CCR COMPLIANCE
GROUNDWATER MONITORING AND CORRECTIVE ACTION
ANNUAL REPORT
NORTH ASH POND AND ASH LANDFILL

Prepared for:

NRG Power Midwest LP
New Castle Generating Station
West Pittsburg, Pennsylvania

Prepared by:

Aptim Environmental & Infrastructure, Inc.
Pittsburgh, Pennsylvania

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Table of Contents

List of Tables

List of Figures

List of Appendices

1.0 Introduction

Title 40 Code of Federal Regulations (CFR) §257.90 mandates that existing Coal Combustion Residuals (CCR) landfills and surface impoundments, also known as CCR units, be subject to groundwater monitoring and corrective action requirements as further detailed in §257.91 through §257.98. These requirements are part of the overall CCR Rule (or Rule) which was published in the Federal Register on April 17, 2015 and which became effective on October 19, 2015. Specific obligations for Owners and Operators of existing CCR units regarding the preparation of "Annual Groundwater Monitoring and Corrective Action Reports (Annual Report)" are outlined in §257.90(e)(1-5). The first of these Annual Reports must be completed no later than January 31, 2018, and provide information to address the following aspects for the preceding calendar year:

- Document the status of the groundwater monitoring and corrective action program for the respective CCR units;
- Summarize key actions completed;
- Describe any problems encountered and actions taken to resolve the problems; and
- Offer a projection of key activities for the upcoming year.

At a minimum, the Annual Report must contain the following information to the extent applicable and available:

- A map, aerial image, or diagram showing the CCR unit and all background/upgradient and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program;
- 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;
- 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/upgradient and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;
- 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); and
- Any other information required to be included as specified in §257.90 through §257.98.

The New Castle Generating Station, operated by NRG Power Midwest LP, a subsidiary of GenOn Energy, Inc. (GenOn), is a coal-fired power plant located in West Pittsburg, Pennsylvania. The Rule applies to this facility due to the management/disposal of CCR materials that are generated from the combustion of coal. CCR units associated with station operations include the New Castle Plant Ash Landfill and the North Ash Pond; however, the management/placement of CCR materials in both units has been significantly curtailed since the transition from coal to natural gas firing was effected in mid-2016. Each of these CCR units has a dedicated groundwater monitoring system that was originally installed to comply with Commonwealth of Pennsylvania Residual Waste Regulations, and was subsequently evaluated and modified (as needed) for use under the CCR program.

In summary, this Annual Report has been prepared to comply with the requirements of §257.90(e), addressing each of the New Castle Station's CCR Units with respect to the groundwater monitoring and corrective actions undertaken during Calendar Year 2018. This Annual Report and all subsequent reports thereto will be placed in the Station's operating record per §257.105(h)(1), noticed to the State Director per §257.106(h)(1), and posted to the publicly accessible internet site per §257.107(h)(1).

2.0 North Ash Pond

2.1 Groundwater Monitoring Network

The CCR groundwater monitoring system for the North Ash Pond is comprised of four wells, including Well MP-20 (upgradient), and Wells MP-21, MP-22, and MP-23 (downgradient). All of the wells are screened within the unconsolidated materials, wherein the uppermost aquifer exists. The locations of the wells are shown on the attached Figure 1, along with depiction of the generalized groundwater flow direction in the area of the pond. Each of these wells was already existing, and no new wells were added nor were any existing wells abandoned/replaced during the 2018 reporting period.

2.2 2018 Data Collection

During January 2018, the results from the October 2017 Detection Monitoring event were reviewed, and subsequent determination made that one downgradient well (MP-23) showed an Appendix III constituent (chloride) at levels representing a statistically significant increase (SSI) above corresponding background concentrations (see Table 1). Accordingly, and per the provisions of §257.94(e)(2), efforts were undertaken to conduct an Alternate Source Demonstration in an attempt to identify a potential source other than the North Ash Pond which was responsible for the observed SSI. This Alternate Source Demonstration, further discussed below in Section 2.3, was ultimately inconclusive and did not yield identification of another potential source for the elevated chloride levels in Well MP-23.

Per the inconclusive findings from the Alternate Source Demonstration for chloride, the North Ash Pond was transitioned into the CCR Assessment Monitoring Program, and an initial round of samples covering all Appendix IV constituents was collected in May 2018 (see Table 2) per §257.95(b). From these results, the detected Appendix IV constituents were carried forward and analyzed during the August 2018 Assessment Monitoring event. The analytical data from this event have since been reviewed, and are anticipated to trigger the First Quarter 2019 performance of another Alternate Source Demonstration (specific to arsenic), based on concentrations in all downgradient wells (see Table 2) representing a statistically significant level (SSL) above the corresponding groundwater protection standard.

2.3 Alternate Source Demonstration

As noted above, an Alternate Source demonstration was conducted in early-2018 which yielded inconclusive findings relative to the elevated chloride levels in downgradient Well MP-23. This Demonstration, which was completed in April 2018 by APTIM's qualified professional engineer, relied principally on geochemical comparisons of Well MP-23 water quality to other possible

sources. None of these comparisons provided ample evidence to definitively identify the chloride as being from a source other than the North Ash Pond.

2.4 2018 Monitoring Program Transitions

In 2018, the North Ash Pond transitioned into the Assessment Monitoring Program based on the inconclusive findings from the Alternate Source Demonstration discussed above in Section 2.3. The transition to the Assessment Monitoring Program was implemented during mid-April 2018, including placement of an appropriate notification into the facility's operating record per §257.105(h).

2.5 2018 Corrective Actions

During 2018, there were no problems identified or corrective actions undertaken.

2.6 2019 Projected Activities

An Alternate Source Demonstration for arsenic is anticipated to be conducted during the First Quarter of 2019, along with continued Assessment Monitoring activities, as appropriate.

3.0 Ash Landfill

3.1 Groundwater Monitoring Network

The CCR groundwater monitoring system for the Ash Landfill is comprised of six wells, including Wells MP-11 and P-6 (upgradient), and Wells MP-10R, MP-12, MP-15, and MP-18 (downgradient). All of the wells are screened within the unconsolidated materials, wherein the uppermost aquifer exists. The locations of the wells are shown on Figure 1 along with a depiction of the generalized groundwater flow direction. Each of these wells was already existing, and no new wells were added nor were any existing wells abandoned/replaced during the 2018 reporting period.

3.2 2018 Data Collection

During January 2018, the results from the October 2017 Detection Monitoring event were reviewed, and subsequent determination made that several downgradient wells showed Appendix III constituents (boron, calcium, sulfate, and total dissolved solids [TDS]) at levels representing SSIs above corresponding background concentrations (see Table 3). Accordingly, and per the provisions of §257.94(e)(2), efforts were undertaken to conduct an Alternate Source Demonstration in an attempt to identify a potential source other than the Ash Landfill which was responsible for the observed SSIs. This Alternate Source Demonstration, further discussed below in Section 3.3 and included in Appendix A, was ultimately successful in determining that the historical ash impoundment (located beneath and beyond the lined limits of the current Ash Landfill) was contributing to the elevated concentrations of boron, calcium, sulfate, and TDS in the downgradient wells. As a result, the Ash Landfill was deemed to remain in the CCR Detection Monitoring Program, and was additionally sampled in May 2018 and November 2018 with continuing observations of SSIs for the same general group of Appendix III constituents (see Table 3).

3.3 Alternate Source Demonstration

As noted above, an Alternate Source Demonstration was conducted in early-2018 which resolved the observed SSIs for boron, calcium, sulfate and TDS in several of the downgradient wells, relative to the levels measured during the October 2017 Detection Monitoring event. This Demonstration, which was completed in April 2018 and certified by APTIM's qualified professional engineer, provided the necessary documentation to confirm that the Ash Landfill is not creating unacceptable impacts to groundwater. Considering the May 2018 and November 2018 Detection Monitoring events showed SSIs for the same general group of Appendix III constituents, and that flow in the Ash Landfill leachate detection zone remains absent, the findings from the April 2018 demonstration remain relevant and applicable.

3.4 2018 Monitoring Program Transitions

During 2018, there were no transitions between monitoring programs. As a result of the successful Alternate Source Demonstration, only activities in support of the Detection Monitoring Program were conducted.

3.5 2018 Corrective Actions

During 2018, there were no problems identified or corrective actions undertaken.

3.6 2019 Projected Activities

It is anticipated that Detection Monitoring activities will continue for the Ash Landfill during 2019, with continued review of Appendix III constituent concentrations and comparison against the calculated background values.

Tables

Table 1
New Castle Generating Station
North Ash Pond--Groundwater Analytical Data
CCR Appendix III Constituents

Monitoring Well	Date Sampled	Groundwater Elevation (ft. MSL)	Total Boron (mg/L)	Total Calcium (mg/L)	Total Chloride (mg/L)	Total Fluoride (mg/L)	Total Dissolved Solids (mg/L)	Sulfate (mg/L)	pH (S.U.)
			Calculated Background						
			3.29	669	32	0.5	2764	1610	6.45-6.90
MP-20 (Upgradient)	29-Dec-15	766.13	1.81	506	30	< 0.5	2340	1390	6.72
	2-Mar-16	766.55	1.68	606	28	< 0.1	2260	1190	6.77
	2-Jun-16	766.13	1.38	452	28	< 0.1	2310	1100	6.62
	8-Sep-16	763.41	1.53	511	26	0.1	2230	1150	6.68
	1-Dec-16	764.11	1.73	500	25	< 0.1	2160	1050	6.79
	2-Mar-17	766.95	2.13	572	27	< 0.1	2320	1330	6.72
	31-May-17	768.15	2.23	570	27	< 0.2	2520	1270	6.57
	30-Aug-17	765.05	2.39	586	26	< 0.1	2530	1150	6.66
	9-Oct-17	764.22	2.39	583	22	< 0.1	2590	1080	6.69
	24-May-18	766.71	2.55	604	28	< 0.5	2470	1310	6.93
	29-Aug-18	765.31	2.59	560	23	< 0.5	2430	1170	6.80
MP-21 (Downgradient)	29-Dec-15	765.68	1.66	473	34	< 0.5	2260	1260	6.68
	2-Mar-16	766.09	1.64	527	31	< 0.1	2160	1150	6.69
	2-Jun-16	765.63	1.52	456	30	< 0.1	2450	1210	6.53
	8-Sep-16	762.86	1.59	477	29	0.2	2300	1220	6.56
	1-Dec-16	763.54	1.77	529	27	< 0.1	2210	1060	6.66
	2-Mar-17	766.53	< 0.05	489	30	0.1	2210	1230	6.85
	1-Jun-17	767.65	1.67	525	32	< 0.2	2270	1220	6.52
	30-Aug-17	764.62	1.71	510	31	< 0.1	2310	1070	6.59
	9-Oct-17	763.81	1.72	467	27	< 0.1	2360	959	6.69
	24-May-18	766.14	1.76	448	33	< 0.5	2150	1090	6.91
	29-Aug-18	764.70	1.52	475	31	< 0.5	2320	1140	6.77
MP-22 (Downgradient)	29-Dec-15	764.41	1.38	387	34	< 0.5	1650	761	6.76
	2-Mar-16	764.59	1.41	388	34	< 0.1	1620	816	6.72
	2-Jun-16	763.89	1.27	336	33	< 0.1	1700	801	6.54
	8-Sep-16	761.33	1.39	404	32	0.1	1750	845	6.57
	1-Dec-16	761.92	1.32	409	31	< 0.1	1710	798	6.62
	2-Mar-17	765.03	1.45	381	33	0.1	1710	868	6.63
	1-Jun-17	766.06	1.39	436	35	< 0.2	1790	915	6.47
	30-Aug-17	763.17	1.44	429	33	< 0.1	1860	832	6.66
	9-Oct-17	762.42	1.50	411	31	< 0.1	1990	840	6.55
	24-May-18	764.35	1.62	392	35	< 0.5	1950	861	6.70
	29-Aug-18	763.22	1.16	424	33	< 0.5	1940	921	6.60
MP-23 (Downgradient)	29-Dec-15	759.66	0.78	408	59	< 0.5	1740	1060	6.72
	2-Mar-16	754.89	0.81	436	50	< 0.1	1710	999	6.70
	2-Jun-16	754.80	0.73	357	47	0.1	1790	981	6.49
	8-Sep-16	750.96	0.82	397	48	0.5	1630	873	6.53
	1-Dec-16	753.21	0.74	371	52	0.1	1430	815	6.61
	2-Mar-17	761.40	0.80	334	48	0.2	1350	702	6.77
	1-Jun-17	762.92	0.77	361	55	< 0.2	1360	769	6.56
	30-Aug-17	760.38	0.72	297	54	< 0.1	1290	595	6.92
	9-Oct-17	760.36	0.68	278	52	0.1	1270	563	6.72
	24-May-18	762.00	0.83	338	58	< 0.5	1190	518	6.89
	29-Aug-18	760.33	0.76	275	58	< 0.5	1090	556	6.73

Notes:
1. Cells with "<" are represented as non-detects. Values shown correspond to the laboratory reporting limit.
2. Background values based on statistical evaluation of initial eight rounds (Dec. 2015 thru Aug. 2017) of groundwater sampling data for Well MP-20.

Table 2
New Castle Generating Station
North Ash Pond--Groundwater Analytical Data
CCR Appendix IV Constituents

Monitoring Well	Date Sampled	Total Antimony (mg/L)	Total Arsenic (mg/L)	Total Barium (mg/L)	Total Beryllium (mg/L)	Total Cadmium (mg/L)	Total Chromium (mg/L)	Total Cobalt (mg/L)	Total Fluoride (mg/L)	Total Lead (mg/L)	Total Lithium (mg/L)	Total Mercury (mg/L)	Total Molybdenum (mg/L)	Total Selenium (mg/L)	Total Thallium (mg/L)	Total Radium-226 and 228 (pCi/L)
		Calculated Background														
		0.001	0.02	0.09	0.001	0.002	0.01	0.005	0.5	0.001	0.40	0.0002	0.02	0.001	0.0002	4.19
		Groundwater Protection Standard														
		MCL	Background	MCL	MCL	MCL	MCL	RSL	MCL	RSL	Background	MCL	RSL	MCL	MCL	MCL
		0.006	0.02	2	0.004	0.005	0.1	0.006	4.0	0.015	0.40	0.002	0.10	0.05	0.002	5
MP-20 (Upgradient)	29-Dec-15	< 0.001	0.016	0.07	< 0.001	< 0.002	< 0.01	< 0.005	< 0.5	< 0.001	0.18	< 0.0002	< 0.02	< 0.001	< 0.0002	1.35
	2-Mar-16	< 0.001	0.018	0.06	< 0.001	< 0.002	< 0.01	< 0.005	< 0.1	< 0.001	0.16	< 0.0002	< 0.02	< 0.001	< 0.0002	1.29
	2-Jun-16	< 0.001	0.019	0.05	< 0.001	< 0.002	< 0.01	< 0.005	< 0.1	< 0.001	0.13	< 0.0002	< 0.02	< 0.001	< 0.0002	1.56
	8-Sep-16	< 0.001	0.020	0.06	< 0.001	< 0.002	< 0.01	< 0.005	0.1	< 0.001	0.14	< 0.0002	< 0.02	< 0.001	< 0.0002	2.77
	1-Dec-16	< 0.001	0.018	0.07	< 0.001	< 0.0002	< 0.01	< 0.005	< 0.1	< 0.001	0.15	< 0.0002	< 0.02	< 0.001	< 0.0002	1.20
	2-Mar-17	< 0.001	0.018	0.08	< 0.001	< 0.0002	< 0.01	< 0.005	< 0.1	< 0.001	0.23	< 0.0002	< 0.02	< 0.001	< 0.0002	0.08
	31-May-17	< 0.001	0.018	0.07	< 0.001	< 0.0002	< 0.01	< 0.005	< 0.2	< 0.001	0.24	< 0.0002	< 0.02	< 0.001	< 0.0002	2.18
	30-Aug-17	< 0.001	0.019	0.07	< 0.001	< 0.0002	< 0.01	< 0.005	< 0.1	< 0.001	0.25	< 0.0002	< 0.02	< 0.001	< 0.0002	2.39
	24-May-18	< 0.001	0.018	0.07	< 0.001	< 0.002	< 0.01	< 0.005	< 0.5	< 0.001	0.29	< 0.0002	< 0.02	< 0.001	< 0.0002	1.46
	29-Aug-18	Not Analyzed	0.018	0.07	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	0.26	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	1.35
MP-21 (Downgradient)	29-Dec-15	< 0.001	0.079	0.12	< 0.001	< 0.002	< 0.01	< 0.005	< 0.5	< 0.001	0.08	< 0.0002	< 0.02	< 0.001	< 0.0002	1.12
	2-Mar-16	< 0.001	0.080	0.13	< 0.001	< 0.002	< 0.01	< 0.005	< 0.1	< 0.001	0.08	< 0.0002	< 0.02	< 0.001	< 0.0002	1.92
	2-Jun-16	< 0.001	0.091	0.12	< 0.001	< 0.002	< 0.01	< 0.005	< 0.1	< 0.001	0.08	< 0.0002	< 0.02	< 0.001	< 0.0002	2.27
	8-Sep-16	< 0.001	0.084	0.13	< 0.001	< 0.002	< 0.01	< 0.005	0.2	< 0.001	0.09	< 0.0002	< 0.02	< 0.001	< 0.0002	3.19
	1-Dec-16	< 0.001	0.085	0.13	< 0.001	< 0.002	< 0.01	< 0.005	< 0.1	< 0.001	0.09	< 0.0002	< 0.02	< 0.001	< 0.0002	1.15
	2-Mar-17	< 0.001	0.083	0.12	< 0.001	< 0.0002	< 0.01	< 0.005	0.1	< 0.001	0.09	< 0.0002	< 0.02	< 0.001	< 0.0002	1.10
	1-Jun-17	< 0.001	0.081	0.12	< 0.001	< 0.0002	< 0.01	< 0.005	< 0.2	< 0.001	0.09	< 0.0002	< 0.02	< 0.001	< 0.0002	1.88
	30-Aug-17	< 0.001	0.088	0.11	< 0.001	< 0.0002	< 0.01	< 0.005	< 0.1	< 0.001	0.09	< 0.0002	< 0.02	< 0.001	< 0.0002	3.11
	24-May-18	< 0.001	0.087	0.11	< 0.001	< 0.002	< 0.01	< 0.005	< 0.5	< 0.001	0.09	< 0.0002	< 0.02	< 0.001	< 0.0002	2.37
	29-Aug-18	Not Analyzed	0.071	0.11	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	0.09	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	1.49
MP-22 (Downgradient)	29-Dec-15	< 0.001	0.045	0.07	< 0.001	< 0.002	< 0.01	< 0.005	< 0.5	< 0.001	0.04	< 0.0002	< 0.02	< 0.001	< 0.0002	0.64
	2-Mar-16	< 0.001	0.058	0.06	< 0.001	< 0.002	< 0.01	< 0.005	< 0.1	< 0.001	0.03	< 0.0002	< 0.02	< 0.001	< 0.0002	1.24
	2-Jun-16	< 0.001	0.074	0.05	< 0.001	< 0.002	< 0.01	< 0.005	< 0.1	< 0.001	0.03	< 0.0002	< 0.02	< 0.001	< 0.0002	1.66
	8-Sep-16	< 0.001	0.078	0.05	< 0.001	< 0.002	< 0.01	< 0.005	0.1	< 0.001	0.04	< 0.0002	< 0.02	< 0.001	< 0.0002	2.85
	1-Dec-16	< 0.001	0.086	0.05	< 0.001	< 0.0002	< 0.01	< 0.005	< 0.1	< 0.001	0.03	< 0.0002	< 0.02	< 0.001	< 0.0002	1.08
	2-Mar-17	< 0.001	0.079	0.05	< 0.001	< 0.0002	< 0.01	< 0.005	0.1	< 0.001	0.03	< 0.0002	< 0.02	< 0.001	< 0.0002	1.96
	1-Jun-17	< 0.001	0.082	0.05	< 0.001	< 0.0002	< 0.01	< 0.005	< 0.2	< 0.001	0.03	< 0.0002	< 0.02	< 0.001	< 0.0002	1.26
	30-Aug-17	< 0.001	0.088	0.04	< 0.001	< 0.0002	< 0.01	< 0.005	< 0.1	< 0.001	0.03	< 0.0002	< 0.02	< 0.001	< 0.0002	4.24
	24-May-18	< 0.001	0.091	0.04	< 0.001	< 0.002	< 0.01	< 0.005	< 0.5	< 0.001	0.04	< 0.0002	< 0.02	< 0.001	< 0.0002	0.57
	29-Aug-18	Not Analyzed	0.087	0.04	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	0.04	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	0.87
MP-23 (Downgradient)	29-Dec-15	< 0.001	0.068	0.02	< 0.001	< 0.002	< 0.01	< 0.005	< 0.5	< 0.001	0.12	< 0.0002	< 0.02	< 0.001	< 0.0002	0.35
	2-Mar-16	< 0.001	0.069	0.02	< 0.001	< 0.002	< 0.01	< 0.005	< 0.1	< 0.001	0.12	< 0.0002	< 0.02	< 0.001	< 0.0002	2.72
	2-Jun-16	< 0.001	0.079	0.02	< 0.001	< 0.002	< 0.01	< 0.005	0.1	< 0.001	0.10	< 0.0002	< 0.02	< 0.001	< 0.0002	2.10
	8-Sep-16	< 0.001	0.069	0.02	< 0.001	< 0.002	< 0.01	< 0.005	0.5	< 0.001	0.11	< 0.0002	< 0.02	< 0.001	< 0.0002	3.20
	1-Dec-16	< 0.001	0.070	0.02	< 0.001	< 0.0002	< 0.01	< 0.005	0.1	< 0.001	0.10	< 0.0002	< 0.02	< 0.001	< 0.0002	0.98
	2-Mar-17	< 0.001	0.066	0.03	< 0.001	< 0.0002	< 0.01	< 0.005	0.2	< 0.001	0.10	< 0.0002	< 0.02	< 0.001	< 0.0002	0.36
	1-Jun-17	< 0.001	0.070	0.03	< 0.001	< 0.0002	< 0.01	< 0.005	< 0.2	< 0.001	0.10	< 0.0002	< 0.02	< 0.001	< 0.0002	1.75
	30-Aug-17	< 0.001	0.067	0.02	< 0.001	< 0.0002	< 0.01	< 0.005	< 0.1	< 0.001	0.09	< 0.0002	< 0.02	< 0.001	< 0.0002	2.43
	24-May-18	< 0.001	0.067	0.03	< 0.001	< 0.002	< 0.01	< 0.005	< 0.5	< 0.001	0.10	< 0.0002	< 0.02	< 0.001	< 0.0002	1.15
	29-Aug-18	Not Analyzed	0.078	0.03	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	0.09	Not Analyzed	Not Analyzed	Not Analyzed	Not Analyzed	1.86

Notes:

1. Cells with "<" are represented as non-detects. Values shown correspond to the laboratory reporting limit.
2. Background values based on statistical evaluation of initial eight rounds (Dec. 2015 thru Aug. 2017) of groundwater sampling data for Well MP-20.
3. As indicated, Groundwater Protection Standards are either published MCLs or risk-based Regional Screening Levels (RSLs). For constituents where calculated background exceeds either the MCL or RSL, the background value is used.

Table 3
New Castle Generating Station
Ash Landfill--Groundwater Analytical Data
CCR Appendix III Constituents

Monitoring Well	Date Sampled	Groundwater Elevation (ft. MSL)	Total Boron (mg/L)	Total Calcium (mg/L)	Total Chloride (mg/L)	Total Fluoride (mg/L)	Total Dissolved Solids (mg/L)	Sulfate (mg/L)	pH (S.U.)
			Calculated Background						
			0.30	217	50	0.1	980	454	6.04-7.96
MP-11 (Upgradient)	30-Dec-15	776.93	0.05	146	36	< 0.1	922	425	7.47
	1-Mar-16	778.21	0.09	173	31	< 0.1	842	410	7.39
	1-Jun-16	777.77	0.15	178	27	< 0.1	890	385	7.29
	7-Sep-16	776.00	0.07	169	33	0.1	980	380	7.33
	30-Nov-16	776.24	0.08	167	33	0.1	872	390	7.43
	1-Mar-17	778.54	0.34	187	26	< 0.1	880	371	7.35
	31-May-17	778.75	0.09	192	25	0.1	838	381	7.03
	29-Aug-17	776.66	0.08	178	48	0.1	916	408	7.11
	10-Oct-17	776.06	0.07	178	39	< 0.1	916	392	6.90
	23-May-18	779.13	0.08	187	27	0.1	806	365	7.07
	28-Nov-18	780.14	0.09	172	29	< 0.1	900	389	6.77
P-6 (Upgradient)	30-Dec-15	777.39	0.11	126	19	< 0.1	622	297	6.69
	1-Mar-16	777.65	0.13	146	26	< 0.1	602	322	6.65
	1-Jun-16	777.93	0.11	129	19	< 0.1	618	302	6.63
	7-Sep-16	776.38	0.12	136	21	< 0.1	620	306	6.58
	30-Nov-16	776.97	0.12	141	19	< 0.1	614	297	6.56
	1-Mar-17	778.64	0.12	135	20	< 0.1	614	305	6.60
	31-May-17	778.64	0.11	146	22	< 0.1	606	316	6.42
	29-Aug-17	777.17	0.12	138	22	< 0.1	644	327	6.52
	10-Oct-17	776.67	0.12	139	21	< 0.1	620	320	6.62
	23-May-18	779.25	0.12	154	20	< 0.1	614	301	6.46
	28-Nov-18	779.95	0.12	142	24	< 0.1	656	342	6.32
MP-10R (Downgradient)	30-Dec-15	768.89	9.62	294	24	< 0.1	1650	853	6.02
	1-Mar-16	769.63	9.55	330	26	< 0.1	1510	784	6.14
	1-Jun-16	768.79	7.95	226	20	< 0.1	1250	609	5.90
	7-Sep-16	764.97	10.9	352	31	< 0.1	1730	817	6.05
	30-Nov-16	766.49	12.7	330	34	< 0.1	1670	824	6.10
	1-Mar-17	769.79	12.1	285	37	< 0.1	1450	797	6.17
	31-May-17	770.70	5.47	212	23	< 0.1	1010	474	6.01
	29-Aug-17	766.48	10.1	254	27	< 0.1	1300	625	6.06
	10-Oct-17	765.37	12.5	296	31	< 0.1	1550	742	6.10
	23-May-18	771.74	3.06	156	8	< 0.1	592	212	6.00
	28-Nov-18	772.33	4.85	212	17	< 0.1	906	415	6.01
MP-12 (Downgradient)	30-Dec-15	772.05	4.96	573	14	< 0.5	4320	2560	6.61
	1-Mar-16	772.56	4.38	594	11	< 1.0	3640	1970	6.55
	1-Jun-16	772.38	3.63	482	11	< 1.0	3780	2140	6.54
	7-Sep-16	769.74	5.35	600	14	< 1	4420	2490	6.50
	30-Nov-16	770.29	4.32	600	12	< 0.5	4030	1950	6.53
	1-Mar-17	772.65	4.19	582	16	0.2	4040	2380	6.60
	31-May-17	773.85	2.59	569	14	< 0.2	3300	1780	6.18
	29-Aug-17	771.16	3.94	589	18	< 0.5	4600	2760	6.31
	10-Oct-17	770.36	4.43	585	14	< 0.1	4490	1920	6.38
	23-May-18	775.03	0.63	58	2	0.2	258	115	5.62
	28-Nov-18	775.26	1.26	175	5	0.2	1160	666	6.20
MP-15 (Downgradient)	30-Dec-15	773.86	1.13	638	7	< 0.1	2340	1150	6.68
	2-Mar-16	775.04	1.25	761	6	< 0.1	2310	1230	6.73
	2-Jun-16	773.54	1.22	645	6	< 0.1	2390	1180	6.62
	7-Sep-16	770.57	1.13	643	5	< 0.1	2320	1120	6.53
	30-Nov-16	772.62	1.06	585	6	< 0.1	2190	1060	6.61
	1-Mar-17	775.78	1.20	670	7	< 0.1	2290	1210	6.48
	31-May-17	775.86	1.30	669	8	< 0.2	2420	1120	6.49
	29-Aug-17	771.62	1.12	627	6	< 0.2	2280	1130	6.41
	9-Oct-17	771.11	1.09	620	5	< 0.1	2310	990	6.54
	23-May-18	777.07	1.10	699	4	< 0.1	2330	1060	6.30
	29-Nov-18	776.30	1.27	715	5	< 0.1	2570	1260	6.39

Table 3
New Castle Generating Station
Ash Landfill--Groundwater Analytical Data
CCR Appendix III Constituents

Monitoring Well	Date Sampled	Groundwater Elevation (ft. MSL)	Total Boron (mg/L)	Total Calcium (mg/L)	Total Chloride (mg/L)	Total Fluoride (mg/L)	Total Dissolved Solids (mg/L)	Sulfate (mg/L)	pH (S.U.)
			Calculated Background						
			0.30	217	50	0.1	980	454	6.04-7.96
MP-18 (Downgradient)	30-Dec-15	769.18	1.03	124	10	0.2	536	98	6.75
	1-Mar-16	769.56	1.03	87	4	0.1	336	53	6.49
	1-Jun-16	768.74	0.99	137	10	< 0.2	580	91	6.82
	7-Sep-16	765.28	1.04	149	14	0.2	606	115	6.74
	30-Nov-16	767.26	1.18	134	15	0.2	512	80	6.55
	1-Mar-17	770.51	0.99	108	12	0.1	442	66	6.54
	31-May-17	770.28	0.80	66	5	0.1	252	33	5.93
	29-Aug-17	767.09	1.06	144	12	0.2	520	59	6.74
	10-Oct-17	766.96	1.15	136	9	0.1	518	68	6.69
	23-May-18	770.94	0.58	49	2	< 0.1	192	18	5.88
	28-Nov-18	771.42	0.85	71	3	0.1	294	37	5.99

Notes:

1. Cells with "<" are represented as non-detects. Values shown correspond to the laboratory reporting limit.
2. Background values based on statistical evaluation of initial eight rounds (Dec. 2015 thru Aug. 2017) of groundwater sampling data for Wells MP-11 and P-6.

Table 4
New Castle Generating Station
Ash Landfill--Groundwater Analytical Data
CCR Appendix IV Constituents

Monitoring Well	Date Sampled	Total Antimony (mg/L)	Total Arsenic (mg/L)	Total Barium (mg/L)	Total Beryllium (mg/L)	Total Cadmium (mg/L)	Total Chromium (mg/L)	Total Cobalt (mg/L)	Total Fluoride (mg/L)	Total Lead (mg/L)	Total Lithium (mg/L)	Total Mercury (mg/L)	Total Molybdenum (mg/L)	Total Selenium (mg/L)	Total Thallium (mg/L)	Total Radium-226 and 228 (pCi/L)
		Calculated Background														
		0.001	0.007	0.17	0.001	0.002	0.01	0.005	0.1	0.002	0.01	0.0002	0.04	0.002	0.0002	1.96
		Groundwater Protection Standard														
		MCL	MCL	MCL	MCL	MCL	MCL	RSL	MCL	RSL	RSL	MCL	RSL	MCL	MCL	MCL
		0.006	0.01	2	0.004	0.005	0.1	0.006	4.0	0.015	0.04	0.002	0.10	0.05	0.002	5
MP-11 (Upgradient)	30-Dec-15	< 0.001	0.001	0.04	< 0.001	< 0.002	< 0.01	< 0.005	< 0.1	< 0.001	< 0.01	< 0.0002	< 0.02	0.002	< 0.0002	1.39
	1-Mar-16	< 0.001	0.001	0.04	< 0.001	< 0.002	< 0.01	< 0.005	< 0.1	< 0.001	< 0.01	< 0.0002	< 0.02	0.002	< 0.0002	0.30
	1-Jun-16	< 0.001	< 0.001	0.04	< 0.001	< 0.002	< 0.01	< 0.005	< 0.1	< 0.001	< 0.01	< 0.0002	< 0.02	0.002	< 0.0002	1.06
	7-Sep-16	< 0.001	< 0.001	0.04	< 0.001	< 0.002	< 0.01	< 0.005	0.1	< 0.001	< 0.01	< 0.0002	< 0.02	0.001	< 0.0002	0.88
	30-Nov-16	< 0.001	< 0.001	0.04	< 0.001	< 0.002	< 0.01	< 0.005	0.1	< 0.001	< 0.01	< 0.0002	< 0.02	0.002	< 0.0002	-0.13
	1-Mar-17	< 0.001	0.001	0.04	< 0.001	< 0.0002	< 0.01	< 0.005	< 0.1	< 0.001	< 0.01	< 0.0002	0.04	0.002	< 0.0002	0.65
	31-May-17	< 0.001	0.003	0.04	< 0.001	< 0.0002	< 0.01	< 0.005	0.1	< 0.001	< 0.01	< 0.0002	< 0.02	0.001	< 0.0002	0.47
	29-Aug-17	< 0.001	0.001	0.04	< 0.001	< 0.0002	< 0.01	< 0.005	0.1	< 0.001	< 0.01	< 0.0002	< 0.02	0.002	< 0.0002	1.21
P-6 (Upgradient)	30-Dec-15	< 0.001	0.004	0.17	< 0.001	< 0.002	< 0.01	< 0.005	< 0.1	0.001	< 0.01	< 0.0002	< 0.02	< 0.001	< 0.0002	0.76
	1-Mar-16	< 0.001	0.003	0.13	< 0.001	< 0.002	< 0.01	< 0.005	< 0.1	< 0.001	< 0.01	< 0.0002	< 0.02	< 0.001	< 0.0002	0.14
	1-Jun-16	< 0.001	0.002	0.11	< 0.001	< 0.002	< 0.01	< 0.005	< 0.1	< 0.001	< 0.01	< 0.0002	< 0.02	< 0.001	< 0.0002	0.75
	7-Sep-16	< 0.001	0.002	0.11	< 0.001	< 0.002	< 0.01	< 0.005	< 0.1	< 0.001	< 0.01	< 0.0002	< 0.02	< 0.001	< 0.0002	1.80
	30-Nov-16	< 0.001	0.002	0.11	< 0.001	< 0.002	< 0.01	< 0.005	< 0.1	< 0.001	< 0.01	< 0.0002	< 0.02	< 0.001	< 0.0002	0.89
	1-Mar-17	< 0.001	0.002	0.11	< 0.001	< 0.0002	< 0.01	< 0.005	< 0.1	< 0.001	< 0.01	< 0.0002	< 0.02	< 0.001	< 0.0002	0.42
	31-May-17	< 0.001	0.007	0.14	< 0.001	< 0.0002	< 0.01	< 0.005	< 0.1	0.002	< 0.01	< 0.0002	< 0.02	< 0.001	< 0.0002	1.11
	29-Aug-17	< 0.001	0.003	0.10	< 0.001	< 0.0002	< 0.01	< 0.005	< 0.1	< 0.001	< 0.01	< 0.0002	< 0.02	< 0.001	< 0.0002	0.54
MP-10R (Downgradient)	30-Dec-15	< 0.001	0.002	0.04	< 0.001	< 0.002	< 0.01	0.034	< 0.1	< 0.001	0.56	< 0.0002	< 0.02	< 0.001	< 0.0002	1.70
	1-Mar-16	< 0.001	0.002	0.03	< 0.001	< 0.002	< 0.01	0.032	< 0.1	< 0.001	0.54	< 0.0002	< 0.02	< 0.001	< 0.0002	0.66
	1-Jun-16	< 0.001	0.002	0.03	< 0.001	< 0.002	< 0.01	0.024	< 0.1	< 0.001	0.40	< 0.0002	< 0.02	< 0.001	< 0.0002	1.16
	7-Sep-16	< 0.001	0.001	0.04	< 0.001	< 0.002	< 0.01	0.033	< 0.1	< 0.001	0.51	< 0.0002	< 0.02	< 0.001	< 0.0002	1.68
	30-Nov-16	< 0.001	0.002	0.03	< 0.001	< 0.002	< 0.01	0.030	< 0.1	< 0.001	0.55	< 0.0002	< 0.02	< 0.001	< 0.0002	0.37
	1-Mar-17	< 0.001	0.002	0.03	< 0.001	0.0005	< 0.01	0.028	< 0.1	< 0.001	0.40	< 0.0002	< 0.02	< 0.001	< 0.0002	1.22
	31-May-17	< 0.001	0.001	0.02	< 0.001	0.0006	< 0.01	0.016	< 0.1	< 0.001	0.17	< 0.0002	< 0.02	< 0.001	< 0.0002	1.13
	29-Aug-17	< 0.001	0.002	0.03	< 0.001	0.0005	< 0.01	0.021	< 0.1	< 0.001	0.30	< 0.0002	< 0.02	< 0.001	< 0.0002	1.35
MP-12 (Downgradient)	30-Dec-15	< 0.001	4.14	0.03	< 0.001	< 0.0002	< 0.01	< 0.005	< 0.5	< 0.001	2.54	< 0.0002	0.03	< 0.001	0.0009	0.56
	1-Mar-16	< 0.001	3.60	0.02	< 0.001	< 0.0002	< 0.01	< 0.005	< 1.0	< 0.001	2.24	< 0.0002	0.02	< 0.001	0.0007	0.34
	1-Jun-16	< 0.001	2.96	0.02	< 0.001	< 0.0002	< 0.01	< 0.005	< 1.0	< 0.001	1.82	< 0.0002	< 0.02	< 0.001	0.0009	0.00
	7-Sep-16	< 0.001	4.91	0.02	< 0.001	< 0.0002	< 0.01	0.006	< 1.0	< 0.001	2.60	< 0.0002	0.03	< 0.001	0.0006	0.47
	30-Nov-16	< 0.001	4.59	0.02	< 0.001	< 0.0002	< 0.01	0.008	< 0.5	< 0.001	2.43	< 0.0002	0.03	< 0.001	0.0004	0.39
	1-Mar-17	< 0.001	3.98	0.02	< 0.001	< 0.0002	< 0.01	< 0.005	0.2	< 0.001	1.95	< 0.0002	0.03	< 0.001	0.0003	-0.03
	31-May-17	< 0.001	1.54	0.03	< 0.001	0.0004	< 0.01	0.007	< 0.2	< 0.001	1.31	< 0.0002	< 0.02	0.005	0.0014	0.78
	29-Aug-17	< 0.001	4.07	0.02	0.002	< 0.0002	< 0.01	0.007	< 0.5	< 0.001	2.25	< 0.0002	< 0.02	0.001	0.0006	1.00
MP-15 (Downgradient)	30-Dec-15	< 0.001	0.069	0.02	< 0.001	< 0.002	< 0.01	< 0.005	< 0.1	< 0.001	0.06	< 0.0002	0.04	< 0.001	0.0019	0.52
	2-Mar-16	< 0.001	0.226	0.02	< 0.001	< 0.002	< 0.01	< 0.005	< 0.1	< 0.001	0.06	< 0.0002	< 0.02	< 0.001	0.0010	0.74
	2-Jun-16	< 0.001	0.208	0.02	< 0.001	< 0.002	< 0.01	< 0.005	< 0.1	< 0.001	0.06	< 0.0002	0.02	< 0.001	0.0012	1.35
	7-Sep-16	< 0.001	0.491	0.03	< 0.001	< 0.002	< 0.01	0.008	< 0.1	< 0.001	0.10	< 0.0002	0.12	< 0.001	0.0025	1.22
	30-Nov-16	< 0.001	0.372	0.03	< 0.001	< 0.002	< 0.01	< 0.005	< 0.1	< 0.001	0.08	< 0.0002	0.09	< 0.001	0.0036	0.46
	1-Mar-17	< 0.001	0.097	0.02	< 0.001	< 0.0002	< 0.01	0.005	< 0.1	< 0.001	0.06	< 0.0002	0.04	< 0.001	0.0017	0.53
	31-May-17	< 0.001	0.136	0.02	< 0.001	< 0.0002	< 0.01	< 0.005	< 0.2	< 0.001	0.05	< 0.0002	0.02	< 0.001	0.0013	0.56
	29-Aug-17	< 0.001	0.307	0.02	< 0.001	< 0.0002	< 0.01	< 0.005	< 0.2	< 0.001	0.07	< 0.0002	0.05	< 0.001	0.0019	0.71
MP-18 (Downgradient)	30-Dec-15	< 0.001	0.020	0.08	< 0.001	< 0.002	< 0.01	< 0.005	0.2	< 0.001	0.05	< 0.0002	< 0.02	0.025	0.0017	0.98
	1-Mar-16	0.001	0.025	0.11	< 0.001	< 0.002	< 0.01	< 0.005	0.1	< 0.001	0.13	< 0.0002	0.04	0.079	0.0041	0.36
	1-Jun-16	< 0.001	0.018	0.05	< 0.001	< 0.002	< 0.01	< 0.005	< 0.2	< 0.001	< 0.01	< 0.0002	< 0.02	0.002	0.0003	1.33
	7-Sep-16	< 0.001	0.017	0.05	< 0.001	< 0.002	< 0.01	< 0.005	0.2	< 0.001	< 0.01	< 0.0002	< 0.02	0.001	0.0002	1.39
	30-Nov-16	< 0.001	0.017	0.08	< 0.001	< 0.002	< 0.01	< 0.005	0.2	< 0.001	0.05	< 0.0002	< 0.02	0.009	0.0008	0.61
	1-Mar-17	< 0.001	0.009	0.08	< 0.001	< 0.0002	< 0.01	< 0.005	0.1	< 0.001	0.06	< 0.0002	0.02	0.057	0.0017	1.19
	31-May-17	0.004	0.003	0.11	< 0.001	< 0.0002	< 0.01	< 0.005	0.1	< 0.001	0.10	< 0.0002	0.05	0.037	0.0051	0.72
	29-Aug-17	< 0.001	0.008	0.07	< 0.001	< 0.0002	< 0.01	< 0.005	0.2	< 0.001	< 0.01	< 0.0002	< 0.02	0.001	0.0007	1.33

Notes:

1. Cells with "<" are represented as non-detects. Values shown correspond to the laboratory reporting limit.
2. Background values based on statistical evaluation of initial eight rounds (Dec. 2015 thru Aug. 2017) of groundwater sampling data for Wells MP-11 and P-6.
3. As indicated, Groundwater Protection Standards are either published MCLs or risk-based Regional Screening Levels (RSLs). For constituents where calculated background exceeds either the MCL or RSL, the background value is used.

Figures

OFFICE	DATE	DESIGNED BY	DRAWN BY	CHECKED BY	APPROVED BY	DRAWING NUMBER
Pittsburgh, PA	12/17/18	--	E. Schlegel	--	--	1009194003-B6

LEGEND:

MP-11 (779.13) — CCR GROUNDWATER MONITORING WELL FOR NEW CASTLE PLANT ASH LANDFILL WITH GROUNDWATER ELEVATIONS MEASURED ON MAY 23, 2018.

MP-23 (762.00) — CCR GROUNDWATER MONITORING WELL FOR NORTH ASH POND WITH GROUNDWATER ELEVATIONS MEASURED ON MAY 24, 2018.

GROUNDWATER FLOW DIRECTION

SCALE
0 400 800 FEET

REFERENCES:

1. GOOGLE AERIAL PHOTOGRAPH, DATED 9/11/2012.

APTIM
500 Penn Center Boulevard,
Suite 1000
Pittsburgh, Pennsylvania 15235

GenOn™

FIGURE 1
CCR COMPLIANCE GROUNDWATER MONITORING WELL LOCATION MAP
PLANT ASH LANDFILL AND NORTH ASH POND
NEW CASTLE GENERATING STATION
NEW CASTLE, PENNSYLVANIA

File: O:\PROJECT\1009194003_New Castle\1009194003-B6.dwg
Plot Date/Time: Dec 17, 2018 - 2:20pm
Plotted By: Greg.Jones
Xref: Image

Appendix A

Ash Landfill—Alternate Source Demonstration

CCR COMPLIANCE
ALTERNATE SOURCE DEMONSTRATION
APPENDIX III GROUNDWATER EVALUATION
OF A STATISTICALLY SIGNIFICANT INCREASE AT THE
NEW CASTLE PLANT ASH LANDFILL

Prepared for:

NRG Power Midwest LP
New Castle Generating Station
West Pittsburg, Pennsylvania

Prepared by:

Aptim Environmental & Infrastructure, Inc.
St. Charles, Illinois

April 2018

Table of Contents

List of Tables

List of Figures

List of Appendices

1.0 Introduction

Title 40 Code of Federal Regulations (CFR) §257.90 mandates that existing Coal Combustion Residuals (CCR) landfills, also known as CCR units, be subject to groundwater monitoring and corrective action requirements as further detailed in §257.91 through §257.98. These requirements are part of the overall CCR Rule (or Rule) which was published in the Federal Register on April 17, 2015 and which became effective on October 19, 2015. Specific obligations for Owners and Operators of existing CCR units regarding the requirements for groundwater sampling as part of the CCR Detection Monitoring Program are outlined in §257.94.

The New Castle Generating Station, operated by NRG Power Midwest LP, a subsidiary of GenOn Energy, Inc. (GenOn), is a coal-fired power plant located in West Pittsburg, Pennsylvania. The Rule applies to this facility due to the management/disposal of CCR materials that are generated from the combustion of coal. CCR units associated with station operations include the New Castle Plant Ash Landfill and the North Bottom Ash Pond (not the subject of this current document). However, the management/placement of CCR materials in both units has been significantly curtailed since the transition from coal to natural gas firing was effected in mid-2016. The Ash Landfill has a dedicated groundwater monitoring system that was originally installed to comply with Commonwealth of Pennsylvania Residual Waste Regulations, and was subsequently adopted for use under the CCR program.

In accordance with §257.94(b), groundwater sampling in support of the CCR Detection Monitoring Program was conducted during the 4th quarter of 2017 at the New Castle Plant Ash Landfill. Samples were collected on October 9-10, 2017, and subsequently analyzed for CCR Appendix III constituents only. The analytical data from this sampling event has served as the first point of comparison to determine if concentrations in any of the downgradient wells are at levels representing a statistically significant increase (SSI) over background concentrations established in the upgradient wells. Results from the October 2017 sampling event showed multiple Appendix III constituents at levels above background in several downgradient monitoring wells. These constituents included boron, calcium, sulfate, and total dissolved solids.

Following additional review of the data and preliminary consideration of the results as SSIs, a determination was made on January 15, 2018 to conduct an Alternate Source Demonstration per §257.94(e)(2), which includes provisions such that:

> "The owner or operator may demonstrate that a source other than the CCR unit caused the statistically significant increase over background levels for a constituent or that the statistically significant increase resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality."

Accordingly, this Alternate Source Demonstration (ASD) has been prepared to satisfy the requirements of §257.94(e)(2), and which further stipulates that the ASD must be completed within 90 days of detecting a SSI(s) above background and be certified by a qualified professional engineer. If a successful ASD is completed, then sampling under the CCR Detection Monitoring program may continue for the unit. The ASD must also be included in the Annual Groundwater Monitoring and Corrective Action Report [per §257.90(e)] that must be prepared by January 31 of each year. If at the end of the 90-day period the ASD is proven unsuccessful, the owner or operator of the affected CCR unit must then initiate an Assessment Monitoring Program per §257.95.

2.0 Background

The Ash Landfill is situated north of the main generating station (refer to Figure 1). Prior to landfill development in this portion of the property, an impoundment existed (occupying an area of approximately 120 acres) that was used for the disposal of sluiced fly ash and bottom ash; these operations took place from approximately 1939 to 1978. From 1978 to 1984 and following the installation of electrostatic precipitators at the station, "dry" fly ash was disposed on the dewatered impoundment area. Beginning in 1984, CCR materials (including "dry" fly ash and dredged bottom ash) were placed in this area.

In 1997, the Pennsylvania Department of Environmental Protection (PADEP) issued Solid Waste Permit No. 300818 for the Ash Landfill, addressing Stages 1, 2, and 3A. These stages are not part of the current monitored/regulated unit. In April 2008, a permit modification was issued for Stages 4, 5, 6, and 7, which together comprise a vertical expansion of the Ash Landfill over top of the previously permitted stages.

From 2008 through 2010, approximately 16.8 acres of layover liner system (liner between Stages 4 and underlying Stages 1, 2, and 3A) was placed at the base of Stage 4. Approximately 17.9 acres of final cover cap liner system was installed over the lower landfill slopes (southern and eastern perimeters) in 2008/2009; approximately 11.6 acres installed over Stage 1, 2, and/or 3A beneath the area designated for Stage 5 (not active) in 2010; and approximately 10.2 acres installed over Stage 1, 2, and/or 3A beneath the area designated for Stage 6 (not active) in 2013. Therefore, Stages 1, 2, and 3A were entirely capped and/or closed by 2013 with the layover liner system installation in Stage 4 and final cover cap placement in the areas designated for Stages 5 and 6. Stage 4 currently remains as the active disposal area.

Design features of the layover liner system created from 2008 through 2010 include a leachate collection system and a leachate detection system (refer to Figures 2 and 3). The leachate collection system captures and diverts leachate from the regulated unit to the Leachate Pond located northwest of the landfill. The leachate detection system is located beneath the leachate collection system and collects/detects any leakage of the leachate collection system above.

Groundwater associated with the Ash Landfill is monitored by upgradient wells MP-11 and P-6 and downgradient wells MP-10R, MP-12, MP-15, and MP-18 (see Figure 1). As previously noted, analytical results from the October 2017 Detection Monitoring event indicated that several Appendix III constituents exceeded the established background levels.

Specifically and as shown in Table 1, Boron exceeded background (0.30 mg/L) at monitoring wells MP-10R, MP-12, MP-15, and MP-18 (12.5, 4.43, 1.09, and 1.15 mg/L, respectively). Calcium exceeded background (217 mg/L) at monitoring wells MP-10R, MP-12, and MP-15 (296,

585, and 620 mg/L, respectively). Sulfate exceeded background (454 mg/L) at monitoring wells MP-10R, MP-12, and MP-15 (742, 1,920, and 990 mg/L, respectively). Total dissolved solids exceeded background (980 mg/L) at monitoring wells MP-10R, MP-12, and MP-15 (1,550, 4,490, and 2,310 mg/L, respectively).

3.0 Geochemical Comparison

Utilizing the data from the October 2017 groundwater sampling event, a geochemical comparison was performed to assist in determining if the SSIs at monitoring wells MP-10, MP-12R, MP-15, and MP-18 originated from the Ash Landfill or from an alternate source. In this regard, a Ternary diagram was created to help compare analytical data from the monitoring wells to leachate from the Ash Landfill. Ternary diagrams graphically depict the ratios of three variables as positions in an equilateral triangle; for the current analysis, these variables include the measured concentrations of Boron, Chloride, and Sulfate. The Ternary diagram for the Ash Landfill (refer to Figure 4) includes the October 2017 groundwater data along with landfill leachate data (refer to Table 2) generated from September 2017 analysis of the Leachate Pond influent (associated with NPDES-permitted Outfall 009).

Review of the Ternary diagram indicates that the geochemical composition of downgradient monitoring wells MP-10R, MP-12, MP-15, and MP-18 is similar to that of the landfill leachate collected from the Leachate Pond. From this observation, one would anticipate a "connection" between the downgradient groundwater monitoring wells and the landfill leachate. However, routine monitoring of the landfill leachate detection system (as required by State of Pennsylvania Residual Waste Regulations) has consistently shown "no flow" as reflected by the documentation in Appendix A. Accordingly, since this system has not detected any leachate potentially leaking into the groundwater below the regulated unit, it can be reasonably concluded that the downgradient monitoring wells are being impacted by an alternate source that is similar to the regulated unit.

A final point on the Ternary diagram is the comparison of boron, which is a recognized component of coal ash and considered to be a very mobile indicator parameter as such. Groundwater impacted by coal ash generally contains elevated levels of boron. Collective analytical data (presented in Tables 1, 2, and 3) show elevated levels of boron within the leachate (as expected) and, to a lesser extent, in the downgradient groundwater monitoring wells. These results, which are depicted on Figure 5, further indicate that the elevated levels of Appendix III constituents in monitoring wells MP-10R, MP-12, MP-15, and MP-18 are from an alternate source that is again similar to the regulated unit. Also, the historical analytical data for monitoring wells MP-10R, MP-12, MP-15, and MP-18 are relatively constant (refer to Table 3). If there were a leak in the regulated unit, beyond leachate being detected in the leachate detection system, there would be spikes in the analytical data for the downgradient wells compared with historical data.

4.0 Alternate Source Identification and Conclusions

Based on review of boring logs/well construction details (Appendix B), it is acknowledged that the upgradient and downgradient groundwater monitoring wells for the Ash Landfill are screened in the uppermost aquifer; however, only the upgradient wells (Wells MP-11 and P-6) are screened in relatively undisturbed/native soils. The downgradient groundwater monitoring wells (MP-10R, MP-12, MP-15, and MP-18) are generally located within the boundaries of the historic 120-acre ash impoundment, with the screened intervals of two of these wells (MP-12 and MP-15) being situated entirely within ash. Not coincidentally, these two wells showed the highest values above background for the majority of the Appendix III constituents. For reference, groundwater contours and flow direction in the uppermost aquifer beneath the Ash Landfill are shown on Figure 6. From Figure 6, it is observed that the two wells with the most elevated groundwater concentrations (MP-12 and MP-15) are not located in the directly downgradient position from the Ash Landfill, and which again suggests a source other than the regulated unit.

From the information above and that presented in previous sections of this report, the Appendix III SSIs for boron, calcium, fluoride, sulfate, and total dissolved solids reported at monitoring wells MP-10R, MP-12, MP-15, and MP-18 during the October 2017 Detection Monitoring event have resulted from a source other than the Ash Landfill. Being that the materials (ash) within and contained by the regulated unit are similar to those within the historic 120-acre ash impoundment, it is not unexpected that the geochemical composition of the regulated unit's leachate and the groundwater in contact with the underlying 120-acre ash impoundment are also similar (refer to Figure 4).

Regardless, several pieces of compelling evidence have emerged during the course of this demonstration study. Most notably, these include the fact that flow within the Ash Landfill's leachate detection system has never been observed (documentation in Appendix A); that the downgradient monitoring wells (MP-12 and MP-15) with the highest Appendix III constituent concentrations were screened entirely within ash associated with the historical impoundment; and that those same monitoring wells were less hydraulically downgradient than the other downgradient monitoring wells. Collectively, this evidence points to the historic 120-acre ash impoundment which underlies and surrounds the existing Ash Landfill CCR unit, as being the source of the elevated Appendix III concentrations in the downgradient monitoring wells. Commensurate with this conclusion, the SSIs from the October 2017 Detection Monitoring event are deemed not to be in association with the New Castle Plant Ash Landfill. Accordingly, and per §257.94(e)(2), Detection Monitoring for the regulated unit will continue on the minimum semiannual frequency as outlined in §257.94(b).

5.0 Professional Engineer's Certification

In accordance with §257.94(e)(2) of the Rule, I hereby certify based on a review of the information contained herein, that the technical and investigatory methods utilized in this Alternate Source Demonstration Report are accurate and appropriate. These methods' application have provided the necessary evidence to conclude that the New Castle Plant Ash Landfill is not the source of the SSIs observed during the October 2017 Detection Monitoring event.

Certified by: _____

Richard Southorn, P.E., P.G., CPSWQ

Professional Engineer Registration No. PE 085411

Aptim Environmental & Infrastructure, Inc.

Date: April 10, 2018

Tables

Table 1
CCR Appendix III Constituents (4th Quarter 2017)
New Castle Plant Ash Landfill

Monitoring Well	Date Sampled	Total Boron (mg/L)	Total Calcium (mg/L)	Total Chloride (mg/L)	Total Fluoride (mg/L)	Total Dissolved Solids (mg/L)	Sulfate (mg/L)	pH (S.U.)
		Calculated Background						
		0.30	**217**	**50**	**0.1**	**980**	**454**	**6.04-7.96**
MP-11 (Upgradient)	30-Dec-15	0.05	146	36	< 0.1	922	425	7.47
	1-Mar-16	0.09	173	31	< 0.1	842	410	7.39
	1-Jun-16	0.15	178	27	< 0.1	890	385	7.29
	7-Sep-16	0.07	169	33	0.1	980	380	7.33
	30-Nov-16	0.08	167	33	0.1	872	390	7.43
	1-Mar-17	0.34	187	26	< 0.1	880	371	7.35
	31-May-17	0.09	192	25	0.1	838	381	7.03
	29-Aug-17	0.08	178	48	0.1	916	408	7.11
P-6 (Upgradient)	30-Dec-15	0.11	126	19	< 0.1	622	297	6.69
	1-Mar-16	0.13	146	26	< 0.1	602	322	6.65
	1-Jun-16	0.11	129	19	< 0.1	618	302	6.63
	7-Sep-16	0.12	136	21	< 0.1	620	306	6.58
	30-Nov-16	0.12	141	19	< 0.1	614	297	6.56
	1-Mar-17	0.12	135	20	< 0.1	614	305	6.60
	31-May-17	0.11	146	22	< 0.1	606	316	6.42
	29-Aug-17	0.12	138	22	< 0.1	644	327	6.52
MP-10R (Downgradient)	10-Oct-17	12.5	296	31	< 0.1	1550	742	6.10
MP-12 (Downgradient)	10-Oct-17	4.43	585	14	< 0.1	4490	1920	6.38
MP-15 (Downgradient)	9-Oct-17	1.09	620	5	< 0.1	2310	990	6.54
MP-18 (Downgradient)	10-Oct-17	1.15	136	9	0.1	518	68	6.69

= Statistically Significant Increase (SSI) over Background.

Notes:

1. Cells with "<" are represented as non-detects. Values shown correspond to the laboratory reporting limit.
2. Background values based on statistical evaluation of initial eight rounds of groundwater sampling data.

TABLE 2
*ANALYSIS RESULTS TABLE
POLLUTANT GROUP 1

Please read instructions carefully before completing this form.

APPLICANT NAME	NRG Power Midwest LP

☐ **Outfall / IMP Number 009** (Show location of sampling point on Line Drawing)
☒ Treatment Facility Influent Sampling Results (Show location of sampling point on Line Drawing)
☐ Intake Sampling Results (Specify Source: _____)
☐ Background (Upstream) Sampling Results (Specify Location: _____)
☐ New Discharge (Basis for Information: _____)

POLLUTANT GROUP 1 PARAMETERS	CONCENTRATION / MASS PRESENT						No. Analyses	No. "Non-Detect" Results	QL Used	Method Used
	Min/Max Daily Value		Max Avg Monthly Value		Long-Term Avg Value					
	Conc	Mass (lbs/day)	Conc	Mass (lbs/day)	Conc	Mass (lbs/day)				
BOD_5 (mg/L)	<0.8	<0.004	<0.8	<0.004	<0.8	<0.004	1	1	0.8	SM 5210 B
COD (mg/L)	6.0*	0.03*	6.0*	0.03*	6.0*	0.03*	1	0	5.0	Hach 8000
TOC (mg/L)	1.1	0.0055	1.1	0.0055	1.1	0.0055	1	0	0.20	SM 5310 C
TSS (mg/L)	3.0	0.02	3.0	0.02	3.0	0.02	1	0	1.0	SM 2540 D
Ammonia-Nitrogen (mg/L)	<0.04	<0.0002	<0.04	<0.0002	<0.04	<0.0002	1	1	0.040	EPA 350.1
Temperature (Winter) (°F)	--	XXX	--	XXX	--	XXX	0	XXX	XXX	--
Temperature (Summer) (°F)	61.5	XXX	61.5	XXX	61.5	XXX	1	XXX	XXX	SM 2550 B
pH – Minimum (S.U.)	7.99	XXX	XXX	XXX	7.99	XXX	1	XXX	XXX	SM4500H B
pH – Maximum (S.U.)	7.99	XXX	XXX	XXX	7.99	XXX	1	XXX	XXX	SM4500H B
Fecal Coliform (No./100 mL)	--	XXX	--	XXX	--	XXX	0	--	XXX	--
Oil and Grease (mg/L)	<1.4	<0.007	<1.4	<0.007	<1.4	<0.007	1	1	1.4	EPA 1664
TRC (mg/L)	0.03	0.00015	0.03	0.00015	0.03	0.00015	1	0	0.01	SM 4500-Cl G
Total Phosphorus (mg/L)	0.047	0.00023	0.047	0.00023	0.047	0.00023	1	0	0.005	EPA 200.7
TKN (mg/L)	<0.5	<0.0025	<0.5	<0.0025	<0.5	<0.0025	1	1	0.5	EPA 351.2
Nitrite + Nitrate-Nitrogen (mg/L)	1.5	0.008	1.5	0.008	1.5	0.008	1	0	0.020	EPA 353.2
Total Dissolved Solids (mg/L)	3,280	16	3,280	16	3,280	16	1	0	1.0	SM 2540 C
Color (Pt-Co Units)	15	XXX	15	XXX	15	XXX	1	0	5.0	SM 2120 B
Bromide (mg/L)	23.1	0.12	23.1	0.12	23.1	0.12	1	0	0.10	EPA 300.0
Chloride (mg/L)	80	0.40	80	0.40	80	0.40	1	0	0.20	EPA 300.0
Sulfate (mg/L)	1,550	7.76	1,550	7.76	1,550	7.76	1	0	0.50	EPA 300.0
Sulfide (mg/L)	<0.05	<0.0002	<0.05	<0.0002	<0.05	<0.0002	1	1	0.05	SM 4500-S2-D
Surfactants (mg/L)	<0.02	<0.0001	<0.02	<0.0001	<0.02	<0.0001	1	1	0.020	SM 5540 C
Fluoride (mg/L)	0.1	0.0005	0.1	0.0005	0.1	0.0005	1	0	0.050	EPA 300.0
Total Hardness (mg/L)	2,160	11	2,160	11	2,160	11	1	0	0.50	EPA 200.7

TABLE 2
ANALYSIS RESULTS TABLE
POLLUTANT GROUP 2

Please read instructions carefully before completing this form.

APPLICANT NAME	NRG Power Midwest LP

☐ **Outfall / IMP Number 009** (Show location of sampling point on Line Drawing)
☒ Treatment Facility Influent Sampling Results (Show location of sampling point on Line Drawing)
☐ Intake Sampling Results (Specify Source: _____)
☐ Background (Upstream) Sampling Results (Specify Location: _____)
☐ New Discharge (Basis for Information: _____)

POLLUTANT GROUP 2 PARAMETERS	CONCENTRATION / MASS PRESENT						No. Analyses	No. "Non-Detect" Results	QL Used	Method Used
	Min/Max Daily Value		Max Avg Monthly Value		Long-Term Avg Value					
	Conc	Mass (lbs/day)	Conc	Mass (lbs/day)	Conc	Mass (lbs/day)				
Aluminum, Total (µg/L)	32.4	0.00016	32.4	0.00016	32.4	0.00016	1	0	2.0	EPA 200.8
Antimony, Total (µg/L)	39.9	0.00020	39.9	0.00020	39.9	0.00020	1	0	0.50	EPA 200.8
Arsenic, Total (µg/L)	122	0.00061	122	0.00061	122	0.00061	1	0	0.50	EPA 200.8
Barium, Total (µg/L)	27.6	0.00014	27.6	0.00014	27.6	0.00014	1	0	2.00	EPA 200.8
Beryllium, Total (µg/L)	<0.50	<0.0000025	<0.50	<0.0000025	<0.50	<0.0000025	1	1	0.50	EPA 200.8
Boron, Total (µg/L)	63,400	0.32	63,400	0.32	63,400	0.32	1	0	10	EPA 200.7
Cadmium, Total (µg/L)	0.40	0.0000020	0.40	0.0000020	0.40	0.0000020	1	0	0.10	EPA 200.8
Chromium, Total (µg/L)	<2.00	<0.000010	<2.00	<0.000010	<2.00	<0.000010	1	1	2.00	EPA 200.8
Chromium, Hexavalent (µg/L)	<1.00	<0.000005	<1.00	<0.000005	<1.00	<0.000005	1	1	1.0	USGS I-1230-85
Cobalt, Total (µg/L)	<0.20	<0.0000010	<0.20	<0.0000010	<0.20	<0.0000010	1	1	0.20	EPA 200.8
Copper, Total (µg/L)	0.8*	0.000004*	0.8*	0.000004*	0.8*	0.000004*	1	0	0.50	EPA 200.8
Cyanide, Total (µg/L)	<10	<0.00005	<10	<0.00005	<10	<0.00005	1	1	10	ASTM D7511
Iron, Total (µg/L)	82	0.00041	82	0.00041	82	0.00041	1	0	20.0	EPA 200.7
Iron, Dissolved (µg/L)	32*	0.00016*	32*	0.00016*	32*	<0.00016*	1	0	20.0	EPA 200.7
Lead, Total (µg/L)	<0.2	<0.0000010	<0.2	<0.0000010	<0.2	<0.0000010	1	1	0.20	EPA 200.8
Manganese, Total (µg/L)	69.4	0.00035	69.4	0.00035	69.4	0.00035	1	0	5.00	EPA 200.8
Mercury, Total (µg/L)	<0.10	<0.0000005	<0.10	<0.0000005	<0.10	<0.0000005	1	1	0.10	SM 3112B
Molybdenum, Total (µg/L)	5,780	0.029	5,780	0.029	5,780	0.029	1	0	0.50	EPA 200.8
Nickel, Total (µg/L)	6.5	0.000033	6.5	0.000033	6.5	0.000033	1	0	0.20	EPA 200.8
Phenols, Total (µg/L)	5.0*	0.000025*	5.0*	0.000025*	5.0*	0.000025*	1	0	5.00	EPA 420.4
Selenium, Total (µg/L)	129	0.00065	129	0.00065	129	0.00065	1	0	0.50	EPA 200.8
Silver, Total (µg/L)	<0.10	<0.0000005	<0.10	<0.0000005	<0.10	<0.0000005	1	1	0.10	EPA 200.8
Thallium, Total (µg/L)	3.0	0.00002	3.0	0.00002	3.0	0.00002	1	0	0.10	EPA 200.8
Zinc, Total (µg/L)	<2.0	<0.00001	<2.0	<0.00001	<2.0	<0.00001	1	1	2.0	EPA 200.8

Table 3
Historical CCR Appendix III Constituents
New Castle Plant Ash Landfill

Monitoring Well	Date Sampled	Total Boron (mg/L)	Total Calcium (mg/L)	Total Chloride (mg/L)	Total Fluoride (mg/L)	Total Dissolved Solids (mg/L)	Sulfate (mg/L)	pH (S.U.)
		Calculated Background						
		0.30	**217**	**50**	**0.1**	**980**	**454**	**6.04-7.96**
MP-11 (Upgradient)	30-Dec-15	0.05	146	36	< 0.1	922	425	7.47
	1-Mar-16	0.09	173	31	< 0.1	842	410	7.39
	1-Jun-16	0.15	178	27	< 0.1	890	385	7.29
	7-Sep-16	0.07	169	33	0.1	980	380	7.33
	30-Nov-16	0.08	167	33	0.1	872	390	7.43
	1-Mar-17	0.34	187	26	< 0.1	880	371	7.35
	31-May-17	0.09	192	25	0.1	838	381	7.03
	29-Aug-17	0.08	178	48	0.1	916	408	7.11
Average		**0.12**	**174**	**32**	**0.1**	**893**	**394**	**7.27**
P-6 (Upgradient)	30-Dec-15	0.11	126	19	< 0.1	622	297	6.69
	1-Mar-16	0.13	146	26	< 0.1	602	322	6.65
	1-Jun-16	0.11	129	19	< 0.1	618	302	6.63
	7-Sep-16	0.12	136	21	< 0.1	620	306	6.58
	30-Nov-16	0.12	141	19	< 0.1	614	297	6.56
	1-Mar-17	0.12	135	20	< 0.1	614	305	6.60
	31-May-17	0.11	146	22	< 0.1	606	316	6.42
	29-Aug-17	0.12	138	22	< 0.1	644	327	6.52
Average		**0.12**	**137**	**21**	**0.1**	**618**	**309**	**6.57**
MP-10R (Downgradient)	30-Dec-15	9.62	294	24	< 0.1	1650	853	6.02
	1-Mar-16	9.55	330	26	< 0.1	1510	784	6.14
	1-Jun-16	7.95	226	20	< 0.1	1250	609	5.90
	7-Sep-16	10.9	352	31	< 0.1	1730	817	6.05
	30-Nov-16	12.7	330	34	< 0.1	1670	824	6.10
	1-Mar-17	12.1	285	37	< 0.1	1450	797	6.17
	31-May-17	5.47	212	23	< 0.1	1010	474	6.01
	29-Aug-17	10.1	254	27	< 0.1	1300	625	6.06
Average		**9.80**	**285**	**28**	**0.1**	**1446**	**723**	**6.05**

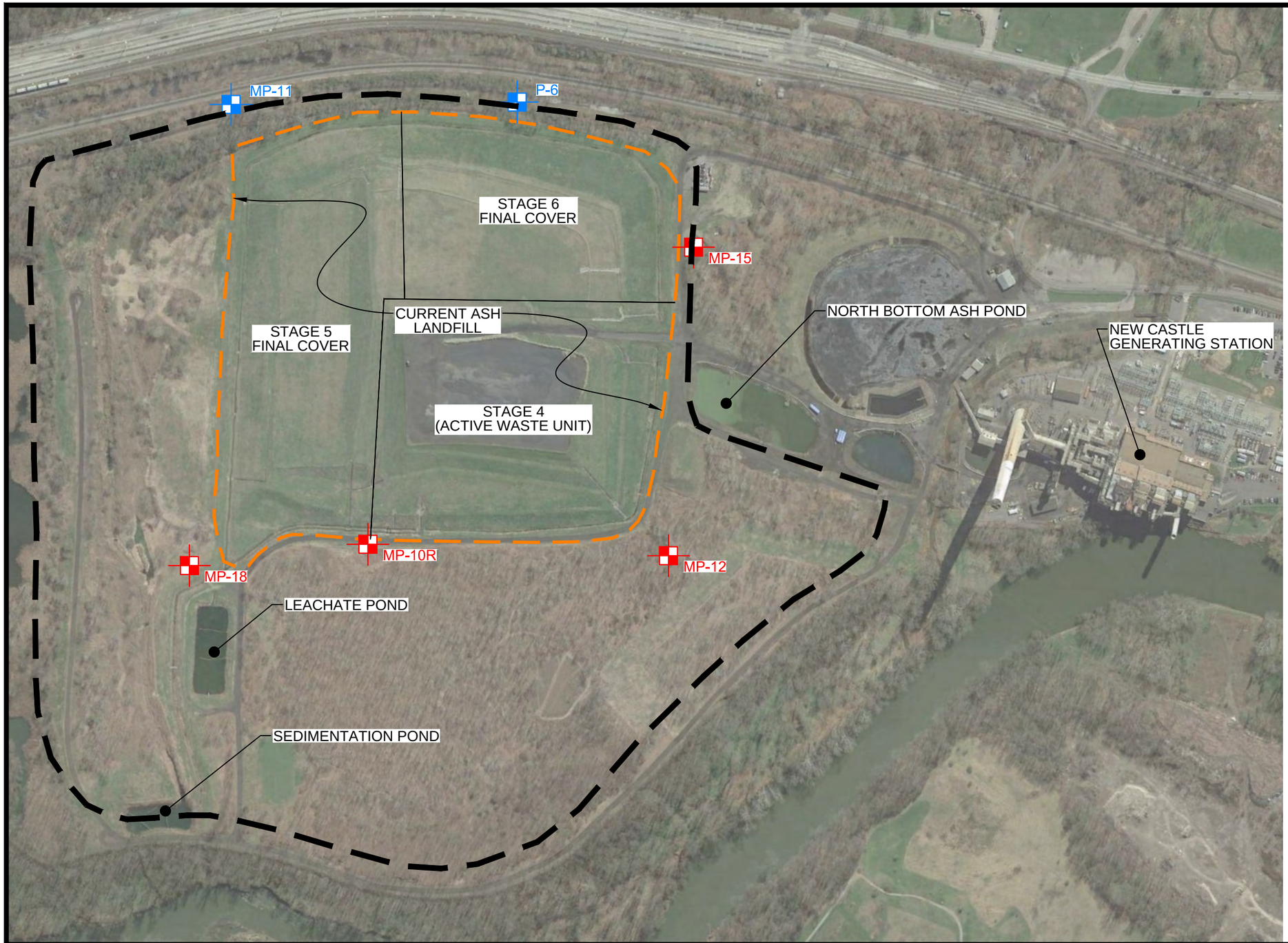
Table 3
Historical CCR Appendix III Constituents
New Castle Plant Ash Landfill

Monitoring Well	Date Sampled	Total Boron (mg/L)	Total Calcium (mg/L)	Total Chloride (mg/L)	Total Fluoride (mg/L)	Total Dissolved Solids (mg/L)	Sulfate (mg/L)	pH (S.U.)
		Calculated Background						
		0.30	**217**	**50**	**0.1**	**980**	**454**	**6.04-7.96**
MP-12 (Downgradient)	30-Dec-15	4.96	573	14	< 0.5	4320	2560	6.61
	1-Mar-16	4.38	594	11	< 1.0	3640	1970	6.55
	1-Jun-16	3.63	482	11	< 1.0	3780	2140	6.54
	7-Sep-16	5.35	600	14	< 1	4420	2490	6.50
	30-Nov-16	4.32	600	12	< 0.5	4030	1950	6.53
	1-Mar-17	4.19	582	16	0.2	4040	2380	6.60
	31-May-17	2.59	569	14	< 0.2	3300	1780	6.18
	29-Aug-17	3.94	589	18	< 0.5	4600	2760	6.31
Average		**4.17**	**574**	**14**	**0.6**	**4016**	**2254**	**6.45**
MP-15 (Downgradient)	30-Dec-15	1.13	638	7	< 0.1	2340	1150	6.68
	2-Mar-16	1.25	761	6	< 0.1	2310	1230	6.73
	2-Jun-16	1.22	645	6	< 0.1	2390	1180	6.62
	7-Sep-16	1.13	643	5	< 0.1	2320	1120	6.53
	30-Nov-16	1.06	585	6	< 0.1	2190	1060	6.61
	1-Mar-17	1.20	670	7	< 0.1	2290	1210	6.48
	31-May-17	1.30	669	8	< 0.2	2420	1120	6.49
	29-Aug-17	1.12	627	6	< 0.2	2280	1130	6.41
Average		**1.18**	**655**	**6**	**0.1**	**2318**	**1150**	**6.56**
MP-18 (Downgradient)	30-Dec-15	1.03	124	10	0.2	536	98	6.75
	1-Mar-16	1.03	87	4	0.1	336	53	6.49
	1-Jun-16	0.99	137	10	< 0.2	580	91	6.82
	7-Sep-16	1.04	149	14	0.2	606	115	6.74
	30-Nov-16	1.18	134	15	0.2	512	80	6.55
	1-Mar-17	0.99	108	12	0.1	442	66	6.54
	31-May-17	0.80	66	5	0.1	252	33	5.93
	29-Aug-17	1.06	144	12	0.2	520	59	6.74
Average		**1.02**	**119**	**10**	**0.2**	**473**	**74**	**6.46**

Notes:

1. Cells with "<" are represented as non-detects. Values shown correspond to the laboratory reporting limit.
2. The average for chemcial constituents is an arithmetic mean.
3. The average for pH is an arithmetic mean of the logarithmically transformed hydrogen ion values [H+] from each sampling event.
4. Background values based on statistical evaluation of initial eight rounds of groundwater sampling data.

Figures



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0 400'

GRAPHIC SCALE

LEGEND

- APPROXIMATE EXISTING WASTE BOUNDARY
- APPROXIMATE HISTORIC 120 ACRE ASH IMPOUNDMENT BOUNDARY
- MP-11 — UPDRADIENT GROUNDWATER MONITORING WELL LOCATION
- MP-12 — DOWNGRADIENT GROUNDWATER MONITORING WELL LOCATION

NOTES

1. FOR CLARITY, NOT ALL SITE FEATURES MAY BE SHOWN.

REV. NO.	DATE	DESCRIPTION

GenOn™

APTIM

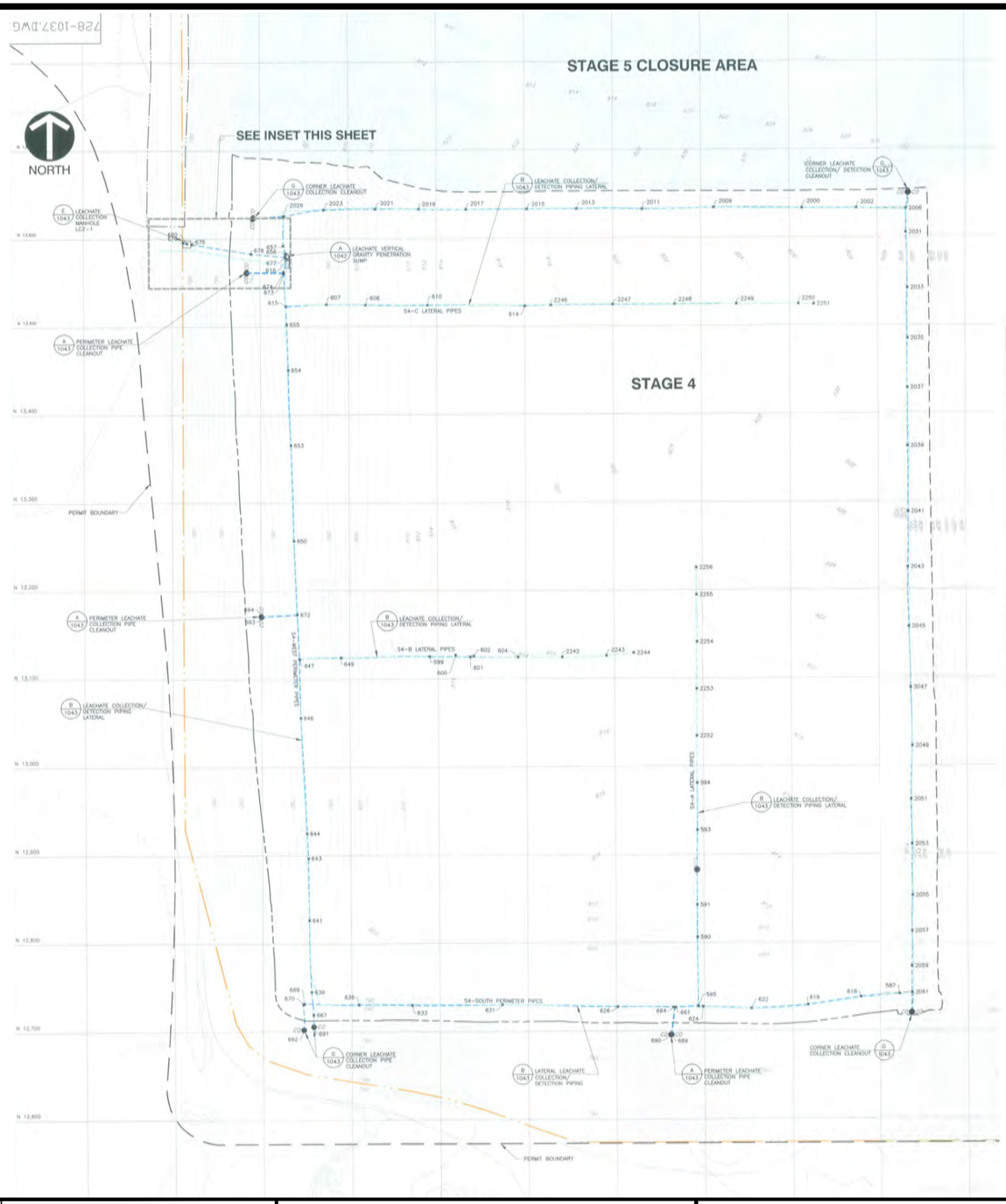
APTIM Environmental & Infrastructure, Inc.

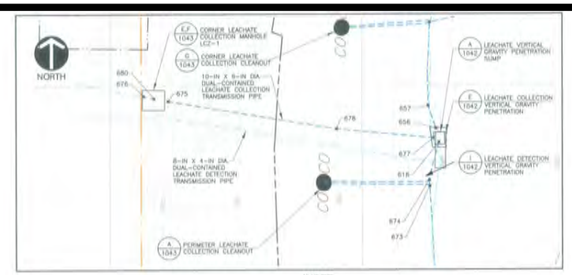
NEW CASTLE PLANT ASH LANDFILL
WEST PITTSBURG, PENNSYLVANIA

FIGURE 1
SITE LOCATION MAP

DRAWN BY:	BWM	APPROVED BY:	DAM	PROJ. NO.:	1009194003	DATE:	APRIL 2018

C:\3DCivil\NRG\NewCastleLF\Figures\Fig-01-LocationMap.dwg, 11x17, 4/6/2018 1:12:05 PM





INSET
LEACHATE COLLECTION/DETECTION TRANSMISSION PIPING DETAIL

SCALE IN FEET
0 20 40

AS-BUILT LEACHATE COLLECTION PIPE SURVEY DATA

GRID POINT	NORTHING	EASTING	ELEVATION
587	12741.30	10022.11	798.67
590	12806.33	9792.49	804.81
591	12840.90	9792.30	808.65
593	12928.01	9792.87	811.62
594	12981.35	9792.90	812.86
595	13727.70	9793.91	794.77
599	13125.67	9490.49	811.85
600	13127.15	9520.07	812.33
601	13128.14	9536.74	812.30
602	13128.08	9540.58	812.23
604	13124.62	9590.73	814.18
607	13525.25	9375.22	798.20
608	13524.53	9419.51	800.12
610	13524.15	9489.57	810.81
614	13522.99	9600.20	814.04
615	13523.07	9329.05	781.93
616	13577.45	9330.59	781.15
618	12737.97	9977.24	795.84
619	12729.24	9917.29	795.48
622	12725.27	9853.20	795.08
624	12727.45	9798.36	794.80
626	12727.52	9701.49	793.70
631	12730.25	9570.81	791.68
633	12729.83	9468.99	790.13
636	12730.67	9408.58	789.36
639	13745.36	9355.12	789.25
641	13826.65	9353.05	788.47
643	12847.04	9352.13	787.52
644	12925.23	9350.83	787.29
646	13056.20	9344.28	786.07
647	13122.93	9343.28	785.44
649	13124.58	9390.26	782.34
650	13256.91	9337.52	784.44
653	13365.40	9334.31	783.21
654	13450.77	9331.54	782.59
655	13502.57	9330.11	781.98
656	13583.02	9329.36	780.99
657	13591.92	9326.32	781.04
661	12726.72	9787.28	794.42
664	12726.74	9784.51	794.42
667	12719.36	9357.21	792.80
669	12731.80	9346.50	791.22
670	12731.24	9345.38	791.72
672	13173.52	9341.05	784.96
673	13560.06	9326.99	781.39
674	13562.44	9326.77	781.29
675	13563.88	9223.10	777.83
676	13595.86	9213.19	777.93
677	13579.17	9328.34	777.85
678	13582.87	9283.93	778.01

AS-BUILT LEACHATE COLLECTION PIPE SURVEY DATA

GRID POINT	NORTHING	EASTING	ELEVATION
680	13594.92	9217.50	777.74
689	12695.96	9782.25	800.41
690	12695.82	9781.68	800.31
691	12706.63	9357.46	798.15
692	12702.45	9345.97	797.69
693	13171.05	9300.62	803.27
694	13171.50	9300.30	803.29
2000	13633.33	9914.18	824.01
2002	13633.09	9976.09	825.15
2006	13632.15	10033.41	826.00
2009	13634.16	9814.47	821.47
2011	13632.54	9733.59	819.60
2013	13633.12	9659.02	817.33
2015	13632.94	9602.74	815.87
2017	13632.82	9533.89	813.54
2019	13633.30	9480.24	809.75
2021	13633.38	9430.81	807.34
2023	13632.61	9372.41	797.97
2026	13620.18	9327.00	781.87
2031	13605.03	10033.25	825.28
2033	13542.26	10034.75	825.02
2035	13484.93	10034.64	824.35
2037	13429.02	10034.40	823.87
2039	13362.64	10034.29	823.05
2041	13288.41	10034.67	822.23
2043	13225.36	10033.98	821.77
2045	13158.01	10035.16	820.72
2047	13088.74	10036.78	818.79
2049	13022.50	10038.24	816.81
2051	12962.00	10038.15	814.78
2053	12911.20	10037.18	813.06
2055	12853.05	10037.47	811.26
2057	12812.49	10036.90	809.87
2059	12772.55	10036.45	797.93
2061	12742.80	10036.44	797.63
2242	13124.49	9840.94	816.01
2243	13126.03	9691.12	817.71
2244	13129.19	9772.14	818.71
2246	13523.89	9629.89	815.49
2247	13524.41	9599.75	816.09
2248	13524.57	9769.82	819.98
2249	13524.78	9839.68	822.14
2250	13524.75	9909.94	824.31
2251	13524.37	9927.66	825.15
2252	13034.71	9792.97	814.74
2253	13088.07	9793.27	816.66
2254	13141.42	9793.69	818.16
2255	13194.77	9793.47	819.58
2256	13225.72	9793.37	820.72

LEGEND
- EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- EXISTING EDGE OF ROAD
- EXISTING BUILDING
- EXISTING STREAM OR RIVER
- EXISTING TREELINE
- EXISTING SPOT ELEVATION
- EXISTING PERMIT BOUNDARY
- PROPERTY LINE
- 2008 PERMITTED LIMIT OF ASH LANDFILL
- AS-BUILT LEACHATE COLLECTION PIPE
- AS-BUILT LEACHATE DETECTION PIPE
- 626 AS-BUILT CLEANOUT
- LIMIT OF 2008/2009 CLOSURE CONSTRUCTION (SEE NOTE 2)
- STAGE 4 LINER/CLOSURE TIE-IN SEAM
- LIMIT OF STAGE 4 LINER SYSTEM
- ✕ 500 AS-BUILT LEACHATE PIPE CERTIFICATION POINT

FIGURE ADAPTED FROM CIVIL & ENVIRONMENTAL CONSULTANTS, INC. "STAGE 4 LEACHATE PIPING PLAN", DATED 12-08-10.

REV. NO.	DATE	DESCRIPTION

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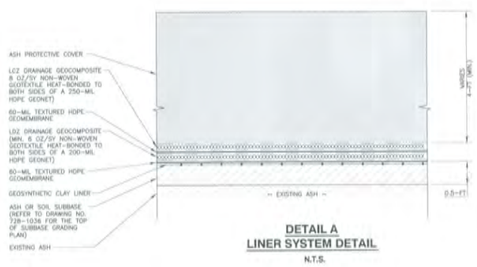
APTIM

APTIM Environmental & Infrastructure, Inc.

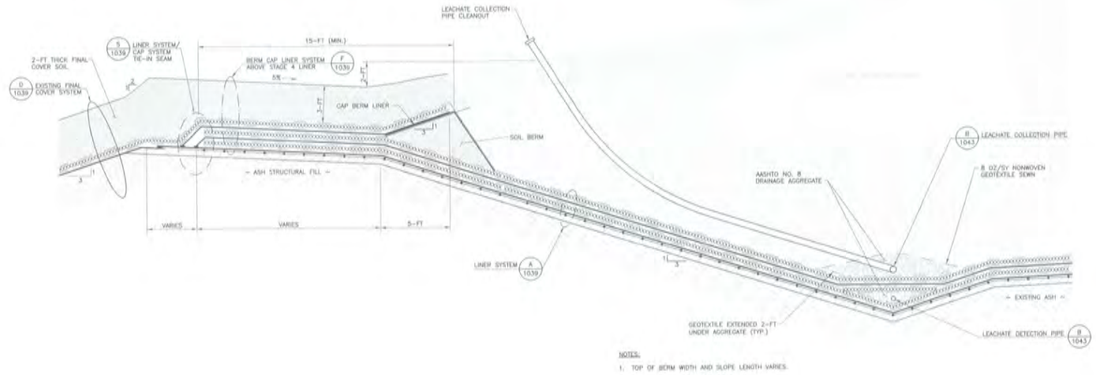
NEW CASTLE PLANT ASH LANDFILL
WEST PITTSBURG, PENNSYLVANIA

FIGURE 2
STAGE 4 LEACHATE PIPING PLAN

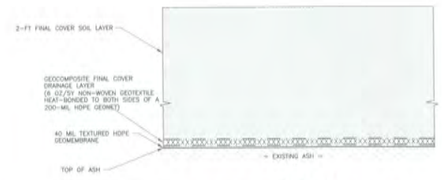
DRAWN BY:	BWM	APPROVED BY:	DAM	PROJ. NO.:	1009194003	DATE:	APRIL 2018



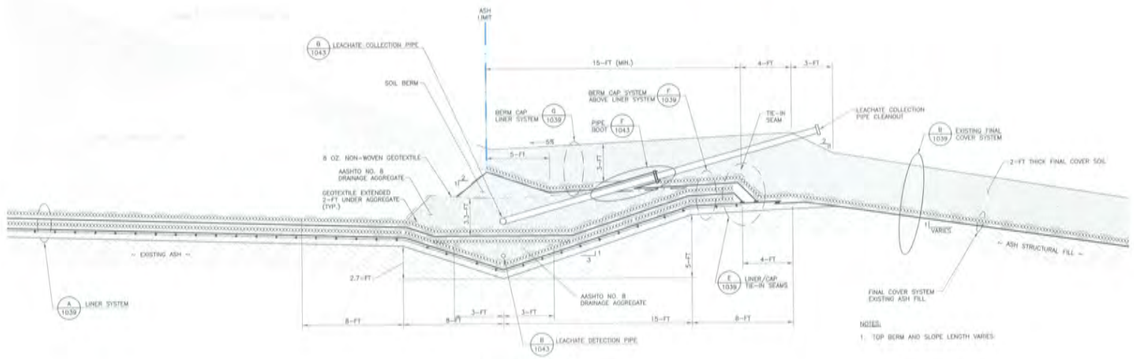
DETAIL A
LINER SYSTEM DETAIL
N.T.S.



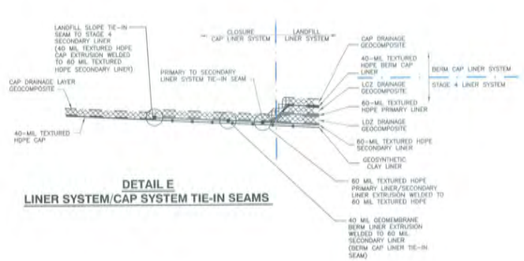
DETAIL C
STAGE 4 WEST BERM
N.T.S.



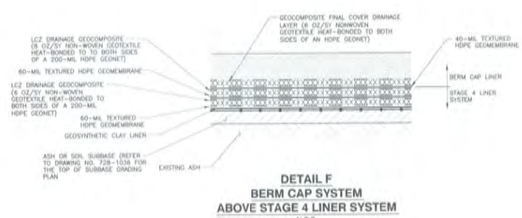
DETAIL B
EXISTING FINAL COVER SYSTEM DETAIL
N.T.S.



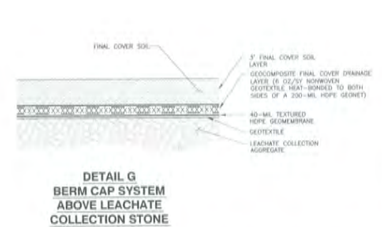
DETAIL D
STAGE 4 SOUTH BERM
N.T.S.



DETAIL E
LINER SYSTEM/CAP SYSTEM TIE-IN SEAMS



DETAIL F
BERM CAP SYSTEM ABOVE STAGE 4 LINER SYSTEM
N.T.S.



DETAIL G
BERM CAP SYSTEM ABOVE LEACHATE COLLECTION STONE
N.T.S.

FIGURE ADAPTED FROM CIVIL & ENVIRONMENTAL CONSULTANTS, INC. "LINER SYSTEM DETAILS (SHEET 1 OF 2)", DATED 12-08-10.

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NEW CASTLE PLANT ASH LANDFILL
WEST PITTSBURG, PENNSYLVANIA

FIGURE 3
LINER SYSTEM DETAILS

DRAWN BY:	BWM	APPROVED BY:	DAM	PROJ. NO.:	1009194003	DATE:	APRIL 2018

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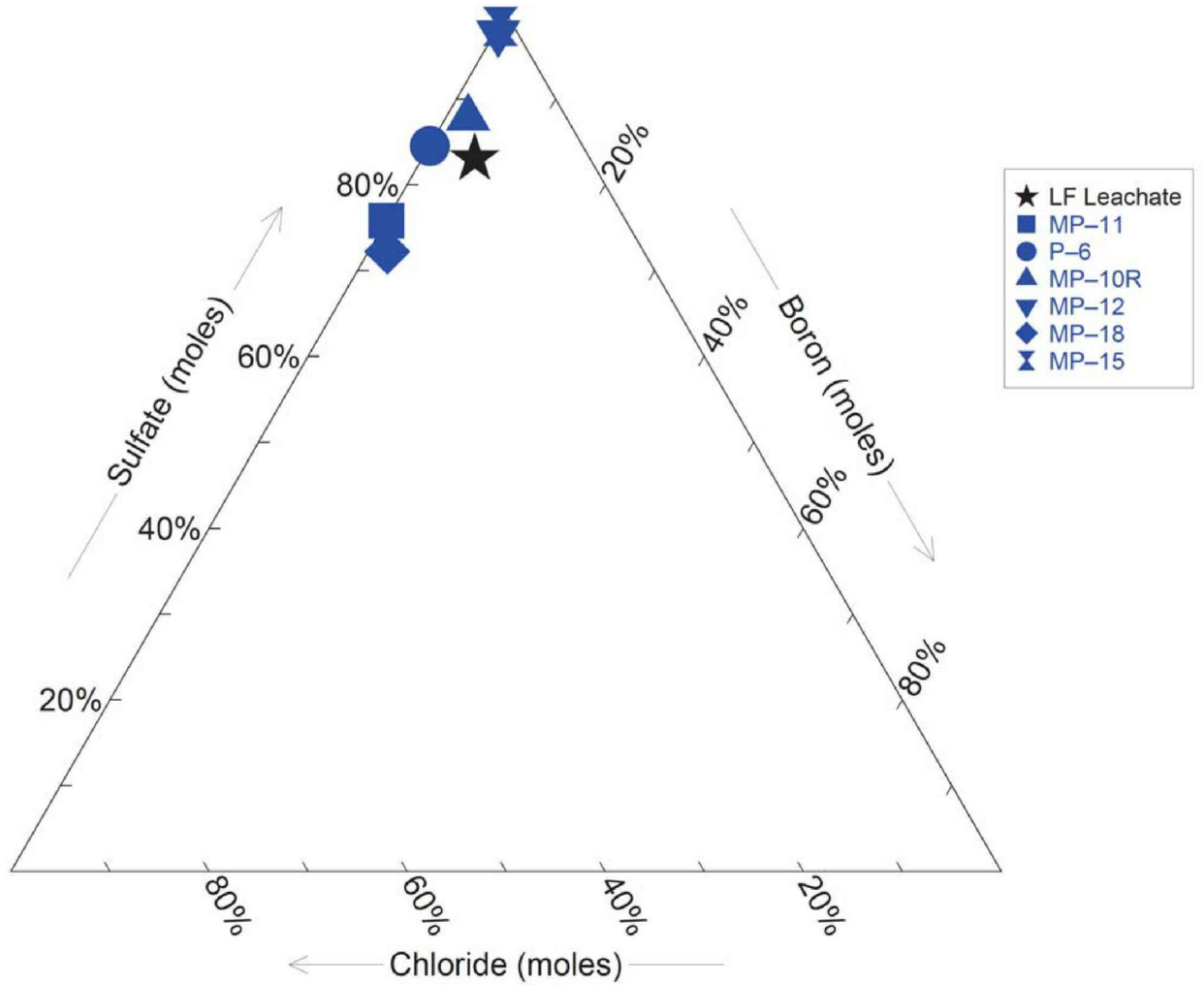

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NEW CASTLE PLANT ASH LANDFILL
WEST PITTSBURG, PENNSYLVANIA

FIGURE 4
TERNARY DIAGRAM

DRAWN BY:	BWM	APPROVED BY:	DAM	PROJ. NO.:	1009194003	DATE:	APRIL 2018

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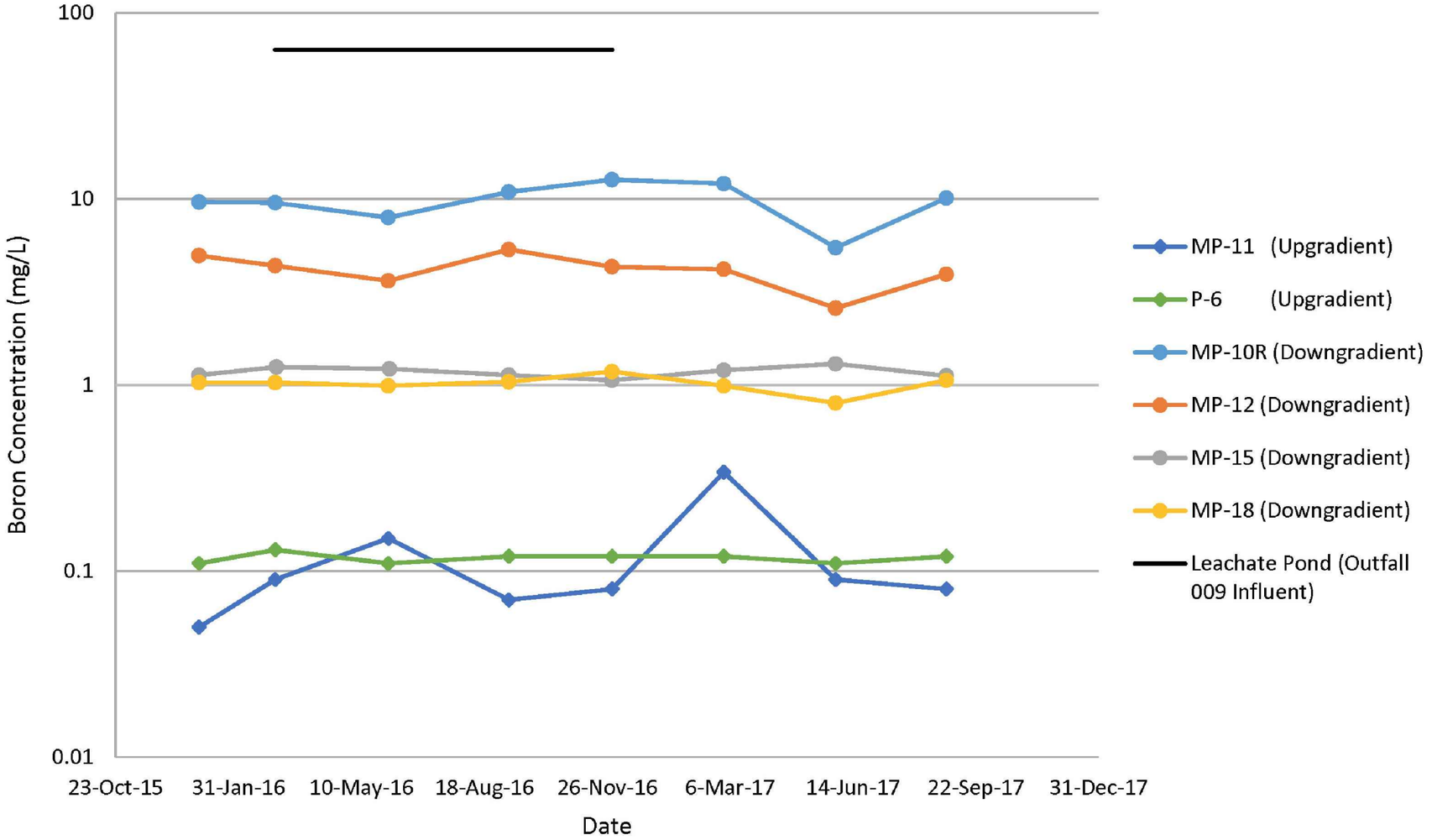

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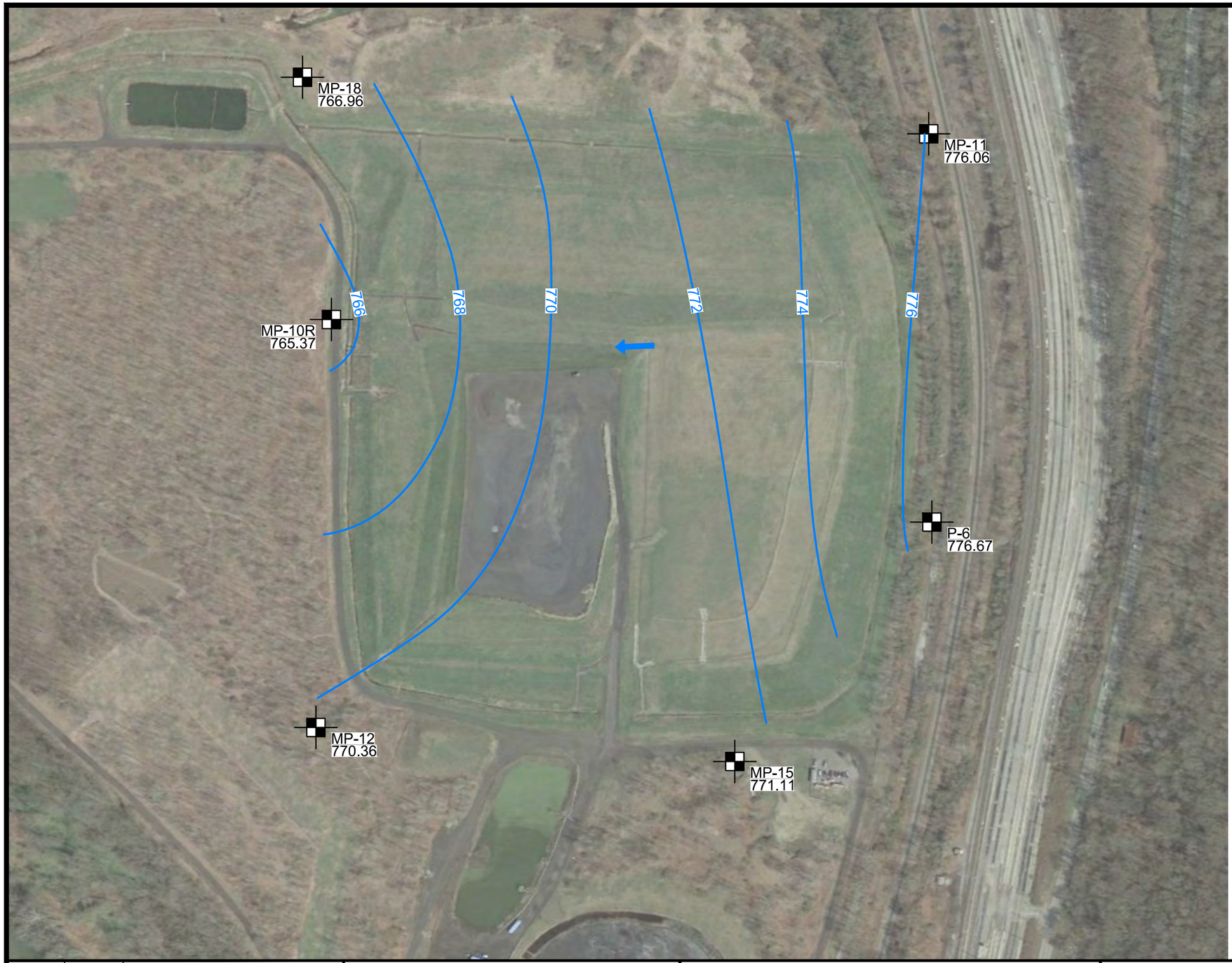
NEW CASTLE PLANT ASH LANDFILL
WEST PITTSBURG, PENNSYLVANIA

FIGURE 5
BORON CONCENTRATIONS GRAPH

DRAWN BY:	BWM	APPROVED BY:	DAM	PROJ. NO.:	1009194003	DATE:	APRIL 2018



N

0 300'

GRAPHIC SCALE

LEGEND

MP-11 776.06 — MONITORING WELL LOCATION AND GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL)

770 — GROUNDWATER ELEVATION CONTOUR

ESTIMATED DIRECTION OF GROUNDWATER FLOW

NOTES

1. GROUNDWATER SAMPLED ON OCTOBER 9-10, 2017.
2. FOR CLARITY, NOT ALL SITE FEATURES MAY BE SHOWN.

REV. NO.	DATE	DESCRIPTION

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APTIM Environmental & Infrastructure, Inc.

NEW CASTLE PLANT ASH LANDFILL
WEST PITTSBURG, PENNSYLVANIA

FIGURE 6
GROUNDWATER ELEVATION CONTOUR MAP
OCTOBER 2017

DRAWN BY:	BWM	APPROVED BY:	DAM	PROJ. NO.:	1009194003	DATE:	APRIL 2018

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Appendix A

Leachate Detection System Monitoring Documentation

From: Brown, Steven W.
To: "Ewing, Jennifer"
Subject: RE: Leachate Detection Zone Inquiry, 1Q15 Data Management - New Castle Plant Ash Landfill (CEC Project No. 070-109.1503)

Jennifer,

I confirm that no liquid was flowing from the leachate detection zone during 1Q15; and therefore, no samples were collected.

Steve

Steven W. Brown

Environmental Specialist
New Castle, Niles, & Elrama Plants
Ph: 724-535-1825 - New Castle
Ph: 330-505-4366 – Niles
Cell: 330-233-4663
Fax: 724-535-1825 – New Castle
Fax: 330-505-4351 - Niles

From: Ewing, Jennifer [mailto:jewing@cecinc.com]
Sent: Wednesday, April 01, 2015 11:10 AM
To: Brown, Steven W.
Subject: Leachate Detection Zone Inquiry, 1Q15 Data Management - New Castle Plant Ash Landfill (CEC Project No. 070-109.1503)
Importance: High

Hi Steve,

I understand that NRG personnel observe the leachate system at the New Castle Plant Ash Landfill on a daily basis. I will be preparing the 1Q15 Form 14R submittal to the DEP and need you to confirm that no liquid was flowing from the leachate detection zone to date during 1Q15; and therefore, no samples were collected.

Please contact me with any questions or comments.

Thanks,
Jennifer

Jennifer A. Ewing, P.G. / Project Manager
Civil & Environmental Consultants, Inc.
333 Baldwin Road · Pittsburgh, PA 15205-1751
Toll-Free: 800-365-2324 · Direct: 412-249-3173 · Fax: 412-429-2114
Email: jewing@cecinc.com Mobile: 412-215-1289 · http://www.cecinc.com
Senior Leadership · Integrated Services · Personal Business Relationships
Celebrating 25 Years ~ 1989-2014

From: Brown, Steven W.
To: "Ewing, Jennifer"
Subject: RE: Leachate Detection Zone Inquiry, 2Q15 Data Management - New Castle Plant Ash Landfill (CEC Project No. 070-109.1503)

Jennifer,
I confirm that no liquid was observed flowing from the leachate detection zone during 2Q15 to date; and therefore, no samples were collected.

Steve

Steven W. Brown
Environmental Specialist
New Castle, Niles, & Elrama Plants
Ph: 724-535-1825 - New Castle
Cell: 330-233-4663
Fax: 724-535-1825 – New Castle
Fax: 330-505-4351 - Niles

From: Ewing, Jennifer [mailto:jewing@cecinc.com]
Sent: Tuesday, June 23, 2015 8:52 AM
To: Brown, Steven W.
Subject: RE: Leachate Detection Zone Inquiry, 2Q15 Data Management - New Castle Plant Ash Landfill (CEC Project No. 070-109.1503)

Hi Steve,

I understand that NRG personnel observe the leachate system at the New Castle Plant Ash Landfill on a daily basis. I will be preparing the 2Q15 Form 14R submittal to the PADEP and need you to confirm that no liquid was flowing from the leachate detection zone to date during 2Q15; and therefore, no samples were collected.

Note that the forms are due to PADEP no later than Tue-Jul-07-2015. Please contact me with any questions or comments.

Thanks,
Jennifer

Jennifer A. Ewing, P.G. / Project Manager
Civil & Environmental Consultants, Inc.
333 Baldwin Road · Pittsburgh, PA 15205-1751
Toll-Free: 800-365-2324 · Direct: 412-249-3173 · Fax: 412-429-2114
Email: jewing@cecinc.com Mobile: 412-215-1289 · http://www.cecinc.com
Senior Leadership · Integrated Services · Personal Business Relationships
Celebrating 25 Years ~ 1989-2014

From: Brown, Steven W.
To: "Ewing, Jennifer"
Subject: RE: Leachate Detection Zone Inquiry, 3Q15 Data Management - New Castle Plant Ash Landfill (CEC Project No. 070-109.1503)

Jennifer,
As of 9/24/15, New Castle Station personnel have not observed flow from the leachate detection zone during the 3rd Quarter 2015.

Steve

Steven W. Brown
Environmental Specialist
New Castle, Niles, & Elrama Plants
Ph: 724-535-1825 - New Castle
Cell: 330-233-4663
Fax: 724-535-1801– New Castle
Fax: 330-505-4351 - Niles

From: Ewing, Jennifer [mailto:jewing@cecinc.com]
Sent: Thursday, September 24, 2015 4:20 PM
To: Brown, Steven W.
Subject: Leachate Detection Zone Inquiry, 3Q15 Data Management - New Castle Plant Ash Landfill (CEC Project No. 070-109.1503)

Hi Steve,

I understand that NRG personnel observe the leachate system at the New Castle Plant Ash Landfill on a daily basis. I will be preparing the 3Q15 Form 14R submittal to the PADEP and need you to confirm that no liquid was flowing from the leachate detection zone to date during 3Q15; and therefore, no samples were collected.

Note that the forms are due to PADEP no later than Fri-Oct-09-2015. Please contact me with any questions or comments.

Thanks,
Jennifer

Jennifer A. Ewing, P.G. / Project Manager
Civil & Environmental Consultants, Inc.
333 Baldwin Road · Pittsburgh, PA 15205-1751
Toll-Free: 800-365-2324 · Direct: 412-249-3173 · Fax: 412-429-2114
Email: jewing@cecinc.com Mobile: 412-215-1289 · http://www.cecinc.com
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Celebrating 25 Years ~ 1989-2014

From: Brown, Steven W.
To: "Ewing, Jennifer"
Subject: RE: Leachate Detection Zone Inquiry, 4Q15 Data Management - New Castle Plant Ash Landfill (CEC Project No. 070-109.1503)

Jennifer,
As of 12/22/15, New Castle Station personnel have not observed flow from the leachate detection zone during the 4th Quarter 2015 and no samples were collected.

Steve

Steven W. Brown
Environmental Specialist
New Castle, Niles, & Elrama Plants
Ph: 724-535-1825 - New Castle
Cell: 330-233-4663
Fax: 724-535-1801– New Castle
Fax: 330-505-4351 - Niles

From: Ewing, Jennifer [mailto:jewing@cecinc.com]
Sent: Monday, December 21, 2015 4:55 PM
To: Brown, Steven W.
Subject: Leachate Detection Zone Inquiry, 4Q15 Data Management - New Castle Plant Ash Landfill (CEC Project No. 070-109.1503)

Hi Steve,

I understand that NRG personnel observe the leachate system at the New Castle Plant Ash Landfill on a daily basis. I will be preparing the 4Q15 Form 14R submittal to the PADEP and need you to confirm that no liquid was flowing from the leachate detection zone to date during 4Q15; and therefore, no samples were collected.

Note that the forms are due to PADEP no later than Tue-Jan-05-2016; therefore, I would like to issue the letter for Ethan's signature prior to the New Year's holiday. Please contact me with any questions or comments.

Thanks,
Jennifer

Jennifer A. Ewing, P.G. / Project Manager
Civil & Environmental Consultants, Inc.
333 Baldwin Road · Pittsburgh, PA 15205-1751
Toll-Free: 800-365-2324 · Direct: 412-249-3173 · Fax: 412-429-2114
Email: jewing@cecinc.com Mobile: 412-215-1289 · http://www.cecinc.com
Senior Leadership · Integrated Services · Personal Business Relationships
Celebrating 25 Years ~ 1989-2014

From: Brown, Steven W.
To: "Ewing, Jennifer (jewing@cecinc.com)"
Subject: New Castle Leachate Detection Zone Flow
Attachments: image001.jpg
image002.jpg

Jennifer,

As of 3/30/16, New Castle Station personnel have not observed flow from the leachate detection zone during the 1st Quarter 2016 and no samples were collected.

Steve

Steven W. Brown

Environmental Specialist

New Castle, Niles, & Elrama Stations

Ph: 724-535-1825 - New Castle
Cell: 330-233-4663
Fax: 724-535-1801– New Castle
Fax: 330-505-4351 - Niles

From: Brown, Steven W.
To: "Ewing, Jennifer"
Subject: RE: Leachate Detection Zone Inquiry, 2Q16 Data Management - New Castle Plant Ash Landfill (CEC Project No. 070-109.1603)

Jennifer,
As of 6/29/16, New Castle Station personnel have not observed flow from the leachate detection zone during the 2nd Quarter 2016 and no samples were collected.

Steve

Steven W. Brown
Environmental Specialist
New Castle, Niles, & Elrama Plants
Ph: 724-535-1825 - New Castle
Cell: 330-233-4663
Fax: 724-535-1801– New Castle
Fax: 330-505-4351 - Niles

From: Ewing, Jennifer [mailto:jewing@cecinc.com]
Sent: Wednesday, June 29, 2016 1:53 PM
To: Brown, Steven W.
Subject: Leachate Detection Zone Inquiry, 2Q16 Data Management - New Castle Plant Ash Landfill (CEC Project No. 070-109.1603)

Hi Steve,

I understand that NRG personnel observe the leachate system at the New Castle Plant Ash Landfill on a daily basis. I will be preparing the 2Q16 Form 14R submittal to the PADEP and need you to confirm that no liquid was flowing from the leachate detection zone to date during 2Q16; and therefore, no samples were collected.

Note that the forms are due to PADEP no later than Th-Jul-14-2016. Please contact me with any questions or comments.

Thanks,
Jennifer

Jennifer A. Ewing, P.G. / Project Manager
Civil & Environmental Consultants, Inc.
333 Baldwin Road · Pittsburgh, PA 15205-1751
Toll-Free: 800-365-2324 · Direct: 412-249-3173 · Fax: 412-429-2114
Email: jewing@cecinc.com Mobile: 412-215-1289 · http://www.cecinc.com
Senior Leadership · Integrated Services · Personal Business Relationships

From: Brown, Steven W.
To: "Ewing, Jennifer"
Subject: Leachate Detection Zone Inquiry, 3rdQ16 Data Management - New Castle Plant Ash Landfill (CEC Project No. 070-109.1603)

Jennifer,

As of 9/30/16, New Castle Station personnel have not observed flow from the leachate detection zone during the 3rd Quarter 2016 and no samples were collected.

Steve

Steven W. Brown

Environmental Specialist

New Castle, Niles, & Elrama Plants

Ph: 724-535-1825 - New Castle
Cell: 330-233-4663
Fax: 724-535-1801– New Castle
Fax: 330-505-4351 - Niles

From: Brown, Steven W.
To: "Ewing, Jennifer"
Subject: RE: Leachate Detection Zone Inquiry, 4Q16 Data Management - New Castle Plant Ash Landfill (CEC Project No. 070-109.1603)

Jennifer,
The New Castle personnel have not observed any flow from the leachate detection zone during the 4th quarter 2016 as of December 16, 2016.

Steve

Steven W. Brown
Environmental Specialist
New Castle, Niles, & Elrama Plants
Ph: 724-535-1825 - New Castle
Cell: 330-233-4663
Fax: 724-535-1801– New Castle
Fax: 330-505-4351 - Niles

From: Ewing, Jennifer [mailto:jewing@cecinc.com]
Sent: Friday, December 16, 2016 9:56 AM
To: Brown, Steven W.
Subject: Leachate Detection Zone Inquiry, 4Q16 Data Management - New Castle Plant Ash Landfill (CEC Project No. 070-109.1603)
Importance: High

Hi Steve,

I understand that NRG personnel observe the leachate system at the New Castle Plant Ash Landfill on a daily basis. I will be preparing the 4Q16 Form 14R submittal to the PADEP and need you to confirm that no liquid was flowing from the leachate detection zone to date during 4Q16; and therefore, no samples were collected.

Note that the forms are due to PADEP no later than Th-Dec-29-2016. Please contact me with any questions or comments.

Thanks,
Jennifer

Jennifer A. Ewing, P.G. / Project Manager
Civil & Environmental Consultants, Inc.
333 Baldwin Road · Pittsburgh, PA 15205-1751
Toll-Free: 800-365-2324 · Direct: 412-249-3173 · Fax: 412-429-2114
Email: jewing@cecinc.com Mobile: 412-215-1289 · http://www.cecinc.com
Senior Leadership · Integrated Services · Personal Business Relationships

From: Brown, Steven W.
To: "Ewing, Jennifer"
Subject: RE: Leachate Detection Zone Inquiry, 1Q17 Data Management - New Castle Plant Ash Landfill (CEC Project No. 070-109.1703)

Jennifer,
The New Castle personnel have not observed any flow from the leachate detection zone during the 1st quarter 2017 as of March 27, 2017. Therefore no samples were collected for analysis.

Steve

Steven W. Brown
Environmental Specialist
New Castle, Niles, & Elrama Plants
Ph: 724-535-1825 - New Castle
Cell: 330-233-4663
Fax: 724-535-1801– New Castle
Fax: 330-505-4351 - Niles

From: Ewing, Jennifer [mailto:jewing@cecinc.com]
Sent: Monday, March 27, 2017 4:42 PM
To: Brown, Steven W.
Subject: Leachate Detection Zone Inquiry, 1Q17 Data Management - New Castle Plant Ash Landfill (CEC Project No. 070-109.1703)

Hi Steve,

I understand that NRG personnel observe the leachate system at the New Castle Plant Ash Landfill on a daily basis. I will be preparing the 1Q17 Form 14R submittal to the PADEP and need you to confirm that no liquid was flowing from the leachate detection zone to date during 1Q17; and therefore, no samples were collected.

Note that the forms are due to PADEP no later than Fri-Apr-07-2017. Please contact me with any questions or comments.

Thanks,
Jennifer

Jennifer A. Ewing, P.G. / Project Manager
Civil & Environmental Consultants, Inc.
333 Baldwin Road · Pittsburgh, PA 15205-1751
Toll-Free: 800-365-2324 · Direct: 412-249-3173 · Fax: 412-429-2114
Email: jewing@cecinc.com Mobile: 412-215-1289 · http://www.cecinc.com
Senior Leadership · Integrated Services · Personal Business Relationships

From: Brown, Steven W.
To: "Ewing, Jennifer"
Subject: RE: Leachate Detection Zone Inquiry, 2Q17 Data Management - New Castle Plant Ash Landfill (CEC Project No. 070-109.1703)

Jennifer,
New Castle Station personnel did not observe flow from the leachate detection zone during the 2nd Quarter 2017 and no samples were collected.

Steve

Steven W. Brown
Environmental Specialist
New Castle, Niles, & Elrama Plants
Ph: 724-535-1825 - New Castle
Cell: 330-233-4663
Fax: 724-535-1801– New Castle
Fax: 330-505-4351 - Niles

From: Ewing, Jennifer [mailto:jewing@cecinc.com]
Sent: Monday, July 10, 2017 2:13 PM
To: Brown, Steven W.
Subject: Leachate Detection Zone Inquiry, 2Q17 Data Management - New Castle Plant Ash Landfill (CEC Project No. 070-109.1703)
Importance: High

Hi Steve,

I understand that NRG personnel observe the leachate system at the New Castle Plant Ash Landfill on a daily basis. I am preparing the 2Q17 Form 14R submittal to the PADEP and need you to confirm that no liquid was flowing from the leachate detection zone to date during 2Q17; and therefore, no samples were collected.

Note that the forms are due to PADEP no later than Th-Jul-20-2017. Please contact me with any questions or comments.

Thanks,
Jennifer

Jennifer A. Ewing, P.G. / Project Manager
Civil & Environmental Consultants, Inc.
333 Baldwin Road · Pittsburgh, PA 15205-1751
Toll-Free: 800-365-2324 · Direct: 412-249-3173 · Fax: 412-429-2114
Email: jewing@cecinc.com Mobile: 412-215-1289 · http://www.cecinc.com
Senior Leadership · Integrated Services · Personal Business Relationships

From: Brown, Steven W.
To: "Ewing, Jennifer (jewing@cecinc.com)"
Subject: New Castle Station Landfill Leachate Detection Flow 3rd Quarter 2017
Attachments: image001.png
image004.jpg

Jennifer,

There has been no flow observed from the leachate detection zone during the 3rd quarter 2017 at the New Castle Landfill.

Steve

NRG Energy

Steven W. Brown
Environmental Specialist
New Castle, Niles, & Elrama Stations
Ph: 724-535-1825 - New Castle
Cell: 330-233-4663
Fax: 724-535-1801– New Castle

From: Brown, Steven W.
To: "Ewing, Jennifer"
Subject: RE: Leachate Detection Zone Inquiry, 4Q17 Data Management - New Castle Plant Ash Landfill (CEC Project No. 070-109.1703)
Attachments: image001.png
image004.jpg

Jennifer,
New Castle Station personnel have not observed flow from the leachate detection zone during the 4th Quarter 2017 as of 21-15-17 and no samples were collected.

Steve

Steven W. Brown
Environmental Specialist
New Castle, Niles, & Elrama Stations
Ph: 724-535-1825 - New Castle
Cell: 330-233-4663
Fax: 724-535-1801– New Castle
Email: steven.brown@genon.com

Please note my email address change as shown above

From: Ewing, Jennifer [mailto:jewing@cecinc.com]
Sent: Monday, December 11, 2017 5:35 PM
To: Brown, Steven W.
Subject: Leachate Detection Zone Inquiry, 4Q17 Data Management - New Castle Plant Ash Landfill (CEC Project No. 070-109.1703)

Hi Steve,

I understand that NRG personnel observe the leachate system at the New Castle Plant Ash Landfill on a daily basis. I am preparing the 4Q17 Form 14R submittal to the PADEP and need you to confirm that no liquid was flowing from the leachate detection zone to date during 4Q17; and therefore, no samples were collected.

Note that the forms are due to PADEP no later than Tue-Dec-26-2017; therefore, we anticipate issuing the week before Christmas. Please contact me with any questions or comments.

Thanks,
Jennifer

Jennifer A. Ewing, P.G. / Project Manager

Appendix B

Boring Logs/Well Construction Details

OHIO EDISON / PENN POWER

OHIO EDISON / PENN POWER
LOG OF BORING

NO MP-11

LOCATION OF BORING
Weather sunny & cold (10°) 2-8-95
N
• MP-11
current Ash Disp. Area
• MP 12
° MP 10
DATUM ELEVATION

FACILITY NAME
New Castle Fly Ash Disposal Facility

DRILLING METHOD: Hollow Stem Auger (HSA) 6 1/4" I.D. (9 5/8" O.D.), CME-75
BORING NO. MP-11
SHEET | OF |
SAMPLING METHOD: 2" Split Spoon sampler 140 lb hammer with 30 inch drop.
DRILLING START TIME 8:15 DATE 2/8 FINISH TIME 9:50 DATE 2/8
WATER LEVEL 9.9' (bags) TIME 8:45 DATE 2/8
SURFACE CONDITIONS: Wooded/grassy area off access road

DRILLING CONTR North Coast Drill. Serv. Inc.
BY E. Zarenski
DATE 2-8-95 CHECKED BY

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT SAMPLER	SOIL DENSITY/ CONSISTENCY	COLOR	DEPTH IN FEET	SOIL GRAPH	
SS	24/14	SS-1 / 0-2	3,4,8,7	soft med stiff	DK Brn	0	SM	DARK BROWN (10YR 3/3) SILTY SAND, (dry), (soft/med stiff), (topsoil) 8:20 HNU=0ppm
						1		
						2		
						3		
						4		
SS	24/18	SS-2 / 4-7	5,8,8,11	soft med stiff	DK Brn	5	SM	DARK BROWN (10YR 3/3), SILTY FINE TO MED GRAINED SAND, (MOIST), (Med STIFF/STIFF), (FILL), with Gravel (<3/4 inch) 8:35 HNU=0ppm gravel is made of limestone debris, angular.
						6		
						7		
						8		
						9		
						▼		Water table 9.9'
SS	24/17	SS-3 / 10-12	13,27, 9,5	med stiff STIFF	DK Brn	10	SP	Same as above, grades to SILTY SAND AND GRAVEL, gravel is rounded/subangular 8:50 HNU=0ppm
						1		
						2		
						3		
						4		
SS	24/24	SS-4 / 15-17	3,5,10,10	MED STIFF STIFF	OLV. Gry	15	SP	15.0 16.8' OLIVE GRAY (5 Y 4/1), CLAYEY SILT, low to med plasticity, wet), (med STIFF to STIFF) (alluvial) 9:20 HNU=0ppm
						6		
						7		TOTAL DEPTH 17.0'
						8		
						9		
						20		

FORM X-904 (2-95)

DISTRIBUTION: ORIGINAL - FIELD COPY YELLOW COPY - REPORT COPY PINK COPY - FILE COPY

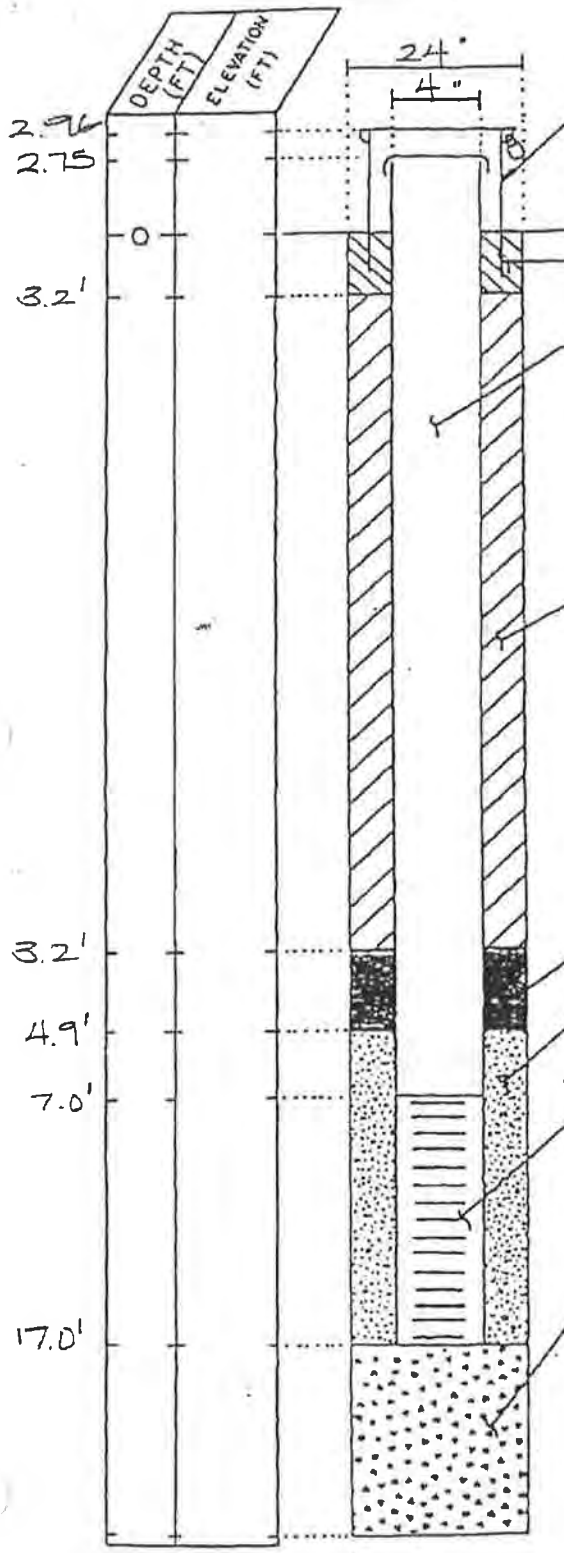
WELL - COMPLETION LOG

PROJECT NAME: New Castle Ash Disp. Facility WELL NO.: MW-11

PROJECT NO.: _____ GEOLOGIST/ENGINEER: Ezgenek DATE INSTALLED: 2/8/95

MEASURED WATER LEVEL: 12.7 ' FROM TOP OF RISER

DATE MEASURED: 2/9/95 (9:00)



CAP AND CASING: 6" Dia Steel (5ft long locking prot. cover.

GROUND SURFACE

SURFACE SEAL: Quick crete (4 bags)

RISER: 4" PVC Schedule 40

BACKFILL: Quick grout none used in this well.

SEAL: 3/8" diam bentonite pellets, used 1 bucket.

FILTER PACK: Best Sand #5 clean Silica sand (10 bags)

WELL SCREEN:
SLOT SIZE: #10 slot" (.010 inch)
SLOT TYPE: CONTINUOUS SLOTTED OTHER: ____
MATERIAL: 4" PVC

ABANDONED BOREHOLE BACKFILL: N/A

DEVELOPMENT METHOD: 3.5" Bailer

COMMENTS/RESULTS: N/A

INSTALLATION PROBLEMS/ COMMENTS: N/A

NOTES: N/A

Civil & Environmental Consultants, Inc.
Pittsburgh, Pennsylvania
1-800-365-2324

Borehole Number: MP-11
Elevation (Ft/MSL): _____ (ft)
Borehole Diameter: 9 5/8 inches, From 0 To 17
___ inches, From ___ To ___
Total Depth: 17 (ft)
Depth to Static Ground Water Level (SWL): 9.9 (ft) BGS
Date SWL Measured: 02/08/95 mm/dd/yy

Drilling Method: 4 1/4" ID HSA
Date Drilled: 02/08/95 (mm/dd/yy)
Drilled By: NORTHWEST [illegible] SERVICE
Drillers License Number: _____
Logged By: E. ZAENGLER
County: LAWRENCE
Township or Municipality: TAYLOR TOWNSHIP

Depth (ft)	Lithologic Description	Plot	Ground Water* Observations	Samples No.	Samples Rec.**	Comments	Well/Piezometer Construction	Depth (Ft)
0	DARK BROWN SILTY SAND, SOFT/MED. STIFF (TOPSOIL)			1	14/24	DRY	QUICK CRETE; BENTONITE	0
5	DARK BROWN SILTY FINE TO MED GRAINED SAND, MED. STIFF, WITH GRAVEL [FILL]	SM		2	18/24	MOIST	4" PVC RISER	5
10	SAME AS ABOVE, GRADES TO SILTY SAND AND GRAVEL (ROUNDED, SUB-ANGULAR)		▽	3	17/24	WATER TABLE ENCOUNTERED @ 9.9'	#5 SILICA SAND PACK	10
15	OLIVE GREY CLAYEY SILT LOW TO MED. PLASTICITY, MED STIFF TO STIFF	SP		4	24/24	WET	4" PVC 10 SLOT SCREEN	15
17								17
20								20

* ▽ Encountered Ground Water ▼ Composite Static Water Level ** Recovered/Attempted

Use additional sheets with this format as necessary

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PROJECT Penn Power — PROJECT NO. 80-211-3
ELEVATION ~784 GWL 0 HRS — BORING NO. P-6
HRS
DATE 1/4-5/84 FIELD ENGINEER J.M. KING — PAGE NO. 1 OF 1

DEPTH FEET	BLOWS PER SIX INCHES OR CORE RECOVERY/RUN	SAMPLE NO., TYPE & RECOVERY OR % ROCK RECOVERY	CASING BLOWS	DESCRIPTION: PROFILE	SOIL DENSITY-CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS OR ROCK BROKENNESS	REMARKS::
1	2	3	4	5	6	7	8	9	10
					loose	black	Silty ash, cinders, gravel		fill material
	2				med. dense	gray-	sandy SILT to silty SAND +		composed of ash +
5	6	SS-1			soft	brown	tr FINE GRAVEL		cinders
	9	10%							
					med. dense	gray-	moist, crs. cinders, ASH, fine-		
	2				–	white	brick fragments in silty matrix		
10	4	SS-2							
		10%							
					very loose	green-	moist to wet SILT + tr. fine SAND		wet sand streaks
					soft	brown			
	1/2					gray-	moist SILT + tr. CLAY & SAND		plant frags; other
15	1 1/2	SS-3				brown			organic debris
		100%				black			
	2	SS-4			med dense	gray-	v moist to wet SILT + some fine		roots in sample -
	4				soft	white	SAND		layered layer
20		100%			loose, soft	gray	wet fine-med. SAND		clean, well sorted
	1	SS-5							
	2	100%							
	1	SS-6			loose soft	gray			
	4								
25	5	100%							
					dense				
	12	SS-7			stiff	gray-	wet fine SAND and GRAVEL		
	18					brown	+ tr. SILT		
30									

REMARKS:::: E.O.H. 28'. set 2" 0.010 screen at 9.0 - 25.4

PROJECT NO. 80-211-3
BORING NO. P-6

:: POCKET PENETROMETER READINGS
:::: METHOD OF ADVANCING AND CLEANING BORING

Borehole Number: P-10
Elevation (Ft/MSL): _____ (ft)
Borehole Diameter: ___ inches, From ___ To ___
___ inches, From ___ To ___
Total Depth: 28 (ft)
Depth to Static Ground Water Level (SWL): _____ (ft)
Date SWL Measured: _____ (mm/dd/yy)

Drilling Method: SSA & HSA
Date Drilled: 01-14-5/84 (mm/dd/yy)
Drilled By: _____
Drillers License Number: _____
Logged By: JM KING
County: LAWRENCE
Township or Municipality: TAYLOR TOWNSHIP

Depth (Ft)	Lithologic Description	Plot	Ground Water* Observations	Samples No.	Samples Rec** Att	Comments	Well/Piezometer Construction	Depth (Ft)
0	BLACK SILTY ASH, CINDERS, GRAVEL, LOOSE							0
5	GREY SANDY SILT TO SILTY SAND, TRACE FINE GRAVEL, MED. DENSE, SOFT							5
10	GREY-WHITE COARSE CINDERS, ASH, FIRE BRICK FRAGS IN SILTY MATRIX, MED DENSE						2" PVC	10
15	GREEN-BROWN SILT, TRACE FINE SAND, VERY LOOSE, SOFT					MOIST TO WET		15
	GREY-BROWN TO BLACK SILT TRACE CLAY AND SAND, PLANT FRAGS, ORGANIC DEBRIS					MOIST		
20	GREY-WHITE SILT, SOME FINE SAND MED DENSE, SOFT, ROOTS, WELL SORTED							20
	GREY FINE TO MED SAND, LOOSE, SOFT					WET	2" PVC #10 SLOT SCREEN	
25								25
28	GREY-BROWN FINE SAND AND GRAVEL, TRACE SILT, DENSE, STIFF					WET	NO ADDITIONAL CONSTRUCTION DETAILS	28
								30

* ▽ Encountered Ground Water ▼ Composite Static Water Level ** Recovered/Attempted

Use additional sheets with this format as necessary

Recycled Paper

CEC
Civil & Environmental Consultants, Inc.
Chicago Cincinnati Columbus Export Detroit Indianapolis Nashville Pittsburgh St. Louis

Project Name: New Castle Plant Ash Landfill	Borehole/Well ID: MP-10R
	Casing Elevation: 776.9756
	Ground Elevation: 775.1076
Project No.: 040-654.0208	Groundwater Ele.: 768.2756

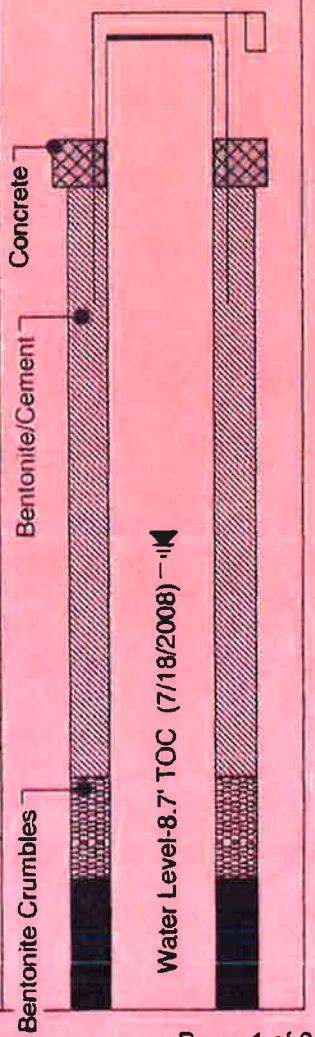
Date Started: 7/17/2008 Completed: 7/18/2008
Drilling Company: Terra Testing
Driller: Danny Dodd
CEC Representative: Timothy E. Moberg
Drilling Method: H.S.A
Bore Hole: 12" Core Size:
Well Installed: ☑ 4" Well
Screened Interval: 17.5'-27.5'

Sample Information:
Collected a lined bag of soil from (0'-5') for geotech analysis.

Comments/Problems:
Flowing sands caused inner augers to bind up when switching from splitspooning to augering. Splitspoons were not collected from (23'-30'). Flowing sands also prevented the well from being set at the bottom of the boring.

Sample No./ Core Run	Recovery (feet)	Blow Counts/ RQD	Organic Vapor Reading (ppm)	Sample Type	Depth (feet)	Material Description and Comments	Graphic Log	Elevation (feet, msl)
					-3			
					-1	Ground Surface		0.0
S-1	1.6	1,1,1,1	80.1	SS	1	FILL Gray FLYASH, some roots at surface, moist at (0'-2'), moist+ at (2'-3'), wet to saturated at (3'-9.5')		
		Augered			3			
S-2	2.0	2,1,1,2	25.8	SS	5			
		Augered			7			
S-3	1.4	3,1,1,1	39.4	SS	9			-9.5
		Augered						-10.0
S-4	1.6	WOR\2	66.2	SS	11	FILL/ALLUVIUM Brown SILT, with gray flyash, wet		
		Augered				ALLUVIUM Brown SILT, trace gray mottles, wet		-11.5
S-5	1.4	1,1,1,2	92.7	SS	13	Brown SILT, with very fine grained sand, wet		

Well Diagram



Civil & Environmental Consultants, Inc.	Project Name: New Castle Plant Ash Land. Borehole/Well ID: MP-10R Project No.: 040-625

Sample No./ Core Run	Recovery	Blow Counts/ RQD	Organic Vapor	Sample Type	Depth (feet)	Material Description and Comments	Graphic Log	Elevation (feet, msl)	Well Diagram
		Augered							
S-6	0.6	WOR\0.5,1,1,3	81.3	SS	16	Brown fine grained SAND, with silt, wet		-15.5	Bentonite Seal
		Augered						-17.5	
S-7	1.8	29,16,13,22	26.7	SS	18	Brown SAND and GRAVEL, moist+ to wet			#3 Silca Sand Filter Pack
		Augered			20				
S-8	1.2	28,13,13,22	24.6	SS	22				4" Slot 10 Screen
		Augered			24				
					26				
					28				
					30			-30.0	
						Bottom of Boring at 30' below ground surface.			

OHIO EDISON / PENN POWER

LOG OF BORING

NO. MP-12

LOCATION OF BORING: Weather Sunny/Phly cloudy 5-10°, 2-7-95

← N

DATUM: ELEVATION:

FACILITY NAME: New Castle Ash Disposal Facility

DRILLING METHOD: Hollow stem Auger (HSA), 6¼" I.D. (9 5/8" O.D.) CME-75

SAMPLING METHOD: 2.0' Split spoon Sampler, 140lb hammer with 30" drop.

BORING NO. MP-12

SHEET 1 OF 1

			DRILLING START	DRILLING FINISH
WATER LEVEL	6.1	bgs (below ground surface).		
TIME	17:48		TIME 17:30	TIME 19:00
DATE	2/7/95		DATE 2/7	DATE 2/7

SURFACE CONDITIONS: Open field.

DRILLING CONTR. North Coast Drilling Service Inc

BY E. Zaenglein DATE 2/7/95 CHECKED BY

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT. SAMPLER	SOIL DENSITY/ CONSISTENCY	COLOR	DEPTH IN FEET	SOIL GRAPH	
SS	24/20	SS-1 / 0-2	1,3,3,5	soft / med soft	DK Brn	0	ML	0.0-0.5' DARK BROWN (10YR 3/3), SANDY SILT, trace organics, (dry), (soft/med stiff), (topsoil)
						1		0.5'-2.0' DARK GRAY (N3), SANDY SILT, (dry), (soft/med stiff), (Fly Ash)
						2		17:50 HNu = 0ppm
						3		
						4		
SS	24/16	SS-2 / 6-7	1,2,3,1	very soft	dk gray	5		same as above, water at ≈ 6.1', (Fly Ash).
						▼6		17:58 HNu = 0ppm
						7	ML	
						8		
						9		
SS	24/18	SS-3 / 10-12	WOH	very soft	dk gray	10		same as above (Fly Ash)
						1		18:05 HNu = 0ppm
						2	ML	
SS	24/16	SS-4 / 13-15	WOH	very soft	dk gray	3		same as above (Fly Ash)
						4		18:10 HNu = 0ppm
						15		TOTAL DEPTH 15.0'
						6		
						7		
						8		
						9		
						20		

FORM X-804 (2-95)

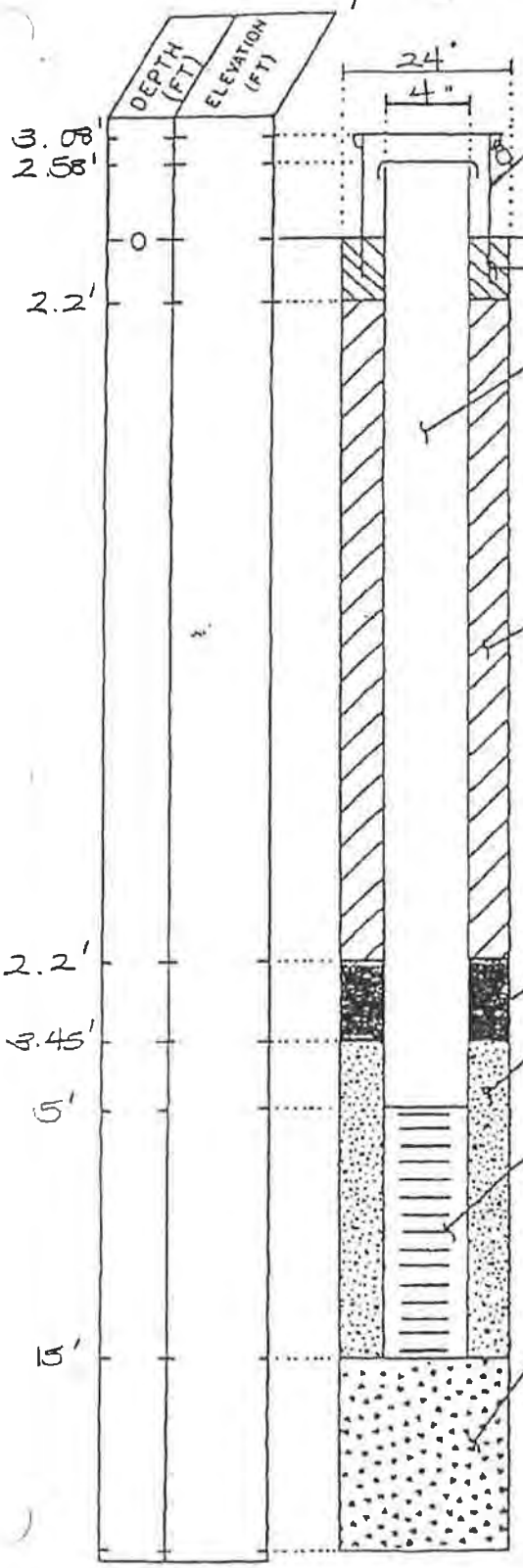
DISTRIBUTION: ORIGINAL - FIELD COPY YELLOW COPY - REPORT COPY PINK COPY - FILE COPY

PROJECT NAME: New Castle Ash Disp Facility WELL NO.: MP-12

PROJECT NO.: N/A GEOLOGIST/ENGINEER: Egrenak DATE INSTALLED: 2/7/95

MEASURED WATER LEVEL: 8.65' FROM TOP OF RISER

DATE MEASURED: 2/9/95 (8:43)



CAP AND CASING: 6" Dia Steel (5Ft long) locking prot. cover.

GROUND SURFACE

SURFACE SEAL: Quick Crete (5 bags)

RISER: 4" PVC Schedule 40

BACKFILL: N/A

SEAL: 3/8" diam. bentonite pellets used bucket

FILTER PACK: Best sand #5 clean Silica sand (5 bags)

WELL SCREEN:
SLOT SIZE: #10 Slot" (.010 inch.)
SLOT TYPE: CONTINUOUS SLOTTED OTHER:
MATERIAL: 4" PVC

ABANDONED BOREHOLE BACKFILL: N/A

DEVELOPMENT METHOD: bailer (3.5")

COMMENTS/RESULTS: screened in Fly-ash, could be difficult to develop.

INSTALLATION PROBLEMS/ COMMENTS: N/A

NOTES: N/A

Civil & Environmental Consultants, Inc.
Pittsburgh, Pennsylvania
1-800-365-2324

Borehole Number: MP-12
Elevation (Ft/MSL): _____ (ft)
Borehole Diameter: 7¾ inches, From 0 To 15'
___ inches, From ___ To ___
Total Depth: 15 (ft)
Depth to Static Ground Water Level (SWL): 6.1 (ft) BGS
Date SWL Measured: 02/07/95 (mm/dd/yy)

Drilling Method: 6¼" ID HSA
Date Drilled: 02/07/95 (mm/dd/yy)
Drilled By: NORTHCOAST DRILLING SERVICE
Drillers License Number: _____
Logged By: E. ZAENGLER
County: LAWRENCE
Township or Municipality: TAYLOR TOWNSHIP

Depth (ft)	Lithologic Description	Plot	Ground Water* Observations	Samples No.	Samples Rec**	Comments	Well/Piezometer Construction	Depth (Ft)
0	0-0.5': DARK BROWN SANDY SILT, TRACE ORGANICS, SOFT/MED STIFF (TOPSOIL) 0.5-2.0': DARK GREY FLY ASH (SANDY SILT), SOFT/MED STIFF	ML		1	20/24	DRY	QUICK CRETE; BENTONITE; 4" PVC RISER	0
5	SAME AS ABOVE	ML	▽	2	16/24	WATER TABLE ENCOUNTERED @ 6.1'	BENTONITE; 4" PVC #10 SLOT SCREEN; #5 SILICA SAND PACK	5
10	SAME AS ABOVE	ML		3	18/24	WET	#5 SILICA SAND PACK	10
	SAME AS ABOVE			4	16/24	WET		
15								15

* ▽ Encountered Ground Water ▼ Composite Static Water Level ** Recovered/Attempted

Use additional sheets with this format as necessary

Recycled Paper

WELL COMPLETION LOG

PROJECT NAME: New Castle Completion Log WELL NO.: MW-15

PROJECT NO.: N/A GEOLOGIST/ENGINEER: ezgeng DATE INSTALLED: 4/20/95

MEASURED WATER LEVEL: 9.03 ' FROM TOP OF RISER

DATE MEASURED: 4/26/95

CAP AND CASING: 6" Dia Steel (6ft long) locking protective cover.

GROUND SURFACE

SURFACE SEAL: Quick Crete (5½ bags)

RISER: 4" PVC Schedule 40

BACKFILL: N/A

SEAL: 3/8" bentonite pellets used 2 buckets

FILTER PACK: Best Sand #5 clean silica sand (6 bags)

WELL SCREEN:
SLOT SIZE: #10 Slot (.010 inch)
SLOT TYPE: CONTINUOUS SLOTTED OTHER:
MATERIAL: 4" PVC

ABANDONED BOREHOLE BACKFILL: Best Sand #5 clean Silica Sand (½ bag)

DEVELOPMENT METHOD: DC Pump

COMMENTS/RESULTS: Screened in Fly ash could be difficult to dev.

INSTALLATION PROBLEMS/ COMMENTS: N/A

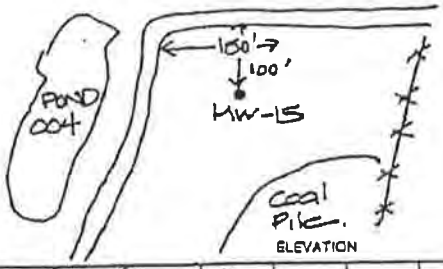
NOTES: N/A

CHOEDISON/PENN POWER

LOG OF BORING

NO. [illegible]

LOCATION OF BORING: Weather Sunny 54°



DATUM: ELEVATION:

FACILITY NAME: New Castle Ash Disposal Facility

DRILLING METHOD: Hollow Stem Auger (HSA) 6 1/4" I.D. (9 5/8" O.D.) CME 55

SAMPLING METHOD: 2.0' Split spoon Sampler 140lb hammer with 30" drop.

WATER LEVEL	9.6'	bgs.		
TIME				
DATE	4/20/95			

BORING NO.: MW-15

SHEET: 1 OF 1

DRILLING: START TIME 09:30 DATE 4/20 — FINISH TIME 13:30 DATE 4/20

DRILLING CONTR. North Coast Drilling Sac., JV

BY S. Zgambo DATE 4/20/95 CHECKED BY

SURFACE CONDITIONS: Open Field

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	SAMPLE NO. / SAMPLE DEPTH	BLOWS/FT. SAMPLER	SOIL DENSITY/ CONSISTENCY	COLOR	DEPTH IN FEET	SOIL GRAPH	
SS	24/16	SS-1 0-2	1,2,2,3	vy soft	dk gry	0		Dark gray (N3), (SILT, trace Fine sand and organics in top 8" (topsoil), (vy soft to soft), (moist), (Fly Ash). HNU = 0ppm 09:55
						1		
						2		
						3		
						4	ML	
SS	24/12	SS-2 5-7	2,2,3,3	Soft	gry	5		Same as above, trace Fine to medium sand (coarsening with depth), (Fly Ash appears laminated) HNU = 0ppm 09:58
						6		
						7		
						8		
						9		
SS	24/23	SS-3 10-12	3,2,3,3	Soft	gry	10	ML	Same as above, (Fly Ash), (moist/wet) HNU = 0ppm 10:10 Water at 9.6'
						1		
						2		
						3	ML	
						4		
SS	24/24	SS-4 15-17	WOH	vy soft	dk gry	15		Same as above, (Fly Ash), (wet)
						6		
						7		
						8		T.D. 18.0' BOTTOM OF WELL 17.5' bgs
						9		
						20		

FORM X-904 (2-95)

DISTRIBUTION: ORIGINAL - FIELD COPY YELLOW COPY - REPORT COPY PINK COPY - FILE COPY

Borehole Number: MW-15
Surface Elevation (Ft/MSL): _____ (ft)
Borehole Diameter: 9 5/8 inches, From 0 To 18.5'
___ inches, From ___ To ___
Total Depth: 18' (ft)
Depth to Static Ground Water Level (SWL): 9.6 (ft) BGS
Date SWL Measured: 04/20/95 (mm/dd/yy)

Drilling Method: 10 1/4" ID HSA
Date Drilled: 04/20/95 (mm/dd/yy)
Drilled By: NORTHCOAST DRILLING SERVICE
Drillers License Number: _____
Logged By: E ZIENGLER
County: LAWRENCE
Township or Municipality: TAYLOR TOWNSHIP

Depth (Ft)	Lithologic Description	Plot	Ground Water* Observations	Samples No.	Samples Rec** Att	Comments	Well/Piezometer Construction	Depth (Ft)
0	DARK GREY SILT WITH TRACE FINE SAND AND ORGANICS (TOPSOIL), VERY SOFT TO SOFT FLY ASH	ML		1	16/24	MOIST	QUICK CRETE	0
-5	SAA, TRACE FINE TO MED. SAND, DARKENING WITH DEPTH (FLY ASH IS LAMINATED)	ML		2	12/24		BENTONITE; 4" CASE; BENTONITE	5
-10	SAA (FLY ASH)	ML	▽	3	23/24	WATER TABLE ENCOUNTERED @ 9.6' MOIST/WET.	#5 SILICA SAND PACK; 4" SCREEN; #5 SILICA SAND PACK	10
-15	SAA (FLY ASH)	ML		4	24/24	WET		15
-18								18
-20								20

* ▽ Encountered Ground Water ▼ Composite Static Water Level ** Recovered/Attempted

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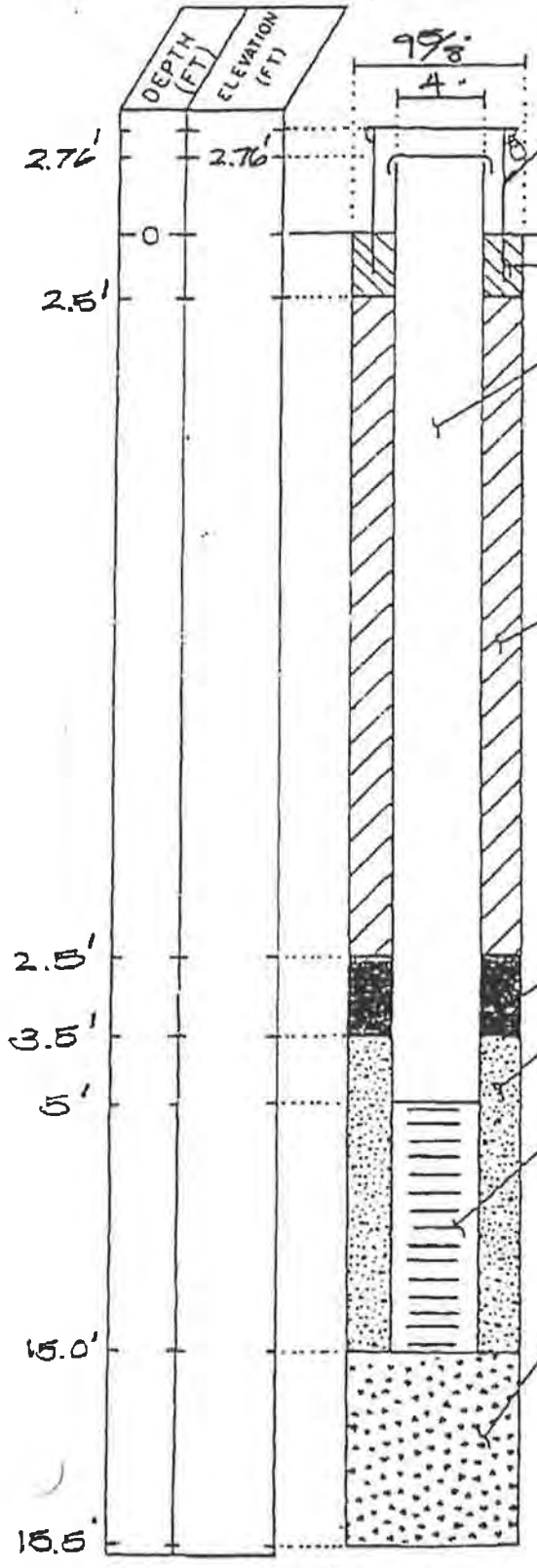
WELL - COMPLETION LOG

PROJECT NAME: New Castle Ash Disp. Facility WELL NO.: MP-18

PROJECT NO.: N/A GEOLOGIST/ENGINEER: E. Zgrencik DATE INSTALLED: 7/26/95

MEASURED WATER LEVEL: 8.66' FROM TOP OF RISER

DATE MEASURED: 8/2/95



CAP AND CASING: 6" Dia Steel (5Ft long) locking protective cover.

GROUND SURFACE

SURFACE SEAL: Quick crete (3 bags)

RISER: 4" PVC Schedule 40

BACKFILL: N/A

SEAL: 3/8" diam. bentonite pellets used bucket

FILTER PACK: Best sand #5 clean silica sand (6 bags)

WELL SCREEN:
SLOT SIZE: #10 Slot" (.010 inch)
SLOT TYPE: CONTINUOUS SLOTTED OTHER:
MATERIAL: 4" PVC

ABANDONED BOREHOLE
BACKFILL: Best Sand #5 clean silica sand

DEVELOPMENT METHOD: DC Pump.

COMMENTS/RESULTS:

INSTALLATION PROBLEMS/ COMMENTS: N/A

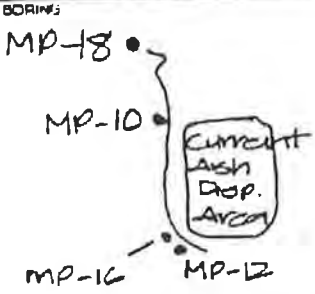
NOTES: N/A

Civil & Environmental Consultants, Inc.
Pittsburgh, Pennsylvania
1-800-365-2324

OHIO EDISON / PENN POWER

LOG OF BORING

LOCATION OF BORING



DATUM

ELEVATION

FACILITY NAME: New Castle Ash Disposal Facility

DRILLING METHOD: HSA 6¼" I.D. (9⅝" O.D.), CME-75.

SAMPLING METHOD: 2.0' split spoon sampler, 140 lb. hammer with 30 in. drop.

BORING NO: MP-18

SHEET: 1 OF 1

WATER LEVEL	≈8.8'			
TIME				
DATE				

DRILLING: START TIME 11:20, DATE 7/26; FINISH TIME 12:30, DATE 7/26

SURFACE CONDITIONS: Open Field/Swamp area.

SAMPLER TYPE	INCHES DRIVEN / INCHES RECOVERED	SAMPLE NO / SAMPLE DEPTH	BLOWS/FT. SAMPLER	SOIL DENSITY/ CONSISTENCY	COLOR	DEPTH IN FEET	SOIL GRAPH	
SS	24/18	SS-1/0-2	1,1 / 1,1	Very soft	Dk Gray	0	ML	Dark gray (N3), Silt, trace fine sand and organics in fine sand and organics in from 12" (topsoil), (very soft), (dry to moist), (homogeneous), (dry ash), (Fill) 11:25 HNu-0ppm
						1		
						2		
						3		Water at ≈8.8' bgs
						4		
SS	24/16	SS-2/5-7	WH / 1,1	Very soft	Brn	5	ML	Brown (10YR5/3) (ML) silt, with clay & organic laminae, (very soft), (wet), (laminated), (Alluvial/Lacustrine)
						6		
						7		11:40 HNu-0ppm
						8		
						9		
SS	24/18	SS-3/10-12	WH / 1,1	Very soft	Yell Brn	10	ML	10.5-10.6 same as above. 10.6-12.0 Yellowish Brown (10YR5/6) well graded Fine to medium grained sand, trace silt, (loose), (wet), (Alluvial/Lacustrine)
						11		
						12	SW	11:55 HNu-0ppm
						13		
						14		
SS	24/20	SS-4/15-17	WH / 2,2	loose	Yell Brn	15		Same as above. 12.15 HNu-0ppm
						16		
						17		Total depth 17'. Augered to 15' bgs.
						18		
						19		
						20		

DRILLING CONTRACTOR: [illegible]

BY: [illegible] DATE: 7/26/95 CHECKED BY: _____

FORM X-904 (2-95)

DISTRIBUTION: ORIGINAL - FIELD COPY YELLOW COPY - REPORT COPY PINK COPY - FILE COPY

G-PRS-WRB345 1/95

Borehole Number: MP-18
Elevation (Ft/MSL): _____ (ft)
Borehole Diameter: 9 5/8 inches, From 0 To 12
___ inches, From ___ To ___
Total Depth: 17 (ft)
Depth to Static Ground Water Level (SWL): 3.8 (ft) BGS
Date SWL Measured: 07/26/95 (mm/dd/yy)

Drilling Method: 6 1/4" ID HSA
Date Drilled: 07/26/95 (mm/dd/yy)
Drilled By: NORTHCREST DRILLING SERVICE
Drillers License Number: _____
Logged By: F ZIEGLER
County: LAWRENCE
Township or Municipality: TAYLOR TOWNSHIP

Depth (Ft)	Lithologic Description	Plot	Ground Water* Observations	Samples No.	Samples Rec** Att	Comments	Well/Piezometer Construction	Depth (Ft)
0	DARK OKE / SILT, TRACE FINE SAND AND ORGANICS IN TOP 12", V. SOFT NON-HOMOGENEOUS FLY ASH			1	18/24	DRY TO MOIST	QUICK CRETE; 4" PVC RISER; QUICK CRETE	0
			▽			WATER TABLE ENCOUNTERED @ 3.8'	BENTONITE; BENTONITE	
5	BROWN SILT WITH CLAY AND ORGANIC LAMINAE, V. SOFT, LAMINATED	ML		2	16/24	WET		5
							#5 SILICA SAND PACK; 4" PVC #10 SLOT SCREEN; #5 SILICA SAND PACK	
10	10.0'-10.6' SAA 10.6'-12.0' YELLOWISH BROWN WELL GRADED, FINE TO MED. SAND, TRACE SILT, LOOSE			3	18/24	WET		10
		SW						
15	SAA			4	24/24			15
17								17
20								20

* ▽ Encountered Ground Water ▼ Composite Static Water Level ** Recovered/Attempted

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