TETRA TECH

January 7, 2019

Mr. Jason Lowery, Assistant Project Manager
Wisconsin Department of Natural Resources
Remediation & Redevelopment Program
101 S. Webster Street, Box 7921 Madison, WI 53707

SENT BY EMAIL: Jason.Lowery@wisconsin.gov

RE: BARRETT LANDFILL – Annual Inspection Report

Dear Mr. Lowery:

Enclosed is the Annual Inspection Report for the Barrett Landfill, in New Berlin, Wisconsin, prepared for the Wisconsin Department of Natural Resources (WDNR) by Tetra Tech, presenting the results of the inspections and specifying the items identified as requiring maintenance or repair.

We trust that the information provided meets or exceeds your expectations. Please contact me (262-792-1282x4, ashley.wagner@tetratech.com) to discuss our findings or if you are in need of any additional information.

Sincerely,

Tetra Tech

Ashley A. Wagner

Senior Project Geologist, P.G.

Enclosure: Annual Inspection Report

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ANNUAL INSPECTION REPORT

BARRETT LANDFILL

New Berlin, Waukesha County, Wisconsin

January 4, 2019

PRESENTED TO

Wisconsin Department
of Natural Resources
101 S. Webster Street
Madison, WI 53707

PRESENTED BY

TETRA TECH

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1 SUMMARY OF ANNUAL LANDFILL INSPECTION

On behalf of the Wisconsin Department of Natural Resources (WDNR), Tetra Tech performed the Annual Inspection at the Barrett Landfill in New Berlin, Wisconsin in October and December of 2018.

The purpose of the annual landfill inspection was to provide an evaluation of the quality of the cover and monitoring systems, documentation of observations, and identification of areas of concern impacting the ability to meet performance objectives. Tasks were conducted to ensure compliance with performance objectives as defined in Wisconsin Administrative Code NR504.

Inspections of the landfill gas venting system and landfill cover was conducted on October 12, 2018; inspections of the gas probes and groundwater monitoring network was conducted on December 5, 2018. Field visits were conducted by Tetra Tech geologists Ashley Wagner and Luke Rykoskey. The results of the inspections are summarized below. Recommendations based on the monitoring and annual inspection events are provided as Section 3. The detailed Landfill Inspection Form is included as Appendix A. Site maps are provided as Appendix B, and photographic documentation is provided as Appendix C.

2 GENERAL LANDFILL: SECURITY FENCE, ACCESS ROADS AND PERIMETER

Inspections of the access roads and perimeter fencing were conducted on October 12, 2018 and included an evaluation of erosion, vegetation, damage, barriers, and tampering.

In general, the following conditions were observed:

2.1.1 MOWING

The vegetated landfill cover was mowed by Jim Resse in September 2018 and the perimeter was mowed by Badgerland Lawn and Landscaping in October 2018.

2.1.2 LARGE TREE AND BRUSH REMOVAL ALONG PERIMETER FENCE

Inspection of large trees along the fence line of the landfill property was completed by the WDNR in the Fall of 2017, prior to Tetra Tech's contract for landfill O&M. Evidence of tree trimming was observed during sampling and inspection events. Low hanging branches over the perimeter access road were trimmed back by Badgerland Lawn and Landscaping, Inc. during the perimeter mowing conducted in October 2018. The need of perimeter tree and brush removal will be further evaluated in the spring of 2019.

2.1.3 ELEVATIONS SURVEY

A survey of monitor wells, gas probes and leachate head wells was conducted by Kapur and Associates, Inc. on October 16, 2018. Monitor well data included casing elevations to 0.01 ft, ground surface elevations to 0.1 ft, and horizontal coordinates. All other wells were surveyed for ground surface elevations to 0.1 ft and horizontal coordinates. This information can be found in Appendix D and will be provided to the WDNR in electronic and map format. Tetra Tech will incorporate this information into future groundwater contour maps.

2.1.4 LANDFILL COVER INSPECTION

An inspection of the landfill cover was conducted on October 12, 2018. The inspection included an evaluation of the condition of vegetative cover, areas of significant erosion, signs of settlement or subsidence, and presence of significant vegetation around gas vents and monitor wells.

Drainage channels along the perimeter of the landfill were assessed for the following during the Annual Inspection:

- Areas of erosion, including drainage channels and channel slopes
- Backfill, seed and mulch erosion areas (gullies)
- Culverts, overflow structures, riprap condition, and potential blockage

Areas that need vegetation, erosion or settlement repair were identified, and these will be graded and/or filled with protective cover soil and topsoil, seeded, mulched and sufficiently watered to re-establish vegetation in the Spring of 2019.

Minimal mulched material from the brush hog from mulching activities in 2017 was still present in the drainage channel on the northwestern portion of the Site. It did not appear to be obstructing any drainage at the time, and it will be monitored in the future. The location of this area location is indicated on Figure 3.

A description and the associated locations of recommended repairs is provided in Section 3.

2.1.5 LANDFILL GAS VENTING SYSTEM

Gas probe monitoring was last completed on IN OR DATE November 2017. This monitoring is conducted on a biennial basis. The next monitoring event is scheduled for September or October 2019.

The landfill gas venting system was renumbered on October 12, 2018 to cause the in-field numbers to match the numbers on historical figures. The gas vents were included in the survey. The landfill gas venting system was assessed during the renumbering of the gas vents as well as during the annual inspection for an evaluation of the overall condition and operational effectiveness, as follows:

- Vent pipes were inspected and cleared of any obstructions;
- Vent screens were maintained and secured as necessary;
- Several vents were missing screens and will need to be repaired;
- Vent boots were inspected for any holes or tears in the liner; and
- Hose clamps securing the boots in place were checked and retightened if needed.

Gas vent risers were inspected, and recommended repairs are provided in Section 3.

2.1.6 GROUNDWATER MONITORING NETWORK

Groundwater monitoring was last completed in November 2017. This monitoring is conducted on a biennial basis. The next monitoring event is scheduled for September or October 2019. The Annual Inspection of the groundwater monitoring network was completed December 5, 2018. Recommendations for repairs to groundwater monitor wells are provided in Section 3.

The annual inspection included all gas probes and leachate head wells. We recommend that missing, damaged or corroded locks be replaced and minimal damage to casing or well covers be repaired as provided in Section 3.

2.1.7 LEACHATE REMOVAL SYSTEM

Sampling of the leachate was conducted on May 24, 2018 and also on October 16, 2018. The results have been submitted to the WDNR GEMS program. The analytical results are included in Appendix E.

The leachate pumping system was decommissioned on November 2, 2018. A final collection volume of leachate was transported by MJM Pumping Services, LLC to Crystal Springs Treatment, LLC of Milwaukee, WI for disposal. The aboveground force main was disconnected and the system winterized at this time. Pipes were capped, electrical panels shut down (switches turned off), and flexible piping drained for storage at the Tetra Tech storage unit.

2.1.8 LEACHATE LINE CLEANING

On October 29, 2018 Tetra Tech met Speedy Clean from Menasha, WI at the Site. The leachate collection lines were water pressure cleaned (water "jetted") and television inspected. Both lines appeared to be in good condition and free of obstruction. Cleanout Line A was cleaned to a length of 756.7 ft and televised 756.7 ft, Cleanout Line B was cleaned to a length of 1,000 ft and televised 800 ft. The counter wasn't counting properly for the video and the footage of Cleanout Line B reads 705.8 ft, when it is actually 800 ft. GPS was not able to be used to track the lines due to the significant depth of the lines (approximately 60 feet bgs).

During cleaning activities, additional water was needed. Prior to cleaning activities, Tetra Tech coordinated with the City of New Berlin Public Works Department for Speedy Clean to be able fill up their water tank at a fire hydrant on South Casper Drive.

Results from the leachate line cleaning are provided in Appendix F.

3 RECOMMENDATIONS BASED ON 2018 ANNUAL LANDFILL INSPECTION

In accordance with the Scope of Work, the following activities will be conducted in the Spring of 2019:

3.1.1 REPAIRS NEEDED

We provide the following recommendations for follow up or repairs in Spring of 2019, based on the Annual Inspection:

Gas Vents and Probes:

- Five gas vents (GV-119, GV-124, GV-135, GV-137, and GV-138) had holes or tears in the boots at the base of the vent (photos 37, 38, 75, 77, and 78).
- The hose clamp needs to be replaced on GV-129 (photo 24).
- Screens need to be replaced on GV-100 and GV-101 (photos 1 and 90).
- Gas probes GP-3, GP-5 and GP-12 need locks as there are none on these protective casings.

Leachate Head Wells:

- One unmarked LHW (near GV-143) had a hole/tear in the boot that will need to be repaired (photo 67).
- If the outside of the protective casing is lockable, locks will need to be added. If the outside of the protective casing cannot be locked, a cap or plug that can be locked will need to be installed to the well casing.
- Provide a new cover for LHW-94-5 (photo 27).
- Dig out LHW-94-3 to further inspect (photo 13).

Monitor Wells:

- Currently, there are no WDNR Monitor Well ID labels on any of the wells; these will be installed at each location upon receipt of the labels assigned to each well at installation.
- Eight monitor wells are currently without locks.
- B-15A and B-19 do not have well caps. The PVC sticks up too high for the protective casing to close properly if a cap is installed. Flush caps will need to be installed at these locations, or the PVC cut down for a plug-style cap to fit.
- B-96-13A and B-96-13 have unlockable PVC protective casings: we recommend installation of protective casings consisting of lockable steel; alternatively, both well casings are of considerable height (approximately 4.5 feet above ground surface) and if not switched to steel could be cut down to a workable height, and a lockable cap or plug installed. B-96-13 is damaged at a depth of approximately 8 ft bgs; this will be further investigated and repaired or replaced if needed (photos 137-140).
- B-94-19 is bent and needs to be repaired (photo 133). During sampling of B-94-19A, it was difficult to get a bailer down the well at approximately 7.5 ft bgs; this will be further investigated and repaired if appropriate.
- B-94-14A is located near the edge of a slope and there is erosion around the cement pad that should be addressed by clean fill or repair (photo 126).

Erosion:

- Erosion channels were observed on the northeast face of the landfill hill, extending towards Sedimentation Basin 1; these channels will need to be filled and reseeded (photos 44-50, 91-92).
- Bare/dead vegetation was observed near the lift station (photos 84-85) and will be monitored in spring for growth, if no growth is apparent, grass seed will be spread.

- A drain pipe located near GV-117 is flattened and damaged; this should be repaired (photo 53).

Perimeter Tree and Brush Removal:

- In the spring of 2019, an evaluation of perimeter tree and brush removal will take place

Features are identified on the photo log and attached Figure 3.

4 APPENDICES

4.1.1 APPENDIX A: Landfill Inspection Form

4.1.2 APPENDIX B: Site Maps

4.1.3 APPENDIX C: Photograph Documentation

4.1.4 APPENDIX D: Survey Results

4.1.5 APPENDIX E: Leachate Analytical Results

4.1.6 APPENDIX F: Leachate Line Cleaning Results

APPENDIX A: Landfill Inspection Form

BARRETT LANDFILL INSPECTION FORM A-1
Monitor Wells
December 5, 2018

Well ID	Clearly Marked? (Y/N)	Lock Condition (Good, rusted, broken, none)	Key Number	Well Cap (Y/N)	Well Condition	Photo Time	Notes
MWs sampled							
B-15A	Yes	Rusted	2258	No	Rusted	11:04/11:05	
B-21	Yes	Rusted	2258	No	Rusted	10:53	
B-21A	Yes	Rusted	2258	No	Rusted	10:53	
B-94-14A	Yes	Good	2258	Yes	Fair	11:13/11:13	
B-94-14R	Yes	Rusted	2258	Yes	Fair	11:13/11:15	
B-94-19A	Yes	Ok	2258	Yes	Good	11:47	
B-94-25	Yes	Good	2258	Yes	Fair	11:22/11:22	
B-94-25A	Yes	Good	2258	No	Ok	11:23	
B-96-13A	Yes	None	NA	Yes	Good	11:42/11:42	
B-96-17	Yes	None	NA	Yes	Rusted	10:39/10:39	
B-96-17A	Yes	None	NA	Yes	Rusted	10:39/10:39	
B-96-18A	Yes	Ok	2258	Yes	Cap doesn't sit right	11:51	
B-96-18B	Yes	Ok	2258	Yes	Ok	11:51	
W-23	Yes	None	NA	No	Rusted	10:02	
W-23A	Yes	None	NA	Yes	Ok	10:02	
W-24	Yes	Good	2258	Yes	Good	10:33/10:34	
Other Wells							
B-94-26	Yes	None	NA	No	Rusted	10:26/10:27	PVC bent
B-19	Yes	None	NA	No	Bent	11:37/11:38	Doesn't Close
B-96-13	Yes	None	NA	Yes	Good	11:42/11:42	
B-15	Yes	None	NA	No	Rusted and Broken	11:05/11:05	

Notes:
NA = Not Applicable

BARRETT LANDFILL INSPECTION FORM A-2
Monitor Wells
October 12, 2018

Gas Vent ID From 2017 Report	New Assigned Gas Vent ID	Boot Condition	Hose Clamp Condition	Screen Present (Y/N)	Screen Clear (Y/N)	Tilt Direction	Notes
GV-10	**GV-1**	Ok	Ok	Yes	Yes	NE	
GV-12	**GV-2**	Ok	Ok	Yes	Yes	Slightly N	
GV-13	**GV-3**	Ok	Ok	Yes	Yes	N	
GV-39	**GV-4**	Ok	Ok	Yes	Yes	Straight	
GV-41	**GV-5**	Ok	Ok	Yes	Yes	W	
GV-1	**GV-100**	NA	NA	No	NA	Straight	Outside waste
GV-33	**GV-101**	Ok	Ok	NO	NA	Straight	
GV-31	**GV-102**	Ok	Ok	Yes	Yes	Slightly W	
GV-29	**GV-103**	Ok	Ok	Yes	Yes	Straight	
GV-28	**GV-104**	Ok	Ok	Yes	Yes	W	beehive cleared out
Unmarked	**GV-105**	OK	OK	Yes	Yes	N-NW	
GV-36	**GV-106**	Ok	Ok	Yes	Yes	Straight	
GV-35	**GV-107**	Ok	Ok	Yes	Yes	Slightly N	
GV-34	**GV-108**	Ok	Ok	Yes	Yes	NW	
GV-32	**GV-109**	Ok	Ok	Yes	Yes	Slightly N	
GV-30	**GV-110**	Ok	Ok	Yes	Yes	S	
GV-14	**GV-111**	Ok	Ok	Yes	Yes	Slightly N	
GV-27	**GV-112**	Ok	Ok	Yes	Yes	E	
GV-43	**GV-113**	NA	NA	Yes	Yes	W-SW	
LHW	**GV-113**	Ok	Ok	Yes	Yes	W-SW	
GV-38	**GV-114**	NA	NA	Yes	Yes	W	Outside waste
GV-11	**GV-115**	Ok	Ok	Yes	Yes	N	
GV-9	**GV-116**	Ok	Ok	Yes	Yes	N	
GV-26	**GV-117**	Ok	Ok	Yes	Yes	E	
Unmarked	**GV-118**	NA	NA	Yes	Yes	W	Outside waste
GV-11	**GV-119**	Hole/tear	Ok	Yes	Yes	Straight/Slighly W	Hole/tear still has part of boot under hole, need to seal up
GV-15	**GV-120**	Ok	Ok	Yes	Yes	Straight/Slighly W	
GV-8	**GV-121**	Ok	Ok	Yes	Yes	Straight	
GV-7	**GV-122**	Ok	Ok	Yes	Yes	Straight NE	
GV-25	**GV-123**	Ok	Ok	Yes	Yes	E	
GV-18	**GV-124**	Hole/tear	Ok	Yes	Yes	Straight	tear
GV-6	**GV-125**	Ok	Ok	Yes	Yes	Straight	
GV-24	**GV-126**	Ok	Ok	Yes	Yes	Straight	
GV-5	**GV-127**	Ok	Ok	Yes	Yes	Straight	
GV-42	**GV-128**	NA	NA	Yes	Yes	Slightly W	
GV-17	**GV-129**	Ok	NA	Yes	Yes	Straight	Top of boot straight/no gaps - no hose clamp
GV-17	**GV-130**	Ok	Ok	Yes	Yes	Straight	
GV-20	**GV-131**	Ok	Ok	Yes	Yes	Slighly NE	
GV-21	**GV-132**	Ok	Ok	Yes	Yes	Straight	
GV-22	**GV-133**	Ok	Ok	Yes	Yes	Straight	
GV-4	**GV-134**	Ok	Ok	Yes	Yes	Straight	
GV-3	**GV-135**	Hole/tear	Ok	Yes	Yes	Straight	
GV-2	**GV-136**	Ok	Ok	Yes	Yes	NE	beehive cleared out
Unmarked	**GV-137**	Hole/tear	Ok	Yes	Yes	E	tear at base
GV-50	**GV-138**	Hole/tear	Ok	Yes	No	S	tear at bottom, beehive cleared out
GV-49	**GV-139**	Ok	Ok	Yes	Yes	SE	
GV-48	**GV-140**	Ok	Ok	Yes	Yes	S	
GV-47	**GV-142**	Ok	Ok	Yes	Yes	E	
GV-46	**GV-143**	Ok	Ok	Yes	Yes	Straight	
GV-45	**GV-144**	Ok	Ok	Yes	Yes	Straight	
GV-44	**GV-145**	Ok	Ok	Yes	Yes	Straight	tightened hose clamp
GV-23	**GV-146**	Ok	Ok	Yes	Yes	N	

Notes:
N = North
NE = Northeast
E = East
SE = Southeast
S = South
SW = Southwest
W = West
NW = Northwest

Gas vents were renumbered in the field on 10/12/18 to match historical figures.

BARRETT LANDFILL INSPECTION FORM A-3
Gas Probes
December 5, 2018

Well ID	Clearly Marked? (Y/N)	Lock Condition (Good, rusted, broken, none)	WDNR Number	Well Cap (Y/N)	Well Condition	Photo Time	Notes
GP-1	Yes	Rusted -2258	NA	Yes	Fair	11:03/11:04	
GP-2S	Yes	Rusted -2258	NA	Yes	Rusted	10:51/10:53	
GP-2D	Yes		NA	Yes			
GP-3S	Yes	None	NA	Yes	Good	11:41/11:42	
GP-3M	Yes		NA	Yes			
GP-3D	Yes		NA	Yes			
GP-4	Abandoned						
GP-5S	Yes	None	NA	Yes	Fair	11:10/11:10	
GP-5M	Yes		NA	Yes			
GP-5D	Yes		NA	Yes			
GP-6S	Yes	Rusted	NA	Yes	Fair	10:58	
GP-6M	Yes		NA	Yes			Dented
GP-6D	Yes		NA	Yes			
GP-7	Abandoned						
GP-8S	Yes	Good -2258	NA	Yes	Good	10:10/10:13	
GP-8M	Yes		NA	Yes			
GP-8D	Yes		NA	Yes			
GP-9S	Yes	Ok	NA	Yes	Fair, bent	10:15/10:16	Lock won't lock on well cover doesn't fit right
GP-9M	Yes		NA	Yes			
GP-9D	Yes		NA	Yes			
GP-10S	Yes	Rusted -2258	NA	Yes	Good	10:22/10:23	
GP-10M	Yes		NA	Yes			
GP-10D	Yes		NA	Yes			
GP-11S	Yes	Good -2258	NA	Yes	Good	10:30/10:31	
GP-11M	Yes		NA	Yes			
GP-11D	Yes		NA	Yes			
GP-12S	Yes	None	NA	Yes	Good	10:38/10:38	
GP-12M	Yes		NA	Yes			
GP-12D	Yes		NA	Yes			

Notes:
NA = Not Applicable

BARRETT LANDFILL INSPECTION FORM A-4
Leachate Head Wells or Unknowns
October 12, 2018

Well ID	Clearly Marked? (Y/N)	Boot Condition	Hose Clamp Condition	Lock Condition (Good, rusted, broken, none)	Key Number	Well Cap (Y/N)	Well Condition	Location	Notes
LHW-94-1	Yes	Ok	Ok	None	NA	No	Ok	Near GV-101, northern part of site	
LHW-94-3	Yes	-	-	-	-	-	-	Near GV-4, northwestern part of site	Well is sunken into ground, cannot get cover off to further inspect well
LHW-94-5	Yes	Ok	Ok	None	NA	Yes	tilted inside casing	Near GV-131, southwestern part of site	No protective casing cover
LHW-94-6	Yes	Loose	Loose	None	NA	Yes	tilted inside casing	Near GV-134, southeastern part of site	
Unkowns									
LHW	only as LHW	Hole/tear	Ok	None	NA	Yes	tilted W	N of GV-143, southwestern part of site	No number assigned, capped off
Parts of old leachate system?	No	NA	NA	None	NA	Yes	Cover broken	W of leachate piping	not sure if LHW or something else
	No	NA	NA	None	NA	Yes	Ok	W of leachate piping	not sure if LHW or something else
LHW?	No	NA	NA	None	NA	Yes	no cover on larger casing	N of B-96-17	not sure if LHW or something else, 2 pipes in larger casing

Notes:
N = North
NE = Northeast
E = East
SE = Southeast
S = South
SW = Southwest
W = West
NW = Northwest

NA = Not Applicable

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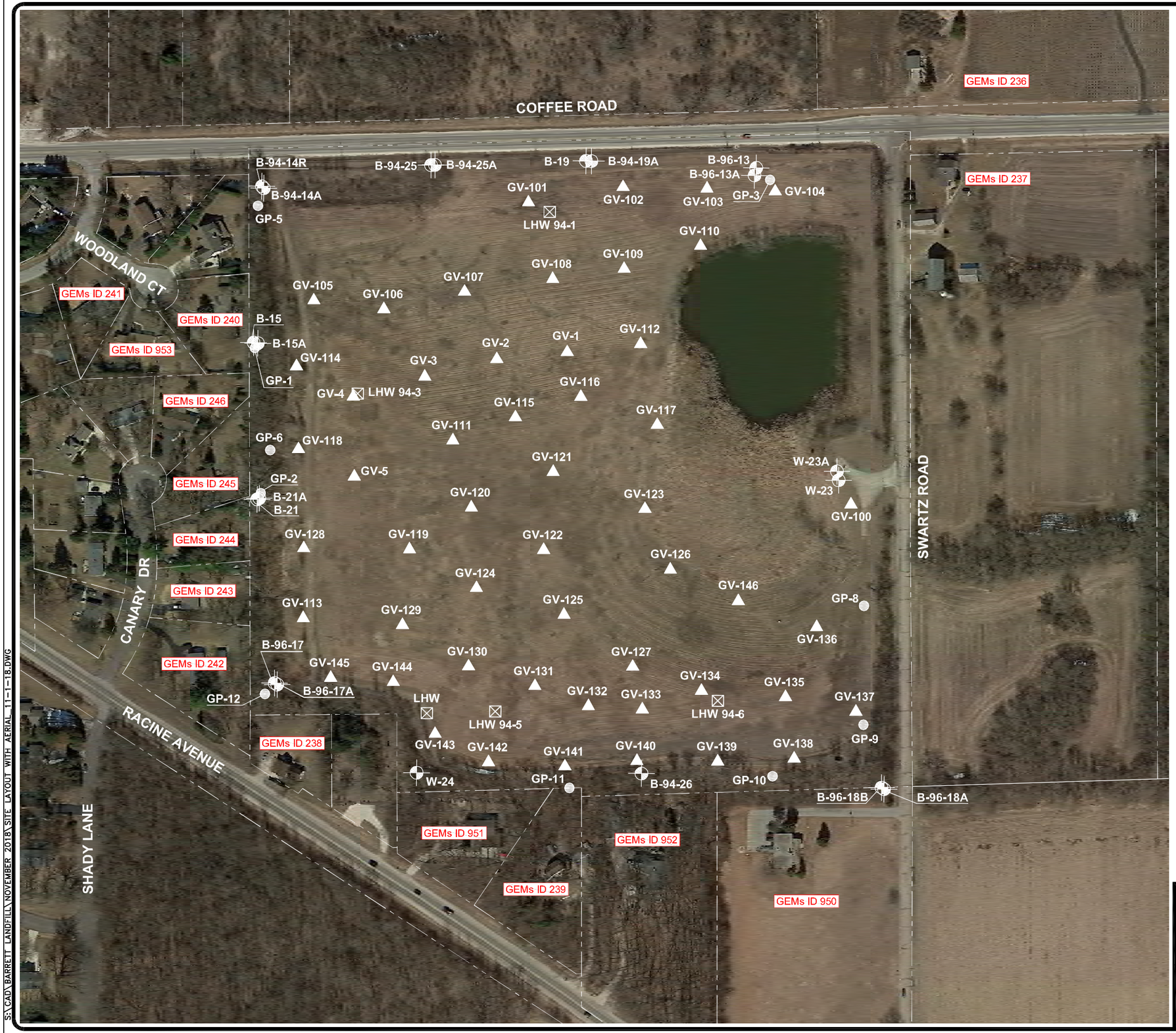
Barrett Landfill Site Inspection Form

Inspector: Ashley Wagner Date: 10/12/18

Type of inspection (circle): monthly quarterly semi-annual **annual** severe weather

	Good	Fair	Poor	Comments
1. Vegetative cover (condition, trees or bushes on cap)	X			No more woody vegetation located living/standing on cap
2. Soil stability (erosion control)		X		Erosion found on NE, N and SW hill faces, need repairs
3. Cover integrity (no exposed waste or ruts)	X			A piece of corrugated metal and a tire were found on the north hill face
4. Surface water drainage (settlement or ponding)	X			Minimal mulched material at NW portion from 2017, noted on figure, will need to observe in future to see if blocking drainage.
5. Surface seep control	X			
6. Unauthorized access control (fence, gates, locks, signs, vandalism)	X			No signs of trespassing
7. Groundwater well maintenance (seals, casing, labels)	X			Locks need to be installed where missing or where needing replacing.
8. Gas Probes	X			Locks need to be installed where missing or where needing replacing.
9. Gas vents		X		Make repairs to boots with holes/tears
10. Leachate Head Wells (LHW) and unidentified pipes		X		Fix any broken or missing covers, add locks where missing.
11. Drainage layer discharge pipes		X		Drain pipe near GV-117 needs to be repaired/replaced, all others ok.
10. Other activities on or adjacent to landfill	X			
11. Additional comments	Some well locks are difficult to open (getting old and rusted) and may need to be replaced in the near future.			
12. Items to be observed in future inspections	Erosion on N hill face, mulched material on NW portion			
13. Recommended maintenance activities	Fill/Seed erosion, fix missing screens, replace locks			

APPENDIX B: Site Maps



LEGEND

GP-8 ●	GAS PROBE
W-23 ⊕	MONITORING WELL
B-21 ⊕	PIEZOMETER
GV-100 ▲	GAS VENT
LHW 94-1 ☒	LEACHATE HEAD WELL

0 200 400

SCALE IN FEET

TITLE: **SITE LAYOUT**

LOCATION: **Barrett Landfill Project**
New Berlin, Wisconsin

TETRA TECH

APPROVED	AW
DRAFTED	CP
PROJECT#	117-7413003
DATE	1-4-19

FIGURE 1

S:\CAD\BARRETT LANDFILL\NOVEMBER 2018\SITE LAYOUT WITH AERIAL_11-1-18.DWG

COFFEE ROAD

GEMs ID 236

GEMs ID 237

WOODLAND CT

GEMs ID 241

GEMs ID 240

GEMs ID 953

GEMs ID 246

GEMs ID 245

GEMs ID 244

GEMs ID 243

GEMs ID 242

GEMs ID 238

GEMs ID 951

GEMs ID 952

GEMs ID 239

GEMs ID 950

CANARY DR

RACINE AVENUE

SHADY LANE

SWARTZ ROAD

B-94-14R
B-94-14A
GP-5
B-94-25
B-94-25A
B-19
B-94-19A
B-96-13
B-96-13A
GP-3
GV-101
GV-102
GV-103
GV-104
LHW 94-1
GV-110
GV-109
GV-108
GV-107
GV-105
GV-106
B-15
B-15A
GP-1
GV-114
GV-3
GV-2
GV-1
GV-112
GV-4
LHW 94-3
GV-116
GV-115
GV-117
GV-111
GP-6
GV-118
GV-121
GV-5
GP-2
B-21A
B-21
GV-120
GV-123
W-23A
W-23
GV-100
GV-128
GV-119
GV-122
GV-126
GV-124
GV-146
GV-113
GV-129
GV-125
GP-8
GV-136
B-96-17
GV-145
GV-144
GV-130
GV-127
GV-131
GV-134
GV-135
GV-137
GP-12
B-96-17A
LHW
LHW 94-5
GV-132
GV-133
LHW 94-6
GP-9
GV-143
GV-142
GV-141
GV-140
GV-139
GV-138
W-24
GP-11
B-94-26
GP-10
B-96-18B
B-96-18A

N

LEGEND

GP-8	GAS PROBE
W-23	MONITORING WELL
B-21	PIEZOMETER
GV-100	GAS VENT
LHW 94-1	LEACHATE HEAD WELL

0 200 400

SCALE IN FEET

TITLE: **SITE LAYOUT**

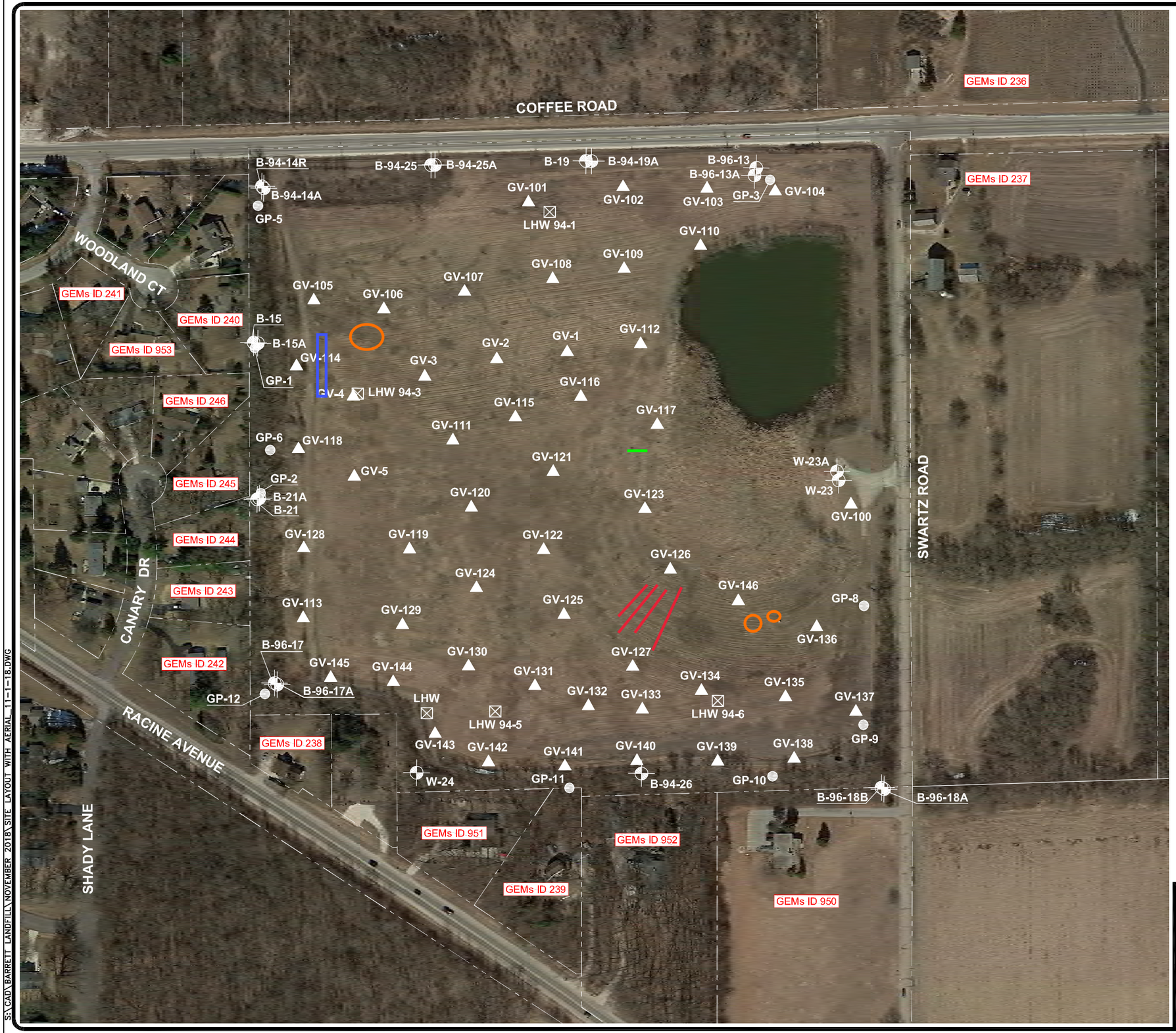
LOCATION: **Barrett Landfill Project**
New Berlin, Wisconsin

TETRA TECH

APPROVED	AW
DRAFTED	CP
PROJECT#	117-7413003
DATE	1-4-19

FIGURE **2**

S:\CAD\BARRETT LANDFILL\NOVEMBER 2018\SITE LAYOUT 11-1-18.DWG



Mulched material from 2017

Erosion

Bare vegetation

Damaged drain culvert

LEGEND

GP-8 ●	GAS PROBE
W-23 ⊕	MONITORING WELL
B-21 ⊕	PIEZOMETER
GV-100 ▲	GAS VENT
LHW 94-1 ☒	LEACHATE HEAD WELL

0 200 400

SCALE IN FEET

TITLE: **SITE LAYOUT**

LOCATION: **Barrett Landfill Project**
New Berlin, Wisconsin

TETRA TECH

APPROVED	AW
DRAFTED	CP
PROJECT#	117-7413003
DATE	1-4-19

FIGURE 3

S:\CAD\BARRETT LANDFILL\NOVEMBER 2018\SITE LAYOUT WITH AERIAL_11-1-18.DWG

APPENDIX C: Photograph Documentation

Barrett Landfill
New Berlin, WI

Tetra Tech Site Inspections

October 12, 2018 – Gas Vents and Landfill Cover

Weather 37°F, Cloudy, Light Breeze

December 5, 2018 – Monitoring Wells and Gas Probes

Weather 22°F, Partly Cloudy, Light Breeze

1. GV-101 Straight

2. LHW-94-1

3. GV-102 Slight West tilt

4. GV-103 Straight

5. GV-104 West tilt

6. GV-110 South tilt

7. GV-109 Slight North tilt

8. GV-108 Northwest tilt

9. GV-107 Slight North tilt

10. GV-106 Straight

11. GV-105 North-Northwest tilt

12. GV-114 West tilt

13. GV-4 Straight, LHW-94-3 unable to open

14. GV-3 North tilt

15. GV-2 Slight North tilt

16. GV-1 Northeast tilt

17. GV-112 East tilt

18. GV-116 North tilt

19. GV-115 North tilt

20. GV-111 Slight North tilt

21. GV-5 West tilt

22. GV-119 Slight West tilt

23. GV-129 Straight

24. GV-129 Top of boot straight-no gaps, missing hose clamp

25. GV-130 Straight

26. Woody vegetation around GV-130

27. LHW-94-5 – no protective casing cover

28. LHW-94-5 – no lock present

29. LHW-94-5

30. GV-131 Slight Northeast tilt

31. GV-132 Straight

32. GV-133 Straight

33. GV-134 Straight

34. LHW-94-6 – no lock

35. Inside LHW-94-6 tilted

36. GV-135 Straight

37. GV-135 hole

38. GV-135 tear

39. GV-136 Northeast tilt

40. Leachate lift station

41. Leachate lift station #2

42. GV-146 North tilt

43. GV-126 Straight

44. Erosion down hill face #1

45. Erosion down hill face #2

46. Erosion down hill face #3

47. Erosion down hill face #4

48. Erosion down hill face #5

49. Erosion down hill face #6

50. Erosion down hill face #7

51. GV-123 East tilt

52. Drainage pipe at base of GV-123

53. Damaged corrugated pipe

54. GV-117 East tilt

55. GV-121 Straight

56. GV-122 Slight Northeast tilt

57. GV-125 Straight

58. GV-124 Straight

59. GV-120 Slight W tilt

60. GV-118 West tilt

61. GV-128 Slight West tilt

62. GV-113 West-Southwest tilt

63. GV-145 Straight

64. GV-145 Before tightened

65. GV-144 Straight

66. Unidentified LHW Southeast of GV-144 and North of GV-143

67. Tear in boot of unidentified LHW Southeast of GV-144 and North of GV-143

68. GV-143 Straight

69. GV-143 and LHW

70. GV-142 Southeast-East tilt

71. GV-141 Straight

72. GV-140 South tilt

73. GV-139 Southeast tilt

74. GV-138 South tilt

75. GV-138 tear at bottom

76. GV-137 East tilt

77. GV-137 tear at base

78. GV-137 tear at base

79. GV-127 Straight

80. Site overview looking Northeast

81. Site overview looking North

82. Site overview looking Northwest

83. Woody vegetation – potentially from 2017

84. Possibly vegetation near lift station

85. Dead vegetation #2 near lift station

86. Unmarked vaults – possible parts of old leachate system

87. Inside unmarked vault – possible parts of old leachate system, near leachate piping

88. Inside Unmarked vaults – possible parts of old leachate system, near leachate piping

89. Unmarked pipe

90. GV-100

91. Extent of erosion down hillface

92. Extent of erosion down hillface #2

93. W-23 – no cap

94. W-23A

95. GP-8

96. GP-8 Open

97. GP-9

98. GP-9 Open

99. GP-10

100. GP-10 Open

101. B-94-26

102. B-94-26 Open – no cap

103. GP-11 Open

103. GP-11

104. MW-24

105. MW-24 Open

106. GP-12

107. GP-12 Open

108. B-96-17A

109. B-96-17A Open

110. B-96-17

111. B-96-17 Open

112. GP-2

113. GP-2 Open

114. B-21A Open –no cap

115. B-21 Open – no cap

116. B-21 Inside

117. GP-6

118. GP-6

119. GP-1 Open

120. B-15A

121. B-15A Open – no cap

122. B-15

123. B-15 Open – no cap

124. GP-5

125. GP-5 Open

126. B-94-14A – eroding ground slope at base of well

127. B-94-14A Open

128. B-94-14

129. B-94-14 Open

130. B-94-25

131. B-94-25 Open

132. B-94-25A

133. B-19

134. B-19 Open – no cap

135. GP-3

136. GP-3 Open

137. B-96-13

138. B-96-13 Open

139. B-96-13A

140. B-96-13A Open

141. B-94-19A

142. B-96-18A

143. B-96-18B

APPENDIX D: Survey Results

APPENDIX D
2018 Kapur and Associates Survey Results

Monitoring Wells

NAME	GEMS ID	ELEVATION			STATE PLANE NORTH	STATE PLANE EAST	LAT	LONG	WTM Northing	WTM Easting
		TOP STEEL	PVC TOP	GROUND						
B-96-13		976.1	975.85	972.2	362872.88	2488754.04	42.98096	-88.17352	919680.242	2194619.63
B-96-13A	911	976.77	976.44	972.22	362857.69	2488750.46	42.98092	-88.17353	919665.054	2194616.05
B-94-14A	903	953.78	954.32	952.05	362832.02	2487765.76	42.98091	-88.17721	919639.552	2193631.43
B-94-14R	902	954	954.18	952.17	362836.05	2487761.94	42.98092	-88.17723	919643.582	2193627.61
B-15	225	957.21	957.07	956.32	362522.23	2487745.3	42.98006	-88.17731	919329.79	2193610.91
B-15A	251	960.17	960.1	957.55	362521.04	2487753.9	42.98006	-88.17728	919328.599	2193619.51
B-96-17	913	974.29	974.33	972.82	361839.19	2487787.54	42.97818	-88.17721	918646.799	2193653.04
B-96-17A	914	974.39	974.44	973.47	361836.08	2487792.76	42.97817	-88.17719	918643.688	2193658.26
B-96-18A	915	973.86	973.87	971.96	361626	2489010.28	42.97753	-88.17266	918433.419	2194875.64
B-96-18B	916	974.5	974.66	972.73	361629.32	2489005.4	42.97753	-88.17268	918436.74	2194870.76
B-19	232	960.98	961.04	957.43	362886.94	2488412.44	42.98102	-88.17479	919694.359	2194278.06
B-94-19A	904	959.74	959.76	958.06	362886.48	2488423.26	42.98102	-88.17475	919693.897	2194288.88
B-21	252	964.04	963.01	961.63	362207.76	2487752.51	42.9792	-88.17731	919015.345	2193618.07
B-21A	253	963.81	963.69	961.83	362210.06	2487756.89	42.9792	-88.1773	919017.644	2193622.45
W-23	259	985.56	985.24	984.96	362246.11	2488919.24	42.97923	-88.17295	919053.495	2194784.71
W-23A	260	985.82	985.5	985.07	362263.92	2488916.03	42.97928	-88.17296	919071.304	2194781.51
W-24	263	1011.83	1012.04	1008.62	361659.16	2488072.48	42.97767	-88.17616	918466.735	2193937.92
B-94-25	905	950.48	950.63	949.24	362878.5	2488101.4	42.98102	-88.17595	919685.972	2193967.05
B-94-25A	906	951.26	951.39	949.38	362878.91	2488109.29	42.98102	-88.17593	919686.38	2193974.94
B-94-26	907	1018.58	1016.98	1016.08	361657.62	2488523.65	42.97764	-88.17448	918465.119	2194389.06

Leachate Head Wells

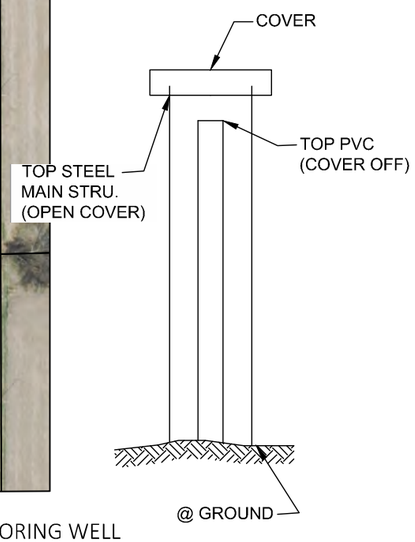
NAME	GEMS ID	ELEVATION			STATE PLANE NORTH	STATE PLANE EAST	LAT	LONG	WTM Northing	WTM Easting
		TOP STEEL	PVC TOP	GROUND						
LHW 94-1	971	965.26	965.92	962.39	362784.37	2488339.63	42.98074	-88.17507	919591.809	2194205.24
LHW 94-3	973	989.59	-	988.94	362420.08	2487954.21	42.97977	-88.17654	919227.611	2193819.79
LHW 94-5	975	1033.51	1033.15	1031.56	361781.96	2488229.6	42.978	-88.17557	918589.499	2194095.05
LHW 94-6	976	1033.4	1032.75	1031.4	361802.57	2488676.25	42.97803	-88.1739	918610.032	2194541.67
LHW (Like GV without a vent)	-	-	-	1001.84	361778.61	2488093.06	42.978	-88.17608	918586.17	2193958.52

Gas Probes

NAME	GEMS ID	ELEVATION			STATE PLANE NORTH	STATE PLANE EAST	LAT	LONG	WTM Northing	WTM Easting
		TOP STEEL	PVC TOP	GROUND						
GP-1	280	959.92	959.62	957.41	362511.59	2487747.64	42.98003	-88.17731	919319.151	2193613.25
GP-2S	284	963.88	963.73	961.83	362213.34	2487756.85	42.97921	-88.17730	919020.924	2193622.41
GP-2D	286	96.39	963.45	961.83	362213.34	2487756.85	42.97921	-88.17730	919020.924	2193622.41
GP-3S	287	976.67	976.52	976.67	362848.89	2488781.61	42.98089	-88.17342	919656.25	2194647.2
GP-3M	288	976.67	976.60	976.67	362848.89	2488781.61	42.98089	-88.17342	919656.25	2194647.2
GP-3D	289	976.67	976.39	976.67	362848.89	2488781.61	42.98089	-88.17342	919656.25	2194647.2
GP-5S	294	954.07	953.97	953.42	362796.74	2487754.04	42.98081	-88.17726	919604.276	2193619.7
GP-5M	295	954.07	CAN'T OPEN	953.42	362796.74	2487754.04	42.98081	-88.17726	919604.276	2193619.7
GP-5D	296	954.07	CAN'T OPEN	953.42	362796.74	2487754.04	42.98081	-88.17726	919604.276	2193619.7
GP-6S	297	968.90	968.63	967.78	362306.68	2487778.65	42.97947	-88.17721	919114.252	2193644.23
GP-6M	298	968.90	968.68	967.78	362306.68	2487778.65	42.97947	-88.17721	919114.252	2193644.23
GP-6D	299	968.90	968.65	967.78	362306.68	2487778.65	42.97947	-88.17721	919114.252	2193644.23
GP-8S	264	992.68	992.16	990.08	361994.12	2488970.17	42.97854	-88.17278	918801.517	2194835.6
GP-8M	265	992.68	992.02	990.08	361994.12	2488970.17	42.97854	-88.17278	918801.517	2194835.6
GP-8D	266	992.68	992.05	990.08	361994.12	2488970.17	42.97854	-88.17278	918801.517	2194835.6
GP-9S	267	995.09	995.72	994.14	361755.35	2488969.06	42.97788	-88.17281	918562.766	2194834.45
GP-9M	268	995.09	995.64	994.14	361755.35	2488969.06	42.97788	-88.17281	918562.766	2194834.45
GP-9D	269	995.09	995.73	994.14	361755.35	2488969.06	42.97788	-88.17281	918562.766	2194834.45
GP-10S	270	998.84	998.86	998.54	361652.19	2488786.74	42.97761	-88.17349	918459.645	2194652.12
GP-10M	271	998.84	999.13	998.54	361652.19	2488786.74	42.97761	-88.17349	918459.645	2194652.12
GP-10D	272	998.84	998.86	998.54	361652.19	2488786.74	42.97761	-88.17349	918459.645	2194652.12
GP-11S	273	1014.27	1014.42	1011.74	361628.65	2488379.11	42.97757	-88.17502	918436.176	2194244.52
GP-11M	274	1014.27	1014.41	1011.74	361628.65	2488379.11	42.97757	-88.17502	918436.176	2194244.52
GP-11D	275	1014.27	1014.37	1011.74	361628.65	2488379.11	42.97757	-88.17502	918436.176	2194244.52
GP-12S	276	973.61	973.59	970.69	361817.39	2487768.23	42.97812	-88.17729	918625.004	2193633.72
GP-12M	277	973.61	973.76	970.69	361817.39	2487768.23	42.97812	-88.17729	918625.004	2193633.72
GP-12D	278	973.61	973.75	970.69	361817.39	2487768.23	42.97812	-88.17729	918625.004	2193633.72

Gas Vents

NAME	GEMS ID	ELEVATION			STATE PLANE NORTH	STATE PLANE EAST	LAT	LONG	WTM Northing	WTM Easting
		TOP STEEL	PVC TOP	GROUND						
GV-1	-	-	-	987.34	362501.24	2488374.67	42.97996	-88.17496	919308.696	2194240.23
GV-2	-	-	-	987.10	362485.90	2488232.78	42.97993	-88.1755	919293.381	2194098.35
GV-3	-	-	-	989.56	362452.83	2488087.41	42.97985	-88.17604	919260.338	2193952.99
GV-4	-	-	-	989.43	362412.71	2487947.81	42.97975	-88.17657	919220.245	2193813.39
GV-5	-	-	-	1003.82	362254.28	2487948.35	42.97931	-88.17658	919061.828	2193813.9
GV-100	-	-	-	986.06	362194.91	2488943.25	42.97909	-88.17287	919002.295	2194808.71
GV-101	-	-	-	959.94	362802.36	2488298.29	42.98079	-88.17523	919609.805	2194163.91
GV-102	-	-	-	964.71	362832.76	2488487.49	42.98087	-88.17452	919640.17	2194353.1
GV-103	-	-	-	971.64	362834.19	2488655.59	42.98086	-88.17389	919641.572	2194521.18
GV-104	-	-	-	973.93	362829.97	2488789.86	42.98084	-88.17339	919637.33	2194655.44
GV-105	-	-	-	964.62	362606.88	2487866.68	42.98028	-88.17685	919414.413	2193732.3
GV-106	-	-	-	968.57	362589.40	2488006.62	42.98023	-88.17633	919396.911	2193872.22
GV-107	-	-	-	965.84	362623.34	2488168.95	42.98031	-88.17572	919430.821	2194034.55
GV-108	-	-	-	969.18	362648.88	2488345.01	42.98037	-88.17506	919456.329	2194210.6
GV-109	-	-	-	972.52	362668.47	2488487.19	42.98042	-88.17453	919475.894	2194352.77
GV-110	-	-	-	973.91	362714.27	2488642.48	42.98053	-88.17395	919521.664	2194508.05
GV-111	-	-	-	1009.97	362325.86	2488147.08	42.9795	-88.17583	919133.369	2194012.63
GV-112	-	-	-	984.68	362519.29	2488522.97	42.98	-88.17441	919326.72	2194388.52
GV-113	-	-	-	989.93	361968.05	2487845.05	42.97853	-88.17699	918775.639	2193710.56
GV-114	-	-	-	973.71	362473.35	2487831.31	42.97992	-88.177	919280.9	2193696.91
GV-115	-	-	-	1003.92	362371.35	2488272.25	42.97961	-88.17536	919178.834	2194137.8
GV-116	-	-	-	998.80	362411.73	2488400.31	42.97972	-88.17488	919219.189	2194265.85
GV-117	-	-	-	967.48	362357.64	2488556.27	42.97956	-88.1743	919165.077	2194421.79
GV-118	-	-	-	982.29	362306.05	2487836.11	42.97946	-88.17699	919113.613	2193701.68
GV-119	-	-	-	1030.62	362106.32	2488058.34	42.9789	-88.17618	918913.861	2193923.86
GV-120	-	-	-	1027.15	362192.08	2488183.25	42.97913	-88.17571	918999.593	2194048.77
GV-121	-	-	-	1019.19	362262.90	2488346.60	42.97931	-88.17509	919070.38	2194212.12
GV-122	-	-	-	1030.57	362106.52	2488329.47	42.97888	-88.17517	918914.016	2194194.97
GV-123	-	-	-	968.91	362187.79	2488531.83	42.9791	-88.1744	918995.245	2194397.32
GV-124	-	-	-	1032.88	362030.04	2488193.81	42.97868	-88.17568	918837.565	2194059.31
GV-125	-	-	-	1029.80	361974.90	2488368.22	42.97852	-88.17503	918782.4	2194233.69
GV-126	-	-	-	972.34	362066.71	2488582.24	42.97876	-88.17422	918874.166	2194447.71
GV-127	-	-	-	1029.10	361871.38	2488505.84	42.97823	-88.17453	918678.865	2194371.28
GV-128	-	-	-	988.34	362109.21	2487847.45	42.97892	-88.17697	918916.787	2193712.99
GV-129	-	-	-	1030.99	361953.78	2488045.09	42.97848	-88.17624	918761.336	2193910.58
GV-130	-	-	-	1031.21	361870.70	2488175.68	42.97825	-88.17576	918678.241	2194041.15
GV-131	-	-	-	1032.06	361831.48	2488309.08	42.97813	-88.17526	918639.001	2194174.53
GV-132	-	-	-	1031.23	361793.47	2488417.83	42.97802	-88.17486	918600.976	2194283.27
GV-133	-	-	-	1030.92	361785.21	2488525.66	42.97799	-88.17446	918592.698	2194391.09
GV-134	-	-	-	1030.54	361822.18	2488644.94	42.97809	-88.17401	918629.645	2194510.36
GV-135	-	-	-	1026.80	361810.22	2488811.69	42.97804	-88.17339	918617.658	2194677.1
GV-136	-	-	-	997.45	361952.05	2488874.92	42.97843	-88.17314	918759.466	2194740.35
GV-137	-	-	-	994.74	361783.53	2488953.80	42.97796	-88.17286	918590.946	2194819.19
GV-138	-	-	-	998.41	361687.03	2488829.04	42.9777	-88.17333	918494.475	2194694.43
GV-139	-	-	-	1010.87	361681.32	2488676.19	42.9777	-88.17391	918488.791	2194541.59
GV-140	-	-	-	1019.80	361680.33	2488513.93	42.9777	-88.17451	918487.829	2194379.34
GV-141	-	-	-	1021.10	361671.99	2488370.64	42.97769	-88.17505	918479.514	2194236.06
GV-142	-	-	-	1019.04	361679.58	2488217.68	42.97772	-88.17562	918487.129	2194083.11
GV-143	-	-	-	1004.31	361738.28	2488111.18	42.97789	-88.17601	918545.842	2193976.63
GV-144	-	-	-	998.85	361840.02	2488027.14	42.97817	-88.17632	918647.588	2193892.62
GV-145	-	-	-	989.91	361847.24	2487899.88	42.9782	-88.17679	918654.829	2193765.37
GV-146	-	-	-	977.32	362002.47	2488718.16	42.97858	-88.17372	918809.908	2194583.61



MONITORING WELLS

POINT No.	NAME	ELEVATION TOP STEEL	ELEVATION PVC TOP	ELEVATION GROUND	NORTH	EAST
	1000 LHW 94-3	989.59		988.94	362420.08	2487954.71
	1002 W-23	985.56	985.24	984.96	362746.11	2488919.74
	1003 W-23A	985.82	985.50	985.07	362263.92	2488916.03
	1005 MWELL MCP XY2 #1			986.19	362183.91	2488944.10
	1006 MWELL MCP XY2 #2			986.46	362173.85	2488945.09
	1015 B-94-26	1018.58	1016.98	1016.08	361657.62	2488523.65
	1026 B-94-25	950.48	950.63	949.24	362878.50	2488101.40
	1027 B-94-25A	951.26	951.39	949.38	362878.91	2488109.29
	1028 B-94-19A	959.74	959.76	958.06	362886.48	2488423.26
	1029 B19 BENT N	960.98	961.04	957.43	362886.94	2488412.44
	1030 LHW 94-1	965.26	965.92	962.39	362784.37	2488339.63
	1036 PLAST B-96-13	976.10	975.85	972.20	362872.88	2488754.04
	1037 PLAST B-96-13A	976.77	976.44	972.22	362857.69	2488750.46
	1079 LHW 94-6	1033.40	1032.75	1031.40	361802.57	2488676.25
	1080 LHW 94-5	1033.51	1033.15	1031.56	361781.96	2488228.60
	1502 94-14-R	954.00	954.18	952.17	362836.05	2487761.94
	1503 94-14A	953.78	954.32	952.05	362832.02	2487765.76
	1523 W-24	1011.83	1012.04	1008.62	361659.16	2488072.48
	1534 B 96 17B	974.39	974.44	973.47	361836.08	2487792.76
	1535 B 96 17A?	974.29	974.33	972.82	361839.19	2487787.54
	1542 B21	964.04	963.01	961.63	362207.76	2487752.51
	1543 B21A	963.81	963.69	961.83	362210.06	2487756.89
	1561 B-15A	960.17	960.10	957.55	362521.04	2487753.90
	1567 B-15	957.21	957.07	956.32	362522.23	2487745.30
	1572 B-96-18A	973.86	973.87	971.96	361626.00	2489010.28
	1573 B-96-18B	974.50	974.66	972.73	361629.32	2489005.40

GAS PROBES

POINT No.	NAME	ELEVATION TOP STEEL	ELEVATION PVC TOP S	ELEVATION PVC TOP M	ELEVATION PVC TOP D	ELEVATION GROUND	NORTH	EAST
	1009 GP-8	992.68	992.16	992.02	992.05	990.08	361994.12	2488970.17
	1010 GP-9	995.09	995.72	995.64	995.73	994.14	361755.35	2488969.06
	1011 GP-10	998.84	998.86	999.13	998.86	998.54	361652.19	2488786.74
	1038 PLAST GP-3	976.67	976.52	976.60	976.39	976.67	362848.89	2488781.61
	1504 GP-5	954.07	953.97	CAN'T OPEN	CAN'T OPEN	953.42	362796.74	2487754.04
	1516 GP-11	1014.27	1014.42	1014.37	1014.41	1011.74	361628.65	2488379.11
	1528 GP-12	973.61	973.59	973.75	973.76	970.69	361817.39	2487768.23
	1547 GP-2	963.88	963.73	963.45	-	961.83	362213.34	2487756.85
	1553 GP 6	968.90	968.63	968.65	968.68	967.78	362306.68	2487778.65
	1567 GP 1	959.92	959.62			957.41	362511.59	2487747.64

GAS VENTS

POINT No.	NAME	GROUND ELEV.	NORTH	EAST
1007	100	986.06	362194.91	2488943.25
1008	0	986.01	362202.01	2488942.37
1012	138	998.41	361687.03	2488829.04
1013	139	1010.87	361681.32	2488676.19
1014	140	1019.80	361680.33	2488513.93
1016	141	1021.10	361671.99	2488370.64
1017	142	1019.04	361679.58	2488217.68
1018	143	1004.31	361738.28	2488111.18
1019 LHW OLD		1001.84	361778.61	2488093.06
1020	144	998.85	361840.02	2488027.14
1021	145	989.91	361847.24	2487899.88
1022	113	989.93	361968.05	2487845.05
1023	128	988.34	362109.21	2487847.45
1024	118	982.29	362306.05	2487836.11
1025	114	973.71	362473.35	2487831.31
1031	101	959.94	362802.36	2488298.29
1032	102	964.71	362832.76	2488487.49
1033	103	971.64	362834.19	2488655.59
1034	110	973.91	362714.77	2488642.48
1035	104	973.93	362829.97	2488789.86
1039	109	972.52	362668.47	2488487.19
1040	108	969.18	362648.88	2488345.01
1041	107	965.84	362623.34	2488168.95
1042	106	968.57	362589.40	2488006.62
1043	105	964.62	362606.88	2487866.68
1044	4	989.43	362412.71	2487947.81
1045	3	989.56	362452.83	2488087.41
1046	2	987.10	362485.90	2488232.78
1047	1	987.34	362501.24	2488374.67
1048	112	984.68	362519.29	2488522.97
1049	116	998.80	362411.73	2488400.31
1050	115	1003.92	362371.35	2488272.25
1051	111	1009.97	362325.86	2488147.08
1052	5	1003.82	362254.28	2487948.35
1053	120	1027.15	362192.08	2488183.25
1054	121	1019.19	362262.90	2488346.60
1055	122	1030.57	362106.52	2488329.47
1056	124	1032.88	362030.04	2488193.81
1057	129	1030.99	361953.78	2488045.09
1058	119	1030.67	362106.37	2488058.34
1059	130	1031.71	361870.70	2488175.68
1060	131	1032.06	361831.48	2488309.08
1061	125	1029.80	361974.90	2488368.22
1062	127	1029.10	361871.38	2488505.84
1063	132	1031.23	361793.47	2488417.83
1064	133	1030.92	361785.21	2488525.66
1065	134	1030.54	361822.18	2488644.94
1066	135	1026.80	361810.22	2488811.69
1067	136	997.45	361952.05	2488874.92
1068	146	977.32	362002.47	2488718.16
1069	126	972.34	362066.71	2488582.24
1070	123	968.91	362187.79	2488531.83
1071	117	967.48	362357.64	2488556.27
1081	137	994.74	361783.53	2488953.80

KAPUR & ASSOCIATES, INC.
CONSULTING ENGINEERS
7711 N. PORT WASHINGTON ROAD
MILWAUKEE, WISCONSIN 53217
Phone: 414.351.6668 Fax: 414.351.4117
www.kapurengineers.com

PROJECT:
MONITORING WELL EXHIBIT

LOCATION:
BARNETT LANDFILL

CLIENT:
TETRA TECH
DNR

RELEASE:

REVISIONS:

#	DATE	DESCRIPTION

NORTH ARROW:

SCALE: 1" = 200'
0 100 200

SEAL:

we listen. we innovate.
we turn your vision into reality.

SHEET:
MW EXHIBIT

PROJECT MANAGER:	JH
PROJECT NUMBER:	19.0007.01
DATE:	2018/11/06

SHEET NUMBER:
1 of 1

FILENAME: S:\Wauk_Co\WestBerlin\Proj\190007 Tetra Tech--DNR Barnett landfill\Survey\190007_Jt.dwg

APPENDIX E: Leachate Analytical Results

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

June 12, 2018

Lori Huntoon
Tetra Tech Geo
175 North Corporate Drive
Suite 100
Brookfield, WI 53045

RE: Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

Dear Lori Huntoon:
Enclosed are the analytical results for sample(s) received by the laboratory on May 25, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Steven Mleczko for
Brian Basten
brian.basten@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Ashley Wagner, Tetra Tech Geo

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
Virginia VELAP ID: 460263
South Carolina Certification #: 83006001
Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-16-00157
Federal Fish & Wildlife Permit #: LE51774A-0

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40169819001	**LEACHATE**	Water	05/24/18 14:35	05/25/18 13:35
40169819002	**TRIP BLANK**	Water	05/24/18 00:00	05/25/18 13:35

Pace Analytical Services, LLC
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Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40169819001	**LEACHATE**	EPA 6010	JLD	5
		EPA 7470	AJT	1
		EPA 8270	RJN	75
		EPA 8260	LAP	45
			RMW	3
		SM 2540D	KTS	1
		SM 5210B	DDY	1
		EPA 300.0	HMB	2
		EPA 310.2	DAW	1
		EPA 350.1	TMK	1
		EPA 351.2	TMK	1
		EPA 410.4	TJJ	1
40169819002	**TRIP BLANK**	EPA 8260	LAP	45

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

Sample: LEACHATE **Lab ID: 40169819001** Collected: 05/24/18 14:35 Received: 05/25/18 13:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Cadmium	**<1.3**	ug/L	5.0	1.3	1	06/06/18 13:25	06/08/18 13:53	7440-43-9	
Iron	**1150**	ug/L	100	34.0	1	06/06/18 13:25	06/08/18 13:53	7439-89-6	
Lead	**12.0J**	ug/L	13.0	4.3	1	06/06/18 13:25	06/08/18 13:53	7439-92-1	1q
Sodium	**1890000**	ug/L	50000	9890	100	06/06/18 13:25	06/08/18 13:59	7440-23-5	
Total Hardness by 2340B	**221000**	ug/L	2000	150	1	06/06/18 13:25	06/08/18 13:53		
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<1.3**	ug/L	4.2	1.3	1	06/06/18 09:30	06/07/18 08:45	7439-97-6	D3
8270 MSSV Semivolatile Organic	Analytical Method: EPA 8270 Preparation Method: EPA 3510								
1,2,4,5-Tetrachlorobenzene	**<211**	ug/L	703	211	12.5	05/30/18 07:39	06/07/18 12:46	95-94-3	
1,2,4-Trichlorobenzene	**<254**	ug/L	848	254	12.5	05/30/18 07:39	06/07/18 12:46	120-82-1	
1,2-Dichlorobenzene	**<241**	ug/L	804	241	12.5	05/30/18 07:39	06/07/18 12:46	95-50-1	
1,3-Dichlorobenzene	**<235**	ug/L	785	235	12.5	05/30/18 07:39	06/07/18 12:46	541-73-1	
1,4-Dichlorobenzene	**<235**	ug/L	782	235	12.5	05/30/18 07:39	06/07/18 12:46	106-46-7	
1-Methylnaphthalene	**<209**	ug/L	695	209	12.5	05/30/18 07:39	06/07/18 12:46	90-12-0	
2,2'-Oxybis(1-chloropropane)	**<191**	ug/L	636	191	12.5	05/30/18 07:39	06/07/18 12:46	108-60-1	
2,3,4,6-Tetrachlorophenol	**<189**	ug/L	629	189	12.5	05/30/18 07:39	06/07/18 12:46	58-90-2	
2,4,5-Trichlorophenol	**<105**	ug/L	351	105	12.5	05/30/18 07:39	06/07/18 12:46	95-95-4	
2,4,6-Trichlorophenol	**<264**	ug/L	880	264	12.5	05/30/18 07:39	06/07/18 12:46	88-06-2	
2,4-Dichlorophenol	**<171**	ug/L	569	171	12.5	05/30/18 07:39	06/07/18 12:46	120-83-2	
2,4-Dimethylphenol	**<158**	ug/L	527	158	12.5	05/30/18 07:39	06/07/18 12:46	105-67-9	
2,4-Dinitrophenol	**<88.9**	ug/L	296	88.9	12.5	05/30/18 07:39	06/07/18 12:46	51-28-5	
2,4-Dinitrotoluene	**<99.0**	ug/L	330	99.0	12.5	05/30/18 07:39	06/07/18 12:46	121-14-2	
2,6-Dinitrotoluene	**<75.4**	ug/L	251	75.4	12.5	05/30/18 07:39	06/07/18 12:46	606-20-2	
2-Chloronaphthalene	**<206**	ug/L	686	206	12.5	05/30/18 07:39	06/07/18 12:46	91-58-7	
2-Chlorophenol	**<145**	ug/L	482	145	12.5	05/30/18 07:39	06/07/18 12:46	95-57-8	
2-Methylnaphthalene	**<189**	ug/L	631	189	12.5	05/30/18 07:39	06/07/18 12:46	91-57-6	
2-Methylphenol(o-Cresol)	**<109**	ug/L	362	109	12.5	05/30/18 07:39	06/07/18 12:46	95-48-7	
2-Nitroaniline	**<96.7**	ug/L	322	96.7	12.5	05/30/18 07:39	06/07/18 12:46	88-74-4	
2-Nitrophenol	**<146**	ug/L	485	146	12.5	05/30/18 07:39	06/07/18 12:46	88-75-5	
3&4-Methylphenol(m&p Cresol)	**<195**	ug/L	651	195	12.5	05/30/18 07:39	06/07/18 12:46		
3,3'-Dichlorobenzidine	**<113**	ug/L	377	113	12.5	05/30/18 07:39	06/07/18 12:46	91-94-1	
3-Nitroaniline	**<121**	ug/L	404	121	12.5	05/30/18 07:39	06/07/18 12:46	99-09-2	
4,6-Dinitro-2-methylphenol	**<81.7**	ug/L	272	81.7	12.5	05/30/18 07:39	06/07/18 12:46	534-52-1	
4-Bromophenylphenyl ether	**<247**	ug/L	822	247	12.5	05/30/18 07:39	06/07/18 12:46	101-55-3	
4-Chloro-3-methylphenol	**<211**	ug/L	703	211	12.5	05/30/18 07:39	06/07/18 12:46	59-50-7	
4-Chlorophenylphenyl ether	**<102**	ug/L	341	102	12.5	05/30/18 07:39	06/07/18 12:46	7005-72-3	
4-Nitroaniline	**<229**	ug/L	763	229	12.5	05/30/18 07:39	06/07/18 12:46	100-01-6	L2
4-Nitrophenol	**<131**	ug/L	437	131	12.5	05/30/18 07:39	06/07/18 12:46	100-02-7	
Acenaphthene	**<167**	ug/L	558	167	12.5	05/30/18 07:39	06/07/18 12:46	83-32-9	
Acenaphthylene	**<133**	ug/L	442	133	12.5	05/30/18 07:39	06/07/18 12:46	208-96-8	
Acetophenone	**<533**	ug/L	1780	533	12.5	05/30/18 07:39	06/07/18 12:46	98-86-2	
Anthracene	**<226**	ug/L	752	226	12.5	05/30/18 07:39	06/07/18 12:46	120-12-7	
Benzo(a)anthracene	**<66.9**	ug/L	223	66.9	12.5	05/30/18 07:39	06/07/18 12:46	56-55-3	
Benzo(a)pyrene	**<235**	ug/L	784	235	12.5	05/30/18 07:39	06/07/18 12:46	50-32-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

Sample: LEACHATE **Lab ID: 40169819001** Collected: 05/24/18 14:35 Received: 05/25/18 13:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Semivolatile Organic	Analytical Method: EPA 8270 Preparation Method: EPA 3510								
Benzo(b)fluoranthene	**<81.8**	ug/L	273	81.8	12.5	05/30/18 07:39	06/07/18 12:46	205-99-2	
Benzo(g,h,i)perylene	**<101**	ug/L	338	101	12.5	05/30/18 07:39	06/07/18 12:46	191-24-2	
Benzo(k)fluoranthene	**<125**	ug/L	418	125	12.5	05/30/18 07:39	06/07/18 12:46	207-08-9	
Benzyl alcohol	**<137**	ug/L	456	137	12.5	05/30/18 07:39	06/07/18 12:46	100-51-6	
Butylbenzylphthalate	**<96.7**	ug/L	322	96.7	12.5	05/30/18 07:39	06/07/18 12:46	85-68-7	
Chrysene	**<217**	ug/L	725	217	12.5	05/30/18 07:39	06/07/18 12:46	218-01-9	
Di-n-butylphthalate	**<320**	ug/L	1070	320	12.5	05/30/18 07:39	06/07/18 12:46	84-74-2	
Di-n-octylphthalate	**<237**	ug/L	788	237	12.5	05/30/18 07:39	06/07/18 12:46	117-84-0	
Dibenz(a,h)anthracene	**<165**	ug/L	551	165	12.5	05/30/18 07:39	06/07/18 12:46	53-70-3	
Dibenzofuran	**<96.1**	ug/L	320	96.1	12.5	05/30/18 07:39	06/07/18 12:46	132-64-9	
Diethylphthalate	**<135**	ug/L	451	135	12.5	05/30/18 07:39	06/07/18 12:46	84-66-2	
Dimethylphthalate	**<241**	ug/L	804	241	12.5	05/30/18 07:39	06/07/18 12:46	131-11-3	
Fluoranthene	**<70.4**	ug/L	235	70.4	12.5	05/30/18 07:39	06/07/18 12:46	206-44-0	
Fluorene	**<93.7**	ug/L	312	93.7	12.5	05/30/18 07:39	06/07/18 12:46	86-73-7	
Hexachloro-1,3-butadiene	**<308**	ug/L	1030	308	12.5	05/30/18 07:39	06/07/18 12:46	87-68-3	
Hexachlorobenzene	**<212**	ug/L	706	212	12.5	05/30/18 07:39	06/07/18 12:46	118-74-1	
Hexachlorocyclopentadiene	**<84.8**	ug/L	283	84.8	12.5	05/30/18 07:39	06/07/18 12:46	77-47-4	
Hexachloroethane	**<332**	ug/L	1110	332	12.5	05/30/18 07:39	06/07/18 12:46	67-72-1	
Indeno(1,2,3-cd)pyrene	**<187**	ug/L	624	187	12.5	05/30/18 07:39	06/07/18 12:46	193-39-5	
Isophorone	**<91.8**	ug/L	306	91.8	12.5	05/30/18 07:39	06/07/18 12:46	78-59-1	
N-Nitroso-di-n-propylamine	**<121**	ug/L	405	121	12.5	05/30/18 07:39	06/07/18 12:46	621-64-7	
N-Nitrosodimethylamine	**<124**	ug/L	413	124	12.5	05/30/18 07:39	06/07/18 12:46	62-75-9	
N-Nitrosodiphenylamine	**<441**	ug/L	1470	441	12.5	05/30/18 07:39	06/07/18 12:46	86-30-6	
Naphthalene	**<237**	ug/L	791	237	12.5	05/30/18 07:39	06/07/18 12:46	91-20-3	
Nitrobenzene	**<181**	ug/L	604	181	12.5	05/30/18 07:39	06/07/18 12:46	98-95-3	
Pentachlorophenol	**<179**	ug/L	598	179	12.5	05/30/18 07:39	06/07/18 12:46	87-86-5	
Phenanthrene	**<228**	ug/L	759	228	12.5	05/30/18 07:39	06/07/18 12:46	85-01-8	
Phenol	**<74.9**	ug/L	250	74.9	12.5	05/30/18 07:39	06/07/18 12:46	108-95-2	D3
Pyrene	**<168**	ug/L	561	168	12.5	05/30/18 07:39	06/07/18 12:46	129-00-0	
Pyridine	**<224**	ug/L	746	224	12.5	05/30/18 07:39	06/07/18 12:46	110-86-1	
bis(2-Chloroethoxy)methane	**<125**	ug/L	415	125	12.5	05/30/18 07:39	06/07/18 12:46	111-91-1	
bis(2-Chloroethyl) ether	**<198**	ug/L	659	198	12.5	05/30/18 07:39	06/07/18 12:46	111-44-4	
bis(2-Ethylhexyl)phthalate	**<86.6**	ug/L	289	86.6	12.5	05/30/18 07:39	06/07/18 12:46	117-81-7	
Surrogates									
Nitrobenzene-d5 (S)	95	%	56-120		12.5	05/30/18 07:39	06/07/18 12:46	4165-60-0	
2-Fluorobiphenyl (S)	67	%	54-122		12.5	05/30/18 07:39	06/07/18 12:46	321-60-8	
Terphenyl-d14 (S)	116	%	59-136		12.5	05/30/18 07:39	06/07/18 12:46	1718-51-0	
Phenol-d6 (S)	30	%	16-120		12.5	05/30/18 07:39	06/07/18 12:46	13127-88-3	
2-Fluorophenol (S)	58	%	27-77		12.5	05/30/18 07:39	06/07/18 12:46	367-12-4	
2,4,6-Tribromophenol (S)	103	%	58-134		12.5	05/30/18 07:39	06/07/18 12:46	118-79-6	
8260 MSV	Analytical Method: EPA 8260								
1,1,1-Trichloroethane	**<5.0**	ug/L	10.0	5.0	10		05/30/18 09:59	71-55-6	
1,1,2-Trichloroethane	**<2.0**	ug/L	10.0	2.0	10		05/30/18 09:59	79-00-5	
1,1-Dichloroethane	**<2.4**	ug/L	10.0	2.4	10		05/30/18 09:59	75-34-3	
1,1-Dichloroethene	**<4.1**	ug/L	10.0	4.1	10		05/30/18 09:59	75-35-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

Sample: LEACHATE **Lab ID: 40169819001** Collected: 05/24/18 14:35 Received: 05/25/18 13:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
1,2-Dibromo-3-chloropropane	**<21.6**	ug/L	50.0	21.6	10		05/30/18 09:59	96-12-8	
1,2-Dibromoethane (EDB)	**<1.8**	ug/L	10.0	1.8	10		05/30/18 09:59	106-93-4	
1,2-Dichlorobenzene	**<5.0**	ug/L	10.0	5.0	10		05/30/18 09:59	95-50-1	
1,2-Dichloroethane	**<1.7**	ug/L	10.0	1.7	10		05/30/18 09:59	107-06-2	
1,2-Dichloropropane	**<2.3**	ug/L	10.0	2.3	10		05/30/18 09:59	78-87-5	
1,3-Dichlorobenzene	**<5.0**	ug/L	10.0	5.0	10		05/30/18 09:59	541-73-1	
1,4-Dichlorobenzene	**<5.0**	ug/L	10.0	5.0	10		05/30/18 09:59	106-46-7	
2-Butanone (MEK)	**44.8J**	ug/L	200	29.8	10		05/30/18 09:59	78-93-3	
Acetone	**252**	ug/L	200	29.5	10		05/30/18 09:59	67-64-1	
Benzene	**5.0J**	ug/L	10.0	5.0	10		05/30/18 09:59	71-43-2	
Bromodichloromethane	**<5.0**	ug/L	10.0	5.0	10		05/30/18 09:59	75-27-4	
Bromoform	**<5.0**	ug/L	10.0	5.0	10		05/30/18 09:59	75-25-2	
Bromomethane	**<24.3**	ug/L	50.0	24.3	10		05/30/18 09:59	74-83-9	
Carbon disulfide	**<6.1**	ug/L	50.0	6.1	10		05/30/18 09:59	75-15-0	
Carbon tetrachloride	**<5.0**	ug/L	10.0	5.0	10		05/30/18 09:59	56-23-5	
Chlorobenzene	**<5.0**	ug/L	10.0	5.0	10		05/30/18 09:59	108-90-7	
Chloroethane	**<3.7**	ug/L	10.0	3.7	10		05/30/18 09:59	75-00-3	
Chloroform	**<25.0**	ug/L	50.0	25.0	10		05/30/18 09:59	67-66-3	
Chloromethane	**<5.0**	ug/L	10.0	5.0	10		05/30/18 09:59	74-87-3	
Dibromochloromethane	**<5.0**	ug/L	10.0	5.0	10		05/30/18 09:59	124-48-1	
Dibromomethane	**<4.3**	ug/L	10.0	4.3	10		05/30/18 09:59	74-95-3	
Dichlorodifluoromethane	**<2.2**	ug/L	10.0	2.2	10		05/30/18 09:59	75-71-8	
Ethylbenzene	**10.6**	ug/L	10.0	5.0	10		05/30/18 09:59	100-41-4	
Methyl-tert-butyl ether	**<1.7**	ug/L	10.0	1.7	10		05/30/18 09:59	1634-04-4	
Methylene Chloride	**<2.3**	ug/L	10.0	2.3	10		05/30/18 09:59	75-09-2	
Naphthalene	**<25.0**	ug/L	50.0	25.0	10		05/30/18 09:59	91-20-3	
Styrene	**<5.0**	ug/L	10.0	5.0	10		05/30/18 09:59	100-42-5	
Tetrachloroethene	**<5.0**	ug/L	10.0	5.0	10		05/30/18 09:59	127-18-4	
Tetrahydrofuran	**143**	ug/L	50.0	20.3	10		05/30/18 09:59	109-99-9	
Toluene	**16.3**	ug/L	10.0	5.0	10		05/30/18 09:59	108-88-3	
Trichloroethene	**<3.3**	ug/L	10.0	3.3	10		05/30/18 09:59	79-01-6	
Trichlorofluoromethane	**<1.8**	ug/L	10.0	1.8	10		05/30/18 09:59	75-69-4	
Vinyl chloride	**<1.8**	ug/L	10.0	1.8	10		05/30/18 09:59	75-01-4	
Xylene (Total)	**25.1J**	ug/L	30.0	15.0	10		05/30/18 09:59	1330-20-7	
cis-1,2-Dichloroethene	**<2.6**	ug/L	10.0	2.6	10		05/30/18 09:59	156-59-2	
cis-1,3-Dichloropropene	**<5.0**	ug/L	10.0	5.0	10		05/30/18 09:59	10061-01-5	
trans-1,2-Dichloroethene	**<2.6**	ug/L	10.0	2.6	10		05/30/18 09:59	156-60-5	
trans-1,3-Dichloropropene	**<2.3**	ug/L	10.0	2.3	10		05/30/18 09:59	10061-02-6	
Surrogates									
4-Bromofluorobenzene (S)	91	%	61-130		10		05/30/18 09:59	460-00-4	pH
Dibromofluoromethane (S)	94	%	67-130		10		05/30/18 09:59	1868-53-7	
Toluene-d8 (S)	99	%	70-130		10		05/30/18 09:59	2037-26-5	
Field Data	Analytical Method:								
Field pH	**7.94**	Std. Units			1		05/24/18 14:35		
Field Specific Conductance	**3999**	umhos/cm			1		05/24/18 14:35		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

Sample: LEACHATE **Lab ID: 40169819001** Collected: 05/24/18 14:35 Received: 05/25/18 13:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Temperature, Water (C)	**13.7**	deg C			1		05/24/18 14:35		
2540D Total Suspended Solids	Analytical Method: SM 2540D								
Total Suspended Solids	**4.8**	mg/L	2.0	0.95	1		05/31/18 11:59		
5210B BOD, 5 day	Analytical Method: SM 5210B	Preparation Method: SM 5210B							
BOD, 5 day	**448**	mg/L	200	200	100	05/25/18 16:15	05/30/18 13:34		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**1400**	mg/L	200	50.0	100		06/08/18 12:40	16887-00-6	
Sulfate	**30.2J**	mg/L	60.0	20.0	20		06/07/18 21:25	14808-79-8	D3
310.2 Alkalinity	Analytical Method: EPA 310.2								
Alkalinity, Total as CaCO3	**5590**	mg/L	1170	352	50		05/30/18 14:30		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1	Preparation Method: EPA 350.1							
Nitrogen, Ammonia	**682**	mg/L	25.0	12.5	50	06/01/18 13:28	06/01/18 15:39	7664-41-7	
351.2 Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2	Preparation Method: EPA 351.2							
Nitrogen, Kjeldahl, Total	**751**	mg/L	73.1	21.9	5	06/05/18 15:10	06/06/18 15:03	7727-37-9	
410.4 COD	Analytical Method: EPA 410.4	Preparation Method: EPA 410.4							
Chemical Oxygen Demand	**2510**	mg/L	448	134	1	06/05/18 08:59	06/05/18 12:21		

Sample: TRIP BLANK **Lab ID: 40169819002** Collected: 05/24/18 00:00 Received: 05/25/18 13:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
1,1,1-Trichloroethane	**<0.50**	ug/L	1.0	0.50	1		05/30/18 13:24	71-55-6	
1,1,2-Trichloroethane	**<0.20**	ug/L	1.0	0.20	1		05/30/18 13:24	79-00-5	
1,1-Dichloroethane	**<0.24**	ug/L	1.0	0.24	1		05/30/18 13:24	75-34-3	
1,1-Dichloroethene	**<0.41**	ug/L	1.0	0.41	1		05/30/18 13:24	75-35-4	
1,2-Dibromo-3-chloropropane	**<2.2**	ug/L	5.0	2.2	1		05/30/18 13:24	96-12-8	
1,2-Dibromoethane (EDB)	**<0.18**	ug/L	1.0	0.18	1		05/30/18 13:24	106-93-4	
1,2-Dichlorobenzene	**<0.50**	ug/L	1.0	0.50	1		05/30/18 13:24	95-50-1	
1,2-Dichloroethane	**<0.17**	ug/L	1.0	0.17	1		05/30/18 13:24	107-06-2	
1,2-Dichloropropane	**<0.23**	ug/L	1.0	0.23	1		05/30/18 13:24	78-87-5	
1,3-Dichlorobenzene	**<0.50**	ug/L	1.0	0.50	1		05/30/18 13:24	541-73-1	
1,4-Dichlorobenzene	**<0.50**	ug/L	1.0	0.50	1		05/30/18 13:24	106-46-7	
2-Butanone (MEK)	**<3.0**	ug/L	20.0	3.0	1		05/30/18 13:24	78-93-3	
Acetone	**<3.0**	ug/L	20.0	3.0	1		05/30/18 13:24	67-64-1	
Benzene	**<0.50**	ug/L	1.0	0.50	1		05/30/18 13:24	71-43-2	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

Sample: TRIP BLANK **Lab ID: 40169819002** Collected: 05/24/18 00:00 Received: 05/25/18 13:35 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
Bromodichloromethane	**<0.50**	ug/L	1.0	0.50	1		05/30/18 13:24	75-27-4	
Bromoform	**<0.50**	ug/L	1.0	0.50	1		05/30/18 13:24	75-25-2	
Bromomethane	**<2.4**	ug/L	5.0	2.4	1		05/30/18 13:24	74-83-9	
Carbon disulfide	**<0.61**	ug/L	5.0	0.61	1		05/30/18 13:24	75-15-0	
Carbon tetrachloride	**<0.50**	ug/L	1.0	0.50	1		05/30/18 13:24	56-23-5	
Chlorobenzene	**<0.50**	ug/L	1.0	0.50	1		05/30/18 13:24	108-90-7	
Chloroethane	**<0.37**	ug/L	1.0	0.37	1		05/30/18 13:24	75-00-3	
Chloroform	**<2.5**	ug/L	5.0	2.5	1		05/30/18 13:24	67-66-3	
Chloromethane	**<0.50**	ug/L	1.0	0.50	1		05/30/18 13:24	74-87-3	
Dibromochloromethane	**<0.50**	ug/L	1.0	0.50	1		05/30/18 13:24	124-48-1	
Dibromomethane	**<0.43**	ug/L	1.0	0.43	1		05/30/18 13:24	74-95-3	
Dichlorodifluoromethane	**<0.22**	ug/L	1.0	0.22	1		05/30/18 13:24	75-71-8	
Ethylbenzene	**<0.50**	ug/L	1.0	0.50	1		05/30/18 13:24	100-41-4	
Methyl-tert-butyl ether	**<0.17**	ug/L	1.0	0.17	1		05/30/18 13:24	1634-04-4	
Methylene Chloride	**<0.23**	ug/L	1.0	0.23	1		05/30/18 13:24	75-09-2	
Naphthalene	**<2.5**	ug/L	5.0	2.5	1		05/30/18 13:24	91-20-3	
Styrene	**<0.50**	ug/L	1.0	0.50	1		05/30/18 13:24	100-42-5	
Tetrachloroethene	**<0.50**	ug/L	1.0	0.50	1		05/30/18 13:24	127-18-4	
Tetrahydrofuran	**<2.0**	ug/L	5.0	2.0	1		05/30/18 13:24	109-99-9	
Toluene	**<0.50**	ug/L	1.0	0.50	1		05/30/18 13:24	108-88-3	
Trichloroethene	**<0.33**	ug/L	1.0	0.33	1		05/30/18 13:24	79-01-6	
Trichlorofluoromethane	**<0.18**	ug/L	1.0	0.18	1		05/30/18 13:24	75-69-4	
Vinyl chloride	**<0.18**	ug/L	1.0	0.18	1		05/30/18 13:24	75-01-4	
Xylene (Total)	**<1.5**	ug/L	3.0	1.5	1		05/30/18 13:24	1330-20-7	
cis-1,2-Dichloroethene	**<0.26**	ug/L	1.0	0.26	1		05/30/18 13:24	156-59-2	
cis-1,3-Dichloropropene	**<0.50**	ug/L	1.0	0.50	1		05/30/18 13:24	10061-01-5	
trans-1,2-Dichloroethene	**<0.26**	ug/L	1.0	0.26	1		05/30/18 13:24	156-60-5	
trans-1,3-Dichloropropene	**<0.23**	ug/L	1.0	0.23	1		05/30/18 13:24	10061-02-6	
Surrogates									
4-Bromofluorobenzene (S)	87	%	61-130		1		05/30/18 13:24	460-00-4	
Dibromofluoromethane (S)	98	%	67-130		1		05/30/18 13:24	1868-53-7	
Toluene-d8 (S)	100	%	70-130		1		05/30/18 13:24	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

QC Batch: 291075
QC Batch Method: EPA 7470
Analysis Method: EPA 7470
Analysis Description: 7470 Mercury
Associated Lab Samples: 40169819001

METHOD BLANK: 1702082 Matrix: Water
Associated Lab Samples: 40169819001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.13	0.42	06/07/18 08:18	

LABORATORY CONTROL SAMPLE: 1702083

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1702084 1702085

Parameter	Units	40170134026 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.13	5	5	5.0	4.9	99	98	85-115	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

QC Batch: 291114 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 40169819001

METHOD BLANK: 1702268 Matrix: Water
Associated Lab Samples: 40169819001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	<1.3	5.0	06/07/18 17:37	
Iron	ug/L	<34.0	100	06/07/18 17:37	
Lead	ug/L	<4.3	13.0	06/07/18 17:37	
Sodium	ug/L	<98.9	500	06/07/18 17:37	
Total Hardness by 2340B	ug/L	<150	2000	06/07/18 17:37	

LABORATORY CONTROL SAMPLE: 1702269

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	500	508	102	80-120	
Iron	ug/L	5000	4970	99	80-120	
Lead	ug/L	500	500	100	80-120	
Sodium	ug/L	5000	5020	100	80-120	
Total Hardness by 2340B	ug/L		31900			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1702270 1702271

Parameter	Units	40170020001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	ug/L	<1.3	500	500	516	514	103	103	75-125	0	20	
Iron	ug/L	<34.0	5000	5000	5030	5040	100	100	75-125	0	20	
Lead	ug/L	<4.3	500	500	506	506	101	101	75-125	0	20	
Sodium	ug/L	7600	5000	5000	12800	12700	104	103	75-125	1	20	
Total Hardness by 2340B	ug/L	110000			143000	140000				2	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

QC Batch: 290195 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV
Associated Lab Samples: 40169819001, 40169819002

METHOD BLANK: 1698501 Matrix: Water
Associated Lab Samples: 40169819001, 40169819002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	<0.50	1.0	05/30/18 07:21	
1,1,2-Trichloroethane	ug/L	<0.20	1.0	05/30/18 07:21	
1,1-Dichloroethane	ug/L	<0.24	1.0	05/30/18 07:21	
1,1-Dichloroethene	ug/L	<0.41	1.0	05/30/18 07:21	
1,2-Dibromo-3-chloropropane	ug/L	<2.2	5.0	05/30/18 07:21	
1,2-Dibromoethane (EDB)	ug/L	<0.18	1.0	05/30/18 07:21	
1,2-Dichlorobenzene	ug/L	<0.50	1.0	05/30/18 07:21	
1,2-Dichloroethane	ug/L	<0.17	1.0	05/30/18 07:21	
1,2-Dichloropropane	ug/L	<0.23	1.0	05/30/18 07:21	
1,3-Dichlorobenzene	ug/L	<0.50	1.0	05/30/18 07:21	
1,4-Dichlorobenzene	ug/L	<0.50	1.0	05/30/18 07:21	
2-Butanone (MEK)	ug/L	<3.0	20.0	05/30/18 07:21	
Acetone	ug/L	<3.0	20.0	05/30/18 07:21	
Benzene	ug/L	<0.50	1.0	05/30/18 07:21	
Bromodichloromethane	ug/L	<0.50	1.0	05/30/18 07:21	
Bromoform	ug/L	<0.50	1.0	05/30/18 07:21	
Bromomethane	ug/L	<2.4	5.0	05/30/18 07:21	
Carbon disulfide	ug/L	<0.61	5.0	05/30/18 07:21	
Carbon tetrachloride	ug/L	<0.50	1.0	05/30/18 07:21	
Chlorobenzene	ug/L	<0.50	1.0	05/30/18 07:21	
Chloroethane	ug/L	<0.37	1.0	05/30/18 07:21	
Chloroform	ug/L	<2.5	5.0	05/30/18 07:21	
Chloromethane	ug/L	<0.50	1.0	05/30/18 07:21	
cis-1,2-Dichloroethene	ug/L	<0.26	1.0	05/30/18 07:21	
cis-1,3-Dichloropropene	ug/L	<0.50	1.0	05/30/18 07:21	
Dibromochloromethane	ug/L	<0.50	1.0	05/30/18 07:21	
Dibromomethane	ug/L	<0.43	1.0	05/30/18 07:21	
Dichlorodifluoromethane	ug/L	<0.22	1.0	05/30/18 07:21	
Ethylbenzene	ug/L	<0.50	1.0	05/30/18 07:21	
Methyl-tert-butyl ether	ug/L	<0.17	1.0	05/30/18 07:21	
Methylene Chloride	ug/L	<0.23	1.0	05/30/18 07:21	
Naphthalene	ug/L	<2.5	5.0	05/30/18 07:21	
Styrene	ug/L	<0.50	1.0	05/30/18 07:21	
Tetrachloroethene	ug/L	<0.50	1.0	05/30/18 07:21	
Tetrahydrofuran	ug/L	<2.0	5.0	05/30/18 07:21	
Toluene	ug/L	<0.50	1.0	05/30/18 07:21	
trans-1,2-Dichloroethene	ug/L	<0.26	1.0	05/30/18 07:21	
trans-1,3-Dichloropropene	ug/L	<0.23	1.0	05/30/18 07:21	
Trichloroethene	ug/L	<0.33	1.0	05/30/18 07:21	
Trichlorofluoromethane	ug/L	<0.18	1.0	05/30/18 07:21	
Vinyl chloride	ug/L	<0.18	1.0	05/30/18 07:21	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

METHOD BLANK: 1698501 Matrix: Water
Associated Lab Samples: 40169819001, 40169819002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Xylene (Total)	ug/L	<1.5	3.0	05/30/18 07:21	
4-Bromofluorobenzene (S)	%	85	61-130	05/30/18 07:21	
Dibromofluoromethane (S)	%	97	67-130	05/30/18 07:21	
Toluene-d8 (S)	%	100	70-130	05/30/18 07:21	

LABORATORY CONTROL SAMPLE: 1698502

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	57.3	115	70-130	
1,1,2-Trichloroethane	ug/L	50	51.0	102	70-130	
1,1-Dichloroethane	ug/L	50	54.7	109	71-132	
1,1-Dichloroethene	ug/L	50	59.3	119	75-130	
1,2-Dibromo-3-chloropropane	ug/L	50	53.6	107	63-123	
1,2-Dibromoethane (EDB)	ug/L	50	54.3	109	70-130	
1,2-Dichlorobenzene	ug/L	50	54.0	108	70-130	
1,2-Dichloroethane	ug/L	50	54.2	108	70-131	
1,2-Dichloropropane	ug/L	50	52.2	104	80-120	
1,3-Dichlorobenzene	ug/L	50	52.6	105	70-130	
1,4-Dichlorobenzene	ug/L	50	53.9	108	70-130	
Benzene	ug/L	50	50.2	100	73-145	
Bromodichloromethane	ug/L	50	54.0	108	70-130	
Bromoform	ug/L	50	61.2	122	67-130	
Bromomethane	ug/L	50	42.6	85	26-128	
Carbon disulfide	ug/L	50	52.4	105	72-156	
Carbon tetrachloride	ug/L	50	56.8	114	70-133	
Chlorobenzene	ug/L	50	56.9	114	70-130	
Chloroethane	ug/L	50	46.6	93	58-120	
Chloroform	ug/L	50	54.3	109	80-121	
Chloromethane	ug/L	50	47.7	95	40-127	
cis-1,2-Dichloroethene	ug/L	50	54.6	109	70-130	
cis-1,3-Dichloropropene	ug/L	50	53.5	107	70-130	
Dibromochloromethane	ug/L	50	57.2	114	70-130	
Dichlorodifluoromethane	ug/L	50	52.3	105	20-135	
Ethylbenzene	ug/L	50	55.4	111	87-129	
Methyl-tert-butyl ether	ug/L	50	52.4	105	66-143	
Methylene Chloride	ug/L	50	53.9	108	70-130	
Styrene	ug/L	50	56.7	113	70-130	
Tetrachloroethene	ug/L	50	58.2	116	70-130	
Toluene	ug/L	50	55.2	110	82-130	
trans-1,2-Dichloroethene	ug/L	50	55.9	112	75-132	
trans-1,3-Dichloropropene	ug/L	50	53.6	107	70-130	
Trichloroethene	ug/L	50	56.9	114	70-130	
Trichlorofluoromethane	ug/L	50	64.1	128	76-133	
Vinyl chloride	ug/L	50	51.4	103	57-136	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

LABORATORY CONTROL SAMPLE: 1698502

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Xylene (Total)	ug/L	150	173	115	70-130	
4-Bromofluorobenzene (S)	%			96	61-130	
Dibromofluoromethane (S)	%			97	67-130	
Toluene-d8 (S)	%			95	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1698921 1698922

Parameter	Units	40169810007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1-Trichloroethane	ug/L	<0.50	50	50	55.1	55.9	110	112	70-134	1	20	
1,1,2-Trichloroethane	ug/L	<0.20	50	50	50.7	54.5	101	109	70-130	7	20	
1,1-Dichloroethane	ug/L	<0.24	50	50	52.0	54.4	104	109	71-133	5	20	
1,1-Dichloroethene	ug/L	<0.41	50	50	57.8	59.6	116	119	75-136	3	20	
1,2-Dibromo-3-chloropropane	ug/L	<2.2	50	50	56.1	52.1	112	104	63-123	7	20	
1,2-Dibromoethane (EDB)	ug/L	<0.18	50	50	51.9	54.8	104	110	70-130	5	20	
1,2-Dichlorobenzene	ug/L	<0.50	50	50	53.0	53.1	106	106	70-130	0	20	
1,2-Dichloroethane	ug/L	<0.17	50	50	52.5	54.5	105	109	70-131	4	20	
1,2-Dichloropropane	ug/L	<0.23	50	50	50.4	52.0	101	104	80-120	3	20	
1,3-Dichlorobenzene	ug/L	<0.50	50	50	50.8	50.9	102	102	70-130	0	20	
1,4-Dichlorobenzene	ug/L	<0.50	50	50	51.5	52.7	103	105	70-130	2	20	
Benzene	ug/L	<0.50	50	50	47.7	48.8	95	98	73-145	2	20	
Bromodichloromethane	ug/L	<0.50	50	50	53.8	54.9	108	110	70-130	2	20	
Bromoform	ug/L	<0.50	50	50	58.8	61.4	118	123	67-130	4	20	
Bromomethane	ug/L	<2.4	50	50	43.7	45.1	87	90	26-129	3	20	
Carbon disulfide	ug/L	<0.61	50	50	51.1	52.3	102	105	72-156	2	30	
Carbon tetrachloride	ug/L	<0.50	50	50	54.7	58.1	109	116	70-134	6	20	
Chlorobenzene	ug/L	<0.50	50	50	54.1	57.0	108	114	70-130	5	20	
Chloroethane	ug/L	<0.37	50	50	45.3	46.7	91	93	58-120	3	20	
Chloroform	ug/L	<2.5	50	50	50.8	53.8	102	108	80-121	6	20	
Chloromethane	ug/L	<0.50	50	50	44.7	45.9	89	92	40-128	3	20	
cis-1,2-Dichloroethene	ug/L	<0.26	50	50	46.1	49.2	92	98	70-130	7	20	
cis-1,3-Dichloropropene	ug/L	<0.50	50	50	54.2	53.8	108	108	70-130	1	20	
Dibromochloromethane	ug/L	<0.50	50	50	55.8	57.7	112	115	70-130	3	20	
Dichlorodifluoromethane	ug/L	<0.22	50	50	50.1	52.1	100	104	20-146	4	20	
Ethylbenzene	ug/L	<0.50	50	50	53.1	54.5	106	109	87-129	3	20	
Methyl-tert-butyl ether	ug/L	<0.17	50	50	49.9	51.8	100	104	66-143	4	20	
Methylene Chloride	ug/L	<0.23	50	50	51.2	51.9	102	104	70-130	1	20	
Styrene	ug/L	<0.50	50	50	54.5	55.5	109	111	70-130	2	20	
Tetrachloroethene	ug/L	<0.50	50	50	56.1	60.1	112	120	70-130	7	20	
Toluene	ug/L	<0.50	50	50	53.4	54.6	107	109	82-131	2	20	
trans-1,2-Dichloroethene	ug/L	<0.26	50	50	52.5	54.7	105	109	75-135	4	20	
trans-1,3-Dichloropropene	ug/L	<0.23	50	50	52.3	53.0	105	106	70-130	1	20	
Trichloroethene	ug/L	<0.33	50	50	55.2	55.8	110	112	70-130	1	20	
Trichlorofluoromethane	ug/L	<0.18	50	50	63.0	64.7	126	129	76-150	3	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1698921 1698922

Parameter	Units	40169810007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Vinyl chloride	ug/L	<0.18	50	50	51.2	51.5	102	103	56-143	1	20	
Xylene (Total)	ug/L	<1.5	150	150	169	174	113	116	70-130	3	20	
4-Bromofluorobenzene (S)	%						100	100	61-130			
Dibromofluoromethane (S)	%						97	96	67-130			
Toluene-d8 (S)	%						96	97	70-130			

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
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(920)469-2436

QUALITY CONTROL DATA

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

QC Batch: 290346 Analysis Method: EPA 8270
QC Batch Method: EPA 3510 Analysis Description: 8270 Water MSSV
Associated Lab Samples: 40169819001

METHOD BLANK: 1698847 Matrix: Water
Associated Lab Samples: 40169819001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4,5-Tetrachlorobenzene	ug/L	<1.7	5.6	05/31/18 08:58	
1,2,4-Trichlorobenzene	ug/L	<2.0	6.8	05/31/18 08:58	
1,2-Dichlorobenzene	ug/L	<1.9	6.4	05/31/18 08:58	
1,3-Dichlorobenzene	ug/L	<1.9	6.3	05/31/18 08:58	
1,4-Dichlorobenzene	ug/L	<1.9	6.3	05/31/18 08:58	
1-Methylnaphthalene	ug/L	<1.7	5.6	05/31/18 08:58	
2,2'-Oxybis(1-chloropropane)	ug/L	<1.5	5.1	05/31/18 08:58	
2,3,4,6-Tetrachlorophenol	ug/L	<1.5	5.0	05/31/18 08:58	
2,4,5-Trichlorophenol	ug/L	<0.84	2.8	05/31/18 08:58	
2,4,6-Trichlorophenol	ug/L	<2.1	7.0	05/31/18 08:58	
2,4-Dichlorophenol	ug/L	<1.4	4.6	05/31/18 08:58	
2,4-Dimethylphenol	ug/L	<1.3	4.2	05/31/18 08:58	
2,4-Dinitrophenol	ug/L	<0.71	2.4	05/31/18 08:58	
2,4-Dinitrotoluene	ug/L	<0.79	2.6	05/31/18 08:58	
2,6-Dinitrotoluene	ug/L	<0.60	2.0	05/31/18 08:58	
2-Chloronaphthalene	ug/L	<1.6	5.5	05/31/18 08:58	
2-Chlorophenol	ug/L	<1.2	3.9	05/31/18 08:58	
2-Methylnaphthalene	ug/L	<1.5	5.0	05/31/18 08:58	
2-Methylphenol(o-Cresol)	ug/L	<0.87	2.9	05/31/18 08:58	
2-Nitroaniline	ug/L	<0.77	2.6	05/31/18 08:58	
2-Nitrophenol	ug/L	<1.2	3.9	05/31/18 08:58	
3&4-Methylphenol(m&p Cresol)	ug/L	<1.6	5.2	05/31/18 08:58	
3,3'-Dichlorobenzidine	ug/L	<0.91	3.0	05/31/18 08:58	
3-Nitroaniline	ug/L	<0.97	3.2	05/31/18 08:58	
4,6-Dinitro-2-methylphenol	ug/L	<0.65	2.2	05/31/18 08:58	
4-Bromophenylphenyl ether	ug/L	<2.0	6.6	05/31/18 08:58	
4-Chloro-3-methylphenol	ug/L	<1.7	5.6	05/31/18 08:58	
4-Chlorophenylphenyl ether	ug/L	<0.82	2.7	05/31/18 08:58	
4-Nitroaniline	ug/L	<1.8	6.1	05/31/18 08:58	
4-Nitrophenol	ug/L	<1.0	3.5	05/31/18 08:58	
Acenaphthene	ug/L	<1.3	4.5	05/31/18 08:58	
Acenaphthylene	ug/L	<1.1	3.5	05/31/18 08:58	
Acetophenone	ug/L	<4.3	14.2	05/31/18 08:58	
Anthracene	ug/L	<1.8	6.0	05/31/18 08:58	
Benzo(a)anthracene	ug/L	<0.53	1.8	05/31/18 08:58	
Benzo(a)pyrene	ug/L	<1.9	6.3	05/31/18 08:58	
Benzo(b)fluoranthene	ug/L	<0.65	2.2	05/31/18 08:58	
Benzo(g,h,i)perylene	ug/L	<0.81	2.7	05/31/18 08:58	
Benzo(k)fluoranthene	ug/L	<1.0	3.3	05/31/18 08:58	
Benzyl alcohol	ug/L	<1.1	3.7	05/31/18 08:58	
bis(2-Chloroethoxy)methane	ug/L	<1.0	3.3	05/31/18 08:58	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

METHOD BLANK: 1698847 Matrix: Water
Associated Lab Samples: 40169819001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
bis(2-Chloroethyl) ether	ug/L	<1.6	5.3	05/31/18 08:58	
bis(2-Ethylhexyl)phthalate	ug/L	<0.69	2.3	05/31/18 08:58	
Butylbenzylphthalate	ug/L	<0.77	2.6	05/31/18 08:58	
Chrysene	ug/L	<1.7	5.8	05/31/18 08:58	
Di-n-butylphthalate	ug/L	<2.6	8.5	05/31/18 08:58	
Di-n-octylphthalate	ug/L	<1.9	6.3	05/31/18 08:58	
Dibenz(a,h)anthracene	ug/L	<1.3	4.4	05/31/18 08:58	
Dibenzofuran	ug/L	<0.77	2.6	05/31/18 08:58	
Diethylphthalate	ug/L	<1.1	3.6	05/31/18 08:58	
Dimethylphthalate	ug/L	<1.9	6.4	05/31/18 08:58	
Fluoranthene	ug/L	<0.56	1.9	05/31/18 08:58	
Fluorene	ug/L	<0.75	2.5	05/31/18 08:58	
Hexachloro-1,3-butadiene	ug/L	<2.5	8.2	05/31/18 08:58	
Hexachlorobenzene	ug/L	<1.7	5.6	05/31/18 08:58	
Hexachlorocyclopentadiene	ug/L	<0.68	2.3	05/31/18 08:58	
Hexachloroethane	ug/L	<2.7	8.9	05/31/18 08:58	
Indeno(1,2,3-cd)pyrene	ug/L	<1.5	5.0	05/31/18 08:58	
Isophorone	ug/L	<0.73	2.4	05/31/18 08:58	
N-Nitroso-di-n-propylamine	ug/L	<0.97	3.2	05/31/18 08:58	
N-Nitrosodimethylamine	ug/L	<0.99	3.3	05/31/18 08:58	
N-Nitrosodiphenylamine	ug/L	<3.5	11.8	05/31/18 08:58	
Naphthalene	ug/L	<1.9	6.3	05/31/18 08:58	
Nitrobenzene	ug/L	<1.5	4.8	05/31/18 08:58	
Pentachlorophenol	ug/L	<1.4	4.8	05/31/18 08:58	
Phenanthrene	ug/L	<1.8	6.1	05/31/18 08:58	
Phenol	ug/L	<0.60	2.0	05/31/18 08:58	
Pyrene	ug/L	<1.3	4.5	05/31/18 08:58	
Pyridine	ug/L	<1.8	6.0	05/31/18 08:58	
2,4,6-Tribromophenol (S)	%	75	58-134	05/31/18 08:58	
2-Fluorobiphenyl (S)	%	58	54-122	05/31/18 08:58	
2-Fluorophenol (S)	%	43	27-77	05/31/18 08:58	
Nitrobenzene-d5 (S)	%	77	56-120	05/31/18 08:58	
Phenol-d6 (S)	%	27	16-120	05/31/18 08:58	
Terphenyl-d14 (S)	%	103	59-136	05/31/18 08:58	

LABORATORY CONTROL SAMPLE: 1698848

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/L	50	42.1	84	70-130	
1,2-Dichlorobenzene	ug/L	50	35.6	71	62-130	
1,3-Dichlorobenzene	ug/L	50	34.5	69	59-130	
1,4-Dichlorobenzene	ug/L	50	34.4	69	61-108	
1-Methylnaphthalene	ug/L	50	47.7	95	71-136	
2,2'-Oxybis(1-chloropropane)	ug/L	50	35.0	70	52-123	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

LABORATORY CONTROL SAMPLE: 1698848

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4,5-Trichlorophenol	ug/L	50	37.1	74	70-127	
2,4,6-Trichlorophenol	ug/L	50	38.5	77	77-120	
2,4-Dichlorophenol	ug/L	50	37.5	75	71-112	
2,4-Dimethylphenol	ug/L	50	31.0	62	43-118	
2,4-Dinitrophenol	ug/L	50	30.2	60	36-130	
2,4-Dinitrotoluene	ug/L	50	42.6	85	70-130	
2,6-Dinitrotoluene	ug/L	50	43.2	86	70-130	
2-Chloronaphthalene	ug/L	50	44.5	89	70-130	
2-Chlorophenol	ug/L	50	35.5	71	65-108	
2-Methylnaphthalene	ug/L	50	45.2	90	70-130	
2-Methylphenol(o-Cresol)	ug/L	50	32.1	64	60-130	
2-Nitroaniline	ug/L	50	36.1	72	70-130	
2-Nitrophenol	ug/L	50	38.4	77	71-113	
3&4-Methylphenol(m&p Cresol)	ug/L	50	28.6	57	53-130	
3,3'-Dichlorobenzidine	ug/L	50	23.4	47	40-100	
3-Nitroaniline	ug/L	50	36.3	73	70-130	
4,6-Dinitro-2-methylphenol	ug/L	50	40.0	80	62-130	
4-Bromophenylphenyl ether	ug/L	50	49.9	100	70-130	
4-Chloro-3-methylphenol	ug/L	50	39.2	78	74-116	
4-Chlorophenylphenyl ether	ug/L	50	44.3	89	70-130	
4-Nitroaniline	ug/L	50	32.4	65	67-127	L2
4-Nitrophenol	ug/L	50	14.7	29	14-75	
Acenaphthene	ug/L	50	43.6	87	80-120	
Acenaphthylene	ug/L	50	43.5	87	70-130	
Anthracene	ug/L	50	52.4	105	70-130	
Benzo(a)anthracene	ug/L	50	45.5	91	70-130	
Benzo(a)pyrene	ug/L	50	46.0	92	78-118	
Benzo(b)fluoranthene	ug/L	50	46.4	93	70-130	
Benzo(g,h,i)perylene	ug/L	50	46.4	93	70-121	
Benzo(k)fluoranthene	ug/L	50	52.0	104	70-121	
Benzyl alcohol	ug/L	50	35.2	70	60-130	
bis(2-Chloroethoxy)methane	ug/L	50	44.3	89	70-130	
bis(2-Chloroethyl) ether	ug/L	50	37.6	75	70-115	
bis(2-Ethylhexyl)phthalate	ug/L	50	50.2	100	70-124	
Butylbenzylphthalate	ug/L	50	49.8	100	70-130	
Chrysene	ug/L	50	43.8	88	66-126	
Di-n-butylphthalate	ug/L	50	50.1	100	70-130	
Di-n-octylphthalate	ug/L	50	42.4	85	59-123	
Dibenz(a,h)anthracene	ug/L	50	33.7	67	52-133	
Dibenzofuran	ug/L	50	41.7	83	70-130	
Diethylphthalate	ug/L	50	45.4	91	70-130	
Dimethylphthalate	ug/L	50	42.5	85	70-130	
Fluoranthene	ug/L	50	48.6	97	85-122	
Fluorene	ug/L	50	44.1	88	70-130	
Hexachloro-1,3-butadiene	ug/L	50	41.1	82	66-114	
Hexachlorobenzene	ug/L	50	49.0	98	70-130	
Hexachlorocyclopentadiene	ug/L	50	20.2	40	19-81	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(920)469-2436

QUALITY CONTROL DATA

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

LABORATORY CONTROL SAMPLE: 1698848

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Hexachloroethane	ug/L	50	33.0	66	52-130	
Indeno(1,2,3-cd)pyrene	ug/L	50	43.7	87	58-125	
Isophorone	ug/L	50	39.7	79	70-130	
N-Nitroso-di-n-propylamine	ug/L	50	40.9	82	70-127	
N-Nitrosodimethylamine	ug/L	50	23.5	47	38-130	
N-Nitrosodiphenylamine	ug/L	50	46.4	93	80-124	
Naphthalene	ug/L	50	43.1	86	70-130	
Nitrobenzene	ug/L	50	42.2	84	70-130	
Pentachlorophenol	ug/L	50	41.1	82	65-109	
Phenanthrene	ug/L	50	48.2	96	70-130	
Phenol	ug/L	50	16.4	33	28-120	
Pyrene	ug/L	50	50.8	102	70-130	
Pyridine	ug/L	50	9.1	18	10-130	
2,4,6-Tribromophenol (S)	%			90	58-134	
2-Fluorobiphenyl (S)	%			80	54-122	
2-Fluorophenol (S)	%			50	27-77	
Nitrobenzene-d5 (S)	%			90	56-120	
Phenol-d6 (S)	%			31	16-120	
Terphenyl-d14 (S)	%			110	59-136	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1698849 1698850

Parameter	Units	40169803001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
2,4-Dimethylphenol	ug/L	<1.3	50.5	52.1	11.7	12.2	23	23	10-118	4	45	
2-Methylphenol(o-Cresol)	ug/L	<0.89	50.5	52.1	21.6	23.5	43	45	38-130	9	47	
3&4-Methylphenol(m&p Cresol)	ug/L	<1.6	50.5	52.1	20.0	22.5	40	43	36-130	12	37	
Dibenzofuran	ug/L	<0.78	50.5	52.1	37.8	38.6	75	74	70-130	2	20	
Phenol	ug/L	<0.61	50.5	52.1	14.1	14.6	28	28	21-120	4	24	
2,4,6-Tribromophenol (S)	%						69	69	58-134			
2-Fluorobiphenyl (S)	%						66	62	54-122			
2-Fluorophenol (S)	%						41	37	27-77			
Nitrobenzene-d5 (S)	%						70	65	56-120			
Phenol-d6 (S)	%						27	26	16-120			
Terphenyl-d14 (S)	%						90	97	59-136			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

QC Batch: 290560 Analysis Method: SM 2540D
QC Batch Method: SM 2540D Analysis Description: 2540D Total Suspended Solids
Associated Lab Samples: 40169819001

METHOD BLANK: 1699727 Matrix: Water
Associated Lab Samples: 40169819001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	<0.48	1.0	05/31/18 11:59	

LABORATORY CONTROL SAMPLE: 1699728

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	96.0	96	80-120	

SAMPLE DUPLICATE: 1699729

Parameter	Units	40169798001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	653	653	0	5	

SAMPLE DUPLICATE: 1699730

Parameter	Units	40169928003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	82.0	81.0	1	5	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

QC Batch: 290148
QC Batch Method: SM 5210B
Analysis Method: SM 5210B
Analysis Description: 5210B BOD, 5 day
Associated Lab Samples: 40169819001

METHOD BLANK: 1697868 Matrix: Water
Associated Lab Samples: 40169819001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
BOD, 5 day	mg/L	<2.0	2.0	05/30/18 13:20	

METHOD BLANK: 1698143 Matrix: Water
Associated Lab Samples: 40169819001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
BOD, 5 day	mg/L	<2.0	2.0	05/30/18 13:39	

LABORATORY CONTROL SAMPLE & LCSD: 1697870 1697871

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
BOD, 5 day	mg/L	198	228	225	115	113	84.6-115	2	20	

LABORATORY CONTROL SAMPLE & LCSD: 1697870 1697873

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
BOD, 5 day	mg/L	198	228	227	115	115	84.6-115	0	20	

SAMPLE DUPLICATE: 1697872

Parameter	Units	40169819001 Result	Dup Result	RPD	Max RPD	Qualifiers
BOD, 5 day	mg/L	448	456	2	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

QC Batch: 290766 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 40169819001

METHOD BLANK: 1700614 Matrix: Water
Associated Lab Samples: 40169819001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	2.0	06/07/18 20:01	
Sulfate	mg/L	<1.0	3.0	06/07/18 20:01	

LABORATORY CONTROL SAMPLE: 1700615

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.7	103	90-110	
Sulfate	mg/L	20	20.4	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1700616 1700617

Parameter	Units	40169805001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	328	400	400	746	745	104	104	90-110	0	15	
Sulfate	mg/L	240	400	400	651	651	103	103	90-110	0	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1700618 1700619

Parameter	Units	40169949003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	11.9	100	100	118	118	106	106	90-110	0	15	
Sulfate	mg/L	80.0	100	100	188	186	108	106	90-110	1	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

QC Batch: 290399
QC Batch Method: EPA 310.2
Analysis Method: EPA 310.2
Analysis Description: 310.2 Alkalinity
Associated Lab Samples: 40169819001

METHOD BLANK: 1699018 Matrix: Water
Associated Lab Samples: 40169819001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.0	23.5	05/30/18 14:04	

LABORATORY CONTROL SAMPLE: 1699019

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	106	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1699020 1699021

Parameter	Units	40169905005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	109	100	100	169	171	60	62	90-110	2	20	M0

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1699022 1699023

Parameter	Units	40169905009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	111	100	100	209	206	98	95	90-110	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

QC Batch: 290745 Analysis Method: EPA 350.1
QC Batch Method: EPA 350.1 Analysis Description: 350.1 Ammonia, Distilled
Associated Lab Samples: 40169819001

METHOD BLANK: 1700478 Matrix: Water
Associated Lab Samples: 40169819001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	<0.25	0.50	06/01/18 15:01	

LABORATORY CONTROL SAMPLE: 1700479

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	10	9.7	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1700480 1700481

Parameter	Units	40169708001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	<0.25	10	10	9.6	9.8	95	96	90-110	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1700482 1700483

Parameter	Units	40169779001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	92.5	200	200	289	289	98	98	90-110	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

QC Batch: 291003 Analysis Method: EPA 351.2
QC Batch Method: EPA 351.2 Analysis Description: 351.2 TKN
Associated Lab Samples: 40169819001

METHOD BLANK: 1701676 Matrix: Water
Associated Lab Samples: 40169819001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	<0.22	0.73	06/06/18 13:50	

LABORATORY CONTROL SAMPLE: 1701677

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1701678 1701679

Parameter	Units	40170065001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Kjeldahl, Total	mg/L	0.81	5	5	5.5	5.5	93	94	90-110	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1701680 1701681

Parameter	Units	40169789002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Kjeldahl, Total	mg/L	5.3	5	5	9.8	9.7	90	88	90-110	1	20	M0

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

QC Batch: 290925 Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 Analysis Description: 410.4 COD
Associated Lab Samples: 40169819001

METHOD BLANK: 1701369 Matrix: Water
Associated Lab Samples: 40169819001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	<13.4	44.8	06/05/18 12:18	

LABORATORY CONTROL SAMPLE: 1701370

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	500	515	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1701371 1701372

Parameter	Units	40169622001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chemical Oxygen Demand	mg/L	265	1000	1000	1300	1330	103	107	90-110	3	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1701373 1701374

Parameter	Units	40169692001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chemical Oxygen Demand	mg/L	19.0J	526	526	587	580	108	107	90-110	1	10	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(920)469-2436

QUALIFIERS

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

1q	Analyte was detected in the associated method blank at a concentration of -5.24 ug/L.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
L2	Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results may be biased low.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
pH	Post-analysis pH measurement indicates insufficient VOA sample preservation.

Pace Analytical Services, LLC
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Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 117-7413003.01 BARRETT LF
Pace Project No.: 40169819

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40169819001	**LEACHATE**	EPA 3010	291114	EPA 6010	291262
40169819001	**LEACHATE**	EPA 7470	291075	EPA 7470	291137
40169819001	**LEACHATE**	EPA 3510	290346	EPA 8270	290454
40169819001	**LEACHATE**	EPA 8260	290195		
40169819002	**TRIP BLANK**	EPA 8260	290195		
40169819001	**LEACHATE**				
40169819001	**LEACHATE**	SM 2540D	290560		
40169819001	**LEACHATE**	SM 5210B	290148	SM 5210B	290577
40169819001	**LEACHATE**	EPA 300.0	290766		
40169819001	**LEACHATE**	EPA 310.2	290399		
40169819001	**LEACHATE**	EPA 350.1	290745	EPA 350.1	290762
40169819001	**LEACHATE**	EPA 351.2	291003	EPA 351.2	291119
40169819001	**LEACHATE**	EPA 410.4	290925	EPA 410.4	290982

UPPER MIDWEST REGION
MN: 612-607-1700 **WI:** 920-469-2436

Pace Analytical®
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CHAIN OF CUSTODY

40169819

*Preservation Codes
A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

(Please Print Clearly)	
Company Name:	Tetra Tech
Branch/Location:	Brookfield, WI
Project Contact:	Ashley Wagner
Phone:	(262) 798-1282 x226
Project Number:	117-7413003.01
Project Name:	Barrett LF
Project State:	WI
Sampled By (Print):	Ashley Wagner
Sampled By (Sign):	Ashley Wagner
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	Ashley Wagner
Mail To Company:	Tetra Tech
Mail To Address:	175 N Corporate Dr Suite 100 Brookfield, WI 53045
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	

Data Package Options (billable)
☐ EPA Level III
☐ EPA Level IV

MS/MSD
☐ On your sample (billable)
☐ NOT needed on your sample

Matrix Codes
A = Air W = Water
B = Biota DW = Drinking Water
C = Charcoal GW = Ground Water
O = Oil SW = Surface Water
S = Soil WW = Waste Water
SI = Sludge WP = Wipe

FILTERED? (YES/NO)
PRESERVATION (CODE)*

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	Y/N	Pick Letter	Analyses Requested: VOCs 8260	SVOCs	TSS	Sulfate, chloride alkalinity	BOD 5Day	metals	COD	Ammonia TKN	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
					N	B	A	A	A	A	A	D	C	C			
001	Leachate	5-24	1435	SI/W			3	2	1	1	1	1	1	1	GEM ID 258		
002	Trip Blank	—	—	DI			2										
															pH 7.94		
															temp 13.7 °C		
															Cond >3999 us/cm over range		
	Please provide EDMS report																
															please put TSS, sulfate + alkalinity on second invoice		

Rush Turnaround Time Requested - Prelims
(Rush TAT subject to approval/surcharge)
Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Email #1:	
Email #2:	
Telephone:	
Fax:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Ashley Wagner	5/24/18 1700	Mary Jannin	5/25/18 9:35
Mary Jannin	5/25/18 1225	Rose Pan	5/25/18 1225
Rose Pan	5/25/18 1335	Susan Mayer	5/25/18 1335

PACE Project No.: 40169819
Receipt Temp = ROI °C
Sample Receipt pH: OK / Adjusted
Cooler Custody Seal: Present / Not Present
Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

ORIGINAL

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Sample Preservation Receipt Form

Client Name: Tetra Tech Project # 401 69819

All containers needing preservation have been checked and noted below: ☐Yes ☐No ☐N/A

Initial when completed: SKW Date/Time: 5-25-18 1450

Lab Lot# of pH paper: 10454771 Lab Std #ID of preservation (if pH adjusted):

	Glass							Plastic							Vials						Jars			General								
Pace Lab #	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3C	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU	SP5T	ZPLC	GN	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001	2							2			1		1	2				3										X			5	≤2	2.5 / 5 / 10
002																		2															2.5 / 5 / 10
003																																	2.5 / 5 / 10
004																																	2.5 / 5 / 10
005																																	2.5 / 5 / 10
006																																	2.5 / 5 / 10
007																																	2.5 / 5 / 10
008																																	2.5 / 5 / 10
009																																	2.5 / 5 / 10
010																																	2.5 / 5 / 10
011																																	2.5 / 5 / 10
012																																	2.5 / 5 / 10
013																																	2.5 / 5 / 10
014																																	2.5 / 5 / 10
015																																	2.5 / 5 / 10
016																																	2.5 / 5 / 10
017																																	2.5 / 5 / 10
018																																	2.5 / 5 / 10
019																																	2.5 / 5 / 10
020																																	2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: _____ Headspace in VOA Vials (>6mm) : ☐Yes ☐No ☐N/A ***If yes look in headspace column**

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	DG9A	40 mL amber ascorbic	JGFU	4 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP2N	500 mL plastic HNO3	DG9T	40 mL amber Na Thio	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH, Znact	VG9U	40 mL clear vial unpres	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3U	250 mL plastic unpres	VG9H	40 mL clear vial HCL		
AG5U	100 mL amber glass unpres	BP3C	250 mL plastic NaOH	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres	BP3S	250 mL plastic H2SO4			GN:	

Pace Analytical 1241 Bellevue Street, Green Bay, WI 54302	Document Name: **Sample Condition Upon Receipt (SCUR)**	Document Revised: 25Apr2018
	Document No.: **F-GB-C-031-Rev.07**	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Client Name: Tetra Tech

Project #: **WO#: 40169819**

Courier: ☐ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco ☐ Client ☒ Pace Other: _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other _____

Thermometer Used SR - N/A **Type of Ice:** (Wet) Blue Dry None ☐ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: ROI /Corr: _____

Temp Blank Present: ☐ yes ☑ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Person examining contents:
Date: 5-25-18
Initials: SLW

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☑Yes ☐No	6.
Rush Turn Around Time Requested:	☐Yes ☑No	7.
Sufficient Volume: For Analysis: ☑Yes ☐No MS/MSD: ☐Yes ☑No ☐N/A		8.
Correct Containers Used:	☑Yes ☐No	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☑N/A	
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: W		
Trip Blank Present:	☑Yes ☐No ☐N/A	13.
Trip Blank Custody Seals Present	☑Yes ☐No ☐N/A	
Pace Trip Blank Lot # (if purchased): 399		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ **Date:** 5-29-18

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

November 01, 2018

Lori Huntoon
Tetra Tech Geo
175 North Corporate Drive
Suite 100
Brookfield, WI 53045

RE: Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

Dear Lori Huntoon:
Enclosed are the analytical results for sample(s) received by the laboratory on October 17, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Brian Basten
brian.basten@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Ashley Wagner, Tetra Tech Geo

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
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CERTIFICATIONS

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
Virginia VELAP ID: 460263
South Carolina Certification #: 83006001
Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-16-00157
Federal Fish & Wildlife Permit #: LE51774A-0

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40177806001	**LEACHATE**	Water	10/16/18 08:35	10/17/18 10:05

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(920)469-2436

SAMPLE ANALYTE COUNT

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40177806001	**LEACHATE**	EPA 6010	TXW	6
		EPA 7470	AJT	1
		EPA 8270	RJN	75
		EPA 8260	HNW	45
			BDB	3
		SM 2540D	KTS	1
		SM 5210B	DDY	1
		EPA 300.0	HMB	2
		EPA 310.2	DAW	1
		EPA 350.1	TMK	1
		EPA 351.2	TMK	1
		EPA 410.4	TJJ	1

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

Sample: LEACHATE **Lab ID: 40177806001** Collected: 10/16/18 08:35 Received: 10/17/18 10:05 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Cadmium	**<1.3**	ug/L	5.0	1.3	1	10/26/18 08:00	10/30/18 19:32	7440-43-9	
Iron	**1650**	ug/L	246	73.9	1	10/26/18 08:00	10/30/18 19:32	7439-89-6	
Lead	**<5.9**	ug/L	19.7	5.9	1	10/26/18 08:00	10/30/18 19:32	7439-92-1	
Manganese	**9.9**	ug/L	5.1	1.5	1	10/26/18 08:00	10/30/18 19:32	7439-96-5	
Sodium	**2290000**	ug/L	153000	45800	100	10/26/18 08:00	10/31/18 17:54	7440-23-5	
Total Hardness by 2340B	**246000**	ug/L	2000	150	1	10/26/18 08:00	10/30/18 19:32		
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.84**	ug/L	2.8	0.84	1	10/23/18 12:30	10/24/18 09:03	7439-97-6	D3
8270 MSSV Semivolatile Organic	Analytical Method: EPA 8270 Preparation Method: EPA 3510								
1,2,4,5-Tetrachlorobenzene	**<33.7**	ug/L	112	33.7	2	10/23/18 08:00	10/23/18 17:08	95-94-3	
1,2,4-Trichlorobenzene	**<40.7**	ug/L	136	40.7	2	10/23/18 08:00	10/23/18 17:08	120-82-1	
1,2-Dichlorobenzene	**<38.6**	ug/L	129	38.6	2	10/23/18 08:00	10/23/18 17:08	95-50-1	
1,3-Dichlorobenzene	**<37.7**	ug/L	126	37.7	2	10/23/18 08:00	10/23/18 17:08	541-73-1	
1,4-Dichlorobenzene	**<37.5**	ug/L	125	37.5	2	10/23/18 08:00	10/23/18 17:08	106-46-7	
1-Methylnaphthalene	**<33.4**	ug/L	111	33.4	2	10/23/18 08:00	10/23/18 17:08	90-12-0	
2,2'-Oxybis(1-chloropropane)	**<30.5**	ug/L	102	30.5	2	10/23/18 08:00	10/23/18 17:08	108-60-1	
2,3,4,6-Tetrachlorophenol	**<30.2**	ug/L	101	30.2	2	10/23/18 08:00	10/23/18 17:08	58-90-2	
2,4,5-Trichlorophenol	**<16.8**	ug/L	56.1	16.8	2	10/23/18 08:00	10/23/18 17:08	95-95-4	
2,4,6-Trichlorophenol	**<42.3**	ug/L	141	42.3	2	10/23/18 08:00	10/23/18 17:08	88-06-2	
2,4-Dichlorophenol	**<27.3**	ug/L	91.1	27.3	2	10/23/18 08:00	10/23/18 17:08	120-83-2	
2,4-Dimethylphenol	**<25.3**	ug/L	84.3	25.3	2	10/23/18 08:00	10/23/18 17:08	105-67-9	
2,4-Dinitrophenol	**<14.2**	ug/L	47.4	14.2	2	10/23/18 08:00	10/23/18 17:08	51-28-5	
2,4-Dinitrotoluene	**<15.8**	ug/L	52.8	15.8	2	10/23/18 08:00	10/23/18 17:08	121-14-2	
2,6-Dinitrotoluene	**<12.1**	ug/L	40.2	12.1	2	10/23/18 08:00	10/23/18 17:08	606-20-2	
2-Chloronaphthalene	**<32.9**	ug/L	110	32.9	2	10/23/18 08:00	10/23/18 17:08	91-58-7	
2-Chlorophenol	**<23.1**	ug/L	77.1	23.1	2	10/23/18 08:00	10/23/18 17:08	95-57-8	
2-Methylnaphthalene	**<30.3**	ug/L	101	30.3	2	10/23/18 08:00	10/23/18 17:08	91-57-6	
2-Methylphenol(o-Cresol)	**<17.4**	ug/L	57.9	17.4	2	10/23/18 08:00	10/23/18 17:08	95-48-7	
2-Nitroaniline	**<15.5**	ug/L	51.6	15.5	2	10/23/18 08:00	10/23/18 17:08	88-74-4	
2-Nitrophenol	**<23.3**	ug/L	77.6	23.3	2	10/23/18 08:00	10/23/18 17:08	88-75-5	
3&4-Methylphenol(m&p Cresol)	**53.7J**	ug/L	104	31.2	2	10/23/18 08:00	10/23/18 17:08		
3,3'-Dichlorobenzidine	**<18.1**	ug/L	60.4	18.1	2	10/23/18 08:00	10/23/18 17:08	91-94-1	
3-Nitroaniline	**<19.4**	ug/L	64.6	19.4	2	10/23/18 08:00	10/23/18 17:08	99-09-2	
4,6-Dinitro-2-methylphenol	**<13.1**	ug/L	43.6	13.1	2	10/23/18 08:00	10/23/18 17:08	534-52-1	
4-Bromophenylphenyl ether	**<39.4**	ug/L	131	39.4	2	10/23/18 08:00	10/23/18 17:08	101-55-3	
4-Chloro-3-methylphenol	**<33.8**	ug/L	113	33.8	2	10/23/18 08:00	10/23/18 17:08	59-50-7	
4-Chlorophenylphenyl ether	**<16.4**	ug/L	54.6	16.4	2	10/23/18 08:00	10/23/18 17:08	7005-72-3	
4-Nitroaniline	**<36.6**	ug/L	122	36.6	2	10/23/18 08:00	10/23/18 17:08	100-01-6	
4-Nitrophenol	**<21.0**	ug/L	69.8	21.0	2	10/23/18 08:00	10/23/18 17:08	100-02-7	
Acenaphthene	**<26.8**	ug/L	89.3	26.8	2	10/23/18 08:00	10/23/18 17:08	83-32-9	
Acenaphthylene	**<21.2**	ug/L	70.8	21.2	2	10/23/18 08:00	10/23/18 17:08	208-96-8	
Acetophenone	**<85.3**	ug/L	284	85.3	2	10/23/18 08:00	10/23/18 17:08	98-86-2	
Anthracene	**<36.1**	ug/L	120	36.1	2	10/23/18 08:00	10/23/18 17:08	120-12-7	
Benzo(a)anthracene	**<10.7**	ug/L	35.7	10.7	2	10/23/18 08:00	10/23/18 17:08	56-55-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

Sample: LEACHATE **Lab ID: 40177806001** Collected: 10/16/18 08:35 Received: 10/17/18 10:05 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Semivolatile Organic	Analytical Method: EPA 8270 Preparation Method: EPA 3510								
Benzo(a)pyrene	**<37.7**	ug/L	126	37.7	2	10/23/18 08:00	10/23/18 17:08	50-32-8	
Benzo(b)fluoranthene	**<13.1**	ug/L	43.6	13.1	2	10/23/18 08:00	10/23/18 17:08	205-99-2	
Benzo(g,h,i)perylene	**<16.2**	ug/L	54.0	16.2	2	10/23/18 08:00	10/23/18 17:08	191-24-2	
Benzo(k)fluoranthene	**<20.1**	ug/L	66.8	20.1	2	10/23/18 08:00	10/23/18 17:08	207-08-9	
Benzyl alcohol	**<21.9**	ug/L	73.0	21.9	2	10/23/18 08:00	10/23/18 17:08	100-51-6	
Butylbenzylphthalate	**<15.5**	ug/L	51.6	15.5	2	10/23/18 08:00	10/23/18 17:08	85-68-7	
Chrysene	**<34.8**	ug/L	116	34.8	2	10/23/18 08:00	10/23/18 17:08	218-01-9	
Di-n-butylphthalate	**<51.3**	ug/L	171	51.3	2	10/23/18 08:00	10/23/18 17:08	84-74-2	
Di-n-octylphthalate	**<37.8**	ug/L	126	37.8	2	10/23/18 08:00	10/23/18 17:08	117-84-0	
Dibenz(a,h)anthracene	**<26.4**	ug/L	88.1	26.4	2	10/23/18 08:00	10/23/18 17:08	53-70-3	
Dibenzofuran	**<15.4**	ug/L	51.2	15.4	2	10/23/18 08:00	10/23/18 17:08	132-64-9	
Diethylphthalate	**<21.6**	ug/L	72.2	21.6	2	10/23/18 08:00	10/23/18 17:08	84-66-2	
Dimethylphthalate	**<38.6**	ug/L	129	38.6	2	10/23/18 08:00	10/23/18 17:08	131-11-3	
Fluoranthene	**<11.3**	ug/L	37.6	11.3	2	10/23/18 08:00	10/23/18 17:08	206-44-0	
Fluorene	**<15.0**	ug/L	50.0	15.0	2	10/23/18 08:00	10/23/18 17:08	86-73-7	
Hexachloro-1,3-butadiene	**<49.2**	ug/L	164	49.2	2	10/23/18 08:00	10/23/18 17:08	87-68-3	
Hexachlorobenzene	**<33.9**	ug/L	113	33.9	2	10/23/18 08:00	10/23/18 17:08	118-74-1	
Hexachlorocyclopentadiene	**<13.6**	ug/L	45.2	13.6	2	10/23/18 08:00	10/23/18 17:08	77-47-4	
Hexachloroethane	**<53.2**	ug/L	177	53.2	2	10/23/18 08:00	10/23/18 17:08	67-72-1	
Indeno(1,2,3-cd)pyrene	**<30.0**	ug/L	99.9	30.0	2	10/23/18 08:00	10/23/18 17:08	193-39-5	
Isophorone	**<14.7**	ug/L	49.0	14.7	2	10/23/18 08:00	10/23/18 17:08	78-59-1	
N-Nitroso-di-n-propylamine	**<19.4**	ug/L	64.8	19.4	2	10/23/18 08:00	10/23/18 17:08	621-64-7	
N-Nitrosodimethylamine	**<19.8**	ug/L	66.1	19.8	2	10/23/18 08:00	10/23/18 17:08	62-75-9	
N-Nitrosodiphenylamine	**<70.6**	ug/L	235	70.6	2	10/23/18 08:00	10/23/18 17:08	86-30-6	
Naphthalene	**<38.0**	ug/L	127	38.0	2	10/23/18 08:00	10/23/18 17:08	91-20-3	
Nitrobenzene	**<29.0**	ug/L	96.7	29.0	2	10/23/18 08:00	10/23/18 17:08	98-95-3	
Pentachlorophenol	**<28.7**	ug/L	95.6	28.7	2	10/23/18 08:00	10/23/18 17:08	87-86-5	
Phenanthrene	**<36.4**	ug/L	121	36.4	2	10/23/18 08:00	10/23/18 17:08	85-01-8	
Phenol	**26.6J**	ug/L	40.0	12.0	2	10/23/18 08:00	10/23/18 17:08	108-95-2	D3
Pyrene	**<26.9**	ug/L	89.8	26.9	2	10/23/18 08:00	10/23/18 17:08	129-00-0	
Pyridine	**<35.8**	ug/L	119	35.8	2	10/23/18 08:00	10/23/18 17:08	110-86-1	
bis(2-Chloroethoxy)methane	**<19.9**	ug/L	66.4	19.9	2	10/23/18 08:00	10/23/18 17:08	111-91-1	
bis(2-Chloroethyl) ether	**<31.6**	ug/L	105	31.6	2	10/23/18 08:00	10/23/18 17:08	111-44-4	
bis(2-Ethylhexyl)phthalate	**<13.9**	ug/L	46.2	13.9	2	10/23/18 08:00	10/23/18 17:08	117-81-7	
Surrogates									
Nitrobenzene-d5 (S)	74	%	56-120		2	10/23/18 08:00	10/23/18 17:08	4165-60-0	
2-Fluorobiphenyl (S)	91	%	54-122		2	10/23/18 08:00	10/23/18 17:08	321-60-8	
Terphenyl-d14 (S)	110	%	59-136		2	10/23/18 08:00	10/23/18 17:08	1718-51-0	
Phenol-d6 (S)	31	%	16-120		2	10/23/18 08:00	10/23/18 17:08	13127-88-3	
2-Fluorophenol (S)	51	%	27-77		2	10/23/18 08:00	10/23/18 17:08	367-12-4	
2,4,6-Tribromophenol (S)	136	%	58-134		2	10/23/18 08:00	10/23/18 17:08	118-79-6	S3
8260 MSV	Analytical Method: EPA 8260								
1,1,1-Trichloroethane	**<2.4**	ug/L	10.0	2.4	10		10/18/18 10:23	71-55-6	
1,1,2-Trichloroethane	**<5.5**	ug/L	50.0	5.5	10		10/18/18 10:23	79-00-5	
1,1-Dichloroethane	**<2.7**	ug/L	10.0	2.7	10		10/18/18 10:23	75-34-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

Sample: LEACHATE **Lab ID: 40177806001** Collected: 10/16/18 08:35 Received: 10/17/18 10:05 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV	Analytical Method: EPA 8260								
1,1-Dichloroethene	**<2.4**	ug/L	10.0	2.4	10		10/18/18 10:23	75-35-4	
1,2-Dibromo-3-chloropropane	**<17.6**	ug/L	58.8	17.6	10		10/18/18 10:23	96-12-8	
1,2-Dibromoethane (EDB)	**<8.3**	ug/L	27.6	8.3	10		10/18/18 10:23	106-93-4	
1,2-Dichlorobenzene	**<7.1**	ug/L	23.5	7.1	10		10/18/18 10:23	95-50-1	
1,2-Dichloroethane	**<2.8**	ug/L	10.0	2.8	10		10/18/18 10:23	107-06-2	
1,2-Dichloropropane	**<2.8**	ug/L	10.0	2.8	10		10/18/18 10:23	78-87-5	
1,3-Dichlorobenzene	**<6.3**	ug/L	20.9	6.3	10		10/18/18 10:23	541-73-1	
1,4-Dichlorobenzene	**<9.4**	ug/L	31.5	9.4	10		10/18/18 10:23	106-46-7	
2-Butanone (MEK)	**<29.4**	ug/L	200	29.4	10		10/18/18 10:23	78-93-3	
Acetone	**159J**	ug/L	200	27.4	10		10/18/18 10:23	67-64-1	
Benzene	**<2.5**	ug/L	10.0	2.5	10		10/18/18 10:23	71-43-2	
Bromodichloromethane	**<3.6**	ug/L	12.1	3.6	10		10/18/18 10:23	75-27-4	
Bromoform	**<39.7**	ug/L	132	39.7	10		10/18/18 10:23	75-25-2	
Bromomethane	**<9.7**	ug/L	50.0	9.7	10		10/18/18 10:23	74-83-9	
Carbon disulfide	**<3.7**	ug/L	50.0	3.7	10		10/18/18 10:23	75-15-0	
Carbon tetrachloride	**<1.7**	ug/L	10.0	1.7	10		10/18/18 10:23	56-23-5	
Chlorobenzene	**<7.1**	ug/L	23.7	7.1	10		10/18/18 10:23	108-90-7	
Chloroethane	**<13.4**	ug/L	50.0	13.4	10		10/18/18 10:23	75-00-3	
Chloroform	**<12.7**	ug/L	50.0	12.7	10		10/18/18 10:23	67-66-3	
Chloromethane	**<21.9**	ug/L	73.0	21.9	10		10/18/18 10:23	74-87-3	
Dibromochloromethane	**<26.0**	ug/L	86.7	26.0	10		10/18/18 10:23	124-48-1	
Dibromomethane	**<9.4**	ug/L	31.2	9.4	10		10/18/18 10:23	74-95-3	
Dichlorodifluoromethane	**<5.0**	ug/L	50.0	5.0	10		10/18/18 10:23	75-71-8	
Ethylbenzene	**<2.2**	ug/L	10.0	2.2	10		10/18/18 10:23	100-41-4	
Methyl-tert-butyl ether	**<12.5**	ug/L	41.5	12.5	10		10/18/18 10:23	1634-04-4	
Methylene Chloride	**<5.8**	ug/L	50.0	5.8	10		10/18/18 10:23	75-09-2	
Naphthalene	**<11.8**	ug/L	50.0	11.8	10		10/18/18 10:23	91-20-3	
Styrene	**<4.7**	ug/L	15.5	4.7	10		10/18/18 10:23	100-42-5	
Tetrachloroethene	**<3.3**	ug/L	10.9	3.3	10		10/18/18 10:23	127-18-4	
Tetrahydrofuran	**71.9J**	ug/L	200	23.2	10		10/18/18 10:23	109-99-9	
Toluene	**<1.7**	ug/L	50.0	1.7	10		10/18/18 10:23	108-88-3	
Trichloroethene	**<2.6**	ug/L	10.0	2.6	10		10/18/18 10:23	79-01-6	
Trichlorofluoromethane	**<2.1**	ug/L	10.0	2.1	10		10/18/18 10:23	75-69-4	
Vinyl chloride	**<1.7**	ug/L	10.0	1.7	10		10/18/18 10:23	75-01-4	
Xylene (Total)	**<15.0**	ug/L	30.0	15.0	10		10/18/18 10:23	1330-20-7	
cis-1,2-Dichloroethene	**<2.7**	ug/L	10.0	2.7	10		10/18/18 10:23	156-59-2	
cis-1,3-Dichloropropene	**<36.3**	ug/L	121	36.3	10		10/18/18 10:23	10061-01-5	
trans-1,2-Dichloroethene	**<10.9**	ug/L	36.4	10.9	10		10/18/18 10:23	156-60-5	
trans-1,3-Dichloropropene	**<43.7**	ug/L	146	43.7	10		10/18/18 10:23	10061-02-6	
Surrogates									
4-Bromofluorobenzene (S)	98	%	70-130		10		10/18/18 10:23	460-00-4	pH
Dibromofluoromethane (S)	97	%	70-130		10		10/18/18 10:23	1868-53-7	
Toluene-d8 (S)	105	%	70-130		10		10/18/18 10:23	2037-26-5	
Field Data	Analytical Method:								
Field pH	**8.82**	Std. Units			1		10/30/18 08:09		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
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(920)469-2436

ANALYTICAL RESULTS

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

Sample: LEACHATE **Lab ID: 40177806001** Collected: 10/16/18 08:35 Received: 10/17/18 10:05 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Field Specific Conductance	**3999**	umhos/cm			1		10/30/18 08:09		
Temperature, Water (C)	**11.4**	deg C			1		10/30/18 08:09		
2540D Total Suspended Solids	Analytical Method: SM 2540D								
Total Suspended Solids	**21.7**	mg/L	2.9	1.4	1		10/18/18 13:09		
5210B BOD, 5 day	Analytical Method: SM 5210B	Preparation Method: SM 5210B							
BOD, 5 day	**350**	mg/L	200	200	100	10/17/18 11:00	10/22/18 11:56		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**1280**	mg/L	200	50.0	100		10/24/18 00:35	16887-00-6	
Sulfate	**107J**	mg/L	300	100	100		10/24/18 00:35	14808-79-8	D3
310.2 Alkalinity	Analytical Method: EPA 310.2								
Alkalinity, Total as CaCO3	**4760**	mg/L	587	176	25		10/23/18 13:48		
350.1 Ammonia, Distilled	Analytical Method: EPA 350.1	Preparation Method: EPA 350.1							
Nitrogen, Ammonia	**552**	mg/L	25.0	12.5	50	10/24/18 12:19	10/24/18 14:07	7664-41-7	
351.2 Total Kjeldahl Nitrogen	Analytical Method: EPA 351.2	Preparation Method: EPA 351.2							
Nitrogen, Kjeldahl, Total	**576**	mg/L	73.1	21.9	5	10/23/18 11:58	10/23/18 17:26	7727-37-9	
410.4 COD	Analytical Method: EPA 410.4	Preparation Method: EPA 410.4							
Chemical Oxygen Demand	**2370**	mg/L	448	134	1	10/30/18 09:01	10/30/18 12:30		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

QC Batch: 304021
QC Batch Method: EPA 7470
Analysis Method: EPA 7470
Analysis Description: 7470 Mercury
Associated Lab Samples: 40177806001

METHOD BLANK: 1776234 Matrix: Water
Associated Lab Samples: 40177806001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.084	0.28	10/24/18 08:19	

LABORATORY CONTROL SAMPLE: 1776235

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.8	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1776236 1776237

Parameter	Units	40177737001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	0.19J	5	5	5.1	4.7	97	90	85-115	7	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

QC Batch: 304419 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 40177806001

METHOD BLANK: 1778650 Matrix: Water
Associated Lab Samples: 40177806001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	<1.3	5.0	10/30/18 18:51	
Iron	ug/L	<73.9	246	10/30/18 18:51	
Lead	ug/L	<5.9	19.7	10/30/18 18:51	
Manganese	ug/L	<1.5	5.1	10/30/18 18:51	
Sodium	ug/L	<458	1530	10/30/18 18:51	
Total Hardness by 2340B	ug/L	<150	2000	10/30/18 18:51	

LABORATORY CONTROL SAMPLE: 1778651

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	500	495	99	80-120	
Iron	ug/L	5000	5020	100	80-120	
Lead	ug/L	500	492	98	80-120	
Manganese	ug/L	500	499	100	80-120	
Sodium	ug/L	5000	5020	100	80-120	
Total Hardness by 2340B	ug/L		32600			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1778652 1778653

Parameter	Units	40178250001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	ug/L	<1.3	500	500	504	504	101	101	75-125	0	20	
Iron	ug/L	<0.074 mg/L	5000	5000	5120	5060	102	101	75-125	1	20	
Lead	ug/L	<5.9	500	500	495	494	99	98	75-125	0	20	
Manganese	ug/L	<1.5	500	500	505	503	101	100	75-125	0	20	
Sodium	ug/L	7.8 mg/L	5000	5000	13000	13000	103	103	75-125	0	20	
Total Hardness by 2340B	ug/L	51.9 mg/L			85700	86000				0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

QC Batch: 303570 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV
Associated Lab Samples: 40177806001

METHOD BLANK: 1773304 Matrix: Water
Associated Lab Samples: 40177806001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1-Trichloroethane	ug/L	<0.24	1.0	10/18/18 06:33	
1,1,2-Trichloroethane	ug/L	<0.55	5.0	10/18/18 06:33	
1,1-Dichloroethane	ug/L	<0.27	1.0	10/18/18 06:33	
1,1-Dichloroethene	ug/L	<0.24	1.0	10/18/18 06:33	
1,2-Dibromo-3-chloropropane	ug/L	<1.8	5.9	10/18/18 06:33	
1,2-Dibromoethane (EDB)	ug/L	<0.83	2.8	10/18/18 06:33	
1,2-Dichlorobenzene	ug/L	<0.71	2.4	10/18/18 06:33	
1,2-Dichloroethane	ug/L	<0.28	1.0	10/18/18 06:33	
1,2-Dichloropropane	ug/L	<0.28	1.0	10/18/18 06:33	
1,3-Dichlorobenzene	ug/L	<0.63	2.1	10/18/18 06:33	
1,4-Dichlorobenzene	ug/L	<0.94	3.1	10/18/18 06:33	
2-Butanone (MEK)	ug/L	<2.9	20.0	10/18/18 06:33	
Acetone	ug/L	<2.7	20.0	10/18/18 06:33	
Benzene	ug/L	<0.25	1.0	10/18/18 06:33	
Bromodichloromethane	ug/L	<0.36	1.2	10/18/18 06:33	
Bromoform	ug/L	<4.0	13.2	10/18/18 06:33	
Bromomethane	ug/L	<0.97	5.0	10/18/18 06:33	
Carbon disulfide	ug/L	<0.37	5.0	10/18/18 06:33	
Carbon tetrachloride	ug/L	<0.17	1.0	10/18/18 06:33	
Chlorobenzene	ug/L	<0.71	2.4	10/18/18 06:33	
Chloroethane	ug/L	<1.3	5.0	10/18/18 06:33	
Chloroform	ug/L	<1.3	5.0	10/18/18 06:33	
Chloromethane	ug/L	<2.2	7.3	10/18/18 06:33	
cis-1,2-Dichloroethene	ug/L	<0.27	1.0	10/18/18 06:33	
cis-1,3-Dichloropropene	ug/L	<3.6	12.1	10/18/18 06:33	
Dibromochloromethane	ug/L	<2.6	8.7	10/18/18 06:33	
Dibromomethane	ug/L	<0.94	3.1	10/18/18 06:33	
Dichlorodifluoromethane	ug/L	<0.50	5.0	10/18/18 06:33	
Ethylbenzene	ug/L	<0.22	1.0	10/18/18 06:33	
Methyl-tert-butyl ether	ug/L	<1.2	4.2	10/18/18 06:33	
Methylene Chloride	ug/L	<0.58	5.0	10/18/18 06:33	
Naphthalene	ug/L	<1.2	5.0	10/18/18 06:33	
Styrene	ug/L	<0.47	1.6	10/18/18 06:33	
Tetrachloroethene	ug/L	<0.33	1.1	10/18/18 06:33	
Tetrahydrofuran	ug/L	<2.3	20.0	10/18/18 06:33	
Toluene	ug/L	<0.17	5.0	10/18/18 06:33	
trans-1,2-Dichloroethene	ug/L	<1.1	3.6	10/18/18 06:33	
trans-1,3-Dichloropropene	ug/L	<4.4	14.6	10/18/18 06:33	
Trichloroethene	ug/L	<0.26	1.0	10/18/18 06:33	
Trichlorofluoromethane	ug/L	<0.21	1.0	10/18/18 06:33	
Vinyl chloride	ug/L	<0.17	1.0	10/18/18 06:33	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(920)469-2436

QUALITY CONTROL DATA

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

METHOD BLANK: 1773304 Matrix: Water
Associated Lab Samples: 40177806001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Xylene (Total)	ug/L	<1.5	3.0	10/18/18 06:33	
4-Bromofluorobenzene (S)	%	97	70-130	10/18/18 06:33	
Dibromofluoromethane (S)	%	96	70-130	10/18/18 06:33	
Toluene-d8 (S)	%	104	70-130	10/18/18 06:33	

LABORATORY CONTROL SAMPLE: 1773305

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1-Trichloroethane	ug/L	50	51.7	103	70-133	
1,1,2-Trichloroethane	ug/L	50	53.4	107	70-130	
1,1-Dichloroethane	ug/L	50	49.0	98	70-134	
1,1-Dichloroethene	ug/L	50	47.5	95	75-132	
1,2-Dibromo-3-chloropropane	ug/L	50	45.5	91	60-126	
1,2-Dibromoethane (EDB)	ug/L	50	51.4	103	70-130	
1,2-Dichlorobenzene	ug/L	50	45.5	91	70-130	
1,2-Dichloroethane	ug/L	50	48.7	97	73-134	
1,2-Dichloropropane	ug/L	50	56.2	112	79-128	
1,3-Dichlorobenzene	ug/L	50	44.7	89	70-130	
1,4-Dichlorobenzene	ug/L	50	45.6	91	70-130	
Benzene	ug/L	50	51.8	104	69-137	
Bromodichloromethane	ug/L	50	55.7	111	70-130	
Bromoform	ug/L	50	56.0	112	64-133	
Bromomethane	ug/L	50	32.9	66	29-123	
Carbon disulfide	ug/L	50	47.9	96	67-153	
Carbon tetrachloride	ug/L	50	51.0	102	73-142	
Chlorobenzene	ug/L	50	50.4	101	70-130	
Chloroethane	ug/L	50	40.3	81	59-133	
Chloroform	ug/L	50	47.3	95	80-129	
Chloromethane	ug/L	50	30.7	61	27-125	
cis-1,2-Dichloroethene	ug/L	50	48.2	96	70-134	
cis-1,3-Dichloropropene	ug/L	50	54.9	110	70-130	
Dibromochloromethane	ug/L	50	50.4	101	70-130	
Dichlorodifluoromethane	ug/L	50	23.3	47	12-127	
Ethylbenzene	ug/L	50	56.1	112	86-127	
Methyl-tert-butyl ether	ug/L	50	45.6	91	65-136	
Methylene Chloride	ug/L	50	44.9	90	72-133	
Styrene	ug/L	50	56.4	113	70-130	
Tetrachloroethene	ug/L	50	54.7	109	70-130	
Toluene	ug/L	50	53.5	107	84-124	
trans-1,2-Dichloroethene	ug/L	50	48.1	96	70-133	
trans-1,3-Dichloropropene	ug/L	50	50.4	101	67-130	
Trichloroethene	ug/L	50	56.0	112	70-130	
Trichlorofluoromethane	ug/L	50	47.4	95	69-147	
Vinyl chloride	ug/L	50	38.3	77	48-134	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

LABORATORY CONTROL SAMPLE: 1773305

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Xylene (Total)	ug/L	150	167	111	70-130	
4-Bromofluorobenzene (S)	%			111	70-130	
Dibromofluoromethane (S)	%			93	70-130	
Toluene-d8 (S)	%			105	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1773306 1773307

Parameter	Units	40177806001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1-Trichloroethane	ug/L	<2.4	500	500	500	528	100	106	70-136	6	20	
1,1,2-Trichloroethane	ug/L	<5.5	500	500	502	537	100	107	70-130	7	20	
1,1-Dichloroethane	ug/L	<2.7	500	500	473	501	95	100	70-139	6	20	
1,1-Dichloroethene	ug/L	<2.4	500	500	456	489	91	98	72-137	7	20	
1,2-Dibromo-3-chloropropane	ug/L	<17.6	500	500	527	567	105	113	60-130	7	21	
1,2-Dibromoethane (EDB)	ug/L	<8.3	500	500	490	527	98	105	70-130	7	20	
1,2-Dichlorobenzene	ug/L	<7.1	500	500	446	474	89	95	70-130	6	20	
1,2-Dichloroethane	ug/L	<2.8	500	500	461	500	92	100	71-137	8	20	
1,2-Dichloropropane	ug/L	<2.8	500	500	527	541	105	108	78-130	3	20	
1,3-Dichlorobenzene	ug/L	<6.3	500	500	451	473	90	95	70-130	5	20	
1,4-Dichlorobenzene	ug/L	<9.4	500	500	451	476	90	95	70-130	6	20	
Benzene	ug/L	<2.5	500	500	500	523	100	105	66-143	5	20	
Bromodichloromethane	ug/L	<3.6	500	500	533	558	107	112	70-130	5	20	
Bromoform	ug/L	<39.7	500	500	528	573	106	115	64-134	8	20	
Bromomethane	ug/L	<9.7	500	500	340	370	68	74	29-136	8	25	
Carbon disulfide	ug/L	<3.7	500	500	487	513	97	103	67-156	5	21	
Carbon tetrachloride	ug/L	<1.7	500	500	495	515	99	103	73-142	4	20	
Chlorobenzene	ug/L	<7.1	500	500	486	510	97	102	70-130	5	20	
Chloroethane	ug/L	<13.4	500	500	421	425	84	85	58-138	1	20	
Chloroform	ug/L	<12.7	500	500	459	480	92	96	80-131	4	20	
Chloromethane	ug/L	<21.9	500	500	358	390	72	78	24-125	9	20	
cis-1,2-Dichloroethene	ug/L	<2.7	500	500	471	491	94	98	68-137	4	22	
cis-1,3-Dichloropropene	ug/L	<36.3	500	500	529	552	106	110	70-130	4	20	
Dibromochloromethane	ug/L	<26.0	500	500	479	503	96	101	70-131	5	20	
Dichlorodifluoromethane	ug/L	<5.0	500	500	360	379	72	76	10-127	5	20	
Ethylbenzene	ug/L	<2.2	500	500	538	574	108	115	81-136	7	20	
Methyl-tert-butyl ether	ug/L	<12.5	500	500	430	461	86	92	58-142	7	23	
Methylene Chloride	ug/L	<5.8	500	500	438	461	87	91	69-137	5	20	
Styrene	ug/L	<4.7	500	500	539	566	108	113	70-130	5	20	
Tetrachloroethene	ug/L	<3.3	500	500	534	565	107	113	70-132	6	20	
Toluene	ug/L	<1.7	500	500	518	545	103	109	81-130	5	20	
trans-1,2-Dichloroethene	ug/L	<10.9	500	500	470	498	94	100	70-136	6	20	
trans-1,3-Dichloropropene	ug/L	<43.7	500	500	472	509	94	102	67-130	7	20	
Trichloroethene	ug/L	<2.6	500	500	542	567	108	113	70-131	5	20	
Trichlorofluoromethane	ug/L	<2.1	500	500	478	500	96	100	66-150	5	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1773306 1773307

Parameter	Units	40177806001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Vinyl chloride	ug/L	<1.7	500	500	417	432	83	86	46-134	4	20	
Xylene (Total)	ug/L	<15.0	1500	1500	1610	1720	108	114	70-134	6	20	
4-Bromofluorobenzene (S)	%						110	113	70-130			pH
Dibromofluoromethane (S)	%						93	93	70-130			
Toluene-d8 (S)	%						105	106	70-130			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

QC Batch: 303999
QC Batch Method: EPA 3510
Analysis Method: EPA 8270
Analysis Description: 8270 Water MSSV
Associated Lab Samples: 40177806001

METHOD BLANK: 1776183
Matrix: Water
Associated Lab Samples: 40177806001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4,5-Tetrachlorobenzene	ug/L	<1.7	5.6	10/23/18 13:52	
1,2,4-Trichlorobenzene	ug/L	<2.0	6.8	10/23/18 13:52	
1,2-Dichlorobenzene	ug/L	<1.9	6.4	10/23/18 13:52	
1,3-Dichlorobenzene	ug/L	<1.9	6.3	10/23/18 13:52	
1,4-Dichlorobenzene	ug/L	<1.9	6.3	10/23/18 13:52	
1-Methylnaphthalene	ug/L	<1.7	5.6	10/23/18 13:52	
2,2'-Oxybis(1-chloropropane)	ug/L	<1.5	5.1	10/23/18 13:52	
2,3,4,6-Tetrachlorophenol	ug/L	<1.5	5.0	10/23/18 13:52	
2,4,5-Trichlorophenol	ug/L	<0.84	2.8	10/23/18 13:52	
2,4,6-Trichlorophenol	ug/L	<2.1	7.0	10/23/18 13:52	
2,4-Dichlorophenol	ug/L	<1.4	4.6	10/23/18 13:52	
2,4-Dimethylphenol	ug/L	<1.3	4.2	10/23/18 13:52	
2,4-Dinitrophenol	ug/L	<0.71	2.4	10/23/18 13:52	
2,4-Dinitrotoluene	ug/L	<0.79	2.6	10/23/18 13:52	
2,6-Dinitrotoluene	ug/L	<0.60	2.0	10/23/18 13:52	
2-Chloronaphthalene	ug/L	<1.6	5.5	10/23/18 13:52	
2-Chlorophenol	ug/L	<1.2	3.9	10/23/18 13:52	
2-Methylnaphthalene	ug/L	<1.5	5.0	10/23/18 13:52	
2-Methylphenol(o-Cresol)	ug/L	<0.87	2.9	10/23/18 13:52	
2-Nitroaniline	ug/L	<0.77	2.6	10/23/18 13:52	
2-Nitrophenol	ug/L	<1.2	3.9	10/23/18 13:52	
3&4-Methylphenol(m&p Cresol)	ug/L	<1.6	5.2	10/23/18 13:52	
3,3'-Dichlorobenzidine	ug/L	<0.91	3.0	10/23/18 13:52	
3-Nitroaniline	ug/L	<0.97	3.2	10/23/18 13:52	
4,6-Dinitro-2-methylphenol	ug/L	<0.65	2.2	10/23/18 13:52	
4-Bromophenylphenyl ether	ug/L	<2.0	6.6	10/23/18 13:52	
4-Chloro-3-methylphenol	ug/L	<1.7	5.6	10/23/18 13:52	
4-Chlorophenylphenyl ether	ug/L	<0.82	2.7	10/23/18 13:52	
4-Nitroaniline	ug/L	<1.8	6.1	10/23/18 13:52	
4-Nitrophenol	ug/L	<1.0	3.5	10/23/18 13:52	
Acenaphthene	ug/L	<1.3	4.5	10/23/18 13:52	
Acenaphthylene	ug/L	<1.1	3.5	10/23/18 13:52	
Acetophenone	ug/L	<4.3	14.2	10/23/18 13:52	
Anthracene	ug/L	<1.8	6.0	10/23/18 13:52	
Benzo(a)anthracene	ug/L	<0.53	1.8	10/23/18 13:52	
Benzo(a)pyrene	ug/L	<1.9	6.3	10/23/18 13:52	
Benzo(b)fluoranthene	ug/L	<0.65	2.2	10/23/18 13:52	
Benzo(g,h,i)perylene	ug/L	<0.81	2.7	10/23/18 13:52	
Benzo(k)fluoranthene	ug/L	<1.0	3.3	10/23/18 13:52	
Benzyl alcohol	ug/L	<1.1	3.7	10/23/18 13:52	
bis(2-Chloroethoxy)methane	ug/L	<1.0	3.3	10/23/18 13:52	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

METHOD BLANK: 1776183 Matrix: Water
Associated Lab Samples: 40177806001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
bis(2-Chloroethyl) ether	ug/L	<1.6	5.3	10/23/18 13:52	
bis(2-Ethylhexyl)phthalate	ug/L	<0.69	2.3	10/23/18 13:52	
Butylbenzylphthalate	ug/L	<0.77	2.6	10/23/18 13:52	
Chrysene	ug/L	<1.7	5.8	10/23/18 13:52	
Di-n-butylphthalate	ug/L	<2.6	8.5	10/23/18 13:52	
Di-n-octylphthalate	ug/L	<1.9	6.3	10/23/18 13:52	
Dibenz(a,h)anthracene	ug/L	<1.3	4.4	10/23/18 13:52	
Dibenzofuran	ug/L	<0.77	2.6	10/23/18 13:52	
Diethylphthalate	ug/L	<1.1	3.6	10/23/18 13:52	
Dimethylphthalate	ug/L	<1.9	6.4	10/23/18 13:52	
Fluoranthene	ug/L	<0.56	1.9	10/23/18 13:52	
Fluorene	ug/L	<0.75	2.5	10/23/18 13:52	
Hexachloro-1,3-butadiene	ug/L	<2.5	8.2	10/23/18 13:52	
Hexachlorobenzene	ug/L	<1.7	5.6	10/23/18 13:52	
Hexachlorocyclopentadiene	ug/L	<0.68	2.3	10/23/18 13:52	
Hexachloroethane	ug/L	<2.7	8.9	10/23/18 13:52	
Indeno(1,2,3-cd)pyrene	ug/L	<1.5	5.0	10/23/18 13:52	
Isophorone	ug/L	<0.73	2.4	10/23/18 13:52	
N-Nitroso-di-n-propylamine	ug/L	<0.97	3.2	10/23/18 13:52	
N-Nitrosodimethylamine	ug/L	<0.99	3.3	10/23/18 13:52	
N-Nitrosodiphenylamine	ug/L	<3.5	11.8	10/23/18 13:52	
Naphthalene	ug/L	<1.9	6.3	10/23/18 13:52	
Nitrobenzene	ug/L	<1.5	4.8	10/23/18 13:52	
Pentachlorophenol	ug/L	<1.4	4.8	10/23/18 13:52	
Phenanthrene	ug/L	<1.8	6.1	10/23/18 13:52	
Phenol	ug/L	<0.60	2.0	10/23/18 13:52	
Pyrene	ug/L	<1.3	4.5	10/23/18 13:52	
Pyridine	ug/L	<1.8	6.0	10/23/18 13:52	
2,4,6-Tribromophenol (S)	%	121	58-134	10/23/18 13:52	
2-Fluorobiphenyl (S)	%	91	54-122	10/23/18 13:52	
2-Fluorophenol (S)	%	51	27-77	10/23/18 13:52	
Nitrobenzene-d5 (S)	%	76	56-120	10/23/18 13:52	
Phenol-d6 (S)	%	28	16-120	10/23/18 13:52	
Terphenyl-d14 (S)	%	115	59-136	10/23/18 13:52	

LABORATORY CONTROL SAMPLE & LCSD: 1776184 1776185

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trichlorobenzene	ug/L	50	47.4	46.8	95	94	70-130	1	20	
1,2-Dichlorobenzene	ug/L	50	39.6	41.3	79	83	62-130	4	20	
1,3-Dichlorobenzene	ug/L	50	36.6	38.9	73	78	59-130	6	20	
1,4-Dichlorobenzene	ug/L	50	40.6	40.9	81	82	61-108	1	20	
1-Methylnaphthalene	ug/L	50	51.5	48.5	103	97	71-136	6	20	
2,2'-Oxybis(1-chloropropane)	ug/L	50	45.8	44.1	92	88	52-123	4	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
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(920)469-2436

QUALITY CONTROL DATA

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

LABORATORY CONTROL SAMPLE & LCSD: 1776184 1776185

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
2,4,5-Trichlorophenol	ug/L	50	47.9	51.9	96	104	70-127	8	20	
2,4,6-Trichlorophenol	ug/L	50	49.1	55.0	98	110	77-120	11	20	
2,4-Dichlorophenol	ug/L	50	42.2	49.5	84	99	71-112	16	20	
2,4-Dimethylphenol	ug/L	50	35.4	42.6	71	85	43-118	18	21	
2,4-Dinitrophenol	ug/L	50	50.2	59.6	100	119	36-130	17	28	
2,4-Dinitrotoluene	ug/L	50	61.4	60.0	123	120	70-130	2	20	
2,6-Dinitrotoluene	ug/L	50	60.3	57.0	121	114	70-130	6	20	
2-Chloronaphthalene	ug/L	50	52.2	50.2	104	100	70-130	4	20	
2-Chlorophenol	ug/L	50	37.5	46.5	75	93	65-108	21	20	R1
2-Methylnaphthalene	ug/L	50	51.5	48.3	103	97	70-130	6	20	
2-Methylphenol(o-Cresol)	ug/L	50	34.9	41.7	70	83	60-130	18	20	
2-Nitroaniline	ug/L	50	56.2	53.9	112	108	70-130	4	20	
2-Nitrophenol	ug/L	50	47.2	54.5	94	109	71-113	14	20	
3&4-Methylphenol(m&p Cresol)	ug/L	50	29.5	36.5	59	73	53-130	21	20	R1
3,3'-Dichlorobenzidine	ug/L	50	31.7	35.7	63	71	40-100	12	36	
3-Nitroaniline	ug/L	50	52.8	52.3	106	105	70-130	1	20	
4,6-Dinitro-2-methylphenol	ug/L	50	53.6	60.6	107	121	62-130	12	20	
4-Bromophenylphenyl ether	ug/L	50	50.2	51.9	100	104	70-130	3	20	
4-Chloro-3-methylphenol	ug/L	50	42.1	49.7	84	99	74-116	17	20	
4-Chlorophenylphenyl ether	ug/L	50	58.2	54.0	116	108	70-130	7	20	
4-Nitroaniline	ug/L	50	57.0	54.6	114	109	67-127	4	20	
4-Nitrophenol	ug/L	50	8.2	7.5	16	15	14-75	9	24	
Acenaphthene	ug/L	50	51.2	48.7	102	97	80-120	5	20	
Acenaphthylene	ug/L	50	52.6	49.7	105	99	70-130	6	20	
Anthracene	ug/L	50	57.0	55.7	114	111	70-130	2	20	
Benzo(a)anthracene	ug/L	50	50.3	49.3	101	99	70-130	2	20	
Benzo(a)pyrene	ug/L	50	50.3	50.2	101	100	78-118	0	20	
Benzo(b)fluoranthene	ug/L	50	48.5	48.1	97	96	70-130	1	20	
Benzo(g,h,i)perylene	ug/L	50	43.9	43.8	88	88	70-121	0	20	
Benzo(k)fluoranthene	ug/L	50	51.3	52.9	103	106	70-121	3	20	
Benzyl alcohol	ug/L	50	36.8	39.3	74	79	60-130	6	20	
bis(2-Chloroethoxy)methane	ug/L	50	51.4	49.8	103	100	70-130	3	20	
bis(2-Chloroethyl) ether	ug/L	50	43.1	42.3	86	85	70-115	2	20	
bis(2-Ethylhexyl)phthalate	ug/L	50	47.3	47.0	95	94	70-124	1	20	
Butylbenzylphthalate	ug/L	50	50.6	49.5	101	99	70-130	2	20	
Chrysene	ug/L	50	53.8	50.8	108	102	66-126	6	20	
Di-n-butylphthalate	ug/L	50	51.5	50.9	103	102	70-130	1	20	
Di-n-octylphthalate	ug/L	50	44.5	43.9	89	88	59-123	1	20	
Dibenz(a,h)anthracene	ug/L	50	35.7	35.6	71	71	52-133	0	20	
Dibenzofuran	ug/L	50	55.4	51.9	111	104	70-130	7	20	
Diethylphthalate	ug/L	50	59.6	55.9	119	112	70-130	6	20	
Dimethylphthalate	ug/L	50	53.3	53.5	107	107	70-130	0	20	
Fluoranthene	ug/L	50	54.7	53.9	109	108	85-122	1	20	
Fluorene	ug/L	50	56.6	53.4	113	107	70-130	6	20	
Hexachloro-1,3-butadiene	ug/L	50	48.0	48.1	96	96	66-114	0	20	
Hexachlorobenzene	ug/L	50	54.2	53.9	108	108	70-130	1	20	
Hexachlorocyclopentadiene	ug/L	50	22.1	23.9	44	48	19-81	8	25	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

LABORATORY CONTROL SAMPLE & LCSD: 1776184 1776185

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Hexachloroethane	ug/L	50	35.6	38.8	71	78	52-130	8	22	
Indeno(1,2,3-cd)pyrene	ug/L	50	42.1	41.0	84	82	58-125	3	20	
Isophorone	ug/L	50	50.6	48.7	101	97	70-130	4	20	
N-Nitroso-di-n-propylamine	ug/L	50	47.8	45.5	96	91	70-127	5	20	
N-Nitrosodimethylamine	ug/L	50	26.5	31.7	53	63	38-130	18	21	
N-Nitrosodiphenylamine	ug/L	50	49.5	52.3	99	105	80-124	5	20	
Naphthalene	ug/L	50	49.0	47.6	98	95	70-130	3	20	
Nitrobenzene	ug/L	50	46.7	46.5	93	93	70-130	0	20	
Pentachlorophenol	ug/L	50	39.4	43.2	79	86	65-109	9	20	
Phenanthrene	ug/L	50	51.0	50.2	102	100	70-130	2	20	
Phenol	ug/L	50	19.4	21.8	39	44	28-120	12	20	
Pyrene	ug/L	50	52.7	50.8	105	102	70-130	4	20	
Pyridine	ug/L	50	13.8	12.0	28	24	10-130	14	50	
2,4,6-Tribromophenol (S)	%				114	120	58-134			
2-Fluorobiphenyl (S)	%				97	89	54-122			
2-Fluorophenol (S)	%				43	55	27-77			
Nitrobenzene-d5 (S)	%				95	92	56-120			
Phenol-d6 (S)	%				32	36	16-120			
Terphenyl-d14 (S)	%				107	105	59-136			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

QC Batch: 303649 Analysis Method: SM 2540D
QC Batch Method: SM 2540D Analysis Description: 2540D Total Suspended Solids
Associated Lab Samples: 40177806001

METHOD BLANK: 1773635 Matrix: Water
Associated Lab Samples: 40177806001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Suspended Solids	mg/L	<0.48	1.0	10/18/18 13:09	

LABORATORY CONTROL SAMPLE: 1773636

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Suspended Solids	mg/L	100	110	110	80-120	

SAMPLE DUPLICATE: 1773637

Parameter	Units	40177802002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	2.8	3.2	13	5	R1

SAMPLE DUPLICATE: 1773638

Parameter	Units	40177832001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Suspended Solids	mg/L	216	216	0	5	

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QUALITY CONTROL DATA

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

QC Batch: 303454 Analysis Method: SM 5210B
QC Batch Method: SM 5210B Analysis Description: 5210B BOD, 5 day
Associated Lab Samples: 40177806001

METHOD BLANK: 1772409 Matrix: Water
Associated Lab Samples: 40177806001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
BOD, 5 day	mg/L	<2.0	2.0	10/22/18 11:32	

METHOD BLANK: 1772415 Matrix: Water
Associated Lab Samples: 40177806001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
BOD, 5 day	mg/L	<2.0	2.0	10/22/18 11:58	

LABORATORY CONTROL SAMPLE & LCSD: 1772411 1772412

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
BOD, 5 day	mg/L	198	185	207	93	105	84.6-115	11	20	

LABORATORY CONTROL SAMPLE & LCSD: 1772411 1772414

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
BOD, 5 day	mg/L	198	185	212	93	107	84.6-115	14	20	

SAMPLE DUPLICATE: 1772413

Parameter	Units	40177707002 Result	Dup Result	RPD	Max RPD	Qualifiers
BOD, 5 day	mg/L	142	144	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

QC Batch: 303860 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 40177806001

METHOD BLANK: 1775541 Matrix: Water
Associated Lab Samples: 40177806001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	2.0	10/23/18 18:17	
Sulfate	mg/L	<1.0	3.0	10/23/18 18:17	

LABORATORY CONTROL SAMPLE: 1775542

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	19.7	99	90-110	
Sulfate	mg/L	20	19.8	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1775543 1775544

Parameter	Units	40177978001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	7.3	20	20	27.9	27.7	103	102	90-110	0	15	
Sulfate	mg/L	<60.0	400	400	412	418	93	95	90-110	1	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1775545 1775546

Parameter	Units	40177802002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	18.2	20	20	38.5	38.3	102	101	90-110	1	15	
Sulfate	mg/L	19.6	20	20	40.3	40.1	103	103	90-110	0	15	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

QC Batch: 304039
QC Batch Method: EPA 310.2
Analysis Method: EPA 310.2
Analysis Description: 310.2 Alkalinity
Associated Lab Samples: 40177806001

METHOD BLANK: 1776330 Matrix: Water
Associated Lab Samples: 40177806001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.0	23.5	10/23/18 13:39	

LABORATORY CONTROL SAMPLE: 1776331

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	95.3	95	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1776332 1776333

Parameter	Units	40178025003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	82.4	100	100	186	183	103	100	90-110	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1776334 1776335

Parameter	Units	40178020011 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	345	500	500	771	823	85	96	90-110	6	20	M0

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

QC Batch: 304173
QC Batch Method: EPA 350.1
Analysis Method: EPA 350.1
Analysis Description: 350.1 Ammonia, Distilled
Associated Lab Samples: 40177806001

METHOD BLANK: 1777025
Matrix: Water
Associated Lab Samples: 40177806001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	<0.25	0.50	10/24/18 13:45	

LABORATORY CONTROL SAMPLE: 1777026

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	10	10.3	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1777027 1777028

Parameter	Units	40177623001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	<0.50	10	10	10.5	10.5	103	104	90-110	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1777029 1777030

Parameter	Units	40177851001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	0.25J	10	10	10.6	10.6	103	103	90-110	0	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

QC Batch: 304032 Analysis Method: EPA 351.2
QC Batch Method: EPA 351.2 Analysis Description: 351.2 TKN
Associated Lab Samples: 40177806001

METHOD BLANK: 1776287 Matrix: Water
Associated Lab Samples: 40177806001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	<0.22	0.73	10/23/18 17:14	

LABORATORY CONTROL SAMPLE: 1776288

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	5	4.9	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1776289 1776290

Parameter	Units	40178003003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Kjeldahl, Total	mg/L	0.93	5	5	5.8	5.7	98	95	90-110	3	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1776291 1776292

Parameter	Units	40177802001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Kjeldahl, Total	mg/L	0.38J	5	5	5.2	5.1	96	95	90-110	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

QC Batch: 304714 Analysis Method: EPA 410.4
QC Batch Method: EPA 410.4 Analysis Description: 410.4 COD
Associated Lab Samples: 40177806001

METHOD BLANK: 1781014 Matrix: Water
Associated Lab Samples: 40177806001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	<13.4	44.8	10/30/18 12:29	

LABORATORY CONTROL SAMPLE: 1781015

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	500	521	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1781016 1781017

Parameter	Units	40177802001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chemical Oxygen Demand	mg/L	20.7J	526	526	541	548	99	100	90-110	1	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1781018 1781019

Parameter	Units	40177802002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chemical Oxygen Demand	mg/L	22.9J	526	526	543	548	99	100	90-110	1	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALIFIERS

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

BATCH QUALIFIERS

Batch: 304090

[M5]	A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
R1	RPD value was outside control limits.
S3	Surrogate recovery exceeded laboratory control limits. Analyte presence below reporting limits in associated sample.
pH	Post-analysis pH measurement indicates insufficient VOA sample preservation.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 117-7413003 BARRETT LANDFILL
Pace Project No.: 40177806

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40177806001	**LEACHATE**	EPA 3010	304419	EPA 6010	304525
40177806001	**LEACHATE**	EPA 7470	304021	EPA 7470	304127
40177806001	**LEACHATE**	EPA 3510	303999	EPA 8270	304090
40177806001	**LEACHATE**	EPA 8260	303570		
40177806001	**LEACHATE**				
40177806001	**LEACHATE**	SM 2540D	303649		
40177806001	**LEACHATE**	SM 5210B	303454	SM 5210B	303913
40177806001	**LEACHATE**	EPA 300.0	303860		
40177806001	**LEACHATE**	EPA 310.2	304039		
40177806001	**LEACHATE**	EPA 350.1	304173	EPA 350.1	304199
40177806001	**LEACHATE**	EPA 351.2	304032	EPA 351.2	304105
40177806001	**LEACHATE**	EPA 410.4	304714	EPA 410.4	304813

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

40177806

Section A — **Required** Client Information:

Company:	Tetra Tech
Address:	175 N Corporate Dr, Suite 100
	Brookfield, WI 53045
Email To:	ashley.wagner@tetratech.com
Phone: 262-719-5242	Fax: 262-792-1310
Requested Due Date/TAT:	Standard

Section B — **Required** Project Information:

Report To:	Ashley Wagner
Copy To:	
Purchase Order No.:	
Project Name:	Barrett Landfill
Project Number:	117-7413003

Section C — Invoice Information:

Attention:	Ashley Wagner
Company Name:	Tetra Tech
Address:	175 N Corporate Dr, Suite 100
Pace Quote Reference:	Brookfield, WI 53045
Pace Project Manager:	Brian Basten
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☑ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location — **STATE:** WI

Section D — **Required** Client Information

SAMPLE ID
(A-Z, 0-9 / ,-)
Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

ITEM #	Section D Required Client Information (SAMPLE ID)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COLLECTED: COMPOSITE START TIME	COLLECTED: COMPOSITE END/GRAB DATE	COLLECTED: COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	Alkalinity	Chloride	Sulfate	TKN	Nitrogen, Ammonia	Metals (see list below)	COD	Total Hardness	BOD 5 Day	TSS	VOCs	SVOCs	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
																		Requested Analysis Filtered (Y/N)	N	N	N	N	N	N	N	N	N	N	N	N	
1	Leachate (258)	WT	G	--	--	10/16/18	835		12	5	2	2	3						x	x	x	x	x	x	x	x	x	x	x		001
2	pH 8.82																										x			
3	Temp 11.4																													
4	Conductivity 3999*																													
5	* over range.																													
6																														
7	Trip Blank	WT	G	--	--	--	--		2				2						Lab prepared								x			
8																														
9																														
10																														
11																														
12																														

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Please provide GEMs package to Ashley Wagner with results		10/16/18	12:36	Mary Lawrence	10/16/18	12:36				
GEMs IDs are listed in parentheses after sample ID	Mary Lawrence	10/16/18	1700							
Metals: Cadmium, Lead, Iron, Mercury, Manganese, Sodium	C.S. Rogstad	10/17/18	1005	Susan Kuffel Pace	10/17/18	1005	RAD	Y	Y	Y
NO SAMPLES HAVE BEEN FIELD FILTERED, REPORT AS TOTAL.										

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Ashley Wagner

SIGNATURE of SAMPLER: Ashley Wagner **DATE Signed (MM/DD/YY):** 10/16/18

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical Services, LLC
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Sample Preservation Receipt Form

Client Name: Tetra Tech Project # 40177806

All containers needing preservation have been checked and noted below: ☐Yes ☐No ~~N/A~~ 10/17/18 SKW Initial when completed: SKW Date/Time: 10/17/18 1020

Lab Lot# of pH paper: 10150781 Lab Std #ID of preservation (if pH adjusted): 405439

	Glass							Plastic							Vials						Jars			General			VOA Vials (>6mm)*	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	Both HNO3 pH ≤2	pH after adjusted	Volume (mL)
Pace Lab #	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3C	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU	SP5T	ZPLC	GN						
001	2							2			1		2	2				3										X			7	5.2	2.5 / 5 / 10
002																																2.5 / 5 / 10
003																																2.5 / 5 / 10
004																																2.5 / 5 / 10
005																																2.5 / 5 / 10
006																																2.5 / 5 / 10
007																																2.5 / 5 / 10
008																																2.5 / 5 / 10
009																																2.5 / 5 / 10
010																																2.5 / 5 / 10
011																																2.5 / 5 / 10
012																																2.5 / 5 / 10
013																																2.5 / 5 / 10
014																																2.5 / 5 / 10
015																																2.5 / 5 / 10
016																																2.5 / 5 / 10
017																																2.5 / 5 / 10
018																																2.5 / 5 / 10
019																																2.5 / 5 / 10
020																																2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: _____ Headspace in VOA Vials (>6mm) : ☐Yes ☑No ☐N/A ***If yes look in headspace column**

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	DG9A	40 mL amber ascorbic	JGFU	4 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP2N	500 mL plastic HNO3	DG9T	40 mL amber Na Thio	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH, Znact	VG9U	40 mL clear vial unpres	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3U	250 mL plastic unpres	VG9H	40 mL clear vial HCL		
AG5U	100 mL amber glass unpres	BP3C	250 mL plastic NaOH	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres	BP3S	250 mL plastic H2SO4			GN:	

Pace Analytical 1241 Bellevue Street, Green Bay, WI 54302	Document Name: **Sample Condition Upon Receipt (SCUR)**	Document Revised: 25Apr2018
	Document No.: **F-GB-C-031-Rev.07**	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Client Name: Tetra Tech

Project #: **WO# : 40177806**

40177806

Courier: ☑ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco ☐ Client ☐ Pace Other: _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Packing Material: ☑ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other _____

Thermometer Used SR - N/A **Type of Ice:** (Wet) Blue Dry None ☑ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: RDI /Corr: _____

Temp Blank Present: ☐ yes ☑ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Person examining contents:
Date: 10-17-18
Initials: SAV

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☑Yes ☐No	6.
Rush Turn Around Time Requested:	☐Yes ☑No	7.
Sufficient Volume: For Analysis: ☑Yes ☐No MS/MSD: ☐Yes ☑No ☐N/A		8.
Correct Containers Used:	☑Yes ☐No	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☑N/A	
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: W		
Trip Blank Present:	☐Yes ☑No ☐N/A	13. Trip Blank listed on COC — none in shipment. 10-17-18 SAV
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

Project Manager Review: _____ **Date:** 10-17-18

APPENDIX F: Leachate Line Cleaning Results

Clean out A - Cleaned and Televised 756.7ft

Clean out B - Cleaned 1000ft and Televised 800ft

- Both pipes are 6" plastic pipe
- The riser for each of these pipes is roughly 60 ft Deep

Both Cleanout A + Clean out B were too deep to Locate. We couldn't find any other Cleanouts that the pipe would be connected wit for Cleanout A we Water Jetted 756.7 ft and Televised 756.7 ft. We attempted to Locate the pipe 20 ft from the Cleanout and all the way out to 756 ft. We were unable to Locate due to the depth. For Cleanout B We water Jetted 1000 ft and Televised 800 ft. The footage Counter wasn't Counting properly for the vidio and the footage reads 705.8ft but it is 800 ft. On Clean out B we also Attempted Locating at 20ft from the Cleanout and 800 ft from the Cleanout and Couldn't Locate.