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2022 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

MERRIMACK STATION COAL ASH LANDFILL

Bow, New Hampshire

Prepared for GSP Merrimack LLC File No. 2025.10
January 26, 2022
Minor Revision, February 7, 2022

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1.0 INTRODUCTION

Groundwater monitoring at the Merrimack Station Coal Ash Landfill site (Site) in Bow, New Hampshire is required pursuant to 40 CFR Part 257.90. Sanborn, Head & Associates, Inc. (Sanborn Head) prepared this 2021 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) for the Site as required by 40 CFR Part 257.90(e), and this Annual Report covers the reporting period from January 1, 2021 through December 31, 2021. This report and the services provided by Sanborn Head are subject to the Limitations provided in Appendix A.

2.0 GROUNDWATER MONITORING AND CORRECTIVE ACTIONS OVERVIEW

As required under 40 CFR Part 257.90(e)(6), the following summarizes the groundwater monitoring and corrective action programs for the 2021 annual reporting period.

(i) The Site was operating under the detection monitoring program at the start of the annual reporting period.

(ii) The Site was operating under the detection monitoring program at the end of the annual reporting period, i.e., there was no need to implement assessment monitoring.

(iii) Statistically significant increases over background were detected at the Site (sulfate and boron at SB-4; total dissolved solids at SB-1). Pursuant to 40 CFR Part 257.94(e)(2), demonstrations that these SSIs were due to natural variation in groundwater quality were either completed or are in progress, and the Site continues to operate under the detection monitoring program.

(iv) There were no determinations of statistically significant exceedances of groundwater protection standards.

(v) There were no remedy selections required pursuant to 40 CFR Part 257.97.

(vi) There were no initiated or ongoing remedial activities required pursuant to 40 CFR Part 257.98.

3.0 REPORT REQUIREMENTS

As required under 40 CFR Part 257.90(e), this Annual Report includes the following information:

1. A map and diagram showing the Site and the background (or upgradient) and downgradient monitoring wells that are part of the groundwater monitoring program for the Site;
2. Identification of monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;
3. Monitoring data obtained under 40 CFR Parts 257.90 through 257.98, including:
    a. the number of groundwater samples that were collected for analysis for each background and downgradient well;
    b. the dates the samples were collected; and

c. whether the sample was required by the detection monitoring or assessment monitoring programs;

4. A narrative discussion of transitions, if any, 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);

5. Other information required to be included in the annual report as specified in 40 CFR Parts 257.90 through 257.98, including;

   a. Groundwater elevations measured in each well immediately prior to purging and the rate and direction of groundwater flow, as calculated by the owner or operator of the Site, each time groundwater is sampled (40 CFR Part 257.93(c)); and

   b. Written demonstrations prepared by a qualified professional engineer demonstrating that a source other than the Site caused the statistically significant increase (SSI) over background levels for a constituent or that the SSI resulted from an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality (40 CFR Part 257.94(e)(2));

6. As provided in the groundwater monitoring and corrective actions overview above, a section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the Site.

4.0 BACKGROUND

The Site has been operating since 1978 and was constructed in a former sand and gravel quarry on the property adjacent to the Merrimack Station electric power generation facility in Bow, New Hampshire. The landfill was constructed with a Hypalon geomembrane liner system and a leachate collection system, and it receives coal ash from the nearby Merrimack Station electric power generation facility. A portion of the landfill was filled to final grade and was capped with a final cover system. A Locus Plan for the Site is provided as Figure 1, and the locations of the monitoring wells in relation to the landfill are indicated on the Facility Plan, Figure 2.

The groundwater quality at the Site has been routinely monitored since the 1980s under New Hampshire Department of Environmental Services (NHDES) regulations. The current groundwater monitoring program, as prescribed by the NHDES Groundwater Release Detection Permit No. GWP-198400065-B-006, dated March 16, 2017, requires measuring of static groundwater levels and laboratory analyses of groundwater samples from five (5) overburden monitoring wells (i.e., SB-1, SB-4, SB-6, SB-13, and SB-14) on a semi-annual basis.

As discussed in the Groundwater Monitoring Well Network Verification (Sanborn Head, January 14, 2016), the five monitoring wells were certified as an appropriate groundwater monitoring system and were constructed to meet the requirements of 40 CFR Part 257.91. No monitoring wells were installed or decommissioned at the Site during the reporting period.

5.0 SUMMARY OF GROUNDWATER MONITORING

As specified in 40 CFR Part 257.94(b), a detection monitoring program was initiated in October 2015. A Sampling and Analysis Plan (Sanborn Head, last revised on October 7, 2016) was prepared to address the requirements of 40 CFR part 257.93. Monitoring well SB-13 is the upgradient/background monitoring well for the Site. The other monitoring wells are considered downgradient or sidegradient to the landfill, although groundwater flow conditions at the Site vary over time. For the groundwater monitoring program, unfiltered groundwater samples were collected and analyzed by Eastern Analytical, Inc. (EAI) of Concord, New Hampshire using low-flow sampling techniques, based on the U.S. Environmental Protection Agency (USEPA) Low Stress (Low Flow) Standard Operating Procedure, revised September 20, 2017.

As part of the detection monitoring program, eight independent samples for each background and downgradient well were collected and analyzed for the constituents listed in 40 CFR Part 257 Appendix III (boron, calcium, chloride, fluoride, pH, sulfate, and total dissolved solids) and Appendix IV (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, fluoride, lead, lithium, mercury, molybdenum, selenium, thallium, and radium 226 and 228 combined). The initial eight, independent samples were collected in February 2016 through April 2017 for the five Site monitoring wells. The statistical analysis of the groundwater monitoring data after the eight initial samples indicated that a transition between monitoring programs (i.e., to assessment monitoring) was not required.

Semi-annual detection monitoring, as specified in 40 CFR Part 257.94, was initiated in November 2017. Detection monitoring at the Site includes sampling the five wells for analysis of the Appendix III constituents. For the current reporting period, the semi-annual detection monitoring rounds were in April 2021 and November 2021. Additional samples were collected on February 4, 2021 as part of a retesting routine for the November 2020 monitoring round and September 14, 2021 as part of a retesting routine for the April 2021 monitoring round. As described below, the data analyses completed during the reporting period indicated that a transition between monitoring programs (i.e., to assessment monitoring) was not required.

Groundwater analytical data are summarized in Table 1 and analytical laboratory reports are provided in Appendix B. The groundwater level measurements and inferred general groundwater flow directions are summarized in Table 2.

6.0 SUMMARY OF STATISTICAL ANALYSIS

As required under 40 CFR Part 257.90(b)(iv), Sanborn Head evaluated groundwater monitoring data for a statistically significant increase (SSI) over background levels for the constituents listed in 40 CFR Part 257 Appendix III at the five Site monitoring wells. On May 4, 2018, Sanborn Head issued a Statistical Method Selection Certification, applicable to the statistical analysis completed on the groundwater analytical data collected through September 14, 2021. The certification is available in the Site's operating record. Statistical analysis of the November 2021 data is ongoing.

The prediction interval procedure specified in 40 CFR Part 257.93(f)(3) was selected for evaluation of the most recent parameter values for the site wells (i.e., SB-1, SB-4, SB-6, SB-13, and SB-14). The prediction interval procedure was performed on parameters specified in Appendix III (i.e., boron, calcium, chloride, fluoride, pH, Sulfate, and total dissolved solids) using the multiple well and multiple parameter prediction limit equation.

Based on the prediction interval procedures performed for data collected for the Fall 2020 and Spring 2021 monitoring rounds, SSIs over background levels were identified. Pursuant to 40 CFR Part 257.94(e)(2), within 90 days of detecting the SSI, Sanborn Head prepared an Alternative Source Demonstration (ASD) that demonstrated, based on a weight-of-evidence approach, that the Fall 2020 SSIs were due to natural variation in groundwater quality. An ASD for the Spring 2021 SSI is in progress.[1] The SSIs and corresponding ASDs are summarized in Exhibit 1, below. The Fall 2020 ASD is provided as Appendix C.

Exhibit 1: Alternative Source Demonstrations

Sampling Round	Sampling & Retesting Dates	SSI Location and Parameter	ASD Date
Fall 2020	November 12, 2020 & February 4, 2021	SB-4: Sulfate and boron	May 24, 2021
Spring 2021	April 28, 2021 & September 14, 2021	SB-1: Total dissolved solids	In Progress[1]

Data for the November 2021 groundwater detection monitoring round are included in Table 1; however, the statistical analysis for the November 2021 data is on-going. As stipulated in 40 CFR Part 257.93(h)(2), the Site operator has 90 days from completing the sampling and analysis to identify whether there is an SSI over background. The Fall 2021 samples were collected November 15, 2021; the laboratory analyses were received December 8, 2021; and the statistical analysis is due by March 8, 2022.

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[1] Confirmatory sampling, which is used with the "1-of-2" retesting strategy for detection monitoring, was completed in September 2021. The SSI was detected in statistical analyses completed November 9, 2021, so the ASD is due by February 7, 2022 (i.e., within 90 days of detecting the SSI).

TABLES

TABLE 1
Groundwater Analytical Results Summary
Merrimack Station Coal Ash Landfill
Bow, New Hampshire

Location	Date	Metals (µg/L)															Miscellaneous Parameters							
																					s.u	pCi/L		
		Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium	Cobalt	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Chloride	Fluoride	Sulfate	Total Dissolved Solids	pH	Radium 226	Radium 228	Radium 226+228
Drinking Water MCL		6	5	2,000	4	NS	5	NS	100	NS	15*	NS	2	NS	50	2	NS	4,000	NS	NS	NS	NS	NS	5
CCR Alt. Standards		NA	NA	NA	NA	NA	NA	NA	NA	6	15	40	NA	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GW-1/(AGQS)		6 ‡	5 ‡	2,000 ‡	4 ‡	6,000 ‡	5 ‡	NS ‡	100	NS ‡	15 ‡	NS	2 ‡	NS	50 ‡	2 ‡	NS	4,000	500,000	NS	NS	NS	NS	NS
GW-2		NA	NA	NA	NA	NA	NA	NS	NA	NS	NA	NS	NA	NS	NA	NA	NS	†	†	NS	NS	NS	NS	NS
SB-1	2/24/2016	<1.0	<1.0	14	<1.0	60	<1.0	7,200	<1.0	<1.0	<1.0	<1.000	<0.10	<1.0	<1.0	<1.0	44,000	<100	8,000	96,000	5.21	0.2 ±0.1	0.6 ±0.6	0.8 ±0.6
	4/25/2016	<1.0	<1.0	18	<1.0	100	<1.0	10,000	<1.0	<1.0	<1.0	<100	<0.10	1.0	<1.0	<1.0	58,000	<100	9,000	120,000	5.72	0.5 ±0.2	0.2 ±0.4	0.7 ±0.4
	6/6/2016	<1.0	<1.0	16	<1.0	<50	<1.0	8,200	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	55,000	<100	7,000	140,000	5.52	0.6 ±0.3	0.2 ±0.5	0.8 ±0.5
	7/18/2016	<1.0	<1.0	16	<1.0	70	<1.0	8,600	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	60,000	<100	9,000	120,000	5.35	0.4 ±0.3	0.0 ±0.6	0.4 ±0.6
	8/30/2016	<1.0	<1.0	17	<1.0	<50	<1.0	7,900	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	49,000	<100	7,000	120,000	5.23	0.4 ±0.3	0.3 ±0.4	0.7 ±0.4
	10/17/2016	<1.0	<1.0	17	<1.0	<50	<1.0	9,700	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	60,000	<100	6,000	130,000	5.63	0.6 ±0.4	0.0 ±0.4	0.6 ±0.4
	11/29/2016	<1.0	<1.0	16	<1.0	<50	<1.0	8,000	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	62,000	<100	6,000	88,000	5.63	1.0 ±0.4	0.8 ±0.5	1.8 ±0.5
	4/19/2017	<1.0	<1.0	16	<1.0	<50	<1.0	10,000	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	56,000	<100	8,000	120,000	5.81	0.4 ±0.3	0.2 ±0.5	0.6 ±0.5
	11/17/2017					50		12,000									68,000	<100	8,000	120,000	5.70			
	1/31/2018 ¢							12,000																
	4/9/2018					67		12,000									55,000	<100	10,000	160,000	5.90			
	7/25/2018 ¢							12,000									63,000		13,000	140,000	5.94			
	11/29/2018					87		13,000									66,000	<100	10,000	100,000	6.07			
	4/26/2019					100		13,000									55,000	<100	12,000	140,000	5.78			
	11/15/2019					59		11,000									68,000	<100	10,000	140,000	5.56			
	4/23/2020					70		14,000									53,000	<100	11,000	150,000	5.94			
	11/12/2020					<50		10,000									64,000	<100	13,000	150,000	5.36			
	2/4/2021 ¢							11,000									78,000		11,000	150,000	5.12			
	4/28/2021					78		14,000									62,000	<100	11,000	180,000	5.42			
	9/14/2021					58		13,000									69,000	<100	11,000	210,000	6.21			
	11/15/2021					<50		14,000									93,000	<100	9,600	220,000	4.99			
SB-4	2/23/2016	<1.0	<1.0	14	<1.0	<50	<1.0	8,400	<1.0	<1.0	<1.0	<1.000	<0.10	<1.0	<1.0	<1.0	95,000	<100	9,000	210,000	5.49	0.3 ±0.1	1.0 ±0.6	1.3 ±0.6
	4/25/2016	<1.0	<1.0	14	<1.0	<50	<1.0	9,300	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	110,000	<100	8,000	200,000	5.32	0.3 ±0.3	0.0 ±0.4	0.3 ±0.4
	6/6/2016	<1.0	<1.0	12	<1.0	<50	<1.0	8,000	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	110,000	<100	10,000	230,000	5.62	0.2 ±0.2	0.4 ±0.5	0.6 ±0.5
	7/18/2016	<1.0	<1.0	11	<1.0	<50	<1.0	7,800	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	100,000	<100	11,000	220,000	5.27	0.4 ±0.3	0.4 ±0.6	0.8 ±0.6
	8/30/2016	<1.0	<1.0	10	<1.0	<50	<1.0	6,800	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	88,000	<100	12,000	210,000	5.72	0.2 ±0.2	0.0 ±0.4	0.2 ±0.4
	10/17/2016	<1.0	<1.0	12	<1.0	<50	<1.0	8,400	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	100,000	<100	10,000	190,000	5.71	0.3 ±0.3	0.0 ±0.5	0.3 ±0.5
	11/29/2016	<1.0	1.0	12	<1.0	<50	<1.0	7,000	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	100,000	<100	10,000	180,000	5.79	0.7 ±0.3	0.5 ±0.5	1.2 ±0.5
	4/19/2017	<1.0	<1.0	19	<1.0	<50	<1.0	10,000	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	120,000	<100	9,000	260,000	5.71	0.3 ±0.3	0.0 ±0.5	0.3 ±0.5
	11/17/2017					<50		10,000									77,000	<100	13,000	170,000	5.80			
	4/9/2018					<50		11,000									93,000	<100	12,000	220,000	5.87			
	7/25/2018 ¢							9,800									95,000		11,000	210,000	5.68			
	11/28/2018					<50		12,000									86,000	<100	13,000	83,000	6.28			
	4/26/2019					<50		13,000									94,000	<100	11,000	190,000	5.83			
	11/15/2019					53		11,000									97,000	<100	11,000	230,000	5.75			
	2/14/2020 ¢					<50		11,000									100,000		14,000	190,000	5.85			
	4/23/2020					55		13,000									140,000	<100	11,000	260,000	5.72			
	7/8/2020 ¢					57		11,000									99,000		14,000	240,000	5.59			
	11/12/2020					60		9,600									120,000	<100	18,000	260,000	5.18			
	2/4/2021 ¢					70		8,500									100,000		20,000	240,000	5.22			
	4/28/2021					65		11,000									100,000	<100	16,000	230,000	5.71			
	11/15/2021					<50		11,000									130,000	<100	12,000	290,000	5.16			
SB-6	2/23/2016	<1.0	<1.0	9.0	<1.0	<50	<1.0	5,300	<1.0	<1.0	<1.0	<1.000	<0.10	<1.0	<1.0	<1.0	80,000	<100	10,000	170,000	5.55	0.1 ±0.07	0.5 ±0.5	0.6 ±0.5
	4/25/2016	<1.0	<1.0	16	<1.0	<50	<1.0	9,300	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	140,000	<100	7,000	220,000	5.55	0.4 ±0.3	0.0 ±0.4	0.4 ±0.4
	6/6/2016	<1.0	<1.0	17	<1.0	<50	<1.0	9,300	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	140,000	<100	8,000	270,000	5.40	0.5 ±0.3	0.0 ±0.5	0.5 ±0.5
	7/18/2016	<1.0	<1.0	17	<1.0	<50	<1.0	9,200	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	140,000	<100	9,000	260,000	5.27	0.5 ±0.3	0.3 ±0.6	0.8 ±0.6
	8/30/2016	<1.0	<1.0	18	<1.0	<50	<1.0	9,100	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	140,000	<100	9,000	280,000	5.71	0.4 ±0.2	0.0 ±0.4	0.4 ±0.4
	10/17/2016	<1.0	<1.0	18	<1.0	<50	<1.0	10,000	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	150,000	<100	8,000	260,000	5.78	0.2 ±0.3	0.0 ±0.5	0.2 ±0.5
	11/29/2016	<1.0	<1.0	16	<1.0	<50	<1.0	8,100	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	130,000	<100	9,000	230,000	5.77	0.5 ±0.2	0.8 ±0.5	1.3 ±0.5
	4/19/2017	<1.0	<1.0	13	<1.1	<51	<1.1	7,400	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	100,000	<100	9,000	190,000	5.68	0.4 ±0.3	0.2 ±0.5	0.6 ±0.5
	11/17/2017					<50		9,900									130,000	<100	11,000	230,000	5.60			
	4/9/2018					<50		7,900									120,000	<100	9,500	240,000	5.57			
	7/25/2018 ¢							11,000									180,000		12,000	310,000	5.44			
	11/28/2018					<50		11,000									150,000	<100	11,000	140,000	5.86			
	4/26/2019					84		13,000									150,000	<100	14,000	210,000	5.78			
	7/11/2019 ¢					80		14,000									170,000		15,000	330,000	5.84			
	11/15/2019					52		10,000									140,000	<100	13,000	280,000	5.75			
	2/14/2020 ¢					<50		5,100									79,000		15,000	130,000	5.73			
	4/23/2020					<50		12,000									160,000	<100	8,100	270,000	5.56			
	11/12/2020					<50		12,000									180,000	<100	9,600	330,000	5.37			
	4/28/2021					<50		11,000									150,000	<100	6,700	290,000	5.58			
	11/15/2021					<50		12,000									200,000	<100	8,800	370,000	5.27			
SB-13	2/23/2016	<1.0	<1.0	17	<1.0	<50	<1.0	9,900	<1.0	<1.0	<1.0	<1.000	<0.10	<1.0	<1.0	<1.0	160,000	<100	6,000	270,000	5.34	0.6 ±0.1	0.3 ±0.6	0.9±0.6
	4/25/2016	<1.0	<1.0	17	<1.0	<50	<1.0	8,800	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	160,000	<100	7,000	290,000	5.48	0.4 ±0.3	0.1 ±0.4	0.5 ±0.4
	6/6/2016	<1.0	<1.0	20	<1.0	<50	<1.0	9,900	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	170,000	<100	7,000	320,000	5.50	0.8 ±0.3	0.0 ±0.5	0.8 ±0.5
	7/18/2016	<1.0	<1.0	18	<1.0	<50	<1.0	9,700	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	160,000	<100	8,000	330,000	5.27	0.8 ±0.3	0.0 ±0.6	0.8 ±0.6
	8/30/2016	<1.0	1.0	20	<1.0	<50	<1.0	8,100	2.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	150,000	<100	8,000	270,000	5.35	0.8 ±0.3	0.6 ±0.4	1.4 ±0.4
	10/17/2016	<1.0	<1.0	15	<1.0	<50	<1.0	8,800	2.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	150,000	<100	8,000	260,000	5.06	0.7 ±0.4	0.6 ±0.5	1.3 ±0.5
	11/29/2016	<1.0	<1.0	16	<1.0	<50	<1.0	7,400	1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	140,000	<100	8,000	240,000	5.71	0.6 ±0.3	0.7 ±0.5	1.3 ±0.5
	4/19/2017	<1.0	<1.0	16	<1.1	<51	<1.1	8,000	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	130,000	<100	8,000	270,000	5.56	0.9 ±0.3	0.3 ±0.5	1.2 ±0.5
	11/17/2017					<50		7,000									110,000	<100	9,000	220,000	5.80			
	4/9/2018					<50		11,000									170,000	<100	8,000	330,000	5.81			
	7/25/2018 ¢							10,000									190,000		8,700	340,000	5.69			
	11/28/2018					<50		13,000									200,000	<100	7,200	260,000	5.77			
	4/26/2019					<50		14,000									200,000	<100	7,100	290,000	5.53			
	11/15/2019					<50		8,100									140,000	<100	8,100	280,000	5.82			
	4/23/2020					<50		14,000									230,000	<100	6,500	400,000	5.47			
	7/8/2020 ¢					<50		14,000									210,000		6,900	370,000	5.41			
	11/12/2020					<50		11,000									180,000	<100	8,000	330,000	4.96			
	2/4/2021 ¢					< 50		11,000									180,000		6,700	320,000	5.32			
	4/28/2021					<50		14,000									240,000	<100	5,900	410,000	5.31			
	11/15/2021					<50		11,000									200,000	<100	7,900	370,000	5.02			
SB-14	2/24/2016	<1.0	<1.0	3.0	<1.0	<50	<1.0	6,100	<1.0	<1.0	<1.0	<1.000	<0.10	<1.0	<1.0	<1.0	16,000	<100	4,000	56,000	5.05	0.2 ±0.08	0.0 ±0.5	0.2 ±0.5
	4/25/2016	<1.0	<1.0	9.0	<1.0	<50	<1.0	11,000	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	58,000	<100	3,000	140,000	5.62	0.8 ±0.5	0.2 ±0.1	1.0 ±0.5
	6/6/2016	<1.0	<1.0	6.0	<1.0	<50	<1.0	7,600	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	32,000	<100	4,000	100,000	5.39	0.5 ±0.2	0.2 ±0.5	0.7 ±0.5
	7/18/2016	<1.0	<1.0	3.0	<1.0	<50	<1.0	6,300	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	21,000	<100	5,000	68,000	5.31	0.2 ±0.2	0.3 ±0.5	0.5 ±0.5
	8/30/2016	<1.0	<1.0	2.0	<1.0	<50	<1.0	5,300	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	14,000	<100	4,000	71,000	5.81	0.4 ±0.3	0.4 ±0.5	0.8 ±0.5
	10/17/2016	<1.0	<1.0	2.0	<1.0	<50	<1.0	4,000	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	11,000	<100	4,000	29,000	5.55	0.2 ±0.3	0.0 ±0.5	0.2 ±0.5
	11/29/2016	<1.0	<1.0	2.0	<1.0	<50	<1.0	2,900	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	7,000	<100	4,000	12,000	5.19	0.2 ±0.4	0.2 ±0.5	0.4 ±0.5
	4/19/2017	<1.0	<1.0	10	<1.0	<50	<1.0	10,000	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	56,000	<100	5,000	120,000	5.59	0.7 ±0.3	0.1 ±0.5	0.8 ±0.5
	11/17/2017					<50		8,000									18,000	<100	5,000	59,000	5.60			
	4/9/2018					<50		4,200									14,000	<100	8,400	80,000	5.76			
	7/25/2018 ¢							5,100									9,800		6,100	56,000	5.61			
	11/28/2018					<50		4,500									7,800	<100	6,300	<5,000	5.96			
	4/26/2019					<50		8,700									19,000	<100	3,700	91,000	5.74			
	11/15/2019					<50		5,000									12,000	<100	7,800	69,000	5.94			
	4/23/2020					<50		5,500									9,200	<100	5,500	52,000	5.63			
	11/12/2020					<50		4,000									4,700	<100	15,000	68,000	5.10			
	2/4/2021 ¢							7,900									34,000		6,000	95,000	5.30			
	4/28/2021					<50		3,300									4,000	<100	7,100	42,000	5.37			
	11/15/2021					<50		3,400									9,300	<100	16,000	64,000	5.55			

Notes:
1. Samples were collected by Eastern Analytical, Inc. (EAI) of Concord, New Hampshire on the dates indicated and analyzed by EAI for select metals by USEPA Method 6020. Additional analysis for select wet chemistry parameters were completed by EAI. Analysis for radium 226 and 228 was completed by KNL Environmental Testing, Inc., of Tampa, Florida. Analysis for lithium was completed by SGS Accutest, of Marlborough, Massachussets (Feb. 2016) and Katahdin Analytical Services, of Scarborough, Maine (April 2016 through October 2016).

2. Concentrations are presented in micrograms per liter (µg/L), which are equivalent to parts per billion (ppb), or they are presented in picoCuries per liter (pCi/L) or pH standard units.

3. "<" indicates the analyte was not detected above the indicated laboratory reporting limit.
A blank indicates the sample was not analyzed for this parameter.

4. "GW-1" and "GW-2" Groundwater Standards are from the New Hampshire Department of Environmental Services (NHDES) Contaminated Sites Risk Characterization and Management Policy (RCMP) (January 1998, with 2000 through 2018 revisions/addenda). GW-1 Groundwater Standards are equivalent to the Ambient Groundwater Quality Standards (AGQSs) promulgated in Env-Or 600 (June 2015 with October 2016, September 2018, September 2019, May 2020, January 2021, and July 2021 amendments). The AGQS/GW-1 Groundwater Standards are intended to be protective of groundwater as a source of drinking water. The GW-2 Groundwater Standards apply to groundwater as a potential source of indoor air contamination.

5. "Drinking Water MCLs" are from the United States Environmental Protection Agency (EPA) website (accessed March 22, 2016). The Maximum Contaminant Level (MCL) is the highest level of a contaminant that is allowed in drinking water. MCLs are enforceable standards for drinking water systems.
"CCR Alt. Standards" were codified in 40 CFR Part 257.95(h)(2) for cobalt, lead, lithium, and molybdenum. These are alternative risk-based standards for the four constituents without MCLs that may require establishment of a groundwater protection standard under the coal combustion residuals (CCR) rules 40 CFR Part 257(h).

6. "*" indicates an MCL value is not currently available, and the listed value is an action level.
"†" indicates the RCMP lists the value as not currently available.
"‡" indicates the value provided is typically applied to field-filtered samples (i.e., dissolved analytes) for overburden monitoring wells.
"NA" indicates the RCMP lists the value as not applicable.
"NS" indicates the analyte is not listed in the RCMP or MCL list.
"¢" indicates sample rounds collected as part of the retesting program for identifying statistically significant increases (SSIs).

TABLE 2
Groundwater Level Measurements Summary
Merrimack Station Coal Ash Landfill
Bow, New Hampshire

Date	Depths and elevations in feet.																
	SB-1			SB-4			SB-6			SB-13			SB-14			Inferred General Groundwater Flow Rate (feet/day)	Inferred General Groundwater Flow Direction
	Reference Elevation	Depth to Water	Water Elevation	Reference Elevation	Depth to Water	Water Elevation	Reference Elevation	Depth to Water	Water Elevation	Reference Elevation	Depth to Water	Water Elevation	Reference Elevation	Depth to Water	Water Elevation		
Feb-16	240.85	33.82	207.03	274.26	67.36	206.90	268.77	61.84	206.93	219.86	11.83	208.03	242.70	34.88	207.82	0.5 - 2.7	Northeast
Apr-16	240.85	32.19	208.66	274.26	65.63	208.63	268.77	60.07	208.70	219.86	10.16	209.70	242.70	33.13	209.57	0.5 - 2.5	Northeast
Jun-16	240.85	31.84	209.01	274.26	66.24	208.02	268.77	60.80	207.97	219.86	11.11	208.75	242.70	33.93	208.77	0.4 - 1.9	East
Jul-16	240.85	33.88	206.97	274.26	67.30	206.96	268.77	62.07	206.70	219.86	12.41	207.45	242.70	35.10	207.60	0.4 - 1.9	Northeast
Aug-16	240.85	35.09	205.76	274.26	68.54	205.72	268.77	63.19	205.58	219.86	13.76	206.10	242.70	36.39	206.31	0.3 - 1.4	Northeast
Oct-16	240.85	36.20	204.65	274.26	69.68	204.58	268.77	64.42	204.35	219.86	13.92	205.94	242.70	37.58	205.12	0.8 - 3.9	North-Northeast
Nov-16	240.85	36.40	204.45	274.26	69.93	204.33	268.77	64.69	204.08	219.86	15.14	204.72	242.70	37.80	204.90	0.3 - 1.6	East-Northeast
Apr-17	240.85	32.27	208.58	274.26	65.82	208.44	268.77	60.04	208.73	219.86	9.58	210.28	242.70	32.99	209.71	0.8 - 3.8	North-Northeast
Nov-17	240.85	32.87	207.98	274.26	66.39	207.87	268.77	60.97	207.80	219.86	11.33	208.53	242.70	34.08	208.62	0.4 - 1.8	Northeast
Apr-18	240.85	31.13	209.72	274.26	64.58	209.68	268.77	58.93	209.84	219.86	8.74	211.12	242.70	31.94	210.76	0.6 - 3.2	North-Northeast
Jul-18	240.85	32.60	208.25	274.26	66.01	208.25	268.77	60.84	207.93	219.86	11.13	208.73	242.70	33.78	208.92	0.4 - 2.0	Northeast
Nov-18	240.85	29.99	210.86	274.26	63.59	210.67	268.77	57.92	210.85	219.86	7.66	212.20	242.70	30.82	211.88	0.7 - 3.3	Northeast
Apr-19	240.85	29.83	211.02	274.26	63.34	210.92	268.77	57.60	211.17	219.86	7.51	212.35	242.70	30.72	211.98	0.6 - 2.9	North-Northeast
Jul-19	–	–	–	–	–	–	268.77	58.71	210.06	–	–	–	–	–	–	–	–
Nov-19	240.85	34.48	206.37	274.26	67.96	206.30	268.77	62.66	206.11	219.86	13.21	206.65	242.70	35.85	206.85	0.3 - 1.3	East-Northeast
Feb-20	–	–	–	274.26	66.67	207.59	268.77	61.12	207.65	–	–	–	–	–	–	–	–
Apr-20	240.85	31.84	209.01	274.26	65.34	208.92	268.77	59.73	209.04	219.86	9.62	210.24	242.70	32.75	209.95	0.6 - 3.0	North-Northeast
Jul-20	–	–	–	274.26	66.00	208.26	–	–	–	219.86	11.00	208.86	–	–	–	–	–
Nov-20	240.85	35.72	205.13	274.26	69.23	205.03	268.77	63.92	204.85	219.86	14.48	205.38	242.70	37.09	205.61	0.3 - 1.3	East-Northeast
Feb-21	240.85	33.85	207.00	274.26	67.36	206.90	–	–	–	219.86	12.12	207.74	242.70	34.88	207.82	–	–
Apr-21	240.85	33.37	207.48	274.26	66.88	207.38	268.77	61.31	207.46	219.86	11.43	208.43	242.70	34.38	208.32	0.5 - 2.4	Northeast
Sep-21	240.85	31.11	209.74	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Nov-21	240.85	31.65	209.20	274.26	65.17	209.09	268.77	59.72	209.05	219.86	10.04	209.82	242.70	32.78	209.92	0.4 - 1.9	Northeast

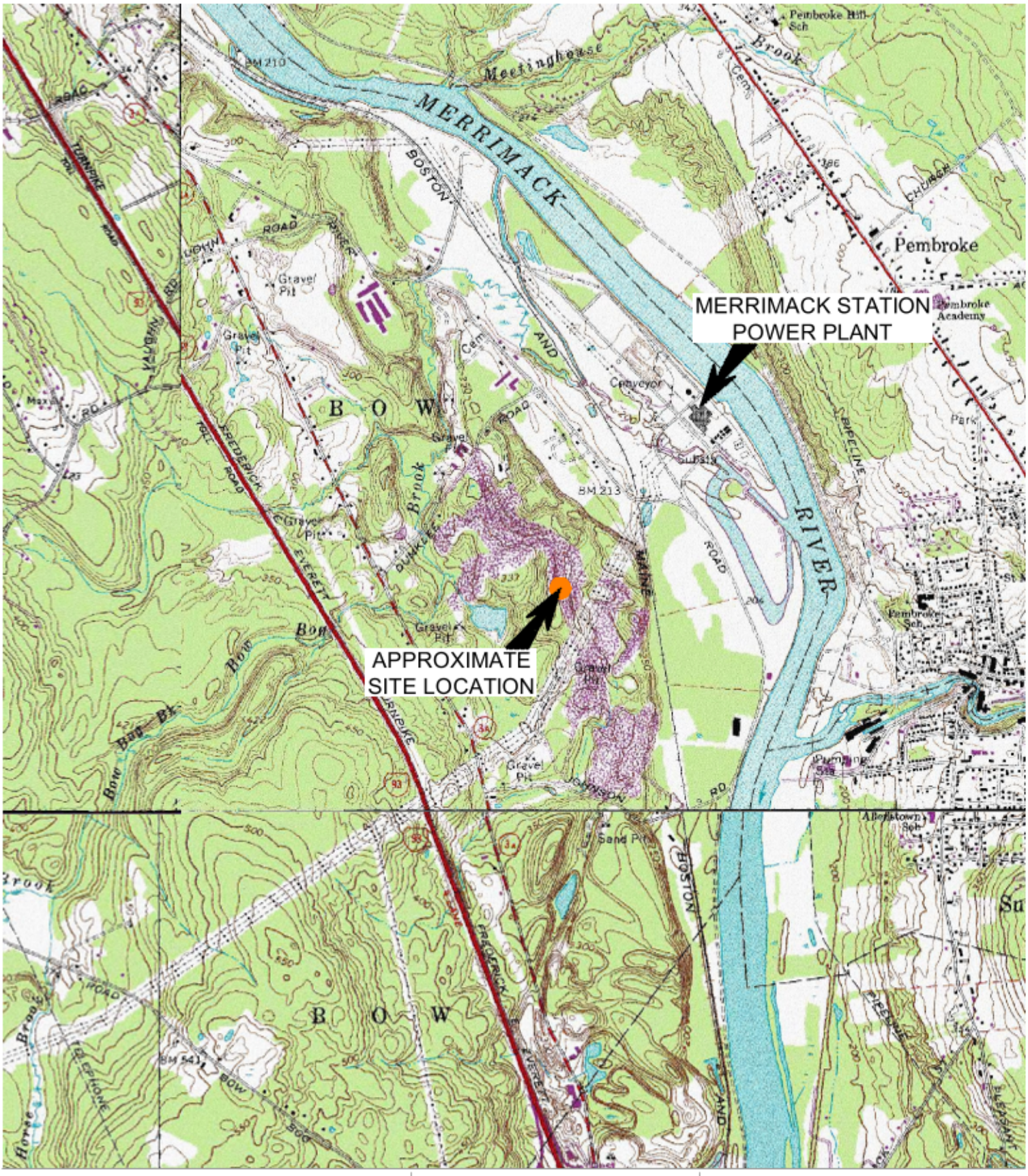
Notes:

1. Depths to water were obtained from information provided in laboratory reports and field sampling sheets prepared by Eastern Analytical, Inc.

2. Inferred general groundwater flow rates and flow directions are approximate and are based on the limited hydrogeologic and groundwater elevation data available. Other interpretations are possible and actual conditions may vary from those indicated. Note that groundwater elevations, directions, and rates may change due to seasonal or other variations in temperature, precipitation, runoff, or other factors.

3. Approximate groundwater flow rates were calculated using an assumed saturated hydraulic conductivity of 100 to 500 feet per day, and an assumed porosity of 39%. Assumptions are consistent with values typical of medium-grained, clean sand. The calculated groundwater flow rate is equivalent to the average interstitial velocity or the seepage velocity.

FIGURES



NOTES:

BASE MAP TAKEN FROM 7.5 MINUTE
USGS QUADRANGLE MAP:
BOW, NEW HAMPSHIRE 1967
(PHOTO REVISED 1998)

Drawn By: E. Wright
Designed By: H. Roakes
Reviewed By: Steinhauser
Project No: 2025.10
Date: January 2022

1000 0 2000 Feet

SANBORN HEAD

Figure 1

Locus Plan

2022 Annual Groundwater Monitoring and Corrective Action Report

Merrimack Station
Coal Ash Landfill
Bow, New Hampshire

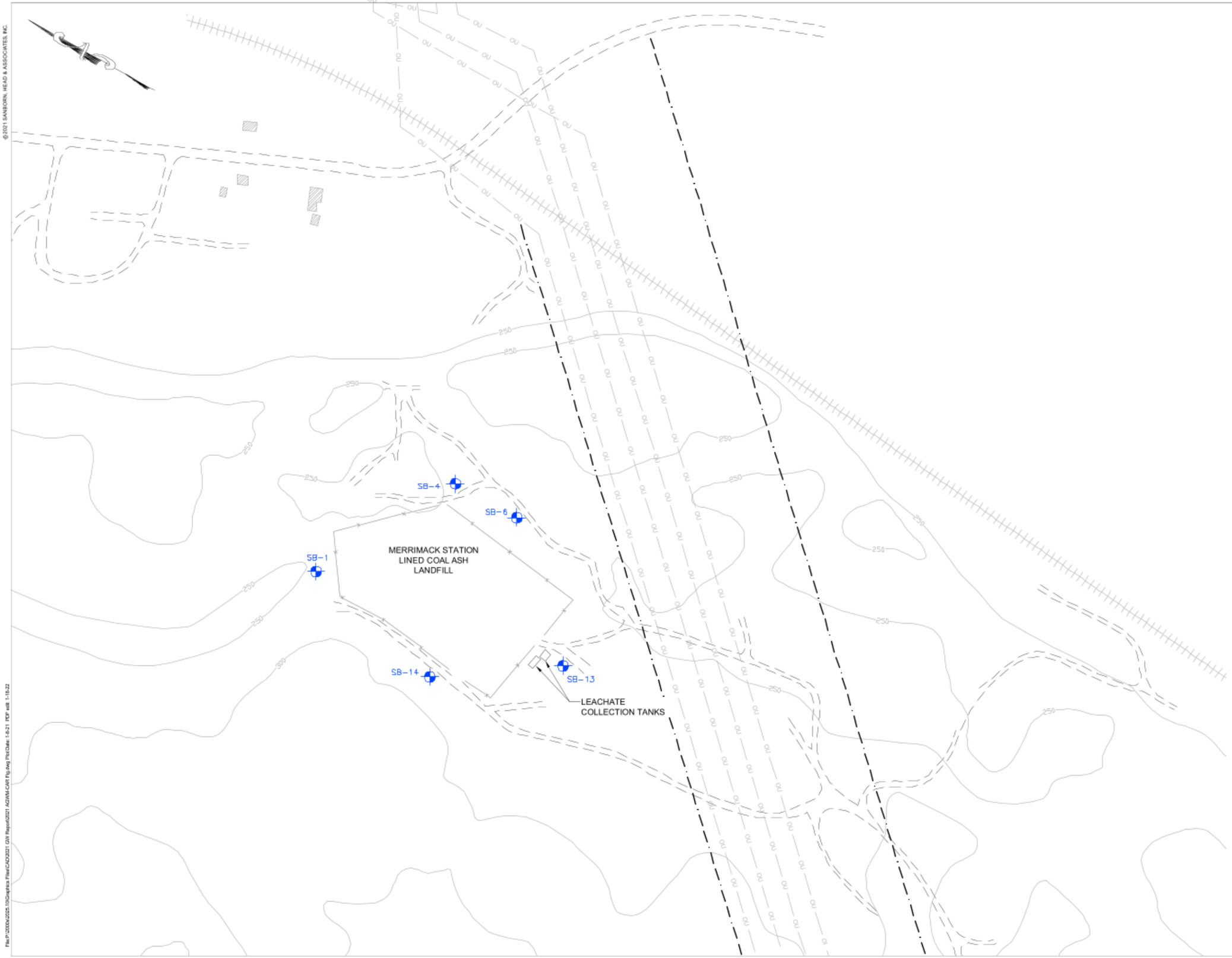


Figure 2

Facility Plan

2022 Annual Groundwater Monitoring and Corrective Action Report

Merrimack Station
Coal Ash Landfill
Bow, New Hampshire

Drawn By: E. Wright
Designed By: H. Roakes
Reviewed By: E. Steinhauser
Project No: 2025.10
Date: January 2022

Notes

1. The base map was developed from a drawing prepared by Public Service Company of New Hampshire's Engineering Division entitled, "Area Plan, Merrimack Station, Bow, N.H." The drawing was dated 5/1/90 and was last revised on 6/28/95.
2. The location of the landfill and the site features shown should be considered approximate.

Legend

- SB-4 — Monitoring Well
- Right-Of-Way
- Fence
- OU — Overhead Utilities
- 250 — Elevation Contour

150' 75' 0 150' 300' Feet

SANBORN HEAD

APPENDIX A

LIMITATIONS

ATTACHMENT A
LIMITATIONS

1. The conclusions and recommendations described in this report are based in part on the data obtained from a limited number of groundwater samples from widely-spaced monitoring locations. The monitoring locations indicate conditions only at the specific locations and times, and only to the depths sampled. They do not necessarily reflect variations that may exist between such locations, and the nature and extent of variations between these monitoring locations may not become evident until further study or remediation is initiated. The validity of the conclusions is based in part on assumptions Sanborn Head has made about conditions at the site. If conditions different from those described become evident, it will be necessary to re-evaluate the conclusions of this report.

2. Water level measurements were made in the monitoring well locations at times and under conditions stated within the report. Fluctuations in the levels of the groundwater may occur due to variations in precipitation and other factors not evident at the time measurements were made.

3. Quantitative laboratory analyses were performed as noted within the report. Additional analytes not searched for during the current study may be present in groundwater at the site. Sanborn Head has relied upon the data provided by the analytical laboratory and did not conduct an independent evaluation of the reliability of these data. Additionally, variations in the types and concentrations of analytes and variations in their distributions within the groundwater may occur due to the passage of time, seasonal water table fluctuations, recharge events, and other factors.

4. The conclusions and recommendations contained in this report are based in part upon various types of chemical data as well as historical and hydrogeologic information developed during previous studies. While Sanborn Head has reviewed those data and information as stated in this report, any of Sanborn Head's interpretations, conclusions, and recommendations that have relied on that information will be contingent on its validity. Should additional chemical data, historical information, or hydrogeologic information become available in the future, such information should be reviewed by Sanborn Head and the interpretations, conclusions, and recommendations presented herein should be modified accordingly.

5. This report was prepared for the exclusive use of GSP Merrimack LLC (GSP) for specific application for 40 CFR Part 257.90 compliance for GSP's Merrimack Station Coal Ash landfill in Bow, New Hampshire, and was prepared in accordance with generally-accepted hydrogeologic practices. No warranty, express or implied, is made.

APPENDIX B

ANALYTICAL LABORATORY REPORTS

February 2021

Eastern Analytical, Inc.
professional laboratory and drilling services

Allan Palmer
Granite Shore Power
431 River Road
Bow , NH 03304

Subject: Laboratory Report

Eastern Analytical, Inc. ID:	221935
Client Identification:	Merrimack Station - Coal Ash
Date Received:	2/4/2021

Dear Mr. Palmer :

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.easternanalytical.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted
< : "less than" followed by the reporting limit
> : "greater than" followed by the reporting limit
%R : % Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269), Vermont (VT1012) and New York (12072).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample (s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw — Lorraine Olashaw, Lab Director

2.18.21 — Date

8 — # of pages (excluding cover letter)

SAMPLE CONDITIONS PAGE

EAI ID#: **221935**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Temperature upon receipt (°C): 4.8 **Received on ice or cold packs (Yes/No): Y**

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date/Time Sampled		Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
221935.01	SB-1	2/4/21	2/4/21	12:00	aqueous		Adheres to Sample Acceptance Policy
221935.02	SB-4	2/4/21	2/4/21	10:17	aqueous		Adheres to Sample Acceptance Policy
221935.03	SB-13	2/4/21	2/4/21	10:58	aqueous		Adheres to Sample Acceptance Policy
221935.04	SB-14	2/4/21	2/4/21	12:32	aqueous		Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitability, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.
Immediate analyses, pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite, performed at the laboratory were run outside of the recommended 15 minute hold time.
All results contained in this report relate only to the above listed samples.
References include:
1) EPA 600/4-79-020, 1983
2) Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd Edition or noted Revision year.
3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
4) Hach Water Analysis Handbook, 4th edition, 1992

LABORATORY REPORT

EAI ID#: **221935**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Sample ID: SB-1

Lab Sample ID: 221935.01
Matrix: aqueous
Date Sampled: 2/4/21
Date Received: 2/4/21

		Analysis			
	Units	Date	Time	Method	Analyst
Solids Dissolved	**150**	mg/L	2/09/21	10:15	2540C-11	KJD
Sulfate	**11**	mg/L	2/05/21	13:22	300.0	ATA
Chloride	**78**	mg/L	2/05/21	13:22	300.0	ATA
Alkalinity Total (CaCO3)	**10**	mg/L	2/08/21	11:13	2320B-11	RB

LABORATORY REPORT

EAI ID#: **221935**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Sample ID:	SB-4	SB-13	SB-14					
Lab Sample ID:	221935.02	221935.03	221935.04					
Matrix:	aqueous	aqueous	aqueous					
Date Sampled:	2/4/21	2/4/21	2/4/21					
Date Received:	2/4/21	2/4/21	2/4/21					
					Analysis			
				Units	**Date**	**Time**	**Method**	**Analyst**
Solids Dissolved	**240**	**320**	**95**	mg/L	2/09/21	10:15	2540C-11	KJD
Sulfate	**20**	**6.7**	**6**	mg/L	2/05/21	13:37	300.0	ATA
Chloride	**100**	**180**	**34**	mg/L	2/05/21	14:54	300.0	ATA
Alkalinity Total (CaCO3)	**13**	**9.4**	**9.2**	mg/L	2/08/21	11:13	2320B-11	RB

LABORATORY REPORT

EAI ID#: **221935**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Sample ID: SB-1

Lab Sample ID: 221935.01
Matrix: aqueous
Date Sampled: 2/4/21
Date Received: 2/4/21

		Analytical Matrix	Units	Date of Analysis	Method	Analyst
Calcium	**11**	AqTot	mg/L	2/8/21	200.8	DS
Magnesium	**3.0**	AqTot	mg/L	2/8/21	200.8	DS
Potassium	**1.6**	AqTot	mg/L	2/8/21	200.8	DS
Sodium	**41**	AqTot	mg/L	2/8/21	200.8	DS

LABORATORY REPORT

EAI ID#: **221935**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Sample ID:	SB-4	SB-13	Analytical Matrix	Units	Date of Analysis	Method	Analyst
Lab Sample ID:	221935.02	221935.03					
Matrix:	aqueous	aqueous					
Date Sampled:	2/4/21	2/4/21					
Date Received:	2/4/21	2/4/21					
Boron	**0.070**	< 0.05	AqTot	mg/L	2/8/21	200.8	DS
Calcium	**8.5**	**11**	AqTot	mg/L	2/8/21	200.8	DS
Magnesium	**2.2**	**2.6**	AqTot	mg/L	2/8/21	200.8	DS
Potassium	**1.9**	**2.1**	AqTot	mg/L	2/8/21	200.8	DS
Sodium	**76**	**120**	AqTot	mg/L	2/8/21	200.8	DS

Sample ID:	SB-14	Analytical Matrix	Units	Date of Analysis	Method	Analyst
Lab Sample ID:	221935.04					
Matrix:	aqueous					
Date Sampled:	2/4/21					
Date Received:	2/4/21					
Calcium	**7.9**	AqTot	mg/L	2/8/21	200.8	DS
Magnesium	**2.1**	AqTot	mg/L	2/8/21	200.8	DS
Potassium	**1.1**	AqTot	mg/L	2/8/21	200.8	DS
Sodium	**16**	AqTot	mg/L	2/8/21	200.8	DS

LABORATORY REPORT

EAI ID#: **221935**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Sample ID:	SB-1
Lab Sample ID:	221935.01
Matrix:	aqueous
Date Sampled:	2/4/21

		Units	Date of Analysis	Method	Analyst
Static Water Level	**33.85**	ft	2/4/21	FieldStati	TNC
Field pH	**5.12**	SU	2/4/21	SM4500	TNC

LABORATORY REPORT

EAI ID#: **221935**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Sample ID:	SB-4	SB-13	SB-14				
Lab Sample ID:	221935.02	221935.03	221935.04				
Matrix:	aqueous	aqueous	aqueous				
Date Sampled:	2/4/21	2/4/21	2/4/21				
				Units	**Date of Analysis**	**Method**	**Analyst**
Static Water Level	**67.36**	**12.12**	**34.88**	ft	2/4/21	FieldStati	TNC
Field pH	**5.22**	**5.32**	**5.30**	SU	2/4/21	SM4500	TNC

CHAIN-OF-CUSTODY RECORD

eastern analytical
professional laboratory services

221935

8

aSampleID	Date/Time	aMatrix	Parameters	Sample Notes	# of containers
SB-1	02/04/2021 12:00	GW	Total Calcium, Magnesium, Potassium, Sodium, Chloride, Sulfate, Total Dissolved Solids, Total Alkalinity, Field pH, SWL		4
preservative: HCL HNO_3 H_2SO_4 NaOH MEOH $Na_2S_2O_3$ ICE					
SB-4	02/04/2021 10:17	GW	Total Boron, Calcium, Magnesium, Potassium, Sodium, Chloride, Sulfate, Total Dissolved Solids, Total Alkalinity, Field pH, SWL		4
preservative: HCL HNO_3 H_2SO_4 NaOH MEOH $Na_2S_2O_3$ ICE					
SB-13	02/04/2021 10:58	GW	Total Boron, Calcium, Magnesium, Potassium, Sodium, Chloride, Sulfate, Field pH, Total Dissolved Solids, Total Alkalinity, SWL		4
preservative: HCL HNO_3 H_2SO_4 NaOH MEOH $Na_2S_2O_3$ ICE					
SB-14	02/04/2021 12:32	GW	Total Calcium, Magnesium, Potassium, Sodium, Chloride, Sulfate, Field pH, Total Dissolved Solids, Total Alkalinity, SWL		4
preservative: HCL HNO_3 H_2SO_4 NaOH MEOH $Na_2S_2O_3$ ICE					

aClientID Merrimack Station - Coal Ash
nProjectID 3949 **nYearMonth** 2021.02
Client (Pro Mgr) Allan Palmer
Customer Granite Shore Power
Address 431 River Road
City Bow **NH** 03304
Phone 230-7997
Fax

Results Needed by: Preferred date _____
Notes about project

ReportingOptions
☒ HC ☐ NO FAX ☐ EDD Disk
☐ Fax ☐ No partial FAX ☒ EDD emai

PO# 7263
Quote# _____

Ice: Y ☑ N ☐
Temperature 4.8 °C

Samples Collected by: JL, TC / EA1

Relinquished by	Date/Time	Received by
[signature]	02/04/2021 13:55	[signature]
Relinquished by	Date/Time	Received by

April 2021

Eastern Analytical, Inc.

professional laboratory and drilling services

Allan Palmer
Granite Shore Power
431 River Road
Bow , NH 03304

Laboratory Report for:

Eastern Analytical, Inc. ID: 225320
Client Identification: Merrimack Station - Coal Ash
Date Received: 4/28/2021

Enclosed are the analytical results per the Chain of Custody for sample(s) in the referenced project. All analyses were performed in accordance with our QA/QC Program, NELAP and other applicable state requirements. All quality control criteria was within acceptance criteria unless noted on the report pages. Results are for the exclusive use of the client named on this report and will not be released to a third party without consent.

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the written approval of the laboratory.

The following standard abbreviations and conventions apply to all EAI reports:

< : "less than" followed by the reporting limit
> : "greater than" followed by the reporting limit
%R : % Recovery

Certifications:
Eastern Analytical, Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269), Vermont (VT1012), New York (12072), West Virginia (9910C) and Alabama (41620). Please refer to our website at www.easternanalytical.com for a copy of our certificates and accredited parameters.

References:

- EPA 600/4-79-020, 1983
- Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd edition or noted revision year.
- Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
- Hach Water Analysis Handbook, 4th edition, 1992

If you have any questions regarding the results contained within, please feel free to contact customer service. Unless otherwise requested, we will dispose of the sample(s) 6 weeks from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw — 5.11.21 — 9

Lorraine Olashaw, Lab Director | Date | # of pages (excluding cover letter)

SAMPLE CONDITIONS PAGE

EAI ID#: **225320**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Temperature upon receipt (°C): 2.9 **Received on ice or cold packs (Yes/No): Y**

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date/Time Sampled		Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
225320.01	SB-1	4/28/21	4/28/21	12:14	aqueous		Adheres to Sample Acceptance Policy
225320.02	SB-4	4/28/21	4/28/21	10:10	aqueous		Adheres to Sample Acceptance Policy
225320.03	SB-6	4/28/21	4/28/21	11:36	aqueous		Adheres to Sample Acceptance Policy
225320.04	SB-13	4/28/21	4/28/21	09:49	aqueous		Adheres to Sample Acceptance Policy
225320.05	SB-14	4/28/21	4/28/21	10:59	aqueous		Adheres to Sample Acceptance Policy

All results contained in this report relate only to the above listed samples.

Unless otherwise noted:

- *Hold times, preservation, container types, and sample conditions adhered to EPA Protocol.*
- *Solid samples are reported on a dry weight basis, unless otherwise noted. pH/Corrosivity, Flashpoint, Ignitability, Paint Filter, Conductivity and Specific Gravity are always reported on an "as received" basis.*
- *Analysis of pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite were performed at the laboratory outside of the recommended 15 minute hold time.*
- *Samples collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures.*

LABORATORY REPORT

EAI ID#: **225320**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Sample ID: SB-1

Lab Sample ID: 225320.01
Matrix: aqueous
Date Sampled: 4/28/21
Date Received: 4/28/21

			Analysis			
		Units	**Date**	**Time**	**Method**	**Analyst**
Solids Dissolved	**180**	mg/L	4/28/21	14:25	2540C-11	KJD
Fluoride	< 0.1	mg/L	4/29/21	4:33	300.0	ATA
Sulfate	**11**	mg/L	4/29/21	4:33	300.0	ATA
Chloride	**62**	mg/L	4/29/21	4:33	300.0	ATA
Alkalinity Total (CaCO3)	**25**	mg/L	4/30/21	11:24	2320B-11	RB

LABORATORY REPORT

EAI ID#: **225320**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Sample ID:	SB-4	SB-6	SB-13	SB-14					
Lab Sample ID:	225320.02	225320.03	225320.04	225320.05					
Matrix:	aqueous	aqueous	aqueous	aqueous					
Date Sampled:	4/28/21	4/28/21	4/28/21	4/28/21		**Analysis**			
Date Received:	4/28/21	4/28/21	4/28/21	4/28/21	**Units**	**Date**	**Time**	**Method**	**Analyst**
Solids Dissolved	**230**	**290**	**410**	**42**	mg/L	4/28/21	14:25	2540C-11	KJD
Fluoride	< 0.1	< 0.1	< 0.1	< 0.1	mg/L	4/29/21	6:21	300.0	ATA
Sulfate	**16**	**6.7**	**5.9**	**7.1**	mg/L	4/29/21	6:21	300.0	ATA
Chloride	**100**	**150**	**240**	**4**	mg/L	4/29/21	11:13	300.0	ATA
Alkalinity Total (CaCO3)	**23**	**13**	**8.8**	**14**	mg/L	4/30/21	11:24	2320B-11	RB

LABORATORY REPORT

EAI ID#: **225320**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Sample ID: SB-1

Lab Sample ID: 225320.01
Matrix: aqueous
Date Sampled: 4/28/21
Date Received: 4/28/21

		Analytical Matrix	Units	Date of Analysis	Method	Analyst
Boron	**0.078**	AqTot	mg/L	4/30/21	200.8	DS
Calcium	**14**	AqTot	mg/L	4/30/21	200.8	DS
Magnesium	**3.4**	AqTot	mg/L	4/30/21	200.8	DS
Potassium	**1.6**	AqTot	mg/L	4/30/21	200.8	DS
Sodium	**38**	AqTot	mg/L	4/30/21	200.8	DS

LABORATORY REPORT

EAI ID#: **225320**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Sample ID:	SB-4	SB-6	SB-13	SB-14					
Lab Sample ID:	225320.02	225320.03	225320.04	225320.05					
Matrix:	aqueous	aqueous	aqueous	aqueous					
Date Sampled:	4/28/21	4/28/21	4/28/21	4/28/21	**Analytical Matrix**	**Units**	**Date of Analysis**	**Method**	**Analyst**
Date Received:	4/28/21	4/28/21	4/28/21	4/28/21					
Boron	**0.065**	< 0.05	< 0.05	< 0.05	AqTot	mg/L	4/30/21	200.8	DS
Calcium	**11**	**11**	**14**	**3.3**	AqTot	mg/L	4/30/21	200.8	DS
Magnesium	**2.7**	**2.8**	**3.1**	**0.90**	AqTot	mg/L	4/30/21	200.8	DS
Potassium	**2.0**	**1.9**	**2.2**	**0.69**	AqTot	mg/L	4/30/21	200.8	DS
Sodium	**74**	**91**	**140**	**7.4**	AqTot	mg/L	4/30/21	200.8	DS

LABORATORY REPORT

EAI ID#: **225320**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Sample ID: SB-1

Lab Sample ID: 225320.01
Matrix: aqueous
Date Sampled: 4/28/21

		Units	Date of Analysis	Method	Analyst
Field pH	**5.42**	SU	4/28/21	SM4500	JL

LABORATORY REPORT

EAI ID#: **225320**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Sample ID:	SB-4	SB-6	SB-13	SB-14				
Lab Sample ID:	225320.02	225320.03	225320.04	225320.05				
Matrix:	aqueous	aqueous	aqueous	aqueous				
Date Sampled:	4/28/21	4/28/21	4/28/21	4/28/21				
					Units	**Date of Analysis**	**Method**	**Analyst**
Field pH	**5.71**	**5.58**	**5.31**	**5.37**	SU	4/28/21	SM4500	TNC

CHAIN-OF-CUSTODY RECORD

eastern analytical
professional laboratory services

225374

8

aSampleID	Date/Time	aMatrix	Parameters	Sample Notes	# of containers
SB-1	04/28/2021 12:14	GW	Total Boron, Calcium, Magnesium, Potassium, Sodium, Flouride, Chloride, Sulfate, Field pH, Total Dissolved Solids, Total Alkalinity		4
preservative: HCL (HNO3) H_2SO_4 NaOH MEOH $Na_2S_2O_3$ (ICE)					
~~SB-4~~	~~04/28/2021~~ 10:10	~~GW~~	~~Total Boron, Calcium, Magnesium, Potassium, Sodium, Flouride, Chloride, Sulfate, Field pH, Total Dissolved Solids, Total Alkalinity~~		4
preservative: HCL (HNO3) H_2SO_4 NaOH MEOH $Na_2S_2O_3$ (ICE)					
~~SB-5~~	~~04/28/2021~~ 11:36	~~GW~~	~~Total Boron, Calcium, Magnesium, Potassium, Sodium, Flouride, Chloride, Sulfate, Field pH, Total Dissolved Solids, Total Alkalinity~~		4
preservative: HCL (HNO3) H_2SO_4 NaOH MEOH $Na_2S_2O_3$ (ICE)					
~~SB-13~~	~~04/28/2021~~ 09:49	GW	~~Total Boron, Calcium, Magnesium, Potassium, Sodium, Flouride, Chloride, Sulfate, Field pH, Total Dissolved Solids, Total Alkalinity~~		4
preservative: HCL (HNO3) H_2SO_4 NaOH MEOH $Na_2S_2O_3$ (ICE)					
~~SB-14~~	~~04/28/2021~~ 10:59	~~GW~~	~~Total Boron, Calcium, Magnesium, Potassium, Sodium, Flouride, Chloride, Sulfate, Field pH, Total Dissolved Solids, Total Alkalinity~~		4
preservative: HCL (HNO3) H_2SO_4 NaOH MEOH $Na_2S_2O_3$ (ICE)					

4/29/21 per client request

aClientID Merrimack Station - Coal Ash
nProjectID 3949 nYearMonth 2021.04
Client (Pro Mgr) Allan Palmer
Customer Granite Shore Power
Address 431 River Road
City Bow NH 03304
Phone 230-7997
Fax

Results Needed by: Preferred date _____
Notes about project

ReportingOptions
☒ HC ☐ NO FAX ☐ EDD Disk
☐ Fax ☐ No partial FAX ☒ EDD emai

PO# 7263
Quote# _____
Ice: Y ☑ N ☐
Temperature 2.9 °C
Samples Collected by: JL, TC (EAI)

Relinquished by	Date/Time	Received by
	04/28/2021 13:30	
Relinquished by	Date/Time	Received by

CHAIN-OF-CUSTODY RECORD

eastern analytical
professional laboratory services

225320

aSampleID	Date/Time	aMatrix	Parameters	Sample Notes	# of containers
~~SB-1~~	~~04/28/2021~~ 12:14	GW	~~Total Boron, Calcium, Magnesium, Potassium, Sodium, Flouride, Chloride, Sulfate, Field pH, Total Dissolved Solids, Total Alkalinity~~	Will refile per client request	4
preservative: HCL (HNO3) H_2SO_4 NaOH MEOH $Na_2S_2O_3$ (ICE)					
SB-4	04/28/2021 10:10	GW	Total Boron, Calcium, Magnesium, Potassium, Sodium, Flouride, Chloride, Sulfate, Field pH, Total Dissolved Solids, Total Alkalinity		4
preservative: HCL (HNO3) H_2SO_4 NaOH MEOH $Na_2S_2O_3$ (ICE)					
SB-6	04/28/2021 11:36	GW	Total Boron, Calcium, Magnesium, Potassium, Sodium, Flouride, Chloride, Sulfate, Field pH, Total Dissolved Solids, Total Alkalinity		4
preservative: HCL (HNO3) H_2SO_4 NaOH MEOH $Na_2S_2O_3$ (ICE)					
SB-13	04/28/2021 09:49	GW	Total Boron, Calcium, Magnesium, Potassium, Sodium, Flouride, Chloride, Sulfate, Field pH, Total Dissolved Solids, Total Alkalinity		4
preservative: HCL (HNO3) H_2SO_4 NaOH MEOH $Na_2S_2O_3$ (ICE)					
SB-14	04/28/2021 10:59	GW	Total Boron, Calcium, Magnesium, Potassium, Sodium, Flouride, Chloride, Sulfate, Field pH, Total Dissolved Solids, Total Alkalinity		4
preservative: HCL (HNO3) H_2SO_4 NaOH MEOH $Na_2S_2O_3$ (ICE)					

aClientID Merrimack Station - Coal Ash
nProjectID 3949 **nYearMonth** 2021.04
Client (Pro Mgr) Allan Palmer
Customer Granite Shore Power
Address 431 River Road
City Bow **NH** 03304
Phone 230-7997
Fax

Results Needed by: Preferred date _____
Notes about project

ReportingOptions
☒ HC ☐ NO FAX ☐ EDD Disk
☐ Fax ☐ No partial FAX ☒ EDD emai

PO# 7263
Quote# _____

Ice: Y ☑ N ☐
Temperature 2.9 °C

Samples Collected by: JL, TC (EAI)

Relinquished by	Date/Time	Received by
	04/28/2021 13:30	
Relinquished by	Date/Time	Received by

September 2021

SANBORN HEAD

Eastern Analytical, Inc.

professional laboratory and drilling services

Allan Palmer
Granite Shore Power
431 River Road
Bow , NH 03304

Laboratory Report for:

Eastern Analytical, Inc. ID:	232006
Client Identification:	Merrimack Station - Coal Ash
Date Received:	9/14/2021
Report revision/reissue:	Revision, replaces report dated 10/4/2021
Revision information:	Report revised to include Silica, per customers request.

Enclosed are the analytical results per the Chain of Custody for sample(s) in the referenced project. All analyses were performed in accordance with our QA/QC Program, NELAP and other applicable state requirements. All quality control criteria was within acceptance criteria unless noted on the report pages. Results are for the exclusive use of the client named on this report and will not be released to a third party without consent.

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%R : % Recovery

Certifications:
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References:

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- Hach Water Analysis Handbook, 4th edition, 1992

If you have any questions regarding the results contained within, please feel free to contact customer service. Unless otherwise requested, we will dispose of the sample(s) 6 weeks from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director

11.16.21
Date

SAMPLE CONDITIONS PAGE

EAI ID#: **232006**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Temperature upon receipt (°C): 1.3 **Received on ice or cold packs (Yes/No): Y**

Acceptable temperature range (°C): 0-6

Lab ID	Sample ID	Date Received	Date/Time Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
232006.01	SB-1	9/14/21	9/14/21 10:49	aqueous		Adheres to Sample Acceptance Policy

All results contained in this report relate only to the above listed samples.

Unless otherwise noted:

- *Hold times, preservation, container types, and sample conditions adhered to EPA Protocol.*
- *Solid samples are reported on a dry weight basis, unless otherwise noted. pH/Corrosivity, Flashpoint, Ignitability, Paint Filter, Conductivity and Specific Gravity are always reported on an "as received" basis.*
- *Analysis of pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite were performed at the laboratory outside of the recommended 15 minute hold time.*
- *Samples collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures.*

LABORATORY REPORT

EAI ID#: **232006**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Sample ID: SB-1

Lab Sample ID: 232006.01
Matrix: aqueous
Date Sampled: 9/14/21
Date Received: 9/14/21

		Analysis			
	Units	**Date**	**Time**	**Method**	**Analyst**
Solids Dissolved	mg/L	9/17/21	13:37	2540C-11	CF
Fluoride	mg/L	9/28/21	0:44	300.0	KD
Sulfate	mg/L	9/28/21	0:44	300.0	KD
Chloride	mg/L	9/28/21	0:44	300.0	KD
Alkalinity Total (CaCO3)	mg/L	9/16/21	9:47	2320B-11	HEH

210
< 0.1
11
69
15

LABORATORY REPORT

EAI ID#: **232006**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Sample ID: SB-1

Lab Sample ID: 232006.01
Matrix: aqueous
Date Sampled: 9/14/21
Date Received: 9/14/21

		Analytical Matrix	Units	Date of Analysis	Method	Analyst
Boron	**0.058**	AqTot	mg/L	9/16/21	200.8	DS
Calcium	**13**	AqTot	mg/L	9/16/21	200.8	DS
Magnesium	**3.2**	AqTot	mg/L	9/16/21	200.8	DS
Potassium	**1.8**	AqTot	mg/L	9/16/21	200.8	DS
Sodium	**39**	AqTot	mg/L	9/16/21	200.8	DS
Silica (calculated)	**14**	AqTot	mg/L	11/15/21	200.7	RJ

Silica (calculated): Silicon (Si) was analyzed by Method 200.7 and converted to silica (SiO_2) by calculation. All the silicon was assumed to be tied up as silica therefore the silicon concentration in mg/L was multiplied by 2.139 to convert to silica. mg/L silicon * 2.139 = mg/L silica.

LABORATORY REPORT

EAI ID#: **232006**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Sample ID: SB-1

Lab Sample ID: 232006.01
Matrix: aqueous
Date Sampled: 9/14/21

		Units	Date of Analysis	Method	Analyst
Field pH	**6.21**	SU	9/14/21	SM4500	JL

CHAIN-OF-CUSTODY RECORD

eastern analytical
professional laboratory services

232006

aSampleID	Date/Time	aMatrix	Parameters	Sample Notes	# of containers
SB-1	09/14/2021 10:49	GW	Total Boron, Calcium, Magnesium, Potassium, Sodium, Flouride, Chloride, Sulfate, Field pH, Total Dissolved Solids, Total Alkalinity		4

preservative: HCL (HNO3) H_2SO_4 NaOH MEOH $Na_2S_2O_3$ (ICE)

aClientID Merrimack Station - Coal Ash
nProjectID 3949 nYearMonth 2021.09
Client (Pro Mgr) Allan Palmer
Customer Granite Shore Power
Address 431 River Road
City Bow NH 03304
Phone 230-7997
Fax

Results Needed by: Preferred date _____
Notes about project

ReportingOptions
☒ HC ☐ NO FAX ☐ EDD Disk
☐ Fax ☐ No partial FAX ☒ EDD emai

PO# 7263
Quote# _____
Ice: Y ☑ N ☐
Temperature 1.3 °C
Samples Collected by: JL/EAM

09/14/21 12:20
Relinquished by Date/Time Received by

Relinquished by Date/Time Received by

November 2021

Eastern Analytical, Inc.
professional laboratory and drilling services

Allan Palmer
Granite Shore Power
431 River Road
Bow , NH 03304

Laboratory Report for:

Eastern Analytical, Inc. ID: 235338
Client Identification: Merrimack Station - Coal Ash
Date Received: 11/15/2021

Enclosed are the analytical results per the Chain of Custody for sample(s) in the referenced project. All analyses were performed in accordance with our QA/QC Program, NELAP and other applicable state requirements. All quality control criteria was within acceptance criteria unless noted on the report pages. Results are for the exclusive use of the client named on this report and will not be released to a third party without consent.

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the written approval of the laboratory.

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< : "less than" followed by the reporting limit
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%R : % Recovery

Certifications:
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References:
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- Standard Methods for Examination of Water and Wastewater, 20th, 21st, 22nd & 23rd edition or noted revision year.
- Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
- Hach Water Analysis Handbook, 4th edition, 1992

If you have any questions regarding the results contained within, please feel free to contact customer service. Unless otherwise requested, we will dispose of the sample(s) 6 weeks from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director — 12.8.21 Date

SAMPLE CONDITIONS PAGE

EAI ID#: **235338**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Temperature upon receipt (°C): 0

Acceptable temperature range (°C): 0-6

Received on ice or cold packs (Yes/No): Y

Lab ID	Sample ID	Date Received	Date/Time Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
235338.01	SB-1	11/15/21	11/15/21 15:51	aqueous		Adheres to Sample Acceptance Policy
235338.02	SB-4	11/15/21	11/15/21 10:15	aqueous		Adheres to Sample Acceptance Policy
235338.03	SB-6	11/15/21	11/15/21 12:00	aqueous		Adheres to Sample Acceptance Policy
235338.04	SB-13	11/15/21	11/15/21 13:25	aqueous		Adheres to Sample Acceptance Policy
235338.05	SB-14	11/15/21	11/15/21 14:41	aqueous		Adheres to Sample Acceptance Policy

All results contained in this report relate only to the above listed samples.

Unless otherwise noted:

- *Hold times, preservation, container types, and sample conditions adhered to EPA Protocol.*
- *Solid samples are reported on a dry weight basis, unless otherwise noted. pH/Corrosivity, Flashpoint, Ignitability, Paint Filter, Conductivity and Specific Gravity are always reported on an "as received" basis.*
- *Analysis of pH, Total Residual Chlorine, Dissolved Oxygen and Sulfite were performed at the laboratory outside of the recommended 15 minute hold time.*
- *Samples collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures.*

LABORATORY REPORT

EAI ID#: **235338**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Sample ID: SB-1

Lab Sample ID: 235338.01

Matrix: aqueous

Date Sampled: 11/15/21

Date Received: 11/15/21

		Analysis			
	Units	**Date**	**Time**	**Method**	**Analyst**
Solids Dissolved	mg/L	11/17/21	11:00	2540C-11	CF
Fluoride	mg/L	11/19/21	4:37	300.0	LLG
Sulfate	mg/L	11/19/21	4:37	300.0	LLG
Chloride	mg/L	11/19/21	4:37	300.0	LLG
Alkalinity Total (CaCO3)	mg/L	11/17/21	10:25	2320B-11	HEH

Solids Dissolved	**220**
Fluoride	< 0.1
Sulfate	**9.6**
Chloride	**93**
Alkalinity Total (CaCO3)	**10**

LABORATORY REPORT

EAI ID#: **235338**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Sample ID:	SB-4	SB-6	SB-13	SB-14					
Lab Sample ID:	235338.02	235338.03	235338.04	235338.05					
Matrix:	aqueous	aqueous	aqueous	aqueous					
Date Sampled:	11/15/21	11/15/21	11/15/21	11/15/21		**Analysis**			
Date Received:	11/15/21	11/15/21	11/15/21	11/15/21	**Units**	**Date**	**Time**	**Method**	**Analyst**
Solids Dissolved	**290**	**370**	**370**	**64**	mg/L	11/17/21	11:00	2540C-11	CF
Fluoride	< 0.1	< 0.1	< 0.1	< 0.1	mg/L	11/19/21	4:53	300.0	LLG
Sulfate	**12**	**8.8**	**7.9**	**16**	mg/L	11/19/21	4:53	300.0	LLG
Chloride	**130**	**200**	**200**	**9.3**	mg/L	11/22/21	12:40	300.0	LLG
Alkalinity Total (CaCO3)	**13**	**6.3**	**8**	**8.4**	mg/L	11/17/21	10:25	2320B-11	HEH

SB-6: The sample for Fluoride was analyzed on 11/30/21

SB-14: The sample for Chloride was analyzed on 11/19/21.

LABORATORY REPORT

EAI ID#: **235338**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Sample ID: SB-1

Lab Sample ID: 235338.01
Matrix: aqueous
Date Sampled: 11/15/21
Date Received: 11/15/21

		Analytical Matrix	Units	Date of Analysis	Method	Analyst
Boron	< 0.05	AqTot	mg/L	11/24/21	200.7	RJ
Calcium	**14**	AqTot	mg/L	11/24/21	200.7	RJ
Magnesium	**3.5**	AqTot	mg/L	11/24/21	200.7	RJ
Potassium	**2.0**	AqTot	mg/L	11/24/21	200.7	RJ
Silica (calculated)	**13**	AqTot	mg/L	11/24/21	200.7	RJ
Sodium	**47**	AqTot	mg/L	11/24/21	200.7	RJ

LABORATORY REPORT

EAI ID#: **235338**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Sample ID:	SB-4	SB-6	SB-13	SB-14					
Lab Sample ID:	235338.02	235338.03	235338.04	235338.05					
Matrix:	aqueous	aqueous	aqueous	aqueous					
Date Sampled:	11/15/21	11/15/21	11/15/21	11/15/21	**Analytical Matrix**	**Units**	**Date of Analysis**	**Method**	**Analyst**
Date Received:	11/15/21	11/15/21	11/15/21	11/15/21					
Boron	< 0.05	< 0.05	< 0.05	< 0.05	AqTot	mg/L	11/24/21	200.7	RJ
Calcium	**11**	**12**	**11**	**3.4**	AqTot	mg/L	11/24/21	200.7	RJ
Magnesium	**2.6**	**3.1**	**2.3**	**0.88**	AqTot	mg/L	11/24/21	200.7	RJ
Potassium	**2.1**	**2.5**	**2.3**	**0.86**	AqTot	mg/L	11/24/21	200.7	RJ
Silica (calculated)	**12**	**12**	**12**	**11**	AqTot	mg/L	11/24/21	200.7	RJ
Sodium	**76**	**120**	**120**	**15**	AqTot	mg/L	11/24/21	200.7	RJ

LABORATORY REPORT

EAI ID#: **235338**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Sample ID: SB-1

Lab Sample ID: 235338.01
Matrix: aqueous
Date Sampled: 11/15/21

		Units	Date of Analysis	Method	Analyst
Field pH	**4.99**	SU	11/15/21	SM4500	JG

LABORATORY REPORT

EAI ID#: **235338**

Client: **Granite Shore Power**

Client Designation: **Merrimack Station - Coal Ash**

Sample ID:	SB-4	SB-6	SB-13	SB-14				
Lab Sample ID:	235338.02	235338.03	235338.04	235338.05				
Matrix:	aqueous	aqueous	aqueous	aqueous				
Date Sampled:	11/15/21	11/15/21	11/15/21	11/15/21				
					Units	**Date of Analysis**	**Method**	**Analyst**
Field pH	**5.16**	**5.27**	**5.02**	**5.55**	SU	11/15/21	SM4500	JG

CHAIN-OF-CUSTODY RECORD

eastern analytical
professional laboratory services

235338

aSampleID	Date/Time	aMatrix	Parameters	Sample Notes	# of containers
SB-1	11/15/21 1551	GW	Total Boron, Calcium, Magnesium, Potassium, Silica, Sodium, Fluoride, Chloride, Sulfate, Field pH, Total Dissolved Solids, Total Alkalinity		4
preservative: HCL (HNO3) H_2SO_4 NaOH MEOH $Na_2S_2O_3$ (ICE)					
SB-4	11/15/21 1015	GW	Total Boron, Calcium, Magnesium, Potassium, Silica, Sodium, Fluoride, Chloride, Sulfate, Field pH, Total Dissolved Solids, Total Alkalinity		4
preservative: HCL (HNO3) H_2SO_4 NaOH MEOH $Na_2S_2O_3$ (ICE)					
SB-6	11/15/21 1200	GW	Total Boron, Calcium, Magnesium, Potassium, Silica, Sodium, Fluoride, Chloride, Sulfate, Field pH, Total Dissolved Solids, Total Alkalinity		4
preservative: HCL (HNO3) H_2SO_4 NaOH MEOH $Na_2S_2O_3$ (ICE)					
SB-13	11/15/21 1325	GW	Total Boron, Calcium, Magnesium, Potassium, Silica, Sodium, Fluoride, Chloride, Sulfate, Field pH, Total Dissolved Solids, Total Alkalinity		4
preservative: HCL (HNO3) H_2SO_4 NaOH MEOH $Na_2S_2O_3$ (ICE)					
SB-14	11/15/21 1441	GW	Total Boron, Calcium, Magnesium, Potassium, Silica, Sodium, Fluoride, Chloride, Sulfate, Field pH, Total Dissolved Solids, Total Alkalinity		4
preservative: HCL (HNO3) H_2SO_4 NaOH MEOH $Na_2S_2O_3$ (ICE)					

aClientID Merrimack Station - Coal Ash
nProjectID 3949 **nYearMonth** 2021.11
Client (Pro Mgr) Allan Palmer
Customer Granite Shore Power
Address 431 River Road
City Bow **NH** 03304
Phone 230-7997
Fax

Results Needed by: Preferred date _____

Notes about project

ReportingOptions
☒ HC ☐ NO FAX ☐ EDD Disk
☐ Fax ☐ No partial FAX ☒ EDD emai

PO# _____
Quote# _____

Ice: Y☒ N☐
Temperature 0 °C

Samples Collected by: JG/EAL

Relinquished by	Date/Time	Received by
	11/15/2021 1800	
Relinquished by	Date/Time	Received by

APPENDIX C

ALTERNATIVE SOURCE DEMONSTRATION

SANBORN HEAD

Building Trust. Engineering Success.

Mr. Allan G. Palmer
GSP Merrimack LLC
431 River Road
Bow, NH 03304

May 24, 2021
File No. 2025.12

Re: Alternative Source Demonstration
Fall 2020 Sulfate and Boron
Merrimack Station Coal Ash Landfill
Bow, New Hampshire

Dear Allan:

Sanborn, Head & Associates, Inc. (Sanborn Head) prepared this Alternative Source Demonstration (ASD) for the Merrimack Station Coal Ash Landfill Site (the Site) located in Bow, New Hampshire. A qualified professional engineer certification is provided in Attachment A, and this ASD was prepared in accordance with the Coal Combustion Residual (CCR) Rules (40 CFR Part 257) and is subject to the Limitations provided in Attachment B. A Locus Plan for the Site is provided as Figure 1.

INTRODUCTION

Based on the prediction interval procedure performed by Sanborn Head, statistically significant increases (SSIs) compared to background groundwater concentrations were identified at monitoring well SB-4 for sulfate and boron.[1] As such, pursuant to 40 CFR Part 257.94(e)(2), within 90 days of detecting the SSI, the owner or operator may provide a written demonstration from a qualified professional engineer that: (i) a source other than the CCR unit caused the SSI; or (ii) the SSI resulted from either an error in sampling, analysis, or statistical evaluation; or natural variation in groundwater chemistry.

In addition to addressing the SB-4 sulfate and boron SSIs, this ASD demonstrates that boron concentrations detected at other Site monitoring locations (i.e., SB-1 and SB-6) originate from a source other than the CCR unit and are a result of natural variation in groundwater chemistry. Although there were no boron SSIs at SB-1 and SB-6, the boron detections at those locations are being incorporated into this ASD to support adding those boron data to the detection monitoring background data used for detecting SSIs.

Groundwater analytical data are provided in Table 1, and groundwater elevation data are provided in Table 2. The locations of the monitoring wells in relation to the landfill are indicated on the Facility Plan, Figure 2.

[1] The November 2020 laboratory analytical data were received on November 30, 2020. Confirmatory sampling, which is allowed with the "1-of-2" retesting strategy, was completed in February 2021, and the data were received on February 18, 2021. The statistical analyses are summarized in the Statistical Method Selection Certification, dated May 4, 2018.

SULFATE DEMONSTRATION

Background

The sulfate SSI identified at SB-4 is based on samples collected in November 2020 and a confirmatory sample collected in February 2021. Using a weight-of-evidence approach, we conclude that the SSI is due to natural variation in groundwater chemistry based on the following findings:

- Detected concentrations of sulfate are within the range of naturally occurring concentrations; and
- A comparison of major ions in groundwater and in landfill leachate do not indicate leachate impacts to groundwater at SB-4.

Naturally Occurring and Ambient Concentrations

The concentrations of sulfate associated with the SSI are within the range of naturally occurring concentrations for comparable groundwaters, as reported in local, state-wide, and regional studies summarized in Exhibit 1 below.[2,3,4] Historical data for SB-4 is also summarized in Exhibit 1.[5] The local and state-wide USGS studies are specific to stratified drift aquifers with similar geology to the Site, and the regional study is applicable to the Site because the glacial outwash overburden at the Site is eroded from the underlying crystalline rock and has similar mineralogical composition to the aquifers in the regional USGS study.

Sulfate occurs naturally in groundwater in the region through dissolution of sulfate-producing minerals (e.g., sulfide minerals). The sulfate data that resulted in the SSI at SB-4 were near, but below, the maximum values detected in the small local study, and they were well within the range of sulfate concentrations reported in the state and regional studies. Although the data that resulted in the SSI at SB-4 are greater than typical, historical values for SB-4 and the nearest Site well, SB-6, the SB-4 SSI concentrations are less than the greatest historical sulfate detection of 26,000 µg/L.

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2 U.S. Geological Survey. 1997. *Geohydrology and Water Quality of Stratified-Drift Aquifers in the Upper Merrimack River Basin, South-Central New Hampshire*; and U.S. Geological Survey. 1995. *Geohydrology and Water Quality of Stratified-Drift Aquifers in the Middle Merrimack River Basin, South-Central New Hampshire.*

3 U.S. Geological Survey. 1995. *Ground-Water Resources in New Hampshire: Stratified-Drift Aquifers.*

4 U.S. Department of the Interior and U.S. Geological Survey. 2012. *Quality of Water from Crystalline Rock Aquifers in New England, New Jersey, and New York, 1995-2007.*

5 *January 2021 Biennial Groundwater Quality Summary Report, Detection Permit, Merrimack Station Coal Ash Landfill*. Prepared by Sanborn Head for GSP Merrimack LLC. Submitted to the New Hampshire Department of Environmental Services on January 25, 2021, per Groundwater Release Detection Permit GWP-198400065-B-006.

Exhibit 1: Comparison of Site Sulfate Concentrations to Literature Values

Study/Location	Sulfate (µg/L)	
SB-4 (SSI data in **bold**)	November 2020: February 2021:	**18,000** **20,000**
Local Stratified Drift Aquifers [sample size (n)=16]	Min.: Median: Max.:	1,000 7,500 14,000
New Hampshire Stratified Drift Aquifers [n=255]	Min.: Median: Max.:	<100 7,800 79,000
Northeast Crystalline Rock Aquifers [n=117]	Min.: Median: Max.:	310 13,420 68,480
SB-4 Historical Data April 1996 through November 2015 [n= 40]	Min: Median: 95th Percentile: Max:	<1,000 11,000 14,000 15,000
SB-6 Historical Data April 1996 through November 2015 [n= 40]	Min: Median: 95th Percentile: Max:	<1,000 10,000 17,000 26,000

In addition to sulfate concentrations being within the range of historical, Site concentrations and concentrations in some comparable groundwaters, the sulfate concentrations were much less than the New Hampshire Ambient Groundwater Quality Standard (AGQS) for sulfate of 500,000 µg/L. The AGQSs are intended to be protective of groundwater as a source of drinking water.

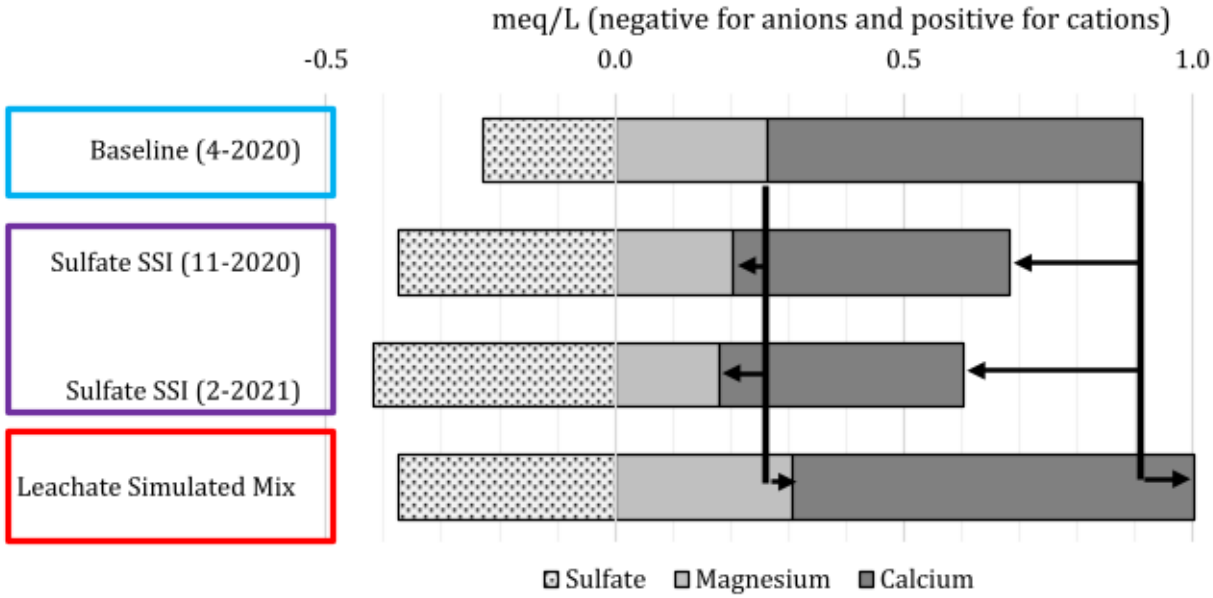
Comparison of major ions

Major ion chemistry was analyzed for SB-4 samples since November 2018. These data, along with major ion chemistry data for the leachate collection system collected in February 2020, are presented as plotted values in Figure 3. Based on the major ion analyses, the leachate was characterized as a [sodium-calcium-magnesium] – sulfate water type. The major ion chemistry data for SB-4 is consistently a sodium – chloride water type.

To understand if leachate is a potential source of the sulfate that resulted in the SSI at SB-4, the major ion chemistry for SSI samples (boxed in purple, see Exhibit 2 below) was compared with the major ion chemistry for SB-4 samples with low sulfate concentrations (boxed in blue, see Exhibit 2). There were numerous SB-4 samples with the low-end value of 11,000 µg/L sulfate, so the most recent sample was used for comparison (i.e., SB-4 sample collected April 2020). Sulfate, magnesium, and calcium ionic strengths for the different SB-4 samples, as well as a hypothetical, calculated mix of April 2020 SB-4 groundwater and leachate (boxed in red) are presented in Exhibit 2 below. The ionic strengths for the hypothetical mix of SB-4 water and leachate were based on a mix of waters that would result in 18,000 µg/L sulfate, which is the SB-4 sulfate concentration in November 2020.[6]

[6] The mixed water calculation was based on a mix of 99.69% SB-4 (April 2020 concentrations, with 11,000 µg/L sulfate) and 0.31% leachate (February 2020 concentrations, with 2,300,000 µg/L sulfate).

Exhibit 2: Ionic Strength for Select Anions (-) and Cations (+) for SB-4 samples and for a Hypothetical Leachate/SB-4 Mix for Sulfate SSI



Based on the ionic strengths and mixing model results presented above, the key major ion data are not indicative of impacts from leachate. Sulfate is included as a key major ion because it is the dominant anion in leachate, and magnesium and calcium are key major ions because they contribute significantly to the cationic strength of leachate relative to SB-4 groundwater, which is dominated by sodium.

If April 2020 SB-4 groundwater and leachate are present in a hypothetical mixture at the ratio of 99.69% groundwater (based on calculation describe above), and assuming the waters mix conservatively and no third end-member is present in the mixture, then the concentration of magnesium and calcium in the sample would increase in samples impacted by leachate. Instead, magnesium and calcium concentrations are both lower in the two SB-4 samples that resulted in the sulfate SSI, so leachate does not appear to be the source of sulfate for the SB-4 sulfate SSI.

BORON DEMONSTRATION

Background

Using a weight-of-evidence approach, we conclude that the boron detections at SB-1, SB-4, and SB-6, including the Fall 2020 SB-4 boron SSI, are from a source other than the CCR unit and are due to natural variation in groundwater chemistry based on the following findings:

- Detected concentrations of boron are within the range of naturally occurring and ambient concentrations and within range of concentrations historically detected at SB-6; and
- A comparison of major ions in groundwater and in landfill leachate do not indicate leachate impacts to groundwater at SB-6.

Naturally Occurring and Ambient Concentrations

Boron is a naturally occurring constituent in some igneous rocks, including granitic rocks and pegmatites (both present in bedrock in the area of the Site[7]), and boron is released to the environment from anthropogenic sources, such as industrial air emissions, fertilizer and herbicide applications, and industrial and municipal wastes.[8,9]

Although concentrations of boron detected at the Site are greater than typical concentrations detected locally (see discussion below), the boron concentrations measured at the Site are still well within the range of concentrations detected in natural or ambient groundwaters as presented below in Exhibit 3. Boron concentrations at the Site range from <50 µg/L to 100 µg/L, with reported median concentrations for the non-New Hampshire background and ambient studies ranging from 42 µg/L to 130 µg/L. We consider these non-New Hampshire studies to be a cross-section of potential boron concentrations, including some geological variation as well as some anthropogenic variation. These are useful comparisons considering the New Hampshire studies are based on fewer sampling locations and may not have collected samples from developed areas that might be more representative of ambient conditions at the Site.

Based on the ranges of naturally occurring and ambient groundwater concentrations found in varying settings and geologies, as documented by the USEPA, concentrations of boron at the Site could likely be sourced from ambient, upgradient sources given the extent of development surrounding the Site. In addition, the boron concentrations were much less than the New Hampshire Ambient Groundwater Quality Standard (AGQS) for boron of 6,000 µg/L. The AGQSs are intended to be protective of groundwater as a source of drinking water.

Comparison of major ions

Major ion chemistry data for SB-4, along with major ion chemistry data for the leachate collection system collected in February 2020, are presented as plotted values in Figure 3. Based on the major ion analyses, the leachate was characterized as a sodium-calcium-magnesium-sulfate water type. The major ion chemistry data for SB-4 is consistently a sodium-chloride water type.

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7 Mapped as Lower part of Rangeley Formation. Nearby Concord Granite. Lyons et al. 1997. *Bedrock Geologic Map of New Hampshire: Reston, VA, U.S. Geological Survey Special Map, 2 sheets, scale 1:250,000.*

8 U.S. Geological Survey. John Hem, 1997. *Study and Interpretation of the Chemical Characteristics of Natural Water*.

9 USEPA. 2008. *Regulatory Determinations Support Document for Selected Contaminants from the Second Drinking Water Candidate Contaminant List (CCL 2), Chapter 3: Boron.*

Exhibit 3: Boron Occurrence in Groundwater for Reports Cited in USEPA's Boron Regulatory Determination Supporting Documents[10]

Study Report	Samples	Concentrations
Dawson, B.J.M. 2001. Ground-water quality in the southeastern Sacramento Valley aquifer, California. U.S. Geological Survey Water-Resources Investigations Report 01-4125. 24 pp.	31 groundwater samples from the Sacramento Valley aquifer.	Minimum: 12 µg/L Median: 42 µg/L Maximum: 1,100 µg/L
Warner, K.L. 1999. Analysis of nutrients, selected inorganic constituents, and trace elements in water from Illinois community-supply wells, 1984-91. U.S. Geological Survey Water-Resources Investigations Report 99-4152. 47 pp.	475 groundwater samples from quaternary aquifers[1] in the lower Illinois River Basin	Minimum: <50 µg/L Median: 130 µg/L Maximum: 2,100 µg/L 68% exceeded 50 µg/L (50 µg/L detection limit) 25% exceeded 29 µg/L
	540 groundwater samples from quaternary aquifers[1] in Illinois outside the lower Illinois River Basin.	Minimum: <50 µg/L Median: 89 µg/L Maximum: 2,300 µg/L 64% exceeded 50 µg/L (50 µg/L detection limit) 25% exceeded 330 µg/L
Minnesota Pollution Control Agency. 1998. Baseline Water Quality of Minnesota's Principal Aquifers.	954 drinking water wells in Minnesota.	Median: 46 µg/L 10% exceeded 500 µg/L 8.7% exceeded 600 µg/L
USEPA. 2008. The Analysis of Occurrence Data from the UCM Program and NIRS in Support of Regulatory Determinations for the Second Drinking Water Contaminant Candidate List. EPA 815-D-08-014. June.	989 public water systems with groundwater sources – considered nationally representative of groundwater-sourced drinking water.	Minimum: <5µg/L Median (of detects): 47 µg/L Maximum: 3,950 µg/L 81.9% exceeded 5 µg/L (5 µg/L detection limit) 4.3% exceeded 700 µg/L 1% exceeded 2.44 µg/L
Frey, M.M., C. Seidel, M. Edwards, J. Parks, and L. McNeill. 2004. Occurrence Survey for Boron and Hexavalent Chromium. AwwaRF Report 91044F.	228 groundwater sources used by public water systems – not considered nationally representative of groundwater-sourced drinking water. No geographical trends evident.	Minimum: <2.0 µg/L Median: 51.4 µg/L Maximum: 3,320 µg/L 99.1% exceeded 2.0 µg/L 8.8% exceeded 700 µg/L 3.1% exceeded 1,400 µg/L

Note:

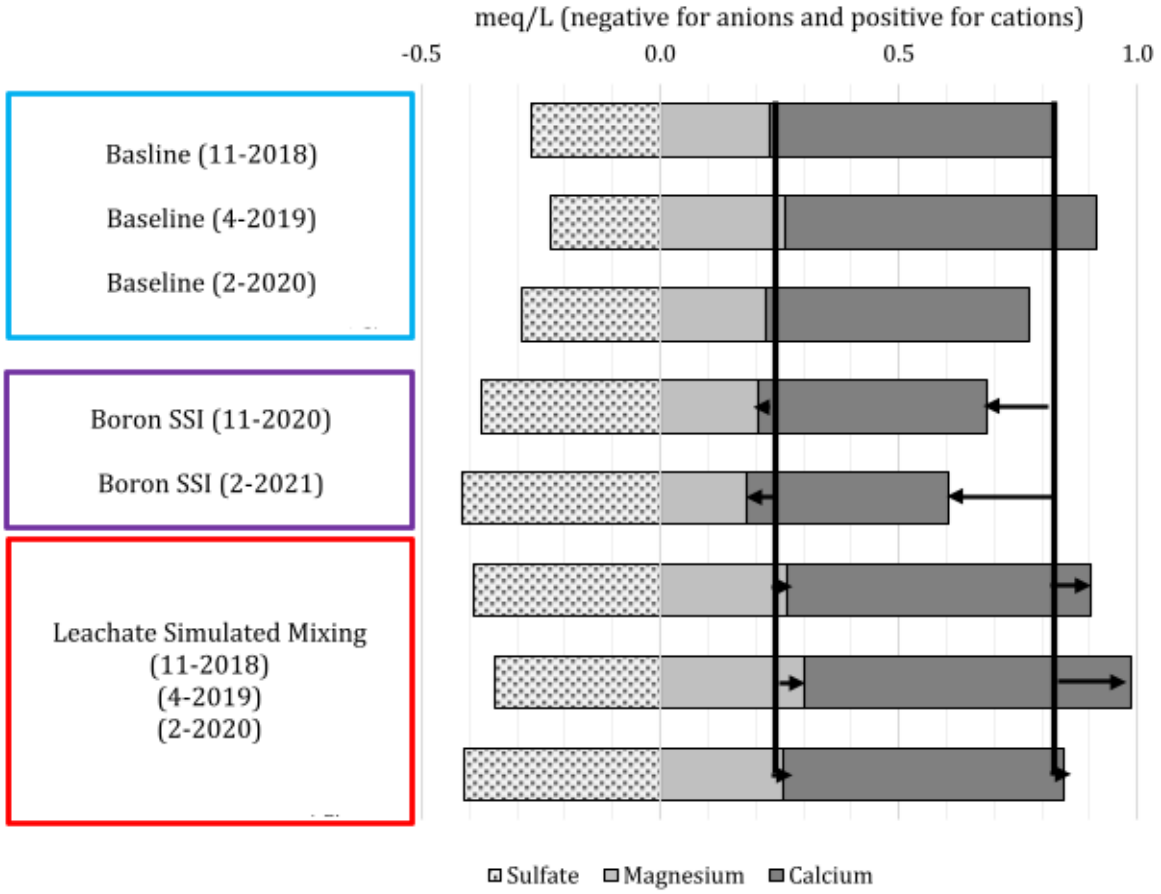
1. The USGS reported the Illinois quaternary aquifers as mainly glacial drift sand and gravel or till of Quaternary age in buried bedrock valleys.

[10] USEPA. 2008. *Regulatory Determinations Support Document for Selected Contaminants from the Second Drinking Water Candidate Contaminant List (CCL 2), Chapter 3: Boron.*

To understand if leachate is a potential source of the boron that resulted in the SSI at SB-4, major ion chemistries for SSI samples (boxed in purple, see Exhibit 4 below) were compared with the major ion chemistries for SB-4 samples with no boron detected (boxed in blue, see Exhibit 4). Because boron was not detected in the SB-4 sample, we assume that there is a baseline boron concentration of 20 µg/L based on two local USGS studies specific to stratified drift aquifers with similar geology to the Site,[11] where sixteen wells were sampled, and boron was not detected above 20 µg/L.

Sulfate, magnesium, and calcium ionic strengths for the different SB-4 samples, as well as a hypothetical, calculated mixes of SB-4 groundwater and leachate (boxed in red) are presented in Exhibit 4, below. The ionic strengths for the hypothetical mix of SB-4 water and leachate were based on a mix of waters that would result in 70 µg/L boron, which is the SB-4 boron concentration in February 2020.[12]

Exhibit 4: Ionic Strength for Select Anions (-) and Cations (+) for SB-4 samples and for a Hypothetical Leachate/SB-4 Mix for Boron SSI



[11] U.S. Geological Survey. 1997. *Geohydrology and Water Quality of Stratified-Drift Aquifers in the Upper Merrimack River Basin, South-Central New Hampshire*; and U.S. Geological Survey. 1995. *Geohydrology and Water Quality of Stratified-Drift Aquifers in the Middle Merrimack River Basin, South-Central New Hampshire*.

[12] The mixed water calculation was based on a mix of 99.9% SB-4 non-detect samples and 0.1% leachate (February 2020 concentrations, with 20,000 µg/L boron). The calculations are based on the assumption that the waters mix conservatively and that these is no third end-member is present in the mixture.

Based on the ionic strengths and mixing model results presented above, the major ion data are not indicative of impacts from leachate. If leachate were the source of the boron, we would expect to see an increase in magnesium and calcium ionic strength in the SSI samples. Instead, magnesium and calcium ionic strengths are both lower in the two SB-4 samples that resulted in the boron SSI, so leachate does not appear to be the source of boron for the SB-4 boron SSI.

Natural Variation Across the Site

During establishment of the detection monitoring program pursuant to 40 CFR Part 257.94(b), eight samples were collected from monitoring wells at the Site and were analyzed for various constituents, including boron. Boron was detected in three of the eight samples from monitoring well SB-1; boron was not detected at other monitoring wells during this initial sampling. As documented in the October 2017 Statistical Method Selection Certification, the detections of boron were not considered statistically significant in the context of the CCR rules, and the initial eight sampling rounds for the Site were considered background.[13]

Since the collection and analysis of the initial eight background samples, boron was detected at monitoring wells SB-1, SB-4, and SB-6. Of these detections, the only detections that resulted in an SSI were the Fall 2020 SB-4 sampling, which is the subject of this ASD. Using a weight-of-evidence approach, we conclude that the boron detections at SB-1, SB-4, and SB-6 were from a source other than the CCR unit and were due to natural variation in groundwater chemistry based on the following findings:

- Detected concentrations of boron are within the range of naturally occurring or ambient concentrations, and more recent boron concentrations did not exceed those detected during the initial eight background samples;
- There is considerable natural variation in groundwater flow conditions and groundwater chemistry at the Site. This ASD and past ASDs showed that observed groundwater variation, including boron impacts, is not consistent with leachate impacts because the signals in major ion concentrations conflict with signals predicted by mixing models that assume leachate is the source of SSIs; and
- Boron detections were transient across the three downgradient and cross-gradient monitoring wells SB-1, SB-4, and SB-6. At SB-1, boron concentrations fluctuated between detect and non-detect. At SB-4, only more recent samples had detectable levels of boron, and at SB-6, there were detections of boron for only three of seventeen samples. These transient, fluctuating detections across several monitoring wells spaced several hundred feet apart appear to be more consistent with natural, ambient, or upgradient sources unrelated to the CCR unit.

[13] "Statistical Method Selection Certification, Data collected through April 19, 2017, Merrimack Station Coal Ash Landfill," prepared by Sanborn Head for Eversource Energy, dated October 16, 2017.

These lines of evidence show that boron detections at monitoring wells SB-1, SB-4, and SB-6 are not indicative of a release and may be considered background groundwater data for updating detection monitoring statistics.

CLOSING

Based on our understanding of the information presented herein, including the Site characteristics, natural variation of regional groundwater chemistry, and the groundwater flow and groundwater chemistry monitoring data, the SSIs of sulfate and boron at SB-4 are due to natural variation in groundwater chemistry.

Thank you for the opportunity to be of service to GSP Merrimack LLC. We look forward to continuing to work with you on this project.

Sincerely,
SANBORN, HEAD & ASSOCIATES, INC.

Harrison R. Roakes, PE
Project Manager

Eric S. Steinhauser, PE, CPESC, CPSWQ
Senior Vice President

HRR/AEA/ESS:hrr

Enclosures: Table 1 – Groundwater Analytical Results Summary
Table 2 – Groundwater Level Measurements Summary

Figure 1 – Locus Plan
Figure 2 – Facility Plan
Figure 3 – Water Chemistry Signatures

Attachment A – Qualified Professional Engineer Certification
Attachment B – Limitations

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TABLES

TABLE 1
Groundwater Analytical Results Summary
Merrimack Station Coal Ash Landfill
Bow, New Hampshire

Location	Date	Metals																						
		µg/L																			s.u	pCi/L		
		Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium	Cobalt	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Chloride	Fluoride	Sulfate	Total Dissolved Solids	pH	Radium 226	Radium 228	Radium 226+228
Drinking Water MCL		6	10	2,000	4	NS	5	NS	100	NS	15*	NS	2	NS	50	2	NS	4,000	NS	NS	NS	NS	NS	5
CCR Alt. Standards		NA	NA	NA	NA	NA	NA	NA	NA	6	15	40	NA	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GW-1/(AGQS)		6 ‡	10 ‡	2,000 ‡	4 ‡	6,000 ‡	5 ‡	NS ‡	100	NS ‡	15 ‡	NS	2 ‡	NS	50 ‡	2 ‡	NS	4,000	500,000	NS	NS	NS	NS	NS
GW-2		NA	NA	NA	NA	NA	NA	NS	NA	NS	NA	NS	NA	NS	NA	NA	NS	†	†	NS	NS	NS	NS	NS
SB-1	2/24/2016	<1.0	<1.0	14	<1.0	60	<1.0	7,200	<1.0	<1.0	<1.0	<1,000	<0.10	<1.0	<1.0	<1.0	44,000	<100	8,000	96,000	5.21	0.2 ±0.1	0.6 ±0.6	0.8 ±0.6
	4/25/2016	<1.0	<1.0	18	<1.0	100	<1.0	10,000	<1.0	<1.0	<1.0	<100	<0.10	1.0	<1.0	<1.0	58,000	<100	9,000	120,000	5.72	0.5 ±0.2	0.2 ±0.4	0.7 ±0.4
	6/6/2016	<1.0	<1.0	16	<1.0	<50	<1.0	8,200	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	55,000	<100	7,000	140,000	5.52	0.6 ±0.3	0.2 ±0.5	0.8 ±0.5
	7/18/2016	<1.0	<1.0	16	<1.0	70	<1.0	8,600	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	60,000	<100	9,000	120,000	5.35	0.4 ±0.3	0.0 ±0.6	0.4 ±0.6
	8/30/2016	<1.0	<1.0	17	<1.0	<50	<1.0	7,900	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	49,000	<100	7,000	120,000	5.23	0.4 ±0.3	0.3 ±0.4	0.7 ±0.4
	10/17/2016	<1.0	<1.0	17	<1.0	<50	<1.0	9,700	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	60,000	<100	6,000	130,000	5.63	0.6 ±0.4	0.0 ±0.4	0.6 ±0.4
	11/29/2016	<1.0	<1.0	16	<1.0	<50	<1.0	8,000	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	62,000	<100	6,000	88,000	5.63	1.0 ±0.4	0.8 ±0.5	1.8 ±0.5
	4/19/2017	<1.0	<1.0	16	<1.0	<50	<1.0	10,000	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	56,000	<100	8,000	120,000	5.81	0.4 ±0.3	0.2 ±0.5	0.6 ±0.5
	11/17/2017					50		12,000									68,000	<100	8,000	120,000	5.70			
	1/31/2018 ¢							12,000																
	4/9/2018					67		12,000									55,000	<100	10,000	160,000	5.90			
	7/25/2018 ¢							12,000									63,000		13,000	140,000	5.94			
	11/29/2018					87		13,000									66,000	<100	10,000	100,000	6.07			
	4/26/2019					100		13,000									55,000	<100	12,000	140,000	5.78			
	11/15/2019					59		11,000									68,000	<100	10,000	140,000	5.56			
	4/23/2020					70		14,000									53,000	<100	11,000	150,000	5.94			
	11/12/2020					<50		10,000									64,000	<100	13,000	150,000	5.36			
	2/4/2021 ¢							11,000									78,000		11,000	150,000	5.12			
SB-4	2/23/2016	<1.0	<1.0	14	<1.0	<50	<1.0	8,400	<1.0	<1.0	<1.0	<1,000	<0.10	<1.0	<1.0	<1.0	95,000	<100	9,000	210,000	5.49	0.3 ±0.1	1.0 ±0.6	1.3 ±0.6
	4/25/2016	<1.0	<1.0	14	<1.0	<50	<1.0	9,300	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	110,000	<100	8,000	200,000	5.32	0.3 ±0.3	0.0 ±0.4	0.3 ±0.4
	6/6/2016	<1.0	<1.0	12	<1.0	<50	<1.0	8,000	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	110,000	<100	10,000	230,000	5.62	0.2 ±0.2	0.4 ±0.5	0.6 ±0.5
	7/18/2016	<1.0	<1.0	11	<1.0	<50	<1.0	7,800	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	100,000	<100	11,000	220,000	5.27	0.4 ±0.3	0.4 ±0.6	0.8 ±0.6
	8/30/2016	<1.0	<1.0	10	<1.0	<50	<1.0	6,800	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	88,000	<100	12,000	210,000	5.72	0.2 ±0.2	0.0 ±0.4	0.2 ±0.4
	10/17/2016	<1.0	<1.0	12	<1.0	<50	<1.0	8,400	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	100,000	<100	10,000	190,000	5.71	0.3 ±0.3	0.0 ±0.5	0.3 ±0.5
	11/29/2016	<1.0	1.0	12	<1.0	<50	<1.0	7,000	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	100,000	<100	10,000	180,000	5.79	0.7 ±0.3	0.5 ±0.5	1.2 ±0.5
	4/19/2017	<1.0	<1.0	19	<1.0	<50	<1.0	10,000	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	120,000	<100	9,000	260,000	5.71	0.3 ±0.3	0.0 ±0.5	0.3 ±0.5
	11/17/2017					<50		10,000									77,000	<100	13,000	170,000	5.80			
	4/9/2018					<50		11,000									93,000	<100	12,000	220,000	5.87			
	7/25/2018 ¢							9,800									95,000		11,000	210,000	5.68			
	11/28/2018					<50		12,000									86,000	<100	13,000	83,000	6.28			
	4/26/2019					<50		13,000									94,000	<100	11,000	190,000	5.83			
	11/15/2019					53		11,000									97,000	<100	11,000	230,000	5.75			
	2/14/2020 ¢					<50		11,000									100,000		14,000	190,000	5.85			
	4/23/2020					55		13,000									140,000	<100	11,000	260,000	5.72			
	7/8/2020 ¢					57		11,000									99,000		14,000	240,000	5.59			
	11/12/2020					60		9,600									120,000	<100	18,000	260,000	5.18			
	2/4/2021 ¢					70		8,500									100,000		20,000	240,000	5.22			

TABLE 1
Groundwater Analytical Results Summary
Merrimack Station Coal Ash Landfill
Bow, New Hampshire

Location	Date	Metals																						
		µg/L																			s.u	pCi/L		
		Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium	Cobalt	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Chloride	Fluoride	Sulfate	Total Dissolved Solids	pH	Radium 226	Radium 228	Radium 226+228
Drinking Water MCL		6	10	2,000	4	NS	5	NS	100	NS	15*	NS	2	NS	50	2	NS	4,000	NS	NS	NS	NS	NS	5
CCR Alt. Standards		NA	NA	NA	NA	NA	NA	NA	NA	6	15	40	NA	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GW-1/(AGQS)		6 ‡	10 ‡	2,000 ‡	4 ‡	6,000 ‡	5 ‡	NS ‡	100	NS ‡	15 ‡	NS	2 ‡	NS	50 ‡	2 ‡	NS	4,000	500,000	NS	NS	NS	NS	NS
GW-2		NA	NA	NA	NA	NA	NA	NS	NA	NS	NA	NS	NA	NS	NA	NA	NS	†	†	NS	NS	NS	NS	NS
SB-6	2/23/2016	<1.0	<1.0	9.0	<1.0	<50	<1.0	5,300	<1.0	<1.0	<1.0	<1,000	<0.10	<1.0	<1.0	<1.0	80,000	<100	10,000	170,000	5.55	0.1 ±0.07	0.5 ±0.5	0.6 ±0.5
	4/25/2016	<1.0	<1.0	16	<1.0	<50	<1.0	9,300	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	140,000	<100	7,000	220,000	5.55	0.4 ±0.3	0.0 ±0.4	0.4 ±0.4
	6/6/2016	<1.0	<1.0	17	<1.0	<50	<1.0	9,300	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	140,000	<100	8,000	270,000	5.40	0.5 ±0.3	0.0 ±0.5	0.5 ±0.5
	7/18/2016	<1.0	<1.0	17	<1.0	<50	<1.0	9,200	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	140,000	<100	9,000	260,000	5.27	0.5 ±0.3	0.3 ±0.6	0.8 ±0.6
	8/30/2016	<1.0	<1.0	18	<1.0	<50	<1.0	9,100	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	140,000	<100	9,000	280,000	5.71	0.4 ±0.2	0.0 ±0.4	0.4 ±0.4
	10/17/2016	<1.0	<1.0	18	<1.0	<50	<1.0	10,000	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	150,000	<100	8,000	260,000	5.78	0.2 ±0.3	0.0 ±0.5	0.2 ±0.5
	11/29/2016	<1.0	<1.0	16	<1.0	<50	<1.0	8,100	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	130,000	<100	9,000	230,000	5.77	0.5 ±0.2	0.8 ±0.5	1.3 ±0.5
	4/19/2017	<1.0	<1.0	13	<1.1	<51	<1.1	7,400	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	100,000	<100	9,000	190,000	5.68	0.4 ±0.3	0.2 ±0.5	0.6 ±0.5
	11/17/2017					<50		9,900									130,000	<100	11,000	230,000	5.60			
	4/9/2018					<50		7,900									120,000	<100	9,500	240,000	5.57			
	7/25/2018 ¢							11,000									180,000		12,000	310,000	5.44			
	11/28/2018					<50		11,000									150,000	<100	11,000	140,000	5.86			
	4/26/2019					84		13,000									150,000	<100	14,000	210,000	5.78			
	7/11/2019 ¢					80		14,000									170,000		15,000	330,000	5.84			
	11/15/2019					52		10,000									140,000	<100	13,000	280,000	5.75			
	2/14/2020 ¢					<50		5,100									79,000		15,000	130,000	5.73			
	4/23/2020					<50		12,000									160,000	<100	8,100	270,000	5.56			
	11/12/2020					<50		12,000									180,000	<100	9,600	330,000	5.37			
SB-13	2/23/2016	<1.0	<1.0	17	<1.0	<50	<1.0	9,900	<1.0	<1.0	<1.0	<1,000	<0.10	<1.0	<1.0	<1.0	160,000	<100	6,000	270,000	5.34	0.6 ±0.1	0.3 ±0.6	0.9±0.6
	4/25/2016	<1.0	<1.0	17	<1.0	<50	<1.0	8,800	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	160,000	<100	7,000	290,000	5.48	0.4 ±0.3	0.1 ±0.4	0.5 ±0.4
	6/6/2016	<1.0	<1.0	20	<1.0	<50	<1.0	9,900	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	170,000	<100	7,000	320,000	5.50	0.8 ±0.3	0.0 ±0.5	0.8 ±0.5
	7/18/2016	<1.0	<1.0	18	<1.0	<50	<1.0	9,700	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	160,000	<100	8,000	330,000	5.27	0.8 ±0.3	0.0 ±0.6	0.8 ±0.6
	8/30/2016	<1.0	1.0	20	<1.0	<50	<1.0	8,100	2.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	150,000	<100	8,000	270,000	5.35	0.8 ±0.3	0.6 ±0.4	1.4 ±0.4
	10/17/2016	<1.0	<1.0	15	<1.0	<50	<1.0	8,800	2.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	150,000	<100	8,000	260,000	5.06	0.7 ±0.4	0.6 ±0.5	1.3 ±0.5
	11/29/2016	<1.0	<1.0	16	<1.0	<50	<1.0	7,400	1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	140,000	<100	8,000	240,000	5.71	0.6 ±0.3	0.7 ±0.5	1.3 ±0.5
	4/19/2017	<1.0	<1.0	16	<1.1	<51	<1.1	8,000	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	130,000	<100	8,000	270,000	5.56	0.9 ±0.3	0.3 ±0.5	1.2 ±0.5
	11/17/2017					<50		7,000									110,000	<100	9,000	220,000	5.80			
	4/9/2018					<50		11,000									170,000	<100	8,000	330,000	5.81			
	7/25/2018 ¢							10,000									190,000		8,700	340,000	5.69			
	11/28/2018					<50		13,000									200,000	<100	7,200	260,000	5.77			
	4/26/2019					<50		14,000									200,000	<100	7,100	290,000	5.53			
	11/15/2019					<50		8,100									140,000	<100	8,100	280,000	5.82			
	4/23/2020					<50		14,000									230,000	<100	6,500	400,000	5.47			
	7/8/2020 ¢					<50		14,000									210,000		6,900	370,000	5.41			
	11/12/2020					<50		11,000									180,000	<100	8,000	330,000	4.96			
	2/4/2021 ¢					<50		11,000									180,000		6,700	320,000	5.32			

TABLE 1
Groundwater Analytical Results Summary
Merrimack Station Coal Ash Landfill
Bow, New Hampshire

Location	Date	Metals																			s.u	pCi/L			
		µg/L																							
		Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Calcium	Chromium	Cobalt	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Chloride	Fluoride	Sulfate	Total Dissolved Solids	pH	Radium 226	Radium 228	Radium 226+228
Drinking Water MCL		6	10	2,000	4	NS	5	NS	100	NS	15*	NS	2	NS	50	2	NS	4,000	NS	NS	NS	NS	NS	5
CCR Alt. Standards		NA	NA	NA	NA	NA	NA	NA	NA	6	15	40	NA	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GW-1/(AGQS)		6 ‡	10 ‡	2,000 ‡	4 ‡	6,000 ‡	5 ‡	NS ‡	100	NS ‡	15 ‡	NS	2 ‡	NS	50 ‡	2 ‡	NS	4,000	500,000	NS	NS	NS	NS	NS
GW-2		NA	NA	NA	NA	NA	NA	NS	NA	NS	NA	NS	NA	NS	NA	NA	NS	†	†	NS	NS	NS	NS	NS
SB-14	2/24/2016	<1.0	<1.0	3.0	<1.0	<50	<1.0	6,100	<1.0	<1.0	<1.0	<1,000	<0.10	<1.0	<1.0	<1.0	16,000	<100	4,000	56,000	5.05	0.2 ±0.08	0.0 ±0.5	0.2 ±0.5
	4/25/2016	<1.0	<1.0	9.0	<1.0	<50	<1.0	11,000	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	58,000	<100	3,000	140,000	5.62	0.8 ±0.5	0.2 ±0.1	1.0 ±0.5
	6/6/2016	<1.0	<1.0	6.0	<1.0	<50	<1.0	7,600	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	32,000	<100	4,000	100,000	5.39	0.5 ±0.2	0.2 ±0.5	0.7 ±0.5
	7/18/2016	<1.0	<1.0	3.0	<1.0	<50	<1.0	6,300	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	21,000	<100	5,000	68,000	5.31	0.2 ±0.2	0.3 ±0.5	0.5 ±0.5
	8/30/2016	<1.0	<1.0	2.0	<1.0	<50	<1.0	5,300	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	14,000	<100	4,000	71,000	5.81	0.4 ±0.3	0.4 ±0.5	0.8 ±0.5
	10/17/2016	<1.0	<1.0	2.0	<1.0	<50	<1.0	4,000	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	11,000	<100	4,000	29,000	5.55	0.2 ±0.3	0.0 ±0.5	0.2 ±0.5
	11/29/2016	<1.0	<1.0	2.0	<1.0	<50	<1.0	2,900	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	7,000	<100	4,000	12,000	5.19	0.2 ±0.4	0.2 ±0.5	0.4 ±0.5
	4/19/2017	<1.0	<1.0	10	<1.0	<50	<1.0	10,000	<1.0	<1.0	<1.0	<100	<0.10	<1.0	<1.0	<1.0	56,000	<100	5,000	120,000	5.59	0.7 ±0.3	0.1 ±0.5	0.8 ±0.5
	11/17/2017					<50		8,000									18,000	<100	5,000	59,000	5.60			
	4/9/2018					<50		4,200									14,000	<100	8,400	80,000	5.76			
	7/25/2018 ¢							5,100									9,800		6,100	56,000	5.61			
	11/28/2018					<50		4,500									7,800	<100	6,300	<5,000	5.96			
	4/26/2019					<50		8,700									19,000	<100	3,700	91,000	5.74			
	11/15/2019					<50		5,000									12,000	<100	7,800	69,000	5.94			
	4/23/2020					<50		5,500									9,200	<100	5,500	52,000	5.63			
	11/12/2020					<50		4,000									4,700	<100	15,000	68,000	5.10			
	2/4/2021 ¢							7,900									34,000		6,000	95,000	5.30			

Notes:
1. Samples were collected by Eastern Analytical, Inc. (EAI) of Concord, New Hampshire on the dates indicated and analyzed by EAI for select metals by USEPA Method 6020. Additional analysis for select wet chemistry parameters were completed by EAI. Analysis for radium 226 and 228 was completed by KNL Environmental Testing, Inc., of Tampa, Florida. Analysis for lithium was completed by SGS Accutest, of Marlborough, Massachussets (Feb. 2016) and Katahdin Analytical Services, of Scarborough, Maine (April 2016 through October 2016).

2. Concentrations are presented in micrograms per liter (µg/L), which are equivalent to parts per billion (ppb), or they are presented in picoCuries per liter (pCi/L) or pH standard units.

3. "<" indicates the analyte was not detected above the indicated laboratory reporting limit.
A blank indicates the sample was not analyzed for this parameter.

4. "GW-1" and "GW-2" Groundwater Standards are from the New Hampshire Department of Environmental Services (NHDES) Contaminated Sites Risk Characterization and Management Policy (RCMP) (January 1998, with 2000 through 2018 revisions/addenda). GW-1 Groundwater Standards are equivalent to the Ambient Groundwater Quality Standards (AGQSs) promulgated in Env-Or 600 (June 2015 with October 2016, September 2018, September 2019, May 2020, and December 2020 amendments). The AGQS/GW-1 Groundwater Standards are intended to be protective of groundwater as a source of drinking water. The GW-2 Groundwater Standards apply to groundwater as a potential source of indoor air contamination.

5. "Drinking Water MCLs" are from the United States Environmental Protection Agency (EPA) website (accessed March 22, 2016). The Maximum Contaminant Level (MCL) is the highest level of a contaminant that is allowed in drinking water. MCLs are enforceable standards for drinking water systems.
"CCR Alt. Standards" were codified in 40 CFR Part 257.95(h)(2) for cobalt, lead, lithium, and molybdenum. These are alternative risk-based standards for the four constituents without MCLs that may require establishment of a groundwater protection standard under the coal combustion residuals (CCR) rules 40 CFR Part 257(h).

6. "*" indicates an MCL value is not currently available, and the listed value is an action level.
"†" indicates the RCMP lists the value as not currently available.
"‡" indicates the value provided is typically applied to field-filtered samples (i.e., dissolved analytes) for overburden monitoring wells.
"NA" indicates the RCMP lists the value as not applicable.
"NS" indicates the analyte is not listed in the RCMP or MCL list.
"¢" indicates sample rounds collected as part of the resampling program for identifying statistically significant increases (SSIs).

TABLE 2
Groundwater Level Measurements Summary
2020 Annual Groundwater Monitoring and Corrective Action Report
Merrimack Station Coal Ash Landfill
Bow, New Hampshire

Date	Depths and elevations in feet.																
	SB-1			SB-4			SB-6			SB-13			SB-14			Inferred General Groundwater Flow Rate (feet/day)	Inferred General Groundwater Flow Direction
	Reference Elevation	Depth to Water	Water Elevation	Reference Elevation	Depth to Water	Water Elevation	Reference Elevation	Depth to Water	Water Elevation	Reference Elevation	Depth to Water	Water Elevation	Reference Elevation	Depth to Water	Water Elevation		
Feb-16	240.85	33.82	207.03	274.26	67.36	206.90	268.77	61.84	206.93	219.86	11.83	208.03	242.70	34.88	207.82	0.5 - 2.7	Northeast
Apr-16	240.85	32.19	208.66	274.26	65.63	208.63	268.77	60.07	208.70	219.86	10.16	209.70	242.70	33.13	209.57	0.5 - 2.5	Northeast
Jun-16	240.85	31.84	209.01	274.26	66.24	208.02	268.77	60.80	207.97	219.86	11.11	208.75	242.70	33.93	208.77	0.4 - 1.9	East
Jul-16	240.85	33.88	206.97	274.26	67.30	206.96	268.77	62.07	206.70	219.86	12.41	207.45	242.70	35.10	207.60	0.4 - 1.9	Northeast
Aug-16	240.85	35.09	205.76	274.26	68.54	205.72	268.77	63.19	205.58	219.86	13.76	206.10	242.70	36.39	206.31	0.3 - 1.4	Northeast
Oct-16	240.85	36.20	204.65	274.26	69.68	204.58	268.77	64.42	204.35	219.86	13.92	205.94	242.70	37.58	205.12	0.8 - 3.9	North-Northeast
Nov-16	240.85	36.40	204.45	274.26	69.93	204.33	268.77	64.69	204.08	219.86	15.14	204.72	242.70	37.80	204.90	0.3 - 1.6	East-Northeast
Apr-17	240.85	32.27	208.58	274.26	65.82	208.44	268.77	60.04	208.73	219.86	9.58	210.28	242.70	32.99	209.71	0.8 - 3.8	North-Northeast
Nov-17	240.85	32.87	207.98	274.26	66.39	207.87	268.77	60.97	207.80	219.86	11.33	208.53	242.70	34.08	208.62	0.4 - 1.8	Northeast
Apr-18	240.85	31.13	209.72	274.26	64.58	209.68	268.77	58.93	209.84	219.86	8.74	211.12	242.70	31.94	210.76	0.6 - 3.2	North-Northeast
Jul-18	240.85	32.60	208.25	274.26	66.01	208.25	268.77	60.84	207.93	219.86	11.13	208.73	242.70	33.78	208.92	0.4 - 2.0	Northeast
Nov-18	240.85	29.99	210.86	274.26	63.59	210.67	268.77	57.92	210.85	219.86	7.66	212.20	242.70	30.82	211.88	0.7 - 3.3	Northeast
Apr-19	240.85	29.83	211.02	274.26	63.34	210.92	268.77	57.60	211.17	219.86	7.51	212.35	242.70	30.72	211.98	0.6 - 2.9	North-Northeast
Jul-19	–	–	–	–	–	–	268.77	58.71	210.06	–	–	–	–	–	–	–	–
Nov-19	240.85	34.48	206.37	274.26	67.96	206.30	268.77	62.66	206.11	219.86	13.21	206.65	242.70	35.85	206.85	0.3 - 1.3	East-Northeast
Feb-20	–	–	–	274.26	66.67	207.59	268.77	61.12	207.65	–	–	–	–	–	–	–	–
Apr-20	240.85	31.84	209.01	274.26	65.34	208.92	268.77	59.73	209.04	219.86	9.62	210.24	242.70	32.75	209.95	0.6 - 3.0	North-Northeast
Jul-20	–	–	–	274.26	66.00	208.26	–	–	–	219.86	11.00	208.86	–	–	–	–	–
Nov-20	240.85	35.72	205.13	274.26	69.23	205.03	268.77	63.92	204.85	219.86	14.48	205.38	242.70	37.09	205.61	0.3 - 1.3	East-Northeast
Feb-21	240.85	33.85	207.00	274.26	67.36	206.90	–	–	–	219.86	12.12	207.74	242.70	34.88	207.82	–	–

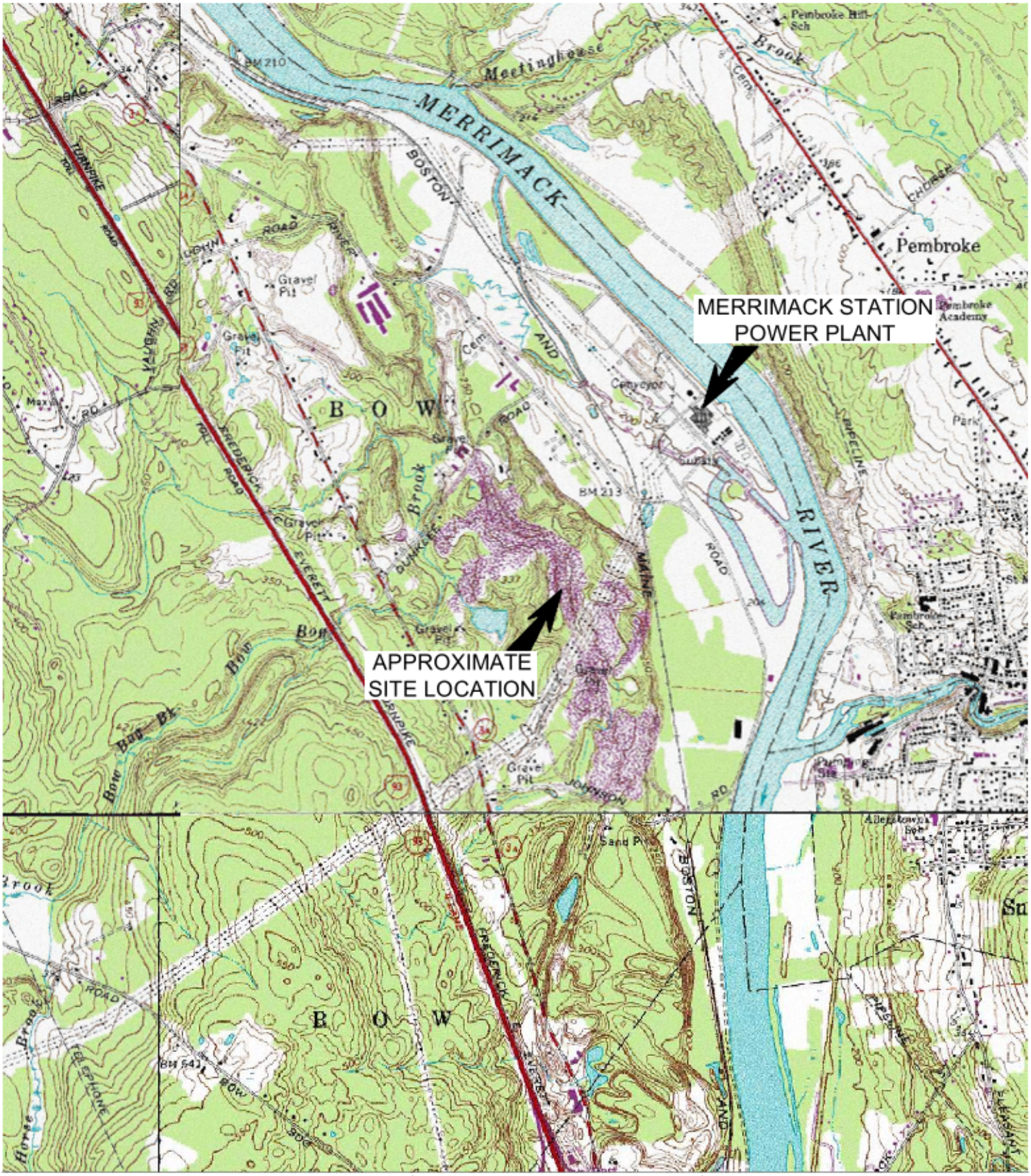
Notes:

1. Depths to water were obtained from information provided in laboratory reports and field sampling sheets prepared by Eastern Analytical, Inc.

2. Inferred general groundwater flow rates and flow directions are approximate and are based on the limited hydrogeologic and groundwater elevation data available. Other interpretations are possible and actual conditions may vary from those indicated. Note that groundwater elevations, directions, and rates may change due to seasonal or other variations in temperature, precipitation, runoff, or other factors.

3. Approximate groundwater flow rates were calculated using an assumed saturated hydraulic conductivity of 100 to 500 feet per day, and an assumed porosity of 39%. Assumptions are consistent with values typical of medium-grained, clean sand. The calculated groundwater flow rate is equivalent to the average interstitial velocity or the seepage velocity.

FIGURES



NOTES:

BASE MAP TAKEN FROM 7.5 MINUTE
USGS QUADRANGLE MAP:
BOW, NEW HAMPSHIRE 1967
(PHOTO REVISED 1998)

Drawn By: D. Dombrowsky
Designed By: G. Panik
Reviewed By: H. Roakes
Project No: 2025.12
Date: May 2021

1000 0 2000 Feet

SANBORN HEAD

Figure 1

Locus Plan

Alternative Source Demonstration
Fall 2020 Sulfate and Boron

Merrimack Station
Coal Ash Landfill
Bow, New Hampshire

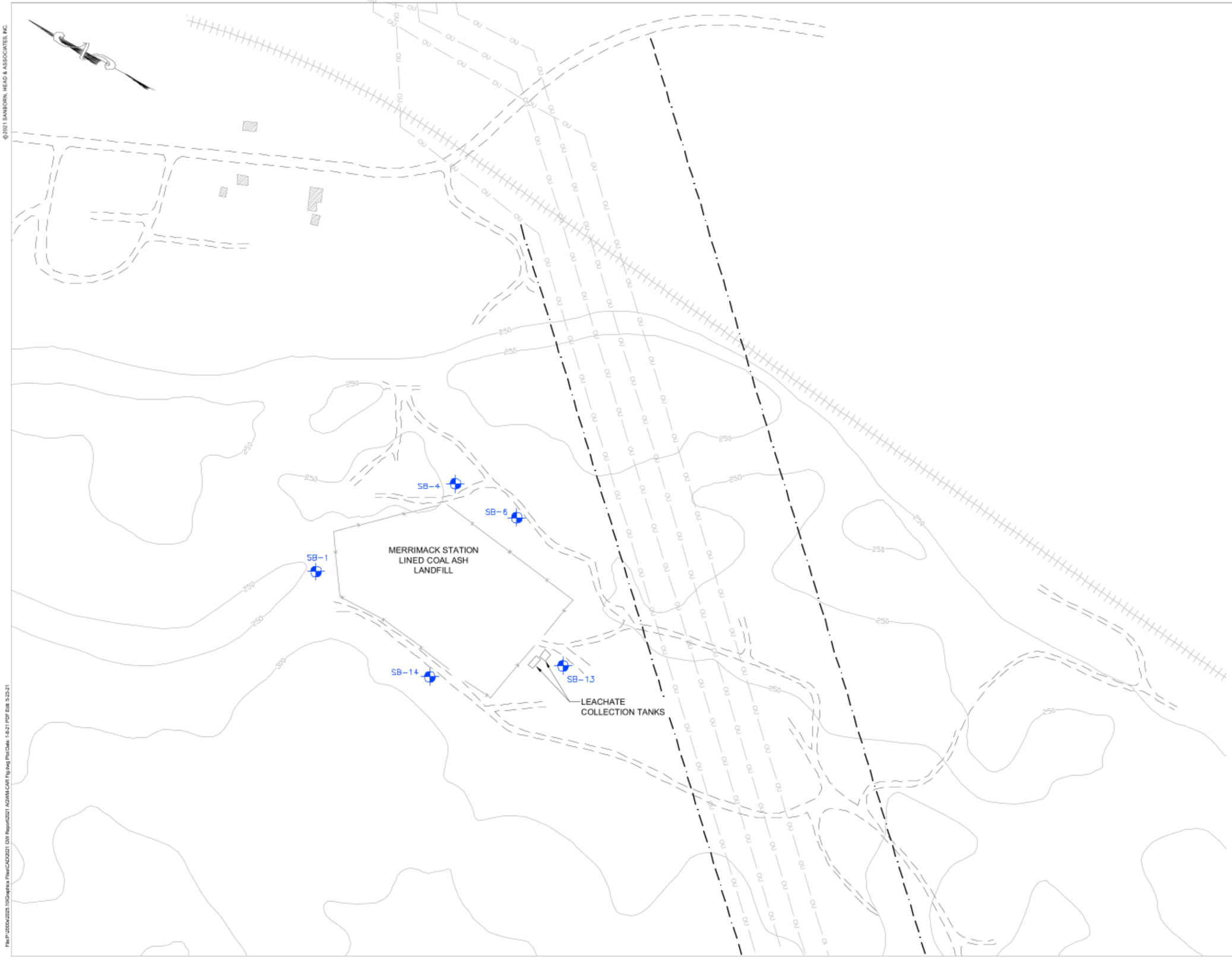


Figure 2

Facility Plan

Alternative Source Demonstration
Fall 2020 Sulfate and Boron

Merrimack Station
Coal Ash Landfill
Bow, New Hampshire

Drawn By: E. Wright
Designed By: H. Roakes
Reviewed By: E. Steinhauser
Project No: 2025.12
Date: May 2021

Notes

1. The base map was developed from a drawing prepared by Public Service Company of New Hampshire's Engineering Division entitled, "Area Plan, Merrimack Station, Bow, N.H." The drawing was dated 5/1/90 and was last revised on 6/28/95.
2. The location of the landfill and the site features shown should be considered approximate.

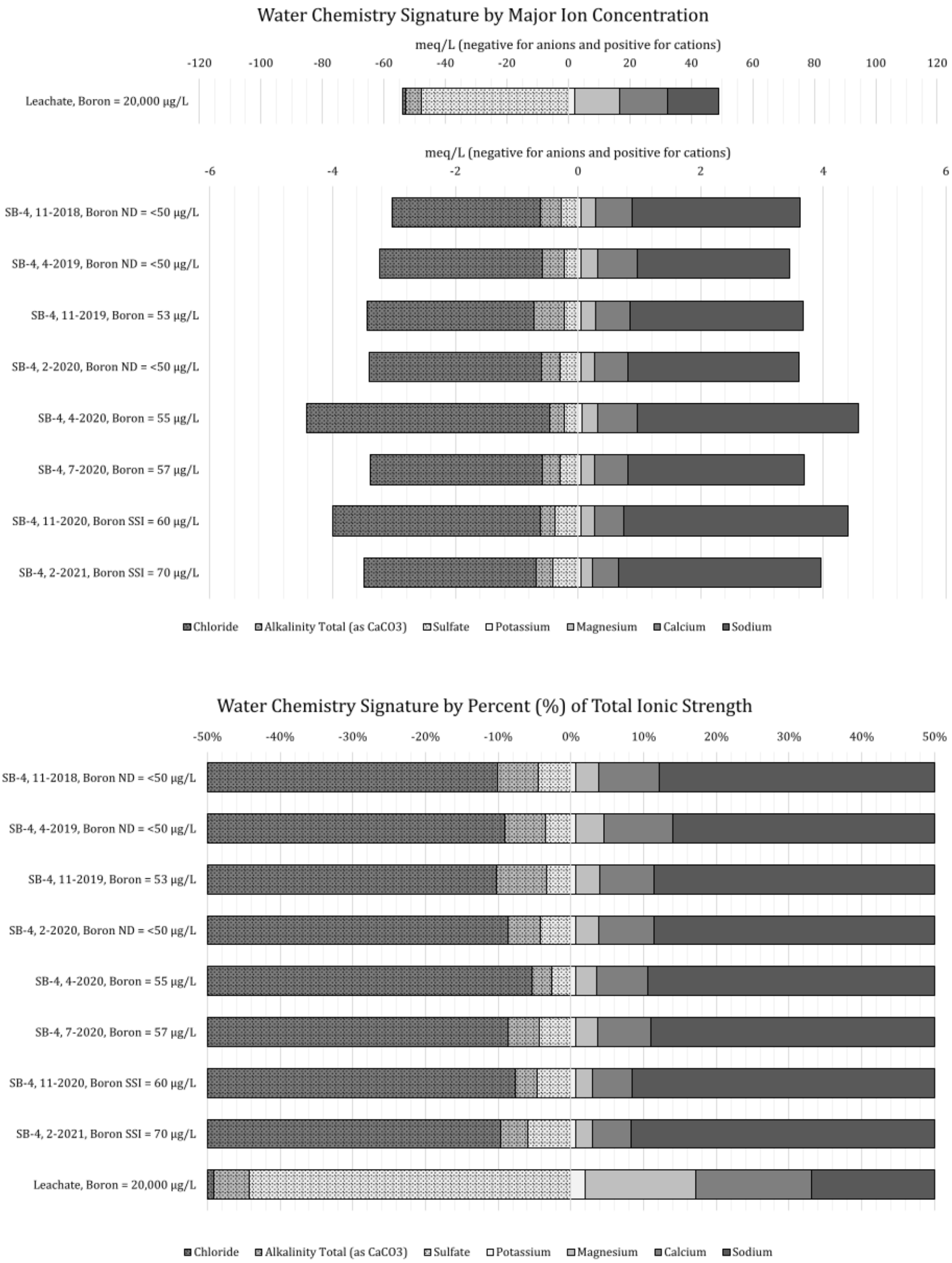
Legend

- SB-4 — Monitoring Well
- Right-Of-Way
- Fence
- OU — Overhead Utilities
- 250 — Elevation Contour

150' 75' 0 150' 300' Feet

SANBORN HEAD

Figure 3 - Water Chemistry Signatures
Merrimack Station Coal Ash Landfill
Bow, New Hampshire



ATTACHMENT A

ATTACHMENT A
QUALIFIED PROFESSIONAL ENGINEER CERTIFICATION

I certify that the information in this alternative source demonstration (ASD) report, dated March 24, 2021 (the "Report"), is accurate, subject to the assumptions and limitations contained within the Report. The ASD report was prepared by Sanborn, Head & Associates, Inc. for the Merrimack Station Coal Ash Landfill site located in Bow, New Hampshire.

ERIC S. STEINHAUSER

Printed Name of Licensed Professional Engineer

Signature

11494	NEW HAMPSHIRE	AUGUST 17, 2021
License Number	Licensing State	Date

ATTACHMENT B

ATTACHMENT B
LIMITATIONS

1. The conclusions and recommendations described in this report are based in part on the data obtained from a limited number of groundwater samples from widely-spaced monitoring locations. The monitoring locations indicate conditions only at the specific locations and times, and only to the depths sampled. They do not necessarily reflect variations that may exist between such locations, and the nature and extent of variations between these monitoring locations may not become evident until further study or remediation is initiated. The validity of the conclusions is based in part on assumptions Sanborn Head has made about conditions at the site. If conditions different from those described become evident, it will be necessary to re-evaluate the conclusions of this report.

2. Water level measurements were made in the monitoring well locations at times and under conditions stated within the report. Fluctuations in the levels of the groundwater may occur due to variations in precipitation and other factors not evident at the time measurements were made.

3. Quantitative laboratory analyses were performed as noted within the report. Additional analytes not searched for during the current study may be present in groundwater at the site. Sanborn Head has relied upon the data provided by the analytical laboratory and did not conduct an independent evaluation of the reliability of these data. Additionally, variations in the types and concentrations of analytes and variations in their distributions within the groundwater may occur due to the passage of time, seasonal water table fluctuations, recharge events, and other factors.

4. The conclusions and recommendations contained in this report are based in part upon various types of chemical data as well as historical and hydrogeologic information developed during previous studies. While Sanborn Head reviewed the data and information as stated in this report, any of Sanborn Head's interpretations, conclusions, and recommendations that relied on that information will be contingent on its validity. Should additional chemical data, historical information, or hydrogeologic information become available in the future, such information should be reviewed by Sanborn Head and the interpretations, conclusions, and recommendations presented herein should be modified accordingly.

5. This report was prepared for the exclusive use of GSP Merrimack LLC (GSP) for specific application for 40 CFR Part 257.90 compliance for GSP's Merrimack Station Coal Ash landfill in Bow, New Hampshire, and was prepared in accordance with generally-accepted hydrogeologic practices. No warranty, express or implied, is made.