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January 30, 2020

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Mr. David M. Heger
Senior Counsel
AES US Services, LLC
One Monument Circle, Suite 701A
Indianapolis, Indiana 46204-2901

Re: **2019 CCR Annual Groundwater Monitoring and Corrective Action Report**
Indianapolis Power & Light Company
Petersburg Generating Station – RWS Type I Landfill
Indianapolis, Indiana
ATC Project No. 170LF00705

Dear Mr. Heger:

ATC Group Services LLC (ATC) has prepared this 2019 CCR Annual Groundwater Monitoring and Corrective Action Report for the Restricted Waste Site (RWS) Type I Landfill at Indianapolis Power & Light Company's (IPL) Petersburg Generating Station located outside Petersburg, Pike County, Indiana. This report has been prepared to comply with reporting requirements described in the United States Environmental Protection Agency's (USEPA) Coal Combustion Residuals (CCR) Rule § 257.90(e). This annual report documents the status of the groundwater monitoring and corrective action program for the Landfill and summarizes information required by § 257.90(e)(1) through § 257.90(e)(5).

Federal CCR Rule § 257.90(e) specifies the following:

> *For existing CCR landfills and existing CCR surface impoundments, no later than January 31, 2019, and annually thereafter, the owner or operator must prepare an annual groundwater monitoring and corrective action report. For new CCR landfills, new CCR surface impoundments, and all lateral expansions of CCR units, the owner or operator must prepare the initial annual groundwater monitoring and corrective action report no later than January 31 of the year following the calendar year a groundwater monitoring system has been established for such CCR unit as required by this subpart, and annually thereafter. For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities*

for the upcoming year. For purposes of this section, the owner or operator has prepared the annual report when the report is placed in the facility's operating record as required by § 257.105(h)(1).

The following key actions have been completed in 2019 to comply with the CCR Rule:

- Statistically Significant Level (SSL) notification pursuant to § 257.95(g) was completed in January 2019.
- In accordance with § 257.96(a), an assessment of corrective measures was initiated in April 2019. A certified Demonstration for 60-Day Extension – Corrective Measures Assessment pursuant to § 257.96(a) was issued in July 2019 (Attachment A). A Corrective Measures Assessment (CMA) report was completed and placed in the facility's operating record in September 2019, with an amended version posted to the facility's publicly available website in October 2019.
- Nature and extent (N&E) characterization was initiated with installation of monitoring wells as required by § 257.95(g)(1).
- Semi-annual assessment monitoring sampling events were conducted in 2019 as required by § 257.95(b) and § 257.95(d)(1). Subsequent SSLs evaluation of 2019 data were performed within 90-days of completing each sampling event pursuant to § 257.93(h)(2).
- An Alternative Source Demonstration was successfully completed pursuant to § 257.95(g)(3)(ii) in October 2019 (Attachment B).

To report on the activities conducted during the prior calendar year and document compliance with the CCR Rule, the specific requirements listed in § 257.90(e)(1) through § 257.90(e)(5) are provided below in bold/italic type followed by a short narrative addressing how that specific requirement has been met.

At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available:

§ 257.90(e)(1) A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;

IPL operates the Petersburg Station located approximately four miles north of Petersburg, Indiana. It is located at 6925 North State Road 57. A Site Location Map is provided as Figure 1. A map showing the location of each CCR management unit, associated upgradient and downgradient CCR monitoring wells, and N&E monitoring equipment installed in 2019, is provided as Figure 2.

§ 257.90(e)(2) Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;

The CCR groundwater monitoring system at the Petersburg Landfill consists of eight (8) monitoring wells: one (1) upgradient monitoring well MW-1, and seven (7) downgradient monitoring wells MW-2R, MW-3, MW-4C, MW-10, MW-11, MW-12, and MW-13.

To characterize the nature and extent (N&E) of the release and any relevant site condition that may affect the remedy ultimately selected, as required by § 257.95(g)(1), additional investigation activities were initiated. These investigation activities include but are not limited to the installation of additional downgradient wells in order to evaluate site conditions that may affect the remedy ultimately selected. Five (5) N&E wells (MW-14, MW-15, MW-16, MW-17, and MW-18) were installed in 2019. These wells were installed to characterize the nature and extent of the contamination plume and to support the CMA. Monitoring wells MW-17 and MW-18 were gauged for water levels in 2019 but were not sampled.

Since there is a “weak” hydraulic connection between the landfill and the ash pond system, monitoring Wells MW-19B, MW-19I and MW-19A that were installed at the facility boundary pursuant to § 257.95(g)(1)(iii) serve the same purpose for the landfill. The analytical associated with these wells are summarized in Table 4 of the 2019 annual Groundwater Monitoring and Corrective Action Report for the Ash Pond system.

The location of the CCR monitoring well network and N&E wells are depicted on Figure 2. No wells were abandoned during this reporting period.

§ 257.90(e)(3) In addition to all the monitoring data obtained under § 257.90 through § 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;

Table 1 provides a summary of the number of samples collected at each CCR monitoring well and N&E well, sampling dates, and designation of whether samples were required by the detection or assessment monitoring program, or N&E. Groundwater elevation data is provided in Table 2. Assessment monitoring groundwater analytical results for the May 2019 semi-annual sampling event is summarized in Table 3. Groundwater results for N&E wells MW-14, MW-15, and MW-16 sampled in May 2019, and N&E wells MW-19B, MW-19I and MW-19A sampled in August 2019 are summarized in Table 4. Groundwater results for the November 2019 sampling event were not finalized in 2019 and therefore not included in this report.

§ 257.90(e)(4) A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels);

Pursuant to § 257.94(e)(2), 257.94(e)(3) and 257.95(b), the facility established an Assessment Monitoring Program in accordance with the requirements of § 257.95 on July 16, 2018 as denoted in

the 2019 Annual Groundwater Monitoring and Corrective Action report. IPL Petersburg continues assessment monitoring in accordance with § 257.95.

A statistical evaluation of the 2018 analytical data was performed in order to determine whether there was a SSL of an Appendix IV constituent detected above the relevant groundwater protection standards (GWPS) in accordance with § 257.95(g) and 257.93(h). This evaluation was completed in January 2019. GWPS were developed pursuant to § 257.95(d)(2) and (h) and exceedances of the established GWPS were identified. Appendix IV constituents that exceeded the GWPS include arsenic, lithium, and molybdenum.

Completion of a notification identifying the Appendix IV constituents that exceeded GWPS in accordance with § 257.95(g) was completed in January 2019 and was placed in the facility's CCR operating record pursuant to § 257.95(g).

A statistical evaluation of the May 2019 analytical data was performed in order to determine whether there was a SSL of an Appendix IV constituent detected above the relevant GWPS in accordance with § 257.95(g) and 257.93(h). This evaluation was completed in September 2019. Based on this evaluation, it was determined that there were no new Appendix IV constituent SSLs; therefore, an additional notification was not triggered pursuant to 40 CFR 257.95(g) as no new SSLs were identified

§ 257.90(e)(5) Other information required to be included in the annual report as specified in § 257.90 through § 257.98.

Table 5 summarizes the groundwater protection standards established in accordance with § 257.95(d)(2) and § 257.95(h).

Pursuant to 40 CFR 257.94(e)(2), an Alternative Source Demonstration was initiated to evaluate whether a source other than the facility was causing the identified SSL in monitoring well MW-10. A successful demonstration was completed (Attachment B) in October 2019. Arsenic exceedances for MW-10 were determined to be from an alternative source other than the CCR unit.

Projected key activities for the upcoming year include the following:

- Assessment monitoring sampling events in accordance with § 257.95.
- Finalize November 2019 analytical data. Completion of statistical evaluation of November 2019 analytical data to determine whether there is a SSL above GWPS for Appendix IV constituents in accordance with § 257.95(g) and 257.93(h). Perform SSL evaluations of final 2020 assessment monitoring analytical data.
- Continue nature and extent work pursuant to § 257.95(g).
- Conduct public meeting to discuss the results of the corrective measures assessment at least 30 days prior to the selection of remedy pursuant to § 257.96(e).
- Prepare semi-annual report(s) describing process in selecting and designing the remedy pursuant to § 257.97(a).

- Following remedy selection, if feasible, prepare and certify final report describing the selected remedy and how it meets the standards specified in § 257.97(b).

We appreciate the opportunity to assist with IPL's CCR Rule groundwater monitoring program at Petersburg Station's RWS Type I Landfill. Please contact either of the undersigned at 317.849.4990 if you have any questions regarding this report.

Sincerely,

Kendra Reininga
Staff Geologist

Mark E. Breting, L.P.G.
Senior Project Geologist

Robert T. Duncan, L.P.G.
Senior Project Geologist

Copies: Ms. Nysa Hogue
Mr. Wil Teague

TABLES

Table 1
Well Sampling Summary
RWS Type I Landfill
Indianapolis Power and Light Company
Petersburg Generating Station
Petersburg, Indiana
ATC Project No. 170LF00705

Identification	Date Installed	Upgradient/Background, Downgradient, or Nature & Extent	Number of Samples	Sample Date	Pace Laboratory Project Number	Detection or Assessment Monitoring Program
MW-1	11/21/1986	Upgradient	2	5/17/2019	50225553	Assessment
				11/6/2019	50241054	
MW-2 (2R)	2/2017 (MW-2R)	Downgradient	2	5/16/2019	50225552	Assessment
				11/6/2019	50241054	
MW-3	1986	Downgradient	2	5/16/2019	50225552	Assessment
				11/6/2019	50241054	
MW-4C	9/29/1992	Downgradient	2	5/16/2019	50225552	Assessment
				11/6/2019	50241054	
MW-10	1/30/2017	Downgradient	2	5/17/2019	50225553	Assessment
				7/3/2019	50229707	
				11/6/2019	50241054	
MW-11	1/25/2017	Downgradient	2	5/17/2019	50225553	Assessment
				11/6/2019	50241054	
MW-12	1/26/2017	Downgradient	2	5/17/2019	50225553	Assessment
				11/6/2019	50241054	
MW-13	1/31/2017	Downgradient	2	5/17/2019	50225553	Assessment
				11/6/2019	50241054	
MW-14	4/3/2019	Nature & Extent	2	5/15/2019	50225254	Assessment
				11/6/2019	50241023	

Table 1
Well Sampling Summary
RWS Type I Landfill
Indianapolis Power and Light Company
Petersburg Generating Station
Petersburg, Indiana
ATC Project No. 170LF00705

Identification	Date Installed	Upgradient/Background, Downgradient, or Nature & Extent	Number of Samples	Sample Date	Pace Laboratory Project Number	Detection or Assessment Monitoring Program
MW-15	4/2/2019	Nature & Extent	2	5/15/2019	50225254	Assessment
				11/6/2019	50241023	
MW-16	4/1/2019	Nature & Extent	2	5/15/2019	50225254	Assessment
				11/6/2019	50241023	
MW-19B	8/1/2019	Nature & Extent	2	8/23/2019	50234059	Assessment
				11/5/2019	50241026	
MW-19I	8/1/2019	Nature & Extent	2	8/23/2019	50234059	Assessment
				11/5/2019	50241026	
MW-19A	8/1/2019	Nature & Extent	2	8/23/2019	50234059	Assessment
				11/5/2019	50241026	

Table 2
Groundwater Elevation Data
RWS Type I Landfill
Indianapolis Power and Light Company
Petersburg Generating Station, Petersburg, Indiana
ATC Project No. 170LF00705

Monitoring Well Location	Gauging Date	TOC Elevation (ft-MSL)	Depth to Water (ft)	Water Elevation (ft-MSL)
MW-1	5/12/2019	528.11	27.17	500.94
	11/3/2019		30.20	497.91
MW-2R	5/12/2019	455	10.02	518.09
	11/3/2019		17.36	437.64
MW-3	5/12/2019	450.71	8.77	441.94
	11/3/2019		9.74	440.97
MW-4C	5/12/2019	454.44	5.03	449.41
	11/3/2019		5.13	449.31
MW-10	5/12/2019	502.38	35.90	466.48
	11/3/2019		39.66	462.72
MW-11	5/12/2019	517.51	30.57	486.94
	11/3/2019		36.00	481.51
MW-12	5/12/2019	517.64	20.22	497.42
	11/3/2019		28.35	489.29
MW-13	5/12/2019	480.97	8.58	472.39
	11/3/2019		13.13	467.84
MW-14	5/12/2019	436.46	6.41	430.05
	7/25/2019		8.04	428.42
	8/29/2019		8.38	428.08
	11/3/2019		9.22	427.24
MW-15	5/12/2019	444.11	15.30	428.81
	7/25/2019		18.88	425.23
	8/29/2019		20.24	423.87
	11/3/2019		21.75	422.36
MW-16	5/12/2019	442.78	3.25	439.53
	7/25/2019		3.88	438.90
	8/29/2019		3.40	439.38
	11/3/2019		3.62	439.16
MW-17	7/25/2019	472.33	15.72	456.61
	8/29/2019		16.96	455.37
	11/3/2019		17.60	454.73
MW-18	7/25/2019	458.27	6.25	452.02
	8/29/2019		6.21	452.06
	11/3/2019		7.11	451.16

Table 2
Groundwater Elevation Data
RWS Type I Landfill
Indianapolis Power and Light Company
Petersburg Generating Station, Petersburg, Indiana
ATC Project No. 170LF00705

Monitoring Well Location	Gauging Date	TOC Elevation (ft-MSL)	Depth to Water (ft)	Water Elevation (ft-MSL)
MW-19B	8/29/2019	421.51	15.36	406.15
	11/3/2019		16.24	405.27
MW-19I	8/291/19	421.28	15.25	406.03
	11/3/2019		16.05	405.23
MW-19A	8/29/2019	421.41	15.35	406.06
	11/3/2019		16.16	405.25

Notes:
TOC = Top of Casing
ft-MSL = feet above Mean Sea Level
ft-bgs = feet below ground surface

Table 3
Summary of Monitoring Results - May 2019
(Semi-Annual CCR Wells)
RWS Type I Landfill
Indianapolis Power and Light Company
Petersburg Generating Station
Petersburg, Indiana
ATC Project No. 170LF00705

Well ID		MW-1	MW-2R	MW-3	MW-4C	MW-10	MW-11	MW-12	MW-13
Pace Lab ID		50225553001	50225552001	50225552002	50225552003	50225553002	50225553003	50225553004	50225553005
Sample Date		5/17/2019	5/16/2019	5/16/2019	5/16/2019	5/17/2019	5/17/2019	5/17/2019	5/17/2019
Static Water Elevation (ft MSL)		500.94	444.98	441.94	449.41	446.48	486.94	497.42	472.39
Field Parameters									
Temperature	°C	17.71	16.15	16.75	14.70	18.43	18.52	18.62	13.16
Dissolved Oxygen, Field	mg/L	8.41	0.10	0.07	0.31	0.58	5.66	9.89	8.62
Conductivity, Field	µS/cm	526.25	2013.82	2264.90	2117.22	2428.37	961.49	359.73	1285.09
ORP, Field	mV	40.73	-84.76	-45.01	0.37	-48.27	32.87	43.54	33.79
pH, Field	Std. Units	7.04	6.83	7.22	6.84	6.52	6.91	6.93	7.23
Analytical Data									
Antimony, Total	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic, Total	ug/L	<1.0	8.3	12.9	<1.0	30.3	<1.0	<1.0	<1.0
Barium, Total	ug/L	29.4	35.5	28.6	26.2	41.2	30.2	28.8	18.8
Beryllium, Total	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Boron, Total	ug/L	165	2020	1620	3870	27000	1380	<100	1860
Cadmium, Total	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Calcium, Total	ug/L	108000	428000	422000	496000	517000	170000	47800	546000
Chromium, Total	ug/L	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Cobalt, Total	ug/L	<1.0	3.3	2.0	1.0	10.3	<1.0	<1.0	<1.0
Lead, Total	ug/L	<10.0	<10.0	47.8	<10.0	<10.0	<10.0	<10.0	<10.0
Lithium, Total	ug/L	<20.0	616	1260	316	<20.0	<20.0	<20.0	<20.0
Mercury, Total	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Molybdenum, Total	ug/L	<10.0	11.2	338	<10.0	<10.0	<10.0	<10.0	47.6
Selenium, Total	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	3.5	<1.0	2.7
Thallium, Total	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Radium-Combined	pCi/L	<1.78	1.19	0.745	0.788	<1.03	<1.43	1.28	<1.57
Chloride	mg/L	2.9	35.0	78.0	36.7	49.4	2.4	9.4	0.52
Fluoride	mg/L	<0.1	<0.1	0.19	0.11	0.20	0.14	0.13	0.69
pH	SU	7.2	7.0	7.4	7.0	7.2	7.2	7.2	7.4
Solids, Dissolved	mg/L	442	2230	2020	2350	2530	837	15.9	2000
Sulfate	mg/L	74.2	1260	1090	1140	1220	403	255	1170

Notes:
ft MSL: Elevation, feet mean sea level
°C: Degrees celcius
uS/cm: microsiemen per centimeter
umhos/cm: micromhos per centimeter
mV: millivolt
Std. Units: standard units
mg/L: milligram per liter
ug/L: microgram per liter
pCi/L: picoCurie per liter

Static water elevation listed for a well may have been collected on a date different than date of well sampling.

Table 4
Summary of Monitoring Results - May and August 2019
(N & E Well Events)
RWS Type I Landfill
Indianapolis Power and Light Company
Petersburg Generating Station
Petersburg, Indiana
ATC Project No. 170LF00705

Well ID		MW-14	MW-15	MW-16	MW-19A	MW-19I	MW-19B
Pace Lab ID		50225254001	50225254002	50225254003	50234059001	50234059003	50234059002
Sample Date		5/15/2019	5/15/2019	5/15/2019	8/23/2019	8/23/2019	8/23/2019
Static Water Elevation (ft MSL)		436.46	428.81	439.53	406.06	405.23	405.27
Field Parameters							
Temperature	°C	13.94	17.06	14.88	17.52	19.29	22.76
Dissolved Oxygen, Field	mg/L	0.09	0.67	0.23	0.97	2.15	1.04
Conductivity, Field	µS/cm	813.44	1776.83	2280.99	2500.5	736.58	748.81
ORP, Field	mV	-58.75	-55.00	-111.21	-42.9	33.1	51.60
pH, Field	Std. Units	6.91	6.97	7.16	6.96	6.99	6.93
Analytical Data							
Antimony, Total	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	1.0
Arsenic, Total	ug/L	1.9	<1.0	3.7	3.8	6.0	13.2
Barium, Total	ug/L	55.8	100	77.3	78.5	109	168
Beryllium, Total	ug/L	<0.20	<0.20	<0.20	0.25	<0.20	0.67
Boron, Total	ug/L	624	1840	2910	24700	630	1040
Cadmium, Total	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Calcium, Total	ug/L	165000	310000	345000	612000	127000	163000
Chromium, Total	ug/L	NA	NA	NA	NA	NA	NA
Cobalt, Total	ug/L	1.7	<1.0	1.7	6.1	4.2	13.2
Lead, Total	ug/L	<20.0	869	2440	<10.0	<10.0	28.1
Lithium, Total	ug/L	<2.0	<2.0	<2.0	<20.0	<20.0	<20.0
Mercury, Total	ug/L	<1.0	<1.0	<1.0	NA	NA	NA
Molybdenum, Total	ug/L	<1.0	<1.0	<1.0	1050	<10.0	<10.0
Selenium, Total	ug/L	0.42	0.42	0.42	<1.0	2.0	1.0
Thallium, Total	ug/L	1.1	1.1	1.1	<1.0	<1.0	<1.0
Radium-Combined	ug/L	<1.0	<1.0	<1.0	1.78	1.37	4.10
Chloride	mg/L	5.0	81.4	85.2	103.0	11.6	12.8
Fluoride	mg/L	<0.10	<0.10	<0.10	<0.10	0.15	0.12
pH	SU	7.1	7.1	7.2	7.1	7.4	7.4
Solids, Dissolved	mg/L	695	1710	2360	2390	430	436
Sulfate	mg/L	222	893	1280	1520	61.9	115

Notes:
ft MSL: Elevation, feet mean sea level
°C: Degrees celcius
uS/cm: microsiemen per centimeter
umhos/cm: micromhos per centimeter
mV: millivolt
Std. Units: standard units
mg/L: milligram per liter
ug/L: microgram per liter
pCi/L: picoCurie per liter

Static water elevation listed for a well may have been collected on a date different than date of well sampling.

NA = Not Analyzed

Table 5
Groundwater Protection Standards
RWS Type I Landfill
Indianapolis Power and Light Company
Petersburg Generating Station
Petersburg, Indiana
ATC Project No. 170LF00705

Parameter	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Radium 226/228 Combined
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L
GWPS	6	10	2000	4	5	100	6	4	15	40	2	100	50	2	5.5854

Notes:
ug/L = micrograms per liter (ppb)
mg/L = milligrams per liter (ppm)
pCi/L = picoCuries per liter
GWPS = Groundwater Protection Standard

FIGURES

H:\2019\IPL\PETERSBURG\170LF00705\170LF00705-SITE LOCATION MAP.DWG, 11X17P

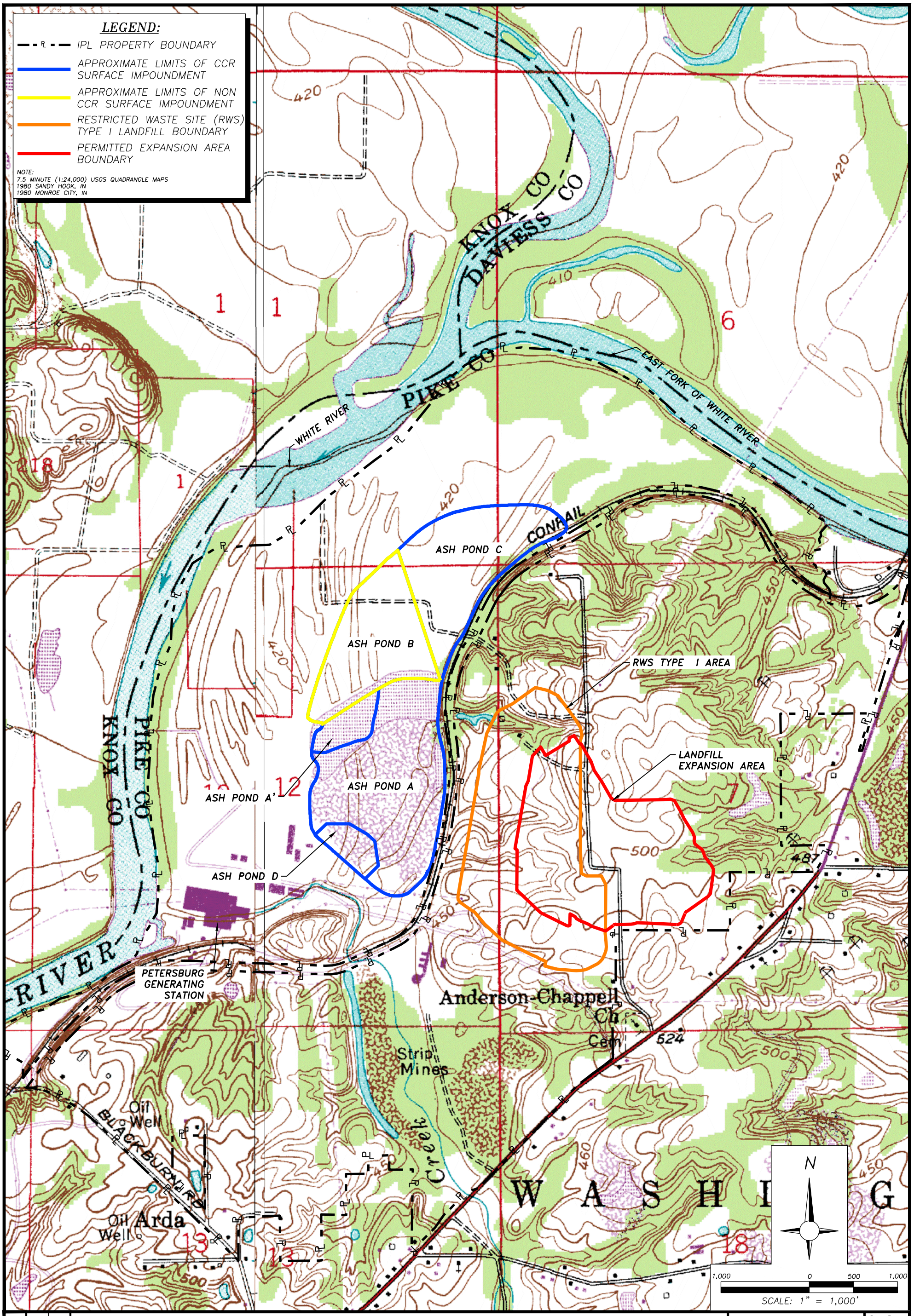


Figure: 1	Scale: AS SHOWN	Date: 12/19	**SITE LOCATION MAP** IPL PETERSBURG GENERATING STATION RWS TYPE I LANDFILL PETERSBURG, INDIANA

Project Number: 170LF00705	Drn. By: JG
Drawing File: SEE TOP LEFT	Ckd. By: KR
ATC	App'd By:
	Ckd. Date:

LEGEND:

- MW-1 — CCR MONITORING WELL (Well Identification)
- MW-1 — NATURE AND EXTENT MONITORING WELL (Well Identification)
- FACILITY BOUNDARY
- RESTRICTED WASTE SITE (RWS) TYPE I LANDFILL BOUNDARY
- PERMITTED EXPANSION AREA BOUNDARY

MW-18
MW-17
MW-10
MW-19B
MW-19I
MW-19A
RWS TYPE I AREA
LANDFILL EXPANSION AREA
MW-16
MW-4C
MW-11
MW-15
MW-3
MW-14
MW-12
MW-2R
MW-13
MW-1

N

600 0 200 400 600

SCALE: 1" = 600'

Drn. By:	Ckd. By:	App'd By:	Ckd. Date:
JG	KR		

Project Number: 170LF00705

Drawing File: SEE LOWER LEFT

ATC

GROUNDWATER MONITORING SYSTEM
CCR NETWORK AND N AND E WELLS

IPL PETERSBURG GENERATING STATION
RWS TYPE I LANDFILL
PETERSBURG, INDIANA

Date: 1/20

Scale: AS SHOWN

Figure: 2

H:\2019\IPL\PETERSBURG\170LF00705\170LF00705-CCR GW MONITORING SYSTEM MAP.DWG, 11X17L

ATTACHMENT A

Demonstration for 60-Day Extension – Corrective Measures Assessment

HALEY & ALDRICH, INC.
6500 Rockside Road
Suite 200
Cleveland, OH 44131
216.739.0555

MEMORANDUM

July 2019
Project No. 133274-003

SUBJECT: **Demonstration for 60-Day Extension – Corrective Measures Assessment (CMA)**
Indianapolis Power & Light (IPL) – Petersburg Generating Station
Restricted Waste Landfill
Pike County, Indiana

Pursuant to CFR Title 40 Chapter 257 Subpart D §257.96(a) (CCR Rule), I certify that IPL has demonstrated the need for an additional 60-days beyond the regulatory time period of 90 days to complete the assessment of corrective measures for the Restricted Waste Landfill (Landfill) due to site-specific conditions and the evaluation of remedial treatment alternatives in support of an informed CMA process.

In the case of the assessment for the Landfill, the site has complex hydrogeology and nature and extent (N&E) investigations are ongoing in support of the CMA process. Nature and extent information is an important component of the CMA. IPL is also in the process of reviewing possible groundwater remedies as well as implementation of critical steps in the groundwater treatment and remedy assessment process. Based on these site-specific conditions and related groundwater treatment alternatives evaluations in support of the CMA by IPL, a 60-day extension is needed to complete the CMA process.

This certification as submitted, is to the best of my knowledge, accurate and complete.

Signed:_____
Certifying Engineer

Print Name:	Steven F. Putrich, P.E.
Indiana License No.:	PE11200566
Title:	CCR Practice Lead, Senior Consulting Engineer
Company:	Haley & Aldrich, Inc.

Professional Engineer's Seal

ATTACHMENT B

Demonstration That Source Other Than CCR Unit Caused Contamination

HALEY ALDRICH

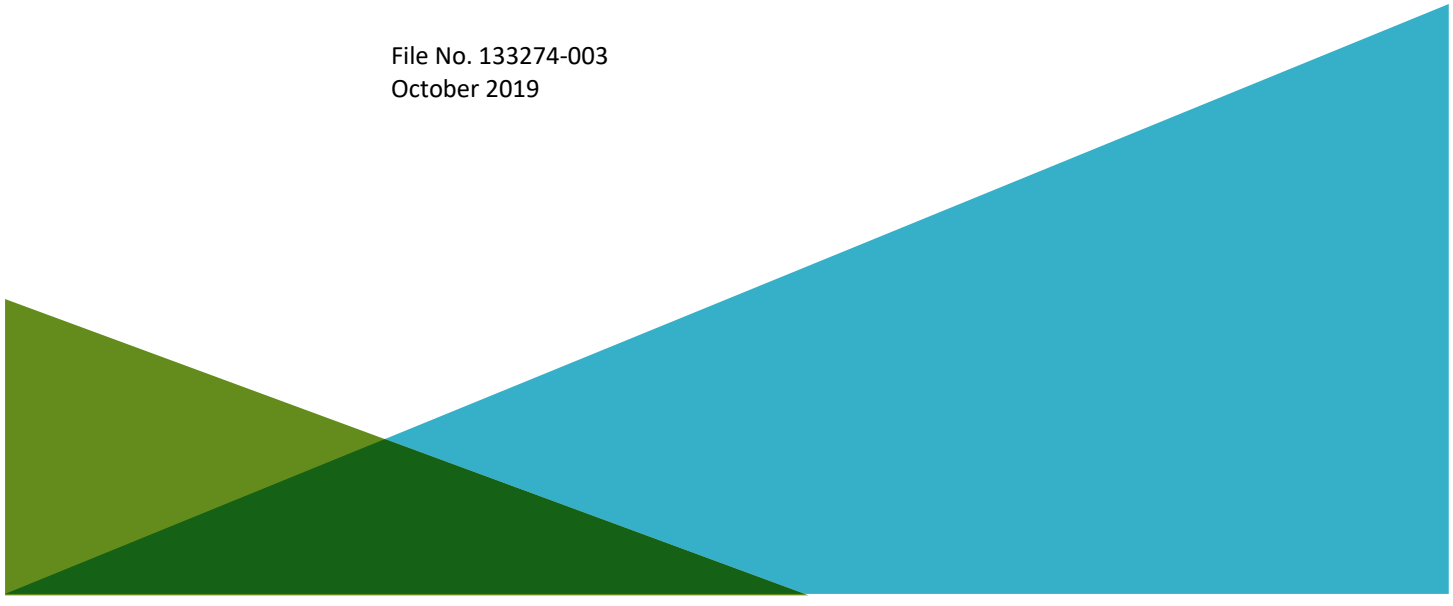
www.haleyaldrich.com

REPORT ON
PETERSBURG GENERATING STATION
RESTRICTED WASTE LANDFILL
ALTERNATE SOURCE DEMONSTRATION
PETERSBURG, INDIANA

by
Haley & Aldrich, Inc.
Cleveland, Ohio

for
Indianapolis Power & Light Company
Petersburg, Indiana

File No. 133274-003
October 2019



HALEY & ALDRICH, INC.
6500 Rockside Road
Suite 200
Cleveland, OH 44131
216.739.0555

Certification of Accuracy of Demonstration – Statistically Significant Increase Over Background Levels Not Caused by CCR Unit

Pursuant to 40 C.F.R. § 257.95(g)(3)(ii), the undersigned, being a qualified professional engineer, as that term is defined under 40 C.F.R. § 257.53, hereby certifies the accuracy of the information in the report to demonstrate whether, with respect to the CCR unit(s) and Appendix IV constituents listed in the table below, the statistically significant increase over groundwater protection standard(s) established pursuant to 40 C.F.R. § 257.95(h) was caused by a source other than the CCR unit, or resulted from error in sampling analysis, statistical evaluation, or natural variation in groundwater quality.

Petersburg Generating Station Restricted Waste Landfill
Arsenic, total

Signed: _____
Consulting Engineer

Date: October 10, 2019

Print Name: Steven F. Putrich
Indiana License No.: 11200566
Title: Vice President
Company: Haley & Aldrich, Inc.

Professional Engineer's Seal:

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List of Acronyms and Abbreviations

Abbreviation	Definition
ASD	Alternate Source Demonstration
ATC	ATC Group Services, LLC.
bgs	Below Ground Surface
CCR	Coal Combustion Residual
Eh	Hydrogen Electrode
GWPS	Groundwater Protection Standards
Haley & Aldrich	Haley & Aldrich, Inc.
IDNR	Indiana Department of Natural Resources
IPL	Indianapolis Power & Light
LCL	Lower Confidence Level
mg/kg	Milligrams per Kilogram
ORP	Oxidation Reduction Potential
PGS	Petersburg Generating Station
Site	Petersburg Generating Station
SSL	Statistically Significant Level
µg/L	Micrograms per Liter
USEPA	United States Environmental Protection Agency

1. Introduction

Haley & Aldrich, Inc. (Haley & Aldrich) prepared this Alternate Source Demonstration (ASD) for Indianapolis Power & Light (IPL) for the Petersburg Landfill (CCR Unit) at the Petersburg Generating Station (PGS or "Site"). ATC Group Services, LLC (ATC) on behalf of IPL has conducted groundwater monitoring at this CCR Unit in compliance with the United States Environmental Protection Agency (USEPA) Coal Combustion Residual (CCR) Rule effective 19 October 2015 (Rule).

During the performance of the groundwater monitoring program, a statistically significant level (SSL) of arsenic as defined at 257.95 was identified at downgradient well location, MW-10. This ASD documents that a source of arsenic other than the CCR unit is the cause of the calculated SSL identified at the downgradient well MW-10.

1.1 BACKGROUND

The groundwater monitoring well network installed at the Petersburg Landfill (CCR Unit) consists of eight (8) monitoring wells, one (1) upgradient monitoring well (MW-1) and seven (7) downgradient monitoring wells (MW-2R, MW-3, MW-4C, MW-10, MW-11, MW-12 and MW-13). **Figure 1** presents the approximate limits of the RWS III Petersburg Landfill (CCR Unit) and the locations of the groundwater monitoring well network.

ATC installed monitoring wells MW-10, MW-11, MW-12 and MW-13 within the unconsolidated deposits overlying bedrock as part of the CCR unit baseline and assessment monitoring program in 2017. The groundwater quality data obtained from the upgradient well MW-1 was used to establish statistical limits for the parameters of analysis based on comparisons to the data obtained from the downgradient well locations.

Groundwater monitoring was completed in May and September 2018 and the comparison of the groundwater protection standards (GWPS) to the 95% lower confidence limit (LCL) of the mean for the last four (4) groundwater monitoring events was completed as part of the Assessment Monitoring program for the CCR Unit by ATC. The calculated 95% LCL (48 micrograms per liter (µg/L)) for arsenic was determined to be above the GWPS of 10 µg/L for arsenic.

1.2 CCR RULE REQUIREMENTS

USEPA regulations regarding assessment monitoring programs for CCR units including landfills and surface impoundments provide owners and operators with the option to conduct an ASD when an Appendix IV constituent is identified at an SSL above the GWPS (40 CFR 257.95(g)(3)(ii)).

According to the Rule, an owner or operator may:

- Demonstrate that a source other than the CCR unit caused the contamination, or that the SSL resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Any such demonstration must be supported by a report that includes the factual or evidentiary basis for conclusions and must be certified to be accurate by a qualified professional engineer.

Due to the determination of an SSL for arsenic at MW-10, IPL elected to assess the possibility of alternate sources of arsenic that could be the cause of the SSL calculated for this Appendix IV constituent at the CCR Unit.

1.3 SITE GEOLOGY

Bedrock beneath the CCR Unit is assigned to the Carbondale Group of the Pennsylvanian System and includes sandstone, shale, limestone, clay and coal of the Petersburg and Linton Formations. The uppermost named coal in the vicinity of landfill is the Springfield Coal (Coal V) of the Petersburg Formation. The Springfield Coal has been extensively mined in the uplands area adjacent to the CCR Unit and appears to sub-crop along the alignment of the train tracks adjacent to and west of the CCR Unit.

The CCR Unit is located on top of the upland area adjacent to the floodplain of the White River and is constructed at least in part over land disturbed by historic surface coal mines. Soil borings installed in the vicinity of MW-10 indicate unconsolidated granular (sand) and cohesive (silt and clayey silt) geologic material overlying Carbondale Group bedrock of the Pennsylvanian System.

1.4 HYDROGEOLOGY

The Petersburg Generating Station lies within the West Fork White River Basin. Several aquifer systems have been identified in the southern portion of the West Fork White River Basin.

ATC identified the aquifer systems within and adjacent to the CCR Unit including the Pennsylvanian Carbondale Group Bedrock Aquifer, the White River Outwash Aquifer System, the Lacustrine and Backwater Deposits Aquifer System, and the Dissected Till and Residuum Aquifer System.

Bedrock Aquifer Systems of Pike County, Indiana (Schrader and Herring, 2003) includes a map unit identified as Underground Mine Areas. Indiana Department of Natural Resources (IDNR)describes these units as areas where coal seams have been removed by underground mining methods leaving approximately 50% of the coal. The Underground Mine Areas map unit includes a mapped area adjacent to the MW-10 location.

Piezometric data recorded by ATC from the monitoring wells installed at the CCR unit shows groundwater flow in the uppermost aquifer is generally to the west and north west towards the White River. A potentiometric surface map constructed from the groundwater elevations obtained by ATC in August 2019 is provided as **Figure 2**.

1.5 SCOPE AND OBJECTIVE

The overall objective of the ASD is to determine if an alternate source of arsenic exists within the vicinity of the CCR Unit and to characterize the naturally occurring geochemical conditions within the uppermost aquifer system that could potentially mobilize the alternate source of arsenic, if present, within the area of the groundwater monitoring well network.

2. Alternate Source Demonstration for Arsenic

This ASD for the SSL of arsenic identified at down gradient monitoring well MW-10 includes the determination of a source of arsenic in soil and an evaluation of the groundwater geochemistry that could promote the mobilization of dissolved phase arsenic in the area of MW-10.

The findings of the additional investigation activities, performed by ATC as part of the ASD indicate that arsenic detected in groundwater at MW-10 is associated with the reductive dissolution of naturally occurring arsenic within the area downgradient from the unit and not related to a release of arsenic from the CCR Unit. The findings of the additional investigation and evaluation of the geochemical mechanisms, and the lines of evidence that support this determination, are described below.

2.1 HISTORIC SURFACE COAL MINING INFORMATION

Coal mining and related impacts to groundwater quality in southwest Indiana has been well documented (Comer, 2012). Pyrite is commonly found in coal deposits and associated overburden in southwest Indiana and arsenic can be present in bituminous coals in three (3) distinct forms: arsenical pyrite; arsenopyrite (FeAsS); and arsenate ($AsO_4 3-$)[14] as arsenic replaces some of the sulfur in the pyrite crystalline structure. Reactive sulfide minerals containing other metals may also be present in coal and overburden soils.

Historic surface and underground coal mines of the Petersburg Formation Springfield (Coal V) have been documented adjacent to the MW-10 monitoring well location. Underground mines include the Rogers Mine (1890 -1924) and the Gladstone Mine (1920- 1930) and surface mines include the Miracle #1 Pit (1979-1981), Redman #1 Pit (1980-1981), Regal #7 (1978-1979), Redman # 2 (1979-1980), Redman #3 (1979-1980), and Unknown Mine #63 (1970-1971) (IDNR, 2019).

The Indiana Geological & Water Survey Indiana Coal Quality Database (IGWS, 2018) includes the analysis of the Petersburg Formation Springfield (Coal V) from the Redman Pit No. 1 mine which was located less than 1 mile to the east of MW-10. The results of the analysis indicate that arsenic is present at a concentration of 7.6 parts per million in coal from this location.

2.2 ADDITIONAL DATA COLLECTION ACTIVITIES

To evaluate potential alternate sources contributing to the calculated SSL for arsenic at MW-10, additional data collection activities, as described below, were initiated by ATC in 2019.

- Three (3) soil borings identified as TP-1, TP-2, and TP-3 were installed by ATC approximately 30 feet north, east and west of MW-10. An additional soil boring was installed adjacent to MW-10 approximately 5 feet to the east. The soil boring locations and the existing MW-10 monitoring well are shown on **Figure 3**. The boring logs for TP-1, TP-2, TP-3 and the offset MW-10 location are included in **Appendix A**.

- During the installation of each soil boring, representative soil samples were collected by ATC staff from the approximate elevation of the monitoring well MW-10 screened interval and submitted for laboratory analysis for total arsenic, iron and manganese at an IDEM certified environmental laboratory. Soil laboratory analytical results are included in **Appendix B**.

- Temporary groundwater monitoring wells were constructed in borings TP-1, TP-2 and TP-3 and the wells were developed and representative samples of the groundwater using low-flow, low-stress sampling methods were collected by ATC staff and submitted for laboratory analysis of total and dissolved arsenic at a IDEM certified environmental laboratory. The groundwater analysis results are also provided in **Appendix B**.

- During the collection of the groundwater samples, geochemical indicator parameters, oxidation reduction potential (ORP), hydrogen ion concentration (pH), specific conductivity (mS) and temperature (°C) were collected. Copies of the sampling field sheets are provided in **Appendix C**.

2.3 RESULTS AND DISCUSSION

Arsenic exists in nature in the oxidation states +V (arsenate), +III (arsenite), 0 (arsenic) and -III (arsine). The speciation and mobilization of arsenic in groundwater is primarily controlled by pH and ORP according to the standard hydrogen electrode (Eh). Under oxidizing conditions (Eh > 0 Volts) with neutral pH, arsenic is typically found in the solid phase bound to iron oxyhydroxides. Under reducing conditions (Eh < 0 Volts), arsenic is typically found in its mobilized, arsenite (+III) state.

The oxidation of sulfide minerals such as pyrite associated with naturally occurring coal seams and shale deposits is a major source of naturally occurring arsenic in groundwater and iron oxyhydroxides constitute the most common source of naturally occurring arsenite (+III) in groundwater. This is due to the reaction of the naturally occurring iron oxyhydroxides with anoxic groundwater which releases arsenite (+III) from the soil matrix. This mechanism occurs along the groundwater flow path within the groundwater bearing units exposed to reducing conditions induced from the presence of organic carbon sources or other reducing agents.

Investigation findings that support this condition is present at the site include:

- The review of the TP soil boring logs indicates that monitoring well MW-10 is completed in fill material potentially related to historic surface mining activities. This observation includes the presence of plastic bags and vegetative organic matter including chunks of wood and other woody fibers in boring TP-1 at 44-48 feet below ground surface (bgs), gravel size coal fragments mixed with silty clay loam in TP-2 at 15-24.5 bgs and sand sized coal grains in TP-3 at 16-18 bgs.

- Gray, dark gray and black sediment identified at the bottom of the TP borings indicates reducing conditions in the fill material most likely due to the presence of the vegetative debris.

- Total arsenic detected in the soil samples collected from each of the soil borings ranged from 2.6 milligrams per kilogram (mg/kg) to 13.6 mg/kg. The soil sample from MW-10 offset boring had the highest concentration of arsenic at 13.6 mg/kg and TP-3 soil sample showed the lowest arsenic concentration at 2.6 mg/kg.

- The concentration of dissolved arsenic detected in the groundwater samples collected from the temporary monitoring wells ranged from 4.5 micrograms per liter (µg/L) at TP-3 to 135 µg/L at MW-10 which coincides with the elevated arsenic soil concentrations.

- The geochemical indicator parameters collected during the collection of the groundwater samples indicate that TP-1, TP-3 and MW-10 are under reducing conditions with ORP ranging from -1.0 mV to -95.1 mV at neutral pH.

- The concentrations of Total Sulfate (SO_4^{2-}) detected in the groundwater samples collected from MW-10 and the TP wells range from 546 to 1,770 milligrams per liter indicating that the groundwater conditions have not induced the formation of arsenic-sulfide mineral precipitates.

- The concentration of the major cations including calcium (Ca) magnesium (Mg), sodium (Na) and potassium (K) and anions including sulfate (SO_4^{2-}), chloride (Cl) and carbonates (CO_3^{2-}/HCO_3^-) in groundwater samples collected from TP-1, TP-2, TP-3, and MW-10 were evaluated by ATC using a Trilinear Diagram. The water quality characteristics in TP-1, TP-2, TP-3 and MW-10 plot at similar positions on the trilinear diagram indicates groundwater quality throughout the investigation area exhibits the same geochemical characteristics.

The physical characteristics of the overburden soils identified in the offset soil borings indicates that monitoring well MW-10 was originally completed in disturbed backfill material likely associated with surface mining activities within the Unknown Mine #65 area. The results of the analysis for both groundwater and soil indicate reducing groundwater conditions in the immediate area of monitoring well MW-10.

The Trilinear Diagram prepared by ATC is presented on **Figure 4**. The results of the analysis of the soil and groundwater collected as part of the additional data collection activities are summarized in **Table 1** and **Table 2**.

3. Conclusions and Recommendations

The geochemistry of the immediate area around MW-10 was evaluated through the installation of soil borings and the collection of representative soil and groundwater samples for laboratory analysis. The results of these additional collection activities and the review of historic documents concerning the surface mining activities within southwestern Indiana indicate that the total arsenic detected in this area of the site is associated with the reductive dissolution of naturally occurring arsenic and not the migration of dissolved arsenic from waste stored within the CCR Unit.

The lines of evidence that support this conclusion are:

- ATC reviewed the geology and hydrogeology of Pike County, Indiana and the IPL Petersburg Generating Station and the historic coal mining activities within and adjacent to the CCR Unit at the IPL Petersburg Generating Station. The information developed from the historic document review indicates that monitoring well MW-10 is installed within an area of historic surface coal mining activities.

- ATC installed additional soil borings adjacent to monitoring well 10 to evaluate the subsurface conditions and identified organic debris including vegetation, plastic, dark brown to black soil color, and gravel size coal particles that confirms the area of the monitoring well has been previously disturbed.

- ATC collected representative groundwater and soil samples from the additional soil borings and detected naturally occurring sources of arsenic in the soil matrix and confirmed that due the presence of organic matter in the subsurface, the groundwater geochemistry conditions in the area immediately adjacent to monitoring well MW-10 is sufficient to promote the dissolution of arsenite (+III) from the aquifer matrix.

- Arsenic was not detected in groundwater samples collected at other locations downgradient of the landfill as would be expected if the landfill was the source of arsenic.

Based on the results of the historic document review and the performance of additional investigation activities at the site, the source of the calculated SSL of arsenic at MW-10 downgradient from the Petersburg RWS III Landfill is the presence of naturally occurring sources of arsenic and the reducing geochemical conditions near the well from the historic surface mining activities conducted in this area of the site.

Monitoring well MW-10 was not installed in native materials and does provide representative groundwater quality therefore removal of MW-10 from the monitoring well network for the evaluation of the CCR unit is recommended.

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1. EPRI, 2017. Guidelines for Development of Alternative Source Demonstration at Coal Combustion Residual Sites. 302010920. October.

2. Korte, N., 1991. Naturally occurring arsenic in groundwater of the midwestern United States, Environmental Geology and Water Sciences, 18 (2), pp 137-141.

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6. Comer, J.B.(Editor), 2012. Effects of Abandoned Mine Land Reclamation on Ground and Surface Water Quality, Research and Case Histories from Indiana, Indiana University, Indiana Geological Survey Special Report 72, 352 p.

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Tables

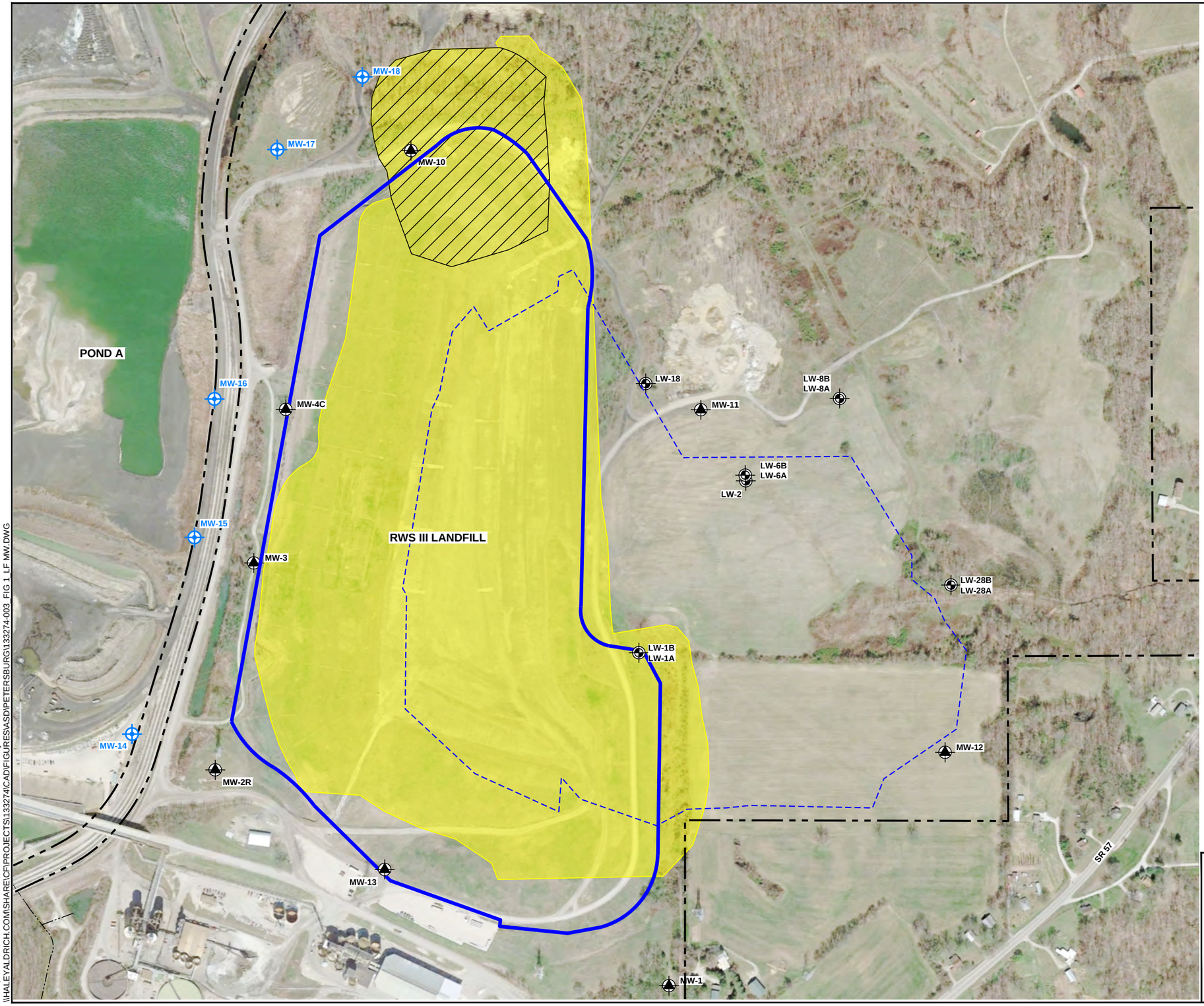
Table 1
Alternate Source Demonstration
Arsenic
Groundwater Laboratory and Field Test Results Summary
Indianapolis Power & Light Company
Petersburg, Indiana
ATC Project No. 170LF00705

Sample ID	Sample Date	Arsenic	Arsenic Dissolved	Iron	Iron Dissolved	Manganese	Manganese Dissolved	Sulfate	TOC	DOC	D.O. Field	ORP Field	Turbidity	pH Field
		µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	mg/L	mg/L	mV	NTU	S.U.
MW-10	7/2/2019	135	104	57,400.00	45,200.00	9,140.00	8,770.00	1,700	4.3	5	0.20	-72.4	10.98	6.97
TP-1	7/2/2019	104	94.7	26,600.00	23,200.00	1,500.00	1,440.00	1,240	9.9	9.2	0.10	-95.1	146.23	7.13
TP-2	7/2/2019	61.3	2.5	77,200.00	844.00	19,400.00	17,900.00	960	4.7	5.6	0.23	17.4	2,953.00	7.02
TP-3	7/2/2019	4.5	1.4	4,990.00	1,220.00	17,100.00	17,000.00	546	3.3	3	0.25	-1.0	525.85	6.68
Duplicate	7/2/2019	101	101	28,800.00	22,400.00	1,520.00	1,510.00	1,240	9.5	9	0.10	-95.1	146.23	7.13

Table 2
Alternate Source Demonstration
Arsenic
Soil Laboratory Test Results Summary
Indianapolis Power & Light Company
Petersburg, Indiana
ATC Project No. 170LF00705

Sample ID	Arsenic	Iron	Manganese	Arsenic SPLP	Iron SPLP	Manganese SPLP	pH NL	pH SPLP
	mg/kg	mg/kg	mg/kg	µg/L	µg/L	µg/L	S.U.	S.U.
MW-10 (42-44)	13.6	8920	106	27.9	280	<10	8.29	8.84
TP-1 (42-44)	8.5	9530	134	<10	714	31.4	7.41	6.36
TP-2 (36-38)	3.8	6570	256	<10	2190	99.1	7.57	9.08
TP-3 (38-40)	2.6	5970	164	21.1	34900	1260	7.61	8.32

Figures



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE LIMITS OF LANDFILL
- APPROXIMATE PERMITTED LANDFILL EXPANSION BOUNDARY
- MW-10 — CCR MONITORING WELL LOCATION
- MW-14 — NATURE AND EXTENT MONITORING WELL
- LW-2 — 1991 LANDFILL OBSERVATION WELL
- UNKNOWN MINE #63 (1970-1971)
- UNKNOWN MINE #65 (1965-1966)

NOTES

1. ALL BOUNDARIES AND LOCATIONS ARE APPROXIMATE.
2. AERIAL IMAGE FROM GOOGLE EARTH.
3. MONITORING WELL LOCATIONS OBTAINED FROM FIGURE 2 2018 CCR ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT (ATC, JANUARY 2019).
4. WELL DESIGNATION:
   - B = SHALLOW WELL
   - I = INTERMEDIATE WELL
   - A = DEEP WELL
5. CCR = COAL COMBUSTION RESIDUALS

N

0 400 800

SCALE IN FEET

HALEY ALDRICH

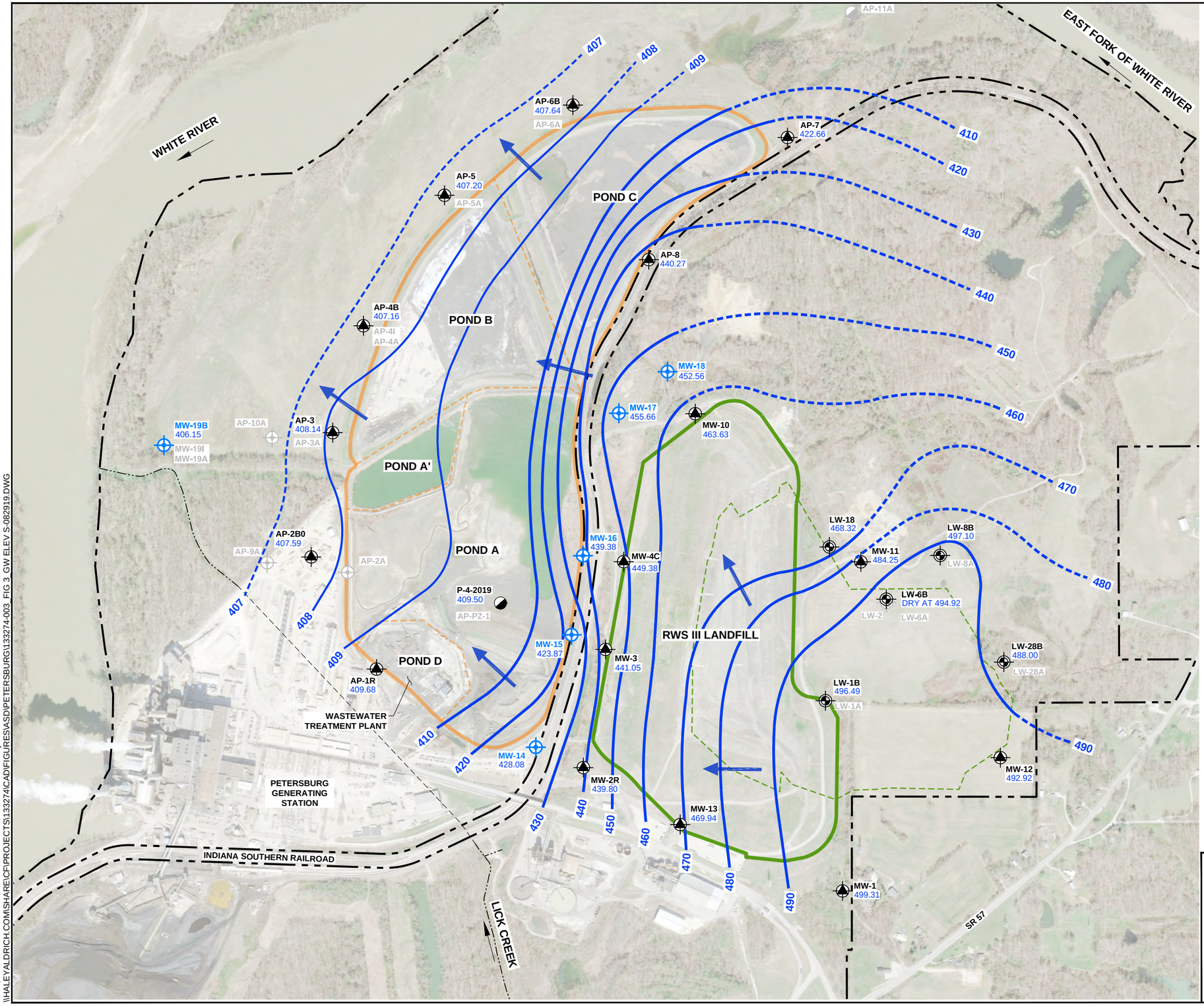
ALTERNATIVE SOURCE DEMONSTRATION
PETERSBURG GENERATING STATION
PETERSBURG, INDIANA

LANDFILL SITE MAP

SCALE: AS SHOWN
OCTOBER 2019

FIGURE 1

VARI, KATALIN Saved: 10/4/2019 5:21 PM Layout: FIGURE 1
W:\HALEYALDRICH.COM\SHARE\CP\PROJECTS\133274\CAD\FIGURES\SD\PETERSBURG\133274-003_FIG 1_LF MW.DWG



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE LIMITS OF ASH POND SYSTEM
- APPROXIMATE BOUNDARY OF ASH POND
- APPROXIMATE LIMITS OF LANDFILL
- APPROXIMATE PERMITTED LANDFILL EXPANSION BOUNDARY
- AP-7 — CCR MONITORING WELL LOCATION
- AP-PZ-1 — PIEZOMETER LOCATION
- MW-14 — NATURE AND EXTENT MONITORING WELL
- LW-2 — 1991 LANDFILL OBSERVATION WELL
- 497.10 — GROUNDWATER ELEVATION IN FEET
- 470 — GROUNDWATER ELEVATION CONTOUR IN FEET
- GROUNDWATER FLOW DIRECTION

NOTES

1. ALL BOUNDARIES AND LOCATIONS ARE APPROXIMATE.
2. AERIAL IMAGE FROM GOOGLE EARTH.
3. MONITORING WELL LOCATIONS OBTAINED FROM FIGURE 2 OF 2018 CCR ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT (ATC, JANUARY 2019).
4. WELL DESIGNATION:
   - B = SHALLOW WELL
   - I = INTERMEDIATE WELL
   - A = DEEP WELL
5. CCR = COAL COMBUSTION RESIDUALS
6. GROUNDWATER ELEVATIONS MEASURED ON AUGUST 29, 2019.
7. GROUNDWATER ELEVATION CONTOURS DASHED WHERE INFERRED.

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0 700 1400
SCALE IN FEET

HALEY ALDRICH

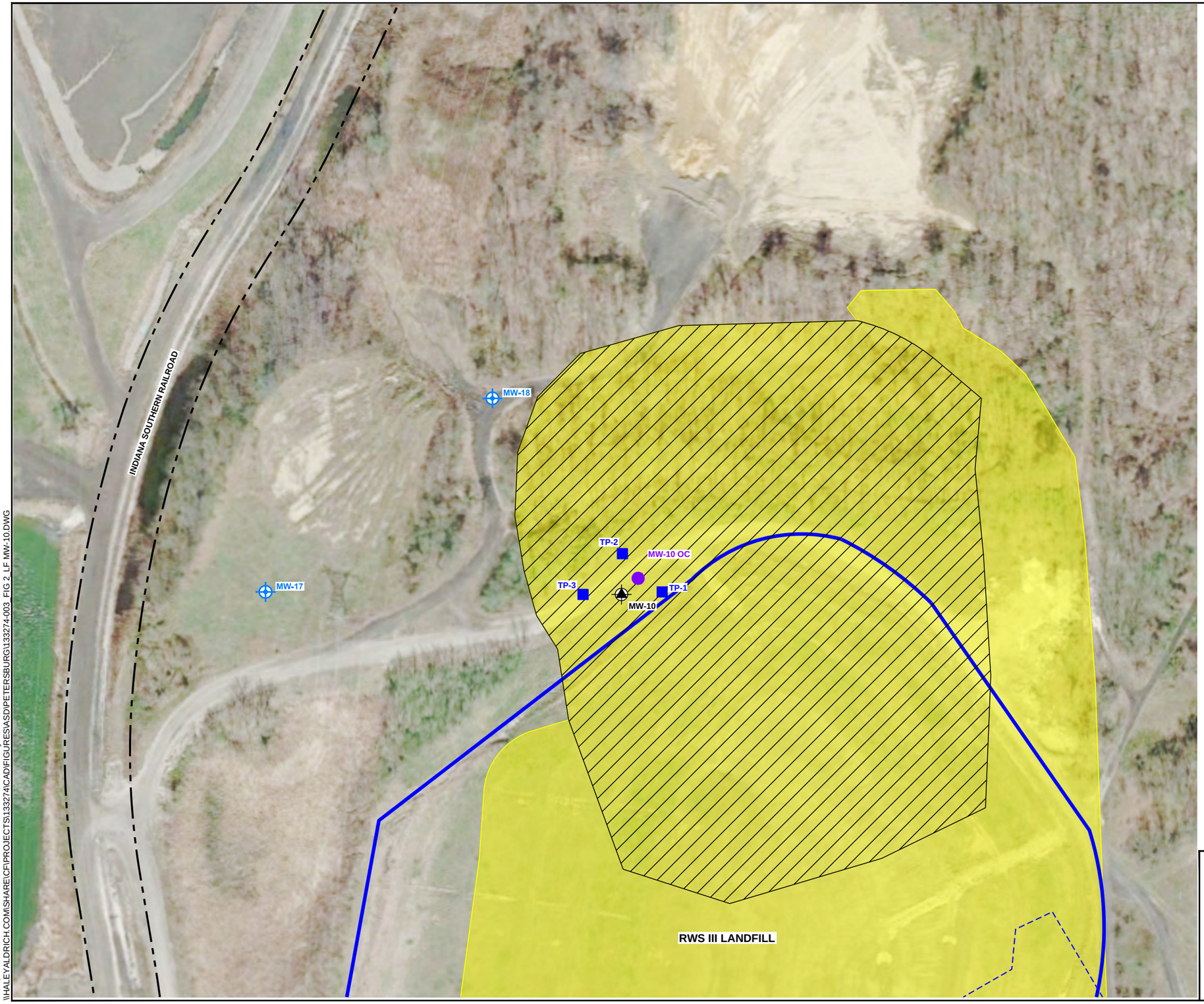
ALTERNATIVE SOURCE DEMONSTRATION
PETERSBURG GENERATING STATION
PETERSBURG, INDIANA

POTENTIOMETRIC SURFACE MAP

SCALE: AS SHOWN
OCTOBER 2019

FIGURE 2

VARI, KATALIN Saved: 10/4/2019 4:44 PM Layout: FIGURE 3
\\HALEYALDRICH.COM\SHARE\CF\PROJECTS\133274\CADD\FIGURES\ASD\PETERSBURG\133274-003_FIG 3_GW ELEV S-082919.DWG



LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE LIMITS OF LANDFILL
- APPROXIMATE PERMITTED LANDFILL EXPANSION BOUNDARY
- MW-10 — CCR MONITORING WELL LOCATION
- MW-14 — NATURE AND EXTENT MONITORING WELL
- TP-3 — TEMPORARY PIEZOMETER LOCATION
- MW-10 OC — ASD EXPLORATORY BORING LOCATION
- UNKNOWN MINE #63 (1970-1971)
- UNKNOWN MINE #65 (1965-1966)

NOTES

1. ALL BOUNDARIES AND LOCATIONS ARE APPROXIMATE.
2. AERIAL IMAGE FROM GOOGLE EARTH.
3. MONITORING WELL LOCATIONS OBTAINED FROM FIGURE 2 2018 CCR ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT (ATC, JANUARY 2019).
4. WELL DESIGNATION:
   - B = SHALLOW WELL
   - I = INTERMEDIATE WELL
   - A = DEEP WELL
5. CCR = COAL COMBUSTION RESIDUALS
6. ASD = ALTERNATIVE SOURCE DEMONSTRATION

N

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SCALE IN FEET

HALEY ALDRICH

ALTERNATIVE SOURCE DEMONSTRATION
PETERSBURG GENERATING STATION
PETERSBURG, INDIANA

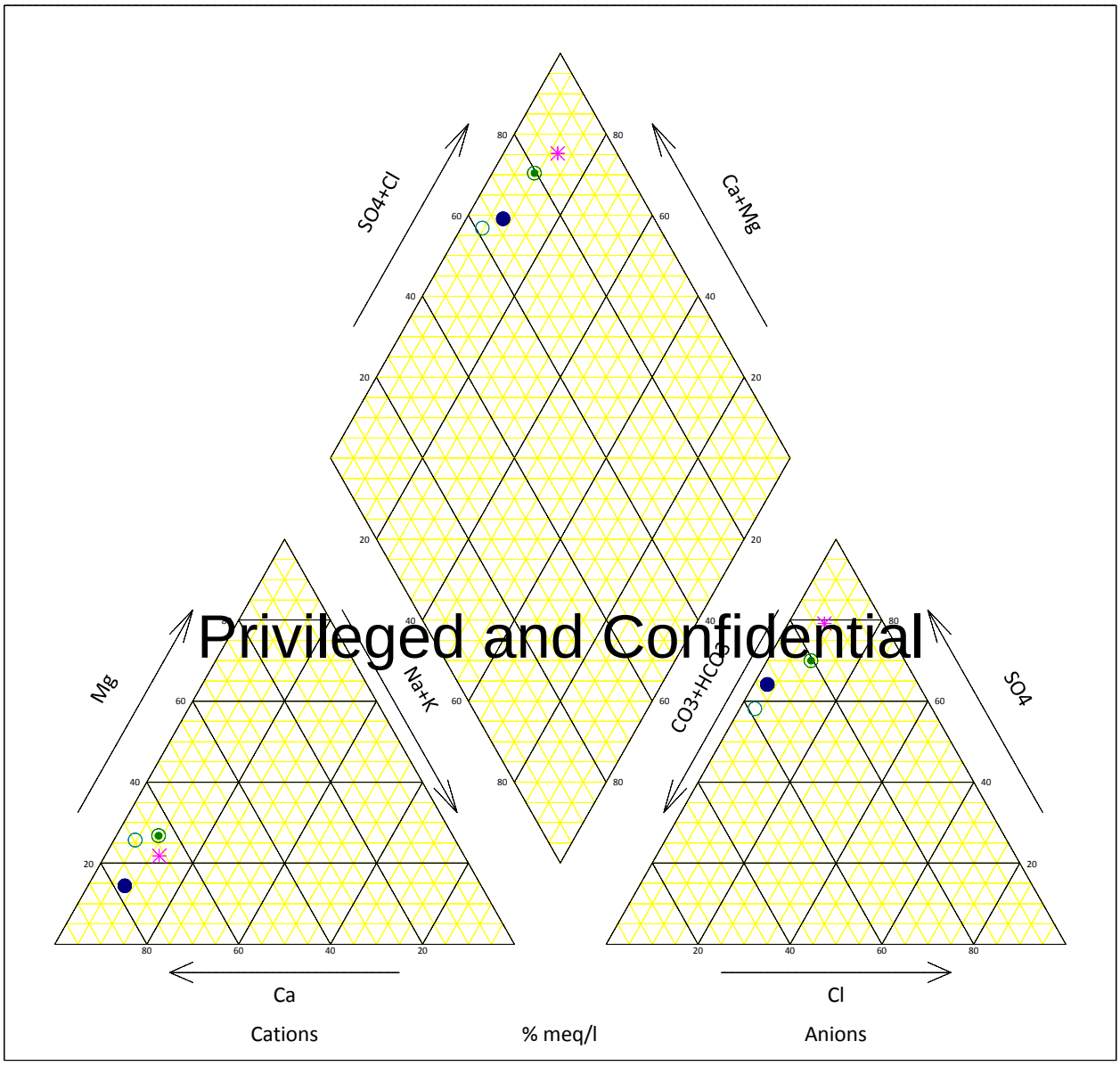
SOIL BORING AND FORMER MINE LOCATIONS

SCALE: AS SHOWN
OCTOBER 2019

FIGURE 3

VARI, KATALIN Saved: 10/4/2019 4:53 PM Layout: FIGURE 2
\\HALEYALDRICH.COM\SHARE\CP\PROJECTS\133274\CAD\FIGURES\ASD\PETERSBURG\133274-003_FIG 2_LF MW-10.DWG

Petersburg Ash Pond [apccr]



MW-10	7/02/2019 -	7/03/2019
TP-1	7/02/2019 -	7/03/2019
TP-2	7/02/2019 -	7/03/2019
TP-3	7/02/2019 -	7/03/2019

Prepared by: ATC Group Services LLC

APPENDIX A

Additional Soil Boring Logs

7988 Centerpoint Drive, Suite 100
Indianapolis, IN 46256
(317) 849-4990
Fax (317) 849-4278

TEST BORING LOG

CLIENT: **Indianapolis Power and Light Company**
PROJECT NAME: **MW-10 ASD**
PROJECT LOCATION: **Petersburg Generating Station**, **Petersburg, Indiana**

BORING #: **MW-10 Offset**
Northing: **1197028.08**
Easting: **2908053.78**
JOB #: **170LF00705**

DRILLING and SAMPLING INFORMATION

Date Started	5/28/19	Hammer Wt.	140 lbs.
Date Completed	5/28/19	Hammer Drop	30 in.
Drill Foreman	R. Hackman	Spoon Sampler OD	2 in.
Inspector	S. Barajas	Rock Core Dia.	- in.
Boring Method	HSA	Shelby Tube OD	- in.

TEST DATA

SOIL CLASSIFICATION SURFACE ELEVATION 498.94	Stratum Elevation, ft	Stratum Depth, ft	Depth Scale, ft	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Groundwater	Standard Penetration Test, Blows per 6 in. Increments	Remarks
Topsoil	498.2	0.8		1	SS			4-6-7-4	
Medium dense, very dark grayish brown SANDY LOAM (10YR 3/2, rough) dry, non-cohesive, non-plastic, non-sticky, non-effervescent	496.9	2.0							- with gravel from 0.75-2'
				2	SS			8-8-9-15	
Very stiff, yellowish brown SANDY LOAM (10YR 5/4, rough) moist, cohesive, low plasticity, non-sticky, non-effervescent				3	SS			4-16-17-19	
			5						
- color change to brown (10YR 5/3, rough) from 6'				4	SS			12-16-12-14	
				5	SS			4-4-4-5	
	489.9	9.0							
Medium stiff, brown SILTY CLAY (10YR 4/3, rough) mottled with very dark grayish brown (10YR 3/2, rough) moist, cohesive, low plasticity, non-sticky, non-effervescent									- sandy from 9-12'
			10	6	SS			7-7-6-6	
- trace sand from 12'				7	SS			2-2-2-3	
	484.9	14.0							
Soft, dark grayish brown LOAM (10YR 4/2, rough) moist, cohesive, medium plasticity, slightly sticky, non-effervescent, trace coal				8	SS			2-1-3-4	- sandy from 14-16'
			15						
				9	SS			4-5-4-5	
	481.4	17.5							
Soft, dark gray SILTY CLAY (10YR 4/1, rough) moist, cohesive, medium plasticity, non-sticky, non-effervescent				10	SS			2-2-2-4	- mixed with coal grains, sand to gravel in size

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Depth to Groundwater
Noted on Drilling Tools 37.0 ft.
At Completion _____ ft.
After _____ hours _____ ft.
Cave Depth _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
HA - Hand Auger

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TEST BORING LOG

CLIENT: **Indianapolis Power and Light Company**
PROJECT NAME: **MW-10 ASD**
PROJECT LOCATION: **Petersburg Generating Station**, **Petersburg, Indiana**

BORING #: **MW-10 Offset**
Northing: **1197028.08**
Easting: **2908053.78**
JOB #: **170LF00705**

DRILLING and SAMPLING INFORMATION

Date Started	5/28/19	Hammer Wt.	140 lbs.
Date Completed	5/28/19	Hammer Drop	30 in.
Drill Foreman	R. Hackman	Spoon Sampler OD	2 in.
Inspector	S. Barajas	Rock Core Dia.	- in.
Boring Method	HSA	Shelby Tube OD	- in.

TEST DATA

SOIL CLASSIFICATION (continued)	Stratum Elevation, ft	Stratum Depth, ft	Depth Scale, ft	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Groundwater	Standard Penetration Test, Blows per 6 in. Increments	Remarks
- mottled with black (10YR 2/1, rough) from 21'				11	SS			5-5-5-6	
				12	SS			2-2-3-4	- organic material (wood) from 22-22.5'
	474.9	24.0							
Medium stiff, gray LOAM (10YR 5/1, rough) moist, cohesive, medium plasticity, non-sticky, non-effervescent	473.9	25.0	25	13	SS			2-3-3-5	
Loose, very dark gray COAL ASH (10YR 3/1, rough) moist, non-cohesive, non-plastic, non-sticky, non-effervescent	471.9	27.0		14	SS			6-6-4-6	- coal ash very fine-grained
Very soft, very dark grayish brown SILTY CLAY (10YR 3/2, rough) moist, cohesive, low plasticity, slightly sticky, non-effervescent				15	SS			1-1-1-1	
			30	16	SS			1-1-1-2	
- plastic and color change to very dark brown (10YR 2/2, rough) at 32'				17	SS			0-1-0-1	
				18	SS			1-0-1-0	
			35						
	462.9	36.0							
Soft, dark grayish brown LOAM (10YR 4/2, rough) mottled with gray (10YR 5/1, rought) and brown (10YR 4/3, rough) moist, cohesive, low plasticity, non-sticky, non-effervescent	461.9	37.0		19	SS		●	1-2-2-3	- water on rods at 37'
	460.9	38.0							
Soft, dark grayish brown SILTY CLAY (10YR 4/2, rough) mottled with dark yellowish brown (10YR 4/4) wet, cohesive, plastic, non-sticky				20	SS			0-1-1-1	- moderately sorted sand
Very loose, brown SAND (10YR 4/3, rough)									

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Depth to Groundwater
● Noted on Drilling Tools **37.0** ft.
▽ At Completion _____ ft.
▼ After _____ hours _____ ft.
Cave Depth _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
HA - Hand Auger

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TEST BORING LOG

CLIENT: **Indianapolis Power and Light Company**
PROJECT NAME: **MW-10 ASD**
PROJECT LOCATION: **Petersburg Generating Station**, **Petersburg, Indiana**

BORING #: **MW-10 Offset**
Northing: **1197028.08**
Easting: **2908053.78**
JOB #: **170LF00705**

DRILLING and SAMPLING INFORMATION

Date Started	5/28/19	Hammer Wt.	140 lbs.
Date Completed	5/28/19	Hammer Drop	30 in.
Drill Foreman	R. Hackman	Spoon Sampler OD	2 in.
Inspector	S. Barajas	Rock Core Dia.	- in.
Boring Method	HSA	Shelby Tube OD	- in.

TEST DATA

SOIL CLASSIFICATION (continued)	Stratum Elevation, ft	Stratum Depth, ft	Depth Scale, ft	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Groundwater	Standard Penetration Test, Blows per 6 in. Increments	Remarks
wet, non-cohesive, non-plastic, non-sticky, non-effervescent - color change to grayish brown (10YR 5/2, rough) at 39'				21	SS			0-1-1-3	
				22	SS			3-4-5-10	
	454.9	44.0							
Medium stiff, gray SILTY CLAY (10YR 5/1, rough) wet, cohesive, plastic, non-sticky, non-effervescent			45	23	SS			3-3-4-3	
				24	SS			2-2-2-4	
				25	SS			3-3-5-6	
- color change to grayish brown (10YR 5/2, rough) at 49.5'			50	26	SS			7-7-7-7	
				27	SS			5-6-6-8	
	445.9	53.0							
Stiff, yellowish brown, LOAM (10YR 5/4, rough) mottled with gray (10YR 6/1, rough) wet, cohesive, medium plasticity, non-sticky, non-effervescent	443.9	55.0		28	SS			0-8-9-10	
Very stiff, light gray SILTY CLAY (10YR 7/1, rough) mottled with yellowish brown (10YR 5/6, rough) wet, cohesive, very plastic, non-sticky, non-effervescent			55	29	SS			12-11-11-13	
	440.9	58.0							
- slightly sticky at 58' reddish brown weathered siltstone				30	SS			11-16-18-19	
6" of coal	438.9	60.0							

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Depth to Groundwater
Noted on Drilling Tools **37.0** ft.
At Completion _____ ft.
After _____ hours _____ ft.
Cave Depth _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
HA - Hand Auger

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TEST BORING LOG

CLIENT **Indianapolis Power and Light Company**
PROJECT NAME **MW-10 ASD**
PROJECT LOCATION **Petersburg Generating Station**
Petersburg, Indiana

BORING # **MW-10 Offset**
Northing **1197028.08**
Easting **2908053.78**
JOB # **170LF00705**

DRILLING and SAMPLING INFORMATION

Date Started	5/28/19	Hammer Wt.	140 lbs.
Date Completed	5/28/19	Hammer Drop	30 in.
Drill Foreman	R. Hackman	Spoon Sampler OD	2 in.
Inspector	S. Barajas	Rock Core Dia.	- in.
Boring Method	HSA	Shelby Tube OD	- in.

TEST DATA

SOIL CLASSIFICATION (continued)	Stratum Elevation, ft	Stratum Depth, ft	Depth Scale, ft	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Groundwater	Standard Penetration Test, Blows per 6 in. Increments	Remarks
6" of coal	437.4	61.5		31	SS			22-25-28-40	
reddish brown weathered siltstone	436.9	62.0							
Bottom of borehole at 62'									

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Depth to Groundwater
Noted on Drilling Tools 37.0 ft.
At Completion ____ ft.
After ____ hours ____ ft.
Cave Depth ____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
HA - Hand Auger

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TEST BORING LOG

CLIENT **Indianapolis Power and Light Company**
PROJECT NAME **MW-10 ASD**
PROJECT LOCATION **Petersburg Generating Station**
Petersburg, Indiana

BORING # **TP-1**
Northing **1197035.08**
Easting **2908062.88**
JOB # **170LF00705**

DRILLING and SAMPLING INFORMATION

Date Started	5/22/19	Hammer Wt.	140 lbs.
Date Completed	5/23/19	Hammer Drop	30 in.
Drill Foreman	R. Hackman	Spoon Sampler OD	2 in.
Inspector	S. Barajas	Rock Core Dia.	- in.
Boring Method	HSA	Shelby Tube OD	- in.

TEST DATA

SOIL CLASSIFICATION SURFACE ELEVATION 499.04	Stratum Elevation, ft	Stratum Depth, ft	Depth Scale, ft	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Groundwater	Standard Penetration Test, Blows per 6 in. Increments	Remarks
Blind drill			5 10 15						
Medium stiff, dark gray CLAY LOAM (10YR 4/1, rough) moist, cohesive, low plasticity, non-sticky, non-effervescent	481.0	18.0		1	SS			2-4-4-5	

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Depth to Groundwater
Noted on Drilling Tools 38.0 ft.
At Completion _____ ft.
After _____ hours _____ ft.
Cave Depth _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
HA - Hand Auger

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TEST BORING LOG

CLIENT **Indianapolis Power and Light Company**
PROJECT NAME **MW-10 ASD**
PROJECT LOCATION **Petersburg Generating Station**
Petersburg, Indiana

BORING # **TP-1**
Northing **1197035.08**
Easting **2908062.88**
JOB # **170LF00705**

DRILLING and SAMPLING INFORMATION

Date Started	5/22/19	Hammer Wt.	140 lbs.
Date Completed	5/23/19	Hammer Drop	30 in.
Drill Foreman	R. Hackman	Spoon Sampler OD	2 in.
Inspector	S. Barajas	Rock Core Dia.	- in.
Boring Method	HSA	Shelby Tube OD	- in.

TEST DATA

SOIL CLASSIFICATION (continued)	Stratum Elevation, ft	Stratum Depth, ft	Depth Scale, ft	Sample No.	Sample Type	Standard Penetration Test, Blows per 6 in. Increments	Remarks
- little gravel from 20'				2	SS	6-7-8-7	
	477.0	22.0					
Medium stiff, gray SANDY LOAM (10YR 5/1, rough) mottled with seams of very dark gray (10YR 3/1, rough) moist, cohesive, low-plasticity, non-sticky, non-effervescent				3	SS	2-3-3-5	- 4 seams each about 2 in thick composed of silt and fine-grained sand
				4	SS	4-6-6-7	
			25				
				5	SS	3-3-4-7	
				6	SS	5-6-8-8	
			30				
				7	SS	14-5-6-8	
				8	SS	2-3-5-5	
	466.0	33.0					
Medium stiff, dark gray LOAMY SAND (10YR 4/1, rough) moist, cohesive, non-plastic, non-sticky, non-effervescent				9	SS	3-3-3-6	
	464.0	35.0	35				
Loose, black LOAMY SAND (10YR 2/1, rough) very moist, non-cohesive, non-plastic, non-sticky, non-effervescent				10	SS	3-2-2-3	
	462.0	37.0					
Soft, very dark grayish brown SILTY CLAY (10YR 3/2, rough) wet, cohesive, low plasticity, slightly sticky, non-effervescent				11	SS	1-0-1-3	
	459.3	39.8					

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Depth to Groundwater
Noted on Drilling Tools **38.0** ft.
At Completion _____ ft.
After _____ hours _____ ft.
Cave Depth _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
HA - Hand Auger

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TEST BORING LOG

CLIENT: **Indianapolis Power and Light Company**
PROJECT NAME: **MW-10 ASD**
PROJECT LOCATION: **Petersburg Generating Station**, **Petersburg, Indiana**

BORING #: **TP-1**
Northing: **1197035.08**
Easting: **2908062.88**
JOB #: **170LF00705**

DRILLING and SAMPLING INFORMATION

Date Started	5/22/19	Hammer Wt.	140 lbs.
Date Completed	5/23/19	Hammer Drop	30 in.
Drill Foreman	R. Hackman	Spoon Sampler OD	2 in.
Inspector	S. Barajas	Rock Core Dia.	- in.
Boring Method	HSA	Shelby Tube OD	- in.

TEST DATA

SOIL CLASSIFICATION (continued)	Stratum Elevation, ft	Stratum Depth, ft	Depth Scale, ft	Sample No.	Sample Type	Sampler Graphics / Recovery Graphics	Groundwater	Standard Penetration Test, Blows per 6 in. Increments	Remarks
Loose, very dark grayish brown SAND (10YR 3/2, rough) wet, non-cohesive, non-plastic, non-sticky, slightly effervescent - color change to dark gray (10YR 4/1, rough), some organics, some gravel at 41'				12	SS			3-3-4-5	- coarse-grained, well sorted sand
				13	SS			6-8-5-50/0.3	
	455.5	43.5							
organic material (wood), some silt and some sand			45	14	SS			13-23-8-10	
				15	SS			1-9-4-3	
	451.0	48.0							
Very loose, very dark grayish brown LOAMY SAND (10YR 3/2, rough) wet, non-cohesive, low plasticity, non-sticky, slightly effervescent				16	SS			3-3-2-3	
			50	17	SS			0-2-1-2	
- color change to dark grayish brown (10YR 4/2, rough) and becomes more sandy from 52.5'				18	SS			2-0-2-4	
	445.0	54.0							
Very soft, brown SILTY CLAY (10YR 5/3, rough) wet, cohesive, medium plasticity, slightly sticky, non-effervescent	444.0	55.0	55	19	SS			0-1-1-2	
Very soft, dark grayish brown SILTY CLAY (10YR 4/2, rough) mottled with dark yellowish brown (10YR 4/4, rough) wet, cohesive, low plasticity, non-sticky, non-effervescent	443.0	56.0		20	SS			2-2-4-5	
Medium stiff, dark grayish brown SANDY LOAM (10YR 4/2, rough) wet, cohesive, non-plastic, non-sticky, non-effervescent				21	SS			1-2-2-22	
- thin brownish yellow (10YR 6/6, rough) sand seam at 59'	439.5	59.5							

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Depth to Groundwater
Noted on Drilling Tools **38.0** ft.
At Completion _____ ft.
After _____ hours _____ ft.
Cave Depth _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
HA - Hand Auger

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TEST BORING LOG

CLIENT **Indianapolis Power and Light Company**
PROJECT NAME **MW-10 ASD**
PROJECT LOCATION **Petersburg Generating Station**
Petersburg, Indiana

BORING # **TP-1**
Northing **1197035.08**
Easting **2908062.88**
JOB # **170LF00705**

DRILLING and SAMPLING INFORMATION

Date Started	5/22/19	Hammer Wt.	140 lbs.
Date Completed	5/23/19	Hammer Drop	30 in.
Drill Foreman	R. Hackman	Spoon Sampler OD	2 in.
Inspector	S. Barajas	Rock Core Dia.	- in.
Boring Method	HSA	Shelby Tube OD	- in.

TEST DATA

SOIL CLASSIFICATION (continued)	Stratum Elevation, ft	Stratum Depth, ft	Depth Scale, ft	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Groundwater	Standard Penetration Test, Blows per 6 in. Increments	Remarks
- weathered grey SHALE	438.2	60.8		22	SS			43-50/0.3	
- bottom of borehole at 60.8'									

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Depth to Groundwater
Noted on Drilling Tools **38.0** ft.
At Completion _____ ft.
After _____ hours _____ ft.
Cave Depth _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
HA - Hand Auger

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TEST BORING LOG

CLIENT **Indianapolis Power and Light Company**
PROJECT NAME **MW-10 ASD**
PROJECT LOCATION **Petersburg Generating Station**
Petersburg, Indiana

BORING # **TP-1 Offset**
Northing **1197035.08**
Easting **2908067.88**
JOB # **170LF00705**

DRILLING and SAMPLING INFORMATION

Date Started	5/29/19	Hammer Wt.	140 lbs.
Date Completed	5/29/19	Hammer Drop	30 in.
Drill Foreman	R. Hackman	Spoon Sampler OD	2 in.
Inspector	S. Barajas	Rock Core Dia.	- in.
Boring Method	HSA	Shelby Tube OD	- in.

TEST DATA

SOIL CLASSIFICATION SURFACE ELEVATION 499.04	Stratum Elevation, ft	Stratum Depth, ft	Depth Scale, ft	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Groundwater	Standard Penetration Test, Blows per 6 in. Increments	Remarks
- Blind drilled 0-28'			5 10 15						Offset location drilled to set temporary piezometer TP-1

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Depth to Groundwater
Noted on Drilling Tools 34.0 ft.
At Completion _____ ft.
After _____ hours _____ ft.
Cave Depth _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
HA - Hand Auger

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TEST BORING LOG

CLIENT: **Indianapolis Power and Light Company**
PROJECT NAME: **MW-10 ASD**
PROJECT LOCATION: **Petersburg Generating Station**, **Petersburg, Indiana**

BORING #: **TP-1 Offset**
Northing: **1197035.08**
Easting: **2908067.88**
JOB #: **170LF00705**

DRILLING and SAMPLING INFORMATION

Date Started	5/29/19	Hammer Wt.	140 lbs.
Date Completed	5/29/19	Hammer Drop	30 in.
Drill Foreman	R. Hackman	Spoon Sampler OD	2 in.
Inspector	S. Barajas	Rock Core Dia.	- in.
Boring Method	HSA	Shelby Tube OD	- in.

TEST DATA

SOIL CLASSIFICATION (continued)	Stratum Elevation, ft	Stratum Depth, ft	Depth Scale, ft	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Groundwater	Standard Penetration Test, Blows per 6 in. Increments	Remarks
			25						
Stiff, very dark gray LOAM (10YR 3/1, rough) moist, cohesive, low plasticity, non-sticky, non-effervescent	471.0	28.0		1	SS			3-3-9-8	
Medium dense, white SAND and GRAVEL (10YR 8/1, rough) and brown (10YR 4/3, rough) moist, non-cohesive, non-plastic, non-sticky, non-effervescent (FILL)	469.5	29.5	30	2	SS			8-8-7-9	
Stiff dark grayish brown SILTY CLAY (10YR 4/2, rough) moist, cohesive, medium plasticity, non-sticky, non-effervescent	468.0	31.0		3	SS			4-4-4-4	
Medium stiff, very dark grayish brown SANDY LOAM (10YR 3/2, rough) moist, cohesive, slightly plastic, non-sticky - some gravel at 32.5' - some gravel at 33'	467.0	32.0		4	SS		●	2-0-0-1	- silt and sand sized coal ash - organic material identified at 34'
Loose, black COAL ASH (10YR 2/1, rough) moist, non-cohesive, non-plastic, non-sticky, non-effervescent	465.5	33.5	35	5	SS			2-0-1-2	
Very soft, very dark grayish brown CLAY (10YR 3/2, rough) wet, cohesive, medium plasticity, slightly sticky, non-effervescent	465.0	34.0		6	SS			WOH	
	459.0	40.0							

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Depth to Groundwater
● Noted on Drilling Tools 34.0 ft.
▽ At Completion _____ ft.
▼ After _____ hours _____ ft.
Cave Depth _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
HA - Hand Auger

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TEST BORING LOG

CLIENT: **Indianapolis Power and Light Company**
PROJECT NAME: **MW-10 ASD**
PROJECT LOCATION: **Petersburg Generating Station**, **Petersburg, Indiana**

BORING #: **TP-1 Offset**
Northing: **1197035.08**
Easting: **2908067.88**
JOB #: **170LF00705**

DRILLING and SAMPLING INFORMATION

Date Started	5/29/19	Hammer Wt.	140 lbs.
Date Completed	5/29/19	Hammer Drop	30 in.
Drill Foreman	R. Hackman	Spoon Sampler OD	2 in.
Inspector	S. Barajas	Rock Core Dia.	- in.
Boring Method	HSA	Shelby Tube OD	- in.

TEST DATA

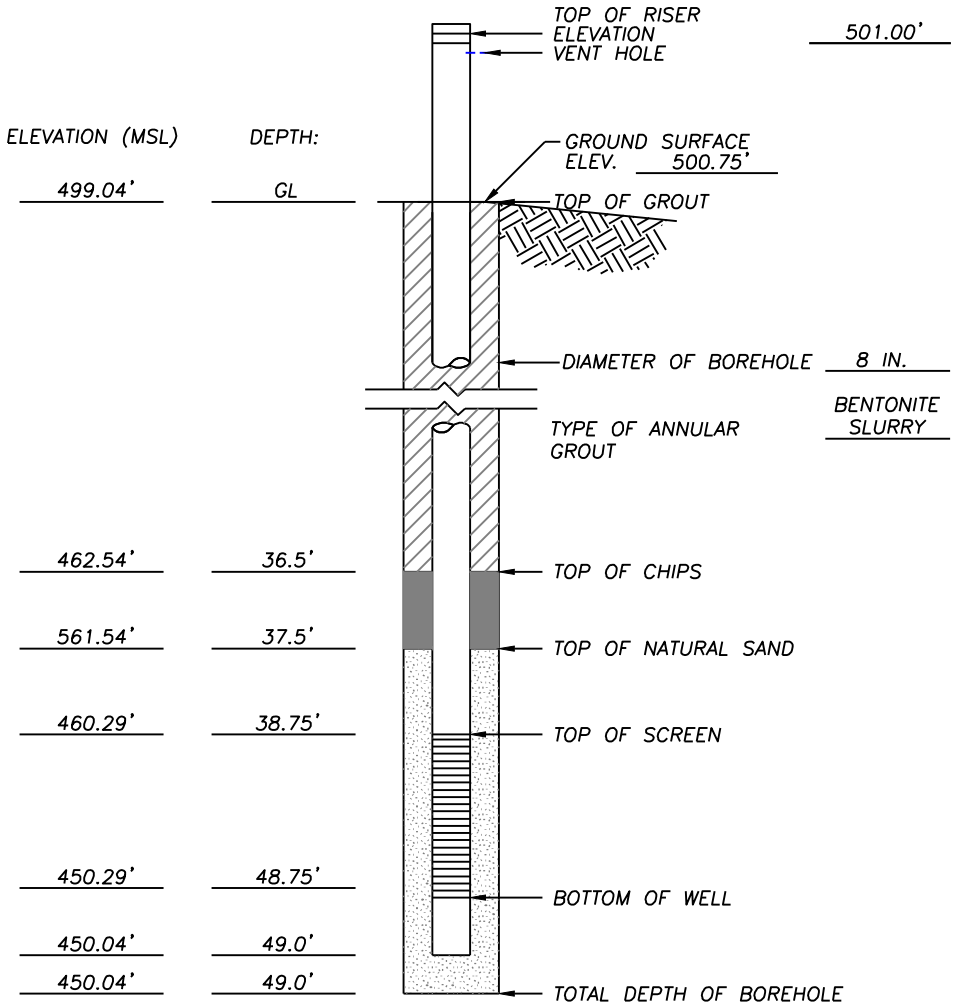
SOIL CLASSIFICATION (continued)	Stratum Elevation, ft	Stratum Depth, ft	Depth Scale, ft	Sample No.	Sample Type	Sampler Graphics / Recovery Graphics	Groundwater	Standard Penetration Test, Blows per 6 in. Increments	Remarks
Loose, dark grayish brown SAND (10YR 4/2, rough) wet, non-cohesive, non-plastic, non-sticky, non-effervescent				7	SS			2-3-3-4	
				8	SS			2-3-4-2	
- mottled, very dark gray (10YR 3/1, rough) at 43'				9	SS			3-2-2-3	
	453.5	45.5	45						
Loose, black SAND (10YR 2/1, rough) wet, non-cohesive, non-plastic, non-sticky, non-effervescent (FILL)				10	SS			6-5-4-5	- organic material (wood) and non-organic material (plastic wrappers) identified
	450.0	49.0							
- bottom of borehole at 49'									Installed TP-1 Offset with a screen from 38.7 to 48.7 ft. at completion.

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Depth to Groundwater
Noted on Drilling Tools 34.0 ft.
At Completion ____ ft.
After ____ hours ____ ft.
Cave Depth ____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
HA - Hand Auger

TYPE OF RISER PIPE:	SCH. 40 PVC
RISER PIPE SIZE:	2 IN.
PRO-COVER MATERIAL:	ALUMINUM
PRO-COVER SIZE:	4 IN.
SCREEN MFG. BY:	JOHNSON
SCREEN SLOT SIZE:	0.010
SIZE OF SAND PACK:	#4, #7
DEVELOPMENT METHOD:	PUMP/BAILER
DEVELOPMENT DATE:	6/6/19
DEVELOPMENT DURATION:	45 MIN
GALLONS PURGED:	40 GAL



NOTE:
-ALL DEPTHS ARE MEASURED FROM GROUND SURFACE
-ALL COORDINATES ARE IN INDIANA STATE PLANE WEST (NAD83)

Northing: 1197035.08	Inspector: S. BARAJAS	Drilling Method: HSA
Easting: 2908067.88	Driller: R. HACKMAN	Completion Date: 5/29/2019

TP-1 MONITORING WELL CONSTRUCTION DIAGRAM - STICK UP COMPLETION

Project Number: 170LF00705		Drn. By: BH
Drawing File: SEE LOWER LEFT		Ckd. By: JJ
Date: 10/19	Scale: NOT TO SCALE	App'd By:
ATC		Figure: 2

H:\2019\IPL\PETERSBURG\170LF00705\170LF00705-WELL DIA.DWG, TP-1

RECORD OF WATER WELL

State Form 35680 (R5 / 9-04)

Driller--Mail complete record in 30 days to:
INDIANA DEPT. OF NATURAL RESOURCES
Division of Water
402 W. Washington St., Rm. W264
Indianapolis, IN 46204-2641
(877) 928-3755 toll-free or (317) 232-4160

County Permit Number
DNR Variance Number
Include if applicable

Fill in completely

WELL LOCATION

County where drilled	Civil township name	Township number (N-S)	Range number (E-W)	Section
PIKE	WASHINGTON			

Driving directions to the well location (*include trip origin, street & road names, intersecting roads, and compass directions).*
Show well address below and subdivision in box at lower right. There is space for a map on the reverse side.

IPL Petersburg Generating Station - from Indianapolis take SR67 South through Washington. Bear left onto SR57 South and follow to site on the right, before entering Petersburg.

Well address: **6925 N. SR57, Petersburg**

UTM Northing
UTM Easting
Datum ☐ NAD 27 ☐ NAD 83
GPS used
Subdivision name & lot number (if applicable)

If drilled for water supply, this well is: ☐ First well on property ☐ Replacement well ☐ Additional well on property ☐ Dry hole

OWNER - CONTRACTOR

Well owner--name	Telephone number
Indianapolis Power & Light Company	(317) 261-8154

Address *(number and street, city, state, ZIP code)*
1 Monument Circle, Indianapolis, IN

Geotechnical Consultant--name	Address *(number and street, city, state, ZIP code)*	Telephone number
ATC GROUP SERVICES	7988 CENTERPOINT DR., INDIANAPOLIS, IN 46256	(317) 849-4990
Drilling contractor--name	Address *(number and street, city, state, ZIP code)*	Telephone number
ATC GROUP SERVICES	7988 CENTERPOINT DR., INDIANAPOLIS, IN 46256	(317) 849-4990

Equipment operator--name	License number of operator	**Date of well completion**
R. HACKMAN	509	5/29/19

CONSTRUCTION DETAILS

Use of well
☐ Home
☐ Public supply
☐ Industrial / Commercial
☐ Livestock
☐ Irrigation
☑ Monitoring / Environ.
☐ Test Hole
Other: _____

Drilling method
☐ Rotary
☐ Reverse Rotary
☐ Cable Tool
☐ Jet
☐ Bucket / Bore
☑ Auger (including HSA)
☐ Direct Push
Other: _____

Type of pump
☐ Submersible
☐ Shallow-well jet
☐ Deep-well jet
☑ No pump installed
Other: _____

Pump depth setting (feet)

Total depth of well (feet) 49	**Borehole diameter** (in.) 8	**Gravel pack inserted**	☑ Yes ☐ No
Casing length (feet) 40.7	**Casing diameter** (in.) 2	**Casing material** Other: _____	☑ PVC ☐ Steel
Screen length (feet) 10	**Screen diameter** (in.) 2	**Screen material** Other: _____	☑ PVC ☐ Steel
Screen slot size 0.01	**Water quality** (clear, odor, etc.)		

WELL CAPACITY TEST

Test method	**Static level** below surface	**Gallons per min.**	**Hours tested**	**Drawdown** (change in level)
☐ Air ☐ Bailing ☐ Pumping	34 feet			feet

GROUTING

Grout material	Grout depth from	to
BENTONITE	36.5	1

Installation method	No. of bags used
TREMIE & POUR	3.5

WELL ABANDONMENT

Sealing material	Depth filled from	to

Installation method	No. of bags used

WELL LOG

FORMATIONS: Type of material	From (feet)	To (feet)
TP-1		
Blank Drill - no lithology noted	0.0	28.0
Gray LOAM	28.0	29.5
White SAND & GRAVEL	29.5	31.0
Brown SILTY CLAY	31.0	32.0
Brown SANDY LOAM	32.0	33.5
COAL ASH	33.5	34.0
Brown Clay	34.0	40.0
Gray-Brown SAND	40.0	45.5
Black SAND	45.5	49.0

Additional space for well log and comments on reverse side

I hereby swear or affirm, under the penalties for perjury, that the information submitted herewith is, to the best of my knowledge and belief, true, accurate, and complete.

Signature of **drilling contractor** or authorized representative MUST BE SIGNED OR STAMPED

Date: 10/3/19

7988 Centerpoint Drive, Suite 100
Indianapolis, IN 46256
(317) 849-4990
Fax (317) 849-4278

TEST BORING LOG

CLIENT: **Indianapolis Power and Light Company**
PROJECT NAME: **MW-10 ASD**
PROJECT LOCATION: **Petersburg Generating Station**, **Petersburg, Indiana**

BORING #: **TP-2**
Northing: **1197058.61**
Easting: **2908028.63**
JOB #: **170LF00705**

DRILLING and SAMPLING INFORMATION

Date Started	5/23/19	Hammer Wt.	140 lbs.
Date Completed	5/23/19	Hammer Drop	30 in.
Drill Foreman	R. Hackman	Spoon Sampler OD	2 in.
Inspector	P. G. Hopper	Rock Core Dia.	- in.
Boring Method	HSA	Shelby Tube OD	- in.

TEST DATA

SOIL CLASSIFICATION SURFACE ELEVATION 498.90	Stratum Elevation, ft	Stratum Depth, ft	Depth Scale, ft	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Groundwater	Standard Penetration Test, Blows per 6 in. Increments	Remarks
Blind drilled to 8'									
	490.9	8.0							
Very loose, brown LOAMY SAND (10YR 4/3, rough) moist, non-cohesive, non-plastic, non-cohesive, non-sticky, slightly effervescent, with chunks of COAL			5	1	SS			3-2-1-1	- fine-grained sand from 8-15'
				2	SS			2-2-2-2	
			10	3	SS			2-1-2-2	
				4	SS			2-1-2-2	
	483.9	15.0	15						
Soft, brown SILTY CLAY LOAM (10YR 4/3, rough) moist, cohesive, low plasticity, non-sticky, non-effervescent, some coal present				5	SS			3-3-2-3	
-sand lenses at 17'									- fine-grained sand lenses 2-6" from 17'
				6	SS			1-1-1-1	
	478.9	20.0							

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Depth to Groundwater
Noted on Drilling Tools **35.0** ft.
At Completion _____ ft.
After _____ hours _____ ft.
Cave Depth _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
HA - Hand Auger

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Indianapolis, IN 46256
(317) 849-4990
Fax (317) 849-4278

TEST BORING LOG

CLIENT: **Indianapolis Power and Light Company**
PROJECT NAME: **MW-10 ASD**
PROJECT LOCATION: **Petersburg Generating Station**, **Petersburg, Indiana**

BORING #: **TP-2**
Northing: **1197058.61**
Easting: **2908028.63**
JOB #: **170LF00705**

DRILLING and SAMPLING INFORMATION

Date Started	5/23/19	Hammer Wt.	140 lbs.
Date Completed	5/23/19	Hammer Drop	30 in.
Drill Foreman	R. Hackman	Spoon Sampler OD	2 in.
Inspector	P. G. Hopper	Rock Core Dia.	- in.
Boring Method	HSA	Shelby Tube OD	- in.

TEST DATA

SOIL CLASSIFICATION (continued)	Stratum Elevation, ft	Stratum Depth, ft	Depth Scale, ft	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Groundwater	Standard Penetration Test, Blows per 6 in. Increments	Remarks
Soft, very dark grayish brown SILTY CLAY (10YR 3/2, rough) moist, cohesive, high plasticity, sticky, non-effervescent, (FILL)				7	SS			2-3-2-3	- fine-grained sand
				8	SS			0-1-2-2	
	474.4	24.5		9	SS			3-4-5-5	
COAL fragments	473.9	25.0	25						
Loose, dark gray SAND (10YR 3/1, rough) moist, non-cohesive, non-plastic, non-sticky, non-effervescent									- fine-grained sand
				10	SS			5-5-5-4	
- color change to light yellowish brown (10YR 6/4, rough) at 27'				11	SS			1-2-3-4	
- trace clay at 29'									
- reddish tint at 30'			30	12	SS			5-5-6-6	
				13	SS			3-3-3-3	
- slightly plastic silty sand at 33'				14	SS			2-2-3-3	
- wet at 35'			35						
				15	SS			3-3-6-8	
	461.9	37.0							
Stiff, dark yellowish brown LOAM (10YR 4/4, rough) wet, cohesive, low plasticity, slightly sticky, non-effervescent	460.9	38.0		16	SS			0-0-1-1	- black grains from 38'
Very loose, light yellowish brown SAND (10YR 6/4, rough) wet, non-cohesive, non-plastic, non-sticky, non-effervescent									

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Depth to Groundwater
Noted on Drilling Tools 35.0 ft.
At Completion _____ ft.
After _____ hours _____ ft.
Cave Depth _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
HA - Hand Auger

7988 Centerpoint Drive, Suite 100
Indianapolis, IN 46256
(317) 849-4990
Fax (317) 849-4278

TEST BORING LOG

CLIENT **Indianapolis Power and Light Company**
PROJECT NAME **MW-10 ASD**
PROJECT LOCATION **Petersburg Generating Station**
Petersburg, Indiana

BORING # **TP-2**
Northing **1197058.61**
Easting **2908028.63**
JOB # **170LF00705**

DRILLING and SAMPLING INFORMATION

Date Started	5/23/19	Hammer Wt.	140 lbs.
Date Completed	5/23/19	Hammer Drop	30 in.
Drill Foreman	R. Hackman	Spoon Sampler OD	2 in.
Inspector	P. G. Hopper	Rock Core Dia.	- in.
Boring Method	HSA	Shelby Tube OD	- in.

TEST DATA

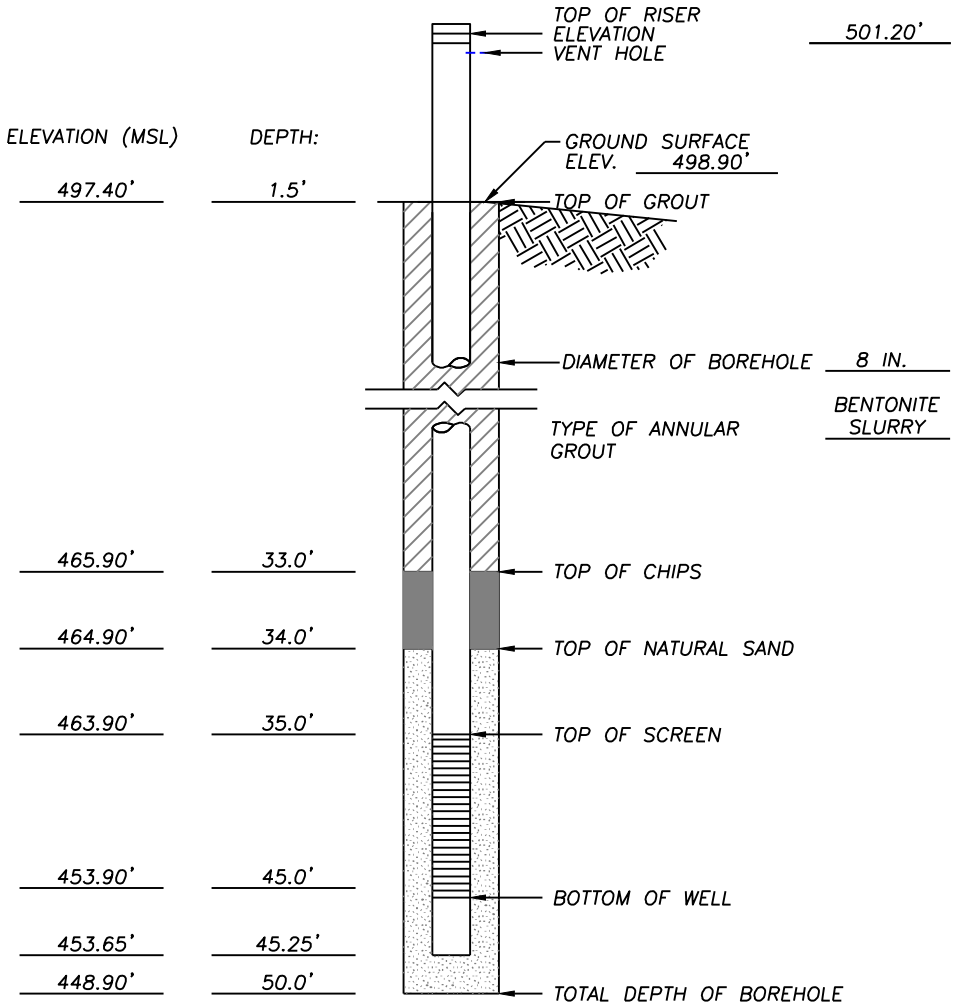
SOIL CLASSIFICATION (continued)	Stratum Elevation, ft	Stratum Depth, ft	Depth Scale, ft	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Groundwater	Standard Penetration Test, Blows per 6 in. Increments	Remarks
				17	SS			3-3-4-6	
				18	SS			4-4-6-8	- oxidation at 42'
				19	SS			4-3-2-2	
Soft, gray SILTY CLAY (10YR 5/1, rough) wet, cohesive, medium plasticity, sticky, non-effervescent	453.9	45.0	45	20	SS			2-3-3-3	Installed TP-2 with a screen from 34.7 to 44.7 ft. at completion.
				21	SS			1-2-3-4	
- bottom of borehole at 50'	448.9	50.0	50						

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Depth to Groundwater
Noted on Drilling Tools **35.0** ft.
At Completion _____ ft.
After _____ hours _____ ft.
Cave Depth _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
HA - Hand Auger

TYPE OF RISER PIPE:	SCH. 40 PVC
RISER PIPE SIZE:	2 IN.
PRO-COVER MATERIAL:	ALUMINUM
PRO-COVER SIZE:	4 IN.
SCREEN MFG. BY:	JOHNSON
SCREEN SLOT SIZE:	0.010
SIZE OF SAND PACK:	#4, #7
DEVELOPMENT METHOD:	PUMP/BAILER
DEVELOPMENT DATE:	6/6/19
DEVELOPMENT DURATION:	20 MIN
GALLONS PURGED:	27.5 GAL



NOTE:
-ALL DEPTHS ARE MEASURED FROM GROUND SURFACE
-ALL COORDINATES ARE IN INDIANA STATE PLANE WEST (NAD83)

Northing: 1197058.61	Inspector: S. BARAJAS	Drilling Method: HSA
Easting: 2908028.63	Driller: R. HACKMAN	Completion Date: 5/23/2019

TP-2 MONITORING WELL CONSTRUCTION DIAGRAM - STICK UP COMPLETION

Project Number: 170LF00705		Drn. By: BH
Drawing File: SEE LOWER LEFT		Ckd. By: JJ
Date: 10/19	Scale: NOT TO SCALE	App'd By:
ATC		Figure: 3

H:\2019\IPL\PETERSBURG\170LF00705\170LF00705-WELL DIA.DWG, TP-2

RECORD OF WATER WELL

State Form 35680 (R5 / 9-04)

Driller--Mail complete record in 30 days to:
INDIANA DEPT. OF NATURAL RESOURCES
Division of Water
402 W. Washington St., Rm. W264
Indianapolis, IN 46204-2641
(877) 928-3755 toll-free or (317) 232-4160

County Permit Number
DNR Variance Number
Include if applicable

Fill in completely

WELL LOCATION

County where drilled	Civil township name	Township number (N-S)	Range number (E-W)	Section
PIKE	WASHINGTON			

Driving directions to the well location (*include trip origin, street & road names, intersecting roads, and compass directions).*
Show well address below and subdivision in box at lower right. There is space for a map on the reverse side.

IPL Petersburg Generating Station - from Indianapolis take SR67 South through Washington. Bear left onto SR57 South and follow to site on the right, before entering Petersburg.

Well address: **6925 N. SR57, Petersburg**

UTM Northing
UTM Easting
Datum ☐ NAD 27 ☐ NAD 83
GPS used
Subdivision name & lot number (if applicable)

If drilled for water supply, this well is: ☐ First well on property ☐ Replacement well ☐ Additional well on property ☐ Dry hole

OWNER - CONTRACTOR

Well owner--name	Telephone number
Indianapolis Power & Light Company	(317) 261-8154

Address *(number and street, city, state, ZIP code)*
1 Monument Circle, Indianapolis, IN

Geotechnical Consultant--name	Address *(number and street, city, state, ZIP code)*	Telephone number
ATC GROUP SERVICES	7988 CENTERPOINT DR., INDIANAPOLIS, IN 46256	(317) 849-4990
Drilling contractor--name	Address *(number and street, city, state, ZIP code)*	Telephone number
ATC GROUP SERVICES	7988 CENTERPOINT DR., INDIANAPOLIS, IN 46256	(317) 849-4990

Equipment operator--name	License number of operator	**Date of well completion**
R. HACKMAN	509	5/23/19

CONSTRUCTION DETAILS

Use of well
☐ Home
☐ Public supply
☐ Industrial / Commercial
☐ Livestock
☐ Irrigation
☑ Monitoring / Environ.
☐ Test Hole
Other: _____

Drilling method
☐ Rotary
☐ Reverse Rotary
☐ Cable Tool
☐ Jet
☐ Bucket / Bore
☑ Auger (including HSA)
☐ Direct Push
Other: _____

Type of pump
☐ Submersible
☐ Shallow-well jet
☐ Deep-well jet
☑ No pump installed
Other: _____

Pump depth setting (feet)

Total depth of well (feet) **44.7**	**Borehole diameter** (in.) **8**	**Gravel pack inserted**	☑ Yes ☐ No
Casing length (feet) **37.3**	**Casing diameter** (in.) **2**	**Casing material** Other: _____	☑ PVC ☐ Steel
Screen length (feet) **10**	**Screen diameter** (in.) **2**	**Screen material** Other: _____	☑ PVC ☐ Steel
Screen slot size **0.01**	**Water quality** (clear, odor, etc.)		

WELL CAPACITY TEST

Test method	**Static level** below surface	**Gallons per min.**	**Hours tested**	**Drawdown** (change in level)
☐ Air ☐ Bailing ☐ Pumping	34 feet			feet

GROUTING

Grout material	Grout depth from	to
BENTONITE	33	1

Installation method	No. of bags used
TREMIE & POUR	4

WELL ABANDONMENT

Sealing material	Depth filled from	to

Installation method	No. of bags used

WELL LOG

FORMATIONS: Type of material	From (feet)	To (feet)
TP-2		
Blank Drill - no lithology noted	0.0	8.0
Brown LOAMY SAND	8.0	15.0
Brown SILTY CLAY LOAM	15.0	20.0
Brown SILTY CLAY	20.0	24.5
COAL	24.5	25.0
Gray SAND	25.0	37.0
Brown LOAM	37.0	38.0
Brown SAND	38.0	45.0
Gray SILTY CLAY	45.0	50.0

Additional space for well log and comments on reverse side

I hereby swear or affirm, under the penalties for perjury, that the information submitted herewith is, to the best of my knowledge and belief, true, accurate, and complete.

Signature of **drilling contractor** or authorized representative MUST BE SIGNED OR STAMPED

Date: 10/3/19

7988 Centerpoint Drive, Suite 100
Indianapolis, IN 46256
(317) 849-4990
Fax (317) 849-4278

TEST BORING LOG

CLIENT: **Indianapolis Power and Light Company**
PROJECT NAME: **MW-10 ASD**
PROJECT LOCATION: **Petersburg Generating Station**, **Petersburg, Indiana**

BORING #: **TP-3**
Northing: **1197013.7**
Easting: **2908029.29**
JOB #: **170LF00705**

DRILLING and SAMPLING INFORMATION

Date Started	5/24/19	Hammer Wt.	140 lbs.
Date Completed	5/24/19	Hammer Drop	30 in.
Drill Foreman	R. Hackman	Spoon Sampler OD	2 in.
Inspector	P. G. Hopper	Rock Core Dia.	- in.
Boring Method	HSA	Shelby Tube OD	- in.

TEST DATA

SOIL CLASSIFICATION SURFACE ELEVATION 498.37	Stratum Elevation, ft	Stratum Depth, ft	Depth Scale, ft	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Groundwater	Standard Penetration Test, Blows per 6 in. Increments	Remarks
Blind drilled to 8'			5						
	490.4	8.0							
Very soft, dark yellowish brown SANDY CLAY LOAM (10YR 4/4, rough) moist, cohesive, low plasticity, slightly sticky, non-effervescent				1	SS			3-2-1-2	- silt and very fine-grained sand
			10	2	SS			2-1-2-1	
				3	SS			2-2-2-2	- No recovery from 12-14'
- very moist with coal fragments from 14'				4	SS			1-1-1-2	
			15						
	482.4	16.0							
Soft, dark yellowish brown SILT LOAM (10YR 4/4, rough) mottled with brown (10YR 5/3, rough) and gray (10YR 5/1, rough), trace COAL ASH, moist, cohesive, low plasticity, slightly sticky, non-effervescent				5	SS			2-2-3-5	
	479.9	18.5		6	SS			2-2-2-2	- fine-grained ash
Very loose, dark gray SAND (10YR 4/1, rough) dry, non-cohesive, non-plastic, non-sticky, slightly effervescent									- fine-grained sand

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Depth to Groundwater
Noted on Drilling Tools 33.0 ft.
At Completion _____ ft.
After _____ hours _____ ft.
Cave Depth _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
HA - Hand Auger

7988 Centerpoint Drive, Suite 100
Indianapolis, IN 46256
(317) 849-4990
Fax (317) 849-4278

TEST BORING LOG

CLIENT: **Indianapolis Power and Light Company**
PROJECT NAME: **MW-10 ASD**
PROJECT LOCATION: **Petersburg Generating Station**, **Petersburg, Indiana**

BORING #: **TP-3**
Northing: **1197013.7**
Easting: **2908029.29**
JOB #: **170LF00705**

DRILLING and SAMPLING INFORMATION

Date Started	5/24/19	Hammer Wt.	140 lbs.
Date Completed	5/24/19	Hammer Drop	30 in.
Drill Foreman	R. Hackman	Spoon Sampler OD	2 in.
Inspector	P. G. Hopper	Rock Core Dia.	- in.
Boring Method	HSA	Shelby Tube OD	- in.

TEST DATA

SOIL CLASSIFICATION (continued)	Stratum Elevation, ft	Stratum Depth, ft	Depth Scale, ft	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Groundwater	Standard Penetration Test, Blows per 6 in. Increments	Remarks
- color change to dark yellowish brown (10YR 4/4, rough) from 22'				7	SS			3-2-3-3	
				8	SS			2-2-2-2	
				9	SS			2-2-3-4	
			25						
				10	SS			4-4-4-5	
	469.9	28.5		11	SS			2-3-5-4	
Medium stiff, yellowish brown CLAY (10YR 5/6, rough) dry, cohesive, medium plasticity, sticky, non-effervescent	468.9	29.5							
			30						
Medium dense, dark yellowish brown SAND (10YR 4/4, rough) dry, non-cohesive, non-plastic, non-sticky, non-effervescent				12	SS			4-5-6-4	
				13	SS			2-1-1-3	
- wet at 33'							●		
				14	SS			1-1-1-1	
	463.4	35.0	35						
Very soft, dark yellowish brown LOAM (10YR 4/4, rough) dry, cohesive, medium plasticity, slightly sticky, non-effervescent				15	SS			0-0-2-2	
				16	SS			1-2-3-2	

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Depth to Groundwater
● Noted on Drilling Tools 33.0 ft.
▽ At Completion _____ ft.
▼ After _____ hours _____ ft.
Cave Depth _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
HA - Hand Auger

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Indianapolis, IN 46256
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TEST BORING LOG

CLIENT: **Indianapolis Power and Light Company**
PROJECT NAME: **MW-10 ASD**
PROJECT LOCATION: **Petersburg Generating Station**, **Petersburg, Indiana**

BORING #: **TP-3**
Northing: **1197013.7**
Easting: **2908029.29**
JOB #: **170LF00705**

DRILLING and SAMPLING INFORMATION

Date Started: **5/24/19**
Date Completed: **5/24/19**
Drill Foreman: **R. Hackman**
Inspector: **P. G. Hopper**
Boring Method: **HSA**

Hammer Wt.: **140** lbs.
Hammer Drop: **30** in.
Spoon Sampler OD: **2** in.
Rock Core Dia.: **-** in.
Shelby Tube OD: **-** in.

TEST DATA

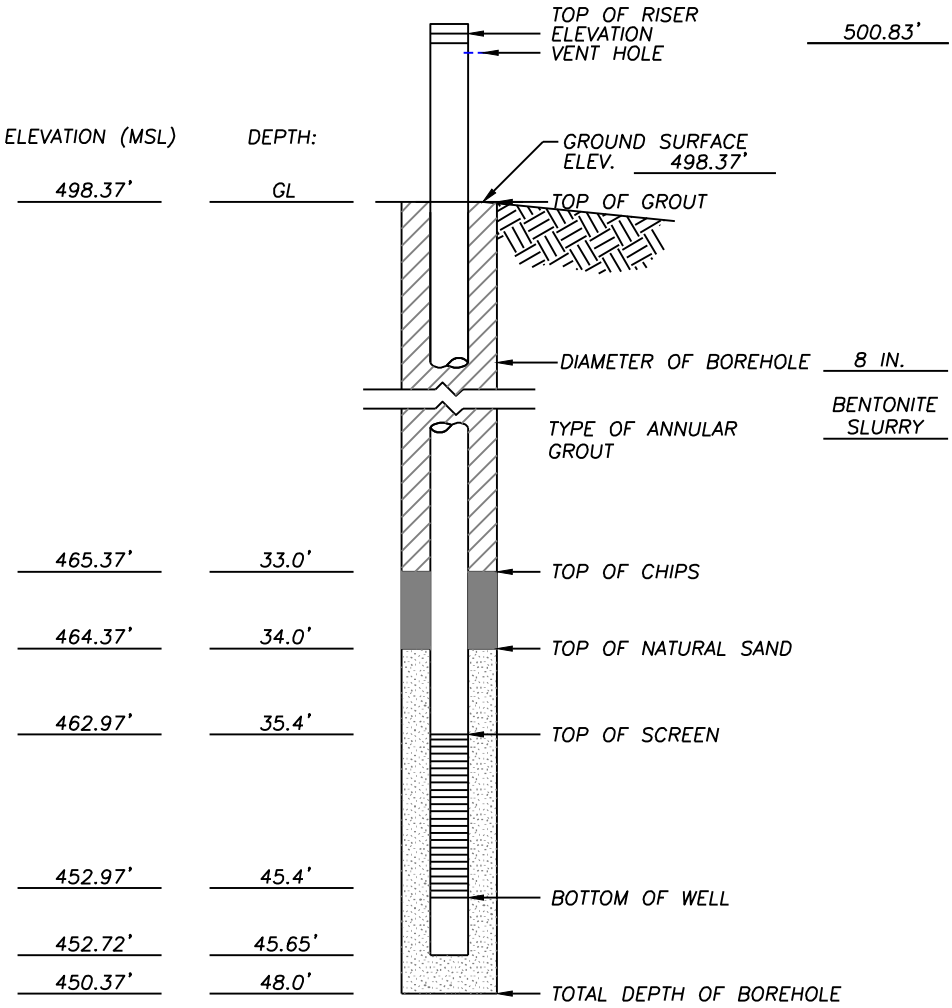
SOIL CLASSIFICATION (continued)	Stratum Elevation, ft	Stratum Depth, ft	Depth Scale, ft	Sample No.	Sample Type	Sampler Graphics Recovery Graphics	Groundwater	Standard Penetration Test, Blows per 6 in. Increments	Remarks
- color change to reddish brown, moist, and silt lenses from 40' - dense from 41'				17	SS			3-3-5-6	
				18	SS			5-6-6-8	
				19	SS			5-5-7-6	
			45						
	452.4	46.0							Installed Monitoring Well TP-3 with a screen from 35.1 to 45.1 ft. at completion.
Medium stiff, gray SILTY CLAY (10YR 5/1, rough) moist, cohesive, medium plasticity, sticky, non-effervescent				20	SS			4-5-5-4	
	450.4	48.0							
- bottom of borehole at 48'									

Sample Type
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

Depth to Groundwater
Noted on Drilling Tools **33.0** ft.
At Completion _____ ft.
After _____ hours _____ ft.
Cave Depth _____ ft.

Boring Method
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling
HA - Hand Auger

TYPE OF RISER PIPE:	SCH. 40 PVC
RISER PIPE SIZE:	2 IN.
PRO-COVER MATERIAL:	ALUMINUM
PRO-COVER SIZE:	4 IN.
SCREEN MFG. BY:	JOHNSON
SCREEN SLOT SIZE:	0.010
SIZE OF SAND PACK:	#4, #7
DEVELOPMENT METHOD:	PUMP/BAILER
DEVELOPMENT DATE:	6/6/19
DEVELOPMENT DURATION:	1 HR
GALLONS PURGED:	25 GAL



NOTE:
-ALL DEPTHS ARE MEASURED FROM GROUND SURFACE
-ALL COORDINATES ARE IN INDIANA STATE PLANE WEST (NAD83)

Northing: 1197013.7	Inspector: S. BARAJAS	Drilling Method: HSA
Easting: 2908029.29	Driller: R. HACKMAN	Completion Date: 5/24/2019

TP-3 MONITORING WELL CONSTRUCTION DIAGRAM - STICK UP COMPLETION

Project Number: 170LF00705		Drn. By: BH
Drawing File: SEE LOWER LEFT		Ckd. By: JJ
Date: 10/19	Scale: NOT TO SCALE	App'd By:
ATC		Figure: 4

H:\2019\IPL\PETERSBURG\170LF00705\170LF00705-WELL DIA.DWG, TP-3

RECORD OF WATER WELL

State Form 35680 (R5 / 9-04)

Driller--Mail complete record in 30 days to:
INDIANA DEPT. OF NATURAL RESOURCES
Division of Water
402 W. Washington St., Rm. W264
Indianapolis, IN 46204-2641
(877) 928-3755 toll-free or (317) 232-4160

County Permit Number
DNR Variance Number
Include if applicable

Fill in completely

WELL LOCATION

County where drilled	Civil township name	Township number (N-S)	Range number (E-W)	Section
PIKE	WASHINGTON			

Driving directions to the well location (*include trip origin, street & road names, intersecting roads, and compass directions).*
Show well address below and subdivision in box at lower right. There is space for a map on the reverse side.

IPL Petersburg Generating Station - from Indianapolis take SR67 South through Washington. Bear left onto SR57 South and follow to site on the right, before entering Petersburg.

Well address: **6925 N. SR57, Petersburg**

UTM Northing
UTM Easting
Datum ☐ NAD 27 ☐ NAD 83
GPS used
Subdivision name & lot number (if applicable)

If drilled for water supply, this well is: ☐ First well on property ☐ Replacement well ☐ Additional well on property ☐ Dry hole

OWNER - CONTRACTOR

Well owner--name	Telephone number
Indianapolis Power & Light Company	(317) 261-8154

Address *(number and street, city, state, ZIP code)*
1 Monument Circle, Indianapolis, IN

Geotechnical Consultant--name	Address *(number and street, city, state, ZIP code)*	Telephone number
ATC GROUP SERVICES	7988 CENTERPOINT DR., INDIANAPOLIS, IN 46256	(317) 849-4990
Drilling contractor--name	Address *(number and street, city, state, ZIP code)*	Telephone number
ATC GROUP SERVICES	7988 CENTERPOINT DR., INDIANAPOLIS, IN 46256	(317) 849-4990

Equipment operator--name	License number of operator	**Date of well completion**
R. HACKMAN	509	5/24/19

CONSTRUCTION DETAILS

Use of well
☐ Home
☐ Public supply
☐ Industrial / Commercial
☐ Livestock
☐ Irrigation
☑ Monitoring / Environ.
☐ Test Hole
Other: _____

Drilling method
☐ Rotary
☐ Reverse Rotary
☐ Cable Tool
☐ Jet
☐ Bucket / Bore
☑ Auger (including HSA)
☐ Direct Push
Other: _____

Type of pump
☐ Submersible
☐ Shallow-well jet
☐ Deep-well jet
☑ No pump installed
Other: _____

Pump depth setting (feet)

Total depth of well (feet) **45.4**	**Borehole diameter** (in.) **8**	**Gravel pack inserted**	☑ Yes ☐ No
Casing length (feet) **37.9**	**Casing diameter** (in.) **2**	**Casing material** Other: _____	☑ PVC ☐ Steel
Screen length (feet) **10**	**Screen diameter** (in.) **2**	**Screen material** Other: _____	☑ PVC ☐ Steel
Screen slot size **0.01**	**Water quality** (clear, odor, etc.)		

WELL CAPACITY TEST

Test method	**Static level** below surface	**Gallons per min.**	**Hours tested**	**Drawdown** (change in level)
☐ Air ☐ Bailing ☐ Pumping	33 feet			feet

GROUTING

Grout material	Grout depth from	to
BENTONITE	33	1

Installation method	No. of bags used
TREMIE & POUR	3.5

WELL ABANDONMENT

Sealing material	Depth filled from	to

Installation method	No. of bags used

WELL LOG

FORMATIONS: Type of material	From (feet)	To (feet)
TP-3		
Blank Drill - no lithology noted	0.0	8.0
Brown SANDY CLAY	8.0	18.0
Brown SILT LOAM	18.0	18.5
Gray SAND	18.5	28.5
Brown CLAY	28.5	29.5
Brown SAND	29.5	46.0
Gray SILTY CLAY	46.0	48.0

Additional space for well log and comments on reverse side

I hereby swear or affirm, under the penalties for perjury, that the information submitted herewith is, to the best of my knowledge and belief, true, accurate, and complete.

Signature of **drilling contractor** or authorized representative MUST BE SIGNED OR STAMPED

Date: 10/3/19

APPENDIX B

Laboratory Analytical Reports

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

July 30, 2019

Mr. Rob Duncan
ATC Group Services, LLC
7988 Centerpoint Drive
Indianapolis, IN 46256

RE: Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Dear Mr. Duncan:
Enclosed are the analytical results for sample(s) received by the laboratory on July 05, 2019. 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,

Donna S. Spyker

Donna Spyker
donna.spyker@pacelabs.com
(317)228-3100
Project Manager

Enclosures

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

CERTIFICATIONS

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572018-1
New Hampshire/TNI Certification #: 297617
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 9526
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad
Wyoming Certification #: 8TMS-L

Indiana Certification IDs

7726 Moller Road, Indianapolis, IN 46268
Illinois Certification #: 200074
Indiana Certification #: C-49-06
Kansas/NELAP Certification #: E-10177
Kentucky UST Certification #: 80226
Kentucky WW Certification #: 98019
Michigan Department of Environmental Quality, Laboratory #9050
Ohio VAP Certification #: CL0065
Oklahoma Certification #: 2018-101
Texas Certification #: T104704355
West Virginia Certification #: 330
Wisconsin Certification #: 999788130
USDA Soil Permit #: P330-16-00257

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

SAMPLE SUMMARY

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Lab ID	Sample ID	Matrix	Date Collected	Date Received
50229707001	**Dup-1**	Water	07/02/19 08:00	07/05/19 12:45
50229707002	**Equipment Blank -1**	Water	07/03/19 13:15	07/05/19 12:45
50229707003	**TP-1**	Water	07/02/19 13:00	07/05/19 12:45
50229707004	**TP-2**	Water	07/03/19 11:30	07/05/19 12:45
50229707005	**TP-3**	Water	07/02/19 14:30	07/05/19 12:45
50229707006	**MW-10**	Water	07/03/19 12:45	07/05/19 12:45

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

SAMPLE ANALYTE COUNT

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
50229707001	**Dup-1**	EPA 9056	RSF	3	PASI-I
		EPA 6010	RAM	12	PASI-I
		EPA 6010	JPK	12	PASI-I
		EPA 6020	CAW	6	PASI-I
		EPA 6020	DMT	6	PASI-I
		EPA 7470	ILP	1	PASI-I
		EPA 7470	ILP	1	PASI-I
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2320B	DAC1	3	PASI-I
		SM 2540C	MLS	1	PASI-I
		SM 5310C	GWA	1	PASI-I
		SM 5310C	GWA	1	PASI-I
50229707002	**Equipment Blank -1**	EPA 6010	RAM	12	PASI-I
		EPA 6020	CAW	6	PASI-I
		EPA 7470	ILP	1	PASI-I
50229707003	**TP-1**	EPA 9056	RSF	3	PASI-I
		EPA 6010	RAM	12	PASI-I
		EPA 6010	JPK	12	PASI-I
		EPA 6020	CAW	6	PASI-I
		EPA 6020	DMT	6	PASI-I
		EPA 7470	ILP	1	PASI-I
		EPA 7470	ILP	1	PASI-I
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2320B	DAC1	3	PASI-I
		SM 2540C	MLS	1	PASI-I
		SM 5310C	GWA	1	PASI-I
		SM 5310C	GWA	1	PASI-I
50229707004	**TP-2**	EPA 9056	RSF	3	PASI-I
		EPA 6010	RAM	12	PASI-I
		EPA 6010	JPK	12	PASI-I
		EPA 6020	CAW	6	PASI-I
		EPA 6020	DMT	6	PASI-I
		EPA 7470	ILP	1	PASI-I

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

SAMPLE ANALYTE COUNT

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 7470	ILP	1	PASI-I
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2320B	DAC1	3	PASI-I
		SM 2540C	MLS	1	PASI-I
		SM 5310C	GWA	1	PASI-I
		SM 5310C	GWA	1	PASI-I
50229707005	**TP-3**	EPA 9056	RSF	3	PASI-I
		EPA 6010	RAM	12	PASI-I
		EPA 6010	JPK	12	PASI-I
		EPA 6020	CAW	6	PASI-I
		EPA 6020	DMT	6	PASI-I
		EPA 7470	ILP	1	PASI-I
		EPA 7470	ILP	1	PASI-I
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2320B	DAC1	3	PASI-I
		SM 2540C	MLS	1	PASI-I
		SM 5310C	GWA	1	PASI-I
		SM 5310C	GWA	1	PASI-I
50229707006	**MW-10**	EPA 9056	RSF	3	PASI-I
		EPA 6010	RAM	12	PASI-I
		EPA 6010	JPK	12	PASI-I
		EPA 6020	CAW	6	PASI-I
		EPA 6020	DMT	6	PASI-I
		EPA 7470	ILP	1	PASI-I
		EPA 7470	ILP	1	PASI-I
		EPA 903.1	MK1	1	PASI-PA
		EPA 904.0	JLW	1	PASI-PA
		Total Radium Calculation	CMC	1	PASI-PA
		SM 2320B	DAC1	3	PASI-I
		SM 2540C	MLS	1	PASI-I
		SM 5310C	GWA	1	PASI-I
		SM 5310C	GWA	1	PASI-I

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

SUMMARY OF DETECTION

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
50229707001	**Dup-1**					
EPA 9056	Chloride	41.7	mg/L	2.5	07/08/19 17:06	
EPA 9056	Fluoride	0.47	mg/L	0.10	07/08/19 16:48	
EPA 9056	Sulfate	1220	mg/L	25.0	07/09/19 08:06	
EPA 6010	Barium	90.5	ug/L	10.0	07/11/19 11:04	
EPA 6010	Calcium	668000	ug/L	10000	07/11/19 11:23	
EPA 6010	Iron	28800	ug/L	100	07/11/19 11:04	
EPA 6010	Magnesium	73100	ug/L	1000	07/11/19 11:04	
EPA 6010	Manganese	1520	ug/L	10.0	07/11/19 11:04	
EPA 6010	Molybdenum	24.4	ug/L	10.0	07/11/19 11:04	
EPA 6010	Potassium	31000	ug/L	1000	07/11/19 11:04	
EPA 6010	Sodium	58900	ug/L	1000	07/11/19 11:04	
EPA 6010	Barium, Dissolved	67.2	ug/L	50.0	07/12/19 23:38	
EPA 6010	Calcium, Dissolved	627000	ug/L	5000	07/13/19 00:28	
EPA 6010	Iron, Dissolved	22400	ug/L	100	07/12/19 23:38	
EPA 6010	Magnesium, Dissolved	70100	ug/L	1000	07/12/19 23:38	
EPA 6010	Manganese, Dissolved	1510	ug/L	10.0	07/12/19 23:38	
EPA 6010	Molybdenum, Dissolved	22.5	ug/L	10.0	07/12/19 23:38	
EPA 6010	Potassium, Dissolved	28600	ug/L	1000	07/12/19 23:38	
EPA 6010	Sodium, Dissolved	55900	ug/L	1000	07/12/19 23:38	
EPA 6020	Arsenic	101	ug/L	1.0	07/10/19 20:21	
EPA 6020	Beryllium	0.48	ug/L	0.40	07/11/19 16:14	
EPA 6020	Cobalt	2.5	ug/L	1.0	07/10/19 20:21	
EPA 6020	Arsenic, Dissolved	101	ug/L	1.0	07/12/19 07:29	
EPA 6020	Cobalt, Dissolved	1.2	ug/L	1.0	07/15/19 08:31	
EPA 903.1	Radium-226	0.993 ± 0.708 (0.993) C:NA T:80%	pCi/L		07/22/19 14:54	
EPA 904.0	Radium-228	0.549 ± 0.323 (0.582) C:85% T:84%	pCi/L		07/17/19 15:54	
Total Radium Calculation	Total Radium	1.54 ± 1.03 (1.58)	pCi/L		07/24/19 10:51	
SM 2320B	Alkalinity, Total as CaCO3	811	mg/L	2.0	07/10/19 17:45	
SM 2320B	Alkalinity,Bicarbonate (CaCO3)	811	mg/L	2.0	07/10/19 17:45	
SM 2540C	Total Dissolved Solids	2730	mg/L	20.0	07/09/19 08:09	
SM 5310C	Total Organic Carbon	9.5	mg/L	1.0	07/12/19 18:29	
SM 5310C	Dissolved Organic Carbon	9.0	mg/L	1.0	07/12/19 14:17	
50229707003	**TP-1**					
EPA 9056	Chloride	42.2	mg/L	2.5	07/08/19 18:20	
EPA 9056	Fluoride	0.47	mg/L	0.10	07/08/19 18:01	
EPA 9056	Sulfate	1240	mg/L	25.0	07/09/19 08:24	
EPA 6010	Barium	80.6	ug/L	10.0	07/11/19 11:09	
EPA 6010	Calcium	641000	ug/L	10000	07/11/19 11:25	
EPA 6010	Iron	26600	ug/L	100	07/11/19 11:09	
EPA 6010	Magnesium	72200	ug/L	1000	07/11/19 11:09	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

SUMMARY OF DETECTION

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
50229707003	**TP-1**					
EPA 6010	Manganese	1500	ug/L	10.0	07/11/19 11:09	
EPA 6010	Molybdenum	22.7	ug/L	10.0	07/11/19 11:09	
EPA 6010	Potassium	30400	ug/L	1000	07/11/19 11:09	
EPA 6010	Sodium	58000	ug/L	1000	07/11/19 11:09	
EPA 6010	Barium, Dissolved	67.5	ug/L	50.0	07/12/19 23:40	
EPA 6010	Calcium, Dissolved	635000	ug/L	5000	07/13/19 00:30	
EPA 6010	Iron, Dissolved	23200	ug/L	100	07/12/19 23:40	
EPA 6010	Magnesium, Dissolved	72100	ug/L	1000	07/12/19 23:40	
EPA 6010	Manganese, Dissolved	1440	ug/L	10.0	07/12/19 23:40	
EPA 6010	Molybdenum, Dissolved	23.5	ug/L	10.0	07/12/19 23:40	
EPA 6010	Potassium, Dissolved	30100	ug/L	1000	07/12/19 23:40	
EPA 6010	Sodium, Dissolved	58500	ug/L	1000	07/12/19 23:40	
EPA 6020	Arsenic	104	ug/L	1.0	07/10/19 20:29	
EPA 6020	Beryllium	0.43	ug/L	0.40	07/11/19 16:21	
EPA 6020	Cobalt	2.6	ug/L	1.0	07/10/19 20:29	
EPA 6020	Selenium	1.0	ug/L	1.0	07/10/19 20:29	
EPA 6020	Arsenic, Dissolved	94.7	ug/L	1.0	07/12/19 07:33	
EPA 6020	Cobalt, Dissolved	3.0	ug/L	1.0	07/15/19 08:35	
EPA 903.1	Radium-226	1.11 ± 0.628 (0.738) C:NA T:86%	pCi/L		07/22/19 15:08	
EPA 904.0	Radium-228	0.270 ± 0.333 (0.705) C:81% T:83%	pCi/L		07/17/19 15:55	
Total Radium Calculation	Total Radium	1.38 ± 0.961 (1.44)	pCi/L		07/24/19 10:51	
SM 2320B	Alkalinity, Total as CaCO3	808	mg/L	2.0	07/10/19 17:45	
SM 2320B	Alkalinity,Bicarbonate (CaCO3)	808	mg/L	2.0	07/10/19 17:45	
SM 2540C	Total Dissolved Solids	2720	mg/L	20.0	07/09/19 08:09	
SM 5310C	Total Organic Carbon	9.9	mg/L	1.0	07/12/19 18:49	
SM 5310C	Dissolved Organic Carbon	9.2	mg/L	1.0	07/12/19 14:36	
50229707004	**TP-2**					
EPA 9056	Chloride	96.8	mg/L	2.5	07/08/19 18:56	
EPA 9056	Fluoride	0.21	mg/L	0.10	07/08/19 18:38	
EPA 9056	Sulfate	960	mg/L	25.0	07/09/19 08:43	
EPA 6010	Barium	457	ug/L	10.0	07/11/19 11:11	
EPA 6010	Cadmium	3.6	ug/L	2.0	07/11/19 11:11	
EPA 6010	Calcium	406000	ug/L	5000	07/11/19 11:27	
EPA 6010	Chromium	76.6	ug/L	10.0	07/11/19 11:11	
EPA 6010	Iron	77200	ug/L	100	07/11/19 11:11	
EPA 6010	Lead	53.4	ug/L	10.0	07/11/19 11:11	
EPA 6010	Lithium	33.3	ug/L	20.0	07/11/19 11:11	
EPA 6010	Magnesium	103000	ug/L	1000	07/11/19 11:11	
EPA 6010	Manganese	19400	ug/L	10.0	07/11/19 11:11	
EPA 6010	Molybdenum	25.6	ug/L	10.0	07/11/19 11:11	

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

SUMMARY OF DETECTION

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
50229707004	**TP-2**					
EPA 6010	Potassium	14300	ug/L	1000	07/11/19 11:11	
EPA 6010	Sodium	58200	ug/L	1000	07/11/19 11:11	
EPA 6010	Barium, Dissolved	88.8	ug/L	50.0	07/12/19 23:42	
EPA 6010	Calcium, Dissolved	362000	ug/L	3000	07/13/19 00:32	
EPA 6010	Iron, Dissolved	844	ug/L	100	07/12/19 23:42	
EPA 6010	Magnesium, Dissolved	85200	ug/L	1000	07/12/19 23:42	
EPA 6010	Manganese, Dissolved	17900	ug/L	10.0	07/12/19 23:42	
EPA 6010	Molybdenum, Dissolved	17.0	ug/L	10.0	07/12/19 23:42	
EPA 6010	Potassium, Dissolved	11100	ug/L	1000	07/12/19 23:42	
EPA 6010	Sodium, Dissolved	72100	ug/L	1000	07/12/19 23:42	
EPA 6020	Arsenic	61.3	ug/L	5.0	07/11/19 16:57	
EPA 6020	Beryllium	4.6	ug/L	1.0	07/11/19 16:57	
EPA 6020	Cobalt	69.2	ug/L	5.0	07/11/19 16:57	
EPA 6020	Thallium	1.6	ug/L	1.0	07/10/19 20:49	
EPA 6020	Arsenic, Dissolved	2.5	ug/L	1.0	07/12/19 07:38	
EPA 6020	Cobalt, Dissolved	8.5	ug/L	1.0	07/15/19 08:40	
EPA 903.1	Radium-226	0.807 ± 0.488 (0.535) C:NA T:84%	pCi/L		07/22/19 15:08	
EPA 904.0	Radium-228	1.01 ± 0.429 (0.665) C:82% T:77%	pCi/L		07/17/19 15:55	
Total Radium Calculation	Total Radium	1.82 ± 0.917 (1.20)	pCi/L		07/24/19 10:51	
SM 2320B	Alkalinity, Total as CaCO3	356	mg/L	2.0	07/10/19 17:45	
SM 2320B	Alkalinity,Bicarbonate (CaCO3)	356	mg/L	2.0	07/10/19 17:45	
SM 2540C	Total Dissolved Solids	2010	mg/L	66.7	07/09/19 08:10	
SM 5310C	Total Organic Carbon	4.7	mg/L	1.0	07/12/19 19:09	
SM 5310C	Dissolved Organic Carbon	5.6	mg/L	1.0	07/12/19 14:57	
50229707005	**TP-3**					
EPA 9056	Chloride	22.6	mg/L	2.5	07/08/19 19:33	
EPA 9056	Sulfate	546	mg/L	25.0	07/09/19 09:01	
EPA 6010	Barium	76.8	ug/L	10.0	07/11/19 11:18	
EPA 6010	Calcium	376000	ug/L	5000	07/11/19 11:29	
EPA 6010	Iron	4990	ug/L	100	07/11/19 11:18	
EPA 6010	Magnesium	84100	ug/L	1000	07/11/19 11:18	
EPA 6010	Manganese	17100	ug/L	10.0	07/11/19 11:18	
EPA 6010	Potassium	5830	ug/L	1000	07/11/19 11:18	
EPA 6010	Sodium	25100	ug/L	1000	07/11/19 11:18	
EPA 6010	Barium, Dissolved	56.8	ug/L	50.0	07/12/19 23:45	
EPA 6010	Calcium, Dissolved	364000	ug/L	3000	07/13/19 00:34	
EPA 6010	Iron, Dissolved	1220	ug/L	100	07/12/19 23:45	
EPA 6010	Magnesium, Dissolved	83900	ug/L	1000	07/12/19 23:45	
EPA 6010	Manganese, Dissolved	17000	ug/L	10.0	07/12/19 23:45	
EPA 6010	Potassium, Dissolved	5660	ug/L	1000	07/12/19 23:45	

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

SUMMARY OF DETECTION

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
50229707005	**TP-3**					
EPA 6010	Sodium, Dissolved	26800	ug/L	1000	07/12/19 23:45	
EPA 6020	Arsenic	4.5	ug/L	1.0	07/10/19 20:41	
EPA 6020	Beryllium	0.21	ug/L	0.20	07/11/19 16:33	
EPA 6020	Cobalt	13.7	ug/L	1.0	07/11/19 16:33	
EPA 6020	Arsenic, Dissolved	1.4	ug/L	1.0	07/12/19 07:42	
EPA 6020	Cobalt, Dissolved	13.8	ug/L	1.0	07/15/19 08:44	
EPA 903.1	Radium-226	0.718 ± 0.669 (1.03) C:NA T:88%	pCi/L		07/22/19 15:08	
EPA 904.0	Radium-228	0.741 ± 0.395 (0.695) C:82% T:77%	pCi/L		07/17/19 15:55	
Total Radium Calculation	Total Radium	1.46 ± 1.06 (1.73)	pCi/L		07/24/19 10:51	
SM 2320B	Alkalinity, Total as CaCO3	460	mg/L	2.0	07/10/19 17:45	
SM 2320B	Alkalinity,Bicarbonate (CaCO3)	460	mg/L	2.0	07/10/19 17:45	
SM 2540C	Total Dissolved Solids	1730	mg/L	10.0	07/09/19 08:09	
SM 5310C	Total Organic Carbon	3.3	mg/L	1.0	07/12/19 19:28	
SM 5310C	Dissolved Organic Carbon	3.0	mg/L	1.0	07/12/19 16:13	
50229707006	**MW-10**					
EPA 9056	Chloride	125	mg/L	25.0	07/09/19 09:19	
EPA 9056	Fluoride	0.39	mg/L	0.10	07/08/19 20:28	
EPA 9056	Sulfate	1700	mg/L	25.0	07/09/19 09:19	
EPA 6010	Barium	136	ug/L	10.0	07/11/19 11:20	
EPA 6010	Calcium	583000	ug/L	10000	07/11/19 11:32	
EPA 6010	Chromium	22.2	ug/L	10.0	07/11/19 11:20	
EPA 6010	Iron	57400	ug/L	100	07/11/19 11:20	
EPA 6010	Lead	22.3	ug/L	10.0	07/11/19 11:20	
EPA 6010	Lithium	35.3	ug/L	20.0	07/11/19 11:20	
EPA 6010	Magnesium	116000	ug/L	1000	07/11/19 11:20	
EPA 6010	Manganese	9140	ug/L	10.0	07/11/19 11:20	
EPA 6010	Molybdenum	25.5	ug/L	10.0	07/11/19 11:20	
EPA 6010	Potassium	23700	ug/L	1000	07/11/19 11:20	
EPA 6010	Sodium	105000	ug/L	1000	07/11/19 11:20	
EPA 6010	Barium, Dissolved	60.0	ug/L	50.0	07/12/19 23:47	
EPA 6010	Calcium, Dissolved	576000	ug/L	5000	07/13/19 00:37	
EPA 6010	Iron, Dissolved	45200	ug/L	100	07/12/19 23:47	
EPA 6010	Lithium, Dissolved	23.4	ug/L	20.0	07/12/19 23:47	
EPA 6010	Magnesium, Dissolved	117000	ug/L	1000	07/12/19 23:47	
EPA 6010	Manganese, Dissolved	8770	ug/L	10.0	07/12/19 23:47	
EPA 6010	Molybdenum, Dissolved	20.7	ug/L	10.0	07/12/19 23:47	
EPA 6010	Potassium, Dissolved	21400	ug/L	1000	07/12/19 23:47	
EPA 6010	Sodium, Dissolved	107000	ug/L	1000	07/12/19 23:47	
EPA 6020	Antimony	2.1	ug/L	1.0	07/10/19 20:45	
EPA 6020	Arsenic	135	ug/L	1.0	07/10/19 20:45	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

SUMMARY OF DETECTION

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
50229707006	**MW-10**					
EPA 6020	Beryllium	4.1	ug/L	0.40	07/11/19 16:41	
EPA 6020	Cobalt	12.5	ug/L	2.0	07/11/19 16:41	
EPA 6020	Selenium	1.6	ug/L	1.0	07/10/19 20:45	
EPA 6020	Thallium	1.9	ug/L	1.0	07/10/19 20:45	
EPA 6020	Arsenic, Dissolved	104	ug/L	1.0	07/12/19 07:47	
EPA 6020	Cobalt, Dissolved	7.0	ug/L	1.0	07/15/19 08:49	
EPA 903.1	Radium-226	2.87 ± 0.941 (0.671) C:NA T:82%	pCi/L		07/22/19 15:08	
EPA 904.0	Radium-228	0.931 ± 0.375 (0.552) C:83% T:85%	pCi/L		07/17/19 15:55	
Total Radium Calculation	Total Radium	3.80 ± 1.32 (1.22)	pCi/L		07/24/19 10:51	
SM 2320B	Alkalinity, Total as CaCO3	353	mg/L	2.0	07/10/19 17:45	
SM 2320B	Alkalinity,Bicarbonate (CaCO3)	353	mg/L	2.0	07/10/19 17:45	
SM 2540C	Total Dissolved Solids	2990	mg/L	20.0	07/09/19 08:10	
SM 5310C	Total Organic Carbon	4.3	mg/L	4.0	07/15/19 16:11	
SM 5310C	Dissolved Organic Carbon	5.0	mg/L	1.0	07/12/19 16:33	

Pace Analytical Services, LLC
7726 Moller Road
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ANALYTICAL RESULTS

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Sample: Dup-1 **Lab ID: 50229707001** Collected: 07/02/19 08:00 Received: 07/05/19 12:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**41.7**	mg/L	2.5	10		07/08/19 17:06	16887-00-6	
Fluoride	**0.47**	mg/L	0.10	1		07/08/19 16:48	16984-48-8	
Sulfate	**1220**	mg/L	25.0	100		07/09/19 08:06	14808-79-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Barium	**90.5**	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:04	7440-39-3	
Cadmium	ND	ug/L	2.0	1	07/10/19 06:08	07/11/19 11:04	7440-43-9	
Calcium	**668000**	ug/L	10000	10	07/10/19 06:08	07/11/19 11:23	7440-70-2	
Chromium	ND	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:04	7440-47-3	
Iron	**28800**	ug/L	100	1	07/10/19 06:08	07/11/19 11:04	7439-89-6	
Lead	ND	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:04	7439-92-1	
Lithium	ND	ug/L	20.0	1	07/10/19 06:08	07/11/19 11:04	7439-93-2	
Magnesium	**73100**	ug/L	1000	1	07/10/19 06:08	07/11/19 11:04	7439-95-4	
Manganese	**1520**	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:04	7439-96-5	
Molybdenum	**24.4**	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:04	7439-98-7	
Potassium	**31000**	ug/L	1000	1	07/10/19 06:08	07/11/19 11:04	7440-09-7	
Sodium	**58900**	ug/L	1000	1	07/10/19 06:08	07/11/19 11:04	7440-23-5	
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Barium, Dissolved	**67.2**	ug/L	50.0	1	07/12/19 06:07	07/12/19 23:38	7440-39-3	
Cadmium, Dissolved	ND	ug/L	1.0	1	07/12/19 06:07	07/12/19 23:38	7440-43-9	
Calcium, Dissolved	**627000**	ug/L	5000	5	07/12/19 06:07	07/13/19 00:28	7440-70-2	
Chromium, Dissolved	ND	ug/L	20.0	1	07/12/19 06:07	07/12/19 23:38	7440-47-3	
Iron, Dissolved	**22400**	ug/L	100	1	07/12/19 06:07	07/12/19 23:38	7439-89-6	
Lead, Dissolved	ND	ug/L	10.0	1	07/12/19 06:07	07/12/19 23:38	7439-92-1	
Lithium, Dissolved	ND	ug/L	20.0	1	07/12/19 06:07	07/12/19 23:38	7439-93-2	
Magnesium, Dissolved	**70100**	ug/L	1000	1	07/12/19 06:07	07/12/19 23:38	7439-95-4	
Manganese, Dissolved	**1510**	ug/L	10.0	1	07/12/19 06:07	07/12/19 23:38	7439-96-5	
Molybdenum, Dissolved	**22.5**	ug/L	10.0	1	07/12/19 06:07	07/12/19 23:38	7439-98-7	
Potassium, Dissolved	**28600**	ug/L	1000	1	07/12/19 06:07	07/12/19 23:38	7440-09-7	
Sodium, Dissolved	**55900**	ug/L	1000	1	07/12/19 06:07	07/12/19 23:38	7440-23-5	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 200.2							
Antimony	ND	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:21	7440-36-0	
Arsenic	**101**	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:21	7440-38-2	
Beryllium	**0.48**	ug/L	0.40	2	07/10/19 08:38	07/11/19 16:14	7440-41-7	
Cobalt	**2.5**	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:21	7440-48-4	
Selenium	ND	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:21	7782-49-2	
Thallium	ND	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:21	7440-28-0	
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 200.2							
Antimony, Dissolved	ND	ug/L	1.0	1	07/11/19 07:31	07/12/19 07:29	7440-36-0	
Arsenic, Dissolved	**101**	ug/L	1.0	1	07/11/19 07:31	07/12/19 07:29	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	07/11/19 07:31	07/12/19 07:29	7440-41-7	
Cobalt, Dissolved	**1.2**	ug/L	1.0	1	07/11/19 07:31	07/15/19 08:31	7440-48-4	
Selenium, Dissolved	ND	ug/L	2.0	1	07/11/19 07:31	07/12/19 07:29	7782-49-2	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Sample: Dup-1 **Lab ID: 50229707001** Collected: 07/02/19 08:00 Received: 07/05/19 12:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 200.2							
Thallium, Dissolved	ND	ug/L	1.0	1	07/11/19 07:31	07/15/19 08:31	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	2.0	1	07/11/19 21:36	07/12/19 10:17	7439-97-6	
7470 Mercury, Dissolved	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury, Dissolved	ND	ug/L	0.20	1	07/14/19 21:30	07/15/19 10:06	7439-97-6	
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	**811**	mg/L	2.0	1		07/10/19 17:45		
Alkalinity,Bicarbonate (CaCO3)	**811**	mg/L	2.0	1		07/10/19 17:45		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	2.0	1		07/10/19 17:45		
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**2730**	mg/L	20.0	1		07/09/19 08:09		
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**9.5**	mg/L	1.0	1		07/12/19 18:29	7440-44-0	
5310C Dissolved Organic Carbon	Analytical Method: SM 5310C							
Dissolved Organic Carbon	**9.0**	mg/L	1.0	1		07/12/19 14:17		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Sample: Equipment Blank -1 **Lab ID: 50229707002** Collected: 07/03/19 13:15 Received: 07/05/19 12:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Barium	ND	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:07	7440-39-3	
Cadmium	ND	ug/L	2.0	1	07/10/19 06:08	07/11/19 11:07	7440-43-9	
Calcium	ND	ug/L	1000	1	07/10/19 06:08	07/11/19 11:07	7440-70-2	
Chromium	ND	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:07	7440-47-3	
Iron	ND	ug/L	100	1	07/10/19 06:08	07/11/19 11:07	7439-89-6	
Lead	ND	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:07	7439-92-1	
Lithium	ND	ug/L	20.0	1	07/10/19 06:08	07/11/19 11:07	7439-93-2	
Magnesium	ND	ug/L	1000	1	07/10/19 06:08	07/11/19 11:07	7439-95-4	
Manganese	ND	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:07	7439-96-5	
Molybdenum	ND	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:07	7439-98-7	
Potassium	ND	ug/L	1000	1	07/10/19 06:08	07/11/19 11:07	7440-09-7	
Sodium	ND	ug/L	1000	1	07/10/19 06:08	07/11/19 11:07	7440-23-5	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 200.2							
Antimony	ND	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:25	7440-36-0	
Arsenic	ND	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:25	7440-38-2	
Beryllium	ND	ug/L	0.20	1	07/10/19 08:38	07/11/19 16:07	7440-41-7	
Cobalt	ND	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:25	7440-48-4	
Selenium	ND	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:25	7782-49-2	
Thallium	ND	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:25	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	2.0	1	07/11/19 21:36	07/12/19 10:20	7439-97-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Sample: TP-1 **Lab ID: 50229707003** Collected: 07/02/19 13:00 Received: 07/05/19 12:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**42.2**	mg/L	2.5	10		07/08/19 18:20	16887-00-6	
Fluoride	**0.47**	mg/L	0.10	1		07/08/19 18:01	16984-48-8	
Sulfate	**1240**	mg/L	25.0	100		07/09/19 08:24	14808-79-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Barium	**80.6**	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:09	7440-39-3	
Cadmium	ND	ug/L	2.0	1	07/10/19 06:08	07/11/19 11:09	7440-43-9	
Calcium	**641000**	ug/L	10000	10	07/10/19 06:08	07/11/19 11:25	7440-70-2	
Chromium	ND	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:09	7440-47-3	
Iron	**26600**	ug/L	100	1	07/10/19 06:08	07/11/19 11:09	7439-89-6	
Lead	ND	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:09	7439-92-1	
Lithium	ND	ug/L	20.0	1	07/10/19 06:08	07/11/19 11:09	7439-93-2	
Magnesium	**72200**	ug/L	1000	1	07/10/19 06:08	07/11/19 11:09	7439-95-4	
Manganese	**1500**	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:09	7439-96-5	
Molybdenum	**22.7**	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:09	7439-98-7	
Potassium	**30400**	ug/L	1000	1	07/10/19 06:08	07/11/19 11:09	7440-09-7	
Sodium	**58000**	ug/L	1000	1	07/10/19 06:08	07/11/19 11:09	7440-23-5	
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Barium, Dissolved	**67.5**	ug/L	50.0	1	07/12/19 06:07	07/12/19 23:40	7440-39-3	
Cadmium, Dissolved	ND	ug/L	1.0	1	07/12/19 06:07	07/12/19 23:40	7440-43-9	
Calcium, Dissolved	**635000**	ug/L	5000	5	07/12/19 06:07	07/13/19 00:30	7440-70-2	
Chromium, Dissolved	ND	ug/L	20.0	1	07/12/19 06:07	07/12/19 23:40	7440-47-3	
Iron, Dissolved	**23200**	ug/L	100	1	07/12/19 06:07	07/12/19 23:40	7439-89-6	
Lead, Dissolved	ND	ug/L	10.0	1	07/12/19 06:07	07/12/19 23:40	7439-92-1	
Lithium, Dissolved	ND	ug/L	20.0	1	07/12/19 06:07	07/12/19 23:40	7439-93-2	
Magnesium, Dissolved	**72100**	ug/L	1000	1	07/12/19 06:07	07/12/19 23:40	7439-95-4	
Manganese, Dissolved	**1440**	ug/L	10.0	1	07/12/19 06:07	07/12/19 23:40	7439-96-5	
Molybdenum, Dissolved	**23.5**	ug/L	10.0	1	07/12/19 06:07	07/12/19 23:40	7439-98-7	
Potassium, Dissolved	**30100**	ug/L	1000	1	07/12/19 06:07	07/12/19 23:40	7440-09-7	
Sodium, Dissolved	**58500**	ug/L	1000	1	07/12/19 06:07	07/12/19 23:40	7440-23-5	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 200.2							
Antimony	ND	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:29	7440-36-0	
Arsenic	**104**	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:29	7440-38-2	
Beryllium	**0.43**	ug/L	0.40	2	07/10/19 08:38	07/11/19 16:21	7440-41-7	
Cobalt	**2.6**	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:29	7440-48-4	
Selenium	**1.0**	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:29	7782-49-2	
Thallium	ND	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:29	7440-28-0	
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 200.2							
Antimony, Dissolved	ND	ug/L	1.0	1	07/11/19 07:31	07/12/19 07:33	7440-36-0	
Arsenic, Dissolved	**94.7**	ug/L	1.0	1	07/11/19 07:31	07/12/19 07:33	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	07/11/19 07:31	07/12/19 07:33	7440-41-7	
Cobalt, Dissolved	**3.0**	ug/L	1.0	1	07/11/19 07:31	07/15/19 08:35	7440-48-4	
Selenium, Dissolved	ND	ug/L	2.0	1	07/11/19 07:31	07/12/19 07:33	7782-49-2	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Sample: TP-1 **Lab ID: 50229707003** Collected: 07/02/19 13:00 Received: 07/05/19 12:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 200.2							
Thallium, Dissolved	ND	ug/L	1.0	1	07/11/19 07:31	07/15/19 08:35	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	2.0	1	07/11/19 21:36	07/12/19 10:22	7439-97-6	
7470 Mercury, Dissolved	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury, Dissolved	ND	ug/L	0.20	1	07/14/19 21:30	07/15/19 10:08	7439-97-6	
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	**808**	mg/L	2.0	1		07/10/19 17:45		
Alkalinity,Bicarbonate (CaCO3)	**808**	mg/L	2.0	1		07/10/19 17:45		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	2.0	1		07/10/19 17:45		
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**2720**	mg/L	20.0	1		07/09/19 08:09		
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**9.9**	mg/L	1.0	1		07/12/19 18:49	7440-44-0	
5310C Dissolved Organic Carbon	Analytical Method: SM 5310C							
Dissolved Organic Carbon	**9.2**	mg/L	1.0	1		07/12/19 14:36		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Sample: TP-2 **Lab ID: 50229707004** Collected: 07/03/19 11:30 Received: 07/05/19 12:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**96.8**	mg/L	2.5	10		07/08/19 18:56	16887-00-6	
Fluoride	**0.21**	mg/L	0.10	1		07/08/19 18:38	16984-48-8	
Sulfate	**960**	mg/L	25.0	100		07/09/19 08:43	14808-79-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Barium	**457**	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:11	7440-39-3	
Cadmium	**3.6**	ug/L	2.0	1	07/10/19 06:08	07/11/19 11:11	7440-43-9	
Calcium	**406000**	ug/L	5000	5	07/10/19 06:08	07/11/19 11:27	7440-70-2	
Chromium	**76.6**	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:11	7440-47-3	
Iron	**77200**	ug/L	100	1	07/10/19 06:08	07/11/19 11:11	7439-89-6	
Lead	**53.4**	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:11	7439-92-1	
Lithium	**33.3**	ug/L	20.0	1	07/10/19 06:08	07/11/19 11:11	7439-93-2	
Magnesium	**103000**	ug/L	1000	1	07/10/19 06:08	07/11/19 11:11	7439-95-4	
Manganese	**19400**	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:11	7439-96-5	
Molybdenum	**25.6**	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:11	7439-98-7	
Potassium	**14300**	ug/L	1000	1	07/10/19 06:08	07/11/19 11:11	7440-09-7	
Sodium	**58200**	ug/L	1000	1	07/10/19 06:08	07/11/19 11:11	7440-23-5	
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Barium, Dissolved	**88.8**	ug/L	50.0	1	07/12/19 06:07	07/12/19 23:42	7440-39-3	
Cadmium, Dissolved	ND	ug/L	1.0	1	07/12/19 06:07	07/12/19 23:42	7440-43-9	
Calcium, Dissolved	**362000**	ug/L	3000	3	07/12/19 06:07	07/13/19 00:32	7440-70-2	
Chromium, Dissolved	ND	ug/L	20.0	1	07/12/19 06:07	07/12/19 23:42	7440-47-3	
Iron, Dissolved	**844**	ug/L	100	1	07/12/19 06:07	07/12/19 23:42	7439-89-6	
Lead, Dissolved	ND	ug/L	10.0	1	07/12/19 06:07	07/12/19 23:42	7439-92-1	
Lithium, Dissolved	ND	ug/L	20.0	1	07/12/19 06:07	07/12/19 23:42	7439-93-2	
Magnesium, Dissolved	**85200**	ug/L	1000	1	07/12/19 06:07	07/12/19 23:42	7439-95-4	
Manganese, Dissolved	**17900**	ug/L	10.0	1	07/12/19 06:07	07/12/19 23:42	7439-96-5	
Molybdenum, Dissolved	**17.0**	ug/L	10.0	1	07/12/19 06:07	07/12/19 23:42	7439-98-7	
Potassium, Dissolved	**11100**	ug/L	1000	1	07/12/19 06:07	07/12/19 23:42	7440-09-7	
Sodium, Dissolved	**72100**	ug/L	1000	1	07/12/19 06:07	07/12/19 23:42	7440-23-5	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 200.2							
Antimony	ND	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:49	7440-36-0	
Arsenic	**61.3**	ug/L	5.0	5	07/10/19 08:38	07/11/19 16:57	7440-38-2	
Beryllium	**4.6**	ug/L	1.0	5	07/10/19 08:38	07/11/19 16:57	7440-41-7	
Cobalt	**69.2**	ug/L	5.0	5	07/10/19 08:38	07/11/19 16:57	7440-48-4	
Selenium	ND	ug/L	5.0	5	07/10/19 08:38	07/11/19 16:57	7782-49-2	D3
Thallium	**1.6**	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:49	7440-28-0	
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 200.2							
Antimony, Dissolved	ND	ug/L	1.0	1	07/11/19 07:31	07/12/19 07:38	7440-36-0	
Arsenic, Dissolved	**2.5**	ug/L	1.0	1	07/11/19 07:31	07/12/19 07:38	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	07/11/19 07:31	07/12/19 07:38	7440-41-7	
Cobalt, Dissolved	**8.5**	ug/L	1.0	1	07/11/19 07:31	07/15/19 08:40	7440-48-4	
Selenium, Dissolved	ND	ug/L	2.0	1	07/11/19 07:31	07/12/19 07:38	7782-49-2	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Sample: TP-2 **Lab ID: 50229707004** Collected: 07/03/19 11:30 Received: 07/05/19 12:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 200.2							
Thallium, Dissolved	ND	ug/L	1.0	1	07/11/19 07:31	07/15/19 08:40	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	2.0	1	07/11/19 21:36	07/12/19 10:30	7439-97-6	
7470 Mercury, Dissolved	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury, Dissolved	ND	ug/L	0.20	1	07/14/19 21:30	07/15/19 10:23	7439-97-6	
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	**356**	mg/L	2.0	1		07/10/19 17:45		
Alkalinity,Bicarbonate (CaCO3)	**356**	mg/L	2.0	1		07/10/19 17:45		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	2.0	1		07/10/19 17:45		
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**2010**	mg/L	66.7	1		07/09/19 08:10		
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**4.7**	mg/L	1.0	1		07/12/19 19:09	7440-44-0	
5310C Dissolved Organic Carbon	Analytical Method: SM 5310C							
Dissolved Organic Carbon	**5.6**	mg/L	1.0	1		07/12/19 14:57		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Sample: TP-3 **Lab ID: 50229707005** Collected: 07/02/19 14:30 Received: 07/05/19 12:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**22.6**	mg/L	2.5	10		07/08/19 19:33	16887-00-6	
Fluoride	ND	mg/L	0.10	1		07/08/19 19:14	16984-48-8	
Sulfate	**546**	mg/L	25.0	100		07/09/19 09:01	14808-79-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Barium	**76.8**	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:18	7440-39-3	
Cadmium	ND	ug/L	2.0	1	07/10/19 06:08	07/11/19 11:18	7440-43-9	
Calcium	**376000**	ug/L	5000	5	07/10/19 06:08	07/11/19 11:29	7440-70-2	
Chromium	ND	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:18	7440-47-3	
Iron	**4990**	ug/L	100	1	07/10/19 06:08	07/11/19 11:18	7439-89-6	
Lead	ND	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:18	7439-92-1	
Lithium	ND	ug/L	20.0	1	07/10/19 06:08	07/11/19 11:18	7439-93-2	
Magnesium	**84100**	ug/L	1000	1	07/10/19 06:08	07/11/19 11:18	7439-95-4	
Manganese	**17100**	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:18	7439-96-5	
Molybdenum	ND	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:18	7439-98-7	
Potassium	**5830**	ug/L	1000	1	07/10/19 06:08	07/11/19 11:18	7440-09-7	
Sodium	**25100**	ug/L	1000	1	07/10/19 06:08	07/11/19 11:18	7440-23-5	
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Barium, Dissolved	**56.8**	ug/L	50.0	1	07/12/19 06:07	07/12/19 23:45	7440-39-3	
Cadmium, Dissolved	ND	ug/L	1.0	1	07/12/19 06:07	07/12/19 23:45	7440-43-9	
Calcium, Dissolved	**364000**	ug/L	3000	3	07/12/19 06:07	07/13/19 00:34	7440-70-2	
Chromium, Dissolved	ND	ug/L	20.0	1	07/12/19 06:07	07/12/19 23:45	7440-47-3	
Iron, Dissolved	**1220**	ug/L	100	1	07/12/19 06:07	07/12/19 23:45	7439-89-6	
Lead, Dissolved	ND	ug/L	10.0	1	07/12/19 06:07	07/12/19 23:45	7439-92-1	
Lithium, Dissolved	ND	ug/L	20.0	1	07/12/19 06:07	07/12/19 23:45	7439-93-2	
Magnesium, Dissolved	**83900**	ug/L	1000	1	07/12/19 06:07	07/12/19 23:45	7439-95-4	
Manganese, Dissolved	**17000**	ug/L	10.0	1	07/12/19 06:07	07/12/19 23:45	7439-96-5	
Molybdenum, Dissolved	ND	ug/L	10.0	1	07/12/19 06:07	07/12/19 23:45	7439-98-7	
Potassium, Dissolved	**5660**	ug/L	1000	1	07/12/19 06:07	07/12/19 23:45	7440-09-7	
Sodium, Dissolved	**26800**	ug/L	1000	1	07/12/19 06:07	07/12/19 23:45	7440-23-5	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 200.2							
Antimony	ND	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:41	7440-36-0	
Arsenic	**4.5**	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:41	7440-38-2	
Beryllium	**0.21**	ug/L	0.20	1	07/10/19 08:38	07/11/19 16:33	7440-41-7	
Cobalt	**13.7**	ug/L	1.0	1	07/10/19 08:38	07/11/19 16:33	7440-48-4	
Selenium	ND	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:41	7782-49-2	
Thallium	ND	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:41	7440-28-0	
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 200.2							
Antimony, Dissolved	ND	ug/L	1.0	1	07/11/19 07:31	07/12/19 07:42	7440-36-0	
Arsenic, Dissolved	**1.4**	ug/L	1.0	1	07/11/19 07:31	07/12/19 07:42	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	07/11/19 07:31	07/12/19 07:42	7440-41-7	
Cobalt, Dissolved	**13.8**	ug/L	1.0	1	07/11/19 07:31	07/15/19 08:44	7440-48-4	
Selenium, Dissolved	ND	ug/L	2.0	1	07/11/19 07:31	07/12/19 07:42	7782-49-2	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Sample: TP-3 **Lab ID: 50229707005** Collected: 07/02/19 14:30 Received: 07/05/19 12:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 200.2							
Thallium, Dissolved	ND	ug/L	1.0	1	07/11/19 07:31	07/15/19 08:44	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	2.0	1	07/11/19 21:36	07/12/19 10:32	7439-97-6	
7470 Mercury, Dissolved	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury, Dissolved	ND	ug/L	0.20	1	07/14/19 21:30	07/15/19 10:25	7439-97-6	
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	**460**	mg/L	2.0	1		07/10/19 17:45		
Alkalinity,Bicarbonate (CaCO3)	**460**	mg/L	2.0	1		07/10/19 17:45		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	2.0	1		07/10/19 17:45		
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**1730**	mg/L	10.0	1		07/09/19 08:09		
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**3.3**	mg/L	1.0	1		07/12/19 19:28	7440-44-0	
5310C Dissolved Organic Carbon	Analytical Method: SM 5310C							
Dissolved Organic Carbon	**3.0**	mg/L	1.0	1		07/12/19 16:13		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Sample: MW-10 **Lab ID: 50229707006** Collected: 07/03/19 12:45 Received: 07/05/19 12:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**125**	mg/L	25.0	100		07/09/19 09:19	16887-00-6	
Fluoride	**0.39**	mg/L	0.10	1		07/08/19 20:28	16984-48-8	
Sulfate	**1700**	mg/L	25.0	100		07/09/19 09:19	14808-79-8	
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Barium	**136**	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:20	7440-39-3	
Cadmium	ND	ug/L	2.0	1	07/10/19 06:08	07/11/19 11:20	7440-43-9	
Calcium	**583000**	ug/L	10000	10	07/10/19 06:08	07/11/19 11:32	7440-70-2	
Chromium	**22.2**	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:20	7440-47-3	
Iron	**57400**	ug/L	100	1	07/10/19 06:08	07/11/19 11:20	7439-89-6	
Lead	**22.3**	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:20	7439-92-1	
Lithium	**35.3**	ug/L	20.0	1	07/10/19 06:08	07/11/19 11:20	7439-93-2	
Magnesium	**116000**	ug/L	1000	1	07/10/19 06:08	07/11/19 11:20	7439-95-4	
Manganese	**9140**	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:20	7439-96-5	
Molybdenum	**25.5**	ug/L	10.0	1	07/10/19 06:08	07/11/19 11:20	7439-98-7	
Potassium	**23700**	ug/L	1000	1	07/10/19 06:08	07/11/19 11:20	7440-09-7	
Sodium	**105000**	ug/L	1000	1	07/10/19 06:08	07/11/19 11:20	7440-23-5	
6010 MET ICP, Dissolved	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Barium, Dissolved	**60.0**	ug/L	50.0	1	07/12/19 06:07	07/12/19 23:47	7440-39-3	
Cadmium, Dissolved	ND	ug/L	1.0	1	07/12/19 06:07	07/12/19 23:47	7440-43-9	
Calcium, Dissolved	**576000**	ug/L	5000	5	07/12/19 06:07	07/13/19 00:37	7440-70-2	
Chromium, Dissolved	ND	ug/L	20.0	1	07/12/19 06:07	07/12/19 23:47	7440-47-3	
Iron, Dissolved	**45200**	ug/L	100	1	07/12/19 06:07	07/12/19 23:47	7439-89-6	
Lead, Dissolved	ND	ug/L	10.0	1	07/12/19 06:07	07/12/19 23:47	7439-92-1	
Lithium, Dissolved	**23.4**	ug/L	20.0	1	07/12/19 06:07	07/12/19 23:47	7439-93-2	
Magnesium, Dissolved	**117000**	ug/L	1000	1	07/12/19 06:07	07/12/19 23:47	7439-95-4	
Manganese, Dissolved	**8770**	ug/L	10.0	1	07/12/19 06:07	07/12/19 23:47	7439-96-5	
Molybdenum, Dissolved	**20.7**	ug/L	10.0	1	07/12/19 06:07	07/12/19 23:47	7439-98-7	
Potassium, Dissolved	**21400**	ug/L	1000	1	07/12/19 06:07	07/12/19 23:47	7440-09-7	
Sodium, Dissolved	**107000**	ug/L	1000	1	07/12/19 06:07	07/12/19 23:47	7440-23-5	
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 200.2							
Antimony	**2.1**	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:45	7440-36-0	
Arsenic	**135**	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:45	7440-38-2	
Beryllium	**4.1**	ug/L	0.40	2	07/10/19 08:38	07/11/19 16:41	7440-41-7	
Cobalt	**12.5**	ug/L	2.0	2	07/10/19 08:38	07/11/19 16:41	7440-48-4	
Selenium	**1.6**	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:45	7782-49-2	
Thallium	**1.9**	ug/L	1.0	1	07/10/19 08:38	07/10/19 20:45	7440-28-0	
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 200.2							
Antimony, Dissolved	ND	ug/L	1.0	1	07/11/19 07:31	07/12/19 07:47	7440-36-0	
Arsenic, Dissolved	**104**	ug/L	1.0	1	07/11/19 07:31	07/12/19 07:47	7440-38-2	
Beryllium, Dissolved	ND	ug/L	0.20	1	07/11/19 07:31	07/12/19 07:47	7440-41-7	
Cobalt, Dissolved	**7.0**	ug/L	1.0	1	07/11/19 07:31	07/15/19 08:49	7440-48-4	
Selenium, Dissolved	ND	ug/L	2.0	1	07/11/19 07:31	07/12/19 07:47	7782-49-2	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Sample: MW-10 **Lab ID: 50229707006** Collected: 07/03/19 12:45 Received: 07/05/19 12:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS, Dissolved	Analytical Method: EPA 6020 Preparation Method: EPA 200.2							
Thallium, Dissolved	ND	ug/L	1.0	1	07/11/19 07:31	07/15/19 08:49	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	2.0	1	07/11/19 21:36	07/12/19 10:39	7439-97-6	
7470 Mercury, Dissolved	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury, Dissolved	ND	ug/L	0.20	1	07/14/19 21:30	07/15/19 10:27	7439-97-6	
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	**353**	mg/L	2.0	1		07/10/19 17:45		
Alkalinity,Bicarbonate (CaCO3)	**353**	mg/L	2.0	1		07/10/19 17:45		
Alkalinity,Carbonate (CaCO3)	ND	mg/L	2.0	1		07/10/19 17:45		
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
Total Dissolved Solids	**2990**	mg/L	20.0	1		07/09/19 08:10		
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	**4.3**	mg/L	4.0	4		07/15/19 16:11	7440-44-0	
5310C Dissolved Organic Carbon	Analytical Method: SM 5310C							
Dissolved Organic Carbon	**5.0**	mg/L	1.0	1		07/12/19 16:33		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

QC Batch: 510075 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 50229707001, 50229707003, 50229707004, 50229707005, 50229707006

METHOD BLANK: 2353823 Matrix: Water
Associated Lab Samples: 50229707001, 50229707003, 50229707004, 50229707005, 50229707006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	0.25	07/08/19 12:50	
Fluoride	mg/L	ND	0.10	07/08/19 12:50	
Sulfate	mg/L	ND	0.25	07/08/19 12:50	

LABORATORY CONTROL SAMPLE: 2353824

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	1.2	1.1	89	80-120	
Fluoride	mg/L	0.5	0.46	92	80-120	
Sulfate	mg/L	2.5	2.3	93	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2353827 2353828

Parameter	Units	50229589002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	ND	1.2	1.2	1.2	1.2	92	92	80-120	0	15	
Fluoride	mg/L	ND	0.5	0.5	0.48	0.48	95	96	80-120	1	15	
Sulfate	mg/L	ND	2.5	2.5	2.4	2.4	97	98	80-120	1	15	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

QC Batch: 510900 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 50229707001, 50229707002, 50229707003, 50229707004, 50229707005, 50229707006

METHOD BLANK: 2357243 Matrix: Water
Associated Lab Samples: 50229707001, 50229707002, 50229707003, 50229707004, 50229707005, 50229707006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	2.0	07/12/19 10:12	

LABORATORY CONTROL SAMPLE: 2357244

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.1	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2357245 2357246

Parameter	Units	50229707005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	4.5	4.0	90	81	75-125	11	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

QC Batch: 511058 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury Dissolved
Associated Lab Samples: 50229707001, 50229707003, 50229707004, 50229707005, 50229707006

METHOD BLANK: 2358005 Matrix: Water
Associated Lab Samples: 50229707001, 50229707003, 50229707004, 50229707005, 50229707006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury, Dissolved	ug/L	ND	0.20	07/15/19 09:26	

LABORATORY CONTROL SAMPLE: 2358006

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury, Dissolved	ug/L	5	5.2	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2358007 2358008

Parameter	Units	50229707003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury, Dissolved	ug/L	ND	5	5	4.8	4.6	95	92	75-125	3	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

QC Batch: 509967 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 50229707001, 50229707002, 50229707003, 50229707004, 50229707005, 50229707006

METHOD BLANK: 2353365 Matrix: Water
Associated Lab Samples: 50229707001, 50229707002, 50229707003, 50229707004, 50229707005, 50229707006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium	ug/L	ND	10.0	07/11/19 10:11	
Cadmium	ug/L	ND	2.0	07/11/19 10:11	
Calcium	ug/L	ND	1000	07/11/19 10:11	
Chromium	ug/L	ND	10.0	07/11/19 10:11	
Iron	ug/L	ND	100	07/11/19 10:11	
Lead	ug/L	ND	10.0	07/11/19 10:11	
Lithium	ug/L	ND	20.0	07/11/19 10:11	
Magnesium	ug/L	ND	1000	07/11/19 10:11	
Manganese	ug/L	ND	10.0	07/11/19 10:11	
Molybdenum	ug/L	ND	10.0	07/11/19 10:11	
Potassium	ug/L	ND	1000	07/11/19 10:11	
Sodium	ug/L	ND	1000	07/11/19 10:11	

LABORATORY CONTROL SAMPLE: 2353366

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium	ug/L	1000	1010	101	80-120	
Cadmium	ug/L	1000	1030	103	80-120	
Calcium	ug/L	10000	10400	104	80-120	
Chromium	ug/L	1000	1020	102	80-120	
Iron	ug/L	10000	10300	103	80-120	
Lead	ug/L	1000	976	98	80-120	
Lithium	ug/L	1000	1010	101	80-120	
Magnesium	ug/L	10000	10100	101	80-120	
Manganese	ug/L	1000	1000	100	80-120	
Molybdenum	ug/L	1000	954	95	80-120	
Potassium	ug/L	10000	10000	100	80-120	
Sodium	ug/L	10000	10100	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2353367 2353368

Parameter	Units	50229676005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium	ug/L	311	1000	1000	1310	1300	100	99	75-125	1	20	
Cadmium	ug/L	ND	1000	1000	1010	990	101	99	75-125	2	20	
Calcium	ug/L	119000	10000	10000	129000	126000	95	67	75-125	2	20	P6
Chromium	ug/L	ND	1000	1000	988	973	98	97	75-125	2	20	
Iron	ug/L	15000	10000	10000	24900	24200	99	93	75-125	3	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2353367 2353368

Parameter	Units	50229676005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead	ug/L	ND	1000	1000	923	899	92	89	75-125	3	20	
Lithium	ug/L	ND	1000	1000	1010	1000	101	100	75-125	1	20	
Magnesium	ug/L	36600	10000	10000	46400	45200	98	86	75-125	3	20	
Manganese	ug/L	483	1000	1000	1460	1430	98	95	75-125	2	20	
Molybdenum	ug/L	15.4	1000	1000	946	934	93	92	75-125	1	20	
Potassium	ug/L	1800	10000	10000	12000	11800	102	100	75-125	2	20	
Sodium	ug/L	9500	10000	10000	19500	19300	100	98	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

QC Batch: 510681 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET Dissolved
Associated Lab Samples: 50229707001, 50229707003, 50229707004, 50229707005, 50229707006

METHOD BLANK: 2356214 Matrix: Water
Associated Lab Samples: 50229707001, 50229707003, 50229707004, 50229707005, 50229707006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Barium, Dissolved	ug/L	ND	50.0	07/12/19 23:34	
Cadmium, Dissolved	ug/L	ND	1.0	07/12/19 23:34	
Calcium, Dissolved	ug/L	ND	1000	07/12/19 23:34	
Chromium, Dissolved	ug/L	ND	20.0	07/12/19 23:34	
Iron, Dissolved	ug/L	ND	100	07/12/19 23:34	
Lead, Dissolved	ug/L	ND	10.0	07/12/19 23:34	
Lithium, Dissolved	ug/L	ND	20.0	07/12/19 23:34	
Magnesium, Dissolved	ug/L	ND	1000	07/12/19 23:34	
Manganese, Dissolved	ug/L	ND	10.0	07/12/19 23:34	
Molybdenum, Dissolved	ug/L	ND	10.0	07/12/19 23:34	
Potassium, Dissolved	ug/L	ND	1000	07/12/19 23:34	
Sodium, Dissolved	ug/L	ND	1000	07/12/19 23:34	

LABORATORY CONTROL SAMPLE: 2356215

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Barium, Dissolved	ug/L	1000	953	95	80-120	
Cadmium, Dissolved	ug/L	1000	960	96	80-120	
Calcium, Dissolved	ug/L	10000	9440	94	80-120	
Chromium, Dissolved	ug/L	1000	949	95	80-120	
Iron, Dissolved	ug/L	10000	9540	95	80-120	
Lead, Dissolved	ug/L	1000	906	91	80-120	
Lithium, Dissolved	ug/L	1000	956	96	80-120	
Magnesium, Dissolved	ug/L	10000	9370	94	80-120	
Manganese, Dissolved	ug/L	1000	937	94	80-120	
Molybdenum, Dissolved	ug/L	1000	898	90	80-120	
Potassium, Dissolved	ug/L	10000	9430	94	80-120	
Sodium, Dissolved	ug/L	10000	9600	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2356216 2356217

Parameter	Units	50229707006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Barium, Dissolved	ug/L	60.0	1000	1000	1070	1070	101	101	75-125	0	20	
Cadmium, Dissolved	ug/L	ND	1000	1000	1070	1080	107	108	75-125	1	20	
Calcium, Dissolved	ug/L	576000	10000	10000	562000	550000	-140	-260	75-125	2	20	P6
Chromium, Dissolved	ug/L	ND	1000	1000	1000	996	100	100	75-125	1	20	
Iron, Dissolved	ug/L	45200	10000	10000	54400	53400	92	81	75-125	2	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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(317)228-3100

QUALITY CONTROL DATA

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2356216 2356217

Parameter	Units	50229707006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Lead, Dissolved	ug/L	ND	1000	1000	874	885	87	88	75-125	1	20	
Lithium, Dissolved	ug/L	23.4	1000	1000	1080	1080	106	106	75-125	0	20	
Magnesium, Dissolved	ug/L	117000	10000	10000	126000	124000	89	64	75-125	2	20	P6
Manganese, Dissolved	ug/L	8770	1000	1000	9640	9430	86	66	75-125	2	20	P6
Molybdenum, Dissolved	ug/L	20.7	1000	1000	973	975	95	95	75-125	0	20	
Potassium, Dissolved	ug/L	21400	10000	10000	31900	31500	104	101	75-125	1	20	
Sodium, Dissolved	ug/L	107000	10000	10000	118000	117000	110	97	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

QC Batch: 510279 Analysis Method: EPA 6020
QC Batch Method: EPA 200.2 Analysis Description: 6020 MET
Associated Lab Samples: 50229707001, 50229707002, 50229707003, 50229707004, 50229707005, 50229707006

METHOD BLANK: 2354483 Matrix: Water
Associated Lab Samples: 50229707001, 50229707002, 50229707003, 50229707004, 50229707005, 50229707006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	07/10/19 18:12	
Arsenic	ug/L	ND	1.0	07/10/19 18:12	
Beryllium	ug/L	ND	0.20	07/10/19 18:12	
Cobalt	ug/L	ND	1.0	07/10/19 18:12	
Selenium	ug/L	ND	1.0	07/10/19 18:12	
Thallium	ug/L	ND	1.0	07/10/19 18:12	

LABORATORY CONTROL SAMPLE: 2354484

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	40	43.5	109	80-120	
Arsenic	ug/L	40	39.3	98	80-120	
Beryllium	ug/L	40	41.8	104	80-120	
Cobalt	ug/L	40	42.2	105	80-120	
Selenium	ug/L	40	39.7	99	80-120	
Thallium	ug/L	40	41.2	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2354485 2354486

Parameter	Units	50229774001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	40	40	39.9	40.6	99	100	75-125	2	20	
Arsenic	ug/L	9.4	40	40	50.0	49.5	101	100	75-125	1	20	
Beryllium	ug/L	ND	40	40	43.5	44.0	108	110	75-125	1	20	CC
Cobalt	ug/L	2.1	40	40	40.0	40.8	95	97	75-125	2	20	
Selenium	ug/L	ND	40	40	37.6	37.5	93	93	75-125	0	20	
Thallium	ug/L	ND	40	40	42.5	42.8	106	107	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

QC Batch: 510475 Analysis Method: EPA 6020
QC Batch Method: EPA 200.2 Analysis Description: 6020 MET Dissolved
Associated Lab Samples: 50229707001, 50229707003, 50229707004, 50229707005, 50229707006

METHOD BLANK: 2355349 Matrix: Water
Associated Lab Samples: 50229707001, 50229707003, 50229707004, 50229707005, 50229707006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony, Dissolved	ug/L	ND	1.0	07/12/19 07:20	
Arsenic, Dissolved	ug/L	ND	1.0	07/12/19 07:20	
Beryllium, Dissolved	ug/L	ND	0.20	07/12/19 07:20	
Cobalt, Dissolved	ug/L	ND	1.0	07/15/19 07:50	
Selenium, Dissolved	ug/L	ND	2.0	07/12/19 07:20	
Thallium, Dissolved	ug/L	ND	1.0	07/15/19 07:50	

LABORATORY CONTROL SAMPLE: 2355350

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony, Dissolved	ug/L	40	43.0	108	80-120	
Arsenic, Dissolved	ug/L	40	39.4	99	80-120	
Beryllium, Dissolved	ug/L	40	42.9	107	80-120	
Cobalt, Dissolved	ug/L	40	41.0	103	80-120	
Selenium, Dissolved	ug/L	40	41.6	104	80-120	
Thallium, Dissolved	ug/L	40	41.0	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2355351 2355352

Parameter	Units	50229774001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony, Dissolved	ug/L	ND	40	40	42.7	42.7	106	107	75-125	0	20	
Arsenic, Dissolved	ug/L	ND	40	40	38.7	38.8	94	94	75-125	0	20	
Beryllium, Dissolved	ug/L	ND	40	40	40.3	40.2	101	100	75-125	0	20	
Cobalt, Dissolved	ug/L	ND	40	40	38.9	38.9	97	97	75-125	0	20	
Selenium, Dissolved	ug/L	ND	40	40	38.4	38.8	96	97	75-125	1	20	
Thallium, Dissolved	ug/L	ND	40	40	41.5	41.8	104	105	75-125	1	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

QC Batch: 510548 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 50229707001, 50229707003, 50229707004, 50229707005, 50229707006

METHOD BLANK: 2355687 Matrix: Water
Associated Lab Samples: 50229707001, 50229707003, 50229707004, 50229707005, 50229707006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	ND	2.0	07/10/19 17:45	
Alkalinity,Bicarbonate (CaCO3)	mg/L	ND	2.0	07/10/19 17:45	
Alkalinity,Carbonate (CaCO3)	mg/L	ND	2.0	07/10/19 17:45	

LABORATORY CONTROL SAMPLE: 2355688

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	50	49.7	99	90-110	

SAMPLE DUPLICATE: 2355689

Parameter	Units	50229520004 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	266	270	1	20	
Alkalinity,Bicarbonate (CaCO3)	mg/L	256	260	1	20	
Alkalinity,Carbonate (CaCO3)	mg/L	10.0	9.8	2	20	

SAMPLE DUPLICATE: 2355690

Parameter	Units	50229707006 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	353	360	2	20	
Alkalinity,Bicarbonate (CaCO3)	mg/L	353	360	2	20	
Alkalinity,Carbonate (CaCO3)	mg/L	ND	ND		20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

QC Batch: 510029 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 50229707001, 50229707003, 50229707004, 50229707005, 50229707006

METHOD BLANK: 2353707 Matrix: Water
Associated Lab Samples: 50229707001, 50229707003, 50229707004, 50229707005, 50229707006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	10.0	07/09/19 08:08	

LABORATORY CONTROL SAMPLE: 2353708

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	300	309	103	80-120	

SAMPLE DUPLICATE: 2353709

Parameter	Units	50229625001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2400	2320	3	10	

SAMPLE DUPLICATE: 2353710

Parameter	Units	50229738001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	4130	4040	2	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
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

QUALITY CONTROL DATA

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

QC Batch: 511028 Analysis Method: SM 5310C
QC Batch Method: SM 5310C Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 50229707001, 50229707003, 50229707004, 50229707005

METHOD BLANK: 2357733 Matrix: Water
Associated Lab Samples: 50229707001, 50229707003, 50229707004, 50229707005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	07/12/19 16:59	

LABORATORY CONTROL SAMPLE: 2357734

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	10	10.3	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2357735 2357736

Parameter	Units	50229917003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	mg/L	3110 ug/L	10	10	13.3	13.8	102	107	80-120	4	20	

MATRIX SPIKE SAMPLE: 2357737

Parameter	Units	50229920003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	4.4	10	14.6	103	80-120	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

QUALITY CONTROL DATA

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

QC Batch: 511282 Analysis Method: SM 5310C
QC Batch Method: SM 5310C Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 50229707006

METHOD BLANK: 2358753 Matrix: Water
Associated Lab Samples: 50229707006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	07/15/19 15:32	

LABORATORY CONTROL SAMPLE: 2358754

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	10	10.4	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2358755 2358756

Parameter	Units	50229916009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	mg/L	71.0	100	100	175	174	104	103	80-120	0	20	

MATRIX SPIKE SAMPLE: 2358757

Parameter	Units	50229916006 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	67.0	100	170	103	80-120	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

QUALITY CONTROL DATA

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

QC Batch: 510840 Analysis Method: SM 5310C
QC Batch Method: SM 5310C Analysis Description: 5310C Dissolved Organic Carbon
Associated Lab Samples: 50229707001, 50229707003, 50229707004, 50229707005, 50229707006

METHOD BLANK: 2356973 Matrix: Water
Associated Lab Samples: 50229707001, 50229707003, 50229707004, 50229707005, 50229707006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Dissolved Organic Carbon	mg/L	ND	1.0	07/12/19 13:32	

LABORATORY CONTROL SAMPLE: 2356974

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Dissolved Organic Carbon	mg/L	10	10.4	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2356975 2356976

Parameter	Units	50229707004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Dissolved Organic Carbon	mg/L	5.6	10	10	15.8	15.6	102	100	80-120	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
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Sample: Dup-1 **Lab ID: 50229707001** Collected: 07/02/19 08:00 Received: 07/05/19 12:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.993 ± 0.708 (0.993) C:NA T:80%**	pCi/L	07/22/19 14:54	13982-63-3	
Radium-228	EPA 904.0	**0.549 ± 0.323 (0.582) C:85% T:84%**	pCi/L	07/17/19 15:54	15262-20-1	
Total Radium	Total Radium Calculation	**1.54 ± 1.03 (1.58)**	pCi/L	07/24/19 10:51	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Sample: TP-1 **Lab ID: 50229707003** Collected: 07/02/19 13:00 Received: 07/05/19 12:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**1.11 ± 0.628 (0.738) C:NA T:86%**	pCi/L	07/22/19 15:08	13982-63-3	
Radium-228	EPA 904.0	**0.270 ± 0.333 (0.705) C:81% T:83%**	pCi/L	07/17/19 15:55	15262-20-1	
Total Radium	Total Radium Calculation	**1.38 ± 0.961 (1.44)**	pCi/L	07/24/19 10:51	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Sample: TP-2 **Lab ID: 50229707004** Collected: 07/03/19 11:30 Received: 07/05/19 12:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.807 ± 0.488 (0.535) C:NA T:84%**	pCi/L	07/22/19 15:08	13982-63-3	
Radium-228	EPA 904.0	**1.01 ± 0.429 (0.665) C:82% T:77%**	pCi/L	07/17/19 15:55	15262-20-1	
Total Radium	Total Radium Calculation	**1.82 ± 0.917 (1.20)**	pCi/L	07/24/19 10:51	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Sample: TP-3 **Lab ID: 50229707005** Collected: 07/02/19 14:30 Received: 07/05/19 12:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**0.718 ± 0.669 (1.03) C:NA T:88%**	pCi/L	07/22/19 15:08	13982-63-3	
Radium-228	EPA 904.0	**0.741 ± 0.395 (0.695) C:82% T:77%**	pCi/L	07/17/19 15:55	15262-20-1	
Total Radium	Total Radium Calculation	**1.46 ± 1.06 (1.73)**	pCi/L	07/24/19 10:51	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Sample: MW-10 **Lab ID: 50229707006** Collected: 07/03/19 12:45 Received: 07/05/19 12:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Radium-226	EPA 903.1	**2.87 ± 0.941 (0.671) C:NA T:82%**	pCi/L	07/22/19 15:08	13982-63-3	
Radium-228	EPA 904.0	**0.931 ± 0.375 (0.552) C:83% T:85%**	pCi/L	07/17/19 15:55	15262-20-1	
Total Radium	Total Radium Calculation	**3.80 ± 1.32 (1.22)**	pCi/L	07/24/19 10:51	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

QUALITY CONTROL - RADIOCHEMISTRY

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

QC Batch: 351118 Analysis Method: EPA 903.1
QC Batch Method: EPA 903.1 Analysis Description: 903.1 Radium-226
Associated Lab Samples: 50229707001, 50229707003, 50229707004, 50229707005, 50229707006

METHOD BLANK: 1706342 Matrix: Water
Associated Lab Samples: 50229707001, 50229707003, 50229707004, 50229707005, 50229707006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.431 ± 0.369 (0.500) C:NA T:82%	pCi/L	07/22/19 14:54	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

QUALITY CONTROL - RADIOCHEMISTRY

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

QC Batch: 351117 Analysis Method: EPA 904.0
QC Batch Method: EPA 904.0 Analysis Description: 904.0 Radium 228
Associated Lab Samples: 50229707001, 50229707003, 50229707004, 50229707005, 50229707006

METHOD BLANK: 1706339 Matrix: Water
Associated Lab Samples: 50229707001, 50229707003, 50229707004, 50229707005, 50229707006

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.643 ± 0.375 (0.680) C:87% T:75%	pCi/L	07/17/19 15:54	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

QUALIFIERS

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

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 adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

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.

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

Act - Activity

Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)

(MDC) - Minimum Detectable Concentration

Trac - Tracer Recovery (%)

Carr - Carrier Recovery (%)

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

TNI - The NELAC Institute.

LABORATORIES

PASI-I	Pace Analytical Services - Indianapolis
PASI-PA	Pace Analytical Services - Greensburg

ANALYTE QUALIFIERS

CC	The continuing calibration for this compound is outside of method control limits. The result is estimated.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
P6	Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
50229707001	**Dup-1**	EPA 9056	510075		
50229707003	**TP-1**	EPA 9056	510075		
50229707004	**TP-2**	EPA 9056	510075		
50229707005	**TP-3**	EPA 9056	510075		
50229707006	**MW-10**	EPA 9056	510075		
50229707001	**Dup-1**	EPA 3010	509967	EPA 6010	510708
50229707002	**Equipment Blank -1**	EPA 3010	509967	EPA 6010	510708
50229707003	**TP-1**	EPA 3010	509967	EPA 6010	510708
50229707004	**TP-2**	EPA 3010	509967	EPA 6010	510708
50229707005	**TP-3**	EPA 3010	509967	EPA 6010	510708
50229707006	**MW-10**	EPA 3010	509967	EPA 6010	510708
50229707001	**Dup-1**	EPA 3010	510681	EPA 6010	511114
50229707003	**TP-1**	EPA 3010	510681	EPA 6010	511114
50229707004	**TP-2**	EPA 3010	510681	EPA 6010	511114
50229707005	**TP-3**	EPA 3010	510681	EPA 6010	511114
50229707006	**MW-10**	EPA 3010	510681	EPA 6010	511114
50229707001	**Dup-1**	EPA 200.2	510279	EPA 6020	510604
50229707002	**Equipment Blank -1**	EPA 200.2	510279	EPA 6020	510604
50229707003	**TP-1**	EPA 200.2	510279	EPA 6020	510604
50229707004	**TP-2**	EPA 200.2	510279	EPA 6020	510604
50229707005	**TP-3**	EPA 200.2	510279	EPA 6020	510604
50229707006	**MW-10**	EPA 200.2	510279	EPA 6020	510604
50229707001	**Dup-1**	EPA 200.2	510475	EPA 6020	510903
50229707003	**TP-1**	EPA 200.2	510475	EPA 6020	510903
50229707004	**TP-2**	EPA 200.2	510475	EPA 6020	510903
50229707005	**TP-3**	EPA 200.2	510475	EPA 6020	510903
50229707006	**MW-10**	EPA 200.2	510475	EPA 6020	510903
50229707001	**Dup-1**	EPA 7470	510900	EPA 7470	510949
50229707002	**Equipment Blank -1**	EPA 7470	510900	EPA 7470	510949
50229707003	**TP-1**	EPA 7470	510900	EPA 7470	510949
50229707004	**TP-2**	EPA 7470	510900	EPA 7470	510949
50229707005	**TP-3**	EPA 7470	510900	EPA 7470	510949
50229707006	**MW-10**	EPA 7470	510900	EPA 7470	510949
50229707001	**Dup-1**	EPA 7470	511058	EPA 7470	511200
50229707003	**TP-1**	EPA 7470	511058	EPA 7470	511200
50229707004	**TP-2**	EPA 7470	511058	EPA 7470	511200
50229707005	**TP-3**	EPA 7470	511058	EPA 7470	511200
50229707006	**MW-10**	EPA 7470	511058	EPA 7470	511200
50229707001	**Dup-1**	EPA 903.1	351118		
50229707003	**TP-1**	EPA 903.1	351118		
50229707004	**TP-2**	EPA 903.1	351118		
50229707005	**TP-3**	EPA 903.1	351118		
50229707006	**MW-10**	EPA 903.1	351118		
50229707001	**Dup-1**	EPA 904.0	351117		
50229707003	**TP-1**	EPA 904.0	351117		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: IPL Petersburg Landfill
Pace Project No.: 50229707

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
50229707004	**TP-2**	EPA 904.0	351117		
50229707005	**TP-3**	EPA 904.0	351117		
50229707006	**MW-10**	EPA 904.0	351117		
50229707001	**Dup-1**	Total Radium Calculation	353317		
50229707003	**TP-1**	Total Radium Calculation	353317		
50229707004	**TP-2**	Total Radium Calculation	353317		
50229707005	**TP-3**	Total Radium Calculation	353317		
50229707006	**MW-10**	Total Radium Calculation	353317		
50229707001	**Dup-1**	SM 2320B	510548		
50229707003	**TP-1**	SM 2320B	510548		
50229707004	**TP-2**	SM 2320B	510548		
50229707005	**TP-3**	SM 2320B	510548		
50229707006	**MW-10**	SM 2320B	510548		
50229707001	**Dup-1**	SM 2540C	510029		
50229707003	**TP-1**	SM 2540C	510029		
50229707004	**TP-2**	SM 2540C	510029		
50229707005	**TP-3**	SM 2540C	510029		
50229707006	**MW-10**	SM 2540C	510029		
50229707001	**Dup-1**	SM 5310C	511028		
50229707003	**TP-1**	SM 5310C	511028		
50229707004	**TP-2**	SM 5310C	511028		
50229707005	**TP-3**	SM 5310C	511028		
50229707006	**MW-10**	SM 5310C	511282		
50229707001	**Dup-1**	SM 5310C	510840		
50229707003	**TP-1**	SM 5310C	510840		
50229707004	**TP-2**	SM 5310C	510840		
50229707005	**TP-3**	SM 5310C	510840		
50229707006	**MW-10**	SM 5310C	510840		

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.

Page: 1 of 1

2214251

Section A Required Client Information:

Company:	ATC
Address:	7988 Centerpoint Drive Indianapolis IN,
Email To:	Robert.duncan@atcgs.com
Phone:	Fax:
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Robert Duncan
Copy To:	
Purchase Order No.:	517427
Project Name:	IPL Petersburg Landfill
Project Number:	170LF00746

Section C Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote Reference:	
Pace Project Manager:	
Pace Profile #:	8427/5 7/5/19

REGULATORY AGENCY

☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: IN

Section D Required Client Information

Matrix Codes (MATRIX / CODE)

Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Tissue	TS
Other	OT

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

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	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	TOTAL METALS	DISSOLVED METALS	Rad 226/228	TOC	DOC	Alkalinity	TDS	Cl/FSO4 1c 7/5/19		Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	Dup 1	WT	G			7-2-19	7-3-19		9	X	X	X							✓	✓	✓	✓	✓	✓				50229707 001
2	Equipment Blank 1	WT	G			7-2-19	13:15		1	X									✓									002
3	TP-1	WT	G			7-2-19	13:00		9	X	X	X							✓	✓	✓	✓	✓	✓	✓			003
4	TP-2	WT	G			7-3-19	11:30		9	X	X	X							✓	✓	✓	✓	✓	✓	✓			004
5	TP-3	WT	G			7-2-19	14:30		9	X	X	X							✓	✓	✓	✓	✓	✓	✓			005
6	MW-10	WT	G			7-3-19	12:45		9	X	X	X							✓	✓	✓	✓	✓	✓	✓			006
7																												
8																												
9																												
10																												
11																												
12																												

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Lab filtered diss met	Andrew Tackett	7/5/19	11:36	Pace	7/5/19	1136				
Field 7/5/19	Pace	7/5/19	1245		7.5.19	1245	0.0	y	y	y
Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl, Fe, Ca, Mg, Na, K, Mn 7/5/19										

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER:

SIGNATURE of SAMPLER: DATE Signed (MM/DD/YY):

*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

SAMPLE CONDITION UPON RECEIPT FORM

Project #: 50229707

Date/Time and Initials of person examining contents: MS 7.5.19 1300

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ Yes ☒ No **Seals Intact:** ☐ Yes ☒ No

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

Thermometer: 1 2 3 4 5 6 A B C (D) E F **Ice Type:** ☒ Wet ☐ Blue ☐ None | **Samples collected today and on ice:** ☐ Yes ☐ No ☒ N/A

Cooler Temperature: 0.7/0.6 **Ice Visible in Sample Containers?:** ☐ Yes ☒ No ☐ N/A

(Initial/Corrected) Temp should be above freezing to 6°C **If temp. is Over 6°C or under 0°C, was the PM Notified?:** ☐ Yes ☐ No ☒ N/A

All discrepancies will be written out in the comments section below.

	Yes	No		Yes	No	N/A
Are samples from West Virginia? Document any containers out of temp.		X	All containers needing acid/base pres. Have been checked?: **exceptions: VOA, coliform, LLHg, O&G, and any container with a septum cap or preserved with HCl.** All containers needing preservation are found to be in compliance with EPA recommendation (<2, >9, >12) unless otherwise noted.	X		
USDA Regulated Soils? (ID, NY, WA, OR, CA, NM, TX, OK, AR, LA, TN, AL, MS, NC, SC, GA, FL, or Puerto Rico)		X				
Chain of Custody Present:	X		Circle: HNO3 H2SO4 NaOH NaOH/ZnAc			
Chain of Custody Filled Out:	X CWB		Dissolved Metals field filtered?:	X		
Short Hold Time Analysis (<72hr)?: Analysis:		X	Headspace Wisconsin Sulfide			X
Time 5035A TC placed in Freezer or Short Holds To Lab:				Present	Absent	N/A
			Residual Chlorine Check (SVOC 625 Pest/PCB 608)			X
			Residual Chlorine Check (Total/Amenable/Free Cyanide)			X
Rush TAT Requested:		X	Headspace in VOA Vials (>6mm):			X
Containers Intact?:	X		Trip Blank Present?:		X	
Sample Label (IDs/Dates/Times) Match COC?: Except TCs, which only require sample ID	X		Trip Blank Custody Seals?:		X	

Comments: No Sampler signature date or time

Sample Container Count

WO# : 50229707

50229707

CLIENT: ATC

COC PAGE 1 of 1

COC ID# _____

Project # 50229707

Sample Line Item	DG9H	VG9H	AG0U	AG1H	AG1U	AG2U	AG3S	WGFU	SP5T	BP1U	BP2N	BP2S	BP2U	BP3B	BP3N	BP3S	BP3U	R	BP1N	Matrix S (Soil/Wa Aqueou	pH <2	pH >9	pH>
1					1		2						2		2				2	L+	✓		
2					1																		
3					1		2						2		2				2		✓		
4					+MS		2						2		2				2		✓		
5					1		2						2		2				2		✓		
6							2						2		2				2		✓		
7																							
8																							
9																							
10																							
11																							
12																							

Container Codes

Glass

DG9B	40mL Na Bisulfate amber vial	AG0U	100mL unpreserved amber glass
DG9H	40mL HCL amber voa vial	AG1H	1 liter HCL amber glass
DG9M	40mL MeOH clear vial	AG1S	1 liter H2SO4 amber glass
DG9P	40mL TSP amber vial	AG1T	1 liter Na Thiosulfate amber glass
DG9S	40mL H2SO4 amber vial	AG1U	1liter unpreserved amber glass
DG9T	40mL Na Thio amber vial	AG2N	500mL HNO3 amber glass
DG9U	40mL unpreserved **amber** vial	AG2S	500mL H2SO4 amber glass
VG9H	40mL HCL clear vial	AG2U	500mL unpreserved amber glass
VG9T	40mL Na Thio. clear vial	AG3S	250mL H2SO4 glass amber
VG9U	40mL unpreserved **clear** vial	AG3U	250mL unpreserved amber glass
VGFX	40mL w/hexane wipe vial	BG1H	1 liter HCL clear glass
VSG	Headspace septa vial & HCL	BG1S	1 liter H2SO4 clear glass
WGKU	8oz unpreserved clear jar	BG1T	1 liter Na Thiosulfate clear glass
WGFU	4oz clear soil jar	BG1U	1 liter unpreserved glass
JGFU	4oz unpreserved amber wide	BG3H	250mL HCl Clear Glass
		BG3U	250mL Unpreserved Clear Glass

Plastic / Misc.

BP1A	1 liter NaOH, Asc Acid plastic
BP1N	1 liter HNO3 plastic
BP1S	1 liter H2SO4 plastic
BP1U	1 liter unpreserved plastic
BP1Z	1 liter NaOH, Zn, Ac
BP2A	500mL NaOH, Asc Acid plastic
BP2N	500mL HNO3 plastic
BP2O	500mL NaOH plastic
BP2S	500mL H2SO4 plastic
BP2U	500mL unpreserved plastic
BP2Z	500mL NaOH, Zn Ac
BP3B	250mL NaOH plastic
BP3N	250mL HNO3 plastic
BP3S	250mL H2SO4 plastic
BP3U	250mL unpreserved plastic
BP3Z	250mL NaOH, Zn Ac plastic

AF	Air Filter
C	Air Cassettes
R	Terra core kit
SP5T	120mL Coliform Na Thiosulfate
U	Summa Can
ZPLC	Ziploc Bag

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

July 03, 2019

Mr. Rob Duncan
ATC Group Services, LLC
7988 Centerpoint Drive
Indianapolis, IN 46256

RE: Project: IPL
Pace Project No.: 50228527

Dear Mr. Duncan:
Enclosed are the analytical results for sample(s) received by the laboratory on June 20, 2019. 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,

Donna Spyker
donna.spyker@pacelabs.com
(317)228-3100
Project Manager

Enclosures

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

CERTIFICATIONS

Project: IPL
Pace Project No.: 50228527

Indiana Certification IDs

7726 Moller Road, Indianapolis, IN 46268
Illinois Certification #: 200074
Indiana Certification #: C-49-06
Kansas/NELAP Certification #: E-10177
Kentucky UST Certification #: 80226
Kentucky WW Certification #: 98019
Michigan Department of Environmental Quality, Laboratory #9050
Ohio VAP Certification #: CL0065
Oklahoma Certification #: 2018-101
Texas Certification #: T104704355
West Virginia Certification #: 330
Wisconsin Certification #: 999788130
USDA Soil Permit #: P330-16-00257

Pace Analytical Services, LLC
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SAMPLE SUMMARY

Project: IPL
Pace Project No.: 50228527

Lab ID	Sample ID	Matrix	Date Collected	Date Received
50228527001	**TP-1 0.5 (42-44)**	Solid	05/29/19 16:00	06/20/19 10:38
50228527002	**TP-2 (36-38)**	Solid	05/23/19 16:00	06/20/19 10:38
50228527003	**TP-3 (38-40)**	Solid	05/24/19 16:00	06/20/19 10:38
50228527004	**MW-10 0.5 (42-44)**	Solid	05/28/19 16:00	06/20/19 10:38
50228527005	**TP-1 0.5 (42-44) SPLP**	Water	05/29/19 16:00	06/20/19 10:38
50228527006	**TP-2 (36-38) SPLP**	Water	05/23/19 16:00	06/20/19 10:38
50228527007	**TP-3 (38-40) SPLP**	Water	05/24/19 16:00	06/20/19 10:38
50228527008	**MW-10 0.5 (42-44) SPLP**	Water	05/28/19 16:00	06/20/19 10:38
50228527009	**TP-1 0.5 (42-44) NL**	Water	05/29/19 16:00	06/20/19 10:38
50228527010	**TP-2 (36-38) NL**	Water	05/23/19 16:00	06/20/19 10:38
50228527011	**TP-3 (38-40) NL**	Water	05/24/19 16:00	06/20/19 10:38
50228527012	**MW-10 0.5 (42-44) NL**	Water	05/28/19 16:00	06/20/19 10:38

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

SAMPLE ANALYTE COUNT

Project: IPL
Pace Project No.: 50228527

Lab ID	Sample ID	Method	Analysts	Analytes Reported
50228527001	**TP-1 0.5 (42-44)**	EPA 6010	RAM	16
		EPA 7471	LBT	1
		SM 2540G	RM1	1
50228527002	**TP-2 (36-38)**	EPA 6010	RAM	16
		EPA 7471	LBT	1
		SM 2540G	RM1	1
50228527003	**TP-3 (38-40)**	EPA 6010	RAM	16
		EPA 7471	LBT	1
		SM 2540G	RM1	1
50228527004	**MW-10 0.5 (42-44)**	EPA 6010	RAM	16
		EPA 7471	LBT	1
		SM 2540G	RM1	1
50228527005	**TP-1 0.5 (42-44) SPLP**	EPA 6010	RAM	16
		EPA 7470	LBT	1
		EPA 1312	DWE	2
50228527006	**TP-2 (36-38) SPLP**	EPA 6010	RAM	16
		EPA 7470	LBT	1
		EPA 1312	DWE	2
50228527007	**TP-3 (38-40) SPLP**	EPA 6010	RAM	16
		EPA 7470	LBT	1
		EPA 1312	DWE	2
50228527008	**MW-10 0.5 (42-44) SPLP**	EPA 6010	RAM	16
		EPA 7470	LBT	1
		EPA 1312	DWE	2
50228527009	**TP-1 0.5 (42-44) NL**	EPA 9056	RSF	1
		EPA 9056	RSF	3
		ASTM D3987	DWE	2
		SM 2320B	DAC1	1
		SM 4500-H+B	TPD	1
		SM 4500-S2-D	TPD	1
		EPA 350.1	MMS	1
		SM 5310C	GWA	1
50228527010	**TP-2 (36-38) NL**	EPA 9056	RSF	1
		EPA 9056	RSF	3
		ASTM D3987	DWE	2
		SM 2320B	DAC1	1
		SM 4500-H+B	TPD	1

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
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SAMPLE ANALYTE COUNT

Project: IPL
Pace Project No.: 50228527

Lab ID	Sample ID	Method	Analysts	Analytes Reported
		SM 4500-S2-D	TPD	1
		EPA 350.1	MMS	1
		SM 5310C	GWA	1
50228527011	**TP-3 (38-40) NL**	EPA 9056	RSF	1
		EPA 9056	RSF	3
		ASTM D3987	DWE	2
		SM 2320B	DAC1	1
		SM 4500-H+B	TPD	1
		SM 4500-S2-D	TPD	1
		EPA 350.1	MMS	1
		SM 5310C	GWA	1
50228527012	**MW-10 0.5 (42-44) NL**	EPA 9056	RSF	1
		EPA 9056	RSF	3
		ASTM D3987	DWE	2
		SM 2320B	DAC1	1
		SM 4500-H+B	TPD	1
		SM 4500-S2-D	TPD	1
		EPA 350.1	MMS	1
		SM 5310C	GWA	1

Pace Analytical Services, LLC
7726 Moller Road
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(317)228-3100

SUMMARY OF DETECTION

Project: IPL
Pace Project No.: 50228527

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
50228527001	**TP-1 0.5 (42-44)**					
EPA 6010	Arsenic	8.5	mg/kg	1.1	06/28/19 13:18	
EPA 6010	Barium	23.3	mg/kg	1.1	06/28/19 13:18	
EPA 6010	Boron	14.0	mg/kg	5.6	06/28/19 13:18	
EPA 6010	Calcium	23700	mg/kg	556	06/28/19 13:52	
EPA 6010	Chromium	6.8	mg/kg	1.1	06/28/19 13:18	
EPA 6010	Cobalt	3.1	mg/kg	1.1	06/28/19 13:18	
EPA 6010	Iron	9530	mg/kg	55.6	06/28/19 13:18	
EPA 6010	Lead	4.0	mg/kg	1.1	06/28/19 13:18	
EPA 6010	Manganese	134	mg/kg	1.1	06/28/19 13:18	
EPA 6010	Molybdenum	4.1	mg/kg	1.1	06/28/19 13:18	
SM 2540G	Percent Moisture	14.1	%	0.10	06/20/19 15:23	H3
50228527002	**TP-2 (36-38)**					
EPA 6010	Arsenic	3.8	mg/kg	1.1	06/28/19 13:20	
EPA 6010	Barium	18.1	mg/kg	1.1	06/28/19 13:20	
EPA 6010	Boron	5.7	mg/kg	5.4	06/28/19 13:20	
EPA 6010	Calcium	957	mg/kg	54.4	06/28/19 13:20	
EPA 6010	Chromium	5.2	mg/kg	1.1	06/28/19 13:20	
EPA 6010	Cobalt	3.4	mg/kg	1.1	06/28/19 13:20	
EPA 6010	Iron	6570	mg/kg	54.4	06/28/19 13:20	
EPA 6010	Lead	3.4	mg/kg	1.1	06/28/19 13:20	
EPA 6010	Manganese	256	mg/kg	1.1	06/28/19 13:20	
SM 2540G	Percent Moisture	15.8	%	0.10	06/20/19 15:24	H3
50228527003	**TP-3 (38-40)**					
EPA 6010	Arsenic	2.6	mg/kg	1.0	06/28/19 13:22	
EPA 6010	Barium	13.8	mg/kg	1.0	06/28/19 13:22	
EPA 6010	Calcium	1470	mg/kg	50.5	06/28/19 13:22	
EPA 6010	Chromium	5.4	mg/kg	1.0	06/28/19 13:22	
EPA 6010	Cobalt	2.6	mg/kg	1.0	06/28/19 13:22	
EPA 6010	Iron	5970	mg/kg	50.5	06/28/19 13:22	
EPA 6010	Lead	2.7	mg/kg	1.0	06/28/19 13:22	
EPA 6010	Manganese	164	mg/kg	1.0	06/28/19 13:22	
SM 2540G	Percent Moisture	14.2	%	0.10	06/20/19 15:24	H3
50228527004	**MW-10 0.5 (42-44)**					
EPA 6010	Arsenic	13.6	mg/kg	1.1	06/28/19 13:24	
EPA 6010	Barium	23.8	mg/kg	1.1	06/28/19 13:24	
EPA 6010	Boron	20.5	mg/kg	5.3	06/28/19 13:24	
EPA 6010	Calcium	1430	mg/kg	52.7	06/28/19 13:24	
EPA 6010	Chromium	10.1	mg/kg	1.1	06/28/19 13:24	
EPA 6010	Cobalt	3.7	mg/kg	1.1	06/28/19 13:24	
EPA 6010	Iron	8920	mg/kg	52.7	06/28/19 13:24	
EPA 6010	Lead	5.1	mg/kg	1.1	06/28/19 13:24	
EPA 6010	Manganese	106	mg/kg	1.1	06/28/19 13:24	
EPA 6010	Molybdenum	2.8	mg/kg	1.1	06/28/19 13:24	
SM 2540G	Percent Moisture	15.3	%	0.10	06/21/19 10:55	H3

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

SUMMARY OF DETECTION

Project: IPL
Pace Project No.: 50228527

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
50228527005	**TP-1 0.5 (42-44) SPLP**					
EPA 6010	Barium	30.2	ug/L	10.0	07/02/19 13:45	
EPA 6010	Boron	335	ug/L	100	07/02/19 13:45	
EPA 6010	Calcium	24500	ug/L	1000	07/02/19 13:45	
EPA 6010	Iron	714	ug/L	100	07/02/19 13:45	
EPA 6010	Manganese	31.4	ug/L	10.0	07/02/19 13:45	
EPA 6010	Molybdenum	77.0	ug/L	10.0	07/02/19 13:45	
EPA 1312	Date Leached	06/26/0019	no units		06/25/19 14:15	
EPA 1312	Final pH	6.36	Std. Units		06/25/19 14:15	
50228527006	**TP-2 (36-38) SPLP**					
EPA 6010	Barium	12.5	ug/L	10.0	07/02/19 13:47	
EPA 6010	Boron	311	ug/L	100	07/02/19 13:47	
EPA 6010	Calcium	6150	ug/L	1000	07/02/19 13:47	
EPA 6010	Iron	2190	ug/L	100	07/02/19 13:47	
EPA 6010	Manganese	99.1	ug/L	10.0	07/02/19 13:47	
EPA 1312	Date Leached	06/26/2019	no units		06/25/19 14:15	
EPA 1312	Final pH	9.08	Std. Units		06/25/19 14:15	
50228527007	**TP-3 (38-40) SPLP**					
EPA 6010	Arsenic	21.1	ug/L	10.0	07/02/19 13:49	
EPA 6010	Barium	144	ug/L	10.0	07/02/19 13:49	
EPA 6010	Boron	102	ug/L	100	07/02/19 13:49	
EPA 6010	Calcium	6310	ug/L	1000	07/02/19 13:49	
EPA 6010	Chromium	32.3	ug/L	10.0	07/02/19 13:49	
EPA 6010	Cobalt	14.2	ug/L	10.0	07/02/19 13:49	
EPA 6010	Iron	34900	ug/L	100	07/02/19 13:49	
EPA 6010	Lead	20.9	ug/L	10.0	07/02/19 13:49	
EPA 6010	Manganese	1260	ug/L	10.0	07/02/19 13:49	
EPA 1312	Date Leached	06/26/2019	no units		06/25/19 14:15	
EPA 1312	Final pH	8.32	Std. Units		06/25/19 14:15	
50228527008	**MW-10 0.5 (42-44) SPLP**					
EPA 6010	Arsenic	27.9	ug/L	10.0	07/02/19 13:51	
EPA 6010	Barium	20.9	ug/L	10.0	07/02/19 13:51	
EPA 6010	Boron	543	ug/L	100	07/02/19 13:51	
EPA 6010	Calcium	14000	ug/L	1000	07/02/19 13:51	
EPA 6010	Iron	280	ug/L	100	07/02/19 13:51	
EPA 6010	Molybdenum	38.9	ug/L	10.0	07/02/19 13:51	
EPA 1312	Date Leached	06/26/2019	no units		06/25/19 14:15	
EPA 1312	Final pH	8.84	Std. Units		06/25/19 14:15	
50228527009	**TP-1 0.5 (42-44) NL**					
EPA 9056	Chloride	0.30	mg/L	0.25	06/27/19 11:39	H3
EPA 9056	Fluoride	0.19	mg/L	0.10	06/27/19 11:39	
EPA 9056	Sulfate	35.4	mg/L	2.5	06/27/19 12:34	H3
ASTM D3987	Date Leached	06/26/2019	no units		06/25/19 12:15	
ASTM D3987	Final pH	7.41	Std. Units		06/25/19 12:15	
SM 2320B	Alkalinity, Total as CaCO3	29.6	mg/L	2.0	06/28/19 10:33	
SM 4500-H+B	pH at 25 Degrees C	8.2	Std. Units	0.10	06/26/19 15:15	H3

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

SUMMARY OF DETECTION

Project: IPL
Pace Project No.: 50228527

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
50228527010	**TP-2 (36-38) NL**					
EPA 9056	Chloride	0.31	mg/L	0.25	06/27/19 15:00	H3
EPA 9056	Fluoride	0.18	mg/L	0.10	06/27/19 15:00	
EPA 9056	Sulfate	14.2	mg/L	0.25	06/27/19 15:00	
ASTM D3987	Date Leached	06/26/2019	no units		06/25/19 12:15	
ASTM D3987	Final pH	7.57	Std. Units		06/25/19 12:15	
SM 2320B	Alkalinity, Total as CaCO3	18.1	mg/L	2.0	06/28/19 10:33	
SM 4500-H+B	pH at 25 Degrees C	8.2	Std. Units	0.10	06/26/19 15:10	H3
50228527011	**TP-3 (38-40) NL**					
EPA 9056	Sulfate	6.1	mg/L	0.25	06/28/19 07:26	
ASTM D3987	Date Leached	06/26/2019	no units		06/25/19 12:15	
ASTM D3987	Final pH	7.61	Std. Units		06/25/19 12:15	
SM 2320B	Alkalinity, Total as CaCO3	11.0	mg/L	2.0	06/28/19 10:33	
SM 4500-H+B	pH at 25 Degrees C	8.0	Std. Units	0.10	06/26/19 15:12	H3
50228527012	**MW-10 0.5 (42-44) NL**					
EPA 9056	Chloride	0.56	mg/L	0.25	06/27/19 16:32	H3
EPA 9056	Fluoride	0.17	mg/L	0.10	06/27/19 16:32	
EPA 9056	Sulfate	17.3	mg/L	0.25	06/27/19 16:32	
ASTM D3987	Date Leached	06/26/2019	no units		06/25/19 12:15	
ASTM D3987	Final pH	8.29	Std. Units		06/25/19 12:15	
SM 2320B	Alkalinity, Total as CaCO3	22.1	mg/L	2.0	06/28/19 10:33	
SM 4500-H+B	pH at 25 Degrees C	8.6	Std. Units	0.10	06/26/19 15:14	H3
EPA 350.1	Nitrogen, Ammonia	0.11	mg/L	0.10	06/28/19 15:58	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS

Project: IPL
Pace Project No.: 50228527

Sample: TP-1 0.5 (42-44) **Lab ID: 50228527001** Collected: 05/29/19 16:00 Received: 06/20/19 10:38 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Antimony	ND	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:18	7440-36-0	
Arsenic	**8.5**	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:18	7440-38-2	
Barium	**23.3**	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:18	7440-39-3	
Beryllium	ND	mg/kg	0.56	1	06/27/19 13:33	06/28/19 13:18	7440-41-7	
Boron	**14.0**	mg/kg	5.6	1	06/27/19 13:33	06/28/19 13:18	7440-42-8	
Cadmium	ND	mg/kg	0.56	1	06/27/19 13:33	06/28/19 13:18	7440-43-9	
Calcium	**23700**	mg/kg	556	10	06/27/19 13:33	06/28/19 13:52	7440-70-2	
Chromium	**6.8**	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:18	7440-47-3	
Cobalt	**3.1**	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:18	7440-48-4	
Iron	**9530**	mg/kg	55.6	1	06/27/19 13:33	06/28/19 13:18	7439-89-6	
Lead	**4.0**	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:18	7439-92-1	
Lithium	ND	mg/kg	5.6	1	06/27/19 13:33	06/28/19 13:18	7439-93-2	N2
Manganese	**134**	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:18	7439-96-5	
Molybdenum	**4.1**	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:18	7439-98-7	
Selenium	ND	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:18	7782-49-2	
Thallium	ND	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:18	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	ND	mg/kg	0.23	1	06/26/19 11:45	06/26/19 21:49	7439-97-6	
Percent Moisture	Analytical Method: SM 2540G							
Percent Moisture	**14.1**	%	0.10	1		06/20/19 15:23		H3

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS

Project: IPL
Pace Project No.: 50228527

Sample: TP-2 (36-38) **Lab ID: 50228527002** Collected: 05/23/19 16:00 Received: 06/20/19 10:38 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Antimony	ND	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:20	7440-36-0	
Arsenic	**3.8**	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:20	7440-38-2	
Barium	**18.1**	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:20	7440-39-3	
Beryllium	ND	mg/kg	0.54	1	06/27/19 13:33	06/28/19 13:20	7440-41-7	
Boron	**5.7**	mg/kg	5.4	1	06/27/19 13:33	06/28/19 13:20	7440-42-8	
Cadmium	ND	mg/kg	0.54	1	06/27/19 13:33	06/28/19 13:20	7440-43-9	
Calcium	**957**	mg/kg	54.4	1	06/27/19 13:33	06/28/19 13:20	7440-70-2	
Chromium	**5.2**	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:20	7440-47-3	
Cobalt	**3.4**	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:20	7440-48-4	
Iron	**6570**	mg/kg	54.4	1	06/27/19 13:33	06/28/19 13:20	7439-89-6	
Lead	**3.4**	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:20	7439-92-1	
Lithium	ND	mg/kg	5.4	1	06/27/19 13:33	06/28/19 13:20	7439-93-2	N2
Manganese	**256**	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:20	7439-96-5	
Molybdenum	ND	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:20	7439-98-7	
Selenium	ND	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:20	7782-49-2	
Thallium	ND	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:20	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	ND	mg/kg	0.24	1	06/26/19 11:45	06/26/19 21:51	7439-97-6	
Percent Moisture	Analytical Method: SM 2540G							
Percent Moisture	**15.8**	%	0.10	1		06/20/19 15:24		H3

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS

Project: IPL
Pace Project No.: 50228527

Sample: TP-3 (38-40) **Lab ID: 50228527003** Collected: 05/24/19 16:00 Received: 06/20/19 10:38 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Antimony	ND	mg/kg	1.0	1	06/27/19 13:33	06/28/19 13:22	7440-36-0	
Arsenic	**2.6**	mg/kg	1.0	1	06/27/19 13:33	06/28/19 13:22	7440-38-2	
Barium	**13.8**	mg/kg	1.0	1	06/27/19 13:33	06/28/19 13:22	7440-39-3	
Beryllium	ND	mg/kg	0.51	1	06/27/19 13:33	06/28/19 13:22	7440-41-7	
Boron	ND	mg/kg	5.1	1	06/27/19 13:33	06/28/19 13:22	7440-42-8	
Cadmium	ND	mg/kg	0.51	1	06/27/19 13:33	06/28/19 13:22	7440-43-9	
Calcium	**1470**	mg/kg	50.5	1	06/27/19 13:33	06/28/19 13:22	7440-70-2	
Chromium	**5.4**	mg/kg	1.0	1	06/27/19 13:33	06/28/19 13:22	7440-47-3	
Cobalt	**2.6**	mg/kg	1.0	1	06/27/19 13:33	06/28/19 13:22	7440-48-4	
Iron	**5970**	mg/kg	50.5	1	06/27/19 13:33	06/28/19 13:22	7439-89-6	
Lead	**2.7**	mg/kg	1.0	1	06/27/19 13:33	06/28/19 13:22	7439-92-1	
Lithium	ND	mg/kg	5.1	1	06/27/19 13:33	06/28/19 13:22	7439-93-2	N2
Manganese	**164**	mg/kg	1.0	1	06/27/19 13:33	06/28/19 13:22	7439-96-5	
Molybdenum	ND	mg/kg	1.0	1	06/27/19 13:33	06/28/19 13:22	7439-98-7	
Selenium	ND	mg/kg	1.0	1	06/27/19 13:33	06/28/19 13:22	7782-49-2	
Thallium	ND	mg/kg	1.0	1	06/27/19 13:33	06/28/19 13:22	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	ND	mg/kg	0.22	1	06/26/19 11:45	06/26/19 21:53	7439-97-6	
Percent Moisture	Analytical Method: SM 2540G							
Percent Moisture	**14.2**	%	0.10	1		06/20/19 15:24		H3

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS

Project: IPL
Pace Project No.: 50228527

Sample: MW-10 0.5 (42-44) **Lab ID: 50228527004** Collected: 05/28/19 16:00 Received: 06/20/19 10:38 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Antimony	ND	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:24	7440-36-0	
Arsenic	**13.6**	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:24	7440-38-2	
Barium	**23.8**	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:24	7440-39-3	
Beryllium	ND	mg/kg	0.53	1	06/27/19 13:33	06/28/19 13:24	7440-41-7	
Boron	**20.5**	mg/kg	5.3	1	06/27/19 13:33	06/28/19 13:24	7440-42-8	
Cadmium	ND	mg/kg	0.53	1	06/27/19 13:33	06/28/19 13:24	7440-43-9	
Calcium	**1430**	mg/kg	52.7	1	06/27/19 13:33	06/28/19 13:24	7440-70-2	
Chromium	**10.1**	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:24	7440-47-3	
Cobalt	**3.7**	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:24	7440-48-4	
Iron	**8920**	mg/kg	52.7	1	06/27/19 13:33	06/28/19 13:24	7439-89-6	
Lead	**5.1**	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:24	7439-92-1	
Lithium	ND	mg/kg	5.3	1	06/27/19 13:33	06/28/19 13:24	7439-93-2	N2
Manganese	**106**	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:24	7439-96-5	
Molybdenum	**2.8**	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:24	7439-98-7	
Selenium	ND	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:24	7782-49-2	
Thallium	ND	mg/kg	1.1	1	06/27/19 13:33	06/28/19 13:24	7440-28-0	
7471 Mercury	Analytical Method: EPA 7471 Preparation Method: EPA 7471							
Mercury	ND	mg/kg	0.23	1	06/26/19 11:45	06/26/19 21:55	7439-97-6	
Percent Moisture	Analytical Method: SM 2540G							
Percent Moisture	**15.3**	%	0.10	1		06/21/19 10:55		H3

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS

Project: IPL
Pace Project No.: 50228527

Sample: TP-1 0.5 (42-44) SPLP **Lab ID: 50228527005** Collected: 05/29/19 16:00 Received: 06/20/19 10:38 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Antimony	ND	ug/L	6.0	1	06/29/19 10:42	07/02/19 13:45	7440-36-0	
Arsenic	ND	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:45	7440-38-2	
Barium	**30.2**	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:45	7440-39-3	
Beryllium	ND	ug/L	4.0	1	06/29/19 10:42	07/02/19 13:45	7440-41-7	
Boron	**335**	ug/L	100	1	06/29/19 10:42	07/02/19 13:45	7440-42-8	
Cadmium	ND	ug/L	2.0	1	06/29/19 10:42	07/02/19 13:45	7440-43-9	
Calcium	**24500**	ug/L	1000	1	06/29/19 10:42	07/02/19 13:45	7440-70-2	
Chromium	ND	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:45	7440-47-3	
Cobalt	ND	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:45	7440-48-4	
Iron	**714**	ug/L	100	1	06/29/19 10:42	07/02/19 13:45	7439-89-6	
Lead	ND	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:45	7439-92-1	
Lithium	ND	ug/L	20.0	1	06/29/19 10:42	07/02/19 13:45	7439-93-2	N2
Manganese	**31.4**	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:45	7439-96-5	
Molybdenum	**77.0**	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:45	7439-98-7	
Selenium	ND	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:45	7782-49-2	
Thallium	ND	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:45	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	2.0	1	07/01/19 12:15	07/01/19 19:06	7439-97-6	
SPLP Leachate	Analytical Method: EPA 1312							
Date Leached	**06/26/0019**	no units		1		06/25/19 14:15		
Final pH	**6.36**	Std. Units		1		06/25/19 14:15		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS

Project: IPL
Pace Project No.: 50228527

Sample: TP-2 (36-38) SPLP **Lab ID: 50228527006** Collected: 05/23/19 16:00 Received: 06/20/19 10:38 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Antimony	ND	ug/L	6.0	1	06/29/19 10:42	07/02/19 13:47	7440-36-0	
Arsenic	ND	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:47	7440-38-2	
Barium	**12.5**	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:47	7440-39-3	
Beryllium	ND	ug/L	4.0	1	06/29/19 10:42	07/02/19 13:47	7440-41-7	
Boron	**311**	ug/L	100	1	06/29/19 10:42	07/02/19 13:47	7440-42-8	
Cadmium	ND	ug/L	2.0	1	06/29/19 10:42	07/02/19 13:47	7440-43-9	
Calcium	**6150**	ug/L	1000	1	06/29/19 10:42	07/02/19 13:47	7440-70-2	
Chromium	ND	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:47	7440-47-3	
Cobalt	ND	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:47	7440-48-4	
Iron	**2190**	ug/L	100	1	06/29/19 10:42	07/02/19 13:47	7439-89-6	
Lead	ND	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:47	7439-92-1	
Lithium	ND	ug/L	20.0	1	06/29/19 10:42	07/02/19 13:47	7439-93-2	N2
Manganese	**99.1**	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:47	7439-96-5	
Molybdenum	ND	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:47	7439-98-7	
Selenium	ND	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:47	7782-49-2	
Thallium	ND	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:47	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	2.0	1	07/01/19 12:15	07/01/19 19:08	7439-97-6	
SPLP Leachate	Analytical Method: EPA 1312							
Date Leached	**06/26/2019**	no units		1		06/25/19 14:15		
Final pH	**9.08**	Std. Units		1		06/25/19 14:15		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS

Project: IPL
Pace Project No.: 50228527

Sample: TP-3 (38-40) SPLP **Lab ID: 50228527007** Collected: 05/24/19 16:00 Received: 06/20/19 10:38 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Antimony	ND	ug/L	6.0	1	06/29/19 10:42	07/02/19 13:49	7440-36-0	
Arsenic	**21.1**	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:49	7440-38-2	
Barium	**144**	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:49	7440-39-3	
Beryllium	ND	ug/L	4.0	1	06/29/19 10:42	07/02/19 13:49	7440-41-7	
Boron	**102**	ug/L	100	1	06/29/19 10:42	07/02/19 13:49	7440-42-8	
Cadmium	ND	ug/L	2.0	1	06/29/19 10:42	07/02/19 13:49	7440-43-9	
Calcium	**6310**	ug/L	1000	1	06/29/19 10:42	07/02/19 13:49	7440-70-2	
Chromium	**32.3**	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:49	7440-47-3	
Cobalt	**14.2**	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:49	7440-48-4	
Iron	**34900**	ug/L	100	1	06/29/19 10:42	07/02/19 13:49	7439-89-6	
Lead	**20.9**	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:49	7439-92-1	
Lithium	ND	ug/L	20.0	1	06/29/19 10:42	07/02/19 13:49	7439-93-2	N2
Manganese	**1260**	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:49	7439-96-5	
Molybdenum	ND	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:49	7439-98-7	
Selenium	ND	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:49	7782-49-2	
Thallium	ND	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:49	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	2.0	1	07/01/19 12:15	07/01/19 19:10	7439-97-6	
SPLP Leachate	Analytical Method: EPA 1312							
Date Leached	**06/26/2019**	no units		1		06/25/19 14:15		
Final pH	**8.32**	Std. Units		1		06/25/19 14:15		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS

Project: IPL
Pace Project No.: 50228527

Sample: MW-10 0.5 (42-44) SPLP **Lab ID: 50228527008** Collected: 05/28/19 16:00 Received: 06/20/19 10:38 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010							
Antimony	ND	ug/L	6.0	1	06/29/19 10:42	07/02/19 13:51	7440-36-0	
Arsenic	**27.9**	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:51	7440-38-2	
Barium	**20.9**	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:51	7440-39-3	
Beryllium	ND	ug/L	4.0	1	06/29/19 10:42	07/02/19 13:51	7440-41-7	
Boron	**543**	ug/L	100	1	06/29/19 10:42	07/02/19 13:51	7440-42-8	
Cadmium	ND	ug/L	2.0	1	06/29/19 10:42	07/02/19 13:51	7440-43-9	
Calcium	**14000**	ug/L	1000	1	06/29/19 10:42	07/02/19 13:51	7440-70-2	
Chromium	ND	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:51	7440-47-3	
Cobalt	ND	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:51	7440-48-4	
Iron	**280**	ug/L	100	1	06/29/19 10:42	07/02/19 13:51	7439-89-6	
Lead	ND	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:51	7439-92-1	
Lithium	ND	ug/L	20.0	1	06/29/19 10:42	07/02/19 13:51	7439-93-2	N2
Manganese	ND	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:51	7439-96-5	
Molybdenum	**38.9**	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:51	7439-98-7	
Selenium	ND	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:51	7782-49-2	
Thallium	ND	ug/L	10.0	1	06/29/19 10:42	07/02/19 13:51	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470							
Mercury	ND	ug/L	2.0	1	07/01/19 12:15	07/01/19 19:12	7439-97-6	
SPLP Leachate	Analytical Method: EPA 1312							
Date Leached	**06/26/2019**	no units		1		06/25/19 14:15		
Final pH	**8.84**	Std. Units		1		06/25/19 14:15		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS

Project: IPL
Pace Project No.: 50228527

Sample: TP-1 0.5 (42-44) NL **Lab ID: 50228527009** Collected: 05/29/19 16:00 Received: 06/20/19 10:38 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
9056 IC Anions 48hr	Analytical Method: EPA 9056							
Nitrite as N	ND	mg/L	0.050	1		06/27/19 11:39	14797-65-0	H3
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**0.30**	mg/L	0.25	1		06/27/19 11:39	16887-00-6	H3
Fluoride	**0.19**	mg/L	0.10	1		06/27/19 11:39	16984-48-8	
Sulfate	**35.4**	mg/L	2.5	10		06/27/19 12:34	14808-79-8	H3
Neutral Leachate	Analytical Method: ASTM D3987							
Date Leached	**06/26/2019**	no units		1		06/25/19 12:15		
Final pH	**7.41**	Std. Units		1		06/25/19 12:15		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	**29.6**	mg/L	2.0	1		06/28/19 10:33		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**8.2**	Std. Units	0.10	1		06/26/19 15:15		H3
4500S2D Sulfide Water	Analytical Method: SM 4500-S2-D							
Sulfide	ND	mg/L	0.10	1		06/27/19 13:02	18496-25-8	
350.1 Ammonia	Analytical Method: EPA 350.1							
Nitrogen, Ammonia	ND	mg/L	0.10	1		06/28/19 16:02	7664-41-7	
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	ND	mg/L	1.0	1		06/28/19 15:44	7440-44-0	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

ANALYTICAL RESULTS

Project: IPL
Pace Project No.: 50228527

Sample: TP-2 (36-38) NL **Lab ID: 50228527010** Collected: 05/23/19 16:00 Received: 06/20/19 10:38 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
9056 IC Anions 48hr	Analytical Method: EPA 9056							
Nitrite as N	ND	mg/L	0.050	1		06/27/19 15:00	14797-65-0	H3
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**0.31**	mg/L	0.25	1		06/27/19 15:00	16887-00-6	H3
Fluoride	**0.18**	mg/L	0.10	1		06/27/19 15:00	16984-48-8	
Sulfate	**14.2**	mg/L	0.25	1		06/27/19 15:00	14808-79-8	
Neutral Leachate	Analytical Method: ASTM D3987							
Date Leached	**06/26/2019**	no units		1		06/25/19 12:15		
Final pH	**7.57**	Std. Units		1		06/25/19 12:15		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	**18.1**	mg/L	2.0	1		06/28/19 10:33		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**8.2**	Std. Units	0.10	1		06/26/19 15:10		H3
4500S2D Sulfide Water	Analytical Method: SM 4500-S2-D							
Sulfide	ND	mg/L	0.10	1		06/27/19 13:02	18496-25-8	
350.1 Ammonia	Analytical Method: EPA 350.1							
Nitrogen, Ammonia	ND	mg/L	0.10	1		06/28/19 15:53	7664-41-7	
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	ND	mg/L	1.0	1		06/28/19 14:46	7440-44-0	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: IPL
Pace Project No.: 50228527

Sample: TP-3 (38-40) NL **Lab ID: 50228527011** Collected: 05/24/19 16:00 Received: 06/20/19 10:38 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
9056 IC Anions 48hr	Analytical Method: EPA 9056							
Nitrite as N	ND	mg/L	0.050	1		06/28/19 07:26	14797-65-0	H3
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	ND	mg/L	0.25	1		06/28/19 07:26	16887-00-6	H3
Fluoride	ND	mg/L	0.10	1		06/28/19 07:26	16984-48-8	
Sulfate	**6.1**	mg/L	0.25	1		06/28/19 07:26	14808-79-8	
Neutral Leachate	Analytical Method: ASTM D3987							
Date Leached	**06/26/2019**	no units		1		06/25/19 12:15		
Final pH	**7.61**	Std. Units		1		06/25/19 12:15		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	**11.0**	mg/L	2.0	1		06/28/19 10:33		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**8.0**	Std. Units	0.10	1		06/26/19 15:12		H3
4500S2D Sulfide Water	Analytical Method: SM 4500-S2-D							
Sulfide	ND	mg/L	0.10	1		06/27/19 13:02	18496-25-8	
350.1 Ammonia	Analytical Method: EPA 350.1							
Nitrogen, Ammonia	ND	mg/L	0.10	1		06/28/19 15:56	7664-41-7	
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	ND	mg/L	1.0	1		06/28/19 15:05	7440-44-0	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: IPL
Pace Project No.: 50228527

Sample: MW-10 0.5 (42-44) NL **Lab ID: 50228527012** Collected: 05/28/19 16:00 Received: 06/20/19 10:38 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
9056 IC Anions 48hr	Analytical Method: EPA 9056							
Nitrite as N	ND	mg/L	0.050	1		06/27/19 16:32	14797-65-0	H3
9056 IC Anions	Analytical Method: EPA 9056							
Chloride	**0.56**	mg/L	0.25	1		06/27/19 16:32	16887-00-6	H3
Fluoride	**0.17**	mg/L	0.10	1		06/27/19 16:32	16984-48-8	
Sulfate	**17.3**	mg/L	0.25	1		06/27/19 16:32	14808-79-8	
Neutral Leachate	Analytical Method: ASTM D3987							
Date Leached	**06/26/2019**	no units		1		06/25/19 12:15		
Final pH	**8.29**	Std. Units		1		06/25/19 12:15		
2320B Alkalinity	Analytical Method: SM 2320B							
Alkalinity, Total as CaCO3	**22.1**	mg/L	2.0	1		06/28/19 10:33		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B							
pH at 25 Degrees C	**8.6**	Std. Units	0.10	1		06/26/19 15:14		H3
4500S2D Sulfide Water	Analytical Method: SM 4500-S2-D							
Sulfide	ND	mg/L	0.10	1		06/27/19 13:02	18496-25-8	
350.1 Ammonia	Analytical Method: EPA 350.1							
Nitrogen, Ammonia	**0.11**	mg/L	0.10	1		06/28/19 15:58	7664-41-7	
5310C TOC	Analytical Method: SM 5310C							
Total Organic Carbon	ND	mg/L	1.0	1		06/28/19 15:25	7440-44-0	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: IPL
Pace Project No.: 50228527

QC Batch: 508703 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 50228527009, 50228527010, 50228527011, 50228527012

METHOD BLANK: 2347168 Matrix: Water
Associated Lab Samples: 50228527009, 50228527010, 50228527011, 50228527012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrite as N	mg/L	ND	0.050	06/27/19 09:50	

LABORATORY CONTROL SAMPLE: 2347169

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrite as N	mg/L	0.5	0.50	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2347170 2347171

Parameter	Units	50228527009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrite as N	mg/L	ND	0.5	0.5	0.48	0.47	95	95	80-120	0	15	H3

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: IPL
Pace Project No.: 50228527

QC Batch: 508670 Analysis Method: EPA 9056
QC Batch Method: EPA 9056 Analysis Description: 9056 IC Anions
Associated Lab Samples: 50228527009, 50228527010, 50228527011, 50228527012

METHOD BLANK: 2347096 Matrix: Water
Associated Lab Samples: 50228527009, 50228527010, 50228527011, 50228527012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	ND	0.25	06/27/19 09:50	
Fluoride	mg/L	ND	0.10	06/27/19 09:50	
Sulfate	mg/L	ND	0.25	06/27/19 09:50	

LABORATORY CONTROL SAMPLE: 2347097

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	1.2	1.2	93	80-120	
Fluoride	mg/L	0.5	0.45	91	80-120	
Sulfate	mg/L	2.5	2.4	97	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2347098 2347099

Parameter	Units	50228527009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	0.30	1.2	1.2	1.4	1.4	85	85	80-120	0	15	H3
Fluoride	mg/L	0.19	0.5	0.5	0.62	0.62	86	86	80-120	0	15	
Sulfate	mg/L	35.4	25	25	58.2	58.3	91	92	80-120	0	15	H3

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: IPL
Pace Project No.: 50228527

QC Batch: 509043 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 50228527005, 50228527006, 50228527007, 50228527008

METHOD BLANK: 2348957 Matrix: Water
Associated Lab Samples: 50228527005, 50228527006, 50228527007, 50228527008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	2.0	07/01/19 18:26	

LABORATORY CONTROL SAMPLE: 2348958

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.3	107	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2348959 2348960

Parameter	Units	50228292002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	5	5	5.1	5.0	101	99	75-125	1	20	

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QUALITY CONTROL DATA

Project: IPL
Pace Project No.: 50228527

QC Batch: 508265 Analysis Method: EPA 7471
QC Batch Method: EPA 7471 Analysis Description: 7471 Mercury
Associated Lab Samples: 50228527001, 50228527002, 50228527003, 50228527004

METHOD BLANK: 2345377 Matrix: Solid
Associated Lab Samples: 50228527001, 50228527002, 50228527003, 50228527004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/kg	ND	0.19	06/26/19 21:19	

LABORATORY CONTROL SAMPLE: 2345378

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/kg	0.5	0.52	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2345379 2345380

Parameter	Units	50228094003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/kg	ND	0.54	0.52	0.56	0.57	104	109	75-125	2	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: IPL
Pace Project No.: 50228527

QC Batch: 507694 Analysis Method: EPA 6010
QC Batch Method: EPA 3050 Analysis Description: 6010 MET
Associated Lab Samples: 50228527001, 50228527002, 50228527003, 50228527004

METHOD BLANK: 2342936 Matrix: Solid
Associated Lab Samples: 50228527001, 50228527002, 50228527003, 50228527004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	mg/kg	ND	1.0	06/28/19 12:50	
Arsenic	mg/kg	ND	1.0	06/28/19 12:50	
Barium	mg/kg	ND	1.0	06/28/19 12:50	
Beryllium	mg/kg	ND	0.50	06/28/19 12:50	
Boron	mg/kg	ND	5.0	06/28/19 12:50	
Cadmium	mg/kg	ND	0.50	06/28/19 12:50	
Calcium	mg/kg	ND	50.0	06/28/19 12:50	
Chromium	mg/kg	ND	1.0	06/28/19 12:50	
Cobalt	mg/kg	ND	1.0	06/28/19 12:50	
Iron	mg/kg	ND	50.0	06/28/19 12:50	
Lead	mg/kg	ND	1.0	06/28/19 12:50	
Lithium	mg/kg	ND	5.0	06/28/19 12:50	N2
Manganese	mg/kg	ND	1.0	06/28/19 12:50	
Molybdenum	mg/kg	ND	1.0	06/28/19 12:50	
Selenium	mg/kg	ND	1.0	06/28/19 12:50	
Thallium	mg/kg	ND	1.0	06/28/19 12:50	

LABORATORY CONTROL SAMPLE: 2342937

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	mg/kg	50	49.7	99	80-120	
Arsenic	mg/kg	50	49.0	98	80-120	
Barium	mg/kg	50	51.0	102	80-120	
Beryllium	mg/kg	50	52.0	104	80-120	
Boron	mg/kg	50	50.6	101	80-120	
Cadmium	mg/kg	50	49.5	99	80-120	
Calcium	mg/kg	500	528	106	80-120	
Chromium	mg/kg	50	50.4	101	80-120	
Cobalt	mg/kg	50	49.7	99	80-120	
Iron	mg/kg	500	518	104	80-120	
Lead	mg/kg	50	48.0	96	80-120	
Lithium	mg/kg	50	50.7	101	80-120	N2
Manganese	mg/kg	50	51.0	102	80-120	
Molybdenum	mg/kg	50	47.7	95	80-120	
Selenium	mg/kg	50	49.7	99	80-120	
Thallium	mg/kg	50	47.5	95	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: IPL
Pace Project No.: 50228527

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2342938 2342939

Parameter	Units	50228567002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	mg/kg	ND	55.7	57	13.9	14.8	25	26	75-125	6	20	M3
Arsenic	mg/kg	11.3	55.7	57	55.5	55.5	79	78	75-125	0	20	
Barium	mg/kg	95.8	55.7	57	145	133	89	64	75-125	9	20	M0
Beryllium	mg/kg	0.90	55.7	57	46.0	47.0	81	81	75-125	2	20	
Boron	mg/kg	6.4	55.7	57	45.1	48.4	70	74	75-125	7	20	M3
Cadmium	mg/kg	ND	55.7	57	45.3	46.4	81	81	75-125	2	20	
Calcium	mg/kg	3000	557	570	3400	3010	73	3	75-125	12	20	P6
Chromium	mg/kg	20.9	55.7	57	68.2	68.9	85	84	75-125	1	20	
Cobalt	mg/kg	9.0	55.7	57	51.7	52.1	77	76	75-125	1	20	
Iron	mg/kg	23200	557	570	25700	22000	440	-226	75-125	16	20	E,P6
Lead	mg/kg	11.5	55.7	57	50.7	50.7	70	69	75-125	0	20	M3
Lithium	mg/kg	13.4	55.7	57	60.3	59.4	84	81	75-125	1	20	N2
Manganese	mg/kg	407	55.7	57	517	404	198	-5	75-125	25	20	P6
Molybdenum	mg/kg	2.5	55.7	57	39.6	42.5	67	70	75-125	7	20	M3
Selenium	mg/kg	ND	55.7	57	42.5	43.9	76	76	75-125	3	20	
Thallium	mg/kg	ND	55.7	57	37.4	39.1	66	68	75-125	4	20	M3

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QUALITY CONTROL DATA

Project: IPL
Pace Project No.: 50228527

QC Batch: 507829 Analysis Method: EPA 6010
QC Batch Method: EPA 3010 Analysis Description: 6010 MET
Associated Lab Samples: 50228527005, 50228527006, 50228527007, 50228527008

METHOD BLANK: 2343555 Matrix: Water
Associated Lab Samples: 50228527005, 50228527006, 50228527007, 50228527008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	6.0	07/02/19 13:41	
Arsenic	ug/L	ND	10.0	07/02/19 13:41	
Barium	ug/L	ND	10.0	07/02/19 13:41	
Beryllium	ug/L	ND	4.0	07/02/19 13:41	
Boron	ug/L	ND	100	07/02/19 13:41	
Cadmium	ug/L	ND	2.0	07/02/19 13:41	
Calcium	ug/L	ND	1000	07/02/19 13:41	
Chromium	ug/L	ND	10.0	07/02/19 13:41	
Cobalt	ug/L	ND	10.0	07/02/19 13:41	
Iron	ug/L	ND	100	07/02/19 13:41	
Lead	ug/L	ND	10.0	07/02/19 13:41	
Lithium	ug/L	ND	20.0	07/02/19 13:41	N2
Manganese	ug/L	ND	10.0	07/02/19 13:41	
Molybdenum	ug/L	ND	10.0	07/02/19 13:41	
Selenium	ug/L	ND	10.0	07/02/19 13:41	
Thallium	ug/L	ND	10.0	07/02/19 13:41	

LABORATORY CONTROL SAMPLE: 2343556

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	1000	1010	101	80-120	
Arsenic	ug/L	1000	990	99	80-120	
Barium	ug/L	1000	975	98	80-120	
Beryllium	ug/L	1000	965	96	80-120	
Boron	ug/L	1000	1020	102	80-120	
Cadmium	ug/L	1000	985	99	80-120	
Calcium	ug/L	10000	9500	95	80-120	
Chromium	ug/L	1000	983	98	80-120	
Cobalt	ug/L	1000	977	98	80-120	
Iron	ug/L	10000	9700	97	80-120	
Lead	ug/L	1000	926	93	80-120	
Lithium	ug/L	1000	978	98	80-120	N2
Manganese	ug/L	1000	964	96	80-120	
Molybdenum	ug/L	1000	926	93	80-120	
Selenium	ug/L	1000	998	100	80-120	
Thallium	ug/L	1000	942	94	80-120	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: IPL
Pace Project No.: 50228527

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2349122 2349123

Parameter	Units	50228567010 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	1000	1000	842	835	84	83	75-125	1	20	
Arsenic	ug/L	12.5	1000	1000	1020	1010	101	99	75-125	1	20	
Barium	ug/L	226	1000	1000	1210	1200	99	98	75-125	1	20	
Beryllium	ug/L	ND	1000	1000	951	939	95	94	75-125	1	20	
Boron	ug/L	607	1000	1000	1680	1690	107	108	75-125	1	20	
Cadmium	ug/L	2.3	1000	1000	999	990	100	99	75-125	1	20	
Calcium	ug/L	284000	10000	10000	302000	309000	175	242	75-125	2	20	E,P6
Chromium	ug/L	62.0	1000	1000	1020	1010	96	95	75-125	1	20	
Cobalt	ug/L	18.1	1000	1000	928	917	91	90	75-125	1	20	
Iron	ug/L	40900	10000	10000	52800	53200	118	123	75-125	1	20	
Lead	ug/L	28.5	1000	1000	878	874	85	85	75-125	0	20	
Lithium	ug/L	51.0	1000	1000	1050	1050	100	100	75-125	1	20	N2
Manganese	ug/L	1060	1000	1000	2020	2030	96	98	75-125	1	20	
Molybdenum	ug/L	18.8	1000	1000	904	894	89	88	75-125	1	20	
Selenium	ug/L	ND	1000	1000	991	987	99	99	75-125	0	20	
Thallium	ug/L	ND	1000	1000	835	831	83	83	75-125	0	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: IPL
Pace Project No.: 50228527

QC Batch: 507618 Analysis Method: SM 2540G
QC Batch Method: SM 2540G Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 50228527001, 50228527002, 50228527003

SAMPLE DUPLICATE: 2342481

Parameter	Units	50228527002 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	15.8	14.7	7	5	R1

SAMPLE DUPLICATE: 2342482

Parameter	Units	50228422003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	20.6	20.3	2	5	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: IPL
Pace Project No.: 50228527

QC Batch: 507767
QC Batch Method: SM 2540G
Analysis Method: SM 2540G
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 50228527004

SAMPLE DUPLICATE: 2343215

Parameter	Units	50228527004 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	15.3	15.0	2	5	H3

SAMPLE DUPLICATE: 2343216

Parameter	Units	50228298017 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	32.3	32.3	0	5	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Indianapolis, IN 46268
(317)228-3100

QUALITY CONTROL DATA

Project: IPL
Pace Project No.: 50228527

QC Batch: 508575 Analysis Method: SM 2320B
QC Batch Method: SM 2320B Analysis Description: 2320B Alkalinity
Associated Lab Samples: 50228527009, 50228527010, 50228527011, 50228527012

METHOD BLANK: 2346566 Matrix: Water
Associated Lab Samples: 50228527009, 50228527010, 50228527011, 50228527012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	ND	2.0	06/28/19 10:33	

LABORATORY CONTROL SAMPLE: 2346567

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	50	49.7	99	90-110	

SAMPLE DUPLICATE: 2346568

Parameter	Units	50228623016 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	257	262	2	20	

SAMPLE DUPLICATE: 2346569

Parameter	Units	50228936002 Result	Dup Result	RPD	Max RPD	Qualifiers
Alkalinity, Total as CaCO3	mg/L	69.7	71.1	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
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

QUALITY CONTROL DATA

Project: IPL
Pace Project No.: 50228527

QC Batch: 508593 Analysis Method: SM 4500-H+B
QC Batch Method: SM 4500-H+B Analysis Description: 4500H+B pH
Associated Lab Samples: 50228527009, 50228527010, 50228527011, 50228527012

SAMPLE DUPLICATE: 2346664

Parameter	Units	50225562001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.8	7.9	1	2	H3

SAMPLE DUPLICATE: 2346665

Parameter	Units	50228527010 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.2	8.1	1	2	H3

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: IPL
Pace Project No.: 50228527

QC Batch: 508774 Analysis Method: SM 4500-S2-D
QC Batch Method: SM 4500-S2-D Analysis Description: 4500S2D Sulfide Water
Associated Lab Samples: 50228527009, 50228527010, 50228527011, 50228527012

METHOD BLANK: 2347620 Matrix: Water
Associated Lab Samples: 50228527009, 50228527010, 50228527011, 50228527012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfide	mg/L	ND	0.10	06/27/19 13:02	

LABORATORY CONTROL SAMPLE: 2347621

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide	mg/L	0.5	0.50	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2347622 2347623

Parameter	Units	50225562001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfide	mg/L	ND	0.5	0.5	0.49	0.50	97	100	90-110	2	20	

MATRIX SPIKE SAMPLE: 2347624

Parameter	Units	50228936001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Sulfide	mg/L	<0.10	0.5	0.48	94	90-110	

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: IPL
Pace Project No.: 50228527

QC Batch: 509070 Analysis Method: EPA 350.1
QC Batch Method: EPA 350.1 Analysis Description: 350.1 Ammonia
Associated Lab Samples: 50228527009, 50228527010, 50228527011, 50228527012

METHOD BLANK: 2349177 Matrix: Water
Associated Lab Samples: 50228527009, 50228527010, 50228527011, 50228527012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.10	06/28/19 15:49	

LABORATORY CONTROL SAMPLE: 2349178

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	5	5.3	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2349179 2349180

Parameter	Units	50228024011 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	ND	5	5	5.2	5.2	105	105	90-110	0	20	

MATRIX SPIKE SAMPLE: 2349181

Parameter	Units	50228527010 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	ND	5	5.4	108	90-110	

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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(317)228-3100

QUALITY CONTROL DATA

Project: IPL
Pace Project No.: 50228527

QC Batch: 509002 Analysis Method: SM 5310C
QC Batch Method: SM 5310C Analysis Description: 5310C Total Organic Carbon
Associated Lab Samples: 50228527009, 50228527010, 50228527011, 50228527012

METHOD BLANK: 2348727 Matrix: Water
Associated Lab Samples: 50228527009, 50228527010, 50228527011, 50228527012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	06/28/19 14:01	

LABORATORY CONTROL SAMPLE: 2348728

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	10	10.3	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2348729 2348730

Parameter	Units	50228527009 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	mg/L	ND	10	10	11.5	11.3	105	103	80-120	1	20	

MATRIX SPIKE SAMPLE: 2348731

Parameter	Units	50228429002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	3.3	10	13.2	99	80-120	

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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(317)228-3100

QUALIFIERS

Project: IPL
Pace Project No.: 50228527

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 adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

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.

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

E	Analyte concentration exceeded the calibration range. The reported result is estimated.
H3	Sample was received or analysis requested beyond the recognized method holding time.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
M3	Matrix spike recovery was outside laboratory control limits due to matrix interferences.
N2	The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.
P6	Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.
R1	RPD value was outside control limits.

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: IPL
Pace Project No.: 50228527

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
50228527009	**TP-1 0.5 (42-44) NL**	EPA 9056	508703		
50228527010	**TP-2 (36-38) NL**	EPA 9056	508703		
50228527011	**TP-3 (38-40) NL**	EPA 9056	508703		
50228527012	**MW-10 0.5 (42-44) NL**	EPA 9056	508703		
50228527009	**TP-1 0.5 (42-44) NL**	EPA 9056	508670		
50228527010	**TP-2 (36-38) NL**	EPA 9056	508670		
50228527011	**TP-3 (38-40) NL**	EPA 9056	508670		
50228527012	**MW-10 0.5 (42-44) NL**	EPA 9056	508670		
50228527001	**TP-1 0.5 (42-44)**	EPA 3050	507694	EPA 6010	508992
50228527002	**TP-2 (36-38)**	EPA 3050	507694	EPA 6010	508992
50228527003	**TP-3 (38-40)**	EPA 3050	507694	EPA 6010	508992
50228527004	**MW-10 0.5 (42-44)**	EPA 3050	507694	EPA 6010	508992
50228527005	**TP-1 0.5 (42-44) SPLP**	EPA 3010	507829	EPA 6010	509460
50228527006	**TP-2 (36-38) SPLP**	EPA 3010	507829	EPA 6010	509460
50228527007	**TP-3 (38-40) SPLP**	EPA 3010	507829	EPA 6010	509460
50228527008	**MW-10 0.5 (42-44) SPLP**	EPA 3010	507829	EPA 6010	509460
50228527005	**TP-1 0.5 (42-44) SPLP**	EPA 7470	509043	EPA 7470	509337
50228527006	**TP-2 (36-38) SPLP**	EPA 7470	509043	EPA 7470	509337
50228527007	**TP-3 (38-40) SPLP**	EPA 7470	509043	EPA 7470	509337
50228527008	**MW-10 0.5 (42-44) SPLP**	EPA 7470	509043	EPA 7470	509337
50228527001	**TP-1 0.5 (42-44)**	EPA 7471	508265	EPA 7471	508640
50228527002	**TP-2 (36-38)**	EPA 7471	508265	EPA 7471	508640
50228527003	**TP-3 (38-40)**	EPA 7471	508265	EPA 7471	508640
50228527004	**MW-10 0.5 (42-44)**	EPA 7471	508265	EPA 7471	508640
50228527001	**TP-1 0.5 (42-44)**	SM 2540G	507618		
50228527002	**TP-2 (36-38)**	SM 2540G	507618		
50228527003	**TP-3 (38-40)**	SM 2540G	507618		
50228527004	**MW-10 0.5 (42-44)**	SM 2540G	507767		
50228527009	**TP-1 0.5 (42-44) NL**	ASTM D3987	508168		
50228527010	**TP-2 (36-38) NL**	ASTM D3987	508168		
50228527011	**TP-3 (38-40) NL**	ASTM D3987	508168		
50228527012	**MW-10 0.5 (42-44) NL**	ASTM D3987	508168		
50228527005	**TP-1 0.5 (42-44) SPLP**	EPA 1312	508169		
50228527006	**TP-2 (36-38) SPLP**	EPA 1312	508169		
50228527007	**TP-3 (38-40) SPLP**	EPA 1312	508169		
50228527008	**MW-10 0.5 (42-44) SPLP**	EPA 1312	508169		
50228527009	**TP-1 0.5 (42-44) NL**	SM 2320B	508575		
50228527010	**TP-2 (36-38) NL**	SM 2320B	508575		
50228527011	**TP-3 (38-40) NL**	SM 2320B	508575		
50228527012	**MW-10 0.5 (42-44) NL**	SM 2320B	508575		
50228527009	**TP-1 0.5 (42-44) NL**	SM 4500-H+B	508593		
50228527010	**TP-2 (36-38) NL**	SM 4500-H+B	508593		
50228527011	**TP-3 (38-40) NL**	SM 4500-H+B	508593		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
7726 Moller Road
Indianapolis, IN 46268
(317)228-3100

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: IPL
Pace Project No.: 50228527

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
50228527012	**MW-10 0.5 (42-44) NL**	SM 4500-H+B	508593		
50228527009	**TP-1 0.5 (42-44) NL**	SM 4500-S2-D	508774		
50228527010	**TP-2 (36-38) NL**	SM 4500-S2-D	508774		
50228527011	**TP-3 (38-40) NL**	SM 4500-S2-D	508774		
50228527012	**MW-10 0.5 (42-44) NL**	SM 4500-S2-D	508774		
50228527009	**TP-1 0.5 (42-44) NL**	EPA 350.1	509070		
50228527010	**TP-2 (36-38) NL**	EPA 350.1	509070		
50228527011	**TP-3 (38-40) NL**	EPA 350.1	509070		
50228527012	**MW-10 0.5 (42-44) NL**	EPA 350.1	509070		
50228527009	**TP-1 0.5 (42-44) NL**	SM 5310C	509002		
50228527010	**TP-2 (36-38) NL**	SM 5310C	509002		
50228527011	**TP-3 (38-40) NL**	SM 5310C	509002		
50228527012	**MW-10 0.5 (42-44) NL**	SM 5310C	509002		

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.

Section A Required Client Information:

Company:	ATC Group Services
Address:	7988 Centerpointe Drive, Suite 100
	Indianapolis, Indiana 46256
Email To:	robert.duncan@atcgs.com
Phone: 317-579-4055	Fax: 317-849-2478
Requested Due Date/TAT:	Standard

Section B Required Project Information:

Report To:	Rob Duncan
Copy To:	same
Purchase Order No.:	

Section C Invoice Information:

Attention:	Paula Sedam
Company Name:	Same
Address:	
Pace Quote Reference:	
Pace Project Manager:	
Pace Profile #:	

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER____

SITE LOCATION: ☐ GA ☐ IL ☐ IN ☑ MI ☐ NC ☐ OH ☐ SC ☐ WI ☐ OTHER____

Section D Required Client Information

SAMPLE ID
One Character per box.
(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 #	SAMPLE ID	MATRIX CODE	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED GRAB DATE	COLLECTED GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Requested Analysis: BTEX & MTBE	Appendix IV	Sulfide	Cl, F, SO4	Ammonia	Residual Chlorine (Y/N)	Pace Project No. / Lab I.D.
1	TP-105 (42-44)	SL	G			5/29/19	4:00		2	X								X	X	X	X	X		001 005 009
2	TP-2 (36-38)	SL	G			5/23/19	4:00		2	X								X	X	X	X	X		002 006 010
3	TP-3 (38-40)	SL	G			5/24/19	4:00		2	X								X	X	X	X	X		003 007 011
4	MW105 (42-44)	SL	G	~~5/28/19~~		5/28/19	4:00		2	X								X	X	X	X	X		004 008 012
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								
13																								
14																								
15																								

Pace Project No. Lab I.D.: 50228527

Additional Comments:

No Radium 226 and 228 analysis from Appendix IV list.

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Steven Barajas/ATC	6/20/19	1000	Kendra Runge	6/20/19	1000
Kendra Runge	6/20/19	10:38	Marcia Bennett	6/20/19	10:38

SAMPLE CONDITIONS

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

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Steven Barajas

SIGNATURE of SAMPLER: Steven Barajas — DATE Signed (MM / DD / YY): 05/23/19

P. Greg Hopper 5/23/19

Pace Analytical

SAMPLE CONDITION UPON RECEIPT FORM

Project #: 50228527

Date/Time and Initials of person examining contents: CT 6/20/19 1355

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☑ Client ☐ Commercial ☐ Pace ☐ Other _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ Yes ☑ No **Seals Intact:** ☐ Yes ☑ No

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

Thermometer: 1 2 3 4 5 6 A B C D E F **Ice Type:** ☑ Wet ☐ Blue ☐ None | Samples collected today and on ice: ☑ Yes ☐ No ☐ N/A

Cooler Temperature: 7.8°C/7.8°C Ice Visible in Sample Containers?: ☐ Yes ☑ No ☐ N/A

(Initial/Corrected) Temp should be above freezing to 6°C If temp. is Over 6°C or under 0°C, was the PM Notified?: ☑ Yes ☐ No ☐ N/A

All discrepancies will be written out in the comments section below.

	Yes	No
Are samples from West Virginia? Document any containers out of temp.		X
USDA Regulated Soils? (ID, NY, WA, OR,CA, NM, TX, OK, AR, LA, TN, AL, MS, NC, SC, GA, FL, or Puerto Rico)		X
Chain of Custody Present:	X	
Chain of Custody Filled Out:	X	
Short Hold Time Analysis (<72hr)?: Analysis:		X
Time 5035A TC placed in Freezer or Short Holds To Lab:		
Rush TAT Requested:		X
Containers Intact?:	X	
Sample Label (IDs/Dates/Times) Match COC?: Except TCs, which only require sample ID	X	

	Yes	No	N/A
All containers needing acid/base pres. Have been checked?: **exceptions: VOA, coliform, LLHg, O&G, and any container with a septum cap or preserved with HCl.** All containers needing preservation are found to be in compliance with EPA recommendation (<2, >9, >12) unless otherwise noted. Circle: HNO3 H2SO4 NaOH NaOH/ZnAc			X
Dissolved Metals field filtered?:			X
Headspace Wisconsin Sulfide			X
	Present	Absent	N/A
Residual Chlorine Check (SVOC 625 Pest/PCB 608)			X
Residual Chlorine Check (Total/Amenable/Free Cyanide)			X
Headspace in VOA Vials (>6mm):			X
Trip Blank Present?:		X	
Trip Blank Custody Seals?:		X	

Comments:

Sample Container Count

WO# : 50228527

50228527

CLIENT: ATC

COC PAGE 1 of 1

COC ID# _____

Project # 50228527

Sample Line Item	DG9H VG9H	AG0U	AG1H	AG1U	AG2U	AG3S	WGFU	SP5T	BP1U	BP2N	BP2S	BP2U	BP3B	BP3N	BP3S	BP3U	Bulk SBS Kit R	Matrix S (Soil/Wa Aqueous	pH <2	pH >9	pH>12
1							2											SC			
2							↓											↓			
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

Container Codes

Glass

DG9B	40mL Na Bisulfate amber vial	AG0U	100mL unpreserved amber glass
DG9H	40mL HCL amber voa vial	AG1H	1 liter HCL amber glass
DG9M	40mL MeOH clear vial	AG1S	1 liter H2SO4 amber glass
DG9P	40mL TSP amber vial	AG1T	1 liter Na Thiosulfate amber glass
DG9S	40mL H2SO4 amber vial	AG1U	1liter unpreserved amber glass
DG9T	40mL Na Thio amber vial	AG2N	500mL HNO3 amber glass
DG9U	40mL unpreserved amber vial	AG2S	500mL H2SO4 amber glass
VG9H	40mL HCL clear vial	AG2U	500mL unpreserved amber glass
VG9T	40mL Na Thio. clear vial	AG3S	250mL H2SO4 glass amber
VG9U	40mL unpreserved clear vial	AG3U	250mL unpreserved amber glass
VGFX	40mL w/hexane wipe vial	BG1H	1 liter HCL clear glass
VSG	Headspace septa vial & HCL	BG1S	1 liter H2SO4 clear glass
WGKU	8oz unpreserved clear jar	BG1T	1 liter Na Thiosulfate clear glass
WGFU	4oz clear soil jar	BG1U	1 liter unpreserved glass
JGFU	4oz unpreserved amber wide	BG3H	250mL HCl Clear Glass
		BG3U	250mL Unpreserved Clear Glass

Plastic / Misc.

BP1A	1 liter NaOH, Asc Acid plastic	BP3U	250mL unpreserved plastic
BP1N	1 liter HNO3 plastic	BP3Z	250mL NaOH, Zn Ac plastic
BP1S	1 liter H2SO4 plastic		
BP1U	1 liter unpreserved plastic	AF	Air Filter
BP1Z	1 liter NaOH, Zn, Ac	C	Air Cassettes
BP2A	500mL NaOH, Asc Acid plastic	R	Terra core kit
BP2N	500mL HNO3 plastic	SP5T	120mL Coliform Na Thiosulfate
BP2O	500mL NaOH plastic	U	Summa Can
BP2S	500mL H2SO4 plastic	ZPLC	Ziploc Bag
BP2U	500mL unpreserved plastic		
BP2Z	500mL NaOH, Zn Ac		
BP3B	250mL NaOH plastic		
BP3N	250mL HNO3 plastic		
BP3S	250mL H2SO4 plastic		

APPENDIX C

Field Sampling Forms

Low-Flow Test Report:

Test Date / Time: 7/3/2019 11:55:10 AM
Project: PETERSBURG IPL
Operator Name: Andy Jaskowiak

Location Name: MW-10 **Well Diameter: 2 in** **Casing Type: PVC** **Screen Length: 120 in** **Top of Screen: 40.58 ft** **Total Depth: 50.58 ft**	**Pump Type: QED Bladder pump** **Tubing Type: LDPE** **Pump Intake From TOC: 45 ft** **Estimated Total Volume Pumped: 11250 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 250 ml/min** **Final Draw Down: 0.09 ft**	**Instrument Used: Aqua TROLL 500** **Serial Number: 625649**

Test Notes:

Weather Conditions:
Hot

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.3	+/- 0.5	+/- 3 %	+/- 10 %	+/- 10 %	+/- 3 %	+/- 0.3	
7/3/2019 11:55 AM	00:00	7.00 pH	17.73 °C	2,514.5 µS/cm	0.53 mg/L	281.42 NTU	52.5 mV		250.00 ml/min
7/3/2019 11:58 AM	03:00	7.02 pH	17.88 °C	2,532.4 µS/cm	0.17 mg/L	264.87 NTU	45.9 mV		250.00 ml/min
7/3/2019 12:01 PM	06:00	7.02 pH	17.48 °C	2,521.1 µS/cm	0.08 mg/L	181.79 NTU	40.0 mV		250.00 ml/min
7/3/2019 12:04 PM	09:00	7.03 pH	17.41 °C	2,567.6 µS/cm	0.06 mg/L	135.08 NTU	34.4 mV		250.00 ml/min
7/3/2019 12:07 PM	12:00	7.03 pH	17.55 °C	2,575.8 µS/cm	0.06 mg/L	101.48 NTU	28.2 mV		250.00 ml/min
7/3/2019 12:10 PM	15:00	7.03 pH	17.48 °C	2,726.8 µS/cm	0.05 mg/L	74.30 NTU	21.6 mV		250.00 ml/min
7/3/2019 12:13 PM	18:00	7.03 pH	17.41 °C	2,573.3 µS/cm	0.05 mg/L	49.37 NTU	15.4 mV		250.00 ml/min
7/3/2019 12:16 PM	21:00	7.02 pH	17.36 °C	2,567.9 µS/cm	0.05 mg/L	44.19 NTU	8.3 mV		250.00 ml/min
7/3/2019 12:19 PM	24:00	7.03 pH	17.38 °C	2,907.6 µS/cm	0.05 mg/L	36.30 NTU	1.2 mV		250.00 ml/min
7/3/2019 12:22 PM	27:00	7.02 pH	17.38 °C	2,557.1 µS/cm	0.05 mg/L	28.49 NTU	-6.3 mV		250.00 ml/min
7/3/2019 12:25 PM	30:00	7.02 pH	17.32 °C	3,389.9 µS/cm	0.04 mg/L	78.67 NTU	-14.3 mV		250.00 ml/min
7/3/2019 12:28 PM	33:00	7.02 pH	17.69 °C	3,411.4 µS/cm	0.07 mg/L	30.62 NTU	-23.0 mV		250.00 ml/min
7/3/2019 12:31 PM	36:00	7.00 pH	19.76 °C	3,457.9 µS/cm	0.11 mg/L	17.16 NTU	-34.7 mV		250.00 ml/min

7/3/2019 12:34 PM	39:00	6.99 pH	21.54 °C	3,438.9 µS/cm	0.17 mg/L	11.67 NTU	-48.1 mV		250.00 ml/min
7/3/2019 12:37 PM	42:00	6.98 pH	22.74 °C	3,434.3 µS/cm	0.19 mg/L	10.72 NTU	-61.1 mV		250.00 ml/min
7/3/2019 12:40 PM	45:00	6.97 pH	23.68 °C	3,435.8 µS/cm	0.20 mg/L	10.98 NTU	-72.4 mV		250.00 ml/min

Samples

Sample ID:	Description:
MW-10	Purged 2.75 gal

Low-Flow Test Report:

Test Date / Time: 7/2/2019 11:37:55 AM
Project: PETERSBURG IPL
Operator Name: Andy Jaskowiak

Location Name: TP-1 **Well Diameter: 2 in** **Casing Type: PVC** **Screen Length: 120 in** **Top of Screen: 40.62 ft** **Total Depth: 50.62 ft** **Initial Depth to Water: 35.97 m**	**Pump Type: QED Bladder pump** **Tubing Type: LDPE** **Pump Intake From TOC: 45 ft** **Estimated Total Volume Pumped: 18000 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 250 ml/min** **Final Draw Down: 0.27 ft**	**Instrument Used: Aqua TROLL 500** **Serial Number: 625649**

Test Notes:
HOT

Weather Conditions:
Hot

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.3	+/- 0.5	+/- 3 %	+/- 0.3 %	+/- 10 %	+/- 10 %	+/- 0.3	
7/2/2019 11:37 AM	00:00	6.98 pH	21.25 °C	3,109.6 µS/cm	0.27 mg/L	2,146.6 NTU	102.8 mV	118.01 ft	250.00 ml/min
7/2/2019 11:40 AM	03:00	7.00 pH	20.40 °C	3,110.2 µS/cm	0.24 mg/L	1,897.3 NTU	94.9 mV	118.01 ft	250.00 ml/min
7/2/2019 11:43 AM	06:00	7.00 pH	19.38 °C	3,094.9 µS/cm	0.21 mg/L	1,307.6 NTU	84.6 mV	118.01 ft	250.00 ml/min
7/2/2019 11:46 AM	09:00	7.01 pH	19.28 °C	3,090.5 µS/cm	0.19 mg/L	1,098.3 NTU	79.8 mV	118.01 ft	250.00 ml/min
7/2/2019 11:49 AM	12:00	7.02 pH	19.34 °C	3,087.8 µS/cm	0.18 mg/L	1,156.7 NTU	71.3 mV	118.01 ft	250.00 ml/min
7/2/2019 11:52 AM	15:00	7.03 pH	18.78 °C	3,057.9 µS/cm	0.18 mg/L	1,054.7 NTU	61.7 mV	118.01 ft	250.00 ml/min
7/2/2019 11:55 AM	18:00	7.04 pH	18.78 °C	3,059.3 µS/cm	0.17 mg/L	788.50 NTU	51.8 mV	118.01 ft	250.00 ml/min
7/2/2019 11:58 AM	21:00	7.04 pH	18.81 °C	3,055.5 µS/cm	0.17 mg/L	613.67 NTU	42.3 mV	118.01 ft	250.00 ml/min
7/2/2019 12:01 PM	24:00	7.05 pH	18.91 °C	3,054.8 µS/cm	0.17 mg/L	634.76 NTU	29.9 mV	118.01 ft	250.00 ml/min
7/2/2019 12:04 PM	27:00	7.05 pH	18.54 °C	3,045.5 µS/cm	0.18 mg/L	547.97 NTU	15.4 mV	118.01 ft	250.00 ml/min
7/2/2019 12:07 PM	30:00	7.05 pH	19.09 °C	3,050.5 µS/cm	0.16 mg/L	408.95 NTU	-1.9 mV	118.01 ft	250.00 ml/min
7/2/2019 12:10 PM	33:00	7.05 pH	19.30 °C	3,051.1 µS/cm	0.17 mg/L	438.76 NTU	-20.0 mV	118.01 ft	250.00 ml/min
7/2/2019 12:13 PM	36:00	7.06 pH	19.19 °C	3,051.4 µS/cm	0.17 mg/L	380.90 NTU	-34.8 mV	118.01 ft	250.00 ml/min

7/2/2019 12:16 PM	39:00	7.07 pH	19.20 °C	3,056.7 µS/cm	0.14 mg/L	272.95 NTU	-49.3 mV	118.01 ft	250.00 ml/min
7/2/2019 12:19 PM	42:00	7.07 pH	19.34 °C	3,062.4 µS/cm	0.14 mg/L	260.69 NTU	-60.5 mV	118.01 ft	250.00 ml/min
7/2/2019 12:22 PM	45:00	7.08 pH	18.90 °C	3,054.5 µS/cm	0.14 mg/L	276.16 NTU	-67.2 mV	118.01 ft	250.00 ml/min
7/2/2019 12:25 PM	48:00	7.09 pH	18.99 °C	3,059.9 µS/cm	0.14 mg/L	242.36 NTU	-72.2 mV	118.01 ft	250.00 ml/min
7/2/2019 12:28 PM	51:00	7.10 pH	18.97 °C	3,064.7 µS/cm	0.12 mg/L	192.67 NTU	-77.6 mV	118.01 ft	250.00 ml/min
7/2/2019 12:31 PM	54:00	7.10 pH	19.29 °C	3,065.0 µS/cm	0.12 mg/L	231.69 NTU	-82.5 mV	118.01 ft	250.00 ml/min
7/2/2019 12:34 PM	57:00	7.10 pH	19.65 °C	3,068.7 µS/cm	0.11 mg/L	182.22 NTU	-86.1 mV	118.01 ft	250.00 ml/min
7/2/2019 12:37 PM	01:00:00	7.11 pH	19.71 °C	3,065.6 µS/cm	0.10 mg/L	156.88 NTU	-88.7 mV	118.01 ft	250.00 ml/min
7/2/2019 12:40 PM	01:03:00	7.12 pH	19.38 °C	3,061.8 µS/cm	0.10 mg/L	182.85 NTU	-90.2 mV	118.01 ft	250.00 ml/min
7/2/2019 12:43 PM	01:06:00	7.13 pH	19.00 °C	3,054.0 µS/cm	0.09 mg/L	133.60 NTU	-92.1 mV	118.01 ft	250.00 ml/min
7/2/2019 12:46 PM	01:09:00	7.13 pH	19.18 °C	3,059.9 µS/cm	0.09 mg/L	148.49 NTU	-92.5 mV	118.01 ft	250.00 ml/min
7/2/2019 12:49 PM	01:12:00	7.13 pH	19.52 °C	3,062.2 µS/cm	0.10 mg/L	146.23 NTU	-95.1 mV	118.01 ft	250.00 ml/min

Samples

Sample ID:	Description:
TP-1	Purged 4 gal

Low-Flow Test Report:

Test Date / Time: 7/2/2019 2:55:21 PM
Project: PETERSBURG IPL
Operator Name: Andy Jaskowiak

Location Name: TP-2 **Well Diameter: 2 in** **Casing Type: PVC** **Screen Length: 120 in** **Top of Screen: 37.82 ft** **Total Depth: 47.82 ft** **Initial Depth to Water: 36.63 ft**	**Pump Type: QED Bladder pump** **Tubing Type: LDPE** **Pump Intake From TOC: 45 ft** **Estimated Total Volume Pumped: 6341.667 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 250 ml/min** **Final Draw Down: 0.08 ft**	**Instrument Used: Aqua TROLL 500** **Serial Number: 625649**

Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.3	+/- 0.5	+/- 3 %	+/- 10 %	+/- 10 %	+/- 3 %	+/- 0.3	
7/2/2019 2:55 PM	00:00	6.79 pH	20.63 °C	2,169.3 µS/cm	1.16 mg/L	3,763.8 NTU	42.2 mV	36.63 ft	250.00 ml/min
7/2/2019 2:56 PM	01:22	6.96 pH	19.71 °C	2,242.9 µS/cm	0.26 mg/L	4,132.6 NTU	39.2 mV	36.63 ft	250.00 ml/min
7/2/2019 2:59 PM	04:22	7.02 pH	18.59 °C	2,246.8 µS/cm	0.11 mg/L	3,681.3 NTU	34.2 mV	36.63 ft	250.00 ml/min
7/2/2019 3:02 PM	07:22	7.00 pH	18.31 °C	2,225.7 µS/cm	0.16 mg/L	3,321.1 NTU	32.4 mV	36.63 ft	250.00 ml/min
7/2/2019 3:05 PM	10:22	6.99 pH	18.49 °C	2,220.9 µS/cm	0.25 mg/L	3,607.6 NTU	28.6 mV	36.63 ft	250.00 ml/min
7/2/2019 3:08 PM	13:22	6.99 pH	17.77 °C	2,178.8 µS/cm	0.28 mg/L	3,257.1 NTU	27.2 mV	36.63 ft	250.00 ml/min
7/2/2019 3:11 PM	16:22	7.00 pH	17.75 °C	2,192.7 µS/cm	0.26 mg/L	2,914.2 NTU	24.2 mV	36.63 ft	250.00 ml/min
7/2/2019 3:14 PM	19:22	7.00 pH	18.36 °C	2,198.1 µS/cm	0.25 mg/L	3,331.1 NTU	21.4 mV	36.63 ft	250.00 ml/min
7/2/2019 3:17 PM	22:22	7.01 pH	18.28 °C	2,192.6 µS/cm	0.23 mg/L	2,794.1 NTU	19.0 mV	36.63 ft	250.00 ml/min
7/2/2019 3:20 PM	25:22	7.02 pH	18.03 °C	2,191.8 µS/cm	0.21 mg/L	2,953.0 NTU	17.4 mV	36.63 ft	250.00 ml/min

Samples

Sample ID:	Description:
TP-2	Purged 1.25 gal

Low-Flow Test Report:

Test Date / Time: 7/3/2019 10:52:50 AM
Project: PETERSBURG IPL (2)
Operator Name: Andy Jaskowiak

Location Name: TP-2 **Well Diameter: 2 in** **Casing Type: PVC** **Screen Length: 120 in** **Top of Screen: 37.82 ft** **Total Depth: 47.82 ft** **Initial Depth to Water: 36.68 ft**	**Pump Type: QED Bladder pump** **Tubing Type: LDPE** **Pump Intake From TOC: 45 ft** **Estimated Total Volume Pumped: 6000 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 250 ml/min** **Final Draw Down: 0.06 ft**	**Instrument Used: Aqua TROLL 500** **Serial Number: 625649**

Test Notes:
Mp50 broke had to resample

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.3	+/- 0.5	+/- 3 %	+/- 10 %	+/- 10 %	+/- 3 %	+/- 0.3	
7/3/2019 10:52 AM	00:00	7.07 pH	18.19 °C	2,429.4 µS/cm	1.67 mg/L	4,830.9 NTU	81.3 mV	36.68 ft	250.00 ml/min
7/3/2019 10:55 AM	03:00	7.06 pH	17.30 °C	2,493.0 µS/cm	0.18 mg/L	764.95 NTU	80.8 mV	36.68 ft	250.00 ml/min
7/3/2019 10:58 AM	06:00	7.03 pH	17.07 °C	2,495.3 µS/cm	0.11 mg/L	387.36 NTU	82.0 mV	36.68 ft	250.00 ml/min
7/3/2019 11:01 AM	09:00	7.02 pH	17.29 °C	2,488.5 µS/cm	0.08 mg/L	264.53 NTU	81.4 mV	36.68 ft	250.00 ml/min
7/3/2019 11:04 AM	12:00	7.02 pH	17.33 °C	2,482.1 µS/cm	0.08 mg/L	344.96 NTU	80.6 mV	36.68 ft	250.00 ml/min
7/3/2019 11:07 AM	15:00	7.02 pH	17.36 °C	2,449.0 µS/cm	0.06 mg/L	265.89 NTU	79.4 mV	36.68 ft	250.00 ml/min
7/3/2019 11:10 AM	18:00	7.02 pH	17.31 °C	2,359.5 µS/cm	0.06 mg/L	265.94 NTU	77.4 mV	36.68 ft	250.00 ml/min
7/3/2019 11:13 AM	21:00	7.02 pH	17.14 °C	2,330.0 µS/cm	0.06 mg/L	312.40 NTU	76.6 mV	36.68 ft	250.00 ml/min
7/3/2019 11:16 AM	24:00	7.02 pH	17.16 °C	2,329.4 µS/cm	0.05 mg/L	339.98 NTU	75.8 mV	36.68 ft	250.00 ml/min

Samples

Sample ID:	Description:
TP-2	Purged 1.25 gal

Low-Flow Test Report:

Test Date / Time: 7/2/2019 2:02:05 PM
Project: PETERSBURG IPL
Operator Name: Andy Jaskowiak

Location Name: TP-3 **Well Diameter: 2 in** **Casing Type: PVC** **Screen Length: 120 in** **Top of Screen: 37.61 ft** **Total Depth: 47.61 ft** **Initial Depth to Water: 36.03 m**	**Pump Type: QED Bladder pump** **Tubing Type: LDPE** **Pump Intake From TOC: 45 ft** **Estimated Total Volume Pumped: 4820.833 ml** **Flow Cell Volume: 130 ml** **Final Flow Rate: 250 ml/min** **Final Draw Down: 0.1 ft**	**Instrument Used: Aqua TROLL 500** **Serial Number: 625649**

Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.3	+/- 0.5	+/- 3 %	+/- 10 %	+/- 10 %	+/- 3 %	+/- 0.3	
7/2/2019 2:02 PM	00:00	6.73 pH	19.49 °C	1,941.7 µS/cm	0.31 mg/L	1,164.3 NTU	-51.9 mV	118.21 ft	250.00 ml/min
7/2/2019 2:03 PM	01:17	6.70 pH	19.62 °C	1,913.3 µS/cm	0.28 mg/L	1,230.8 NTU	-41.4 mV	118.21 ft	250.00 ml/min
7/2/2019 2:06 PM	04:17	6.66 pH	19.44 °C	1,888.7 µS/cm	0.25 mg/L	982.79 NTU	-27.4 mV	118.21 ft	250.00 ml/min
7/2/2019 2:09 PM	07:17	6.66 pH	19.42 °C	1,869.6 µS/cm	0.25 mg/L	865.36 NTU	-19.4 mV	118.21 ft	250.00 ml/min
7/2/2019 2:12 PM	10:17	6.66 pH	19.14 °C	1,857.6 µS/cm	0.24 mg/L	721.22 NTU	-11.6 mV	118.21 ft	250.00 ml/min
7/2/2019 2:15 PM	13:17	6.67 pH	19.17 °C	1,859.0 µS/cm	0.23 mg/L	684.03 NTU	-5.8 mV	118.21 ft	250.00 ml/min
7/2/2019 2:18 PM	16:17	6.67 pH	19.15 °C	1,854.5 µS/cm	0.25 mg/L	635.76 NTU	-2.7 mV	118.21 ft	250.00 ml/min
7/2/2019 2:21 PM	19:17	6.68 pH	19.68 °C	1,862.6 µS/cm	0.25 mg/L	525.85 NTU	-1.0 mV	118.21 ft	250.00 ml/min

Samples

Sample ID:	Description:
TP-1	Depth to water was 36.03 Purged 1.25 gal