490	<0.200	0.414	83.6	60.8	<10.0	0.286	17.7	878	258	267	<8.48	8.4	<0.0002	114	3.05	16.2	2.51	55.8	<0.002	<0.005	0.0367	<0.001	<0.001	<0.00315	<0.001	0.0244	<0.00173	<0.00254	<0.005	<0.001	0.601	<0.24	0.94	<0.001	<0.005	<0.020	BDL	
S-3	10/27/2020	10.9		626	<0.200	0.0602	136	85.3	<10.0	0.13	5.73	1130	288	288	<5.00	8.1	<0.0002	112	0.206	17.3	2.81	95.5	<0.002	<0.005	0.0262	<0.001	<0.001	<0.002	<0.001	0.0174	<0.002	<0.005	<0.001	0.247	<0.100	0.448	<0.001	0.0055	<0.020	BDL		
S-9	6/7/2010	-		826	0.108	0.329	304	88.5	<50.0	-	26	1430	-	242	-	8.06	-	130	1.2	19.7	4.99	174	0.00038	<0.002	0.0539	<0.0002	<0.002	0.00076	<0.004	0.00689	0.046	<0.005	<0.002	<0.0001	<0.004	<0.009	BDL					
S-9	10/14/2010			Not Sampled - Dry																																						
S-9	6/28/2011	19.5		608	<0.05	0.322	161	58.9	<50.0	0.192	12	1020	216	218	<20.0	8.25	<0.0002	90.6	0.524	13.5	3.46	96.2	<0.001	<0.01	0.0319	<0.001	<0.001	<0.005	<0.001	0.0099	<0.005	<0.01	<0.0005	<0.001	<0.02	<0.02	BDL					
S-9	10/25/2011	10.4		825	0.129	0.725	263	236	<50.0	<0.1	8.3	1400	89	90	<20.0	8.04	<0.0002	96.7	0.666	23.2	10.8	156	<0.001	<0.01	0.0387	<0.001	<0.001	<0.005	<0.001	0.0502	<0.0075	<0.01	<0.005	<0.001	<0.0275	BDL						
S-9	6/7/2012	14.6		856	0.102	0.666	224	242	<50.0	0.136	25	1380	137	139	<10.0	7.99	<0.0002	104	1.17	26.8	9.62	143	<0.001	<0.01	0.0485	<0.001	<0.001	<0.00505	<0.001	0.044	<0.008	<0.01	<0.005	<0.001	<0.025	<0.04	BDL					
S-9	10/25/2012	14.3		728	0.086	0.027	223	86.5	<50.0	0.227	25	1230	223	224	<10.0	7.72	<0.0002	118	0.533	16.9	4.29	1																				

BDL=Below Detectable Limits

#=Toluene, all others VOC's BD

ND=Not detected at a concentration greater than the LOQ=Limits of Quantitation
ND/(QC)s=not detected at a concentration greater than the CRBL=Client Required

ND(VOC's)=not detected at a concentration greater than the CRRL=Client Requested Reporting Limit

Table 1.
***=split samples with OEPAs**
****=low quality control check**
associated with TDS results; suspect results according
Bold Face=at/above the MCL or SMCL

Rumpke Sanitary Landfill
Surface Water Sampling Results

Standards		Field Temp.	Dissolved Oxygen	TDS mg/l	NH3 mg/l	NO2 - NO3 mg/l - N	Cl mg/l	SO4 mg/l	COD mg/l	P mg/L	Turb. NTU	Cond. umhos/cm	Bicarb mg/l	T. Alk. mg/l	Carb mg/l	pH	Hg mg/L	Ca mg/l	Fe mg/l	Mg mg/l	K mg/l	Na mg/l	Sb mg/l	As mg/l	Ba mg/l	Be mg/l	Cd mg/l	Cr mg/l	Co mg/l	Cu mg/l	Pb mg/l	Mn mg/l	Ni mg/l	Se mg/l	Ag mg/l	Al mg/l	B mg/l	Sr mg/l	Tl mg/l	V mg/l	Zn mg/l	VOCs			
		MCL			10		250	250								0.002							0.006	0.01	2	0.004	0.005	0.1				0.05				0.002									
SMCL			500		250	250										6.5-8.5							0.3								1	0.05			0.1				5						
Action Level																																													
Stream Sample	Date																																												
S-10	6/7/2010	-		770	0.178	1.09	233	148	<50.0	-	75	1210	-	206	-	8.07	-	118	2.8	23.4	8.38	145	0.00036	<0.002	0.0492	<0.0002	<0.0002	<0.002	0.0014	0.00369	0.0017	0.0678	<0.007	<0.002	<0.0001					<0.0002	<0.004	0.0117	BDL		
S-10	10/14/2010		Not Sampled - Dry																																										
S-10	6/28/2011	21.5		838	<0.05	0.539	253	232	<50.0	0.112	21	1360	118	118	<20.0	8.13	<0.0002	84	1.5	21.5	10.2	143	<0.001	<0.01	0.0418	<0.001	<0.001	0.00138	<0.005	0.00115	0.062	<0.008	<0.01	<0.0005	<0.001	<0.02	<0.024	BDL							
S-10	10/25/2011	11.1		554	0.055	0.17	169	62.5	<50.0	0.141	7.9	1050	215	218	<20.0	8.11	<0.0002	97	0.301	13.8	2.9	91.3	<0.001	<0.01	0.0322	<0.001	<0.001	<0.005	<0.001	0.0093	0.01	<0.005	<0.001	<0.02	BDL										
S-10	6/7/2012	14.8		644	0.111	0.556	155	85.3	<50.0	0.209	9.3	1080	238	241	<10.0	8.02	<0.0002	117	0.367	18.3	3.18	80.6	<0.001	<0.01	0.0385	<0.001	<0.001	<0.005	<0.001	0.123	<0.006	<0.01	<0.005	<0.025	<0.02	BDL									
S-10	10/25/2012	13.9		1200	0.08	0.0552	379	288	<50.0	0.178	30	1980	179	180	<10.0	7.85	<0.0002	163	1.16	36.5	12.3	219	<0.001	<0.01	0.0633	<0.001	<0.001	0.00107	<0.005	<0.001	0.0876	<0.011	<0.01	<0.0005	<0.001	<0.025	<0.02	BDL							
S-10	6/12/2013	18.7		776	<0.200	0.449	221	133	13.4	0.224	42	1290	216	216	-	8.06	<0.0002	101	1.68	20.2	6.94	123	<0.002	<0.005	0.0468	<0.001	<0.001	0.00103	0.00301	0.00122	0.0861	<0.005	<0.005	<0.001	<0.002	<0.005	0.0268	BDL							
S-10	10/8/2013	13.0		517	<0.200	0.498	142	60.8	16	0.25	9.48	893	210	210	-	8.06	<0.0002	79.2	0.352	12.4	3.09	94.4	<0.002	<0.005	0.0304	<0.001	<0.001	<0.003	<0.001	0.146	<0.002	<0.005	<0.001	<0.002	<0.020	BDL									
S-10	5/21/2014	16.2	7.96	886	<0.200	0.339	264	91.5	12	0.188	7.79	1460	284	284	<5.00	8.17	<0.0002	133	0.793	19	2.89	143	<0.002	<0.005	0.00546	<0.001	<0.001	<0.002	<0.001	0.0235	<0.002	<0.005	<0.001	<0.002	<0.005	<0.020	BDL								
S-10	10/27/2014	12.0	9.50	1150	<0.200	<0.0500	468	82.5	<10.0	0.236	8.31	2000	250	250	<5.00	7.93	<0.0002	128	0.344	19.5	4.32	238	<0.002	<0.005	0.0505	<0.001	<0.001	<0.002	<0.001	0.108	<0.002	<0.005	<0.001	<0.002	<0.020	BDL									
S-10	6/4/2015	18.0	7.36	1200	<0.200	0.57	491	95.7	10.5	0.227	17.4	2100	227	227	<5.00	7.92	<0.0002	150	1.26	23.9	4.06	227	<0.002	<0.005	0.066	<0.001	<0.001	<0.0031	<0.001	0.0269	<0.001	0.0923	<0.00225	<0.005	<0.001	<0.002	<0.005	<0.020	BDL						
S-10	10/6/2015	17.7	8.76	1050	<0.200	0.223	277	271	<10.0	<0.100	17.2	1590	196	196	<5.00	7.99	<0.0002	108	1.1	33.6	10.5	149	<0.002	<0.005	0.0432	<0.001	<0.001	<0.002	<0.001	0.153	<0.00417	<0.005	<0.001	<0.002	<0.005	<0.020	BDL								
S-10	5/25/2016	16.0	10.20	860	<0.020	0.61	170	99	17	0.17	9.4	1300	310	310	<4.0	8	<0.0002	130	0.44	23	2.7	120	<0.005	<0.005	0.049	<0.002	<0.005	<0.005	<0.005	0.028	<0.005	<0.005	<0.005	<0.005	<0.010	BDL									
S-10	11/7/2016	12.4		820	0.22	<0.45	210	77	19	0.25	8.8	1300	320	320	<4.0	7.8	<0.0005	120	0.4	21	3.8	130	<0.03	<0.01	<0.0004	<0.005	<0.020	<0.004	<0.025	<0.015	<0.05	<0.03	<0.01	<0.27	<0.1	0.44	<0.005	<0.05	BDL						
S-10	6/1/2017	16.6		685	<0.200	0.496	152	99.9	16.4	0.213	5.13	1130	236	235	<10.0	8.2	<0.0002	126	0.358	19.4	2.6	88.2	<0.002	<0.005	0.0445	<0.001	<0.001	<0.002	<0.001	0.0365	<0.001	0.0271	<0.002	<0.005	<0.001	0.265	<0.200	BDL							
S-10	11/9/2017	6.7		499	<0.200	0.243	102	65.4	13.2	0.138	4.76	846	234	237	<5.00	8.2	<0.0002	91.3	0.228	13.4	2.7	68	<0.002	<0.005	0.0279	<0.001	<0.001	<0.002	<0.001	0.0087	<0.002	<0.005	<0.001	0.242	<0.200	BDL									
S-10	6/4/2018	17.9		631	<0.200	0.419	155	83.6	14.9	0.186	24.4	1100	267	278	<10.0	8.2	<0.0002	105	0.803	17.3	3.21	99.3	<0.002	<0.005	0.0421	<0.001	<0.001	<0.002	<0.001	0.0379	<0.001	0.0244	<0.002	<0.005	<0.001	0.836	<0.100	0.396	<0.001	0.005	<0.020	BDL			
S-10	10/30/2018	6.8		800	<0.200	<0.050	221	82.3	<10.0	0.185	2.48	1410	270	270	<5.00	7.9	<0.0002	124	0.116	20.3	3.49	126	<0.002	<0.005	0.041	<0.001	<0.001	<0.002	<0.001	0.0181	<0.002	<0.005	<0.001	0.116	<0.100	0.452	<0.001	<0.005	<0.020	BDL					
S-10	5/22/2019	16.0		765	<0.200	0.526	165	118	<10.0	0.145	7.54	1250	277	281	<5.00	8.1	<0.0002	131	0.692	21.2	3.03	91	<0.002	<0.005	0.0476	<0.001	<0.001	<0.002	<0.001	0.0235	<0.002	<0.005	<0.001	0.684	<0.100	0.53	<0.001	<0.005	<0.020	BDL					
S-10	11/6/2019	6.1		576	<0.200	0.0919	175	62.7	11.7	0.177	6.36	1060	176	176	<5.00	7.9	<0.0002	73.5	0.241	11.8	3.2	98.6	<0.002	<0.005	0.0257	<0.001	<0.001	<0.002	<0.001	0.00817	<0.002	<0.005	<0.001	0.238	<0.100	0.275	<0.001	<0.005	<0.020	BDL					
S-10	5/27/2020	21.4		519	<0.200	0.238	82.4	144	12.8	0.267	63	816	146	146	<5.00	8.2	<0.0002	84.5	0.568	18.7	3.71	60.9	<0.002	<0.005	0.0459	<0.001	<0.001	<0.00555	<0.00274	0.00429	<0.00235	0.171	<0.00748	<0.005	<0.001	5.24	0.3	0.788	<0.001	0.00954	<0.020	BDL			
S-11	5/21/2014	16.5	8.23	1140	<0.200	0.0583	302	224	<10.0	0.117	2.24	1750	296	296	<5.00	8.15	<0.0002	155	0.545	30.7	3.21	149	<0.002	<0.005	0.0786	<0.001	<0.001	<0.002	<0.001	0.0249	<0.002	<0.005	<0.001	0.002	<0.005	<0.020	BDL								
S-11	10/27/2014	11.7	8.71	1460	<0.200	<0.0500	495	219	13.8	0.132	3.01	2270	273	273	<5.00	7.95	<0.0002	165	0.335	36.1	5.23	274	<0.002	<0.005	0.0834	<0.001	<0.001	<0.002	<0.001	0.0229	<0.002	<0.005	<0.001	0.002	<0.005	<0.020	BDL								
S-11	6/4/2015	17.1	7.15	1360	<0.200	<0.0500	561	212	12.3	<10.0	0.168	2460	269	269	<5.00	7.74	<0.0002	172	0.113	39.3	4.48	293	<0.002	<0.005	0.0883	<0.001	<0.001	<0.002	<0.001	0.0201	<0.001	0.161	<0.002	<0.005	<0.001	<0.002	<0.005	<0.020	BDL						
S-11	10/6/2015	16.1	5.05	1570	<0.200	<0.0500	667	178	13.1	0.142	2.96	2630	300	300	<5.00	7.68	<0.0002	155	0.158	38.6	5.59	314	<0.002	<0.00																					

BDL=Below Detectable Limits

#=Toluene, all others VOC's B
ME=Methyl Ethyl Ketone

ND=Not detected at a concentration greater than the LOQ=Limits of Quantitation
ND/(QC₁)=not detected at a concentration greater than the CRBL=Client Reference

ND(VOC's)=not detected at a concentration greater than the CRRL=Client Requested Reporting Limit

Table 2.

		Field Temp. °C	Dissolved Oxygen mg/l	TDS mg/l	NH3 mg/l	NO2 - NO3 mg/l - N	Cl mg/l	SO4 mg/l	COD mg/l	P mg/l	Cond.umhos/cm	Alkalinity Bicarb mg/l	T. Alk. mg/l	Alkalinity Carb mg/l	pH	Turb. NTU	Hg mg/l	Ca mg/l	Fe mg/l	Mg mg/l	K mg/l	Na mg/l	Al mg/L	Sb mg/l	As mg/l	Ba mg/l	Be mg/l	B mg/L	Cd mg/l	Cr mg/l	Co mg/l	Cu mg/l	Pb mg/l	Mn mg/l	Ni mg/l	Se mg/l	Sr mg/l	Ag mg/l	Tl mg/l	V mg/l	Zn mg/l	VOCs ug/l	
MCL				10																																							
SMCL				500																																							
Action Level																																											
Stream Sample	Date																																										
B-1	5/26/2010	-		436	0.109	<0.02	52.6	177	<50.0	-	713	-	104	-	8.2	6.8	86.6	0.212	21.4	1.95	31.7		0.0023	<0.003	0.047	<0.002	<0.002	0.00026	0.00153	0.000441	0.0471	0.014	<0.003	<0.0001	<0.002	<0.004	0.0111	BDL					
B-1	10/13/2010	-		354	<0.05	<0.02	47.6	148	<50.0	-	545	-	94	-	9.81	3.3	70.7	0.125	20.6	2.9	30.8		<0.0002	<0.002	0.0155	<0.002	<0.002	0.00024	<0.001	<0.002	0.0336	<0.0025	<0.002	<0.001	<0.002	<0.004	<0.007	BDL					
B-1	6/15/2011	-		388	0.063	<0.02	25.5	123	<50.0	0.111	581	177	178	<10.0	8.16	9.5	91	0.441	15	1.82	17.7		0.000522	<0.002	0.0222	<0.0004	<0.0002	<0.002	0.00041	0.00107	<0.002	0.0242	<0.004	<0.002	<0.001	<0.002	<0.004	<0.008	BDL				
B-1	10/18/2011	15.9		291	<0.05	<0.02	24.8	90.4	<50.0	<0.1	481	125	126	<20.0	8.02	3.9	<0.0002	69	<0.1	12.9	2.3	16.5		<0.0002	<0.002	0.0134	<0.0002	<0.0002	<0.002	0.00024	<0.001	<0.002	0.0597	<0.0025	<0.0045	<0.001	<0.002	<0.004	<0.005	BDL			
B-1	6/19/2012	19.5		362	0.309	<0.02	27	103	<50.0	0.241	579	184	184	<10.0	7.18	15	<0.0002	86.8	0.491	15.3	2.63	17.5		<0.1	<0.1	0.0301	<0.005	<0.03	<0.04	<0.02	<0.008	0.648	<0.01	<0.1	<0.04	<0.1	<0.05	BDL					
B-1	10/24/2012	14.4		402	0.098	0.0902	30.9	140	64.1	<0.1	536	100	102	<10.0	8.2	3.9	<0.0002	80.5	0.164	17.7	2.84	20.3		<0.0002	<0.002	0.0209	<0.0002	<0.002	<0.02	<0.002	<0.004	<0.05	BDL										
B-1	8/8/2013	23.2		381	0.287	<0.100	32	120	11.8	0.235	604	155	155	<5.0	7.81	5.82	<0.0002	78	0.943	16.9	2.35	21.5		<0.0002	<0.005	0.0213	<0.001	<0.002	0.0237	<0.002	<0.001	0.539	<0.0292	<0.005	<0.001	<0.002	<0.005	<0.020	BDL				
B-1	11/21/2013	14		409	0.217	<0.100	34.4	175	16.1	0.193	644	148	148	<5.0	8.27	12	<0.0002	86.3	1.42	18	2.99	21.2		<0.0002	<0.005	0.0273	<0.001	<0.001	0.0213	<0.001	<0.001	0.501	<0.0213	<0.005	<0.001	<0.002	<0.005	<0.020	BDL				
B-1	5/28/2014	24.8	9.16	518	<0.200	<0.0500	65.2	190	1.7	<0.100	738	148	148	<5.00	8.4	1.68	<0.0002	95.1	0.301	18.7	1.69	30.6		<0.0002	<0.005	0.017	<0.001	<0.001	0.0099	<0.002	<0.005	<0.001	<0.002	<0.005	<0.020	BDL							
B-1	10/28/2014	16.1		397	<0.200	<0.0500	67	163	20.6	0.146	675	110	110	<5.00	8.04	2.66	<0.0002	72.1	0.333	20.4	2.52	34.7		<0.0002	<0.005	0.0146	<0.001	<0.001	0.0492	<0.002	<0.005	<0.001	<0.002	<0.005	<0.020	BDL							
B-1	5/21/2015	20.8		533	<0.200	<0.0500	65	200	40.7	<0.100	844	173	173	<5.00	8.29	1.52	<0.0002	113	<0.100	23	1.84	32.4		<0.0002	<0.005	0.0191	<0.001	0.0685	<0.001	<0.002	<0.005	<0.001	<0.002	<0.005	<0.020	BDL							
B-1	9/22/2015	19.1		407	<0.200	<0.0500	51.1	136	23.5	0.214	665	134	140	<4.0	8.02	7.66	<0.0002	78.1	1.07	20.1	2.69	30.6		<0.0002	<0.005	0.0238	<0.001	<0.001	0.0251	<0.002	<0.005	<0.001	<0.002	<0.005	<0.020	BDL							
B-1	6/28/2016			570	<0.02	<0.61	55	170	13	<0.05	740	140	140	<4.0	8	2.2	<0.0002	80	0.081	21	1.7	28	0.12	<0.005	<0.02	0.097	<0.002	<0.005	0.005	<0.005	0.013	<0.005	0.43	<0.005	<0.005	<0.005	<0.005	<0.01	BDL				
B-1	12/7/2016			510	<10	<0.61	51	130	61	0.079	660	150	150	<4.0	8	5.6	<0.0005	77	<0.02	22	2.4	29	0.76	<0.03	<0.01	<0.1	<0.0004	<0.1	<0.005	<0.02	<0.004	<0.025	<0.015	<0.05	<0.03	0.4	<0.01	<0.05	<0.05	BDL			
B-1	6/30/2017	19.8		346	1.21	<0.0500	21.7	74.4	13.5	0.472	548	166	166	<5.0	7.9	17.7	<0.0002	72.4	0.767	13.7	2.23	14.5	0.443	<0.002	<0.005	0.025	<0.001	<0.200	<0.001	<0.002	<0.001	0.00365	<0.001	0.679	<0.002	<0.005	<0.253	<0.001	<0.001	<0.005	<0.020	BDL	
B-1	12/20/2017	6.1		377	1.36	<0.0500	31.4	108																																			

**Table 3. BIOLOGICAL STREAM SAMPLING
RUMPKE SANITARY LANDFILL (Location S-1)**

**Table 3. BIOLOGICAL STREAM SAMPLING
RUMPKE SANITARY LANDFILL (Location S-2)**

**Table 3. BIOLOGICAL STREAM SAMPLING
RUMPKE SANITARY LANDFILL (Location S-3)**

	GROUP 1 (Higher Quality)			GROUP 2 (Moderate Quality)			GROUP 3 (Lower Quality)			Non-indicative	
	Bass	Micropterus	Notropis	Coleoptera	Plecoptera	Amphibia	Gastropoda	Chelydri	Dorosoma	Pinnaeophales	
Location S-3											
6/7/2010											
10/14/2010			26								
# 10/14/10			7								
6/28/2011											
10/25/2011			1								
6/7/2012	1										
10/25/2012		1			1						
6/12/2013	2			1	1						
10/8/2013	6*			1*	4*						
5/21/2014											
10/27/2014	3*										
6/3/2015	2			5							
10/6/2015	*										
5/25/2016	1			10							
11/7/2016	3										
6/1/2017											
9/9/2017	1			7							
6/4/2018				1	25						
10/30/2018	5				8						
5/22/2019	1				2						
11/6/2019	1			1							
5/27/2020		1			16	2	1				
10/27/2020			1	1	3						

**Table 3. BIOLOGICAL STREAM SAMPLING
RUMPKE SANITARY LANDFILL (Location S-9)**

**Table 3. BIOLOGICAL STREAM SAMPLING
RUMPKE SANITARY LANDFILL (Location S-10)**

**Table 3. BIOLOGICAL STREAM SAMPLING
RUMPKE SANITARY LANDFILL (Location S-11)**

**Table 3. BIOLOGICAL STREAM SAMPLING
RUMPKE SANITARY LANDFILL (Location S-12)**

**Table 3. BIOLOGICAL STREAM SAMPLING
BOND ROAD LANDFILL (Location 1)**

Location 1	GROUP 1 (Higher Quality)										GROUP 2 (Moderate Quality)										GROUP 3 (Lower Quality)										Non-indicative																																									
	Bass	Micropterus	Notropis	Etheostoma	Amphibia	Gastropoda	Gastropoda	Dytiscidae (Crawling Water Beetle)	Coleoptera	Coleoptera	Psephenidae (Water Penny)	Coleoptera	Coleoptera	Hydrophilidae (Beetle Larva)	Coleoptera	Trichoptera	Elmidae (Adult Riffle)	Mayfly	Ephemeroptera	Stonefly Nymph	Plecoptera	Stonefly Adult	Plecoptera	Turtle	Chelydرا	Gizzard Shad	Dorosoma	Pimephales	Ranidae (Frogs)	Amphibia	Tadpoles	Amphibia	Pelecypoda	Fingernail Clam	Pelecypoda	Other Clams	Pelecypoda	Crane Fly Pupae	Crane Fly Adult	Pychopteridae (Phantom Crane Fly)	Sialidae (Alderfly)	Hemiptera	Dragonfly Nymph	Dragonfly Adult	Damselfly Nymph	Damselfly Adult	Sow Bug	Isopoda	Scud	Amphipoda	Crayfish	Decapoda	Flat Worm	Turbellaria	Round Worm	Nematoda	Oligochaeta (Aquatic Worm)	Hirudinea (Leech)	Physa (Pouch Snail)	Gastropoda	Simuliidae (Blackfly)	Tendipedidae Tendipes (Midge)	Tendipedidae Psychoda (Northfly)	Culex (Mosquito Larva)	Culex (Mosquito)	Tabanidae (Horsefly Larva)	Tabanidae (Horsefly)	Tubifera (Rat-Tailed Maggot)	Unknown Larva	Gerridae (Water Strider)	Notonectidae (Back Swimmer)	Corixidae (Water Boatman)
5/26/2010	*																																																																							
10/13/2010					10	1					5																																																													
6/15/2011					10																																																																			
10/18/2011											3																																																													
6/19/2012					10																																																																			
10/24/2012																																																																								
8/8/2013																																																																								
11/21/2013	Not sampled; pond drained to repair valve																																																																							
5/28/2014	1*				3*																																																																			
10/28/2014	10																																																																							
6/3/2015																																																																								
10/6/2015																																																																								
6/28/2016																																																																								
12/7/2016																																																																								
6/30/2017																																																																								
12/20/2017																																																																								
6/28/2018	1																																																																							
12/12/2018																																																																								
6/28/2019	*																																																																							
11/14/2019	Unable to sample; water level too low.																																																																							
6/16/2020	5										30																																																													
11/19/2020																																																																								

* - Observed while sampling