CCR COMPLIANCE
GROUNDWATER MONITORING AND CORRECTIVE ACTION
ANNUAL REPORT
ASH LANDFILL

Prepared for:

GenOn.

New Castle Power, LLC
New Castle Generating Station
West Pittsburg, Pennsylvania

Prepared by:

APTIM

Aptim Environmental & Infrastructure, LLC
Pittsburgh, Pennsylvania

December 2022

Table of Contents_____

Table

Figure

List of Tables _____

List of Figures _____

Executive Summary _____

In response to the newly adopted Part A elements (effective September 28, 2020) of the Coal Combustion Residuals (CCR) Rule (or Rule), this Executive Summary has been incorporated into the annual report per the specific provisions as codified in 40 CFR §257.90(e)(6). These provisions require that an up-front overview of the current status (covering the immediately preceding calendar year) of groundwater monitoring and corrective action programs be provided in a concise and focused manner for each CCR unit at the facility. Accordingly, the following paragraphs document the respective groundwater monitoring status (for Calendar Year 2022) of the Plant Ash Landfill at the New Castle Generating Station, operated by New Castle Power, LLC. Tables and/or figures referenced in the discussions below are included at the end of the report and further support the text (Section 2.0) in the main body of the report.

As shown in Figure 1, the Plant Ash Landfill is a captive landfill located in the northern portion of the New Castle Station proper, and includes a CCR groundwater monitoring network consisting of six wells, including two upgradient locations (Wells MP-11 and P-6) and four downgradient locations (Wells MP-10R, MP-12, MP-15, and MP-18). For Calendar Year 2022, the Plant Ash Landfill entered and ended the period in the Detection Monitoring Program, wherein it has remained since CCR groundwater monitoring activities were initiated. To support this continuation, an Alternate Source Demonstration (ASD) was completed in April 2018, which successfully showed that statistically significant increases (SSIs) in CCR Appendix III constituents, including boron, calcium, sulfate, and total dissolved solids (TDS) (see Table 1) were associated with a historical ash impoundment and other closed stages of the landfill underlying the landfill's active footprint associated with Stage 4.

The findings and conclusions from the April 2018 ASD remain relevant and applicable to the current groundwater monitoring observations, which continue to show several Appendix III constituents at values above background in the downgradient wells, including Wells MP-10R and MP-15 (boron, calcium, sulfate, and TDS), Well MP-12 (boron, calcium, fluoride, sulfate, and TDS), and Well MP-18 (boron and fluoride) (See Table 1). No groundwater activities to date have triggered the Plant Ash Landfill into the Assessment Monitoring Program, and correspondingly, there has never been basis for performance of an Assessment of Corrective Measures. Moreover, subsequent and existing documentation has confirmed the absence of flow in the landfill's leachate detection zone.

As documented in the 2019 annual groundwater report, the previously designated CCR unit identified as the North Ash Pond was subjected to a clean closure by removal per §257.102(c), and further groundwater monitoring under the CCR Program was successfully terminated.

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 was completed no later than January 31, 2018, and provided 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, and beginning with the current report, must also address the items contained in §257.90(e)(6) in the form of an Executive Summary:

- 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, owned by New Castle Power, LLC, a subsidiary of GenOn Holdings, Inc. (GenOn), is located in West Pittsburg, Pennsylvania. The Rule applies to this facility due to the management/disposal of CCR materials that were generated from the previous combustion of coal. Following successful closure of the North Ash Pond in 2019, only the Plant Ash Landfill remains as the single designated on-site CCR unit. With the transition from coal to natural gas firing in mid-2016, the disposal/placement of CCR materials in the landfill has nearly been completely curtailed. The Plant Ash Landfill 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 sixth Annual Report has been prepared to comply with the requirements of §257.90(e), addressing the New Castle Station's remaining CCR Unit with respect to the groundwater monitoring and corrective actions undertaken during Calendar Year 2022. 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   Plant Ash Landfill

2.1   Groundwater Monitoring Network

The CCR groundwater monitoring system for the Plant 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 2022 reporting period.

2.2   2022 Data Collection

Based on the April 2018 Alternate Source Demonstration (ASD), which successfully identified the underlying historic ash impoundment and other closed stages of the landfill as the source of statistically significant increases (SSIs) for multiple Appendix III constituents (boron, calcium, sulfate, and total dissolved solids [TDS]), the Plant Ash Landfill continued in the CCR Detection Monitoring Program during the 2022 reporting period. Accordingly, samples were collected and analyzed for Appendix III constituents during each of the semi-annual monitoring events conducted in June and November 2022 per the requirements of §257.94(b). From review of Table 1, both of the 2022 Detection Monitoring events showed SSIs for the same general group of Appendix III constituents (boron, calcium, fluoride, sulfate, and TDS) as those addressed in the still relevant and applicable 2018 ASD. These observations, combined with the lack of flow in the leachate detection zone, will serve to keep the Plant Ash Landfill in the CCR Detection Monitoring Program moving into 2023.

2.3   2022 Monitoring Program Transitions

During 2022, there were no transitions between monitoring programs. As a result of the successful ASD (April 2018) and its continued relevance and applicability, the Plant Ash Landfill remained in the Detection Monitoring Program.

2.4   2022 Corrective Actions

During 2022, there were no problems identified or corrective actions undertaken.

2.5   2023 Projected Activities

As noted, it is anticipated that Detection Monitoring activities will continue for the Plant Ash Landfill during 2023, with continued review of Appendix III constituent concentrations and comparison against the calculated background values.

Table 1
New Castle Generating Station
Plant 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
	22-May-19	778.35	0.08	179	24		0.2	794	400	7.18
	27-Aug-19	778.16	0.08	171	23		0.2	806	395	7.29
	10-Jun-20	778.42	0.09	161	21	<	0.1	782	372	7.40
	1-Dec-20	776.95	0.08	147	27		0.2	788	370	7.53
	2-Mar-21	777.53	0.07	165	26		0.2	810	375	7.31
	30-Nov-21	776.31	0.08	155	28		0.2	790	384	6.79
	1-Jun-22	779.25	0.08	161	26	<	0.1	772	332	6.96
	29-Nov-22	776.82	0.07	148	36		0.1	778	348	6.95
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
	22-May-19	779.44	0.12	147	25	<	0.1	606	353	6.80
	27-Aug-19	778.99	0.11	139	25		0.1	602	356	6.82
	10-Jun-20	779.05	0.13	136	23	<	0.1	590	345	6.75
	1-Dec-20	778.60	0.11	127	23	<	0.1	610	330	6.85
	2-Mar-21	779.16	0.11	133	22	<	0.1	594	324	6.65
	30-Nov-21	778.15	0.12	131	22	<	0.1	598	336	6.71
	1-Jun-22	780.72	0.11	127	19	<	0.1	580	307	6.42
	29-Nov-22	778.06	0.11	125	20	<	0.1	598	324	6.52
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
	22-May-19	770.86	1.60	118	4	<	0.1	410	134	6.43
	27-Aug-19	769.17	1.56	118	2	<	0.1	462	191	6.52
	9-Jun-20	769.91	1.49	112	3	<	0.1	484	197	6.44
	1-Dec-20	769.44	3.60	278	20	<	0.1	1330	839	6.34
	2-Mar-21	769.75	2.52	246	16	<	0.1	1110	607	6.32
	30-Nov-21	767.81	10.60	289	35	<	0.1	1470	858	6.45
	1-Jun-22	769.90	1.79	123	7	<	0.1	510	194	6.37
	29-Nov-22	768.24	9.9	266	26	<	0.1	1350	619	6.29

Table 1
New Castle Generating Station
Plant Ash Landfill – Groundwater Analytical Data
CCR Appendix III Constituents

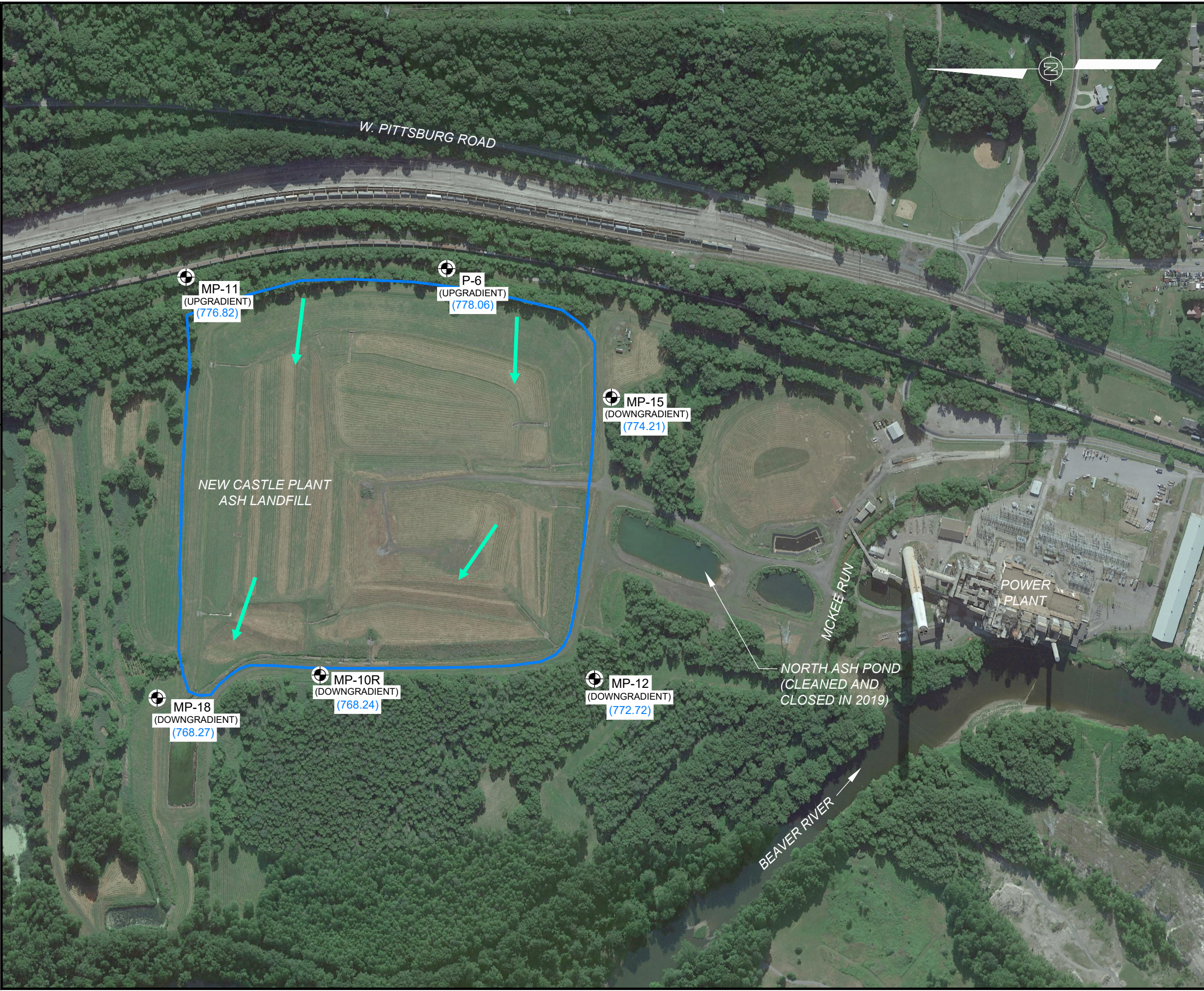| Monitoring Well	Date Sampled	Groundwater Elevation (ft. MSL)	Total Boron (mg/L)	Total Calcium (mg/L)		Total Chloride (mg/L)		Total Fluoride (mg/L)	Total Dissolved Solids (mg/L)	Sulfate (mg/L)	pH (S.U.)
						Calculated Background					
			0.30	217		50		0.1	980	454	6.04-7.96
MP-12 (Downgradient)	30-Dec-15	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
	22-May-19	773.88	0.76	96		2		0.2	554	328	5.74
	27-Aug-19	773.12	1.72	248		5		1.2	1520	990	5.91
	9-Jun-20	773.39	1.69	244	<	10	<	1.0	1080	979	5.84
	1-Dec-20	773.01	2.21	282	<	10	<	1	2070	1340	6.67
	2-Mar-21	773.56	2.56	327		8		0.4	2380	1380	6.53
	30-Nov-21	772.15	3.12	397		10	<	0.1	3140	2090	6.39
	1-Jun-22	773.49	2.12	286		7		0.3	1660	921	6.38
	29-Nov-22	772.72	2.28	379		9		0.3	2530	1340	6.44
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
	22-May-19	779.54	1.07	681		3	<	0.1	2310	1300	6.81
	27-Aug-19	775.98	1.13	697		8		0.2	2400	1360	6.58
	10-Jun-20	776.13	1.01	669		4	<	0.2	2300	1310	6.74
	1-Dec-20	773.81	1.05	658		5		0.2	2370	1410	6.79
	2-Mar-21	774.48	1.09	649		3		0.1	2370	1360	6.44
	30-Nov-21	773.71	0.94	694		5		0.3	2420	1420	6.72
	1-Jun-22	775.71	0.93	653		3	<	0.1	2340	1420	6.38
	29-Nov-22	774.21	0.93	665		3	<	0.1	2570	1290	6.60
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
	22-May-19	770.36	1.02	126		7		0.3	422	24	6.65
	27-Aug-19	769.05	1.11	132		6		0.4	472	43	6.98
	9-Jun-20	769.11	1.03	130		6		0.3	512	93	6.84
	1-Dec-20	768.57	0.83	86		4		0.3	382	58	6.63
	2-Mar-21	769.65	1.04	106		7		0.2	388	82	6.45
	30-Nov-21	767.81	1.13	120		7		0.3	462	66	6.76
	1-Jun-22	769.02	0.91	100		6		0.2	376	43	6.39
	29-Nov-22	768.27	0.98	113		5		0.2	444	90	6.64

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.
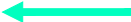
Figure

LEGEND:

MP-11 ⬦
(776.82)
CCR GROUNDWATER MONITORING WELL FOR NEW CASTLE PLANT ASH LANDFILL WITH GROUNDWATER ELEVATIONS MEASURED ON NOVEMBER 29, 2022.

← GROUNDWATER FLOW DIRECTION

Map labels:

W. PITTSBURG ROAD

MP-11 (UPGRADIENT) (776.82)

P-6 (UPGRADIENT) (778.06)

MP-15 (DOWNGRADIENT) (774.21)

NEW CASTLE PLANT ASH LANDFILL

MP-18 (DOWNGRADIENT) (768.27)

MP-10R (DOWNGRADIENT) (768.24)

MP-12 (DOWNGRADIENT) (772.72)

NORTH ASH POND (CLEANED AND CLOSED IN 2019)

MCKEE RUN

POWER PLANT

BEAVER RIVER

SCALE
0   400   800 FEET

REFERENCES:

1. GOOGLE AERIAL PHOTOGRAPH, DATED 7/9/2022.