HYDROGEOLOGIC INVESTIGATION REPORT
PROPOSED COMMERCIAL LAND-BASED AQUACULTURE FACILITY
BELFAST WATER DISTRICT, CASSIDA BACK LOT AND MATHEWS BROTHERS WEST FIELD PROPERTIES
285 NORTHPORT AVENUE
BELFAST, MAINE

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EXECUTIVE SUMMARY

Ransom Consulting, Inc. (Ransom) has prepared this Hydrogeologic Investigation Report on behalf of Nordic Aquafarms, Inc. (NAF) for the proposed development of a commercial land-based aquaculture facility to be located off Northport Avenue in Belfast, Maine. The purpose of this report is to summarize the findings of the investigation conducted at the Site and support applications for Site Location of Development and Significant Groundwater Well permits with the Maine Department of Environmental Protection (MEDEP).

NAF has proposed construction of a land-based commercial Atlantic salmon aquaculture facility on a portion of a parcel of land currently owned by the Belfast Water District (BWD) and two additional abutting parcels owned by Samuel Cassida (also referred to as "Cassida back lot") and Goldenrod Properties, LLC (referred to as the "Mathews Brothers," "MB," and "Mathews Brothers west field" property). In addition to the primary development parcel, the proposed development will include a 40-foot wide easement, located east of US Route 1 (also called Northport Avenue), to allow pipeline access to Belfast Bay. The BWD offices, former surface water intake and pumphouse, and a maintenance garage are currently situated on the parcel, which is located north of the Little River and the Lower Reservoir near the confluence of the Little River and Belfast Bay. The proposed development will include the portion of the BWD property excluding a 250-foot wide buffer zone from the Lower Reservoir of the Little River. The Cassida property is currently managed as a woodlot and abuts the BWD property to the north and east, while the MB property is managed as an agricultural field and abuts the Cassida property to the north and BWD property to the east. Collectively, these properties comprise the "Site." NAF intends to raise Atlantic salmon in the facility, which requires clean and consistent supplies of cold freshwater and saltwater.

The Site encompasses approximately 54 acres of gently sloping terrain incised by several steep gullies. The majority of the Site is undeveloped forest or field, with approximately three developed acres along Northport Avenue, improved with four buildings and paved surfaces used by the BWD for their offices, equipment storage, and maintenance purposes. The proposed development will occur in two "phases" and will encompass approximately 38 acres after completion. Phase I is planned to have approximately 50% fish production capacity after completion, and Phase II will expand the facility to full production. The Site is adjacent to the Lower Little River Dam (the "Lower Dam"), a 30-foot high, 126-foot long concrete and masonry dam. The Lower Dam impounds the Little River into a reservoir that is approximately 37 acres with a capacity of approximately 600 acre-feet (Wright-Pierce, 2018). The Lower Dam and reservoir (also called Belfast Reservoir 1 or the Lower Reservoir) served as the public water supply for the City of Belfast from circa 1887 to 1956, and then as a backup water supply until 1980, when the BWD completely transitioned its water supply to groundwater sourced from the Goose River Aquifer. BWD's current public water supply wells in the Goose River Esker Aquifer are located approximately 6.5 miles north of the Site in a separate and distinct surface water and groundwater system.

This investigation also included explorations at off-site portions of the BWD property, located adjacent to the Upper Little River Dam and reservoir (also called Belfast Reservoir 2 of the Upper Reservoir), approximately 3,000 feet west-northwest of the Site. These off-site portions of BWD's property are currently not included as part of the proposed development, but an exploration agreement between NAF and BWD allowed for investigation of these off-site portions of BWD's property for potential groundwater supply to support the development.

Based on the findings of this investigation, described in detail in Sections 3 through 7, Ransom estimates that the fractured bedrock aquifer at the Site is suitable for a sustained total groundwater withdrawal of approximately 455 gallons per minute (gpm) distributed amongst a proposed bedrock wellfield consisting of three water supply production wells.

The surficial geology of the Site and surrounding area generally consists of the Presumpscot Formation, composed of glaciomarine silt, clay, and smaller components of fine sand. To the north of the Site and elsewhere in the Little River Watershed glacial till is the dominant surficial material. Soil borings advanced at the Site indicate that Presumpscot silts and clays are ubiquitous across the proposed development area and are generally underlain by a thin mantle of glacial till above the bedrock surface, which was generally encountered between 12 and 25 feet below ground surface (bgs).

The bedrock unit underlying the Site and surrounding area is mapped as the Ordovician- to Cambrian-age Penobscot Formation, which generally consists of interbedded metapelite and metasandstone. The Sennebec Pond fault runs from southwest to northeast approximately 2.8 miles northwest of the Site. Test wells drilled at the Site indicate that the bedrock is schist, composed primarily of biotite, quartz and muscovite mica. Graphitic beds were also encountered in most test borings. Metasandstone beds were generally light gray to white in color and were considerably more competent during drilling than the metapelite beds. A heavily weathered zone at the bedrock surface was present in all test borings and ranged in thickness from a few feet to greater than 20 feet. Bedrock fractures and softer areas of rock were also common in most borings and produced minor to significant quantities of water at depths greater than approximately 70 feet bgs.

Ransom conducted a test well drilling program at the Site based on interpretation of a Site-wide electrical resistivity survey aimed at identifying areas where fluid filled fractures in bedrock were likely present. The test well drilling program was conducted in late winter through early spring and fall of 2018 and included the advancement of 12 bedrock test wells, nine of which were advanced on BWD's Lower Reservoir property and the remaining three borings were advanced on BWD's off-site, Upper Reservoir property. In addition, a monitoring network was developed including six overburden piezometers in or near mapped wetlands, three staff gages to monitor surface water levels in the reservoirs and Little River near the Site, and six private water supply at residences near the Site. Results from the test well drilling program identified test wells with estimated yields of less than 10 gpm to greater than 200 gpm. Test wells drilled at the off-site Upper Reservoir property exhibited lower estimated yields than those drilled on the Lower Reservoir property, and thus subsequent investigation work was focused on the Lower Reservoir.

A total of four separate aquifer tests were conducted at the Site, with total pumping rates ranging from 100 to 600 gpm from up to six test wells simultaneously. Data collected during the aquifer tests indicate that groundwater flow at the Site is not uniform in all directions. In general, groundwater flow through the bedrock aquifer occurs along and through fractures in the bedrock.

The results of the aquifer tests were ultimately used to develop a numerical groundwater flow model for the Site, performed by McDonald Morrisey Associates, LLC (MMA), which was used to simulate the effects of various pumping scenarios from production wells across the Site. The model was calibrated using water level data collected during the first three aquifer tests and verified using data collected during the fourth aquifer test. The model results generally support a withdrawal scenario utilizing three pumping wells located in the southeastern portion of the Site with a total combined pumping rate of approximately 455 gpm.

In addition to the assessment of groundwater withdrawal at the Site, a surface water withdrawal from the Lower Reservoir is also proposed as a part of NAF's development. The proposed surface water withdrawal of 250 gpm is based on rules set forth in Maine Department of Environmental Protection

(MEDEP) Chapter 587 allowing for a withdrawal of 70 gpm plus inflows to Belfast Reservoir Number One (also known as the Lower Reservoir). In order to account for inflows into Belfast Reservoir Number One in the planning process, a rate of 250 gpm is presented as a conservative estimate of the baseflow of the Little River. A qualitative sensitivity analysis of the numerical groundwater flow model indicates that fluctuations in head of the Lower Reservoir due to the proposed surface water withdrawal is unlikely to affect the sustainability of the proposed groundwater withdrawal.

In total, the proposed development will receive fresh water from three distinct supply sources:

1. Groundwater withdrawn from the Site at a proposed rate of 455 gpm;

2. Surface water withdrawn from the Site at an estimated rate of 250 gpm; and

3. Public water supply delivered to the Site by the Belfast Water District at a proposed rate of up to 500 gpm.

Combined, the total projected fresh water supply rate available post development would be approximately 1,205 gpm.

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1.0 INTRODUCTION

Ransom Consulting, Inc. (Ransom) has prepared this Hydrogeologic Investigation Report on behalf of Nordic Aquafarms, Inc. (NAF) to support the planning and development of a commercial land-based aquaculture facility to be located off Northport Avenue in Belfast, Maine.

1.1 Background

NAF has proposed construction of a land-based commercial Atlantic salmon aquaculture facility on a portion of a parcel of land currently owned by the Belfast Water District (BWD) and two additional abutting parcels owned by Samuel Cassida (also referred to as “Cassida back lot”) and Goldenrod Properties, LLC (referred to as the “Mathews Brothers,” “MB,” and “Mathews Brothers west field” property). In addition to the primary development parcel, the proposed development will include a 40-foot wide easement, located east of US Route 1 (also called Northport Avenue and Atlantic Highway), to allow pipeline access to Belfast Bay. The BWD offices, former surface water intake and pumphouse, and a maintenance garage are currently situated on the parcel, which is located north of the Little River and the Lower Reservoir near the confluence of the Little River and Belfast Bay. The proposed development will include the BWD property except the 250-foot buffer from the Lower Reservoir of the Little River. The Cassida property is currently managed as a woodlot and abuts the BWD property to the north and east, while the MB property is managed as an agricultural field and abuts the Cassida property to the north and BWD property to the east. Collectively, these properties comprise the “Site” and are shown in Figure 1.

The Site encompasses approximately 54 acres of gently sloping terrain incised by several steep gullies. The majority of the Site is undeveloped forest or field, with approximately three developed acres along Northport Avenue, comprised of four buildings and paved surfaces used by the Belfast Water District as offices, equipment storage, and maintenance space. The proposed development will encompass approximately 34 acres after completion and will be constructed in two primary phases. The Site is adjacent to the Lower Little River Dam (the “Lower Dam”), a 30-foot high, 126-foot long concrete and masonry dam. The Lower Dam impounds a reservoir that is approximately 37 acres with a capacity of approximately 600 acre-feet (Wright-Pierce, 2018). The Lower Dam and reservoir (also called Belfast Reservoir One or the Lower Reservoir) served as the public water supply for the City of Belfast circa 1887 to 1956, and then as a backup public water supply until 1980, when the BWD completely transitioned its water supply to groundwater sourced from the Goose River Aquifer. The new BWD public water supply wells are located approximately 6.5 miles north of the Site in a separate and distinct surface water and groundwater system.

This investigation also included exploration of portions of the BWD property located adjacent to the Upper Little River Dam and reservoir (also called Belfast Reservoir Two or the Upper Reservoir), approximately 3,000 feet west-northwest of the Site. This property was not included as part of the proposed development, but an exploration agreement between NAF and BWD allowed for investigation of this property for potential groundwater supply to support the development.

1.2 Purpose

This hydrogeologic investigation was conducted to evaluate the suitability and sustainability of the bedrock aquifer beneath the Site for installation of bedrock water supply wells to support the proposed aquaculture facility. The purpose of this report is to summarize the findings of the investigation and support applications for Site Location of Development and Significant Groundwater Well permits with the Maine Department of Environmental Protection (MEDEP). The investigation efforts were focused on four primary objectives:

1. Assess the overall suitability of the aquifer for water quality and yield;
2. Assess the viability of a surface water intake from the Lower Reservoir;
3. Identify potential high-yield water supply production well locations at the Site or on the Upper Reservoir property;
4. Assess the hydraulic properties of the aquifer through aquifer tests and numerical groundwater modeling; and
5. Calculate the estimated sustainable yield from one or more production wells located at the Site and/or on the Upper Reservoir Property to support design of a production well or well field and permitting to allow sustainable groundwater.

2.0 LAND AND WATER USE

2.1 Regional Land Use

The region surrounding the Site is located at the southern end of the more densely developed residential and United States Route 1 (US Route 1) commercial portion of the City of Belfast. The general character of the area immediately surrounding the Site is sparse to moderately developed woodlands and farmland interspersed with large commercial operations. These include the Mathews Brothers manufacturing facility immediately to the north of the Site, a currently vacant commercial building to the northeast of the Site, and the Belfast Municipal Airport located approximately one-mile northwest of the Site. To the south and west are generally rural to suburban residential areas of the Town of Northport and City of Belfast. US Route 1, also known as Northport Avenue and Atlantic Highway, borders the eastern side of the Site and includes numerous commercial operations and several residential properties are located opposite the Site between US Route 1 and Belfast Bay.

2.2 Site Land Use

The Site is predominantly undeveloped woodland, with approximately three developed acres along Northport Avenue. The developments include the historic BWD pump house located at the Lower Dam, now used as office space for the BWD, as well as several other buildings used for storage and maintenance by the BWD and paved or gravel driveways and parking areas. The Cassida and BWD portions of the Site have periodically been logged over the past several decades, and a sparse network of woods roads is present. A recreational walking trail traverses the shoreline of the Lower Reservoir through a portion of the BWD property. The strip of shoreland (within 250 feet of the Lower Reservoir) containing the recreation trail is not included in the proposed development Site.

2.3 Regional Water Use

The BWD provides public drinking water sourced from their municipal water supply wells located in the Goose River Aquifer located in north Belfast and the Town of Swanville. BWD's service extends to most of the properties surrounding the Site. This includes all of the homes located on the northern side of the Little River and Lower Reservoir, including those homes and businesses located on US Route 1, Perkins Road, and Lower Congress Street with the exception of two homes located on Reeds Lane off of Lower Congress Street.[1] The public water supply main continues from Belfast into Northport across the US Route 1 bridge of the Little River, following US Route 1 for three quarters of a mile until turning east on Bayside Road and ending in the community of Bayside. Herrick Road (to the west of the Site) is not serviced by BWD's public water supply.

2.3.1 Existing Wells

Ransom conducted a water supply well search to locate private water supply wells within 0.5 miles of the Site boundary. A total of 36 possible private wells were identified within the search radius and are shown on Figure 2. Wells were identified through the Maine Geological Survey (MGS) Water Wells Database, Surficial Materials dataset, and Significant Sand and Gravel Aquifers Maps, the Maine Drinking Water Program Public Water Supply Wells database, and communication with the BWD and Northport Village Corporation. A total of four wells were identified in the search radius in the MGS Water Well Database, and the remaining wells were

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[1] Based on communication with Keith Pooler, Superintendent of the Belfast Water District, on April 18, 2018

assumed to be present based on the presence of a home or business and absence of a public water connection. Off-site wells identified within the search radius are summarized in Table 1.

A total of eleven private well owners surrounding the Site were contacted to confirm the existence of their well and asked to participate in a voluntary monitoring program to evaluate possible interaction between Site wells and surrounding private wells. Of the eleven individuals contacted, eight consented to participate in the monitoring programs, and monitoring equipment was installed in a total of six wells. The owner of the well identified in the MGS database at 253 Northport Avenue confirmed that the structure was served by public water but did not have knowledge of the well's existence at the property. Ransom was unable to locate this well during a reconnaissance at the property on January 7, 2019.

The owner of the well located at 30 Herrick Road confirmed the existence of the well and consented to the monitoring program, however, based on an assessment of the well by a pump and well contractor it was determined that installation of monitoring equipment may adversely impact the well pump and was not advised.

The owners of the wells located at 10 Herrick Road, 24 Herrick Road, and 26 Herrick Road were contacted and either declined to participate in the monitoring program or did not respond to communication attempts beyond the initial contact.

2.4 Site Water Use

The Site is currently serviced by the BWD public water supply system and a private septic system. Ransom is not aware of any water supply or monitoring wells located on Site prior to the drilling work conducted for this investigation.

Historically, the Lower Reservoir and onsite portions of BWD's property that are proposed for NAF's development were used as a primary, and later secondary or backup, water supply for BWD's customer. Dam construction on the Little River (in generally the same location as the current lower dam) began circa 1887 to create a reservoir for use as public drinking water supply for the City of Belfast. In the fall of 1943, the original dam failed after heavy rainfall, destroying the US Route 1 bridge in the process. In 1944, the current Lower Dam was constructed. In the 1950's, the City of Belfast began development of groundwater resources in the Goose River Aquifer, retaining pumping capacity at the Lower Reservoir for backup water supply purposes only, and in 1980 transitioned completely to water supply wells in the Goose River Aquifer.[2]

2.5 Potential Source of Contamination

Ransom completed a Phase I Environmental Site Assessment (ESA) for the Belfast Water District Property on May 3, 2018 (Ransom, 2018a) and for the Mathews Brothers field on November 5, 2018 (Ransom, 2018b). As a part of the Phase I ESAs, a records search including relevant federal and state databases was conducted to identify known potential sources of contamination within a 0.5-mile radius of the Site. In the course of this review, two State Leaking Aboveground Storage Tank (LAST) sites and two State Registered Storage Tank Sites were identified within 0.5 miles of the Site. One approximately

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[2] History of the Belfast Water District from the BWD website: www.belfastwater.org, accessed June 5, 2018

275-gallon fuel oil aboveground storage tank (AST) was observed at the Site in the garage building. No staining or evidence of spills from the tank were observed.

Both LAST sites involved spilling 5 gallons or less of fuel oil from overfilling residential ASTs. A spill in 2003 was located at 256 Northport Avenue, and a spill in 2016 was located at 22 Perkins Road (although this address is believed to be incorrect, given that 22 Perkins Road is an industrial facility, not a residential home as indicated in the report). Due to the small quantities of oil spill and the documented cleanup of spilled oil, these LAST sites are not considered to represent an environmental risk to the Site or groundwater at the Site.

The two State Registered Storage Tank sites identified in the records search abut the Site directly. Both listings refer to the Mathews Brothers Company facility located at 22 Perkins Road (shown on Figure 2). Several oil storage tanks currently or have historically been located at the Mathews Brothers facility. Currently, a 65,000-gallon #5 fuel oil AST and an approximately 4,000-gallon #2 fuel oil AST are indicated as being located at the facility by the supporting material reviewed by the Phase I ESA, however, these tanks do not appear to be listed in MEDEP databases reviewed during the Phase I. There are no records indicating spills or violations pertaining to the ASTs at the facility, and they are not considered to have had an adverse impact on the Site or groundwater at the Site. Historically, MEDEP records indicate that a 1,000 and 5,000-gallon #2 fuel oil underground storage tank (UST) and a 10,000-gallon #5 fuel oil UST were located at the Site. Available records indicate that these USTs were removed in 1988, however, no specific documentation of their removal was identified, including during an in-person file room review at the MEDEP. Given the absence of documentation of the condition of the USTs and the surrounding soil during removal, there is a potential for petroleum from the USTs to have impacted soil and shallow groundwater at the Mathews Brothers facility, and potential for petroleum constituents to have migrated onto the Site.

In addition to State identified petroleum storage sites near the proposed development, historical research of adjoining property uses indicates that the Mathews Brothers facility operated as the Truitt Brothers, Inc. show factory from 1963 through 1985, prior to being purchased by Mathews Brothers in 1989. The Truitt Brothers facility operated two wastewater lagoons that reportedly received some portion of process water from the facility, after alleged treatment. Specifics regarding effluent to the lagoons were not discovered, however, firsthand accounts from local residents recall the lagoons as being devoid of odor and hosting aquatic life such as frogs, turtles, ducks, and algae.

Additional details pertaining to the findings of the Phase I ESAs, including the Limited Subsurface Investigation conducted following the Belfast Water District Phase I ESA, are detailed in the reports.

In addition to the findings of the Phase I ESA, there is the potential for groundwater contamination from private septic systems that serve the Site and all surrounding properties, as well as the possibility of contamination from current or former agricultural use of the Site (i.e. the Mathews Brothers hay field) or the nearby Good Karma Farm located on the northern side of Perkins Road. Public sewer is not available in much of the area surrounding the Site, so all residences and businesses are assumed to be served by private sewer systems. In 2005, the Mathews Brothers facility did connect to the municipal system, retiring their leach field located to the south of their facility. The exact properties served by municipal sewer in the area surrounding the Site have not been identified.

On the whole, the identified potential sources of contamination in the vicinity of the Site are not anticipated to represent a significant threat to groundwater quality at the Site. In order to assess current conditions at the Site, laboratory analysis of groundwater samples collected at the Site was performed and is detailed in this report. In addition, the proposed development includes a comprehensive treatment system to treat all incoming process water, which will mitigate much of the possible risk posed by potential nearby sources of contamination.

3.0 AREA HYDROLOGIC AND HYDROGEOLOGIC SETTING

3.1 Precipitation

Long term daily precipitation data for the Belfast area has been collected by the National Oceanic and Atmospheric Administration (NOAA) at the Belfast, Maine station (Station ID USC00170480) from January 1, 1893 to the present, excluding the period from November 1, 1904 to January 31, 1945 during which data was not recorded. This weather station is located approximately 2.9 miles north of the Site in the lower reaches of the Goose River watershed.

Excluding years with more than ten days of missing measurements, average annual precipitation values range from 26.83 inches in 1965[3] to 71.29 inches in 1983. Over the period of record the average annual precipitation at the station is 46.73 inches. However, average annual precipitation appears to be showing a generally increasing trend over the past 30 years. These data are summarized in Table 2.

A total of four aquifer tests were conducted at the Site, and precipitation data has been obtained and summarized for each aquifer test.

3.1.1 April 2018

In the week leading up to the April 2018 aquifer test, which was conducted from 09:30 on April 2 to 09:30 on April 5, 2018, 0.31 inches of precipitation were recorded, falling on March 30 and March 31. During and after the aquifer test a total of 1.18 inches of precipitation were recorded, with 0.2 inches falling on April 4, 0.68 inches falling on April 5, and 0.3 inches on April 7. Aquifer recovery was monitored until April 9. It is also notable that the aquifer test was conducted during spring snowmelt. Daytime high temperatures during the aquifer test varied from 36° to 56° Fahrenheit, and nighttime lows varied from 20° to 24° Fahrenheit, causing diurnal snowmelt cycles which affected the Little River flow and groundwater elevations.

3.1.2 August 2018

In the week leading up to the August 2018 aquifer test, which was conducted from 09:20 on August 27 to 09:31 on August 30, 0.52 inches of precipitation were recorded, all on August 23. During the aquifer test 0.15 inches of precipitation were recorded, all on August 30, and in the week following the test 0.03 inches of precipitation were recorded on September 4. Temperatures during the test ranged from 59° to 89° Fahrenheit.

3.1.3 November 2018

In the week leading up to the November 2018 aquifer test, which was conducted from 09:00 on November 18 to 09:00 on November 21, a total of 1.56 inches of precipitation were recorded. Precipitation fell as both rain and snow, with 0.18 inches of rain falling on November 13, 1 inch of rain falling on November 14, 0.21 inches of precipitation falling as snow on November 16, and

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[3] 1965 has 10 days of record which do not have precipitation values recorded, all of which fall between 1/24/1965 and 2/26/1965. These missing data are not thought to represent a significant data quality issue. Measurements from the Belfast Station were compared against measurements from the Portland Jetport (Station USW00014764) and Caribou (Station USW00014607) to corroborate extreme measurements at the Belfast Station. Agreement between stations was good, indicating that the extreme values reported in Belfast are not related to poor data quality.

0.17 inches of precipitation falling as snow on November 17. During the test, 0.35 inches of precipitation fell as snow on November 21. In the week following the test, 1.27 inches of precipitation fell as a mixture of rain and snow, with 0.02 inches of precipitation were recorded on November 22, 0.3 inches recorded on November 26, 0.38 inches recorded on November 27, and 0.67 inches on November 28. Temperatures during the test ranged from 18° to 43° Fahrenheit, which, when combined with both snow and rain, resulted in some snowmelt in addition to precipitation.

3.1.4 January 2019

In the week leading up to the January 2019 aquifer test, which was conducted from 12:40 on January 8 to 10:15 on January 12, a total of 1.12 inches of precipitation were recorded. Precipitation fell primarily as snow, with 0.62 inches falling on January 1, 0.04 inches falling on January 3, 0.21 inches falling on January 4, and 0.25 inches falling on January 6. During the test, 0.94 inches of precipitation fell primarily as rain, with 0.11 inches falling on January 8, 0.24 inches falling on January 9, and 0.59 inches falling on January 10. In the week following the test, 0.15 inches of precipitation fell as snow on January 19. Temperatures during the test ranged from 4° to 37° Fahrenheit, indicating that some snowmelt may have also occurred during the test period.

3.2 Topography and Surface Drainage

The Site is located on the United States Geological Survey (USGS) 7.5-minute quadrangle for Searsport, Maine. Ground surface elevation at the Site ranges from approximately 10 feet to 65 feet referenced to the North American Vertical Datum of 1988 (NAVD88). Site topography generally slopes down to the southeast or south toward the Lower Reservoir, and the landscape is bisected by several small- to moderate-sized gullies, which have incised as much as 20 to 30 feet into the land surface. An intermittent unnamed stream flows southeast through the eastern portion of the Site, originating in the fields on the northern side of Perkins Road, passing through a culvert in Perkins Road, along the eastern boundary of the proposed development, beneath US Route 1 via a culvert, and discharging directly to Belfast Bay.

Surface drainage and runoff predominantly drains overland directly to the Lower Reservoir or is collected in ephemeral or intermittent streams in the incised gullies and discharged to the Lower Reservoir. The easternmost portion of the Site discharges surface runoff to the intermittent stream or a smaller gully and ephemeral stream to the northeast, which runs directly to Belfast Bay. As discussed in Section 3.3, Site soils are generally poorly-drained glaciomarine silts and clays. Therefore, the on-site gullies and streams often contain visible water flow during rainy periods or after significant rainfall.

Mapped wetlands, ephemeral, and intermittent streams are identified in Figure 4.

3.3 Site and Regional Surficial Geology

Based on published Maine Geological Survey (MGS) maps, the surficial geology of the Site and surrounding area is identified as the Presumpscot Formation, which is described as containing glaciomarine silt, clay, and minor components of sand deposited during marine transgression after the last major glacial period. To the north of the Site, glacial till is the dominant surficial material, which consists of unsorted clay, silts, sand, cobbles, and boulders derived from glacial progression across the land surface (Thompson & Borns, 1985).

Soil borings advanced at the Site confirm MGS's surficial soil mapping that Presumpscot silts and clays are ubiquitous across the proposed development area and are generally underlain by a thin mantle of glacial till above the bedrock surface, which was generally encountered between 12 and 25 feet below ground surface (bgs).

3.4 Site and Regional Bedrock Geology

Based on published MGS maps, the bedrock unit underlying the Site and surrounding area is identified as the Ordovician-to Cambrian-age Penobscot Formation, which generally consists of interbedded metapelite and metasandstone. The protolith for the Penobscot Formation has been interpreted as sulfidic and/or carbonaceous pelite (Osberg, Hussey, and Boone, 1985). Bedding thickness is generally less than 50 centimeters (cm) and the ratio of metasandstone to metapelite has been found to be approximately 1:1 (Pollock, 2012). The Sennebec Pond fault runs from southwest to northeast approximately 2.8 miles northwest of the Site.

Test wells drilled on-Site indicate that the bedrock is schist-grade metapelite and metasandstone composed primarily of biotite, quartz and muscovite. Graphitic beds were also encountered, which resulted in a thin graphite sheen on the surface of wash water during drilling. Relatively high graphite content in the bedrock is consistent with a carbonaceous protolith. Metasandstone beds, which were generally light gray to white in color and more competent to drill through were also encountered, though perhaps not as regularly as the MGS map rock unit description suggests. A heavily weathered zone at the bedrock surface was present in all test borings and ranged in thickness from a few feet to greater than 20 feet. Bedrock fractures and softer areas of rock were also common below depths of approximately 70 feet bgs in most borings and produced minor to significant quantities of water.

Conceptual geologic cross sections and a map showing the section lines are presented in Appendix H.

3.5 Water Balance and Aquifer Recharge

Prior to evaluating the capacity of the bedrock aquifer at the Site to support sustainable groundwater withdrawal, an assessment of the water flux through the watershed was conducted. The flux of water through the watershed, or water balance, provides context for the overall assessment of safe yield from any proposed wells. To evaluate the proposed withdrawal in the context of the water balance for the watershed, several approaches and analyses are presented below.

3.5.1 Surface Water and the Little River Flow Regime

There are four primary surface water features included in the investigation area: 1) Belfast Bay, 2) the Lower Reservoir, 3) the Upper Reservoir, and 4) the free-flowing reach of the Little River that begins in the tailrace of the Upper Dam and flows into the Lower Reservoir. Monitoring locations have been established in the Upper Reservoir (SG-3), the Little River (SG-4), and the Lower Reservoir (SG-2; see Figure 2 for gage locations). However, these monitoring locations record the natural fluctuations of the watershed overprinted by the influence of the Upper and Lower Dams. Figures 5A through 5C show surface water elevations over time and precipitation, and Figure 5D shows discharge of the Little River over a similar time period.

Stream gaging was conducted in the Little River prior to the November 2018 aquifer test in three locations (SG-Up, SG-Mid, SG-Down) and during the November 2018 aquifer test in two locations (SG-Mid and SG-Down) due to higher discharge preventing gaging at SG-Up. Average (the average of the measurements from each location in a day) stream discharge measurements ranged from a low of 7.67 cubic feet per second (cfs) (3,442 gpm) on October 12, 2018 to a high of 31.35 cfs (14,070 gpm) on November 18, 2018, however, this range does not capture baseflow conditions or high flow conditions. Stream discharge measurements are summarized in Figure 5D and Appendix D.

The Upper Dam is currently (and has been for the duration of the investigation) operated as a run-of-river structure, with all bypass valves left open. The valve intakes are well below the crest of the spillway (approximate spillway elevation is 60 feet NAVD88), which allows the Upper Reservoir elevation to fluctuate more than it would if the spillway were the only structure passing water. Fluctuations of approximately 4 feet at SG-3, located in the Upper Reservoir, can be seen in Figure 5A. Due to the constraints imposed by the bypass valves and pipes on water passing through the dam, fluctuations in water elevation at SG-3 are not directly translated into changes in discharge to the Little River below the dam until the Upper Reservoir begins to spill over the dam crest. The Lower Dam also acts as a run-of-river dam, however, the only outlet structure in use is the spillway, which maintains the Lower Reservoir elevation at approximately 22 feet NAVD88 during baseflow conditions.

As part of the assessment present below, an estimate of flow from the Little River was required. The Little River is not currently gauged (other than with a staff gage installed during this investigation), and no historic gauges are known to have existed in the watershed. In lieu of empirical data, modeled data from StreamStats were used for this investigation. StreamStats is a web-based application developed by the USGS that computes flow statistics through regression equations developed specifically for ungaged rural rivers and streams in Maine. The StreamStats report generated for the Little River at the proposed development Site is included in Appendix A.

3.5.2 Total Water Delivered to the Watershed

The watershed area of the Little River is approximately 16.7 square miles. Because the Site is at the very lower (downstream) limit of- the watershed, this watershed area is effectively representative of the Site watershed. The amount of water delivered to the Little River upstream of the Site for 1-inch of precipitation, the total volume of water delivered in the driest and wettest years on record, and the total volume of water delivered in an average precipitation year all provide a means to assess the volume of water delivered to the watershed. These calculations are summarized below.

Watershed area converted to feet:

$$16.7\ mi^2 = 465.6\ million\ ft^2$$

Gallons of water per inch of rain:

$$465.6\ million\ ft^2\ \times 0.083\ ft\ (1\ in) = 38.6\ million\ ft^3 = 289.1\ \frac{million\ gallons}{inch\ of\ precipitation}$$

Gallons of water delivered in the driest year on record (1965):

$$465.6\ million\ ft^2\ \times 2.24\ ft\ (26.83\ in) = 1.04\ billion\ ft^3 = 7.79\ billion\ gallons\ per\ year\ (BGPY)$$

Gallons of water delivered in the wettest year on record (1983):

$$465.6\, million\, ft^2 \times 5.94\, ft\ (71.29\, in) = 2.77\, billion\, ft^3 = 20.69\, BGPY$$

Gallons of water delivered in an average precipitation year (full record):

$$465.6\, million\, ft^2 \times 3.88\, ft\ (46.73\, in) = 1.81\, billion\, ft^3 = 13.51\, BGPY$$

A basic water balance can be created using the average annual precipitation at the Site of 46.73 inches and assuming some basic parameters for evapotranspiration (ET), infiltration, and surface water runoff. According to Caswell (1987), approximately 50% of precipitation in the State of Maine runs off through streams, 30 to 40% is delivered back to the atmosphere through ET, and 10 to 20% of precipitation infiltrates into the soil and rock as groundwater recharge.

Site specific geology from both maps and drilling logs indicate that overburden permeability is low (Site overburden consists of Presumpscot Formation and glacial till, which is similar to the watershed as a whole), indicating that infiltration in the Little River watershed likely falls on the lower end of the ranges for Maine. Therefore, we use the lower estimate of 10% of precipitation ultimately becomes groundwater recharge. Similarly, the low permeability of the dominant surficial geologic formations in the watershed indicate that runoff to surface water features may be slightly higher than typical for the State. Given this, we estimate that approximately 55% of precipitation in the watershed becomes runoff. This leaves 35% of total precipitation as ET. We can use these Site-specific estimates to calculate a water budget for the Little River Watershed:

Mean Annual Precipitation: $46.73\, inches\ (13.51\, BGPY)$

Mean Annual Infiltration: $46.73\, inches\ x\ 0.10 = 4.67\, inches\ (1.35\, BGPY)$

Mean Annual ET: $46.73\, inches\ x\ 0.35 = 16.36\, inches\ (4.73\, BGPY)$

Mean Annual Runoff: $46.73\, inches\ x\ 0.55 = 25.70\, inches\ (7.43\, BGPY)$

The StreamStats regression provides useful comparison for the water budget for the Little River watershed presented above (StreamStats Report is included in Appendix A). StreamStats estimate the mean annual precipitation to be 47.6 inches, slightly above the average for the 85-year period of record at the Belfast weather station of 46.73 inches, and through a series of regressions estimate the discharge statistics for the Little River watershed. The mean annual precipitation of 47.6 inches used by StreamStats is equivalent to 13.8 bgpy. The StreamStats regression estimates mean annual discharge for the Little River is 34.7 cfs, which is equivalent to 15,574 gpm or 8.19 bgpy. The mean annual discharge of the Little River accounts for approximately 59% of the mean annual precipitation, leaving 41% of the mean annual precipitation as infiltration and ET combined.

The StreamStats regression agrees closely with the water balance presented above using estimated values for the State of Maine, indicating that the estimated water balance is likely within the range of the true water balance for the watershed.

The recharge (i.e. infiltration) from precipitation used in the numerical groundwater model (discussed in Section 5.2 and presented in detail in Appendix F) also agrees well with the water balance presented above. In the numerical model, infiltration values are assigned based on the mapped surficial geology. Areas mapped as glacial till are assigned an annual recharge rate of 5.25 inches and areas mapped as glaciomarine deposits (i.e. Presumpscot Formation) are assigned an annual recharge rate of 1.2 inches. This approach takes a more conservative approach to estimating recharge to the aquifer from precipitation in the numerical model than above, however, it ultimately is similar to estimates of recharge for the watershed derived from the water balance and StreamStats.

3.6 Surface Water Withdrawal

As discussed in Section 2.0, the BWD has historically operated a surface water intake at the Lower Dam on the Little River as a public water supply. Following the development of a groundwater supply in the Goose River Aquifer, BWD moved away from using the surface water intake, and eventually discontinued its use entirely. In order to supplement groundwater withdrawal from the bedrock aquifer at the Site, NAF also proposes including a surface water intake at the Lower Reservoir in their development plans.

Based on the water balance conducted above in Section 3.5, a total annual flux of approximately 7.08 to 8.19 bgpy of water moves through the Lower Reservoir. Due to the unique position of the Lower Reservoir at the downstream terminus of the Little River (the Lower Dam discharges directly into a tidal inlet of Belfast Bay), minimum instream flows are not considered applicable to the Little River below the Lower Dam. The rules set forth in MEDEP Chapter 587 provide for a maximum allowable withdrawal from a surface water body such as the Lower Reservoir, even in the absence of inflow, of up to 1.0 acre-feet of water per acre of the waterbody at normal high water between April 1 and July 31, and up to 2.0 acre-feet of water per acre of the waterbody at normal high water from August 1 to March 31 during any given year. The Chapter 587 rules also allow for any surplus water demonstrated to have been delivered to the Lower Reservoir beyond the maximum acre-foot withdrawals to be included in the overall withdrawal.

Given the acreage of the Lower Reservoir (37 acres, Wright-Pierce, 2018), the allowable withdrawal is approximately 69 gpm on a constant basis during both periods defined by the MEDEP, plus additional inflows as they occur during any given period. The Little River is a moderately-sized drainage and, based on the StreamStats regression, maintains significant flow through to channel year-round. We propose using the 5% duration flow, estimated at 0.55 cfs, or approximately 250 gpm, as a conservative estimate of baseflow of the Little River. Because MEDEP's Chapter 587 rules allow for surplus water to be included in the overall withdrawal and the Little River can reasonably be expected to discharge some amount water to the Lower Reservoir year-round, the proposed surface water withdrawal would effectively be in excess of 69 gpm under normal conditions. Given this, we propose a permitted minimum withdrawal rate of 70 gpm for the proposed surface water intake at the NAF facility, with additional allowable withdrawal that is equivalent to the discharge of the Little River into the Lower Reservoir as provided in Chapter 587 6-A(3). In order to account for inflows into the Lower Reservoir in the planning process, an estimated surface water withdrawal rate of 250 gpm is used, which is equivalent to the conservative estimate of baseflow of the Little River discussed above.

3.7 Belfast Water District Supply

BWD currently relies on two water supply production wells located in the Goose River Esker Aquifer (a.k.a Goose River Aquifer) in Belfast and Swanville. Currently, BWD relies on the Jackson Pit Well and the Smart Road Well to provide water for their ratepayers. A third well, the Talbot Well, was installed in

2005, however, this well has not been connected to the BWD system. BWD had a capacity evaluation performed by A.E. Hodsdon Engineers of Waterville, Maine (AEH) in February 2018 (AEH, 2018) to assess the viability of providing NAF with up to 500 gpm of water from the Goose River Aquifer. AEH performed their assessment by reviewing the previous investigations conducted on behalf of the BWD to assess the water supply, including drilling logs, performance tests, aquifer tests, numerical groundwater modeling, and usage data. AEH used safe yield estimates for the Smart Road Well, derived from a previously conducted modeling effort, and the Jackson Pit Well, based on historic continuous pumping rates when the BWD delivered water to poultry processors, to assess the total capacity of the BWD system as currently operated.

AEH found that, including current usage, BWD's contractual obligation to the Northport Village Corporation, and the proposed obligation to NAF, that BWD had an operating capacity reserve of 221.5 mgpy, which is equal to twice the BWD current average daily demand. AEH also found that should the Smart Road Well need to be taken out-of-service temporarily, the Jackson Pit Well could not support the entire daily demand (the Smart Road Well was found to be able to meet the entire daily demand if the Jackson Pit Well were to be taken out-of-service). Therefore, AEH recommended that BWD connect the Talbot Well to their system prior to the start of service to NAF. With the Talbot Well on-line, enough backup capacity would be in place to meet daily demands should any one of the three wells be taken temporarily out-of-service.

Based on the results of the capacity evaluation performed by AEH and the Maine Public Utilities Commission approval of the water withdrawal agreement, Ransom agrees that the BWD should bring the Talbot well on-line prior to completion of the proposed development.

4.0 EXPLORATION AND TESTING PROGRAM

Exploration and testing of the aquifer underlying the Site was conducted over the course of eleven months from February 2018 through January 2019 and included geophysical surveys, a test well drilling program, four aquifer tests, and various water quality analyses.

4.1 Resistivity Survey

Ransom contracted with Northeast Geophysical Services of Bangor, Maine (NGS) to conduct electrical resistivity surveys of the BWD property, specifically on the northern side of the Lower Reservoir and the northern side of the Upper Reservoir. The purpose of these resistivity surveys were to identify areas of the subsurface with lower resistivity values, which are often representative of fluid filled fractures in bedrock, to better target the test well drilling program.

Resistivity surveys were conducted in two separate events, the first from February 6 to 16, 2018, and the second from September 27 to October 1, 2018. The second survey was conducted to evaluate the MB property after a purchase and sale agreement was reached to include the parcel in the proposed development.

Nine survey lines were completed, totaling 16,780 feet, with seven lines located adjacent to the Lower Reservoir (lines 1-5 and 8-9) and two lines located adjacent to the Upper Reservoir (lines 6-7). Survey line placement and orientations were based on a lineament assessment of the regional geology, Site layout, and access.

Resistivity survey results were interpreted and modeled to create two-dimensional interpretive profiles depicting resistivity for the material located beneath the survey line. The depth the resistivity survey can image to is dependent on the spacing between the electrodes through which a current is induced. NGS was able to model resistivity to depths of approximately 250 to 500 feet bgs in the middle of the lines at the BWD property. However, by the nature of this type of modeling, the ends of the survey lines are not able to image as deeply as the middle of lines, resulting in “tapered” interpretive profiles for each line.

The interpretive resistivity profiles were then evaluated for the presence of low-resistivity anomalies that may be associated with water-bearing, fractured bedrock. Once the most promising anomalies were identified, the test well drilling program was designed to target these areas.

The survey methods, results, line locations, and two-dimensional models are included in Appendix B.

4.2 Test Well Drilling Program

Test well drilling was conducted in several mobilizations by various contractors and using a variety of drilling methods. The initial test well drilling program was conducted between February 19 and March 29, 2018 and included the advancement of nice bedrock test wells, six of which were advanced on BWD’s Lower Reservoir property and the remaining three borings were advanced on BWD’s off-site, Upper Reservoir property. Ransom contracted with Northern Test Boring, Inc. (NTB) of Gorham, Maine; Goodwin Well and Water, Inc. (Goodwin) of Turner, Maine; and Drilex Environmental (Drilex) of Auburn, Massachusetts to drill test wells using air rotary and mud rotary drilling techniques. Additional test wells located on the Site were drilled by Drilex on November 5 and 6, 2018 and by Pine State Drilling of Athens, Maine (Pine State) on November 11, 2018.

Drilling locations were pre-selected based on the results of the electrical resistivity survey, and the drilling method was determined based on accessibility of the drilling location and the equipment available. The specifications, drilling method, and estimated yield upon completion of each test well are summarized in Table 3. The locations of each test well are shown on Figure 2.

Boring logs completed for each test well are included as Appendix C.

4.2.1 Northern Test Boring Test Wells

NTB completed a total of four test wells, identified as NTB-101 through NTB-104, two of which are located at the Lower Reservoir property and two at the off-site Upper Reservoir property. Each of NTB's wells were 4 inches in diameter and were advanced with a track-mounted Dietrich D-50 drill rig using drive and wash methods to the top of bedrock, and a variation of mud rotary (instead of engineered mud, clean water was utilized) to advance through bedrock. At each test well location, steel casing was advanced through the unconsolidated material and set a minimum of 1-foot into the top of competent bedrock.

Cuttings from drilling were consistent with MGS' descriptions of the metapelite and metasandstone that comprise the Penobscot Formation, which is mapped by MGS as the underlying bedrock throughout the Site. Water bearing fractures in bedrock were noted during drilling from the loss of water being recirculated through the borehole. The total depth of drilling at each location was governed by the correlation between observed conditions and resistivity profiles, rate of water loss, and time constraints. To minimize time lost due to shuttling recirculation water from the reservoir to the drilling location in higher yield test wells, explorations were often halted after a significant fracture zone was encountered (e.g. NTB-102 was completed at 217 feet due to excessive loss of drilling fluid).

After drilling NTB-101, NTB-102, and NTB-103, a 3-inch submersible pump was set in each well at a depth of 100 feet and pumped for at least 7.5 hours at a constant rate of between 5 and 10 gpm. The depth to water in the test well was periodically monitored with a manual water level meter over the course of the test pumping to obtain a preliminary estimate of well yield. The short-term low pumping rate did not allow the wells to be heavily stressed or for drawdown to fully stabilize. Therefore, interpretations of preliminary yield are based on extrapolation of the drawdown curves and the available head above the pump.

NTB-104 was advanced in a location with deep overburden, and bedrock was exceptionally weathered for the upper 40 to 50 feet. Below the most heavily weathered bedrock, minimal water loss was observed during drilling and the casing seal was repeatedly undermined during drilling. On completion, the steel well casing was removed and the well abandoned.

4.2.2 Goodwin Well and Water Test Wells

Drilling work conducted by Goodwin was restricted to areas accessible by large truck-mounted equipment. Goodwin completed a total of three test wells, identified as GWW-101 through GWW-103, two of which are located at the Lower Reservoir property and one at the off-site Upper Reservoir property. Each of Goodwin's test wells were 6 inches in diameter and were advanced using a truck-mounted air rotary drill rig. Mud rotary methods were used in unconsolidated materials and into the top of bedrock, and casing was driven at least 8-feet into the top of bedrock. Air rotary methods were used to advance into bedrock.

As with NTB's test wells, bedrock cuttings observed from Goodwin's test wells were consistent with MGS' descriptions of the metapelite and metasandstone of the Penobscot Formation. Water bearing fractures in bedrock were noted during drilling from increases in water discharged from the borehole via air circulation. The total depth of test well GWW-102, located at the Upper Reservoir property, was determined based on the modest yield for the depth of the well and the resistivity profile of Line 7. The total depth of test wells GWW-101 and GWW-103 were limited based on the depth at which the air compressor used to evacuate cuttings from the borehole was no longer able to consistently evacuate water and cuttings from the borehole due to the high water yields (200 to 250 gpm) in these test wells. Attempts were made to continue advancing the boreholes beyond the depth where the air hammer was flooded using a roller bit and air to evacuate cuttings. However, this approach was not particularly effective as the compressor airflow was not sufficient to clear cuttings effectively under high water yield conditions.

After drilling, the test wells well yield was estimated with air lift methods for approximately of 1-hour. A final yield estimate was obtained by the driller estimating the water discharge from the borehole at the end of the air lift test.

4.2.3 Drilex Environmental Test Wells

Drilex completed a total of three test wells, identified as DRX-101, DRX-102, and DRX-103 all located at the Lower Reservoir property. The test wells installed by Drilex were 4 inches in diameter and were advanced with a CME-55 track-mounted rig using air rotary methods. Drive and wash and air rotary methods were used to advance casing through overburden material and seat casing at least 5 feet into bedrock, and air rotary was used to advance the borehole into bedrock.

As with prior test wells, bedrock cuttings observed from Drilex's test wells were consistent with MGS' descriptions of the metapelite and metasandstone of the Penobscot Formation. Water bearing fractures in bedrock were noted during drilling from increases in water discharged from the borehole via air circulation. The total depths of test wells DRX-101 and DRX-102 were determined based on the depth at which the air compressors used to lift cuttings from the borehole were no longer able to consistently evacuate water from the borehole due to yield encountered in the fractures (approximately 60 gpm), preventing drilling from continuing deeper at these test wells. The total depth of DRX-103 was pre-determined and intended to provide a monitoring point to the west of wells PSD-101 and PSD-102, as noted in Section 4.2.4. An attempt was made to continue advancing test well DRX-101 beyond the depth where the air hammer was flooded using a roller bit and water to evacuate cuttings. However, this approach was ineffective as the circulation pump on the rig could not circulate water at a high enough rate to keep up with losses to the formation.

After drilling, the test wells well yield was estimated with air lift methods for approximately of 40 minutes. A final yield estimate was obtained by the driller estimating the water discharge from the borehole at the end of the air lift test.

4.2.4 Pine State Drilling Test Wells

Pine State completed two test wells, identified as PSD-101 and PSD-102 on the MB property adjacent to the Lower Reservoir. Both test wells were completed as 6-inch diameter wells with 40 feet of steel casing using a truck-mounted VersaDrill V2000 and air-rotary. Steel casing was advanced through overburden using a casing hammer and under-reamer to a minimum of 10 feet below the top of bedrock and the final depth of each test well was 400 feet bgs.

As with prior test wells, bedrock cuttings observed from Pine State's test wells were consistent with MGS' descriptions of the metapelite and metasandstone of the Penobscot Formation. Water bearing fractures in bedrock were noted during drilling from increases in water discharged from the borehole via air circulation.

After drilling, the test wells well yield was estimated with air lift methods for approximately of 40 minutes. A final yield estimate was obtained by the driller estimating the water discharge from the borehole at the end of the air lift test.

4.2.5 Results from the Test Well Program

Results from the initial test well drilling program included three test wells with estimated yields of 10 gpm or less (NTB-101, NTB-103, and NTB-104), one test well with an estimated yield of approximately 60 gpm (GWW-102), three test wells with estimated yields greater than 60 gpm (NTB-102, DRX-101, and DRX-102), and two test wells with estimated yields of 200 gpm or greater (GWW-101 and GWW-103). Subsequent test well drilling efforts had similar results, with PSD-101 having an estimated yield of 30 gpm or less and PSD-102 having an estimated yield of approximately 140 gpm. DRX-103 was drilled with the intent of increasing the monitoring well network, not as a potential water supply production well location, however, estimated yield ranged from approximately 35 to 40 gpm. The estimated yield from each test well is presented in Table 3.

As discussed in Sections 4.2.1 through 4.2.4, the drilling methods employed by each drilling contractor had certain associated benefits and limitations which are important when interpreting the results of the test drilling and initial water yield evaluation. Most notably, all drilling methods employed were depth limited based on the quantity of water produced by the test wells. For NTB that limitation took the form of time constraints in transporting large quantities of water from the reservoir to the drilling location, and for Goodwin, Drilex, and Pine State the maximum achievable depth occurred when the formation yield was high enough to flood the air hammer (~200 gpm for Goodwin and Pine State and ~60 gpm for Drilex).

The test wells installed on the off-site, Upper Reservoir property did not yield as much water as those on the Lower Reservoir property, which, when considered in combination with the increased distance from the Upper Reservoir property to the proposed facility area, led NAF and Ransom to discontinue active exploration and testing work at the off-site, Upper Reservoir property.

Based on the preliminary yield assessments, test wells NTB-102, DRX-101, DRX-102, GWW-101, GWW-103, and PSD-102 were all considered to be potential candidate sites for further testing and potential water supply production well locations. Based on this initial assessment, a series of aquifer tests were conducted to better understand the hydrogeologic conditions at the Site.

4.3 Multi-level Wetland Piezometer Installation

In order to assess potential connections between shallow overburden groundwater and the bedrock aquifer during the aquifer tests, six piezometers were installed in areas mapped as wetlands. The piezometers were installed using direct-push drilling on October 1 and 2, 2018. Four piezometers were installed as multi-level pairs (PZ-1S, PZ-1D, PZ-4S, PZ-4D), with one deep piezometer screened above the overburden-bedrock interface and one shallow piezometer screened near the top of the water table per pair. PZ-2 and PZ-3 were installed at the bedrock interface, however, at the time of installation the piezometric surface of the water table was deeper than the overburden-bedrock interface. The locations of the wetland piezometers are shown on Figures 2 and 4.

Boring logs for the wetland piezometers are present in Appendix C.

4.4 Proposed Production Well Installation

After an initial aquifer test (discussed in detail in Section 4.6), an 8-inch diameter proposed water supply production well, PW-1, was drilled adjacent to GWW-101. This well was installed to evaluate the potential to increase well yield by increasing the well depth and to allow for future pumping tests to be conducted with pumping rates similar to final production rates. In addition, the well was constructed to allow it to be easily converted to a final water supply production well after permitting.

The PW-1 well was installed by Goodwin from July 23 to 26, 2018 using air rotary methods, and an auxiliary compressor was used to enable drilling to the full depth of 615 feet bgs. The final driller’s air-lift yield estimates for PW-1 was 330 gpm, with the majority of water assumed to be entering the well through a fracture(s) located at approximately 130 feet bgs. The depth of the highest yield fracture was identified during drilling by the sudden increase in well yield and the direct connection to GWW-101, which is located approximately 15 feet away from PW-1. When the bit reached a depth of approximately 130 feet bgs, water was diverted from being blown out of the PW-1 borehole to blowing out of GWW-101 until the bit moved down to approximately 138 feet bgs. Some additional fractures were encountered between 130 to 615 feet bgs, however, the relative water yield of those fractures was significantly less. Throughout the drilling process large pieces of fractured bedrock (approximately fist-sized) were ejected from the borehole, presumably from the fracture identified at 130 feet. Lithology of the rocks was consistent with the mapped lithology and observed lithology in other wells drilled on Site. However, the formation rock was heavily fractured and very thick secondary mineralization rinds (up to 4 mm) were observed surrounding the formation rock. The secondary mineralization consisted of primarily of pyrite, however interior (interpreted as void space) portions of the mineral rind appeared to be covered in a dark graphitic mineral coating.

4.5 Monitoring Network

A comprehensive network of monitoring locations was developed to assess the hydraulic properties of the aquifer and neighboring surface water bodies. Monitoring points included test wells drilled during the exploration program on the Upper and Lower Reservoir properties, residential water supply wells near the proposed development site, staff gages installed in surface water bodies, and stream flow gaging in the Little River. The monitoring network was adapted following each aquifer test. Supplemental drilling work and additional access agreements for private water supply wells increased the total number of groundwater (both overburden and bedrock) monitoring points available for water monitoring over time, and additional surface water monitoring locations were incorporated as aquifer tests expanded in scope and scale.

Water monitoring was conducted using a combination of manual measurements using electronic water level meters and pressure transducers to measure and record groundwater elevation, groundwater temperature, and in specific locations (i.e. near Belfast Bay), groundwater conductivity. Transducers were deployed in the majority of groundwater monitoring points and in surface water locations when ice conditions were favorable. Pressure records from transducers were corrected for variations in barometric pressure with the use of a barometric pressure logger.[4] Streamflow gaging was conducted using velocity meters and wading staff at several locations along the free-flowing reach of the Little River between the Upper and Lower Reservoirs. A map of monitoring points included in this investigation is presented in Figure 2.

Monitoring frequency was dictated by the data collection needs of each aquifer test; however, a subset of transducers was left in monitoring wells at the Site for extended periods of time to record natural fluctuations in groundwater under non-pumping conditions. Streamflow gaging was conducted prior to and during the November 2018 aquifer test. The monitoring network, type of monitoring, and monitoring frequency for each monitoring point during each aquifer test and the intervening time is presented in Table 4.

The pressure transducer, manual water level, and streamflow measurements are provided in Appendix D.

4.6 Aquifer Testing

A series of four aquifer tests were conducted between April 2018 and January 2019. Each test is referred to by the month it was conducted in, and the basic parameters of each test are detailed below.

Table 5: Basic Aquifer Test Parameters

Test Name	**General Design**	**Duration (hours)**	**Total Number of Pumping Wells**	**Pumping Well IDs: Pump Rate**	**Combined Nominal Pumping Rate**
April 2018	Constant Rate, Simultaneously Pumped	72	2	GWW-101: 100 gpm GWW-103: 100 gpm	200 gpm
August 2018	Constant Rate, Single Well	72	1	PW-1: 250 gpm	250 gpm
November 2018	Constant Rate, Simultaneously Pumped	72	6	PW-1: 250 gpm DRX-101: 30 gpm DRX-102: 30 gpm GWW-103: 175 gpm PSD-101: 15 gpm PSD-102: 100 gpm	600 gpm

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[4] The sitewide barometric pressure logger and a conductivity, temperature, and pressure (CTD) transducer were both lost down well GWW-103 during installation of the pump prior to the November 2018 pumping test. As such, the period from 10/27/2018 15:19:06 DST to 11/18/2018 8:00:00 DST does not have barometrically corrected elevation data.

Test Name	General Design	Duration (hours)	Total Number of Pumping Wells	Pumping Well IDs: Pump Rate	Combined Nominal Pumping Rate
January 2019	Semi-Constant Rate, Staggered Start Times	93	4	GWW-103: 175 gpm DRX-102: 30 gpm PW-1: 145 to 250 gpm PSD-102: 100 gpm	555 gpm[5]

The tests were conducted as a part of the phased approach to the investigation. After each test was conducted, the results were assessed, and subsequent exploration and aquifer tests were designed to help better understand the aquifer system. The goal of the aquifer testing program was to generate sufficient data about the aquifer to calibrate and validate a numerical groundwater model for the Site and surrounding aquifer(s) that could be used to refine total sustainable groundwater yield estimates from the Site and minimize offsite effects of groundwater withdrawal.

4.6.1 April 2018 Test

The April 2018 test was conducted after primary exploratory work was completed as an initial assessment of aquifer performance under pumping conditions. Test wells GWW-101 and GWW-103 were both outfitted with pumps capable of producing approximately 100 gpm each, and a variable rate step test was performed prior to setting the rate for the long-term test. A long-term rate of 100 gpm (the maximum possible with the available pumps) was set for each well based on the results of the step test. Water pumped from GWW-101 was discharged directly to the Lower Reservoir upstream of the Lower Dam, and water pumped from GWW-103 was discharged via a filter bag to diffuse flow to the intermittent stream adjacent the well, upstream of the culvert beneath US Route 1/Northport Avenue. The details of pump setup, start and stop times, total duration, and drawdown in pumping wells during the test are provided in Table 6.

Results of the April 2018 test were used to plan additional aquifer tests and to calibrate the initial numerical groundwater model created for the Site.

4.6.2 August 2018 Test

The August 2018 test was conducted after drilling PW-1. Prior to the installation of PW-1, test wells were either 4-inch diameter (NTB-101, NTB-102, DRX-101, DRX-102) or 6-inch diameter (GWW-101, GWW-102). The 4-inch diameter test wells were limited to pumps smaller than 4 inches with maximum pumping rates of about 30 gpm, and the 6-inch diameter test wells were limited to pumps smaller than 6 inches with maximum pumping rates of less than 200 gpm. PW-1 was constructed as an 8-inch diameter well specifically to allow for aquifer tests at rates greater than 200 gpm to be conducted, with the intention of constructing the well as water supply production well should the testing and analysis indicate the location was suitable and after permitting was complete.

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[5] The pumping rate of 555 gpm is the maximum pumping rate for the test. The pumping rate in PW-1 was increased from 145 to 250 gpm after 24 hours, and additional wells were brought online during the test.

Because pump rates were limited by the size of the pumps that could be installed in the 6-inch diameter wells tested during the April 2018 test, the August 2018 test was also designed to pump from PW-1 at the estimated maximum rate possible. To achieve these goals, a large capacity pump was installed in PW-1 on August 23, 2018, and a step test was conducted on August 24, 2018. Steps of 150 gpm, 250 gpm, and 300 gpm were used and drawdown was observed approximately 1.5 to 2.75 hours per step. Based on the results of the step test, a long-term pumping rate of 250 gpm was set for the constant rate test, which began on August 27, 2018.

In addition to the existing monitoring well network included in the April 2018 test, private water supply well owners adjacent to the Site were contacted and asked to participate in voluntary monitoring of their water supply well to assess potential influence of pumping from the proposed Site development on existing water users in the area. As a result of this effort, the WSW-6 residence and Little River Veterinary Hospital (WSW-4) were included in the monitoring network. A well owner on Herrick Road was also contacted, however, when efforts were made to install a transducer in their well, the water well contractor advised against installing the monitoring equipment due to the fragile nature of the well pump system.

After consultation with MEDEP, water from the test was discharged directly to the intermittent stream adjacent to PW-1. Discharge water was diffused into the stream bed using several tarps to prevent localized scouring where water was released to the channel. The details of pump setup, start and stop times, total duration, and drawdown in pumping wells during the test are provided in Table 6.

Results of the August 2018 test were used to plan additional aquifer tests and to calibrate the numerical groundwater model created for the Site.

4.6.3 November 2018 Test

The goal of the November 2018 test was to maximize the total combined pumping rate for the Site by pumping six wells at the highest rate possible given well yield limitations, or pump capacity limitations for the diameter of the wells installed at the Site. After successful demonstration of the ability of the aquifer to sustain a pumping rate of 250 gpm from PW-1 for 72 hours during the August 2018 test, the November 2018 test was designed with an expanded monitoring well network, including installation of one additional monitoring well on-Site (DRX-103), two additional prospective 6-inch diameter production wells on-Site (PSD-101 and PSD-102), and expanded monitoring of private water supply wells to include properties located off Herrick Road (WSW-3, WSW-5, and WSW-1).

Prior to beginning the test, a series of basic short-term tests were conducted on wells that previously had not been included as pumping wells (DRX-101, DRX-102, PSD-101, and PSD-102). These short-term tests were completed to evaluate whether these wells could sustain the planned pumping rate for the duration of the long-term aquifer test. For DRX-101, DRX-102, and PSD-102, this evaluation consisted of running the pumps at their maximum rate (30 gpm for both DRX wells and 100 gpm for PSD-102) for several hours and monitoring drawdown, while PSD-102 was tested at several lower steps for a similar period. Based on this evaluation, test wells DRX-101, DRX-102, and PSD-102, exhibited short-term yields that were capable of supporting the maximum rates possible with the pumps installed. However, test well PSD-101 was limited by the production capacity of the well, and not the pump. Therefore, a preliminary pumping rate of 30 gpm was set for PSD-101, but due to excessive drawdown and troublesome valving, this rate was reduced several hours into the test to 15 gpm.[6] Pumping rates set for the remaining two pumping wells included in the test were based on previous aquifer tests and/or step tests. Water generated during the aquifer test was discharged to nearby intermittent streams or drainage gullies adjacent to the pumping wells. Water pumped from DRX-102, GWW-103 and PW-1 was discharged to the intermittent stream along the eastern boundary of the Site, which drains to Belfast Bay, and water pumped from DRX-101, PSD-101, and PSD-102 was discharged to drainage gullies that flow into the Lower Reservoir. All discharge points were constructed to prevent erosion and scour of the stream or gully bed or bank using tarps or other diffusion methods.

A total combined nominal pumping rate of 600 gpm was achieved through a total of six pumping wells (details are presented in Table 6). All wells were started simultaneously and run for the entire duration of the test (72 hours), with the exception of DRX-102, which was started several hours after the other wells due to an issue with the ground-fault circuit interrupter (GFCI) in the generator powering the pump.

The results of the November 2018 test were used to plan additional aquifer tests and calibrate the numerical groundwater model created for the Site.

4.6.4 January 2019 Test

During the November 2018 aquifer test, a similar drawdown response to what was observed in the Site pumping wells was observed in three nearby private water supply wells located off Herrick Road to the west of the Little River (additional details of this response are included in Section 5). Due to the anisotropic response to pumping stress observed during the three prior aquifer tests, an evaluation of the potential connectivity between bedrock fracture "groups" was recommended. The evaluation would assess if water-bearing fractures in these private wells also intercepted similar fracture groups as the Site test wells, and if the water drawdown response observed in the nearby, private water supply wells was the result of pumping from specific wells at the Site or whether the response was independent of which wells were being pumped.

In order to refine our understanding of the connectivity between fracture groups and assess if the private well response was dependent on pumping stress from specific wells or the Site as a whole, additional aquifer testing was recommended. After a review of the November 2018 aquifer test data and preliminary numerical modeling of the aquifer system another aquifer test was designed with staggered starts from four pumping wells at the Site. The test began by pumping from DRX-102 and GWW-103 (both wells that appeared to be semi-isolated from pumping stresses from other Site wells) at the maximum rates the pumps could produce (30 and 175 gpm, respectively). After approximately 24 hours of pumping, PW-1 began pumping at a moderate rate of 145 gpm and was increased to 250 gpm after 24 hours. Approximately 72 hours into the test, PSD-102 began pumping at 100 gpm and was operated for approximately 24 hours. During the test, the WSW-3 private well (the most responsive to pumping from the November 2018 test)

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[6] As noted in Table 6, the discharge from PSD-101 was set to 15 gpm, however, upon shutdown the flow meter appeared to be stuck at 15 gpm, indicating that the actual pumping rate from PSD-101 may have differed (likely less) from 15 gpm during the test. This is not considered to be a significant issue in the aquifer test data, as the pumping rate is relatively low compared the overall pumping rate, and PSD-101 is not a favorable location for developing a final production well.

was monitored daily for evidence of response to inform the timing of each pump start time. All four pumps were turned off at the same time[7] approximately 93 hours after the first pump was turned on. Water pumped from DRX-102, GWW-103 and PW-1 was discharged to the intermittent stream along the eastern boundary of the Site and water pumped from PSD-102 was discharged to a drainage gully that extends to the Lower Reservoir. All discharge points were constructed to prevent erosion and scour of the stream or gully bed or bank using tarps or other diffusion methods.

Due to cold weather conditions during the test, pump start and stop times varied slightly from the planned times due to ice blockages in discharge lines and other cold-related issues. These minor deviations from the plan were not considered to significantly affect the quality of data collected during the aquifer test. Details of actual pump start and stop times, as well as comments regarding any irregularities during the test, are presented in Table 6.

Results of the January 2019 aquifer test were used to validate the numerical groundwater model created for the Site.

4.7 Water Quality Testing

Groundwater samples were collected from various bedrock test wells during drilling activities, at the conclusion of drilling, during aquifer tests, and at the end of the April 2018, the August 2018, and the November 2018 tests. Sampled wells included DRX-101, DRX-102, GWW-101, GWW-103, NTB-101, NTB-102, PSD-101, PSD-102, and PW-1. Groundwater samples were collected for field analysis of basic water chemistry, and samples collected from DRX-102, GWW-101, GWW-103, PSD-101, PSD-102, and PW-1 at the end of aquifer tests were submitted for laboratory analysis of water quality parameters that are beneficial to future aquaculture use and to evaluate potential impacts from possible off-Site contaminant sources.

The samples submitted for laboratory analysis were collected directly into laboratory-prepared glassware, preserved in the field in accordance with applicable protocols, and delivered on ice under chain-of-custody protocol for laboratory analysis. Dissolved metal/element samples were field-filtered using a 0.45 micrometer disposable filter. The groundwater samples were submitted to Alpha Analytical, Inc. (Alpha) of Westborough, Massachusetts and analyzed for one or more of the following parameters:

1. Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (U.S. EPA) Method 8260C;

2. Semi-Volatile Organic Compounds (SVOCs) by U.S. EPA Method 8270;

3. Pesticides by U.S. EPA Method 3510C;

4. Dissolved and Total Elements by U.S. EPA Methods 6010C, 6020A, 7471A, and Standard Method 4500P-E;

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[7] PSD-102 appeared to have a mechanical or electrical issue, resulting in an early shutdown approximately 5 hours prior to the planned shutdown. This is not considered to be a significant issue to aquifer test analysis.

5. Hardness, Alkalinity, Ultraviolet (UV) Absorbance and Total Suspended Solids (TSS) by U.S. EPA Method 6010C and Standard Methods 2320B, 5910B and 2540D, respectively; and

6. Dissolved Carbon Dioxide, Total Carbon Dioxide, True Color, Apparent Color and Turbidity by U.S. EPA RSKSOP-175 Guidance and Standard Methods 4500CO2-D, 2120B, 2120B and 2130B, respectively.

Field measurements of groundwater parameters, including temperature, pH, oxidation-reduction potential (ORP), total dissolved solids (TDS), conductivity, and dissolved oxygen (DO) were collected at various times during drilling and aquifer testing. The results of analytical testing and field parameters are presented in Section 6.

4.8 Survey of Reference Data Points

Good Deeds, Inc. (Good Deeds), of Belfast, Maine conducted elevation surveys at the Site to reference all test wells and monitoring points to the Maine Coordinate System of 1983 East Zone horizontal datum and the NAVD88 vertical datum. Due to complicating factors involving ice moving in the Lower Reservoir, staff gage SG-1 was not surveyed.

5.0 AQUIFER CHARACTERIZATION AND TESTING

5.1 Hydrogeologic Conditions and Groundwater Flow

Evaluation of the fractured bedrock aquifer as it pertains to NAF's proposed development, utilized information provided by the electrical resistivity survey, geologic data from test wells, and groundwater elevation data collected under test well pumping and ambient (non-pumping) conditions. In order to accurately evaluate the hydrogeologic setting of the proposed development Site, the scope of the study area and associated numerical model included the Site and surrounding areas including the Upper Reservoir and private water supply wells adjacent to the Site.

5.1.1 Ambient Groundwater Flow Conditions

Ambient groundwater flow at the Site and the surrounding area was assessed by interpolating the groundwater surface from bedrock, deep piezometer, and surface water monitoring points, presented in Figure 7. Groundwater flow through the bedrock aquifer is anisotropic, and generally occurs through discrete bedrock fractures and fracture sets. Due to this phenomenon, groundwater flow does not always occur perpendicular to iso-contour lines that describe the potentiometric surface, however, the contours presented in Figure 6 provide some insight into ambient groundwater dynamics at the Site.

There is generally a strong gradient moving from northwest to southeast across the study area, with the groundwater flow adjacent to each reservoir generally appearing to discharge into the reservoirs, although both the Upper and Lower Reservoirs appear to lose water to the bedrock aquifer near their dams. Adjacent to Belfast Bay, groundwater flow is toward the Bay, with a strong tidal signal observed in GWW-103, which is the closes test well to the Bay.

5.1.2 Characterization of the Bedrock Aquifer

Aquifer test data indicates that there is significant anisotropy in the bedrock aquifer(s) at the Site and surrounding area, and the bedrock aquifer is best characterized as a series of productive fracture systems or groups that are separated by leaky intervals of more competent rock. Drilling observations and rapid propagation of pumping stress indicate that groundwater flow is fracture-dominated, and storage is either minimal or heterogeneous across the investigation area. For example, during the January 2019 aquifer test, water level drawdown in private well WSW-3 responded almost immediately to pumping stress from test well PSD-102, which is located approximately 2,000 feet east of the WSW-3 well on the opposite side of the Little River (see Appendix E for figures depicting groundwater elevation over time during pumping tests). Similarly, test well DRX-101 responded nearly instantaneously to pumping stress from GWW-101/PW-1, which are approximately 1,160 feet east. This can be contrasted to the extremely muted response of DRX-102 to pumping stress from PW-1, which is located approximately 430 feet southeast of DRX-102, during the August 2018 test. While a muted response to pumping from PW-1 was observed in DRX-102 during the August 2018 test, no discernable response to pumping stress was observed in PSD-102 (which is located in a highly productive fracture set) during the first 72 hours of the January 2019 test, although test wells DRX-102 (~900 feet southeast), PW-1 (~1,250 feet southeast), and GWW-103 (~1,800 feet southeast) were pumping at 30, 145 to 250, and 175 gpm, respectively.

In the case of PW-1 and GWW-103, each well clearly responds to pumping stress from the other well. However, PW-1 is more strongly connected to NTB-101 and DRX-101 than GWW-103.

Pumping stress, and by inference the bedrock fracture systems, are predominantly oriented east-west, however, observations collected at DRX-102 and PSD-102 during pumping from wells located to the southeast indicates that there is likely some degree of leakage that occurs between productive fracture groups. Modeling results suggest the horizontal anisotropy coefficient of the bedrock is on the order of 0.01, meaning that the hydraulic conductivity in the north-south direction is estimated to be approximately one hundred times lower than in the east-west direction (see Section 5.2 and Appendix F for additional information regarding the numerical groundwater flow model). Additionally, the relatively close spacing in the north-south direction and similar final completion depths between highly productive wells (e.g. GWW-103, PW-1, DRX-102, PSD-102) that are mostly isolated from each other indicates that the fracture systems are likely steeply dipping to vertical.

5.1.3 Bedrock-Overburden Groundwater Interactions

Obvious responses to pumping stress were also evident in the multi-level wetland piezometers installed on Site. The response observed in piezometers appeared to be the result of pumping from local wells. For example, PZ-1D does not appear to respond to pumping from PW-1, but it does respond to pumping from PSD-102, and PZ-3 appears to respond to pumping from both DRX-102 and PW-1 during the January 2019 test. Notably, hydraulic response to pumping was obvious in the "deep" piezometers (PZ-1D, PZ-2, and PZ-3), which are screened in glacial till at the top of bedrock, while the shallow piezometers (PZ-1S and PZ-4S), which are screened in the clayey silt of the Presumpscot Formation, do not appear to respond to pumping. The piezometers did not respond as quickly to pumping from the bedrock aquifer as bedrock monitoring points. In PZ-2, the groundwater elevation decreased to below the depth of the piezometer during the middle of the January 2019 test. PZ-4D was not observed with measurable water in it during the period of record (October through January). The differential response of the shallow and deep piezometers is likely caused by the difference in hydraulic conductivities between the clayey silt of the Presumpscot formation and relatively more permeable glacial till.

5.1.4 Bedrock Aquifer-Surface Water Interactions

As discussed in Section 3.5, there are four significant surface water bodies in the vicinity of the Site, which include Belfast Bay, the Lower Reservoir impoundment, the Upper Reservoir impoundment, and the free-flowing reach of the Little River that begins downstream of the Upper Dam and flows into the Lower River. Due to the current operational mode of the Upper Dam, the hydrographs for the free-flowing Little River reach and the Lower Reservoir record the signature of the discharge from the Upper Dam, rather than directly recording the watershed response to precipitation events.

Figures 7A and 7B compare the surface water elevations in the Upper Reservoir (Figure 7A) as well as the Lower Reservoir, which includes the Little River (SG-4; Figure 7B) to precipitation and groundwater elevations of wells adjacent to each of these surface water bodies. From this comparison, it appears that the groundwater elevations measured adjacent to the Upper Reservoir in GWW-102 lags behind the surface water elevation in the Upper Reservoir and responds directly to fluctuations in surface water elevation. Based on the relative elevations of the groundwater in GWW-102 and the Upper Reservoir, it appears that the reservoir is losing water to the bedrock aquifer in the vicinity of GWW-102 for at least portions of the year. In contrast, the groundwater elevation in wells NTB-102 and GWW-101 respond to precipitation, however, it is asynchronous from surface water elevations in the Little River or Lower Reservoir. This phenomenon is best illustrated during the precipitation event that occurred from November 26 to 28, which coincided with the recovery period of the November 2018 aquifer test. The hydrographs show an abrupt but delayed response in the surface water bodies, due to attenuation from the Upper Dam, and a more gradual response in the groundwater elevations of NTB-102 and GWW-101. Most notably, the peak in groundwater elevations associated with the precipitation event appears to occur slightly before the peak in the surface water elevation, indicating that the groundwater recharge for these fracture systems is predominantly depending on recharge from the surrounding bedrock aquifer with a subordinate dependence on surface water infiltration from the Little River or the Lower Reservoir.

While the groundwater elevation at NTB-102 and GWW-101 appears to be primarily controlled by hydrologic processes occurring on land and/or in freshwater bodies, the dominant signal observed in the hydrograph of GWW-103 is tidal. Tidal fluctuations of up to two feet are evident in the hydrograph, and when the overall trend in groundwater elevation at GWW-103 is compared to GWW-101, it appears that GWW-103 is dependent on different hydrologic controls than GWW-101. An example of this is the time period from the end of August 2018 to the end of October 2018, where, following recovery from the August 2018 aquifer test, GWW-101 (and GWW-102) showed an increasing trend in groundwater elevation, while GWW-103 showed a subtle decreasing trend in groundwater elevation.

5.2 Numerical Modeling of Groundwater Flow

The rationale, methods, results, and findings of the numerical groundwater flow model created for the Site are detailed in the technical memorandum *Summary of Groundwater Modeling to Support Significant Groundwater Well Permit Application, Proposed Nordic Aquafarms Facility, Belfast, Maine* prepared by McDonald Morrissey Associates, LLC (MMA), March 2019 and provided in Appendix F of this report. The following sections summarize key elements and findings from the numerical modeling effort completed by MMA but does not address all of the components for the model and is not intended as a substitute for the information provided in the technical memorandum detailing the model.

5.2.1 Overview of Model Creation, Calibration, and Validation

The numerical model was created using the MODFLOW-USG (Un-Structured-Grid) code package, developed by the USGS to allow for greater flexibility in model grid creation. Various additional code packages were utilized to allow for various head and flow boundaries to be incorporated into the model. The model grid was created to approximate the extent of the Little River watershed with some additional area adjacent to the coast.

The model was created using publicly available elevation, well, tidal, hydrologic, and hydrogeologic data and studies, in addition to data collected throughout the course of the investigation by Ransom (detailed and presented in this report) and input and output files from preliminary numerical groundwater flow modeling developed by Ransom.

The model consisted of three discrete vertical units, designed to represent surficial geologic materials, consisting of Presumpscot Formation and glacial till, the heavily weathered bedrock surface, and competent bedrock. Depths of each vertical unit were assigned based on available elevation data, and information on the boundaries between units from available well logs and borings completed during this investigation. The total depth of the bedrock was determined based on the elevation of the bottom of well PW-1.

The model was calibrated using data collected during the April 2018, August 2018, and November 2018 aquifer tests and validated using data collected during the January 2019 aquifer test. After iterative calibration, including adjusting vertical and horizontal hydraulic conductivity values and anisotropy, the residual mean statistics, which represent differences between measured and modeled head in the monitoring points available during the test, had mean values of between -0.5 and 2.4 feet for each of the three calibration datasets (i.e. the April, August, and November 2018 aquifer tests). This indicates that the water levels predicted by the model for each pumping test at all monitoring locations was, on average, between 2.4 feet deeper and 0.5 feet shallower than the actual measured water level at any given monitoring point. Following calibration, the January 2019 aquifer test data was used as a validation dataset. The residual mean statistics for the validation dataset had a mean value of 0.9 feet, indicates that the model, on average across all monitoring points, predicted water levels that were 0.9 feet deeper than the measured value at any given monitoring point.

In addition to calibration and validation, a sensitivity analysis of the model was conducted. The sensitivity analysis indicates that the model is most sensitive to changes in hydraulic conductivity (horizontal and vertical), anisotropy (horizontal and vertical), and the recharge rate of precipitation to the aquifer. The model was relatively insensitive to changes in the conductivity between the head-dependent boundaries and groundwater system.

An additional qualitative sensitivity analysis was performed using the model to provide a general assessment of the sensitivity of the groundwater system to a prolonged (steady-state) 2-foot reduction of head in the Lower Reservoir. This conservative assessment indicated that limited changes to the water elevation in the fractured bedrock aquifer would likely occur, however, changes of more than a several feet were generally limited to the Site itself.

5.2.2 Model Simulations and Results

After the successful calibration and validation of the model, a series of pumping simulations were performed to assess the response of the bedrock aquifer to sustained pumping from proposed wells at the Site. The model simulations were designed to estimate the maximum drawdown that may develop during long-term pumping in average conditions and to estimate the amount of time required for groundwater flow to stabilize for a given pumping scenario. Simulations were run until steady-state was reached in the model, which generally took years to a decade to occur. Steady-state is the condition at which average groundwater elevation is no longer changing due to continuous pumping from a well or wells and allows the model to estimate the effects of continuous pumping from the aquifer over decades.

Three pumping scenarios were assessed using the model:

1. A total pumping rate of 455 gpm, with pumping from PW-1 (250 gpm), GWW-103 (175 gpm), DRX-102 (30 gpm);

2. A total pumping rate of 515 gpm, with pumping from PW-1 (250 gpm), GWW-103 (175 gpm), DRX-102 (30 gpm), PSD-102 (30 gpm), and DRX-101 (30 gpm); and

3. A total pumping rate of 227.5 gpm, with pumping from PW-1 (125 gpm), GWW-103 (87.5 gpm), DRX-103 (15 gpm). This scenario represents one-half the pumping rates of scenario 1.

In all scenarios, steady-state flow conditions are not reached for several years to a decade.

In scenario one, steady-state drawdown at PW-1 is estimated to be approximately 200 feet, and drawdown at the WSW-4 private water supply well is predicted to be up to 15 feet. In scenario two, drawdown at PW-1 increases to 220 feet and drawdown at WSW-4 increases to up to 18 feet. Drawdown in scenario three is estimated to be 85 feet at PW-1 and up to 5 feet at WSW-4. Estimated drawdown for shallow piezometer monitoring locations is slightly greater than 5 feet in all pumping scenarios.

5.2.3 Model Findings

During pumping, the model results indicate that the bulk of the water withdrawn from the fractured bedrock aquifer is recharge from precipitation, with lessor contributions from reservoir leakage and salt water from Belfast Bay. At least a portion of the recharge withdrawn from the wells appears to be groundwater intercepted before being discharged to surface water features.

During transient pumping (i.e. as groundwater flow is adjusting to pumping and moving toward steady-state), the response to pumping is propagated slightly faster to the west-northwest of the Site (e.g. toward WSW-1, WSW-3, and WSW-5 wells), and more slowly toward the west and south toward the WSW-2 and WSW-4 wells. As noted above, steady-state conditions are not estimated to be reached for years to a decade.

5.2.4 Model Conclusions and Recommendations

Based on the findings from their modeling effort, MMA indicates that the model generally supports a groundwater withdrawal plan similar to pumping scenario one. Given the projected changes due to pumping under average conditions and the potential variations that may result from deviations from average conditions in the watershed (e.g. drought conditions), MMA recommends the following:

1. Further assessment of private water supply wells to understand normal usage and physical characteristics such as normal water level fluctuations, total well depth, pump depth, etc., to better understand the limiting factors, if any, constituted by the estimated drawdown from pumping;

2. Develop a monitoring plan to assess drawdown in bedrock supply wells located on and off Site, drawdown of the water table near surface water features near the Site, and monitor water quality, including total dissolved solids (TDS), in specific locations to monitor changes in the system during pumping, and;

3. Develop contingencies to address possible cases where current use changes, such as reduced well yield, can be attributed to effects caused by Site-related pumping in order to have an appropriate response plan in place should unanticipated changes to the system occur.

5.3 Proposed Groundwater Withdrawal and the Little River Watershed Water Balance

Based on the findings of this report and the associated modeling effort completed by MMA, including the hydrology and hydrogeology of the Site and the Little River watershed and reservoir system, NAF proposes to withdraw approximately 455 gpm from proposed production wells at the Site. Well PW-1 is proposed to be converted for use as a production well with GWW-101 becoming the observation well, while new production wells are proposed to be drilled adjacent to test wells GWW-103 and DRX-102, leaving the test wells in place to serve as observation wells. Proposed pumping rates are 250 gpm for PW-1, 175 gpm for the proposed production well adjacent to GWW-103 (called PW-2), and 30 GPM for the proposed production well adjacent to DRX-102 (called PW-3). This proposed withdrawal is equivalent to approximately 655,200 gallons per day (gpd).

The proposed withdrawal was determined based on an assessment of the capacity of the test wells drilled on Site, the hydraulic and hydrogeologic properties of the bedrock aquifer, and the apparent sources of recharge and total water available to the well network. Section 3.5 discusses the estimated water balance for the Little River watershed and estimates that approximately 1.35 bgpy of water infiltrate into the overburden and bedrock materials of the watershed, approximately 7.43 bgpy of water runs off as surface water, and the balance of the mean annual precipitation is accounted for through evapotranspiration (4.73 bgpy).

As presented in MMA's technical memorandum detailing the numerical groundwater flow model developed for the Site and watershed, the proposed production wells appear to receive water from that is primarily delivered via infiltration of precipitation with lessor contributions from nearby surface water features, namely, the Lower Reservoir and Belfast Bay. The proposed annual withdrawal of 239 mgpy is approximately 18% of the total estimated recharge to the bedrock aquifer for the watershed. However, the numerical model estimates that while the majority of the withdrawal comes from groundwater recharge, a portion of the total withdrawal is also accounted for through leakage from the Lower Reservoir and Belfast Bay. This reduces the total proportion of the proposed withdrawal to the total watershed recharge to substantially less than 18%. Given this, adverse impacts to the watershed are not expected.

Given the ambiguity associated with defining "drought conditions," MMA estimated the long-term steady-state conditions that would be associated with a 50% reduction in recharge to the groundwater system. This approach is generally more conservative than one where recharge is reduced in the model for only a limited period of time, as it essentially estimates the result of an extreme and permanent shift in climate rather than just a transitory period of anomalously low precipitation. The results of this assessment indicate that, given available information and data, the proposed withdrawal is still viable without anticipated adverse impacts even under extreme changes in groundwater recharge.

In order to assess possible interaction between the proposed surface water withdrawal from the Lower Reservoir and the groundwater system, MMA performed a qualitative sensitivity analysis of a prolonged (i.e. indefinite) reduction in head of the Lower Reservoir of 2 feet. Based on the relative insensitivity of the groundwater system to a prolonged changed in head of the Lower Reservoir, transient changes to reservoir head as may occur from the proposed surface water withdrawal scenario are not likely to impact the overall sustainability of the proposed groundwater withdrawal, nor have a discernable impact on groundwater elevations elsewhere in the fractured bedrock aquifer surrounding the Site.

5.3.1 Potential for Saltwater Intrusion during active pumping

The southeastern portion of the Site may experience some saltwater intrusion into the fractured bedrock aquifer during the proposed groundwater withdrawal scenario. The numerical groundwater flow model as well as groundwater data collected at the Site, including specific conductance (discussed further in Section 6.2.2) and tidal cycles observed in groundwater elevation, all indicate that some portion of the total groundwater withdrawal will be supplied by leakage into the bedrock aquifer from Belfast Bay.

Given the complexity of predicating the potential salinity of groundwater in coastal areas adjacent to the Site and the years to decades it is estimated it would take for saltwater intrusion to occur, the proposed approach for addressing the risk of saltwater intrusion is regular monitoring and the development of contingencies to address saltwater intrusion in wells, should it occur. The proposed Water Resource Monitoring Plan (Ransom, 2019), accounts for this monitoring effort.

6.0 WATER QUALITY

6.1 Groundwater Sample Chemical Analysis Results

Laboratory analytical results for the groundwater samples collected as part of this investigation are described in the following paragraphs and summarized in Table 7, with a comparison of results to recommended limits for salmonid culture. Copies of the laboratory reports are included in Appendix G.

Samples were collected from sampling spigots installed in the discharge pipe at the wellhead directly into pre-labeled laboratory containers. Pump rates were not altered prior to sampling, so sample water may have been exposed to some amount of turbulence, pressure alteration, and/or aeration from the pump or sampling spigot.

6.1.1 Volatile Organic Compounds

Toluene was detected in sample PSD-101 collected on November 21, 2018, at a concentration of 1.9 micrograms per liter (µg/L), slightly above the laboratory detection limit of 0.75 µg/L; no other VOCs were detected in this sample and VOCs were not detected in the remaining samples at concentrations above laboratory reporting limits.

6.1.2 Semi-Volatile Organic Compounds

2-Methylnaphthalene was detected in sample GWW-101 collected on April 5, 2018, at a concentration of 0.13 µg/L, slightly above the laboratory detection limit of 0.10 µg/L; no other SVOCs were detected in this sample and SVOCs were not detected in the remaining samples at concentrations above laboratory reporting limits.

6.1.3 Pesticides

No pesticides were detected at concentrations above their respective laboratory reporting limits in the groundwater sample collected from GWW-101 48 hours into the pump test.

6.1.4 Elements (Total & Dissolved)

Groundwater samples were analyzed for up to 30 elements, of which the following 15 were detected at concentrations above their respective laboratory reporting limits: aluminum, arsenic, barium, boron, calcium, iron, magnesium, manganese, phosphorus, potassium, silicon, sodium, strontium, sulfur and titanium. All detected elements are believed to be naturally occurring in the Site groundwater and are not indicative of a contamination source. Barium, boron, potassium and titanium were only detected in samples collected from GWW-103. Aluminum and titanium were not detected above laboratory reporting limits in dissolved form. With the exception of iron, all detected concentrations were below recommended limits for salmonid culture.

6.1.5 Additional Parameters

Total suspended solids were not detected above laboratory reporting limits in samples collected at the end of aquifer tests and turbidity and UV absorbance from these samples were low. Among all samples analyzed, alkalinity ranged from 54.9 to 143 milligrams calcium carbonate per liter (mg CaCO3/L) and hardness ranged from 37 to 146 milligrams per liter (mg/L). Groundwater samples collected from PW-1 at the end of the August 2018 aquifer test were additionally analyzed for true color [7 Apparent Platinum Cobalt Units (A.P.C.U.)], apparent color (1 A.P.C.U.), dissolved carbon dioxide (17.7 mg/L) and total carbon dioxide (980 mg/L).

6.2 Groundwater Field Parameters

Groundwater parameters measured in the field are described in the following paragraphs and summarized in Table 8.

6.2.1 Temperature

Field readings and transducers were used to measure groundwater temperature at various monitoring points. Groundwater temperatures generally ranged from approximately 6^0 C to 10^0 C over the course of monitoring, which is within range of expected groundwater temperature values in Maine of 5^0C to 10^0C (Caswell, 1987). Continuous pumping also showed a minor influence on groundwater temperature, with modestly colder measurements recorded towards the end of aquifer tests. During recovery, a minor increase in temperature was common in some wells before leveling off to a similar temperature to the pre-pumping temperature.

The numerical flow model indicates that some of the proposed withdrawal demand would be accommodating by surface water flowing into the bedrock aquifer. Given this, groundwater temperature of water being withdrawn from the proposed water supply production wells may vary slightly from what was measured during the aquifer tests.

Complete records of groundwater temperature field readings can be found in Table 8 and transducer measurements can be found in Appendix D.

6.2.2 Specific Conductivity

Measurements of groundwater specific conductivity ranged from 0.14 to 1.38 milli-Siemens per centimeter (mS/cm) among samples collected from site monitoring wells. Notably, the highest measurements were recorded from GWW-103, located closest to the Bay, with conductivity readings measured during drilling increasing incrementally with depth. During aquifer testing, groundwater samples from GWW-103 exhibited conductivity readings approximately five times higher than samples collected from GWW-101. CTD transducers were deployed in GWW-101 and GWW-103 for most of the aquifer tests. Transducer conductivity readings ranged from 0.12 to 0.208 mS/cm in GWW-101 and 0.252 to 0.74 mS/cm in GWW-103. The largest change in conductivity over time occurred in test well GWW-103 during the August 2018 aquifer test, where conductivity increased from approximately 0.3 to 0.7 mS/cm over the course of the test.

During the April 2018[8] and August 2018 tests, conductivity trends under pumping conditions at GWW-103 were generally increasing with time. After pumping ended in the August 2018 test conductivity decreased relatively rapidly during recovery. During the November 2018 and January 2019 tests, conductivity remain relatively stable from the pre-test period through the test and into the post-test period. Small fluctuations in conductivity in GWW-103, which appear to coincide with tidal fluctuations in groundwater elevation, are evident during portions of the

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[8] During the April 2018 test the CTD transducer became entangled partway through the test, limiting data recording for the latter portion of the test.

record as well. Conductivity in GWW-101 generally increased slightly at the start of pumping and then decreased slightly over time during pumping, followed by an abrupt (thought small in magnitude) increase in conductivity that coincided with pumps being turned off. Conductivity records from the CTD transducers are shown on the plots for GWW-101 and GWW-103 in Appendix E.

Complete records of groundwater conductivity field readings can be found in Table 8 and transducer measurements can be found in Appendix D.

6.2.3 Additional Parameters

Field measurements of pH ranged from 6.13 to 8.3 when measured at the conclusion of the aquifer tests; ORP ranged from -101 to 79 millivolts (mV); and TDS ranged from 0.07 to 0.69 parts per thousand (ppt).

6.3 Regulatory Status

Based on a comparison of the analytical results to current MEDEP guidance documents, there are no existing conditions pertaining to groundwater quality at the Site that would require reporting to MEDEP.

6.4 Data Interpretation

Chemical and physical measurements document a notable difference in groundwater collected from GWW-103 and GWW-101/PW-1. Laboratory analytical results for GWW-103 samples indicate a seawater chemical signature, with four major cations found in seawater (sodium, magnesium, calcium and potassium), all appearing at elevated concentrations in groundwater samples from GWW-103 compared to the more inland GWW-101/PW-1. Though conductivity readings do not currently indicate brackish or saltwater (seawater has a conductivity of approximately 55 mS/cm), an increase in conductivity with depth in GWW-103 indicates some limited degree of mixing between the freshwater/seawater systems under natural conditions at the completed depth of the monitoring well at 340 feet bgs.

7.0 FINDINGS

This hydrogeologic investigation was conducted to evaluate the suitability and sustainability of the bedrock aquifer beneath the Site for groundwater and surface water withdrawal to support the proposed land-based Atlantic salmon aquaculture facility. The investigation efforts considered five primary objectives:

1. Assess the overall suitability of the aquifer for water quality and yield;
2. Assess the viability of a surface water intake from the Lower Reservoir;
3. Identify potential high-yield production well locations at the Site;
4. Assess the hydraulic properties of the aquifer through aquifer tests to support the development of a numerical groundwater model; and
5. Calculate the estimated sustainable yield from one or more production wells located at the Site to support design of a production well field and permitting to allow groundwater extraction.

The fresh water supply for the proposed development is expected to come from three primary sources:

1. Groundwater withdrawn from production wells at the Site;
2. Surface water withdrawn from the Lower Reservoir adjacent to the Site; and
3. Municipal water delivered to the Site from the Belfast Water District.

The fractured bedrock aquifer exhibits complex flow behavior, with significant anisotropy in hydraulic conductivity. Aquifer tests indicate that bedrock fracture systems likely dip steeply and trend approximately east-west across the Site. Test wells were installed in several adjacent fracture systems that behave independently over short-term pumping, but leakage between fracture systems is expected to result in drawdown occurring between fracture systems over the course of long-term pumping.

MMA found that the numerical groundwater flow model generally supports a proposed withdrawal scenario of 455 gpm from three wells (PW-1 at 250 gpm, GWW-103 and 175 gpm, and DRX-102 at 30 gpm). Under this scenario, drawdown is expected to be approximately 200 feet at PW-1, and up to 15 feet at a nearby private water supply well (WSW-4) once steady-state groundwater flow conditions are reached. Steady-state conditions are expected to develop over a period of years to a decade. In addition to predicted drawdown, steady-state pumping is expected to result in some amount of saltwater intrusion in the southeastern portion of the Site and surrounding area. Drawdown of the overburden aquifer at the Site due to the proposed withdrawal is estimated to be approximately 5 feet during stead-state flow conditions.

The proposed surface water withdrawal rate of 70 gpm plus inflows (discussed in Section 3.6) is presented based on the 1- or 2- acre-feet per acre permissible to extract from the impoundment, depending on season, plus any additional inflows into the Lower Reservoir, in as provided for in MEDEP Chapter 587 rules. In order to account for inflows into the Lower Reservoir in the planning process, an estimated surface water withdrawal rate of 250 gpm is used, which represents a conservative estimate of baseflow of the Little River. This rate is derived from the estimated 5% duration flow of the Little River. Given the estimated baseflow, it is reasonable to assume that over the course of an average year, 250 gpm or more of inflow into the Lower Reservoir can reasonably be expected for the majority of year, and the inflow rate can be withdrawn in addition to the proposed 70 gpm minimum withdrawal. A qualitative sensitivity analysis of the numerical groundwater flow model indicates that the groundwater system is relatively insensitive to variation in head of the Lower Reservoir.

Chemical analysis of groundwater samples collected from several of the proposed water supply production well locations indicate that the water quality at the Site is acceptable and will be suitable for use in the proposed aquaculture facility with limited pre-treatment prior to introducing it to the fish. Measurement of specific conductance during pumping tests and results from modeling indicate that some amount of saltwater intrusion into the fractured bedrock aquifer adjacent to Belfast Bay is likely. There are several private water supply wells located southeast of the Site in Northport that may be located within an area where saltwater intrusion could occur over the course of years to a decade or more. The Water Resource Monitoring Plan (Ransom, 2019) accounts for the potential, though unlikely, risk of saltwater intrusion through comprehensive monitoring and contingencies should unanticipated changes occur.

BWD had a capacity evaluation performed by A.E. Hodsdon Engineers (AEH) prior to engaging with NAF. This capacity assessment found that adequate supply is available from the existing BWD wells to supply a proposed maximum rate of 500 gpm to the NAF facility under its current well configuration. AEH also found that additional resiliency could be gained in BWD’s water supply system by connecting the Talbot Well to the water distribution system.

8.0 CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusions

Based on the findings summarized in this hydrogeologic investigation, the bedrock aquifer at the Site is inferred to be capable of supporting a sustainable long-term yield of 455 gpm across a network of three water production wells without adverse impacts. This conclusion is based on a detailed assessment of the hydrogeology of the fractured bedrock aquifer, the hydrology of the Site and the Little River watershed, chemical analysis of groundwater, and numerical groundwater flow modeling of the Little River watershed and proposed development Site.

In addition, surface water withdrawal from the Lower Reservoir at a rate of approximately 70 gpm plus any additional inflows into the Lower Reservoir is proposed. In order to account for inflows into the Lower Reservoir in the planning process, an estimated surface water withdrawal rate of 250 gpm is used, which represents a conservative estimate of baseflow of the Little River. The proposed surface water withdrawal is not expected to have an impact on the sustainability of the proposed groundwater withdrawal and is estimated to account for allowable withdrawals under MEDEP Chapter 587 rules without adversely impacting the Lower Reservoir impoundment.

The fresh water supply for the proposed development is expected to have a total capacity of approximately 1,025 gpm plus inflows to the Lower Reservoir, composed of groundwater extracted from the Site (455 gpm), surface water extracted from the Lower Reservoir (70 gpm plus inflows), and municipal water delivered by the BWD (500 gpm). Once the reasonably anticipated additional streamflow from the Little River is accounted for (base flow is estimated by StreamStats at 250 gpm and mean annual discharge is estimated at approximately 15,500 gpm), the total proposed freshwater capacity for the development is anticipated to exceed 1,025 gpm. In order to account for inflows into the Lower Reservoir in the planning process, an estimated surface water withdrawal rate of 250 gpm is used, which represents a conservative estimate of baseflow of the Little River. After incorporating this rate into the freshwater capacity estimate, the effective total freshwater capacity is approximately 1,205 gpm.

An assessment of potential nearby sources of contamination indicates that there are several existing and historic USTs and/or ASTs containing fuel oil at Mathews Brothers facility to the north of the Site, and most residential and commercial properties in the Site vicinity have private sewer systems (i.e. septic fields). Based on the findings of the Phase I ESA and information collected during this investigation, these potential sources of contamination are not considered to represent an undue risk to the bedrock aquifer at the Site.

8.2 Recommendations

Despite the conservative approach taken in this investigation to predict the response of the bedrock aquifer and surrounding hydrologic system, some uncertainty in these predictions is inevitable. To address this, Ransom recommends that NAF undertake the following as part of the proposed development:

1. Follow up with private water supply owners to determine total depths and pump depths of each private water supply well included in the Water Resource Monitoring Plan (Ransom, 2019);

2. Develop contingencies should unexpected drawdown responses occur in nearby private water supply wells that can be attributed to the proposed development;

3. The Water Resource Monitoring Plan (Ransom, 2019) should include provisions to monitor water quality and quantity in nearby private water supply wells, particularly those predicted by modeling to have the greatest estimated drawdowns, as well as water chemistry, including for typical drinking water quality parameters and total dissolved solids, particularly for water supply wells nearest Belfast Bay;

4. Construct the proposed development in such a way that adequate reserve freshwater capacity is maintained should portions of the fresh water supply network need to be taken off-line for maintenance or repairs;

5. The total steady-state drawdown in PW-1 predicted by the numerical groundwater flow model is approximately 200 feet. Based on drilling logs for PW-1, it is believed that one of the primary contributing bedrock fractures to PW-1 is located approximately 135 feet below grade. It is estimated to take years for total drawdown in PW-1 to reach 200 feet, however, the behavior of PW-1 after the drawdown exceeds the depth of the fracture at 135 feet below grade is not known. Given this, close monitoring of the response of PW-1 during sustained pumping and development of a contingency plan should the well response change as drawdown increases are recommended. Similar monitoring and development of contingencies are also recommended for the other proposed water supply production wells, although bedrock fractures supplying those wells are believed to be more evenly distributed throughout the wells;

6. A stream gage should be established in the free-flowing reach of the Little River upstream of the Lower Reservoir to monitor discharge from the Little River into the Lower Reservoir. This will allow discharge from the Little River into the Lower Reservoir to be accounted for and added to the proposed withdrawal rate of 70 gpm as per MEDEP's Chapter 587 rules;

7. Wetlands at the Site after the proposed development is completed should be monitored for potential influence from the proposed groundwater withdrawal;

8. Groundwater and surface water quality may fluctuate over time due to natural processes and due to sustained withdrawal. As such, water chemistry from the withdrawal points should be monitored to allow for proper treatment of the water to maintain necessary water quality for raising salmonids;

9. Proposed water supply production well locations GWW-103 and DRX-102 should be improved with wells of appropriate diameter and depth to accommodate their proposed withdrawal rates and existing test wells at these locations should remain as observation wells. Proposed water supply production well PW-1 is already constructed in a manner that will accommodate the proposed withdrawal rate and GWW-101 should be utilized as an observation well;

10. Based on the results of the capacity evaluation performed by AEH and the Maine Public Utilities Commission approval of the water withdrawal agreement, Ransom agrees that

the BWD should bring the Talbot well on-line prior to completion of the proposed development; and

11. As additional information becomes available, the conceptual model and/or numerical model of the Site should be updated as appropriate.

9.0 REFERENCES

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6. Pollock, Stephen G., 2012, Bedrock geology of the Belfast quadrangle, Maine: Maine Geological Survey, Open-File Map 12-37, color map, scale 1:24,000.

7. Ransom Consulting, Inc., 2018a, ASTM Phase I Environmental Site Assessment and Limited Subsurface Investigation, Lower Reservoir & Cassida Back Lot Properties, 285 Northport Avenue, Belfast, Maine.

8. Ransom Consulting, Inc., 2018b, ASTM Phase I Environmental Site Assessment, Vacant Mathews Brothers Property 22 Perkins Road, Belfast, Maine.

9. Ransom Consulting, Inc., 2019, Water Resource Monitoring Plan, Proposed Commercial Land-Based Aquaculture Facility, Belfast Water District, Cassida Back Lot and Mathews Brothers West Field Properties, 285 Northport Avenue, Belfast, Maine.

10. Thompson, Woodrow B., and Borns, Harold W., Jr. (editors), 1985, Surficial geologic map of Maine: Maine Geological Survey, 42" x 52" color map, scale 1:500,000. *Maine Geological Survey Maps*. 15. http://digitalmaine.com/mgs_maps/15.

11. Wright-Pierce, 2018, Upper and Lower Little River Dams Dam Assessment Report, prepared for Ransom Consulting, Inc.

TABLE 1. EXISTING PRIVATE WATER SUPPLY WELLS

Belfast Water District, Cassida, and Matthews Brothers Properties
285 Northport Avenue
Belfast, Maine

Map/Lot	Address	Town	Data Source*
	North of the Site		
29-42	253 Northport Ave	Belfast	MGS, BWD
4-68A	7 Reeds Ln	Belfast	BWD
4-68B	15 Reeds Ln	Belfast	MGS, BWD
	West of the Site, across the Little River		
4-23	10 Herrick Rd	Belfast	BWD
4-23D	14 Herrick Rd	Belfast	BWD
4-23B	16 Herrick Rd	Belfast	BWD
4-23A	20 Herrick Rd	Belfast	BWD
4-26	24 Herrick Rd	Belfast	BWD
4-27	26 Herrick Rd	Belfast	BWD
4-28	30 Herrick Rd	Belfast	BWD
4-25D	31 Herrick Rd	Belfast	BWD
4-30	46 Herrick Rd	Belfast	BWD
4-29	49 Herrick Rd	Belfast	BWD
4-32	117 Woods Rd	Belfast	BWD
4-24B	122 Woods Rd	Belfast	BWD
4-25	135 Woods Rd	Belfast	BWD
4-25A	135 Woods Rd	Belfast	BWD
4-25C	141 Woods Rd	Belfast	BWD
4-31A	1 Woodsville Ln	Belfast	BWD
4-31B	2 Woodsville Ln	Belfast	BWD
4-31C	3 Woodsville Ln	Belfast	BWD
4-31D	4 Woodsville Ln	Belfast	BWD
	South of the Site, across the Little River		
U2-04	1395 Atlantic Hwy	Northport	NVC
U2-05	1401 Atlantic Hwy	Northport	NVC, MGS
U2-06	1405 Atlantic Hwy	Northport	NVC
U2-08	1406 Atlantic Hwy	Northport	NVC, MGS
U1-13A	1422 Atlantic Hwy	Northport	NVC
U1-13	1426 Atlantic Hwy	Northport	NVC
U1-09	1442 Atlantic Hwy	Northport	NVC
U1-02	1447 Atlantic Hwy	Northport	NVC
U2-14	3 Crest St	Northport	NVC
U2-16	7 Crest St	Northport	NVC
R1-23A	10 Horse Jockey Ln	Northport	NVC
U2-10	15 Summit Ave	Northport	NVC
U2-41	40 Summit Ave	Northport	NVC
U1-12	22 Windward Ln	Northport	NVC

Notes:

1. *Data sources include Maine Geological Survey (MGS), Belfast Water District (BWD) and Northport Village Corporation (NVC).

2. Unless mapped by MGS data or confirmed by owners, private wells are anticipated based on building presence and lack of listing on muncipical water supply billing records.

TABLE 2. AVERAGE PRECIPITATION FOR BELFAST, MAINE

Belfast Water District, Cassida, and Matthews Brothers Properties
285 Northport Avenue
Belfast, Maine

Time Period	Full Period of Record (86 years)	Past 30 Years	Past 20 Years	Past 10 Years
	Average Precipitation (inches)			
Full Year	46.73	48.41	49.39	51.79
January	3.79	3.73	3.58	3.93
February	3.35	3.15	3.31	3.65
March	4.02	3.76	3.89	3.89
April	3.98	4.04	4.36	4.45
May	3.97	3.95	4.09	3.63
June	3.61	4.34	4.47	5.04
July	3.16	3.15	3.12	3.49
August	3.02	3.05	3.16	3.68
September	3.64	4.16	4.04	4.04
October	4.43	5.31	5.95	5.94
November	5.03	4.78	4.77	4.72
December	4.53	4.33	4.67	5.33

Notes:

1. Data from Belfast, ME, NOAA Station ID USC00170480.
2. Years with more than 10 missing data entries were not included in this analysis.
3. Precipitation data from 2019 was omitted due to incomplete record.
4. Dates with no valid precipitation values (i.e. no value was reported) were omitted from this analysis.

TABLE 3. MONITORING POINT SPECIFICATIONS

Belfast Water District, Cassida, and Matthews Brothers Properties
285 Northport Avenue
Belfast, Maine

Well ID	Easting (MSP East Ft)	Northing (MSP East Ft)	Easting (m UTM 19N)	Northing (m UTM 19N)	Elevation (ft NAVD88)	Total Depth (ft bgs)	Estimated Yield (gpm)	Diameter (in)	Depth to Rock (ft bgs)	Casing Depth (ft bgs)	Drilling Method	Rating Method
						Monitoring Points						
DRX-101	854934.4	266159.9	500416.0	4915833.7	58.90	210	>60	4	13	32.4	Air Rotary	Air Lift
DRX-102	855748.9	266550.1	500663.4	4915954.1	58.10	211	>60	4	19	27	Air Rotary	Air Lift
DRX-103	854087.0	266649.5	500157.3	4915981.4	72.49	150	>40	4	24	25	Air Rotary	Air Lift
GWW-101	856102.0	266268.2	500767.7	4915866.5	43.40	320	200	6	15	27	Air Rotary	Air Lift
GWW-102	852404.2	267517.1	499642.9	4916242.6	74.70	420	63	6	32	41	Air Rotary	Air Lift
GWW-103	856483.3	265962.8	500888.3	4915776.5	31.80	340	250	6	16	30	Air Rotary	Air Lift
NTB-101	856399.3	266374.0	500861.9	4915901.6	39.90	192	~10	4	15.6	16.5	Rotary Wash	Submersible
NTB-102	854317.0	266102.7	500228.0	4915815.1	62.20	217	>50	4	25	27	Rotary Wash	Submersible
NTB-103	851535.8	268146.5	499377.1	4916432.8	80.86	267	~10	4	23.1	24.1	Rotary Wash	Submersible
PSD-101	855162.3	266725.3	500484.7	4916006.5	64.33	400	30	6	20	37.5	Air Rotary	Air Lift
PSD-102	854866.1	266672.8	500394.6	4915989.9	66.16	400	140	6	28	38	Air Rotary	Air Lift
PW-1	856081.9	266267.5	500765.8	4915868.7	43.52	615	330	8	15	41	Air Rotary	Air Lift
PZ-1D	854135.1	266531.9	500172.1	4915945.6	70.14	24	NA	1	24	NA	Direct Push	NA
PZ-1S	854132.0	266532.8	500171.2	4915945.9	70.16	15	NA	1	24	NA	Direct Push	NA
PZ-2	855965.7	266395.5	500730.2	4915907.5	42.95	11	NA	1	11	NA	Direct Push	NA
PZ-3	855817.3	266521.7	500684.7	4915945.7	51.39	12	NA	1	12	NA	Direct Push	NA
PZ-4D	856194.6	266250.0	500800.2	4915863.6	36.47	10	NA	1	8.75	NA	Direct Push	NA
PZ-4S	856192.1	266250.8	500799.4	4915863.8	36.52	5	NA	1	8.75	NA	Direct Push	NA
SG-2	856261.9	265909.1	500821.3	4915759.8	32.63	NA	NA	1	NA	NA	NA	NA
SG-3	852528.4	267331.3	499681.1	4916186.2	69.72	NA	NA	1	NA	NA	NA	NA
SG-4	853192.5	266845.4	499884.3	4916039.4	30.93	NA	NA	1	NA	NA	NA	NA
						Private Water Supply Wells						
WSW-01	852765.6	266569.4	499754.8	4915954.5	78.89	unknown	unknown	6	unknown	unknown	NA	NA
WSW-02	852702.3	265259.7	499737.5	4915555.2	80.83	230	unknown	6	unknown	unknown	NA	NA
WSW-03	852885.4	266896.0	499790.7	4916054.3	71.35	117	35	6	unknown	unknown	NA	NA
WSW-04	855622.1	264778.3	500628.5	4915414.1	53.07	226	unknown	6	unknown	unknown	NA	NA
WSW-05	852496.9	266658.0	499672.8	4915981.0	80.69	unknown	unknown	6	unknown	unknown	NA	NA
WSW-06	853071.7	268961.5	499843.6	4916683.9	110.03	unknown	unknown	6	unknown	unknown	NA	NA

Notes:

1. Estimated yields are based on rating after drilling from short term (7.5 to 8.5 hour) aquifer test using submersible pump or through air lift testing using drilling equipment. Ratings are approximate.
2. Drilling fluid utilized during rotary wash drilling consisted of clean water with no additives other than cuttings derived from the formation itself.
3. Information on construction of private water supply wells gathered from voluntary questionnaire responses from well owners.

TABLE 4. MONITORING FREQUENCY
Belfast Water District, Cassida, and Matthews Brothers Properties
285 Northport Avenue
Belfast, Maine

		April 2018 Test		Intervening Time	August 2018 Test		Intervening Time	November 2018 Test		Intervening Time	January 2019 Test		Intervening Time
Well ID	**Monitoring Feature**	**Monitoring Method[1]**	**Monitoring Frequency[2]**	**Monitoring Status**	**Monitoring Method[1]**	**Monitoring Frequency[2]**	**Monitoring Status**	**Monitoring Method[1]**	**Monitoring Frequency[2]**	**Monitoring Status**	**Monitoring Method[1]**	**Monitoring Frequency[2]**	**Monitoring Status**
						Monitoring Points							
DRX-101	Bedrock Aquifer	T, M	1 min	No	T, M	1 min	Yes	T, M	30 sec	No	T, M	1 min	No
DRX-102	Bedrock Aquifer	T, M	1 min	No	T, M	2 min	Yes	T, M	30 sec	No	T, M	30 sec	No
DRX-103	Bedrock Aquifer	--	--	--	--	--	--	T, M	1 min	Yes	T, M	1 min	Yes
GWW-101	Bedrock Aquifer	T, M	30 sec	No	T, M	30 sec	Yes	T, M	30 sec	Yes	T, M	30 sec	Yes
GWW-102	Bedrock Aquifer	T, M[3]	15 min	No	T, M	15 min	Yes	T, M	15 min	Yes	T, M	30 min	Yes
GWW-103	Bedrock Aquifer	T, M	30 sec	No	T, M	1 min	Yes	T, M	30 sec	No	T, M	30 sec	No
NTB-101	Bedrock Aquifer	T, M	1 min	No	T, M	1 min	No	T, M	1 min	Yes	T, M	1 min	Yes
NTB-102	Bedrock Aquifer	T, M	1 min	No	T, M	5 min	Yes	T, M	2 min	Yes	T, M	1 min	Yes
NTB-103	Bedrock Aquifer	NM	NA	No	NM	NA	No	M	2x + daily	No	M	2x + daily	No
PSD-101	Bedrock Aquifer	--	--	--	--	--	--	T, M	30 sec	No	T, M	1 min	No
PSD-102	Bedrock Aquifer	--	--	--	--	--	--	T, M	30 sec	No	T, M	30 sec	No
PW-1	Bedrock Aquifer	--	--	--	T, M	30 sec	No	T, M	30 sec	No	T, M	30 sec	No
PZ-1D	Deep Wetland Piezometer	--	--	--	--	--	--	T, M	5 min	Yes	T, M	10 min	Yes
PZ-1S	Shallow Wetland Piezometer	--	--	--	--	--	--	T, M	5 min	Yes	T, M[3]	10 min	Yes
PZ-2	Deep Wetland Piezometer	--	--	--	--	--	--	M	2x + daily	No	T, M	10 min	Yes
PZ-3	Deep Wetland Piezometer	--	--	--	--	--	--	T, M[3]	10 min	Yes	T, M	10 min	Yes
PZ-4D[5]	Deep Wetland Piezometer	--	--	--	--	--	--	M	2x + daily	No	M	2x + daily	No
PZ-4S	Shallow Wetland Piezometer	--	--	--	--	--	--	T, M	5 min	Yes	T, M	10 min	Yes
SG-1[4]	Lower Reservoir	T, M	15 min	No	--	--	--	--	--	--	--	--	--
SG-2	Lower Reservoir	--	--	--	T, M	15 min	Yes	T, M	15 min	No	M	2x + daily	No
SG-3	Upper Reservoir	--	--	--	--	--	--	T, M	15 min	No	M	2x + daily	No
SG-4	Little River	--	--	--	--	--	--	T, M	15 min	No	M	2x + daily	No
						Private Water Supply Wells[6]							
WSW-01	Bedrock Aquifer	NM	NA	NA	NM	NA	NA	T	5 min	Yes	T	15 min	Yes
WSW-02	Bedrock Aquifer	NM	NA	NA	NM	NA	NA	NM	NM	No	T	5 min	Yes
WSW-03	Bedrock Aquifer	NM	NA	NA	NM	NA	NA	T	5 min	Yes	T	15 min	Yes
WSW-04	Bedrock Aquifer	NM	NA	NA	T	5 min	Yes	T	5 min	Yes	T	15 min	Yes
WSW-05	Bedrock Aquifer	NM	NA	NA	NM	NA	NA	T	5 min	Yes	T	15 min	Yes
WSW-06	Bedrock Aquifer	NM	NA	NA	T	5 min	Yes	T	5 min	Yes	T	15 min	Yes

Notes:

1. T: Monitored with transducer; M: Monitored manually; NM: Not monitored; --: Monitoring point not installed or destroyed.
2. Monitoring Frequency represents the transducer interval, when used, or the approximate frequency of manual measurements. NA: Monitoring frequency not applicable.
3. Transducer record only covers a portion of the aquifer test period.
4. Monitoring point SG-1 was installed in the Lower Reservoir, however, it was damaged by ice before it could be surveyed.
5. Monitoring point PZ-4D has never had a measureable groundwater present when checked.
6. Private water supply wells were generally only manually measured to calibrate the transducer measurement.

TABLE 6. AQUIFER TEST DETAILS
Belfast Water District, Cassida, and Matthews Brothers Properties
285 Northport Avenue
Belfast, Maine

	Pumping Wells	Pump Setting (ft bgs)	Step Test Performed?	Date and Time On (EST)	Date and Time Off (EST)	Pumping Duration	Nominal Pumping Rate[2] (gpm)	Static Water Level (ft NAVD88)	Pumping Water Level (ft NAVD88)	Maximum Drawdown (ft)	Comments
April 2018 Test	GWW-101	150	Yes	4/2/2018 8:30	4/5/2018 8:30	72:00:00	100	22.14	-6.2	28.34	Pumping rate was set based on the step test and maximum capacity of the pump installed in the well.
	GWW-103	100	Yes	4/2/2018 8:30	4/5/2018 8:30	72:00:00	100	14.02	-15.95	29.97	Pumping rate was set based on the step test and maximum capacity of the pump installed in the well. Borehole sloughing resulted in blockage at 120 ft bgs and periodic fouling of pump.
August 2018 Test	PW-1	127	Yes	8/27/2018 8:20	8/30/2018 8:31	72:11:00	250	21.33	-56.19	77.52	Pumping rate was set based on the step test conducted prior to the test.
November 2018 Test	DRX-101	150	Yes[1]	11/18/2018 9:00	11/21/2018 9:00	72:00:00	30	24.14	-12.62	36.76	Pumping rate was based on maximum pump capacity and varied ~2-3 gpm over the course of the test.
	DRX-102	150	Yes[1]	11/18/2018 12:44	11/21/2018 9:00	68:16:00	30	43.57	-24.06	67.63	Pumping rate was based on maximum pump capacity and varied ~2-3 gpm over the course of the test. The pump start was delayed due to a GFCI issue with the generator.
	GWW-103	127	No	11/18/2018 9:00	11/21/2018 9:00	72:00:00	175	14.08	-35.84	49.92	Pumping rate was based on the maximum capacity of the pump installed in the well.
	PSD-101	250	Yes[1]	11/18/2018 9:00	11/21/2018 9:00	72:00:00	15	60.07	6.87	53.2	Pumping rate had to be adjust constantly during initial portion of test due to issues with gate valve. Final rate of 15 gpm determined after starting at 30 gpm. Flow meter was stuck reading 15 gpm at shutdown, indicating discharge may not have been 15 gpm (likely less than 15 gpm).
	PSD-102	150	Yes[1]	11/18/2018 9:00	11/21/2018 9:00	72:00:00	100	60.33	-1.9	62.23	Pumping rate was based on the maximum capacity of the pump installed in the well.
	PW-1	127	No	11/18/2018 9:00	11/21/2018 9:00	72:00:00	250	22.1	-57.4	79.5	Three-phase pump was wired in reverse by pump contractor. Once critical head point reached ~24 hours into the test discharge contued to fall to a final rate of ~230 gpm.
January 2019 Test	DRX-102	150	No	1/8/2019 12:40	1/12/2019 10:15	93:35:00	30	44.06	-23.37	67.43	Pumping rate was based on maximum pump capacity and varied ~2-3 gpm over the course of the test.
	GWW-103	127	No	1/8/2019 13:20	1/12/2019 10:15	92:55:00	175	14.69	-35.38	50.07	Pumping rate was based on the maximum capacity of the pump installed in the well.
	PSD-102	150	No	1/11/2019 10:20	1/12/2019 5:27	19:07:00	100	61.54	7.94	53.6	Pumping rate was based on the maximum capacity of the pump installed in the well.
	PW-1 (1st Step)	127	No	1/9/2019 10:16	1/10/2019 10:15	23:59:00	145	22.77	-17.1	39.87	PW-1 was run at a low and high pumping rate to assess response to pumping from this well in private wells west of the Little River.
	PW-1 (2nd Step)	127	No	1/10/2019 10:15	1/12/2019 10:15	48:00:00	250	-17.1	-54.98	37.88	PW-1 was run at a low and high pumping rate to assess response to pumping from this well in private wells west of the Little River. Three-phase pump was wired in reverse by pump contractor. Once critical head point reached ~24 hours into the test discharge contued to fall to a final rate of ~234 gpm.

Notes:

1. Simplified step tests were conducted for these wells to ensure that they were capable of supporting the maximum pumping rate the installed pump was able to produce.
2. The Nominal Pumping Rate represents the pumping rate set for the well based on test design parameters and pump capabilities. The actual pumping rate varied depending on pump performance and valve drift. Changes in pumping rates were recorded and in cases of signficant pumping rate drift that could not be corrected during the test, the actual pumping rate at the conclusion of the test is noted in the comments.

TABLE 7. GROUNDWATER LABORATORY ANALYTICAL RESULTS
Belfast Water District, Cassida, and Matthews Brothers Properties
285 Northport Avenue
Belfast, Maine

Sample Location	**GWW-101**	**GWW-101**	**GWW-103**	**GWW-103**	**PW-1**	**PSD-101**	**PSD-102**	**DRX-102**	
Date Collected	**2/27/2018**	**4/5/2018**	**3/6/2018**	**4/5/2018**	**8/30/2018**	**11/21/2018**	**11/21/2018**	**11/21/2018**	
Conditions of Collection	**collected following well completion**	**collected at end of 72-hr pump test**	**collected following well completion**	**collected at end of 72-hr pump test**	**collected at end of 72-hr pump test**	**collected at end of 72-hr pump test**	**collected at end of 72-hr pump test**	**collected at end of 72-hr pump test**	**Recommended Limits***
Observations	**clear**	**clear**	**clear**	**clear**	**clear, sulfur odor, iron precipitate buildup in discharge tank**	**clear**	**clear**	**clear**	
Volatile Organic Compounds (VOCs)	**Concentrations in micrograms per liter (ug/L)**								
Toluene	nd(0.75)	nd(0.75)	nd(0.75)	nd(0.75)	nd(0.75)	1.9	nd(0.75)	nd(0.75)	ne
Other VOCs**	nd	nd	nd	nd	nd	nd	nd	nd	ne
Semivolatile Organic Compounds (SVOCs)	**Concentrations in micrograms per liter (ug/L)**								
2-Methylnaphthalene	nd(0.10)	0.13	nd(0.10)	nd(0.10)	nd(0.10)	nd(0.10)	nd(0.10)	nd(0.10)	ne
Other SVOCs**	nd	nd	nd	nd	nd	nd	nd	nd	ne
Elements (Total/Dissolved)	**Concentrations in milligrams per liter (mg/L)**								
Aluminum	0.188 / nd(0.100)	nd(0.100)	0.468 / nd(0.100)	nd(0.100)	nd(0.100)	nm	nm	nm	0.01-1.00
Antimony	nd(0.00400)	nd(0.00400)	nd(0.00400)	nd(0.00400)	nd(0.00400)	nm	nm	nm	ne
Arsenic	0.006 / 0.005	0.007 / 0.008	nd(0.005)	0.005 / nd(0.005)	0.006 / 0.005	nm / nd(0.005)	nm / 0.008	nm / 0.011	0.05-0.40
Barium	nd(0.010)	nd(0.010)	0.016 / 0.015	0.023 / 0.026	nd(0.010)	nm / nd(0.010)	nm / 0.010	nm / nd(0.010)	5
Beryllium	nd(0.00050)	nd(0.00050)	nd(0.00050)	nd(0.00050)	nd(0.00050)	nm	nm	nm	0.01-1.10
Boron	nd(0.030)	nd(0.030)	0.117 / 0.116	0.087 / 0.081	nd(0.030)	nm	nm	nm	5
Cadmium	nd(0.00020)	nd(0.00020)	nd(0.00020)	nd(0.00020)	nd(0.00020)	nm / nd(0.005)	nm / nd(0.005)	nm / nd(0.005)	0.0003-0.0700
Calcium	8.35 / 8.97	10.8 / 10.1	35.4 / 36.4	21.0 / 20.5	11.6 / 11.8	nm	nm	nm	4-160+
Chromium	nd(0.010)	nd(0.010)	nd(0.010)	nd(0.010)	nd(0.010)	nm / nd(0.010)	nm / nd(0.010)	nm / nd(0.010)	0.03-0.10
Cobalt	nd(0.020)	nd(0.020)	nd(0.020)	nd(0.020)	nd(0.020)	nm	nm	nm	0.010-0.05
Copper	nd(0.010)	nd(0.010)	nd(0.010)	nd(0.010)	nd(0.010)	nm / nd(0.010)	nm / nd(0.010)	nm / nd(0.010)	0.006-0.070
Iron	**2.49 / 2.05**	**3.20 / 3.00**	**2.08** / 0.784	**1.51 / 1.45**	**3.20 / 3.31**	nm	nm	nm	0.1-1.1
Lead	nd(0.010)	nd(0.010)	nd(0.010)	nd(0.010)	nd(0.010)	nm / nd(0.010)	nm / nd(0.010)	nm / nd(0.010)	0.01-4.0
Magnesium	3.93 / 3.99	4.72 / 4.20	14.1 / 13.9	10.2 / 9.36	5.10 / 5.04	nm	nm	nm	15-28+
Manganese	0.030 / 0.028	0.035 / 0.033	0.046 / 0.041	0.029 / 0.030	0.034 / 0.036	nm	nm	nm	0.05-1.00
Mercury	nd(0.00020)	nd(0.00020)	nd(0.00020)	nd(0.00020)	nd(0.00020)	nm / nd(0.00020)	nm / nd(0.00020)	nm / nd(0.00020)	0.0001-0.0020
Molybdenum	nd(0.050)	nd(0.050)	nd(0.050)	nd(0.050)	nd(0.050)	nm	nm	nm	8+
Nickel	nd(0.025)	nd(0.025)	nd(0.025)	nd(0.025)	nd(0.025)	nm	nm	nm	0.01-0.40
Phosphorus (Total / Soluble)	0.071 / 0.035	0.122 / 0.125	0.101 / 0.018	0.048 / 0.049	0.116 / 0.106	nm	nm	nm	3+
Potassium	nd(2.50)	nd(2.50)	9.26 / 8.78	6.58 / 6.25	nd(2.5) / 2.51	nm	nm	nm	5-10+
Selenium	nd(0.010)	nd(0.010)	nd(0.010)	nd(0.010)	nd(0.010)	nm / nd(0.010)	nm / nd(0.010)	nm / nd(0.010)	0.005-0.020
Silicon	10.3 / 10.5	11.4 / 10.7	8.26 / 7.97	9.04 / 8.65	na / 10.8	nm	nm	nm	ne
Silver	nd(0.007)	nd(0.007)	nd(0.007)	nd(0.007)	nd(0.007)	nm / nd(0.007)	nm / nd(0.007)	nm / nd(0.007)	ne
Sodium	14.7 / 15.2	12.6 / 12.1	254 / 253	135 / 134	13.8 / 14.9	nm	nm	nm	600-1500+
Strontium	0.041 / 0.041	0.048 / 0.051	0.440 / 0.422	0.195 / 0.218	0.053 / 0.057	nm	nm	nm	ne
Sulfur (Total)	38.7	4.51	46.2	23.2	4.79	nm	nm	nm	ne
Thallium	nd(0.00050)	nd(0.00050)	nd(0.00050)	nd(0.00050)	nd(0.00050)	nm	nm	nm	ne
Titanium	nd(0.010)	nd(0.010)	0.016 / nd(0.010)	nd(0.010)	nd(0.010)	nm	nm	nm	ne
Vanadium	nd(0.010)	nd(0.010)	nd(0.010)	nd(0.010)	nd(0.010)	nm	nm	nm	0.1
Zinc	nd(0.050)	nd(0.050)	nd(0.050)	0.059 / 0.055	nd(0.050)	nm	nm	nm	0.005-0.269
Additional Parameters	**Concentrations in milligrams per liter (mg/L) unless otherwise noted**								
Hardness	37.0	46.5	146	94.5	49.9	nm	nm	nm	20-400
Alkalinity (mg CaCO3/L)	57.9	54.9	143	116	71.3	nm	nm	nm	higher the better
Total Suspended Solids	nm	nd(5)	nm	nd(5)	nd(5)	nm	nm	nm	lower the better
Turbidity (NTU)	nm	nm	nm	nm	0.87	nm	nm	nm	lower the better
Dissolved Carbon Dioxide	nm	nm	nm	nm	17.7	nm	nm	nm	ne
Total Carbon Dioxide	nm	nm	nm	nm	980	nm	nm	nm	ne
True Color (A.P.C.U.)	nm	nm	nm	nm	7	nm	nm	nm	ne
Apparent Color (A.P.C.U.)	nm	nm	nm	nm	13	nm	nm	nm	ne
UV Absorbance @ 254nm (Abs/cm)	nm	0.023	nm	0.011	0.034	nm	nm	nm	lower the better

Notes:

1. nm = not measured; nd = not detected above laboratory detection limit, as noted in parenthesis; ne = not established
2. **Bold** = above recommended limit for salmonid aquaculture
3. * Recommended limits for salmonid culture based on tables provided by Nordic Aquafarms, Inc. in a February 5, 2018 email.
4. **For individual VOC and SVOC detection limits, refer to the laboratory results in Appendix G.
5. A groundwater sample from GWW101 on 4/4/2018, 48-hr into the pump test, was analyzed for pesticides; no pesticides were detected.
6. Concentrations of carbon dioxide may have been impacted by the discharge pipe assembly causing results to be biased high.

TABLE 8. FIELD ANALYSES OF GROUNDWATER QUALITY
Belfast Water District, Cassida, and Matthews Brothers Properties
285 Northport Avenue
Belfast, Maine

Sample Location	NTB-101	NTB-102
Date Collected	2/21/2018	2/27/2018
Observations	clear pumped water, end of drilling	clear pumped water, end of drilling
Temperature (degrees C)	9.6	8.2
pH	8.3	7.21
ORP (mV)	nm	-56
TDS (ppt)	0.112	0.10
Conductivity (mS/cm)	nm	0.20

Sample Location	GWW-101	GWW-101	GWW-101	GWW-101	GWW-101
Date Collected	2/26/2018	2/27/2018	2/27/2018	4/4/2018	4/5/2018
Observations	murky wash water during drilling at 140'	clear wash water during drilling at ~300'	clear wash water, end of drilling at 320', collected samples	47 hours into pump test	71 hours into pump test, collected samples
Temperature (degrees C)	10.1	8.8	8.2	8.0	7.3
pH	7.33	7.68	7.54	6.58	7.33
ORP (mV)	-39	-72	-76	-44	-29
TDS (ppt)	nm	0.09	0.09	0.07	0.07
Conductivity (mS/cm)	0.17	0.18	0.19	0.14	0.14

Sample Location	GWW-103	GWW-103	GWW-103	GWW-103	GWW-103	GWW-103	GWW-103
Date Collected	3/5/2018	3/5/2018	3/6/2018	3/6/2018	4/3/2018	4/4/2018	4/5/2018
Observations	murky wash water during drilling at ~200'	murky wash water during drilling at ~265'	fairly clear wash water during drilling at 300'	clear wash water, end of drilling at 340', collected samples	31 hours into pump test	47.5 hours into pump test	71.5 hours into pump test, collected samples
Temperature (degrees C)	10.4	10.8	10.4	9.9	9.4	8.9	6.7
pH	nm	7.09	7.83	7.86	7.60	7.13	7.18
ORP (mV)	nm	-31	-94	-101	-79	-72	-30
TDS (ppt)	0.20	0.35	0.65	0.69	0.38	0.35	0.37
Conductivity (mS/cm)	0.40	0.70	1.29	1.38	0.74	0.69	0.74

Sample Location	PW-1	PSD-101	PSD-102	DRX-101	DRX-102
Date Collected	8/30/2018	11/21/2018	11/21/2018	11/21/2018	11/21/2018
Observations	71 hours into pump test, collected samples	clear; end of 72-hr pump test	clear; end of 72-hr pump test	clear; end of 72-hr pump test	clear; end of 72-hr pump test
Temperature (degrees C)	8.6	9.9	8.1	7.0	7.8
pH	6.72	6.65	6.13	6.93	6.94
ORP (mV)	-38	14	79	-48	-31
TDS (ppt)	nm	nm	nm	nm	nm
Conductivity (mS/cm)	0.19	0.16	0.19	0.19	0.19
Dissolved Oxygen (mg/L)	0.55	nm	nm	nm	nm

Notes:
1. nm = not measured

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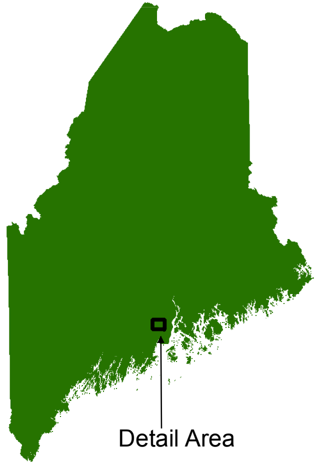
Legend & Notes



Site Boundary

Watershed Boundary

Notes

1. Site Plan based on US Topo basemap.
2. Watersheds delineated from 1/9 arc-second USGS NED data.
2. Some features are approximate in location and scale
3. This plan has been prepared for Nordic Aquafarms Inc. All other uses are not authorized unless written permission is obtained from Ransom Consulting, Inc.

Scale & Orientation

0 1,500 3,000

1 inch = 3,000 feet

Prepared For

Nordic Aquafarms, Inc.
159 High Street
Belfast, Maine

Site Address

Belfast Water District Property
285 Northport Avenue
Belfast, Maine

171.05027 Mar 2019

Figure 1
Watershed Map

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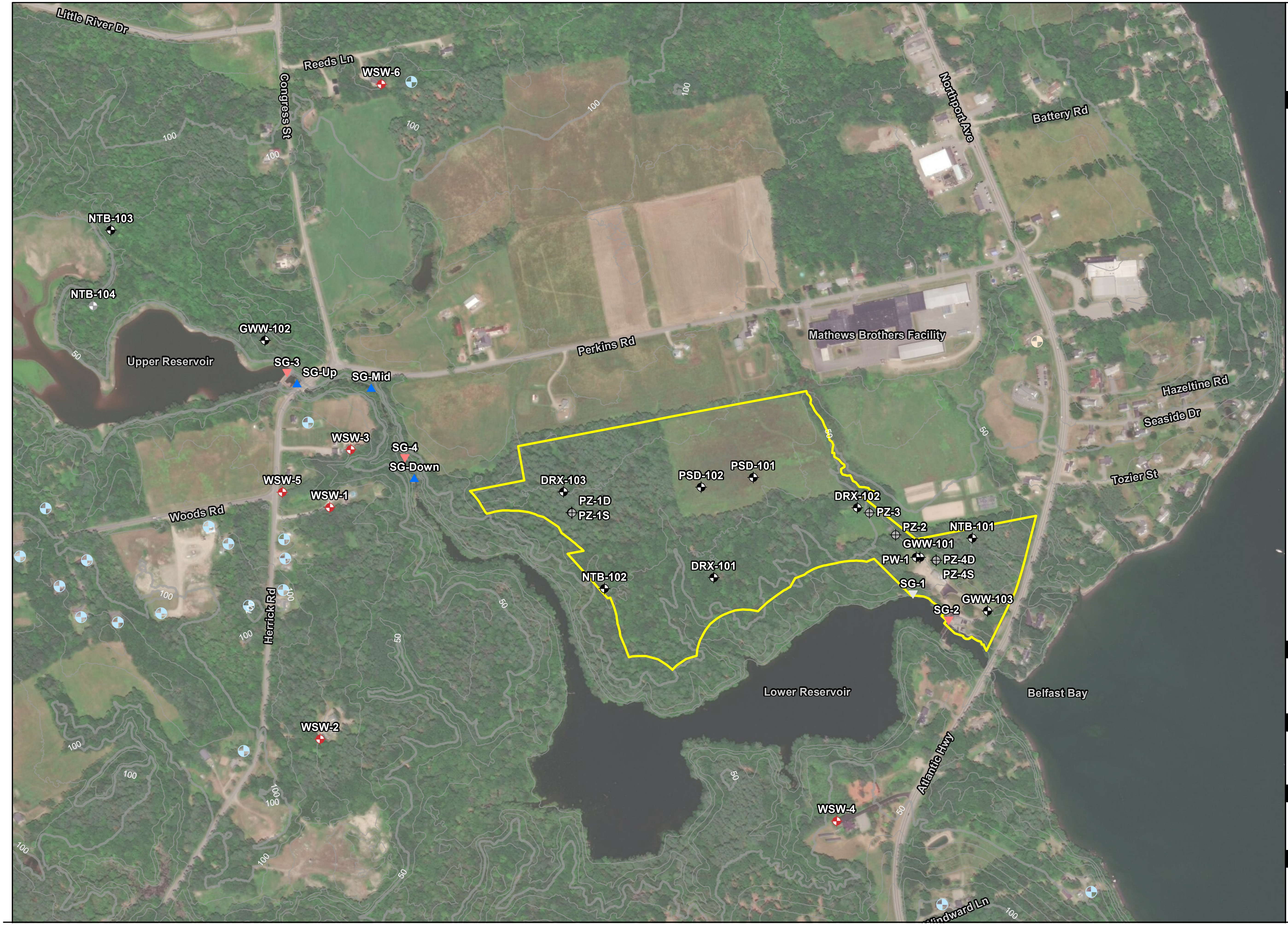

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Legend & Notes

▭	Site Boundary
▼	Staff Gage
▽	Staff Gage- Abandoned
▲	Stream Gage- Manual
⊕	Wetland Piezometer
◆	Monitoring Well
◇	Monitoring Well- Abandoned
●	Private Well- Monitored
○	Private Well- Not Monitored Assumed Location
○	Private Well- Out of Service Unable to Locate

Notes

1. Site Plan based on available orthoimagery
2. Some features are approximate in location and scale.
3. This plan has been prepared for Nordic Aquafarms Inc. All other uses are not authorized unless written permission is obtained from Ransom Consulting, Inc.

Scale & Orientation

0 250 500

1 inch = 500 feet

Prepared For

Nordic Aquafarms, Inc.
159 High Street
Belfast, Maine

Site Address

Belfast Water District Property
285 Northport Avenue
Belfast, Maine

171.05027 | Apr 2019

Figure 2:
Site Area Map

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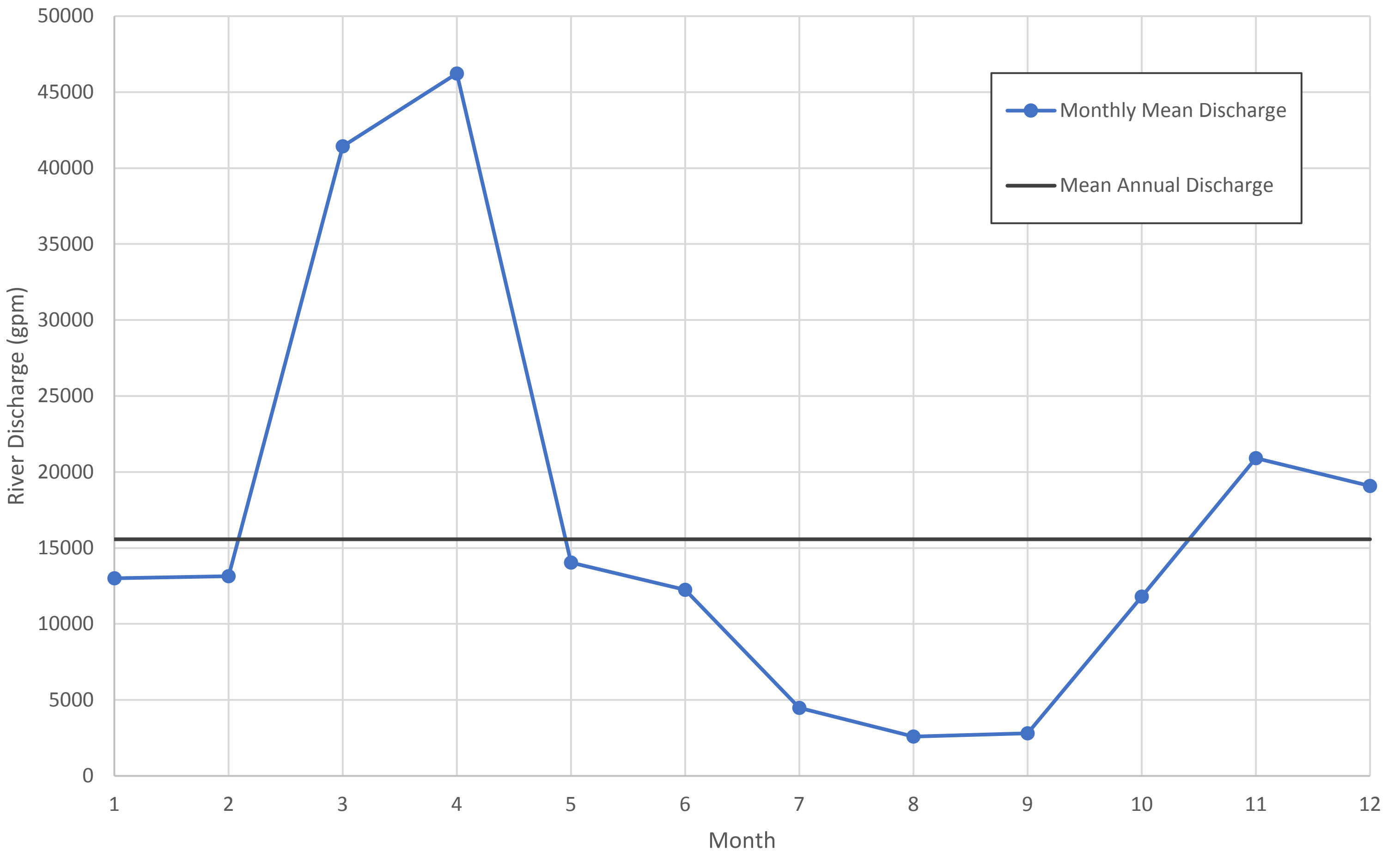
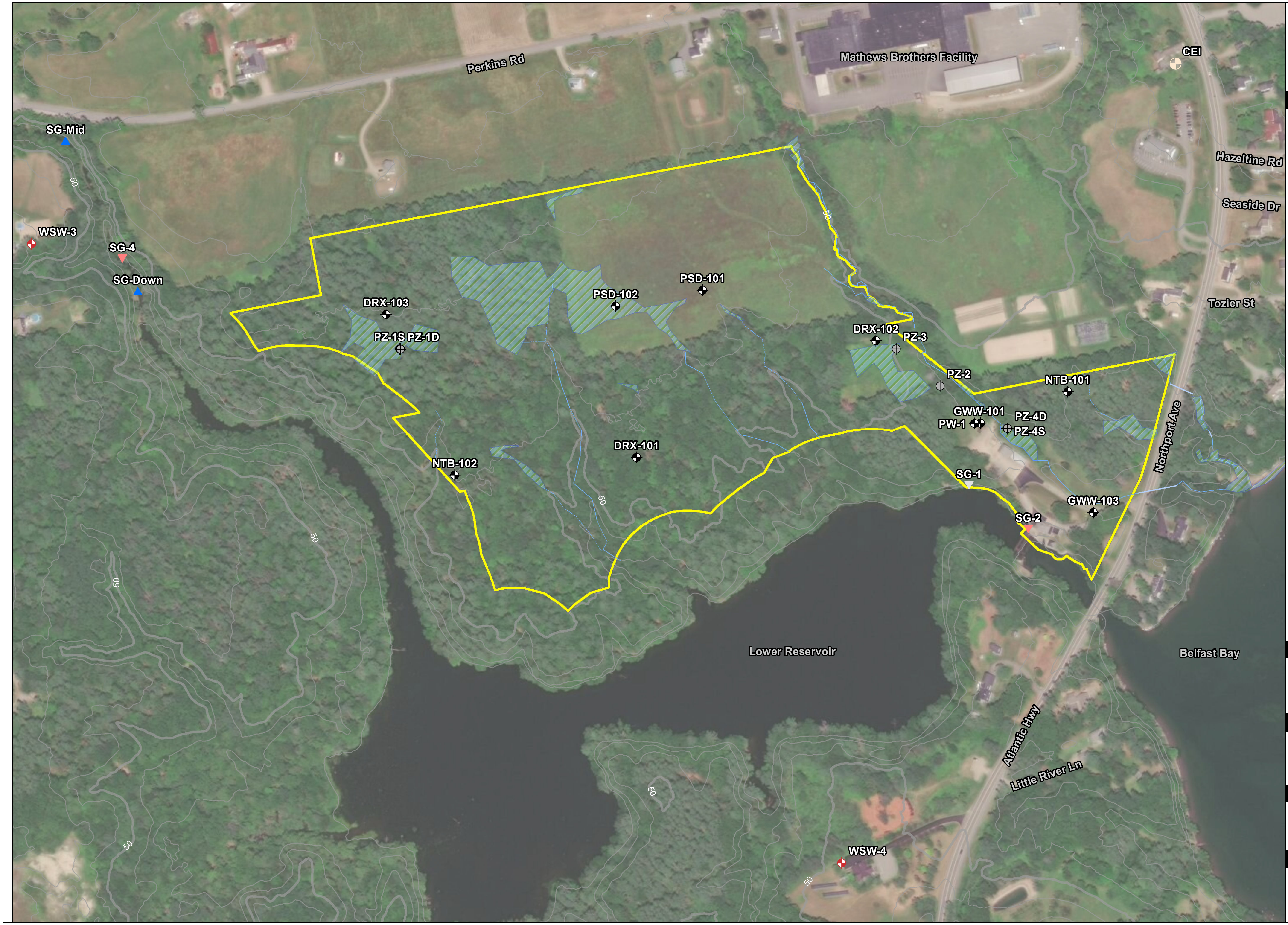
Figure 3: Annual Little River Discahrge from StreamStats





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Legend & Notes

- ▭ Site Boundary
- ▼ Staff Gage
- ▽ Staff Gage-Abandoned
- ▲ Stream Gage-Manual
- ⊕ Wetland Piezometer
- ◆ Monitoring Well
- ◆ Monitoring Well-Abandoned
- ◆ Private Well-Monitored
- ○ Private Well-Not Monitored Assumed Location
- ○ Private Well-Out of Service Unable to Locate
- ▨ Wetland
- ∼ Stream-Intermittent
- ∼ Stream-Ephemeral

Notes

1. Site Plan based on available orthoimagery
2. Some features are approximate in location and scale.
3. This plan has been prepared for Nordic Aquafarms Inc. All other uses are not authorized unless written permission is obtained from Ransom Consulting, Inc.

Scale & Orientation

0 150 300

1 inch = 300 feet

Prepared For

Nordic Aquafarms, Inc.
159 High Street
Belfast, Maine

Site Address

Belfast Water District Property
295 Northport Avenue
Belfast, Maine

171.05027 *Apr 2019*

Figure 4:
Site Features Map

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Figure 5A: sg3 and Precipitation

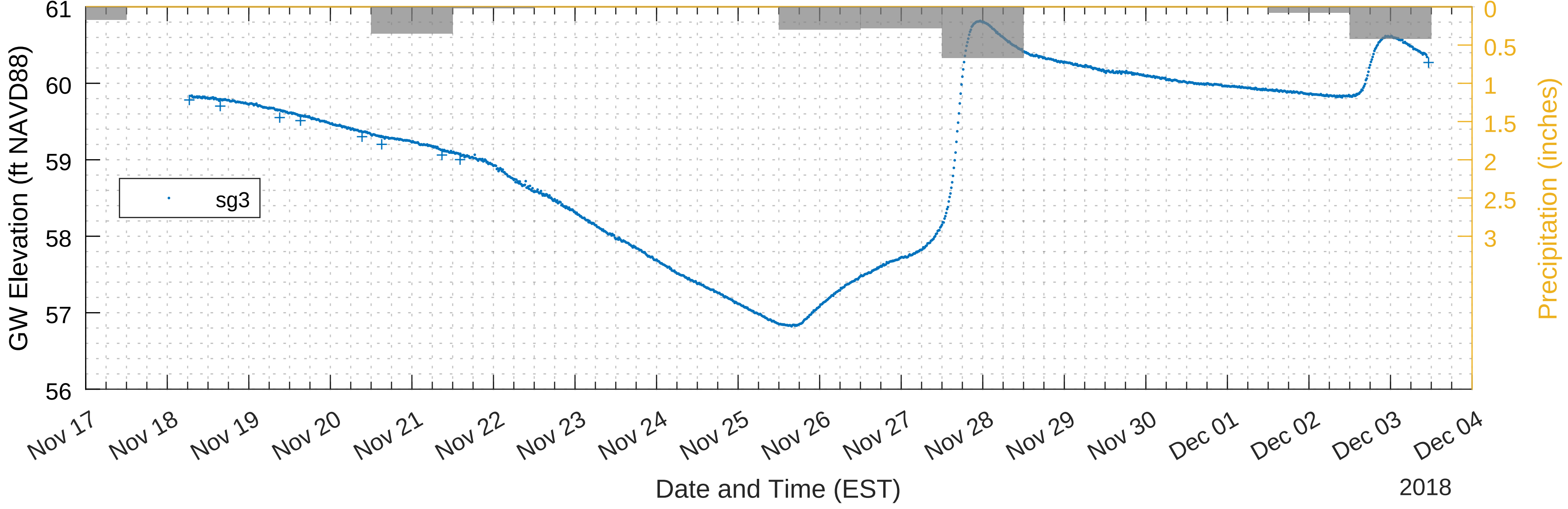


Figure 5B: sg4 and Precipitation

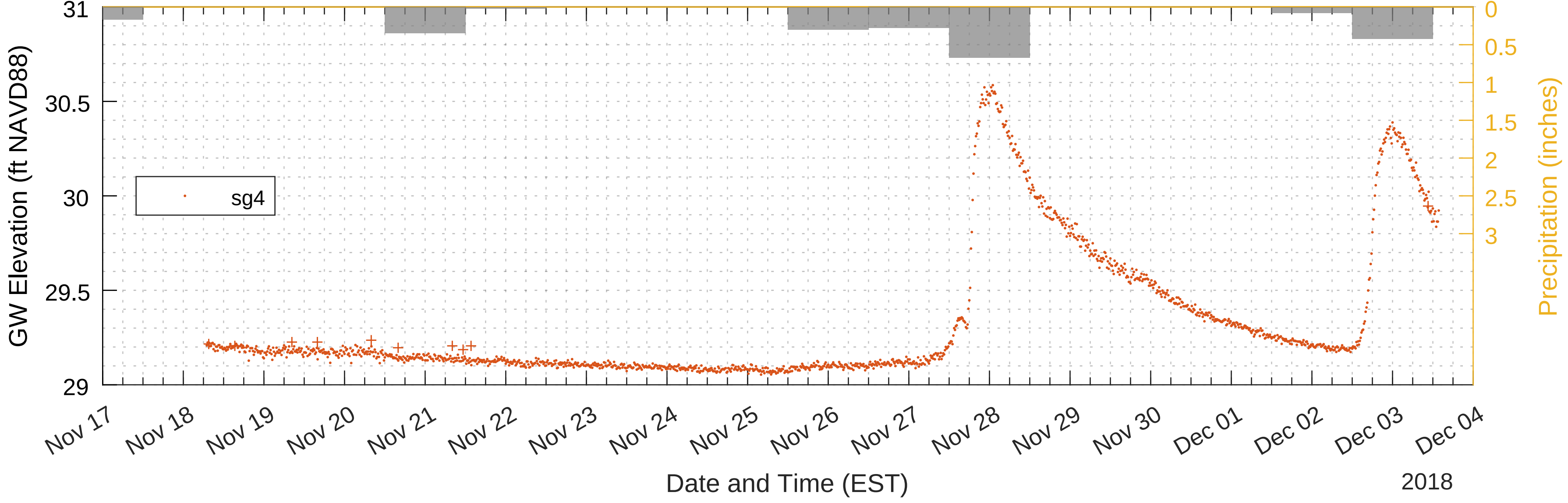


Figure 5C: sg2 and Precipitation

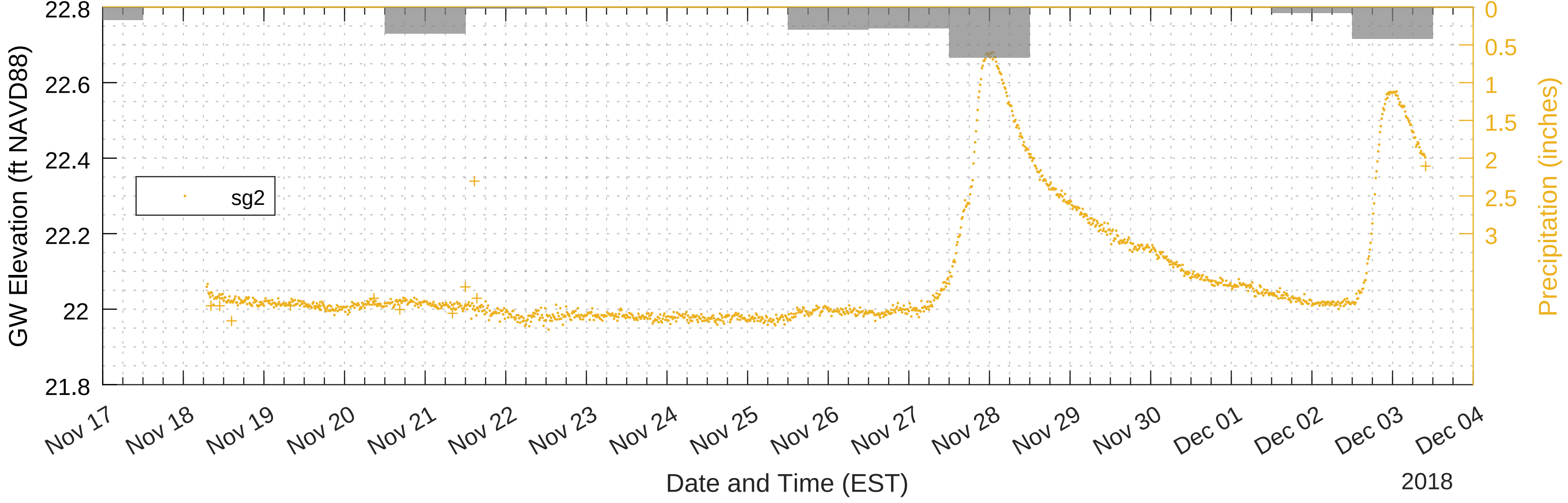
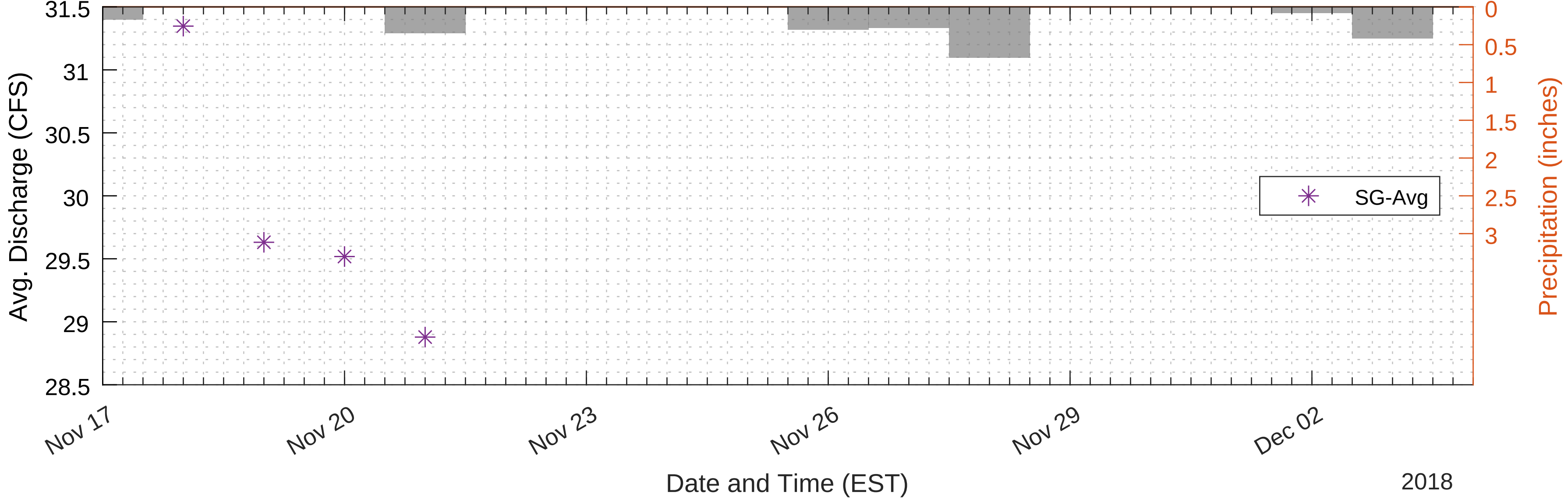


Figure 5D: Average Little River Discharge and Precipitation



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Legend & Notes

- Site Boundary
- ▼ Staff Gage
- ▽ Staff Gage-Abandoned
- ▲ Stream Gage-Manual
- ⊕ Wetland Piezometer
- ◆ Monitoring Well
- ◇ Monitoring Well-Abandoned
- ⊕ Private Well-Monitored
- ○ Private Well-Not Monitored Assumed Location
- ○ Private Well-Out of Service Unable to Locate

Notes

1. Site Plan based on available orthoimagery
2. Some features are approximate in location and scale.
3. Groundwater elevation contours were interpolated by kriging groundwater elevation data at monitoring points collected before 0900 on 1/8/2019. Elevations used in interpolation are shown beneath labels in feet NAVD88.
4. This plan has been prepared for Nordic Aquafarms Inc. All other uses are not authorized unless written permission is obtained from Ransom Consulting, Inc.

Scale & Orientation

0 250 500
1 inch = 500 feet

Prepared For

Nordic Aquafarms, Inc.
159 High Street
Belfast, Maine

Site Address

Belfast Water District Property
285 Northport Avenue
Belfast, Maine

171.05027 *Apr 2019*

Figure 6:
Ambient Groundwater
Contours

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Figure 7A: Groundwater, Surface Water Elevation and Precipitation Near Lower Reservoir

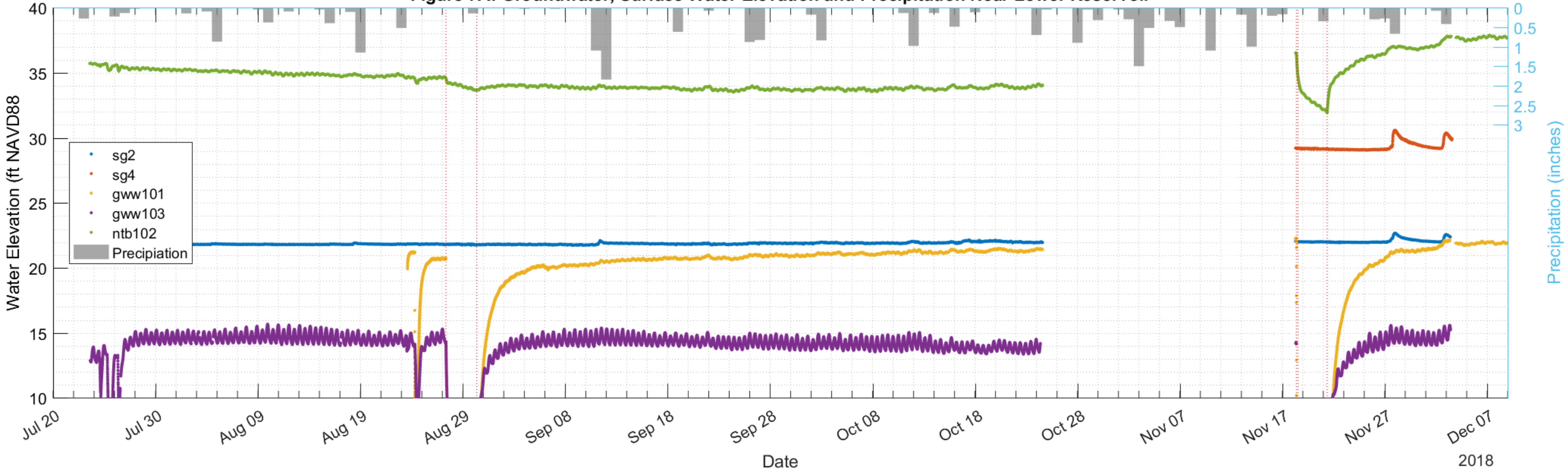
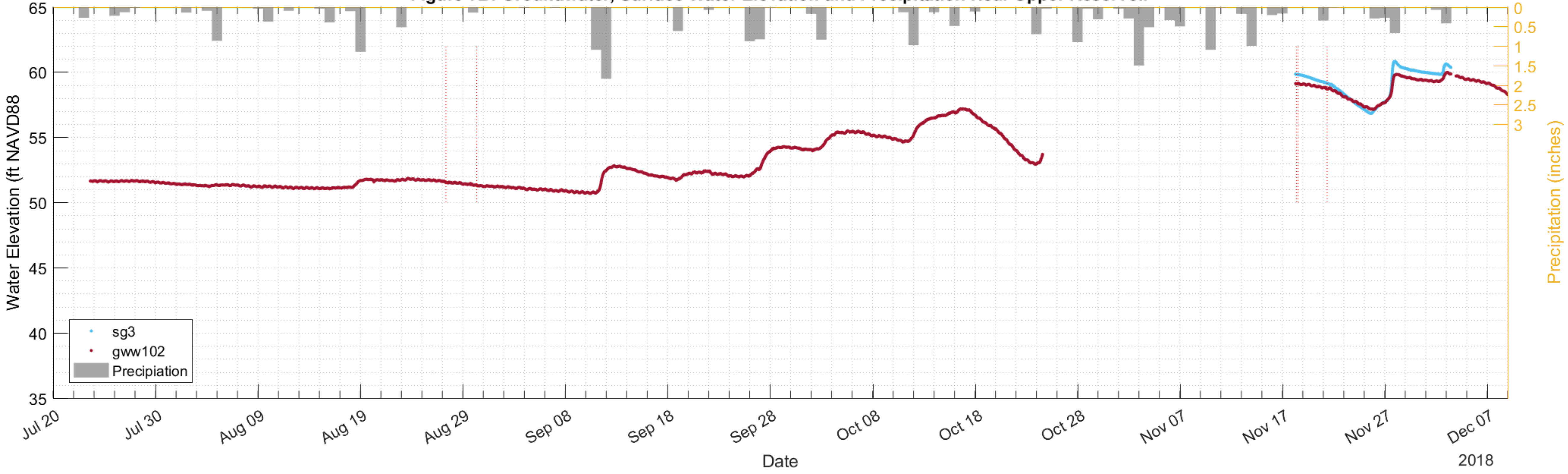


Figure 7B: Groundwater, Surface Water Elevation and Precipitation Near Upper Reservoir



APPENDIX A

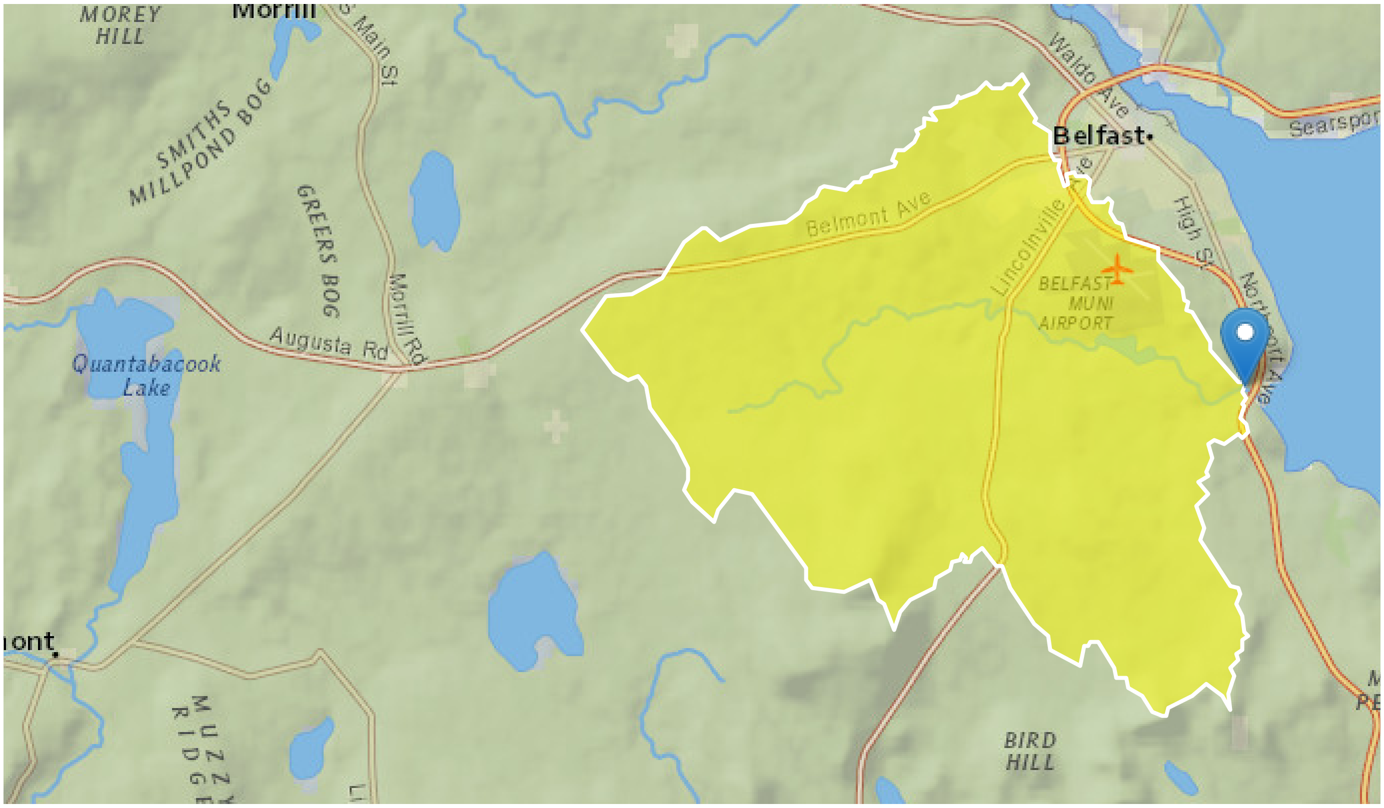
StreamStats Report and Precipitation Data

Hydrogeologic Investigation Report
Proposed Commercial Land-Based Aquaculture Facility
Belfast Water District, Cassida Back Lot, and Mathews Brothers West Field Properties
285 Northport Avenue
Belfast, Maine

Ransom Consulting, Inc.
Project 171.05027.003

Little River StreamStats Report

Region ID: ME
Workspace ID: ME20180613180020022000
Clicked Point (Latitude, Longitude): 44.39511, -68.99043
Time: 2018-06-13 14:01:16 -0400



Generated on 6/13/2018

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	16.7	square miles
STORNWI	Percentage of strorage (combined water bodies and wetlands) from the Nationa Wetlands Inventory	7.05	percent
SANDGRAVAF	Fraction of land surface underlain by sand and gravel aquifers	0.026	dimensionless
ELEV	Mean Basin Elevation	267.8	feet

Parameter Code	Parameter Description	Value	Unit
STATSGOA	Percentage of area of Hydrologic Soil Type A from STATSGO	0.87	percent
COASTDIST	Shortest distance from the coastline to the basin centroid	47	miles
BSLDEM10M	Mean basin slope computed from 10 m DEM	6.21	percent
LC06WATER	Percent of open water, class 11, from NLCD 2006	0.42	percent
ELEVMAX	Maximum basin elevation	747.5	feet
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	10.8	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	2.88	percent
PRECIP	Mean Annual Precipitation	47.6	inches

Bankfull Statistics Parameters [Central and Coastal Bankfull 2004 5042]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	2.92	298

Bankfull Statistics Flow Report [Central and Coastal Bankfull 2004 5042]

Statistic	Value	Unit
Bankfull Streamflow	99.8	ft^3/s
Bankfull Width	33.2	ft
Bankfull Depth	1.55	ft
Bankfull Area	51.2	ft^2

Bankfull Statistics Citations

Dudley, R.W.,2004, Hydraulic-Geometry Relations for Rivers in Coastal and Central Maine: U.S. Geological Survey Scientific Investigations Report 2004-5042, 30 p (http://pubs.usgs.gov/sir/2004/5042/pdf/sir2004-5042.pdf)

Peak-Flow Statistics Parameters [Statewide Peak Flow Full GT 12sqmi WRI 99 4008]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	0.93	1653
STORNWI	Percentage of Storage from NWI	7.05	percent	0.7	26.7

Peak-Flow Statistics Flow Report [Statewide Peak Flow Full GT 12sqmi WRI 99 4008]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	SE	SEp	Equiv. Yrs.
2 Year Peak Flood	601	ft^3/s	335	1080	35.1	35.1	1.8
5 Year Peak Flood	948	ft^3/s	523	1720	36.1	36.1	2.5
10 Year Peak Flood	1210	ft^3/s	656	2230	36.8	36.8	3.2
25 Year Peak Flood	1560	ft^3/s	826	2950	38.6	38.6	4.1
50 Year Peak Flood	1840	ft^3/s	952	3550	39.9	39.9	4.8
100 Year Peak Flood	2140	ft^3/s	1080	4220	41.2	41.2	5.4
500 Year Peak Flood	2880	ft^3/s	1380	6030	44.9	44.9	6.4

Peak-Flow Statistics Citations

Hodgkins, G. A.,1999, Estimating the Magnitude of Peak Flows for Streams in Maine for Selected Recurrence Intervals: U.S. Geological Survey Water-Resources Investigations Report 99-4008, 45 p. (http://me.water.usgs.gov/99-4008.pdf)

Low-Flow Statistics Parameters [Statewide LowFlow SIR 2004 5026]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	9.79	1418
SANDGRAVAF	Fraction of Sand and Gravel Aquifers	0.026	dimensionless	0	0.455

Low-Flow Statistics Flow Report [Statewide LowFlow SIR 2004 5026]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SE	SEp	Equiv. Yrs.

Statistic	Value	Unit	SE	SEp	Equiv. Yrs.
7 Day 10 Year Low Flow	0.728	ft^3/s	44.3	44.3	2.9

Low-Flow Statistics Citations

Dudley, R.W.,2004, Estimating Monthly, Annual, and Low 7-Day, 10-Year Streamflows for Ungaged Rivers in Maine: U.S. Geological Survey Scientific Investigations Report 2004-5026, 22 p. (http://water.usgs.gov/pubs/sir/2004/5026/pdf/sir2004-5026.pdf)

Flow-Duration Statistics Parameters [Statewide Annual SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
SANDGRAVAF	Fraction of Sand and Gravel Aquifers	0.026	dimensionless	0	0.212
ELEV	Mean Basin Elevation	267.8	feet	239	2120

Flow-Duration Statistics Flow Report [Statewide Annual SIR 2015 5151]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
1 Percent Duration	0.124	ft^3/s	144
5 Percent Duration	0.549	ft^3/s	62
10 Percent Duration	1.27	ft^3/s	41
25 Percent Duration	4.98	ft^3/s	22
50 Percent Duration	15.4	ft^3/s	20
75 Percent Duration	38.9	ft^3/s	17
90 Percent Duration	85	ft^3/s	17
95 Percent Duration	131	ft^3/s	18
99 Percent Duration	296	ft^3/s	29

Flow-Duration Statistics Citations

Dudley, R.W.,2015, Regression equations for monthly and annual mean and selected percentile streamflows for ungaged rivers in Maine: U.S. Geological Survey Scientific Investigations Report 2015–5151, 35 p. (http://dx.doi.org/10.3133/sir20155151)

Annual Flow Statistics Parameters [Statewide Annual SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
SANDGRAVAF	Fraction of Sand and Gravel Aquifers	0.026	dimensionless	0	0.212
ELEV	Mean Basin Elevation	267.8	feet	239	2120

Annual Flow Statistics Flow Report [Statewide Annual SIR 2015 5151]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
Mean Annual Flow	34.7	ft^3/s	16

Annual Flow Statistics Citations

Dudley, R.W.,2015, Regression equations for monthly and annual mean and selected percentile streamflows for ungaged rivers in Maine: U.S. Geological Survey Scientific Investigations Report 2015–5151, 35 p. (http://dx.doi.org/10.3133/sir20155151)

January Flow-Duration Statistics Parameters [Statewide January SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
STATSGOA	STATSGO Percent Hydrologic Soil Type A	0.87	percent	0	31.5

January Flow-Duration Statistics Flow Report [Statewide January SIR 2015 5151]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
January 1 Percent Duration	4.23	ft^3/s	49
January 5 Percent Duration	6.23	ft^3/s	37
January 10 Percent Duration	7.74	ft^3/s	35

Statistic	Value	Unit	SEp
January 25 Percent Duration	11	ft^3/s	28
January 50 Percent Duration	15.4	ft^3/s	35
January 75 Percent Duration	25.7	ft^3/s	39
January 90 Percent Duration	49	ft^3/s	40
January 95 Percent Duration	94.6	ft^3/s	45
January 99 Percent Duration	263	ft^3/s	79

January Flow-Duration Statistics Citations

Dudley, R.W.,2015, Regression equations for monthly and annual mean and selected percentile streamflows for ungaged rivers in Maine: U.S. Geological Survey Scientific Investigations Report 2015–5151, 35 p. (http://dx.doi.org/10.3133/sir20155151)

Monthly Flow Statistics Parameters [Statewide January SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
STATSGOA	STATSGO Percent Hydrologic Soil Type A	0.87	percent	0	31.5

Monthly Flow Statistics Parameters [Statewide February SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
COASTDIST	Distance From Coast To Basin Centroid	47	miles	46.6	193
BSLDEM10M	Mean Basin Slope from 10m DEM	6.21	percent	1.5	26.6

Monthly Flow Statistics Parameters [Statewide March SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
COASTDIST	Distance From Coast To Basin Centroid	47	miles	46.6	193
LC06WATER	Percent_Water_from_NLCD2006	0.42	percent	0	6.2

Monthly Flow Statistics Parameters [Statewide April SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
COASTDIST	Distance From Coast To Basin Centroid	47	miles	46.6	193
LC06WATER	Percent_Water_from_NLCD2006	0.42	percent	0	6.2

Monthly Flow Statistics Parameters [Statewide May SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
BSLDEM10M	Mean Basin Slope from 10m DEM	6.21	percent	1.5	26.6
LC06WATER	Percent_Water_from_NLCD2006	0.42	percent	0	6.2

Monthly Flow Statistics Parameters [Statewide June SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
BSLDEM10M	Mean Basin Slope from 10m DEM	6.21	percent	1.5	26.6
LC06WATER	Percent_Water_from_NLCD2006	0.42	percent	0	6.2

Monthly Flow Statistics Parameters [Statewide July SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
SANDGRAVAF	Fraction of Sand and Gravel Aquifers	0.026	dimensionless	0	0.212
ELEV	Mean Basin Elevation	267.8	feet	239	2120

Monthly Flow Statistics Parameters [Statewide August SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
SANDGRAVAF	Fraction of Sand and Gravel Aquifers	0.026	dimensionless	0	0.212
ELEV	Mean Basin Elevation	267.8	feet	239	2120

Monthly Flow Statistics Parameters [Statewide September SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
SANDGRAVAF	Fraction of Sand and Gravel Aquifers	0.026	dimensionless	0	0.212
ELEV	Mean Basin Elevation	267.8	feet	239	2120

Monthly Flow Statistics Parameters [Statewide October SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
SANDGRAVAF	Fraction of Sand and Gravel Aquifers	0.026	dimensionless	0	0.212
ELEV	Mean Basin Elevation	267.8	feet	239	2120

Monthly Flow Statistics Parameters [Statewide November SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
ELEVMAX	Maximum Basin Elevation	747.5	feet	633	6290

Monthly Flow Statistics Parameters [Statewide December SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
STATSGOA	STATSGO Percent Hydrologic Soil Type A	0.87	percent	0	31.5

Monthly Flow Statistics Flow Report [Statewide January SIR 2015 5151]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
January Mean Flow	29	ft^3/s	32

Monthly Flow Statistics Flow Report [Statewide February SIR 2015 5151]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
February Mean Flow	29.3	ft^3/s	17

Monthly Flow Statistics Flow Report [Statewide March SIR 2015 5151]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
March Mean Flow	92.3	ft^3/s	21

Monthly Flow Statistics Flow Report [Statewide April SIR 2015 5151]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
April Mean Flow	103	ft^3/s	18

Monthly Flow Statistics Flow Report [Statewide May SIR 2015 5151]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
May Mean Flow	31.3	ft^3/s	23

Monthly Flow Statistics Flow Report [Statewide June SIR 2015 5151]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
June Mean Flow	27.3	ft^3/s	21

Monthly Flow Statistics Flow Report [Statewide July SIR 2015 5151]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
July Mean Flow	10	ft^3/s	22

Monthly Flow Statistics Flow Report [Statewide August SIR 2015 5151]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
August Mean Flow	5.77	ft^3/s	34

Monthly Flow Statistics Flow Report [Statewide September SIR 2015 5151]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
September Mean Flow	6.27	ft^3/s	33

Monthly Flow Statistics Flow Report [Statewide October SIR 2015 5151]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
October Mean Flow	26.3	ft^3/s	35

Monthly Flow Statistics Flow Report [Statewide November SIR 2015 5151]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
November Mean Flow	46.6	ft^3/s	23

Monthly Flow Statistics Flow Report [Statewide December SIR 2015 5151]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
December Mean Flow	42.5	ft^3/s	29

Monthly Flow Statistics Citations

Dudley, R.W.,2015, Regression equations for monthly and annual mean and selected percentile streamflows for ungaged rivers in Maine: U.S. Geological Survey Scientific Investigations Report 2015–5151, 35 p. (http://dx.doi.org/10.3133/sir20155151)

February Flow-Duration Statistics Parameters [Statewide February SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
COASTDIST	Distance From Coast To Basin Centroid	47	miles	46.6	193
BSLDEM10M	Mean Basin Slope from 10m DEM	6.21	percent	1.5	26.6

February Flow-Duration Statistics Flow Report [Statewide February SIR 2015 5151]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
February 1 Percent Duration	4.85	ft^3/s	50
February 5 Percent Duration	5.91	ft^3/s	37
February 10 Percent Duration	7.66	ft^3/s	33
February 25 Percent Duration	10.8	ft^3/s	27
February 50 Percent Duration	15.9	ft^3/s	23
February 75 Percent Duration	29.7	ft^3/s	16
February 90 Percent Duration	55.3	ft^3/s	22
February 95 Percent Duration	106	ft^3/s	31
February 99 Percent Duration	259	ft^3/s	46

February Flow-Duration Statistics Citations

Dudley, R.W.,2015, Regression equations for monthly and annual mean and selected percentile streamflows for ungaged rivers in Maine: U.S. Geological Survey Scientific Investigations Report 2015–5151, 35 p. (http://dx.doi.org/10.3133/sir20155151)

March Flow-Duration Statistics Parameters [Statewide March SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
COASTDIST	Distance From Coast To Basin Centroid	47	miles	46.6	193
LC06WATER	Percent_Water_from_NLCD2006	0.42	percent	0	6.2

March Flow-Duration Statistics Flow Report [Statewide March SIR 2015 5151]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
March 1 Percent Duration	7.6	ft^3/s	48
March 5 Percent Duration	10.3	ft^3/s	41
March 10 Percent Duration	13.8	ft^3/s	31
March 25 Percent Duration	23.9	ft^3/s	23
March 50 Percent Duration	53.2	ft^3/s	20
March 75 Percent Duration	109	ft^3/s	25
March 90 Percent Duration	212	ft^3/s	29
March 95 Percent Duration	296	ft^3/s	37
March 99 Percent Duration	606	ft^3/s	33

March Flow-Duration Statistics Citations

Dudley, R.W.,2015, Regression equations for monthly and annual mean and selected percentile streamflows for ungaged rivers in Maine: U.S. Geological Survey Scientific Investigations Report 2015–5151, 35 p. (http://dx.doi.org/10.3133/sir20155151)

April Flow-Duration Statistics Parameters [Statewide April SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
COASTDIST	Distance From Coast To Basin Centroid	47	miles	46.6	193
LC06WATER	Percent_Water_from_NLCD2006	0.42	percent	0	6.2

April Flow-Duration Statistics Flow Report [Statewide April SIR 2015 5151]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
April 1 Percent Duration	16.6	ft^3/s	38
April 5 Percent Duration	23.5	ft^3/s	37
April 10 Percent Duration	29.5	ft^3/s	28
April 25 Percent Duration	42.7	ft^3/s	24
April 50 Percent Duration	61.3	ft^3/s	22
April 75 Percent Duration	114	ft^3/s	22
April 90 Percent Duration	215	ft^3/s	20
April 95 Percent Duration	321	ft^3/s	19
April 99 Percent Duration	731	ft^3/s	32

April Flow-Duration Statistics Citations

Dudley, R.W.,2015, Regression equations for monthly and annual mean and selected percentile streamflows for ungaged rivers in Maine: U.S. Geological Survey Scientific Investigations Report 2015–5151, 35 p. (http://dx.doi.org/10.3133/sir20155151)

May Flow-Duration Statistics Parameters [Statewide May SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
BSLDEM10M	Mean Basin Slope from 10m DEM	6.21	percent	1.5	26.6

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
LC06WATER	Percent_Water_from_NLCD2006	0.42	percent	0	6.2

May Flow-Duration Statistics Flow Report [Statewide May SIR 2015 5151]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
May 1 Percent Duration	3.87	ft^3/s	43
May 5 Percent Duration	6.12	ft^3/s	34
May 10 Percent Duration	7.87	ft^3/s	31
May 25 Percent Duration	12.3	ft^3/s	26
May 50 Percent Duration	20.3	ft^3/s	22
May 75 Percent Duration	34.4	ft^3/s	24
May 90 Percent Duration	61.1	ft^3/s	30
May 95 Percent Duration	92.8	ft^3/s	31
May 99 Percent Duration	202	ft^3/s	27

May Flow-Duration Statistics Citations

Dudley, R.W.,2015, Regression equations for monthly and annual mean and selected percentile streamflows for ungaged rivers in Maine: U.S. Geological Survey Scientific Investigations Report 2015–5151, 35 p. (http://dx.doi.org/10.3133/sir20155151)

June Flow-Duration Statistics Parameters [Statewide June SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
BSLDEM10M	Mean Basin Slope from 10m DEM	6.21	percent	1.5	26.6
LC06WATER	Percent_Water_from_NLCD2006	0.42	percent	0	6.2

June Flow-Duration Statistics Flow Report [Statewide June SIR 2015 5151]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
June 1 Percent Duration	2.32	ft^3/s	69
June 5 Percent Duration	3.06	ft^3/s	52
June 10 Percent Duration	3.71	ft^3/s	46
June 25 Percent Duration	6.02	ft^3/s	34
June 50 Percent Duration	10.8	ft^3/s	27
June 75 Percent Duration	24.8	ft^3/s	28
June 90 Percent Duration	61.9	ft^3/s	34
June 95 Percent Duration	121	ft^3/s	34
June 99 Percent Duration	388	ft^3/s	47

June Flow-Duration Statistics Citations

Dudley, R.W.,2015, Regression equations for monthly and annual mean and selected percentile streamflows for ungaged rivers in Maine: U.S. Geological Survey Scientific Investigations Report 2015–5151, 35 p. (http://dx.doi.org/10.3133/sir20155151)

July Flow-Duration Statistics Parameters [Statewide July SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
SANDGRAVAF	Fraction of Sand and Gravel Aquifers	0.026	dimensionless	0	0.212
ELEV	Mean Basin Elevation	267.8	feet	239	2120

July Flow-Duration Statistics Flow Report [Statewide July SIR 2015 5151]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
July 1 Percent Duration	0.421	ft^3/s	96
July 5 Percent Duration	0.796	ft^3/s	78
July 10 Percent Duration	1.05	ft^3/s	64
July 25 Percent Duration	1.69	ft^3/s	49
July 50 Percent Duration	3.6	ft^3/s	37

Statistic	Value	Unit	SEp
July 75 Percent Duration	9.08	ft^3/s	31
July 90 Percent Duration	22.6	ft^3/s	28
July 95 Percent Duration	39.4	ft^3/s	33
July 99 Percent Duration	96.5	ft^3/s	60

July Flow-Duration Statistics Citations

Dudley, R.W.,2015, Regression equations for monthly and annual mean and selected percentile streamflows for ungaged rivers in Maine: U.S. Geological Survey Scientific Investigations Report 2015–5151, 35 p. (http://dx.doi.org/10.3133/sir20155151)

August Flow-Duration Statistics Parameters [Statewide August SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
SANDGRAVAF	Fraction of Sand and Gravel Aquifers	0.026	dimensionless	0	0.212
ELEV	Mean Basin Elevation	267.8	feet	239	2120

August Flow-Duration Statistics Flow Report [Statewide August SIR 2015 5151]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
August 1 Percent Duration	0.0402	ft^3/s	319
August 5 Percent Duration	0.121	ft^3/s	155
August 10 Percent Duration	0.183	ft^3/s	130
August 25 Percent Duration	0.699	ft^3/s	60
August 50 Percent Duration	1.58	ft^3/s	40
August 75 Percent Duration	5.04	ft^3/s	35
August 90 Percent Duration	13.4	ft^3/s	36
August 95 Percent Duration	22.8	ft^3/s	34
August 99 Percent Duration	71.2	ft^3/s	59

August Flow-Duration Statistics Citations

Dudley, R.W.,2015, Regression equations for monthly and annual mean and selected percentile streamflows for ungaged rivers in Maine: U.S. Geological Survey Scientific Investigations Report 2015–5151, 35 p. (http://dx.doi.org/10.3133/sir20155151)

September Flow-Duration Statistics Parameters [Statewide September SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
SANDGRAVAF	Fraction of Sand and Gravel Aquifers	0.026	dimensionless	0	0.212
ELEV	Mean Basin Elevation	267.8	feet	239	2120

September Flow-Duration Statistics Flow Report [Statewide September SIR 2015 5151]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
September 1 Percent Duration	0.0341	ft^3/s	304
September 5 Percent Duration	0.0521	ft^3/s	315
September 10 Percent Duration	0.215	ft^3/s	106
September 25 Percent Duration	0.552	ft^3/s	65
September 50 Percent Duration	1.56	ft^3/s	36
September 75 Percent Duration	5.17	ft^3/s	26
September 90 Percent Duration	12.5	ft^3/s	38
September 95 Percent Duration	24.7	ft^3/s	44
September 99 Percent Duration	94.1	ft^3/s	67

September Flow-Duration Statistics Citations

Dudley, R.W.,2015, Regression equations for monthly and annual mean and selected percentile streamflows for ungaged rivers in Maine: U.S. Geological Survey Scientific Investigations Report 2015–5151, 35 p. (http://dx.doi.org/10.3133/sir20155151)

October Flow-Duration Statistics Parameters [Statewide October SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
SANDGRAVAF	Fraction of Sand and Gravel Aquifers	0.026	dimensionless	0	0.212
ELEV	Mean Basin Elevation	267.8	feet	239	2120

October Flow-Duration Statistics Flow Report [Statewide October SIR 2015 5151]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
October 1 Percent Duration	0.229	ft^3/s	129
October 5 Percent Duration	0.359	ft^3/s	110
October 10 Percent Duration	0.748	ft^3/s	64
October 25 Percent Duration	2.39	ft^3/s	28
October 50 Percent Duration	7.57	ft^3/s	33
October 75 Percent Duration	24.2	ft^3/s	39
October 90 Percent Duration	61.8	ft^3/s	47
October 95 Percent Duration	110	ft^3/s	45
October 99 Percent Duration	308	ft^3/s	61

October Flow-Duration Statistics Citations

Dudley, R.W.,2015, Regression equations for monthly and annual mean and selected percentile streamflows for ungaged rivers in Maine: U.S. Geological Survey Scientific Investigations Report 2015–5151, 35 p. (http://dx.doi.org/10.3133/sir20155151)

November Flow-Duration Statistics Parameters [Statewide November SIR 2015 5151]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
ELEVMAX	Maximum Basin Elevation	747.5	feet	633	6290

November Flow-Duration Statistics Flow Report [Statewide November SIR 2015 5151]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	**Value**	**Unit**	**SEp**
November 1 Percent Duration	1.51	ft^3/s	141
November 5 Percent Duration	2.65	ft^3/s	91
November 10 Percent Duration	5.83	ft^3/s	45
November 25 Percent Duration	14.8	ft^3/s	32
November 50 Percent Duration	28.7	ft^3/s	24
November 75 Percent Duration	54.2	ft^3/s	21
November 90 Percent Duration	101	ft^3/s	26
November 95 Percent Duration	148	ft^3/s	37
November 99 Percent Duration	308	ft^3/s	58

November Flow-Duration Statistics Citations

Dudley, R.W.,2015, Regression equations for monthly and annual mean and selected percentile streamflows for ungaged rivers in Maine: U.S. Geological Survey Scientific Investigations Report 2015–5151, 35 p. (http://dx.doi.org/10.3133/sir20155151)

December Flow-Duration Statistics Parameters [Statewide December SIR 2015 5151]

Parameter Code	**Parameter Name**	**Value**	**Units**	**Min Limit**	**Max Limit**
DRNAREA	Drainage Area	16.7	square miles	14.9	1419
STATSGOA	STATSGO Percent Hydrologic Soil Type A	0.87	percent	0	31.5

December Flow-Duration Statistics Flow Report [Statewide December SIR 2015 5151]

PIl: Prediction Interval-Lower, PIu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	**Value**	**Unit**	**SEp**
December 1 Percent Duration	1.95	ft^3/s	109
December 5 Percent Duration	5.14	ft^3/s	33
December 10 Percent Duration	9.29	ft^3/s	26
December 25 Percent Duration	15.7	ft^3/s	27
December 50 Percent Duration	26.9	ft^3/s	35

Statistic	Value	Unit	SEp
December 75 Percent Duration	42.9	ft^3/s	39
December 90 Percent Duration	78.3	ft^3/s	39
December 95 Percent Duration	133	ft^3/s	38
December 99 Percent Duration	310	ft^3/s	61

December Flow-Duration Statistics Citations

Dudley, R.W.,2015, Regression equations for monthly and annual mean and selected percentile streamflows for ungaged rivers in Maine: U.S. Geological Survey Scientific Investigations Report 2015–5151, 35 p. (http://dx.doi.org/10.3133/sir20155151)

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Application Version: 4.2.1

APPENDIX B

Resistivity Survey Report

Hydrogeologic Investigation Report
Proposed Commercial Land-Based Aquaculture Facility
Belfast Water District, Cassida Back Lot, and Mathews Brothers West Field Properties
285 Northport Avenue
Belfast, Maine

Ransom Consulting, Inc.
Project 171.05027.003

ELECTRICAL RESISTIVITY
SURVEY AT THE
BELFAST WATER DISTRICT SITE,
BELFAST, MAINE

For:

RANSOM CONSULTING, INC.

Northeast Geophysical Services
4 Union Street, Suite 3
Bangor, Maine 04401
October, 2018

ELECTRICAL RESISTIVITY
SURVEY AT THE
BELFAST WATER DISTRICT SITE,
BELFAST, MAINE

INTRODUCTION

At the request of Ransom Consulting, Inc. an electrical resistivity survey was completed by Northeast Geophysical Services (NGS) at the Belfast Water District property in Belfast, Maine. Nine survey lines totaling 16,800 feet were surveyed. Fieldwork for Lines 1-7 was done on February 6-15, 2018 by Mike Scully, Rudy, Jack and Richard Rawcliffe of NGS. Fieldwork for Lines 8 and 9 was done on September 27 and October 1, 2018 by Mike Scully, Rudy Rawcliffe and Wayne Campbell of NGS. The results of the survey will be used to assist in the selection of well drilling locations. This report describes the equipment and methods used and the results of the survey. Vertical profiles that show the modeled 2-D resistivity for each survey line are included with the report.

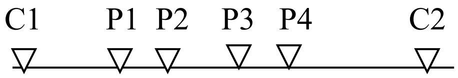
SITE LOCATION

Two areas, named Area 1 and Area 2, were explored. Area 1 contains resistivity Lines 1 through 5 and also Line 8 and 9 and is located in the area north of Belfast Reservoir Number One. Area 2 contains resistivity Lines 6 and 7 and is located in the area north of Belfast Reservoir Number Two of the Belfast Water District. The line locations were surveyed using a hand-held GPS instrument. Figure 1, on the following page, shows the location and orientation of the seven lines (Lines 1-5, 8 and 9) in Area 1. Figure 2 (page 3) shows the location and orientation of the two lines (Lines 6 and 7) in Area 2.

RESISTIVITY METHOD AND INSTRUMENTATION

Electrical resistivity is the resistance (in ohms) to the flow of electricity across a volume of material. Resistivity values are commonly expressed in ohmmeters. The resistivity of earth material is determined by measuring the voltage drop between two electrodes when current is applied into the earth through two other electrodes located a set distance away. Resistivity is calculated by dividing the voltage by the current multiplied by a constant. This constant is determined by the electrode spacing and configuration.

At the Belfast Water District site resistivity data were collected using an ABEM Terrameter SAS 4000 resistivity meter with an ABEM LUND 10-64e electrode selector. This is an automated multi-electrode resistivity system. The survey was conducted using the gradient array. The gradient configuration consists of pairs of potential electrodes that are inside a pair of current electrodes. Depth of investigation is determined by the spacing between the current electrodes with the wider spacing penetrating more deeply into the earth.



gradient configuration

FIGURE 1
Area 1 Resistivity Line Location Map

Line locations are approximate
in relation to photo.

Northeast Geophysical Services

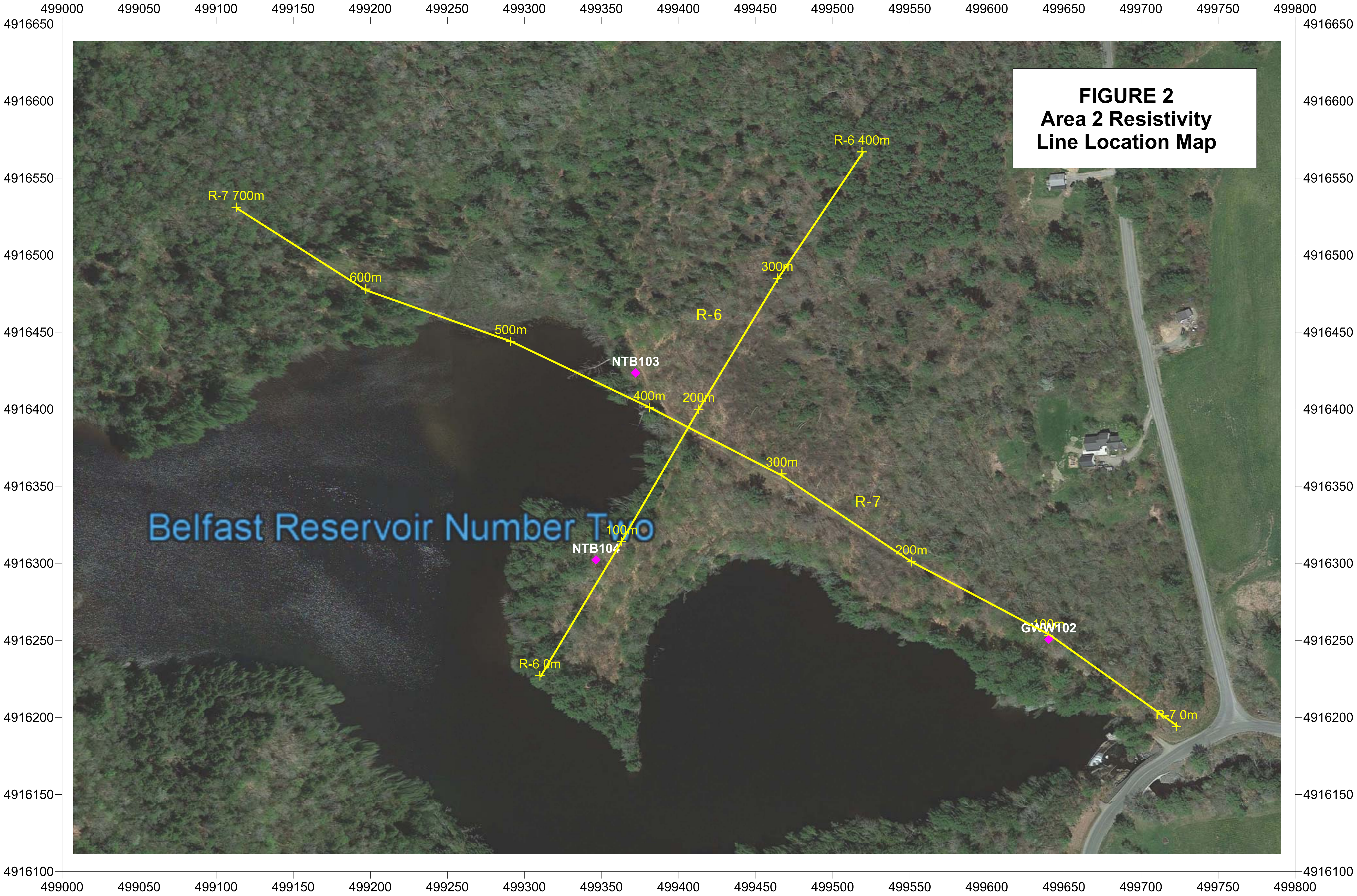


FIGURE 2
Area 2 Resistivity
Line Location Map

Line locations are approximate in relation to photo.

The resistivity of earth material is primarily determined by its water content and the water salinity. Lower resistivities can be caused by increasing the water content or by increasing the water salinity or both. Thus, dry soil or rock typically has a higher resistivity than if it is saturated. And generally, the more porous or highly fractured that saturated material is, the lower its resistivity will be. The following table shows some general ranges in resistivity of some common earth materials.

Material	Resistivity (ohmmeters)
Wet to moist clayey soil and wet clay	1s to 10s
Wet to moist silty soil and silty clay	Low 10s
Wet to moist silty and sandy soils	10s to 100s
Sand and gravel with layers of silt	Low 1000s
Course dry sand and gravel deposits	High 1000s
Well-fractured to slightly fractured saturated rock	100s
Slightly fractured rock with dry, soil filled cracks	Low 1000s
Massively bedded rock	High 1000s

(from Burger, H. R., 1992, Exploration Geophysics of the Shallow Subsurface pp. 295
Prentice Hall, Inc., Englewood Cliffs, New Jersey 07632)

SURVEY RESULTS

The data were interpreted using the RES2DINV interpretation software written by M.H. Loke. This program creates a 2-dimensional model of the subsurface resistivity based on the apparent resistivities measured at the surface. The effectiveness of the model to match the surface measurements is calculated as a percentage of the root-mean-square (% RMS) difference between the modeled and actual measurements. In general, a RMS value of 10% or less is considered a close match between the model and field measurements. At the Belfast Water District site, the RMS values for the models was generally good, averaging less than 10%.

The interpreted data was then contoured using the Surfer contouring program by Golden Software and presented as colorized vertical sections of apparent resistivity for each line. The colors in these sections depict the modeled resistivity with light orange-red to dark red-brown representing areas of high resistivity (700 to >10,000 ohmmeters) and low resistivities (below 200 ohmmeters) shown in blue shades. Resistivities from 200 to 600 ohmmeters are represented by white to yellow tones.

The interpreted data are presented in the appendix as colorized vertical profiles of the modeled resistivity for each of the seven survey lines. The lowest resistivities, which are shown in blue, are interpreted to represent saturated soils or highly fractured saturated bedrock. The highest resistivities, shown in dark red-brown, are interpreted to represent dry sand and gravel soil or massive (unfractured) bedrock. Intermediate colors (yellows to light orange) are interpreted to represent intermediate conditions, i.e. - moist silty or sandy soils or saturated fractured bedrock.

Also shown on the profiles are the approximate locations of the test wells that were drilled after the resistivity survey.

Possible fracture zones may appear on the profiles as areas of relatively low resistivity that cut across areas of high resistivity. For example, on Line 2 there is an east dipping resistivity low area from about 1,800 to 1,400 feet along the line. Similarly, on Line 3 there is a near vertical low resistivity zone from about 975 to 1075 feet along the line. These and other relatively low resistivity zones seen on the models may represent bedrock fracture zones.

LIMITATIONS

The interpreted resistivity sections in this report provide an indication of subsurface conditions at the sites surveyed. This information should be used along with other sources such as geologic mapping, photo-lineament mapping and other geophysical surveys in order to prioritize and optimize drill hole locations.

Electrical resistivity is an effective tool for mapping subsurface features such as saturated sediment or bedrock fracture zones. However, as with any indirect measurement, there are limitations to this method that should be kept in mind. First, it is possible that erroneous or bad data points may have been collected. Bad data would result in incorrect interpretations of the subsurface. A common difficulty in resistivity surveys is high contact resistance between the electrodes and the ground. Ideally, contact resistance should be about 1,000 ohms. The frozen soil along some of the survey lines was challenging and did cause high contact resistances in some areas but the data collected at the Belfast Water District site appeared to be generally good.

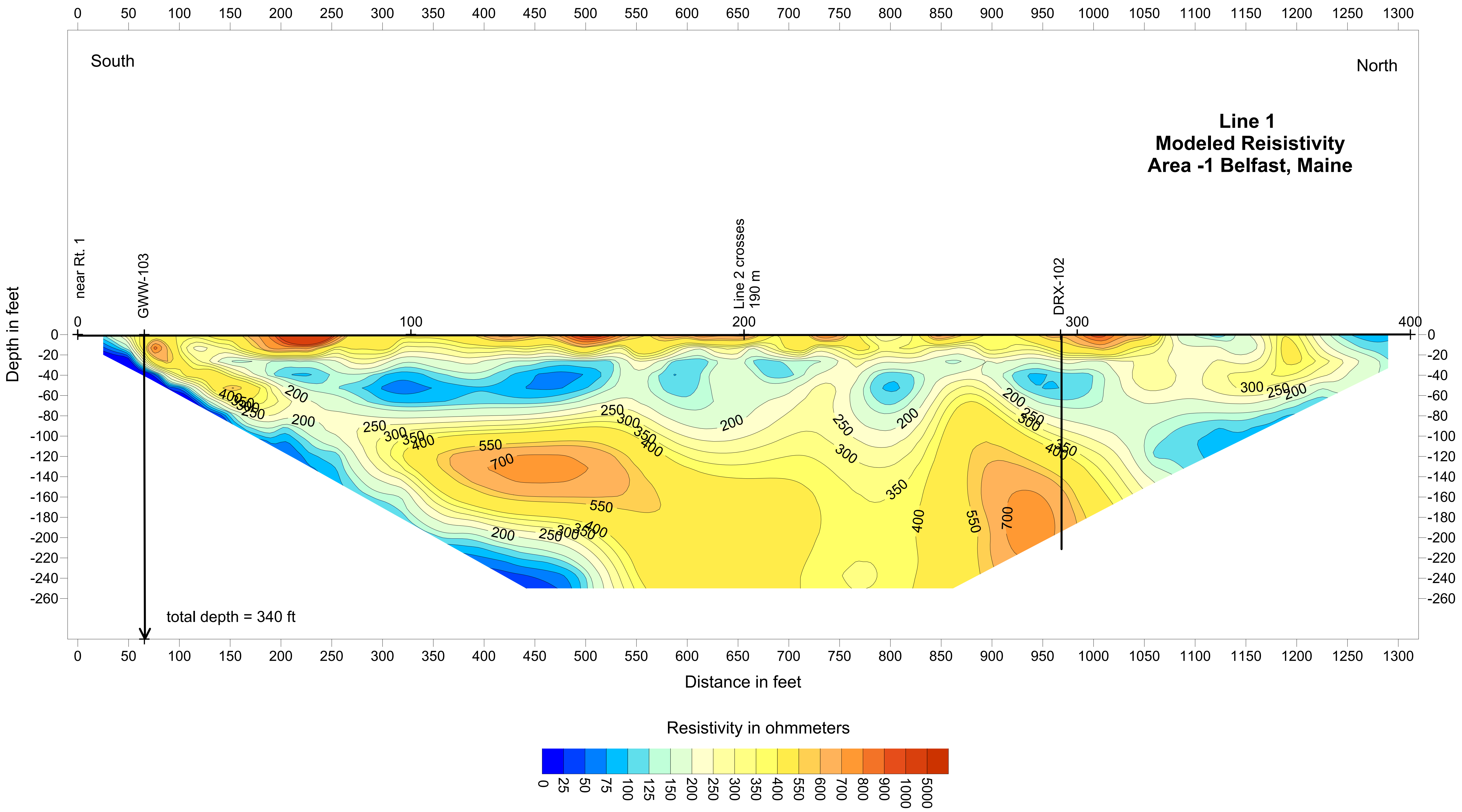
Data quality was assessed in two ways. During data acquisition the instrument makes resistivity readings at each point using forward and reversed polarities (pulsing from electrode A to electrode B and then pulsing from B to A). Unless the data is noisy, these readings should repeat to less than 1%. The difference between the forward and reversed polarity measurements in the resistivity readings at the Belfast Water District site was generally less than 1%.

After the data had been collected, profiles of the apparent resistivity for each “n” level on each of the lines surveyed were examined. Normally, these resistivity profiles should be relatively flat or smoothly varying. Bad data points can be identified as data points that abruptly deflect either upwards or downwards from the profile. There were a few bad data points observed in each of lines of the Belfast Water District site data set. Obviously bad data points were removed before each profile was interpreted.

The modeled resistivity sections presented in this report created interpretations of the subsurface that closely agree mathematically with the field measurements. However, it is possible that other models of the subsurface exist that could also match the field measurements.

It should also be kept in mind that the modeled interpretations assume that changes in resistivity occur in two dimensions, either with depth or distance along the line. In reality the resistivity measurements also measure material to the left and right of the survey line. Thus, it is possible that the program might model a feature that is not actually directly below the electrodes. A worst-case scenario of this would be if a resistivity survey line were run parallel to a vertical conductor such as a metal pipeline or a vertical bedrock fracture. This feature might be detected and shown on the profile as a resistivity low zone even though it is not below the electrodes. Ideally, the resistivity lines should be oriented so as to cross any suspected features (such as bedrock fractures) at right angles to the strike of that feature.

MODELED RESISTIVITY
PROFILES



Line 1
Modeled Reisistivity
Area -1 Belfast, Maine

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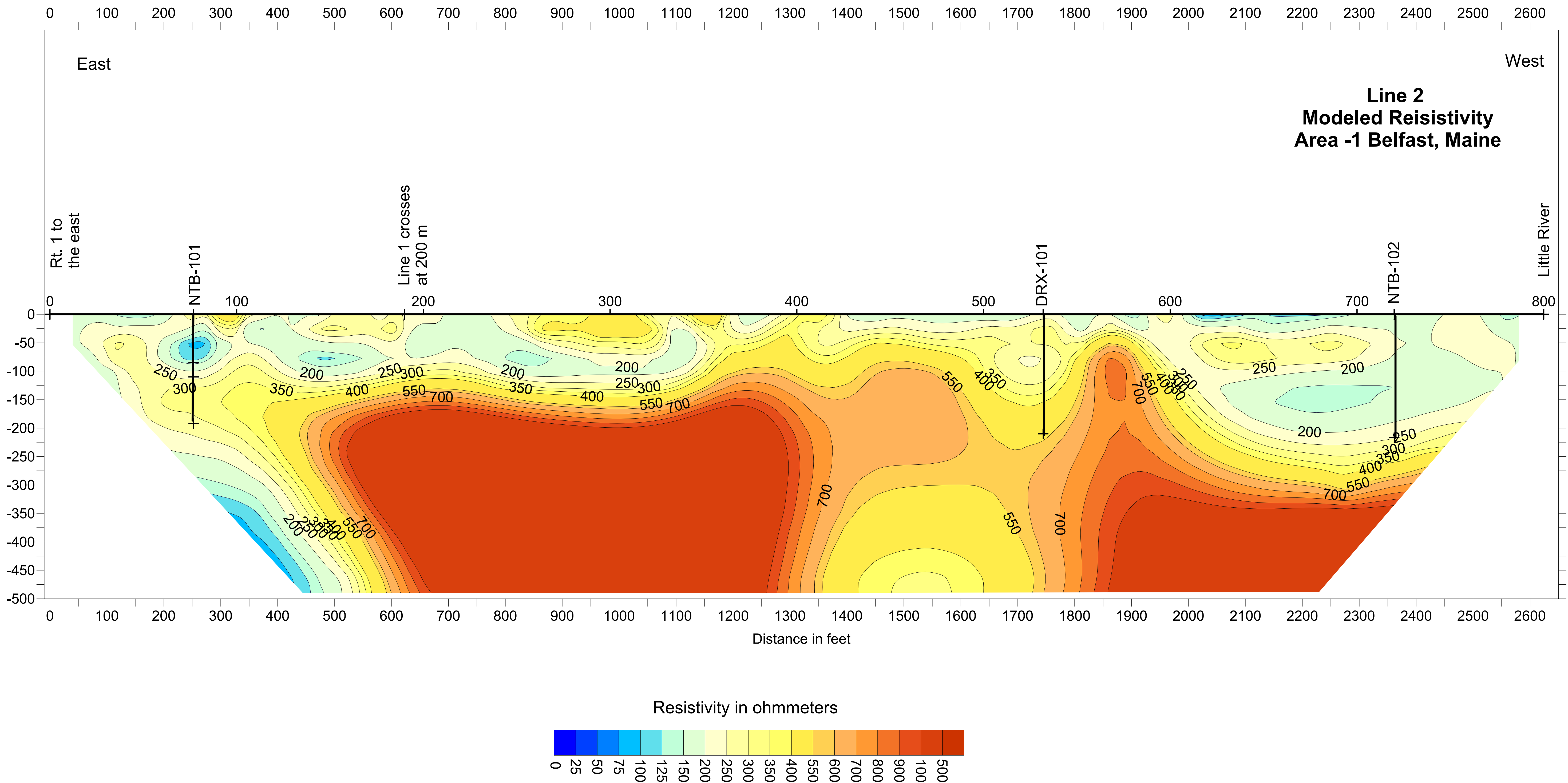
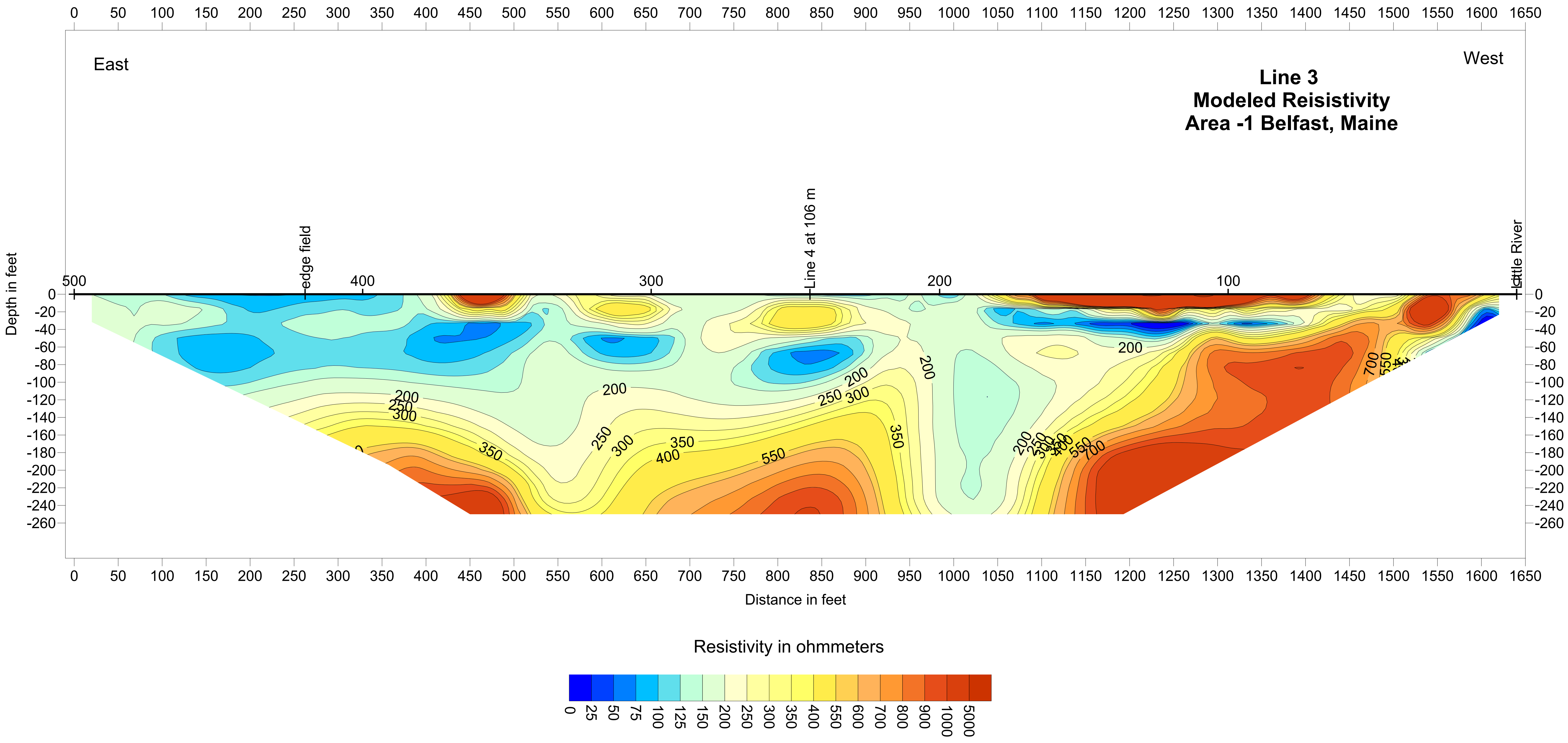


Line 2
Modeled Reisistivity
Area -1 Belfast, Maine

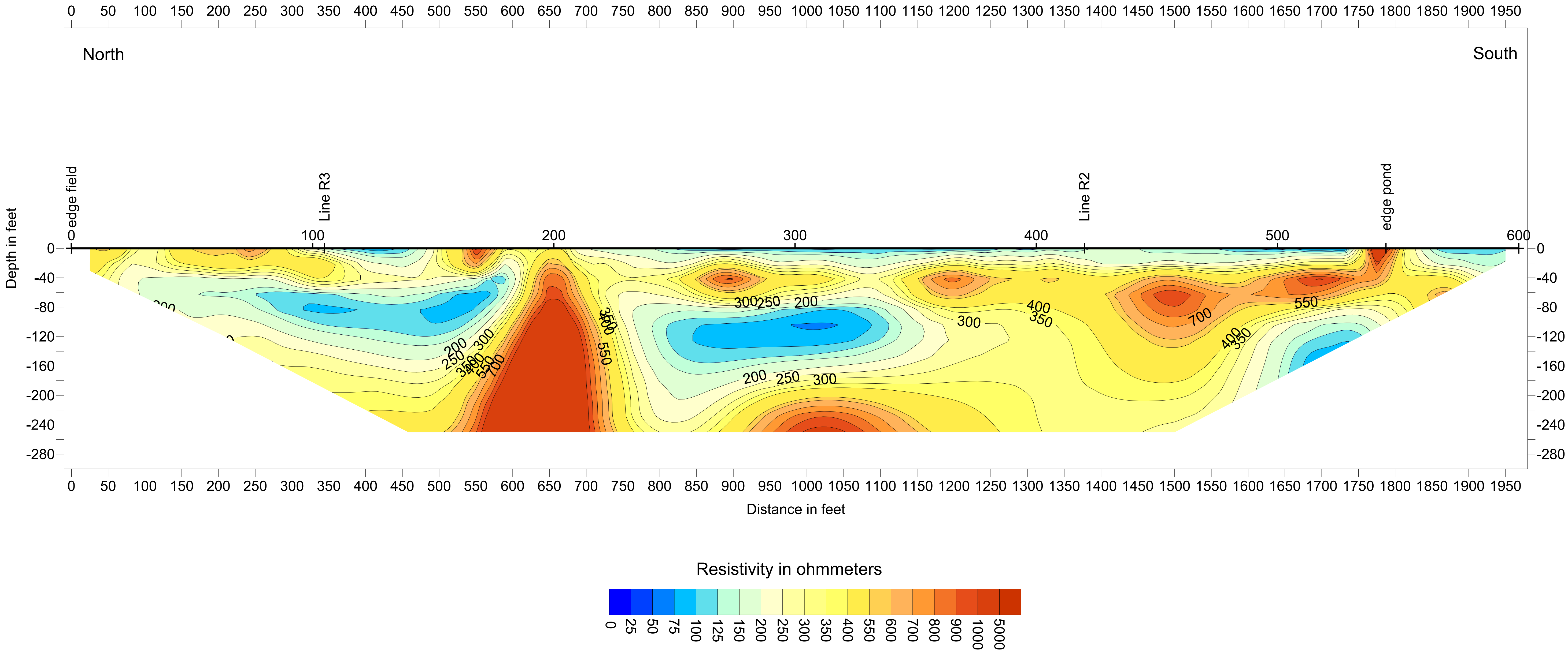
Northeast Geophysical Services



Line 3
Modeled Reisistivity
Area -1 Belfast, Maine

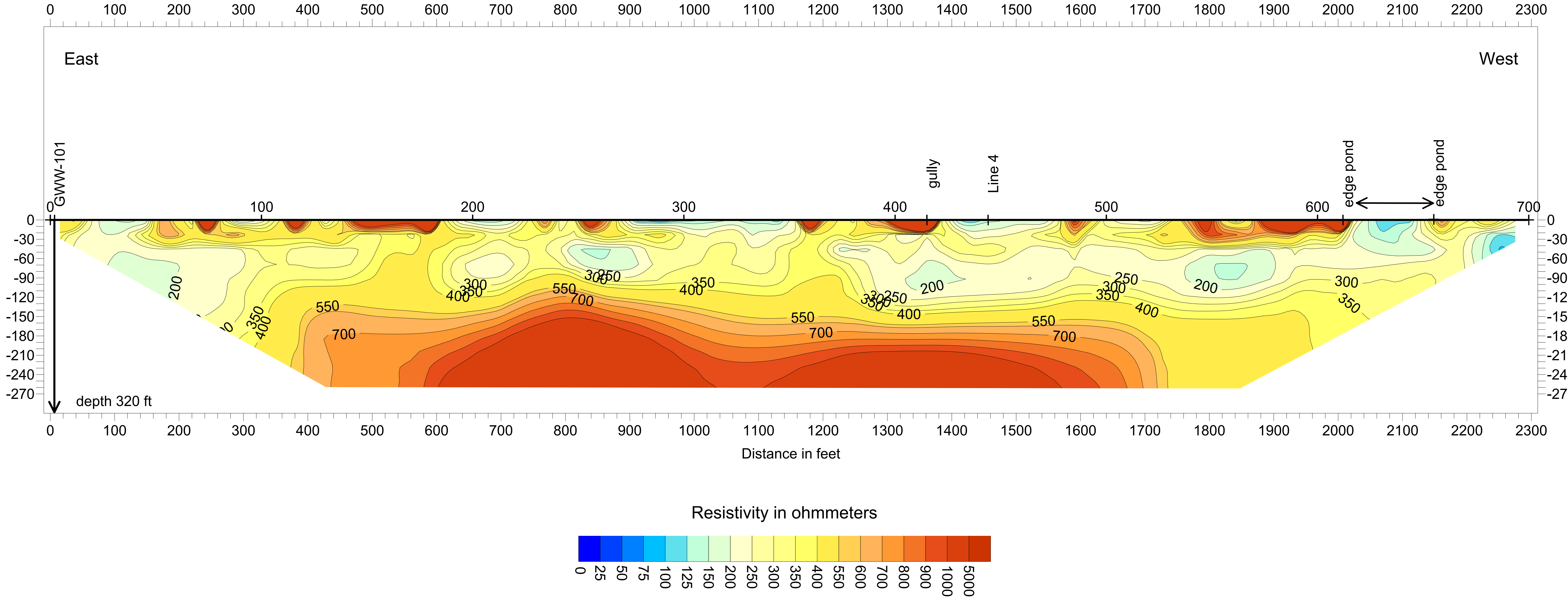
Northeast Geophysical Services

Line 4
Modeled Reisistivity
Area -1 Belfast, Maine

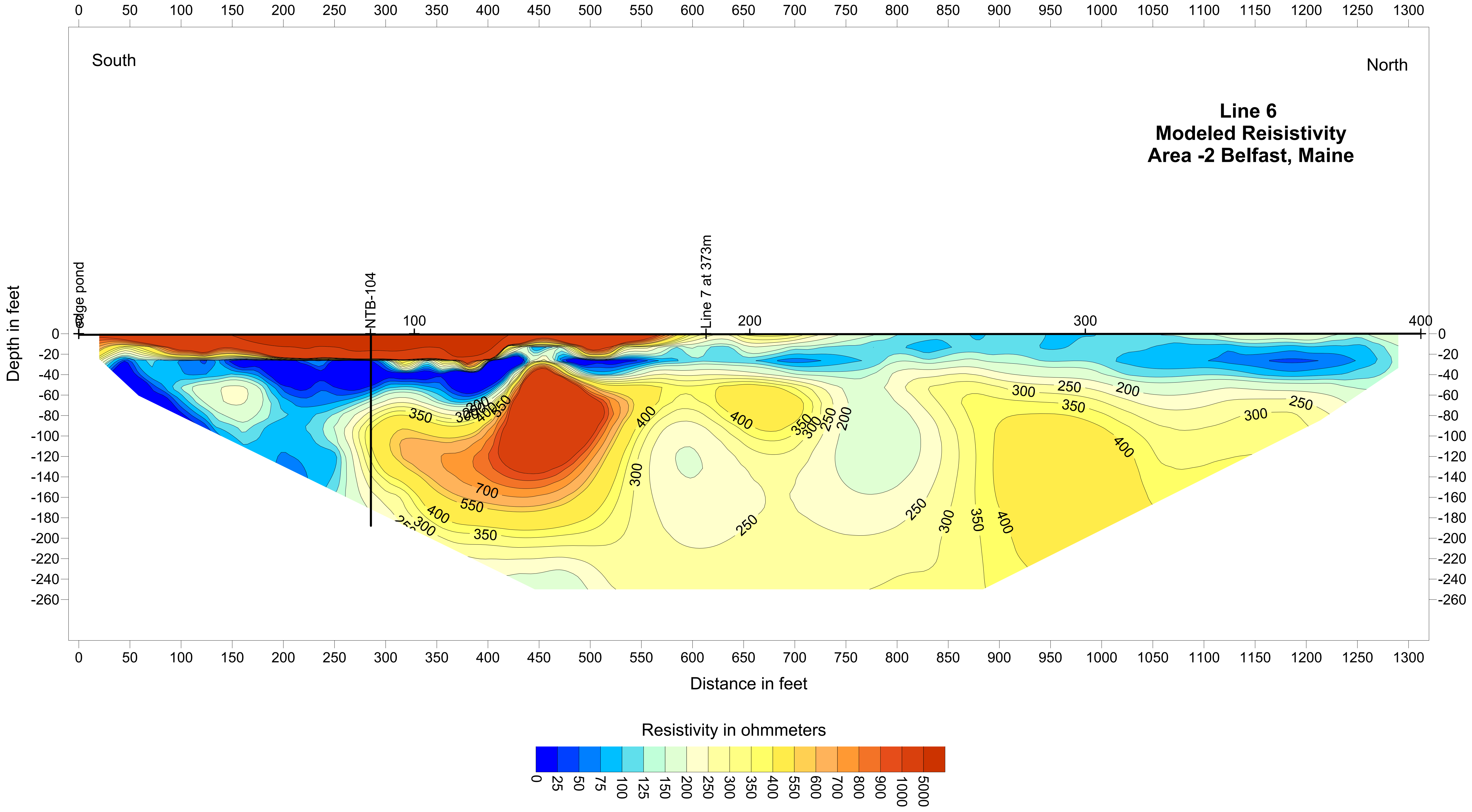


Northeast Geophysical Services

Line 5
Modeled Reisistivity
Area -1 Belfast, Maine

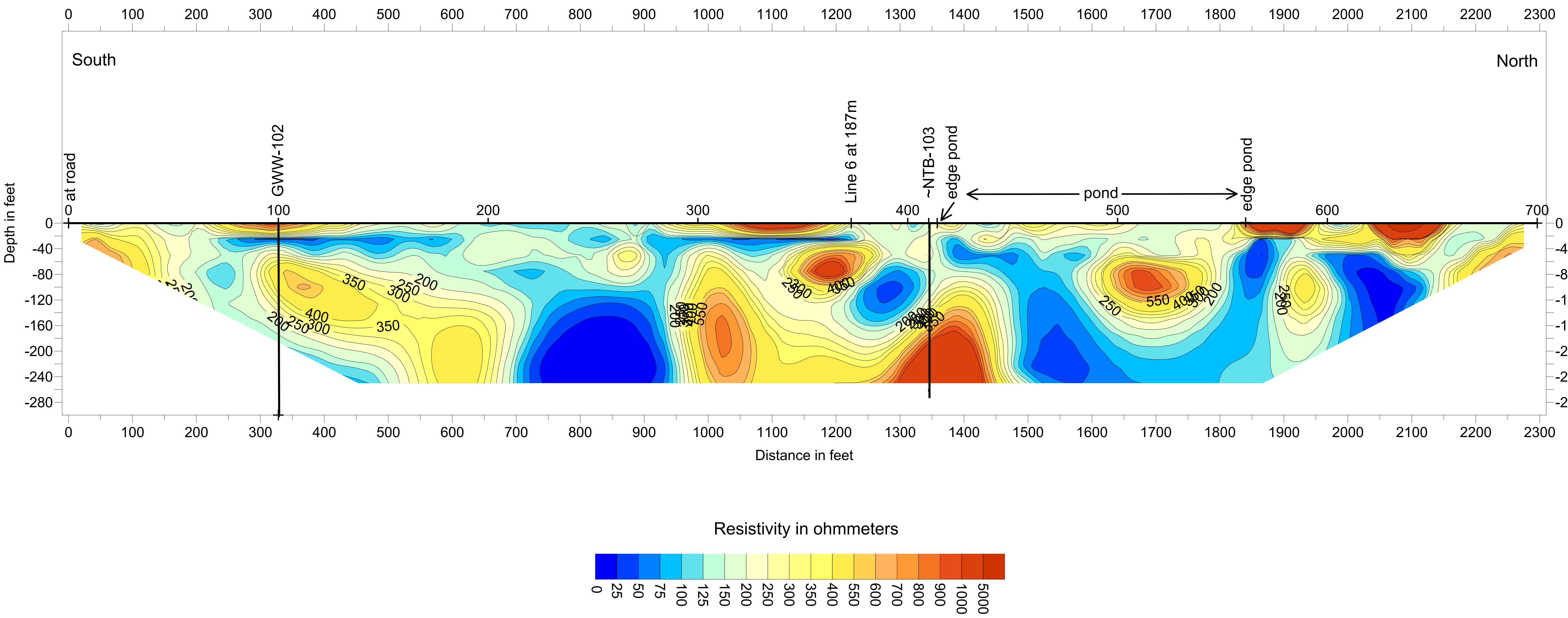


Northeast Geophysical Services



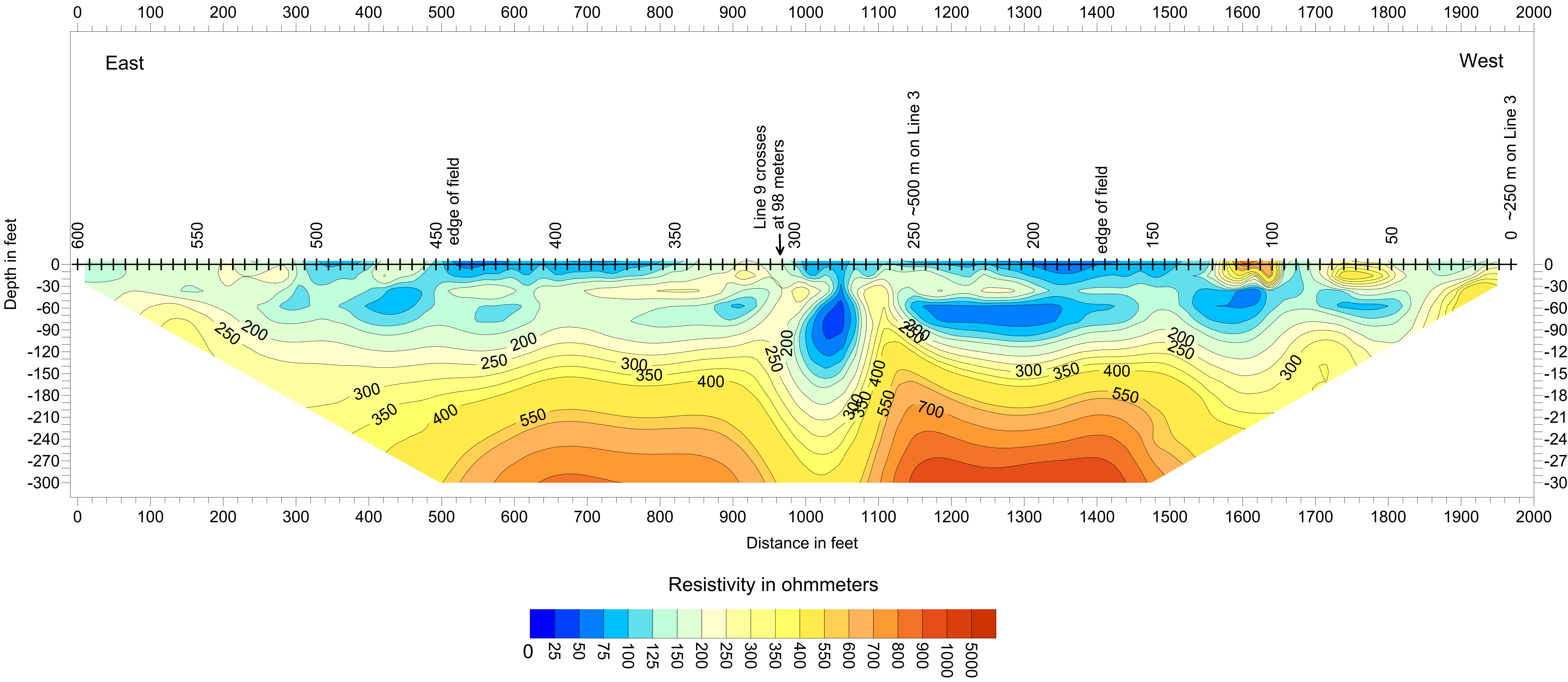
Northeast Geophysical Services

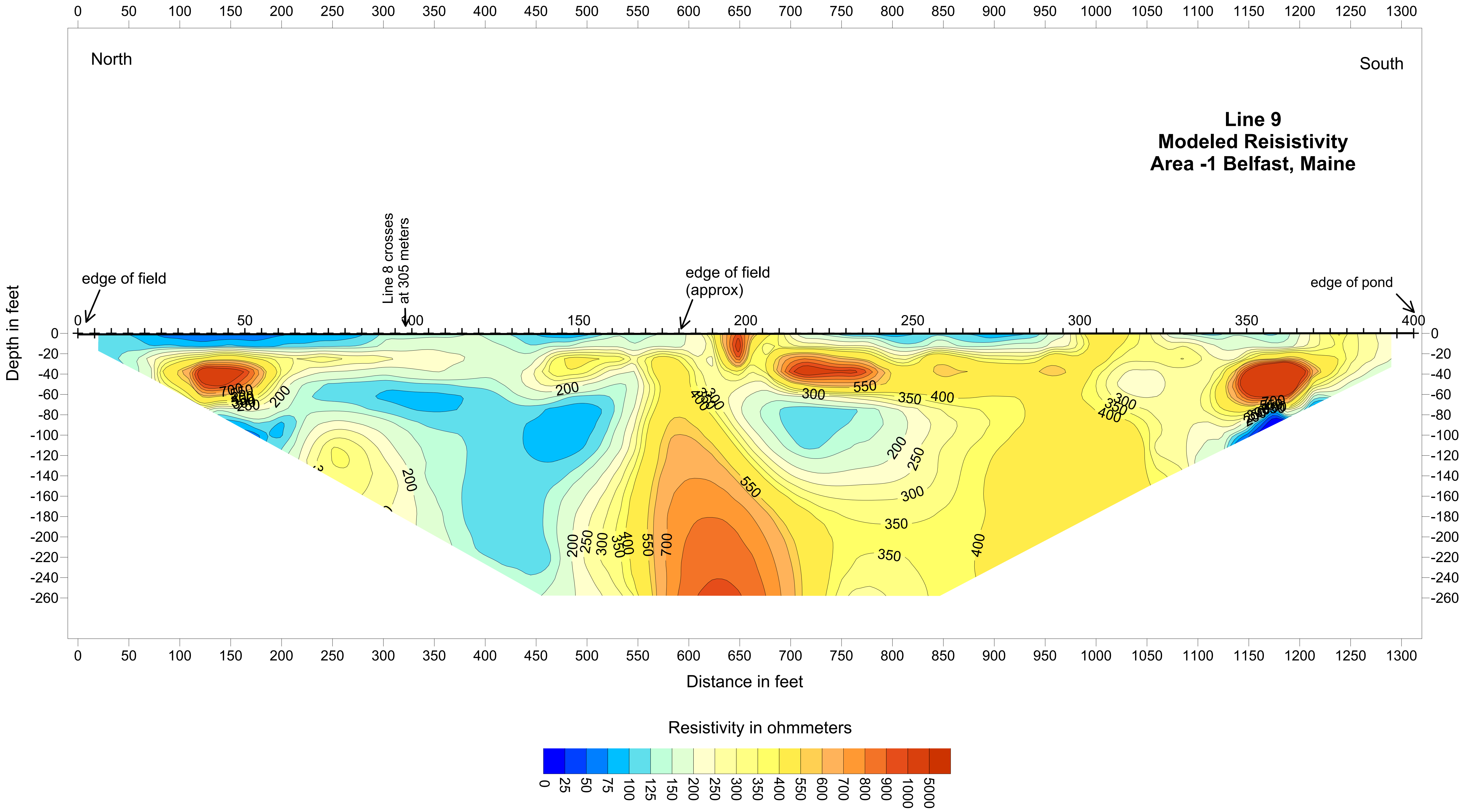
Line 7
Modeled Reisistivity
Area -2 Belfast, Maine



Northeast Geophysical Services

Line 8
Modeled Reisistivity
Area -1 Belfast, Maine





Northeast Geophysical Services

APPENDIX C

Boring Logs

Hydrogeologic Investigation Report
Proposed Commercial Land-Based Aquaculture Facility
Belfast Water District, Cassida Back Lot, and Mathews Brothers West Field Properties
285 Northport Avenue
Belfast, Maine

Ransom Consulting, Inc.
Project 171.05027.003

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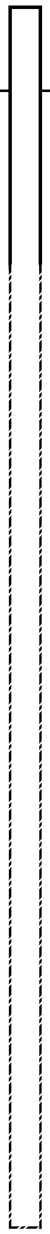
MONITORING WELL LOG

Project: Nordic Aquafarms	Drilling Co.: Drilex Environmental	Boring/Well No.: **DRX-101**
Project No.: 171.05027.003	Driller: Jason	Lock No.: Standard Ransom Lock
Site Location: BWD- Lower Reservoir Property	Drilling Method: Air Rotary	Start Date: 3/27/18
Geologist: Thomas Neilson	Drilling Equip: CME-55 Track Mount	Date Complete: 3/28/18
Ground Elev.: 55.9 feet (Approximate)	Static Water (b-toc):	Total Boring Depth: 210 feet
Top of Casing Elev.: 58.9 feet (Surveyed)	Easting: 500416 m	Northing: 4915834 m (Zone 19 N)

Remarks: Casing advanced through overburden using air rotary methods and casing set into bedrock. Air rotary used to drill through bedrock until compressed air was unable to evacuate water from wellbore, rotary wash used to advance an additional 10'. Water source for rotary wash was Lower Reservoir.

AS-BUILT WELL SCHEMATIC

GEOLOGIC LOG	Depth (ft.)
Above Grade	2.0 - 3.0 Above Grade
	1.0 - 2.0 Above Grade
	0.0 - 1.0 Above Grade
0’-13’: Unconsolidated overburden material (likely Presumpscot Formation and Glacial Till).	5.0
	10.0
13’-32’: Heavily weathered bedrock. Cuttings are biotite and quartz rich schist. Casing set at 32.4’ in less weathered bedrock. Begin to see trace of water at 32’.	15.0
	20.0
	25.0
	30.0
32’-76’: Less heavily weathered bedrock, drilling progressing smoothly. Lithology is same as above with periodic intervals of lighter colored harder metasandstone. Well is producing ~2 gpm at 76’.	35.0
	40.0
	45.0
	50.0
	55.0
	60.0
	65.0
	70.0
	75.0
76’-114’: Same as above, well is producing ~5 gpm at 114’.	80.0
	85.0
	90.0
	95.0
	100.0
	105.0
	110.0
114’-121’: Same as above, tie in second compressor to help lift water and cuttings. Well begins producing ~10 gpm at 121’.	115.0
	120.0
121’-160’: Same as above, at 160’ drilling is slightly harder and choppy, bit appeared to drop through void space (fracture). Producing ~12 gpm at 160’.	125.0
	130.0
	135.0
	140.0
	145.0
	150.0
	155.0
	160.0
160’-168’: Same as above, fractured area at 168’, now producing ~14 gpm.	165.0
168’-178’: Same as above, performed short air lift test at 171’, yield >10gpm. Fractured area at 178’. Making ~20 gpm at 178’. Yield rating becomes challenging due to surging from discharge line.	170.0
	175.0
178’-184’: Same as above, harder and choppy drilling in fractured area at 184’. Well is producing >25 gpm at 184’.	180.0
184’-200’: Same as above. Very large fracture at 200’, air hammer is flooded and no longer able to advance. Air lift yield appears to be 60 gpm or greater. Switch to roller bit.	185.0
	190.0
	195.0
	200.0
200’-210’: Very soft drilling, unable to circulate water to remove cuttings even at max pump speed. Lithology same as above. Hole appears unstable from 208’-210’.	205.0
	210.0
210’: End of exploration. Unable to continue drilling without larger rig due to high well yield.	



3' stick-up, finished with locking cap

Grade

Well Casing Material: Steel

Well Casing Diameter: 4 inches

Well Casing Length: 35 feet

Depth to Bedrock: 13 feet

Depth of Casing: 32.4 feet

Open Interval: 32.4 - 210 feet

Open Hole Diameter: 4 inches

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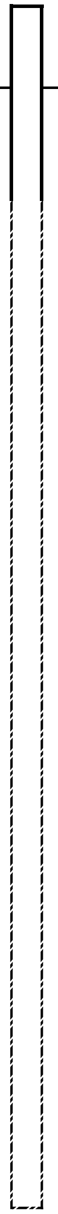
MONITORING WELL LOG

Project: Nordic Aquafarms	Drilling Co.: Drilex Environmental	Boring/Well No.: **DRX-102**
Project No.: 171.05027.003	Driller: Jason	Lock No.: Standard Ransom Lock
Site Location: BWD- Lower Reservoir Property	Drilling Method: Air Rotary	Start Date: 3/28/18
Geologist: Thomas Neilson	Drilling Equip: CME-55 Track Mount	Date Complete: 3/29/18
Ground Elev.: 55 feet (Approximate)	Static Water (b-toc):	Total Boring Depth: 211 feet
Top of Casing Elev.: 58.1 feet (Surveyed)	Easting: 500663 m	Northing: 4915954 m (Zone 19 N)

Remarks: Casing advanced through overburden using air rotary methods and casing set into bedrock. Air rotary used to drill through bedrock until compressed air was unable to evacuate water from wellbore, rotary wash used to advance an additional 10'. Water source for rotary wash was Lower Reservoir.

GEOLOGIC LOG	Depth (ft.)
Above Grade	2.0 - 3.0 Above Grade 1.0 - 2.0 Above Grade 0.0 - 1.0 Above Grade
0'-22': Unconsolidated overburden material (likely Presumpscot Formation and Glacial Till) to 19', bedrock below 19'. Casing driven to 22'.	5.0 10.0 15.0 20.0
22'-36': Bedrock, drilling progressing smoothly. Lithology is biotite and quartz rich schist periodic intervals of lighter colored harder metasandstone. Small fracture at 26'. Well is producing ~8 gpm at 26' and creating bubbles in surface water puddles.	25.0
26'-35': Same as above, fracture at 34'. Well is producing ~10-15 gpm at 35'. Drive casing to 27' to seal off fracture with direct surface connection at 26'.	30.0 35.0
35'-65': Same as above. Significant fracture at 65' with iron stained cuttings. Well is producing ~17 gpm at 65'.	40.0 45.0 50.0 55.0 60.0 65.0
65'-73': Same as above. Significant fracture at 73'. Well is producing ~20 gpm at 73'.	70.0 75.0
73'-116': Same as above. Significant fracture from 113'-116' with iron stained cuttings. Well is producing ~25 to 30 gpm at 116'. Tie in second compressor to help lift water and cuttings.	80.0 85.0 90.0 95.0 100.0 105.0 110.0 115.0
116'-140': Same as above, small fractures (minimal additional water) noted every ~5'. Larger fracture at 140', modest increase in water production.	120.0 125.0 130.0 135.0 140.0
140'-152': Same as above. Larger fracture at 152', well is producing ~35 to 40 gpm.	145.0 150.0
152'-186': Same as above. Significant fracture at 186' with oxidized cuttings. Water discharge begins surging heavily, nearing the capacity of the compressors to evacuate the water. Well is producing >40 gpm	155.0 160.0 165.0 170.0 175.0 180.0 185.0
186'-211': Same lithology as above. Fractures every ~4' continue to increase yield. By 206' the air hammer is barely able to advance. Air hammer completely flooded at 211', unable to continue drilling. Well is producing >60 gpm.	190.0 195.0 200.0 205.0 210.0
211': End of exploration. Unable to continue drilling without larger rig due to high well yield.	215.0

AS-BUILT WELL SCHEMATIC



3' stick-up, finished with locking cap

Grade

Well Casing Material: Steel

Well Casing Diameter: 4 inches

Well Casing Length: 30 feet

Depth to Bedrock: 19 feet

Depth of Casing: 27 feet

Open Interval: 27 - 211 feet

Open Hole Diameter: 4 inches

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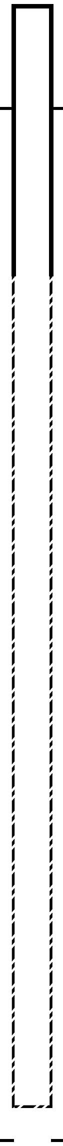
MONITORING WELL LOG

Project: Nordic Aquafarms	Drilling Co.: Drilex Environmental	Boring/Well No.: **DRX-103**
Project No.: 171.05027.003	Driller: Jaime	Lock No.: Standard Ransom Lock
Site Location: BWD- Lower Reservoir Property	Drilling Method: Air Rotary	Start Date: 11/6/18
Geologist: Thomas Neilson	Drilling Equip: CME 55 Track Mounted	Date Complete: 11/7/18
Ground Elev.: 70 feet (Approximate)	Static Water (bgs):	Total Boring Depth: 150 feet
Top of Casing Elev.: 72.49 feet (Surveyed)	Easting: 500157.3 m	Northing: 4915981.4 m (UTM 19N)

Remarks: Boring advanced with air rotary and casing hammer through overburden. Casing set approximately 1' into competent bedrock. Boring advanced with air rotary into bedrock to final depth of 150' bgs. Final estimated well yeild approximately 35 to 40 gpm.

AS-BUILT WELL SCHEMATIC

GEOLOGIC LOG	Depth (ft.)
Above Grade	2.0 - 3.0 Above Grade
	1.0 - 2.0 Above Grade
	0.0 - 1.0 Above Grade
0' to 24': Overburden consisting of glaciomarine clayey silt (Presumpscot Formation) over silty till.	5.0
	10.0
	15.0
	20.0
	25.0
24' to 50': Phyllitic grey schist, no water produced until fracture at 50', producing minimal water (~1 gpm).	30.0
	35.0
	40.0
	45.0
	50.0
50' to 90': Phyllitic grey schist with interbedded light colored quatrzite. Minor water producing fractures encountered at 60' (~1 gpm) and 65' (~2-3 gpm).	55.0
	60.0
	65.0
	70.0
	75.0
	80.0
	85.0
	90.0
90' to 150': Similar lithology to above. Slightly more productive fractures (~2-3 gpm) encountered at 90', 100', and 120'. Below 120' drilling was softer and identifying individual fractures became challenging, water increased considerably with depth to 150'. Final estimated yield after ~20 of air lift pumping was 35 to 40 gpm.	95.0
	100.0
	105.0
	110.0
	115.0
	120.0
	125.0
	130.0
	135.0
	140.0
	145.0
	150.0



2.5' stick-up, finished with locking cap

Grade

Well Casing Material: Steel

Well Casing Diameter: 4 inches

Well Casing Length: 27.5 feet

Depth to Bedrock: 24 feet

Depth of Casing: 25 feet

Open Interval: 25 - 150 feet

Open Hole Diameter: 4 inches

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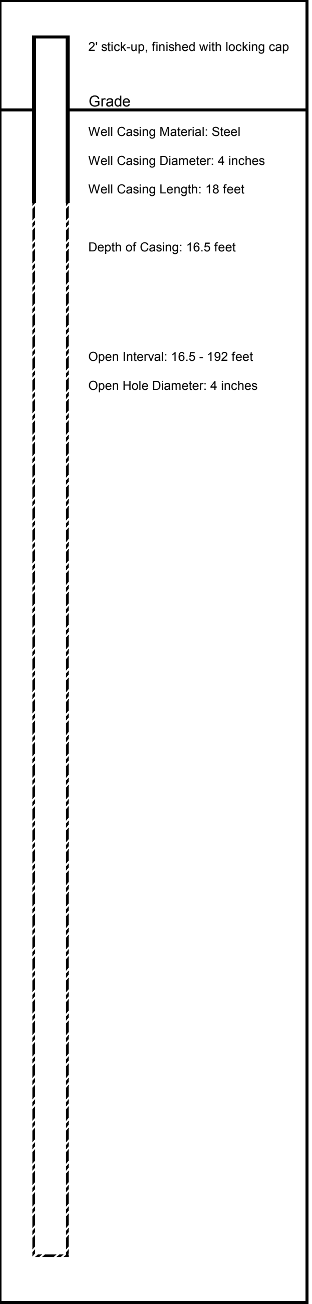
MONITORING WELL LOG

Project: Nordic Aquafarms	Drilling Co.: Northern Test Borings	Boring/Well No.: **NTB-101**
Project No.: 171.05027.003	Driller: Mike Nadeau	Lock No.: Standard Ransom Lock
Site Location: BWD- Lower Reservoir Property	Drilling Method: Rotary Wash	Start Date: 2/19/2018
Geologist: Thomas Neilson	Drilling Equip: Dietrich D-50 Track Mount	Date Complete: 2/20/2018
Ground Elev.: 38 feet (Approximate)	Static Water (b-toc): 15.59' (3/30/18)	Total Boring Depth: 192 feet
Top of Casing Elev.: 39.9 feet (Surveyed)	Easting: 500862	Northing: 4915902 (Zone 19 N)

Remarks: Casing advanced through overburden using drive and wash methods and casing set 0.9' into bedrock. Roller cone bit and mud (water) rotary used to drill through bedrock. Water source for washing cuttings was Lower Reservoir.

AS-BUILT WELL SCHEMATIC

GEOLOGIC LOG	Depth (ft.)
Above Grade	2.0 - 3.0 Above Grade
	1.0 - 2.0 Above Grade
	0.0 - 1.0 Above Grade
0'-13': Clayey silt (Presumpcot Formation).	5.0
	10.0
13'-15.5': Glacial till. Top of weathered bedrock at 15.6'. Casing set to 16.5'	15.0
17'-40': Generally soft drilling, cuttings are biotite and quartz rich schist, notable graphite sheen on wash water. Intervals of hard/rough drilling, likely metasandstone. 7 to 15 minutes per 5-foot run. No significant water loss until 40' bgs, minor water loss below.	20.0
	25.0
	30.0
	35.0
	40.0
40'-85': Same as above, no change in water loss until 85' bgs, moderate water loss below 85'.	45.0
	50.0
	55.0
	60.0
	65.0
	70.0
	75.0
	80.0
	85.0
85'-111': Same as above, no change in water loss until loss of circulation (loosing all water) at 111'. Circulation regained shortly after passing fracture. Estimate loosing ~7 gpm from circulation.	90.0
	95.0
	100.0
	105.0
111'-122': Same as above, minor increase in water loss. Estimated ~9 gpm loss from circulation.	110.0
	115.0
	120.0
122'-128': Same as above, minor increase in water loss at 128'.	125.0
128'-135': Same as above, change bit at 135' (change from 3 7/8" bit to 3 3/4" bit)	130.0
	135.0
135'-164': Same as above, no significant change in water loss.	140.0
	145.0
	150.0
	155.0
	160.0
164'-165': Very hard drilling (3 min/3 inches). Pull rods to check bit, no issues. Likely hard quartzite bed.	165.0
165'-192': After hard quartzite bed drilling is similar to above. No signficant additional water loss.	170.0
	175.0
	180.0
	185.0
	190.0
192': End of Exploration	195.0



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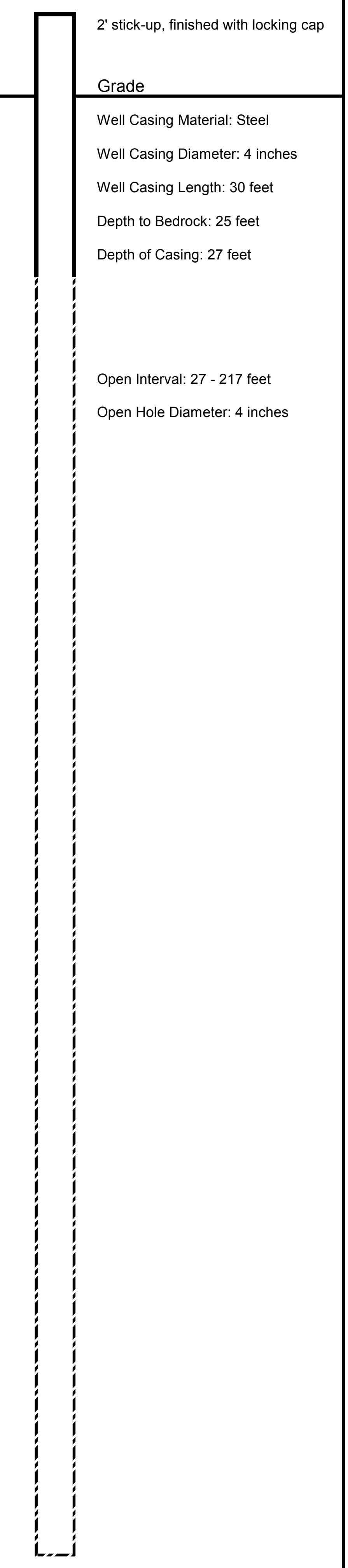
MONITORING WELL LOG

Project: Nordic Aquafarms	Drilling Co.: Northern Test Borings	Boring/Well No.: **NTB-102**
Project No.: 171.05027.003	Driller: Mike Nadeau	Lock No.: Standard Ransom Lock
Site Location: BWD- Lower Reservoir Property	Drilling Method: Rotary Wash	Start Date: 2/21/2018
Geologist: Thomas Neilson	Drilling Equip: Dietrich D-50 Track Mount	Date Complete: 2/23/2018
Ground Elev.: 59 feet (Approximate)	Static Water (b-toc):	Total Boring Depth: 217 feet
Top of Casing Elev.: 62.2 feet (Surveyed)	Easting: 500228	Northing: 4915815 (Zone 19 N)

Remarks: Casing advanced through overburden using drive and wash methods and casing set 2' into bedrock. Roller cone bit and mud (water) rotary used to drill through bedrock. Water source for washing cuttings was Lower Reservoir.

AS-BUILT WELL SCHEMATIC

GEOLOGIC LOG	Depth (ft.)
Above Grade	2.0 - 3.0 Above Grade
	1.0 - 2.0 Above Grade
	0.0 - 1.0 Above Grade
0’-18’: Clayey silt, some fine sand (Presumpscot Formation).	5.0
	10.0
	15.0
18’-27’: Glacial till. Top of weathered bedrock ~25’, competent bedrock at 26’. Set casing to 27’.	20.0
	25.0
27’-63’: Generally soft to moderate drilling, cuttings are biotite and quartz rich schist, notable graphite sheen on wash water. Intervals of hard/rough drilling, likely metasandstone. 10 to 15 minutes per 5-foot run. No significant water loss.	30.0
	35.0
	40.0
	45.0
	50.0
	55.0
	60.0
	65.0
63’-76.5’: Same as above, except very soft from 63’-63.5’ with heavily weathered rock (clay) plugging bit and then being washed up. Minor water loss below 63.5’.	70.0
	75.0
76.5’-102’: Same as above, except drill rod dropped 2” at 76.5’, with modest increase in water loss. Now losing moderate amount of water.	80.0
	85.0
	90.0
	95.0
	100.0
102’-124’: Softer drilling, 6 to 8 minutes per 5-foot run.	105.0
	110.0
	115.0
	120.0
	125.0
124’-147’: Same as above, fracture at 124’ with increased water loss. Losing 275 gallons for 15’ of drilling.	130.0
	135.0
	140.0
	145.0
147’-159’: Same as above, losing 275 gallons for 10 feet of drilling. Roller bit worn, replaced worn 3 7/8” bit with new 3 3/4" bit at 159’.	150.0
	155.0
	160.0
159’-166’: Minor fracture at 159, minor increase in water loss. Hard drilling (15 min/3 feet). Likely quartzite bed ~159’-166’.	165.0
166’-174’: Same as above, drilling speed slightly more variable (likely in and out of quartzite), modest increase in water loss at 166’.	170.0
	175.0
174’-185’- Same as above, minor increase in water loss at 174’.	180.0
	185.0
185’-196’: Same as above, increase in water loss at 185’, notable decrease in water return from borehole, minimal water circulation.	190.0
	195.0
196’-198.5’: Same as above, increase in water loss at 196’, had to increase circulation pump speed.	200.0
196’-198.5’: Same as above, increase in water loss at 196’, had to increase circulation pump speed.	205.0
206’- Losing more water.	210.0
208.5’- Losing more water	215.0
217’: End of exploration	220.0



Well Casing Material: Steel

Well Casing Diameter: 4 inches

Well Casing Length: 30 feet

Depth to Bedrock: 25 feet

Depth of Casing: 27 feet

Open Interval: 27 - 217 feet

Open Hole Diameter: 4 inches

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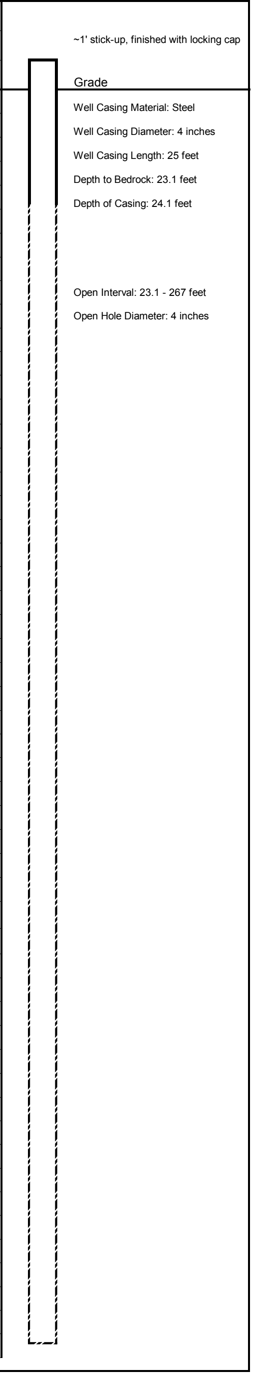
MONITORING WELL LOG

Project: Nordic Aquafarms	Drilling Co.: Northern Test Borings	Boring/Well No.: **NTB-103**
Project No.: 171.05027.003	Driller: Mike Nadeau	Lock No.: Standard Ransom Lock
Site Location: BWD- Upper Reservoir Property	Drilling Method: Rotary Wash	Start Date: 2/27/18
Geologist: Thomas Neilson	Drilling Equip: Dietrich D-50 Track Mount	Date Complete: 2/28/18
Ground Elev.: 80 feet (Approximate)	Static Water (b-toc):	Total Boring Depth: 267 feet
Top of Casing Elev.: 80.86 feet (Surveyed)	Easting: 499377.1 m	Northing: 4916432.8 m (Zone 19 N)

Remarks: Casing advanced through overburden using drive and wash methods and casing set 1' into bedrock. Roller cone bit and mud (water) rotary used to drill through bedrock. Water source for washing cuttings was Upper Reservoir.

GEOLOGIC LOG	Depth (ft.)
Above Grade	2.0 - 3.0 Above Grade
	1.0 - 2.0 Above Grade
	0.0 - 1.0 Above Grade
0'-24.1': Clayey silt, some fine sand (Presumpscot Formation). Top of Bedrock at 23.1', set casing at 24.1'.	5.0
	10.0
	15.0
	20.0
24.1'-117': Generally soft to moderate drilling, cuttings are biotite and quartz rich schist. Intervals of hard/rough drilling, likely metasandstone. 8 to 10 minutes per 5-foot run. Losing approximately 225 gallons for every 5' of advancement (~10 gpm).	25.0
	30.0
	35.0
	40.0
	45.0
	50.0
	55.0
	60.0
	65.0
	70.0
	75.0
	80.0
	85.0
	90.0
	95.0
	100.0
	105.0
	110.0
	115.0
117'-152': Same as above, graphite sheen begins to form on wash water at 152'.	120.0
	125.0
	130.0
	135.0
	140.0
	145.0
152'-157': Same as above except softer drilling, begin to lose slightly more water at 157'.	150.0
	155.0
157'-164': Same as above.	160.0
	165.0
164'-172': Very soft drilling, 4 minutes per 5 foot run. No change in water loss.	170.0
172'-177': Back to soft to moderate drilling, similar lithology, no change in water loss. Change worn 3 7/8" bit to new 3 3/4" bit at 177'.	175.0
177'-267': Generally soft to moderate drilling, approximately 10 to 12 minutes per 5-foot run. Similar lithology to above. No change in water loss since 157'.	180.0
	185.0
	190.0
	195.0
	200.0
	205.0
	210.0
	215.0
	220.0
	225.0
	230.0
	240.0
	245.0
	250.0
	255.0
	260.0
	265.0
267': End of exploration.	270.0

AS-BUILT WELL SCHEMATIC



~1' stick-up, finished with locking cap

Well Casing Material: Steel
Well Casing Diameter: 4 inches
Well Casing Length: 25 feet
Depth to Bedrock: 23.1 feet
Depth of Casing: 24.1 feet

Open Interval: 23.1 - 267 feet
Open Hole Diameter: 4 inches

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MONITORING WELL LOG

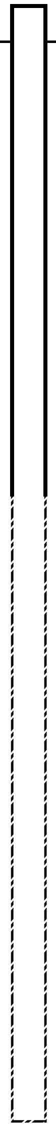
Project: Nordic Aquafarms	Drilling Co.: Northern Test Borings	Boring/Well No.: **NTB-104**
Project No.: 171.05027.003	Driller: Mike Nadeau	Lock No.: Standard Ransom Lock
Site Location: BWD- Upper Reservoir Property	Drilling Method: Rotary Wash	Start Date: 3/1/18
Geologist: Thomas Neilson	Drilling Equip: Dietrich D-50 Track Mount	Date Complete: 3/2/18
Ground Elev.: 76 feet (Approximate)	Static Water (b-toc): N/A	Total Boring Depth: 187 feet
Top of Casing Elev.: Not Surveyed	Easting: 499346 m	Northing: 4916302 m (Zone 19 N)

Remarks: Casing advanced through overburden using drive and wash methods and casing set 2' into bedrock. Roller cone bit and mud (water) rotary used to drill through bedrock. Water source for washing cuttings was Upper Reservoir. Well was abandoned immediatly after drilling due to lack of viable yield.

AS-BUILT WELL SCHEMATIC

GEOLOGIC LOG	Depth (ft.)
Above Grade	2.0 - 3.0 Above Grade 1.0 - 2.0 Above Grade 0.0 - 1.0 Above Grade
0'-50': Clayey silt, some fine sand (Presumpscot Formation).	5.0 10.0 15.0 20.0 25.0 30.0 35.0 40.0 45.0 50.0
50'-64': Glacial Till. Top of heavily weathered bedrock at 60.2', casing set at 64'.	55.0 60.0
64'-74': Very soft drilling, cuttings are biotite and quartz rich schist. 4 to 6 minutes per 5-foot run. Likely heavily weathered bedrock.	65.0 70.0 75.0
74'-88': Generally soft to moderate drilling. Intervals of hard/rough drilling, likely metasandstone. 8 to 10 minutes per 5-foot run. Similar lithology, slightly less weathered than above. No observable water loss.	80.0 85.0
88'-104': Same as above, except begin losing a little water (likely washing around casing through weathered rock).	90.0 95.0 100.0 105.0
104'-162': Same as above, except begin losing a little less water at 104'. Still minimal water loss. Casing came loose at 162', water flushing around the casing and stripping borehole wall. Drove 5' more casing, still not sealed, drove 10' more casing (total of 80' of casing).	110.0 115.0 120.0 125.0 130.0 135.0 140.0 145.0 150.0 155.0 160.0
162'-167': All wash water returning to surface from around casing. Drive 1.5' more casing to seal borehole.	165.0
167'-187': Same lithology as above, no observable water loss.	170.0 175.0 180.0 185.0
187': End of exploration. Casing removed and well abandoned due to poor water production.	190.0 220.0

Well Abandonded after drilling



Grade

Well Casing Material: Steel

Well Casing Diameter: 4 inches

Well Casing Length: N/A feet

Depth to Bedrock: 60.2 feet

Depth of Casing: NA feet

Open Interval: Abandonded

Open Hole Diameter: N/A

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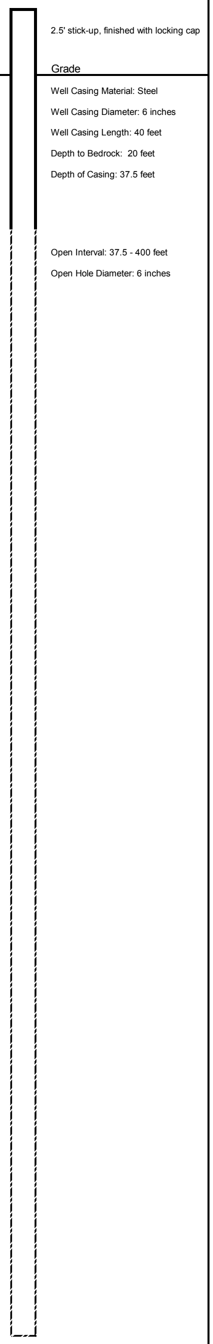
MONITORING WELL LOG

Project: Nordic Aquafarms	Drilling Co.: Pine State Drilling	Boring/Well No.: **PSD-101**
Project No.: 171.05027.003	Driller: Chad Grignon	Lock No.: Standard Ransom Lock
Site Location: Mathews Brothers Field	Drilling Method: Air Rotary	Start Date: 11/12/18
Geologist: Drew Fuchs	Drilling Equip: Versa V-2000NG truck rig	Date Complete: 11/12/18
Ground Elev.: 63 feet (Approximate)	Static Water (bgs):	Total Boring Depth: 400 feet
Top of Casing Elev.: 64.33 feet (Surveyed)	Easting: 500484.7 m	Northing: 4916006.5 m (UTM 19N)

Remarks: Casing advanced through overburden using air rotary methods and casing set into bedrock. Air rotary used to drill through bedrock until pre-determined completion depth of 400 feet. A refusal situation from an inability to evacuate water from wellbore was not reached. Water generated during drilling was discharged through a diverter into a filter bag, complicating yield estimates.

GEOLOGIC LOG	Depth (ft.)
Above Grade	2.0 - 3.0 Above Grade
	1.0 - 2.0 Above Grade
	0.0 - 1.0 Above Grade
0'-20': Unconsolidated overburden material (likely Presumpscot Formation and Glacial Till).	5.0
	10.0
	15.0
	20.0
20-36.5': Heavily weathered bedrock. Casing set at ~37.5' in more competent bedrock.	25.0
	30.0
	35.0
	40.0
36.5'-100': Competent bedrock; cuttings are biotite, graphite, and quartz rich schist. Minimal water yield, 1-2 gpm.	45.0
	50.0
	55.0
	60.0
	65.0
	70.0
	75.0
	80.0
	85.0
	90.0
	95.0
	100.0
100'-115': Same as above. Fracture at 115'; well is producing ~20 gpm.	105.0
	110.0
	115.0
115'-132': Same as above. Fracture at 132'; well is producing ~50 gpm.	120.0
	125.0
	130.0
132'-220': Same as above, minimal increase in water production.	135.0
	140.0
	145.0
	150.0
	155.0
	160.0
	165.0
	170.0
	175.0
	180.0
	185.0
	190.0
	195.0
	200.0
	210.0
	220.0
220'-280': Lithology is biotite, graphite and quartz rich schist with periodic intervals of lighter colored harder metasandstone. Minor increase in water production, yield of ~60 gpm.	230.0
	240.0
	250.0
	260.0
	270.0
	280.0
280'-400': Same lithology as above. Estimated well yield of 30-50 gpm based on flow rate out of 6" opening in discharge filter bag. Yield appears reduced compared to earlier estimates during drilling; possible depletion of stored water.	290.0
	300.0
	310.0
	320.0
	330.0
	340.0
	350.0
	360.0
	370.0
	380.0
	390.0
	400.0
400': End of exploration at pre-determined depth.	

AS-BUILT WELL SCHEMATIC



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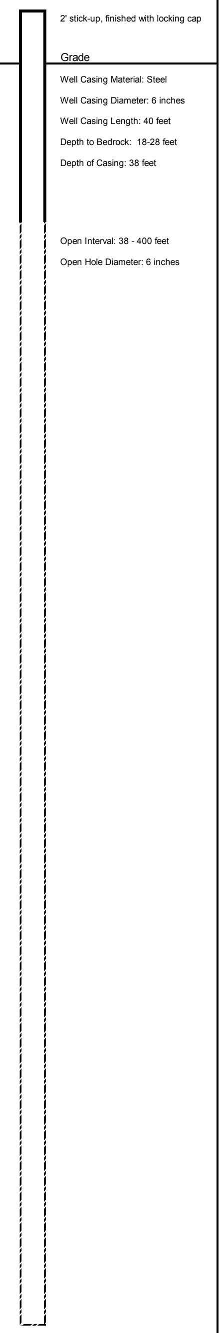
MONITORING WELL LOG

Project: Nordic Aquafarms	Drilling Co.: Pine State Drilling	Boring/Well No.: **PSD-102**
Project No.: 171.05027.003	Driller: Chad Grignon	Lock No.: Standard Ransom Lock
Site Location: Mathews Brothers Field	Drilling Method: Air Rotary	Start Date: 11/12/18
Geologist: Drew Fuchs	Drilling Equip: Versa V-2000NG truck rig	Date Complete: 11/12/18
Ground Elev.: 65 feet (Approximate)	Static Water (bgs):	Total Boring Depth: 400 feet
Top of Casing Elev.: 66.16 feet (Surveyed)	Easting: 500394.6 m	Northing: 4915989.9 m (UTM 19N)

Remarks: Casing advanced through overburden using air rotary methods and casing set into bedrock. Air rotary used to drill through bedrock until pre-determined completion depth of 400 feet. A refusal situation from an inability to evacuate water from wellbore was not reached. Water generated during drilling was discharged through a diverter into a filter bag, complicating yield estimates.

AS-BUILT WELL SCHEMATIC

GEOLOGIC LOG	Depth (ft.)
Above Grade	2.0 - 3.0 Above Grade
	1.0 - 2.0 Above Grade
	0.0 - 1.0 Above Grade
0'-28': Unconsolidated overburden material (likely Presumpscot Formation and Glacial Till), transitioning into highly weathered bedrock.	5.0
	10.0
	15.0
	20.0
	25.0
	30.0
28-37': Moderately weathered bedrock. Casing set at ~38' in more competent bedrock.	35.0
	40.0
37'-60': Competent bedrock; cuttings are biotite, graphite, and quartz rich schist. Minimal water yield, ~5 gpm.	45.0
	50.0
	55.0
	60.0
60'-75': Same lithology as above. Significant fracture at 75', well is producing ~60 gpm.	65.0
	70.0
	75.0
75'-160': Same lithology as above. Small fracture at 158'; well is producing ~80 gpm.	80.0
	85.0
	90.0
	95.0
	100.0
	105.0
	110.0
	115.0
	120.0
	125.0
	130.0
	135.0
	140.0
	145.0
	150.0
	155.0
	160.0
160'-260': Same lithology as above. Small water gains with depth, no obvious fractures, well yield of ~100 gpm.	165.0
	170.0
	175.0
	180.0
	185.0
	190.0
	195.0
	200.0
	210.0
	220.0
	230.0
	240.0
	250.0
	260.0
260'-300': Same lithology as above. Small water gains with depth, no obvious fractures, well yield of ~120 gpm.	270.0
	280.0
	290.0
	300.0
300'-400': Lithology is biotite, graphite and quartz rich schist with periodic intervals of lighter colored harder metasandstone. Minimal increase in water production with depth. Air lift estimated well yield of 140 gpm based on flow rate out of 2' hole in discharge filter bag.	310.0
	320.0
	330.0
	340.0
	350.0
	360.0
	370.0
	380.0
	390.0
	400.0
400': End of exploration at pre-determined depth.	



2' stick-up, finished with locking cap

Grade

Well Casing Material: Steel

Well Casing Diameter: 6 inches

Well Casing Length: 40 feet

Depth to Bedrock: 18-28 feet

Depth of Casing: 38 feet

Open Interval: 38 - 400 feet

Open Hole Diameter: 6 inches

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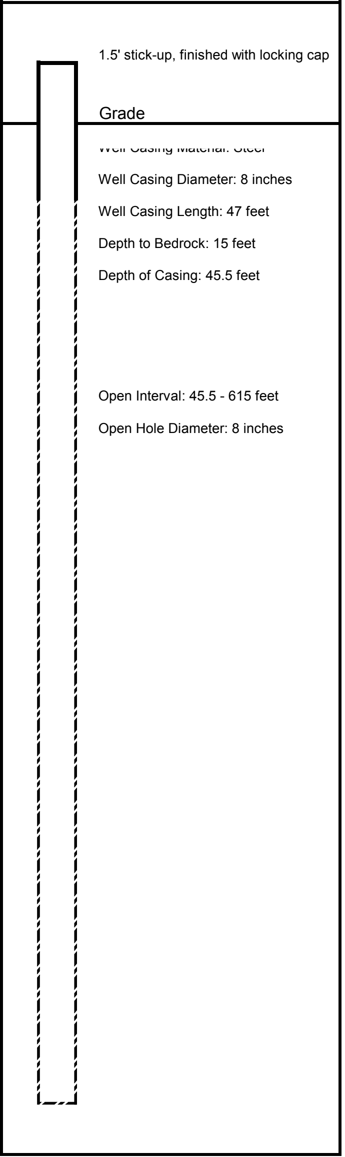
MONITORING WELL LOG

Project: Nordic Aquafarms	Drilling Co.: Goodwin Well and Water	Boring/Well No.: **PW-1**
Project No.: 171.05027.003	Driller: Ralph Ryder	Lock No.: Standard Ransom Lock
Site Location: BWD- Lower Reservoir Property	Drilling Method: Air Rotary	Start Date: 7/24/2018
Geologist: Thomas Neilson	Drilling Equip: Water Well Rig	Date Complete: 7/26/2018
Ground Elev.: 42 feet (Approximate)	Static Water (bgs):	Total Boring Depth: 615 feet
Top of Casing Elev.: 43.52 feet (Surveyed)	Easting: 500765.8 m	Northing: 4915868.7 m (UTM 19N)

Remarks: Boring advanced through overburden and into bedrock with 12" mud rotary. Casing driven to ~45.5' bgs and annual space grouted. Boring advanced into bedrock using air rotary, with auxillary compressor used from 480' to 615' to aid in removal of currting and water. Drilling water discharged through filter bags with silt fence surrounding. Upon completion well purged with polymer foam and blown for ~1 hr. FInal yield checked with 55-gallon barrel, estimated at ~330 gpm.

GEOLOGIC LOG	Depth (ft.)
Above Grade	2.0 - 3.0 Above Grade
	1.0 - 2.0 Above Grade
	0.0 - 1.0 Above Grade
0' to 15': Overburden (clayey silt and till)	20.0
15' to 45': Phyllitic dark grey schist, soft drilling. Set casing to 45.5' bgs and grout.	40.0
45' to 130': Primarily soft dark grey schist with beds of light grey quartzite every 25-30'. Small water bearing fractures noted at 75' (5 gpm) and 107' (5 gpm). Fractures correspond to quartzite beds.	60.0
	80.0
	100.0
	120.0
	140.0
130' to 260': Lithology similar to above. Very large fracture at 130', producing >100 gpm and communicating with GWW-101 (6" well ~15 feet away). Communication continued until ~140' (water stopped blowing out og GWW-101). Large (fist sized) pieces of rock blown out of hole during drilling. Rock was heavily brecciated quartzite with minor components of phyllitic schist. Thick secondary mineralization rinds of predominantly pyrite observed, and dark graphitic material deposited on inside (void space) of mineralization rinds.	160.0
	180.0
	200.0
	220.0
	240.0
	260.0
160' to 615': Similar lithology to above. Predominantly light grey to white quartzite or thinly interbedded schist and quartzite from 260' to 360', with a soft spot at 287' (no additional water observed). Predominantly softer dark grey schist from 380' to 615'. Small fracture noted at 450' corresponding to quartzite bed. Exploration ended at 615', final estimated yield ~330 gpm. Majority of water appears to come from fracture at ~130', however, difficult to discern discrete fractures below this depth due to volume of water being produced from well.	280.0
	300.0
	320.0
	340.0
	360.0
	380.0
	400.0
	420.0
	440.0
	460.0
	480.0
	500.0
	520.0
	540.0
	560.0
	580.0
	600.0
	620.0

AS-BUILT WELL SCHEMATIC



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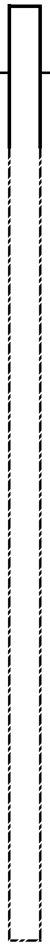
MONITORING WELL LOG

Project: Nordic Aquafarms	Drilling Co.: Goodwin Well and Water	Boring/Well No.: **GWW-101**
Project No.: 171.05027.003	Driller: Joe Bubier	Lock No.: Standard Ransom Lock
Site Location: BWD- Lower Reservoir Property	Drilling Method: Air Roatary	Start Date: 2/26/2018
Geologist: Drew Fuchs	Drilling Equip: Water Well Rig	Date Complete: 2/28/2018
Ground Elev.: 42 feet (Approximate)	Static Water (bgs):	Total Boring Depth: 320 feet
Top of Casing Elev.: 43.40 feet (Surveyed)	Easting: 500767.7 m	Northing: 4915866.5 m (UTM 19N)

Remarks: Boring advanced through overburden using 8 3/4" mud roatary into bedrock. Casing driven to bottom of 8 3/4" hole and air rotary used to advanced into bedrock.

AS-BUILT WELL SCHEMATIC

GEOLOGIC LOG	Depth (ft.)
Above Grade	2.0 - 3.0 Above Grade
	1.0 - 2.0 Above Grade
	0.0 - 1.0 Above Grade
0' to 15': Clayey glaciomarine silt (Presumpscot Formation) and silty gravel till. Overburden.	10.0
15' to 26.5': Heavily weathered phyllitic grey schist. Casing driven to ~26.5' bgs.	20.0
	30.0
26.5' to 78': Interbedded moderately weathered brownish-grey phyllitic schist and light grey to white quartzite. Quartzite beds less frequent and harder to drill than phyllitic beds. No appreciable water being produced.	40.0
	50.0
	60.0
	70.0
78' to 139': Minimally weathered interbedded dark grey phyllitic schist and light grey to white quartzite. Quartzite beds less frequent and harder to drill than phyllitic beds. Water producing fractures encountered at 78' (12 gpm), 112' (8 gpm), and 136' to 139' (55 gpm).	80.0
	90.0
	100.0
	110.0
	120.0
	130.0
	140.0
139' to 286': Similar lithology to above. Quatrzite beds (~10' thick) alternate with phyllitic beds (~10' thick). Quartzite to phyllite ratio near ~50%. Water producing fractures encountered at 235' (25 gpm), 275' (50 gpm), 285' (50 gpm). Air hammer flooded (well producing ~200 gpm), continue drilling with roller bit and air.	150.0
	160.0
	170.0
	180.0
	190.0
	200.0
	210.0
	220.0
	230.0
	240.0
	250.0
	260.0
	270.0
	280.0
	290.0
286' to 320': Lithology and bed thickness/spacing similar to above. Softer drilling from 291' to 297', no observable increase in yield. Exploration ended at 320' bgs, total yield estimated after ~1 hour air lift pumping at 200 gpm.	300.0
	310.0
	320.0



1.5' stick-up, finished with locking cap

Grade

Well Casing Material: Steel

Well Casing Diameter: 6 inches

Well Casing Length: 28 feet

Depth to Bedrock: 15 feet

Depth of Casing: 26.5 feet

Open Interval: 26.5 - 320 feet

Open Hole Diameter: 6 inches

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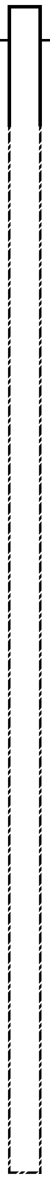
MONITORING WELL LOG

Project: Nordic Aquafarms	Drilling Co.: Goodwin Well and Water	Boring/Well No.: **GWW-102**
Project No.: 171.05027.003	Driller: Joe Bubier	Lock No.: Standard Ransom Lock
Site Location: BWD- Upper Reservoir Property	Drilling Method: Air Roatary	Start Date: 2/28/2018
Geologist: Drew Fuchs	Drilling Equip: Water Well Rig	Date Complete: 3/1/2018
Ground Elev.: 73.5 feet (Approximate)	Static Water (bgs):	Total Boring Depth: 420 feet
Top of Casing Elev.: 74.70 feet (Surveyed)	Easting: 499642.9 m	Northing: 4916242.6 m (UTM 19N)

Remarks: Boring advanced through overburden using 8 3/4" mud roatary into bedrock. Casing driven to bottom of 8 3/4" hole and air rotary used to advanced into bedrock. Casing originally set at 38' bgs, however, casing was easily pushed further after additional drilling, and final casing depth ~41;. Top of rock was very difficult to identify due to heavily weathered nature of formation.

GEOLOGIC LOG	Depth (ft.)
Above Grade	2.0 - 3.0 Above Grade
	1.0 - 2.0 Above Grade
	0.0 - 1.0 Above Grade
0' to 32': Overburden. Predominantly clayey glaciomarine silt (Presumpscot Formation)	10.0
	20.0
32' to 41': Heavily weathered dark grey phyllitic schist. No appreciable water produced.	30.0
41' to 108': Heavily weathered dark grey phyllitic schist. Unable to identify quartzite beds. Drilling extremely soft and hole stripping some during drilling. Casing seal held well. No signficant water being produced.	40.0
	50.0
	60.0
	70.0
	80.0
	90.0
	100.0
	110.0
108' to 333': Moderately weathered dark grey phyllitic schist interbedded with light grey/white quartzite. Quartzite beds ~10' to 20' thick and phyllitic beds ~15' to 60' thick. Fractures producing water encountered at 108' (7.5 gpm), 126' (12.5 gpm), 220' (10 gpm), 244' (33 gpm). Softer drilling encountered from 330' to 333', but no appreciable water noted.	120.0
	130.0
	140.0
	150.0
	160.0
	170.0
	180.0
	190.0
	200.0
	210.0
	220.0
	230.0
	240.0
	250.0
	260.0
	270.0
	280.0
	290.0
	300.0
	310.0
	320.0
	330.0
333' to 420': Predominantly moderately to slightly weathered dark gray phyllitic schist. Minimal evidence of quartzite beds observed. No additional water bearing fractures encountered. Well pumped with air lift for ~1-hour after completion. Final estimated yield of 63 gpm.	340.0
	350.0
	360.0
	370.0
	380.0
	390.0
	400.0
	410.0
	420.0

AS-BUILT WELL SCHEMATIC



1' stick-up, finished with locking cap

Grade

Well Casing Material: Steel

Well Casing Diameter: 6 inches

Well Casing Length: 42 feet

Depth to Bedrock: 32 feet

Depth of Casing: 41 feet

Open Interval: 41 - 420 feet

Open Hole Diameter: inches

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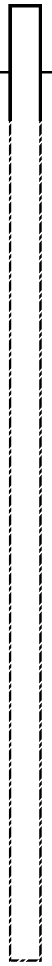
MONITORING WELL LOG

Project: Nordic Aquafarms	Drilling Co.: Goodwin Well and Water	Boring/Well No.: **GWW-103**
Project No.: 171.05027.003	Driller: Joe Bubier	Lock No.: Standard Ransom Lock
Site Location: BWD- Lower Reservoir Property	Drilling Method: Air Roatary	Start Date: 3/5/2018
Geologist: Drew Fuchs	Drilling Equip: Water Well Rig	Date Complete: 3/7/2018
Ground Elev.: 30 feet (Approximate)	Static Water (bgs):	Total Boring Depth: 340 feet
Top of Casing Elev.: 31.80 feet (Surveyed)	Easting: 500888.3 m	Northing: 4915776.5 m (UTM 19N)

Remarks: Boring advanced through overburden using 8 3/4" mud roatary into bedrock. Casing driven to bottom of 8 3/4" hole and air rotary used to advanced into bedrock.

AS-BUILT WELL SCHEMATIC

GEOLOGIC LOG	Depth (ft.)
Above Grade	2.0 - 3.0 Above Grade
	1.0 - 2.0 Above Grade
	0.0 - 1.0 Above Grade
0' to 16': Overburden. Clayey glaciomarine silt (Presumpscot Formation) to 15', silty till from 15' to 16'.	10.0
	20.0
16' to 29': Weathered dark gray phyllitic schist. Set casing to 29' bgs.	30.0
29' to 157': Interbedded dark grey phyllitic schist and light grey/white quartzite. Phyllitic beds range from ~10' to 30'+ in thickness, quartzite beds range from 5' to 20' in thickness and are harder to drill through. Some borhole stripping occuring ~63'. Water bearing fractures encountered at 63' (5 gpm) and 112' (15 gpm),	40.0
	50.0
	60.0
	70.0
	80.0
	90.0
	100.0
	110.0
	120.0
	130.0
	140.0
	150.0
	160.0
157' to 280': Lithology similar to above, however, quartzite beds slightly more common. Water bearing fractures encountered at 157' (100 gpm), 272' (30 gpm), 276' (50 gpm). Well yield ~200 gpm at 280', air hammer unable to conitnue drilling. Air hammer removed and switch to roller bit to continue.	170.0
	180.0
	190.0
	200.0
	210.0
	220.0
	230.0
	240.0
	250.0
	260.0
	270.0
	280.0
280' to 240': Roller bit through similar lithology to above. Water bearing fracture encountered at 315' (50 gpm), and softer drilling at 336', though no additional water observed. End of exploration at 340'. Well yield estimated by air lift for ~30-40 minutes. Final yield estimated at 250 gpm.	290.0
	300.0
	310.0
	320.0
	340.0



~2' stick-up, finished with locking cap

Grade

Well Casing Material: Steel

Well Casing Diameter: 6 inches

Well Casing Length: 31 feet

Depth to Bedrock: 16 feet

Depth of Casing: 29 feet

Open Interval: 29 - 340 feet

Open Hole Diameter: 6 inches

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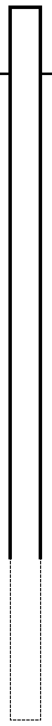
MONITORING WELL LOG

Project: Nordic Aquafarms	Drilling Co.: Environmental Pojects Inc.	Boring/Well No.: **PZ-1D**
Project No.: 171.05027.003	Driller: Mike	Lock No.: Standard Ransom Lock
Site Location: BWD- Lower Reservoir Property	Drilling Method: Direct Push	Start Date: 10/1/2018
Geologist: Thomas Neilson	Drilling Equip: Geoprobe 7822DT	Date Complete: 10/1/2018
Ground Elev.: 68 feet (Approximate)	Static Water (bgs):	Total Boring Depth: 24 feet
Top of Casing Elev.: 70.14 feet (Surveyed)	Easting: 500172.1 m	Northing: 4915945.6 m (UTM 19N)

Remarks: Boring advanced using direct push through overburden. Difficult to discern transition from overburden to bedrock due to heavily weathered bedrock surface. Well developed for ~40 minutes with peristaltic pump following completion.

AS-BUILT WELL SCHEMATIC

GEOLOGIC LOG	Depth (ft.)
Above Grade	2.0 - 3.0 Above Grade
	1.0 - 2.0 Above Grade
	0.0 - 1.0 Above Grade
0' to 8': Olive-brown mottled SILT, little to some Clay, little to trance fine sand. Presumpscot Formation	1.0
	2.0
	3.0
	4.0
	5.0
	6.0
	7.0
	8.0
10' to 12': Olive Brown highly plastic CLAY and SILT, wet/moist.	9.0
	10.0
	11.0
	12.0
12' to 18': SAA grading to medium grey SILT, little clay, very plastic, wet.	13.0
	14.0
	15.0
	16.0
	17.0
	18.0
18' to 19': SAA grading to medium grey SILT, little to some Sand, little clay, trace f. gravel, wet.	19.0
19' to 24': Rusty red to grey SILT, some to little Clay, little sand, little gravel. Till or heavily weathered bedrock- difficult to distinguish boundary. Wet. End of exploration at 24'.	20.0
	21.0
	22.0
	23.0
	24.0



~2' stick-up, finished with protective standpipe and locking cap

Grade

Well Casing Material: Sch. 40 PVC

Well Casing Diameter: 1 inch

Well Casing Length: 26 feet

Depth to Bedrock: 24 feet

Annulus Fill Material: Native Formation

Screen Interval: 19 - 24 feet

Screen Size: 10-slot

Sand Pack: #2 Sand

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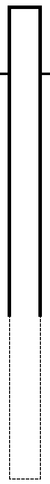
MONITORING WELL LOG

Project: Nordic Aquafarms	Drilling Co.: Environmental Pojects Inc.	Boring/Well No.: **PZ-1S**
Project No.: 171.05027.003	Driller: Mike	Lock No.: Standard Ransom Lock
Site Location: BWD- Lower Reservoir Property	Drilling Method: Direct Push	Start Date: 10/1/2018
Geologist: Thomas Neilson	Drilling Equip: Geoprobe 7822DT	Date Complete: 10/1/2018
Ground Elev.: 68 feet (Approximate)	Static Water (bgs):	Total Boring Depth: 15 feet
Top of Casing Elev.: 70.16 feet (Surveyed)	Easting: 500171.2 m	Northing: 4915945.9 m (UTM 19N)

Remarks: Boring advanced using direct push through overburden. PZ-1S installed as shallow pair to PZ-1D. Silt/clay observed entering through screen during attempted development with peristaltic pump. Unable to develop due to clogged tubing from highly plastic clay.

AS-BUILT WELL SCHEMATIC

GEOLOGIC LOG	Depth (ft.)
Above Grade	2.0 - 3.0 Above Grade
	1.0 - 2.0 Above Grade
	0.0 - 1.0 Above Grade
See PZ-1D for geologic description.	1.0
	2.0
	3.0
	4.0
	5.0
	6.0
	7.0
	8.0
	9.0
	10.0
	11.0
	12.0
	13.0
	14.0
	15.0



~2' stick-up, finished with protective standpipe and locking cap

Grade

Well Casing Material: Sch. 40 PVC

Well Casing Diameter: 1 inch

Well Casing Length: 17 feet

Depth to Bedrock: N/A

Annulus Fill Material: Native Formation

Screen Interval: 10 - 15 feet

Screen Size: 10-slot

Sand Pack: #2 Sand

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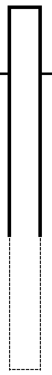
MONITORING WELL LOG

Project: Nordic Aquafarms	Drilling Co.: Environmental Pojects Inc.	Boring/Well No.: **PZ-2**
Project No.: 171.05027.003	Driller: Mike	Lock No.: Standard Ransom Lock
Site Location: BWD- Lower Reservoir Property	Drilling Method: Direct Push	Start Date: 10/1/2018
Geologist: Thomas Neilson	Drilling Equip: Geoprobe 7822DT	Date Complete: 10/1/2018
Ground Elev.: 41 feet (Approximate)	Static Water (bgs):	Total Boring Depth: 11 feet
Top of Casing Elev.: 42.95 feet (Surveyed)	Easting: 500730.2 m	Northing: 4915907.5 m (UTM 19N)

Remarks: Boring advanced using direct push through overburden. Unable to develop after completion due to lack of measureable groundwater.

AS-BUILT WELL SCHEMATIC

GEOLOGIC LOG	Depth (ft.)
Above Grade	2.0 - 3.0 Above Grade
	1.0 - 2.0 Above Grade
	0.0 - 1.0 Above Grade
0' to 9.5': 2" organic soil over Olive-brown SILT, little clay, little fine sand, moist.	1.0
	2.0
	3.0
	4.0
	5.0
	6.0
	7.0
	8.0
	9.0
9.5' to 11': Brown fine SAND and SILT, little clay, trace gravel (till) grading into heavily weathered brown bedrock, wet. Refusal at 11'.	10.0
	11.0



~2' stick-up, finished with protective standpipe and locking cap

Grade

Well Casing Material: Sch. 40 PVC

Well Casing Diameter: 1 inch

Well Casing Length: feet

Depth to Bedrock: feet

Annulus Fill Material: Native Formation

Screen Interval: feet

Screen Size: 10-slot

Sand Pack: #2 Sand

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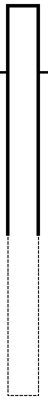
MONITORING WELL LOG

Project: Nordic Aquafarms	Drilling Co.: Environmental Pojects Inc.	Boring/Well No.: **PZ-3**
Project No.: 171.05027.003	Driller: Mike	Lock No.: Standard Ransom Lock
Site Location: BWD- Lower Reservoir Property	Drilling Method: Direct Push	Start Date: 10/1/2018
Geologist: Thomas Neilson	Drilling Equip: Geoprobe 7822DT	Date Complete: 10/1/2018
Ground Elev.: 49 feet (Approximate)	Static Water (bgs):	Total Boring Depth: 12 feet
Top of Casing Elev.: 51.39 feet (Surveyed)	Easting: 500684.7 m	Northing: 4915945.7 m (UTM 19N)

Remarks: Boring advanced using direct push through overburden. Unable to develop after completed due to lack of measureable groundwater.

AS-BUILT WELL SCHEMATIC

GEOLOGIC LOG	Depth (ft.)
Above Grade	2.0 - 3.0 Above Grade
	1.0 - 2.0 Above Grade
	0.0 - 1.0 Above Grade
0' to 9.75': Olive-brown to greay SILT, some to little Clay, some to little fine Sand, mottled, moist	1.0
	2.0
	3.0
	4.0
	5.0
	6.0
	7.0
	8.0
	9.0
9.75' to 12': Brownish-red SILT and SAND, little clay, little gravel (till), grading into greyish heavily weathered bedrock (transition point difficult to identify). Moist. Refusal at 12'.	10.0
	11.0
	12.0



~2' stick-up, finished with protective standpipe and locking cap

Grade

Well Casing Material: Sch. 40 PVC

Well Casing Diameter: 1 inch

Well Casing Length: 14 feet

Depth to Bedrock: 12 feet

Annulus Fill Material: Native Formation

Screen Interval: 7 - 12 feet

Screen Size: 10-slot

Sand Pack: #2 Sand

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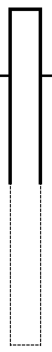
MONITORING WELL LOG

Project: Nordic Aquafarms	Drilling Co.: Environmental Pojects Inc.	Boring/Well No.: **PZ-4D**
Project No.: 171.05027.003	Driller: Mike	Lock No.: Standard Ransom Lock
Site Location: BWD- Lower Reservoir Property	Drilling Method: Direct Push	Start Date: 10/2/2018
Geologist: Thomas Neilson	Drilling Equip: Geoprobe 7822DT	Date Complete: 10/2/2018
Ground Elev.: 34.5 feet (Approximate)	Static Water (bgs):	Total Boring Depth: 10 feet
Top of Casing Elev.: 36.47 feet (Surveyed)	Easting: 500800.2 m	Northing: 4915863.6 m (UTM 19N)

Remarks: Boring advanced using direct push through overburden. Located in narrow flood plain adjacent to intermittent stream. Unable to develop due to lack of measureable groundwater after completion.

GEOLOGIC LOG	Depth (ft.)
Above Grade	2.0 - 3.0 Above Grade
	1.0 - 2.0 Above Grade
	0.0 - 1.0 Above Grade
	1.0
0' to 5': 8" Organic rich brown SILT, some fine Sand, some Clay, over olive-brown to grey SILT, some Clay, some to little fine Sand, some to little gravel from 4.75' to 5'. Possibly thin fluvial deposit.	2.0
	3.0
	4.0
	5.0
5' to 8.75': Olive-brown to brownish-grey SILT, some Clay, some to little fine Sand, moist.	6.0
	7.0
	8.0
8.75' to 10': Light grey crushed weathered bedrock. Refusal at 10'.	9.0
	10.0

AS-BUILT WELL SCHEMATIC



~2' stick-up, finished with protective standpipe and locking cap

Grade

Well Casing Material: Sch. 40 PVC

Well Casing Diameter: 1 inch

Well Casing Length: 12 feet

Depth to Bedrock: 8.75 feet

Annulus Fill Material: Native Formation

Screen Interval: 5 - 10 feet

Screen Size: 10-slot

Sand Pack: #2 Sand

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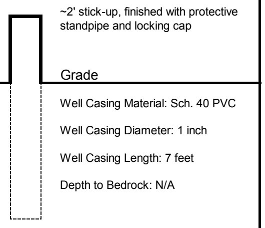
MONITORING WELL LOG

Project: Nordic Aquafarms	Drilling Co.: Environmental Pojects Inc.	Boring/Well No.: **PZ-4S**
Project No.: 171.05027.003	Driller: Mike	Lock No.: Standard Ransom Lock
Site Location: BWD- Lower Reservoir Property	Drilling Method: Direct Push	Start Date: 10/2/2018
Geologist: Thomas Neilson	Drilling Equip: Geoprobe 7822DT	Date Complete: 10/2/2018
Ground Elev.: 34.5 feet (Approximate)	Static Water (bgs):	Total Boring Depth: 5 feet
Top of Casing Elev.: 36.52 feet (Surveyed)	Easting: 500799.4 m	Northing: 4915863.8 m (UTM 19N)

Remarks: Boring advanced using direct push through overburden. Located in narrow flood plain adjacent to intermittent stream. Unable to develop due to lack of measureable groundwater after completion. Well completed with top of screen at grade, however, locking standpipe extends to 3' below grade.

AS-BUILT WELL SCHEMATIC

GEOLOGIC LOG	Depth (ft.)
Above Grade	2.0 - 3.0 Above Grade
	1.0 - 2.0 Above Grade
	0.0 - 1.0 Above Grade
See PZ-4D log for geologic description.	1.0
	2.0
	3.0
	4.0
	5.0



Well Casing Material: Sch. 40 PVC

Well Casing Diameter: 1 inch

Well Casing Length: 7 feet

Depth to Bedrock: N/A

Annulus Fill Material: Native Formation

Screen Interval: 0 - 5 feet

Screen Size: 10-slot

Sand Pack: #2 Sand

APPENDIX D

Groundwater and Surface Water Data

Hydrogeologic Investigation Report
Proposed Commercial Land-Based Aquaculture Facility
Belfast Water District, Cassida Back Lot, and Mathews Brothers West Field Properties
285 Northport Avenue
Belfast, Maine

Ransom Consulting, Inc.
Project 171.05027.003

Appendix D – Monitoring Data
Description and Metadata

Hydrogeologic Investigation Report
Proposed Commercial Land-Based Aquaculture Facility
Belfast Water District, Cassida, and Mathews Brothers Properties
285 Northport Avenue
Belfast, Maine

The appendix consists of electronic data files provided on a CD and/or USB drive with the hard copy of the above reference report. The files included herein are raw data files, and either do not lend themselves to being displayed as a printed table (e.g. too many lines) or are not intended to be displayed as tables. They are included in an effort to provide all relevant data collected during the performance of the activities detailed in the above referenced report to the MEDEP. The electronic media contains a folder with the following contents:

NAF_XDCRData_gen_01-Apr-2019.csv

1. This file includes all the manual measurements collected at Nordic Aquafarms to date. It was created on April 1, 2019 by TBN.

2. Fields Include:

    a. Monitoring Point- The name of the monitoring point where the measurement was made
    b. t_st- Date and time of measurement given in eastern standard time
    c. t_dst- Date and time of measurement given in eastern daylight savings time
    d. DTW-btoc- The measured depth to water below the top of casing in feet, which is the surveyed reference point
    e. gw_elev- The elevation of water in feet NAVD88, defined as the Survey Elevation - DTW_btoc
    f. Notes- Pertinent narrative information about the measurement
    g. TestName- This pumping test during which the measurement was made. Values are as given:

        - Apr 2018: Initial pumping test with gww101 and gww103 pumped at 100 gpm for 72 hrs
        - Aug 2018: Second test, conducted to assess max yield of pw1, pw1 pumped at 250 gpm for 72 hours
        - Nov 2018: Third test, conducted to assess potential Site-Wide yield. Six wells pumped simultaneously for 72 hours
        - Jan 2019: The fourth test, conducted to assess connectivity between wells (e.g. fracture groups) by pumping four wells with staggered starts. Total run time 96 hours
        - Background: Any data point that does not fall within five days before the start of the test or ten days after the pump(s) were turned off

NAF_ManualData_gen_01-Apr-2019.csv

1. This file includes all the transducer measurements collected at Nordic Aquafarms to date. It was created on April 1, 2019 by TBN.

2. Fields include:

    a. Monitoring Point- The name of the monitoring point the measurement was made at
    b. t_st- Date and time of measurement given in eastern standard time
    c. t_dst- Date and time of measurement given in eastern daylight savings time
    d. Temperature- The temperature of the water at the time given in degrees Celsius
    e. Conductivity- The specific conductance of the water at the time given in ms/cm. Instruments without this capability have a value of NaN entered.
    f. WaterLevel- The height of water column above the instrument given in cm
    g. DTW-btoc- The measured depth to water below the top of casing in feet, which is the surveyed reference point
    h. gw_elev- The elevation of water in feet NAVD88, defined as the Survey Elevation - DTW_btoc
    i. TestName- This pumping test during which the measurement was made. Values are as given:

        - Apr 2018: Initial pumping test with gww101 and gww103 pumped at 100 gpm for 72 hrs
        - Aug 2018: Second test, conducted to assess max yield of pw1, pw1 pumped at 250 gpm for 72 hours
        - Nov 2018: Third test, conducted to assess potential Site-Wide yield. Six wells pumped simultaneously for 72 hours
        - Jan 2019: The fourth test, conducted to assess connectivity between wells (e.g. fracture groups) by pumping four wells with staggered starts. Total run time 96 hours
        - Background: Any data point that does not fall within five days before the start of the test or ten days after the pump(s) were turned off

NAF_StreamData.xlsx

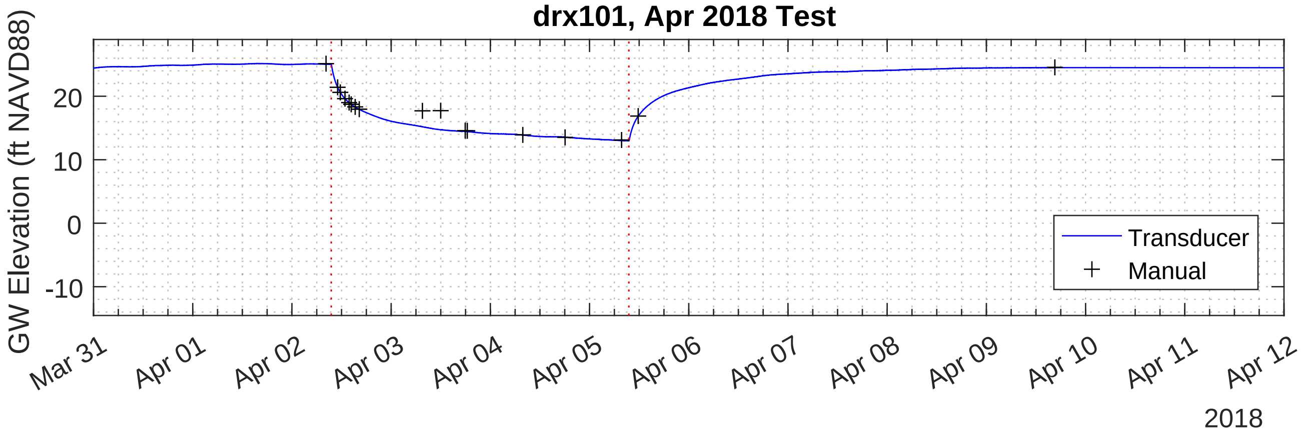
1. This file contains a spreadsheet that tabulates the calculated stream discharge in the Little River at each of the gaging locations. Stream gaging was conducted using a wading rod and flow meter using standard USGS procedures. For depths less than 2.5 feet along each transect the velocity was measured at 0.6 times the total depth, and depths greater than 2.5 feet the velocity was averaged between a measurement at 0.2 and 0.8 times the total depth. Transects were completed in the same location at each gaging event, and each transect had a minimum of 20 measurements recorded.

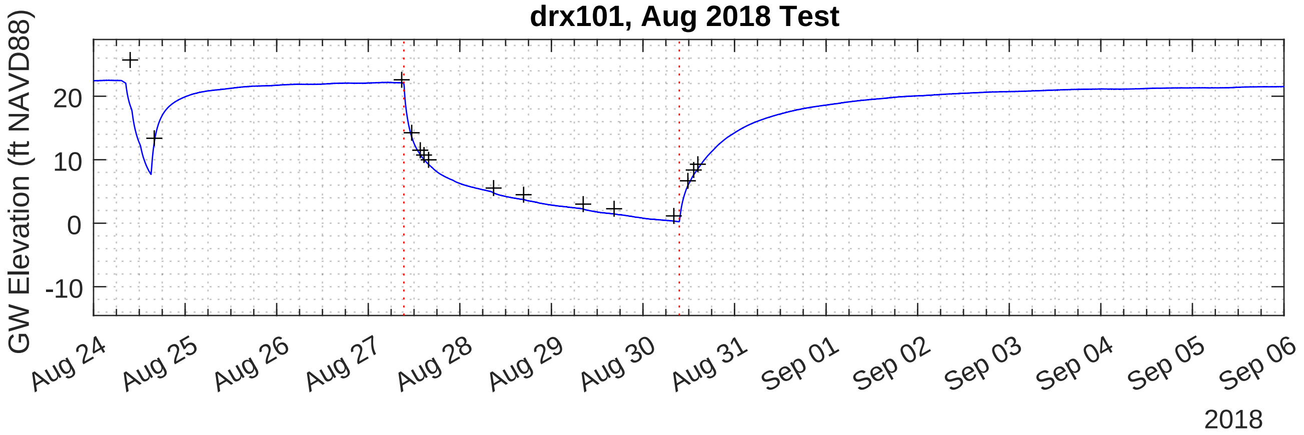
APPENDIX E

Aquifer Test Drawdown Plots

Hydrogeologic Investigation Report
Proposed Commercial Land-Based Aquaculture Facility
Belfast Water District, Cassida Back Lot, and Mathews Brothers West Field Properties
285 Northport Avenue
Belfast, Maine

Ransom Consulting, Inc.
Project 171.05027.003


drx101, Apr 2018 Test
GW Elevation (ft NAVD88)
20
10
0
-10
Transducer
Manual
Mar 31
Apr 01
Apr 02
Apr 03
Apr 04
Apr 05
Apr 06
Apr 07
Apr 08
Apr 09
Apr 10
Apr 11
Apr 12
2018


drx101, Aug 2018 Test
GW Elevation (ft NAVD88)
20
10
0
-10
Aug 24
Aug 25
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Aug 31
Sep 01
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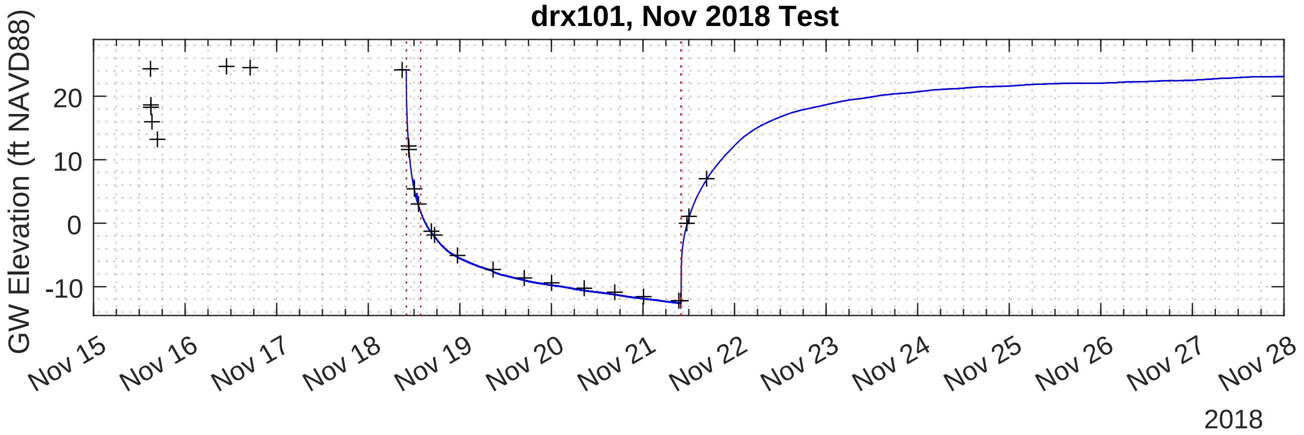
Sep 06
2018


drx101, Nov 2018 Test
GW Elevation (ft NAVD88)
20
10
0
-10
Nov 15
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Nov 17
Nov 18
Nov 19
Nov 20
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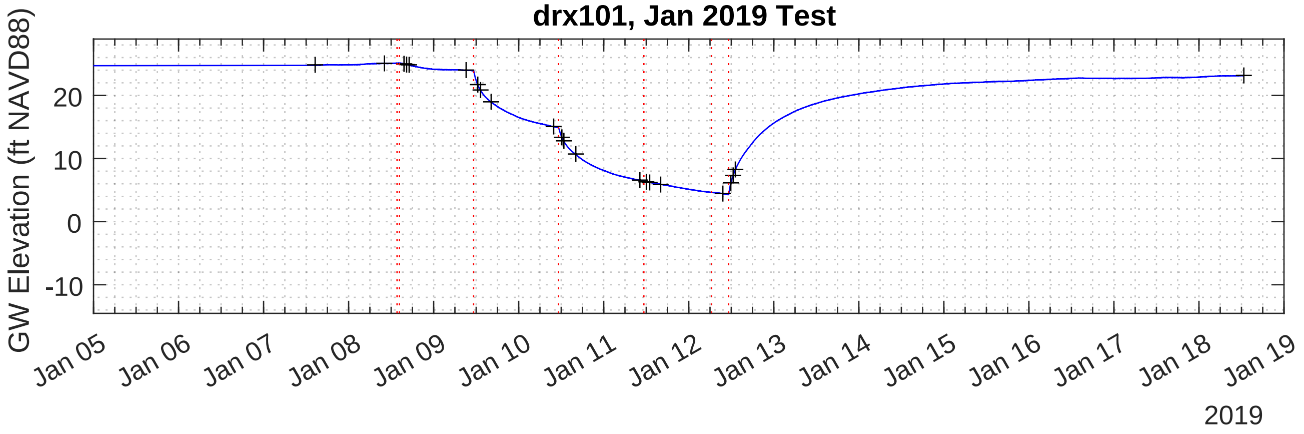
Nov 26
Nov 27
Nov 28
2018


drx101, Jan 2019 Test
GW Elevation (ft NAVD88)
20
10
0
-10
Jan 05
Jan 06
Jan 07
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Jan 09
Jan 10
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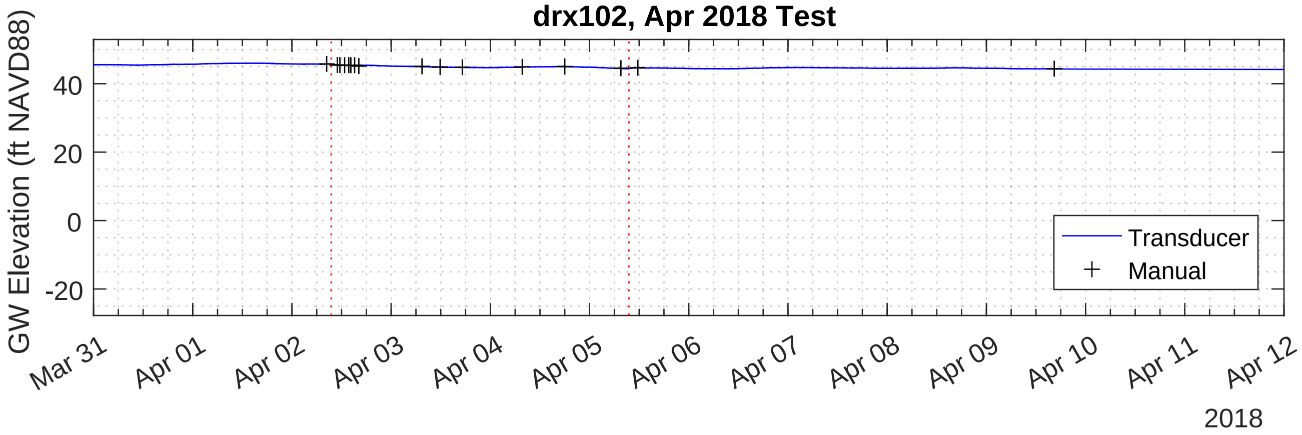
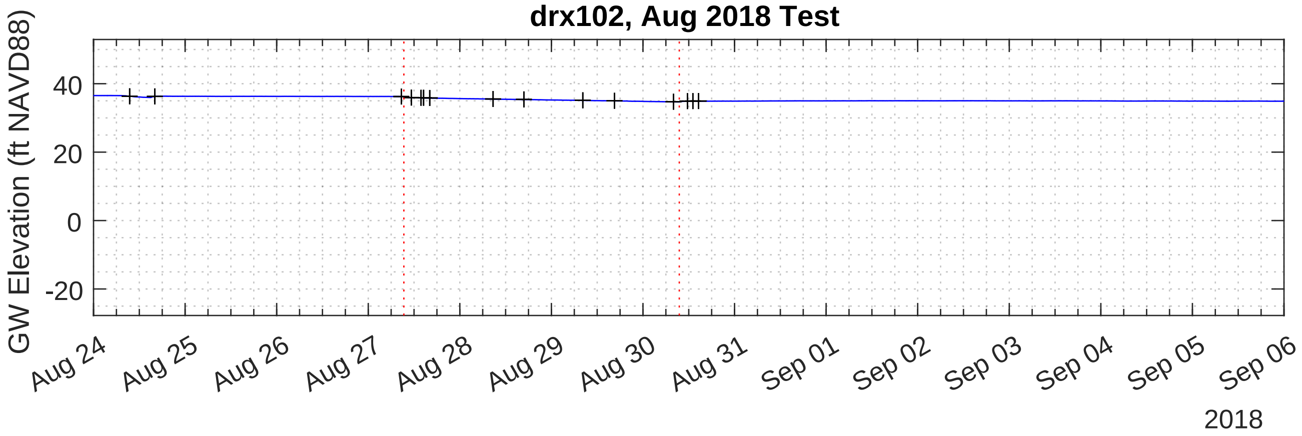
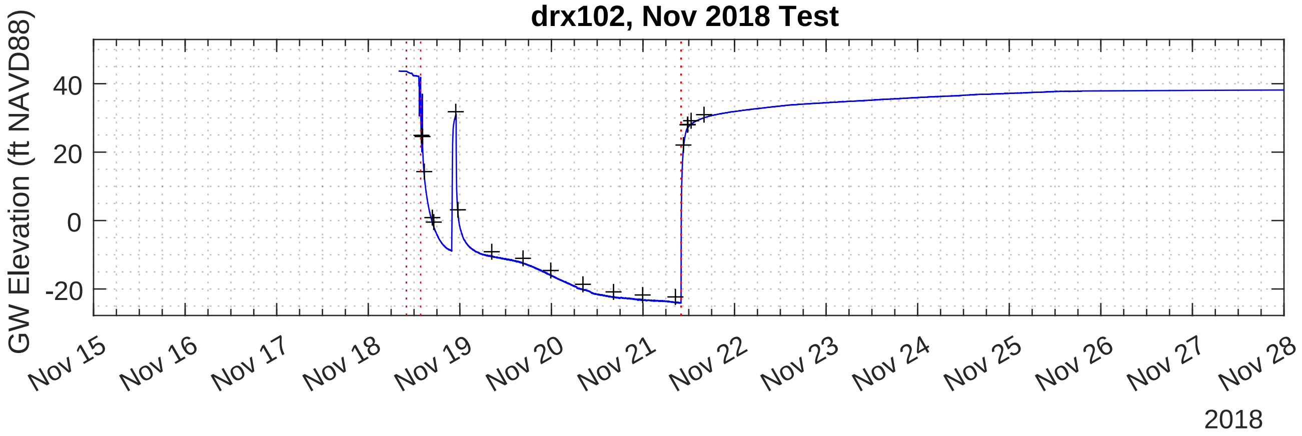
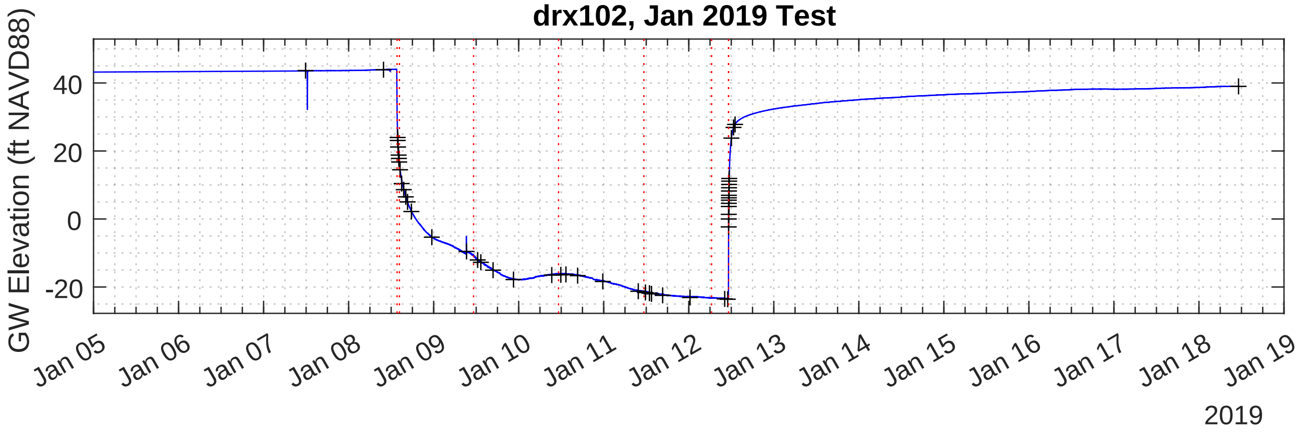
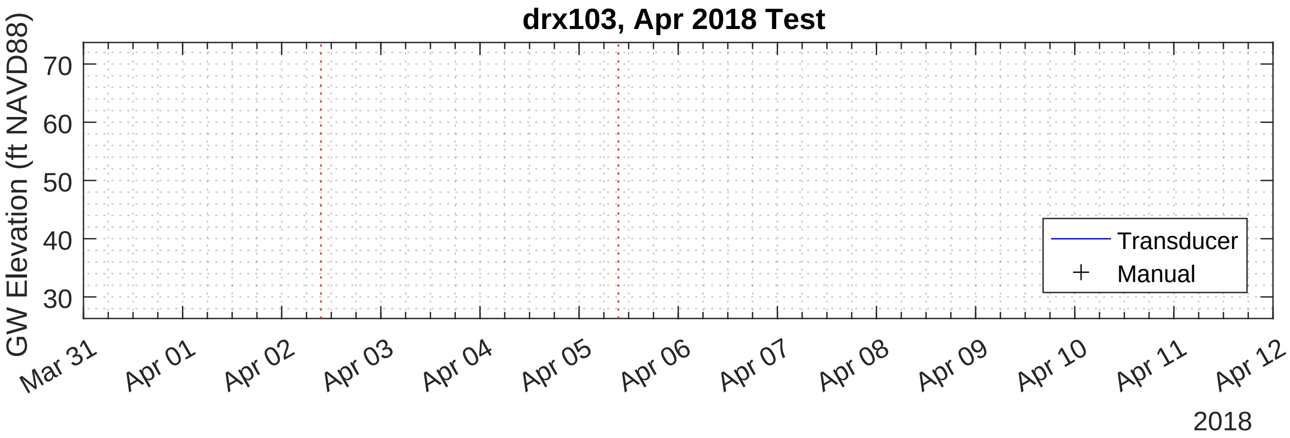
Jan 17
Jan 18
Jan 19
2019

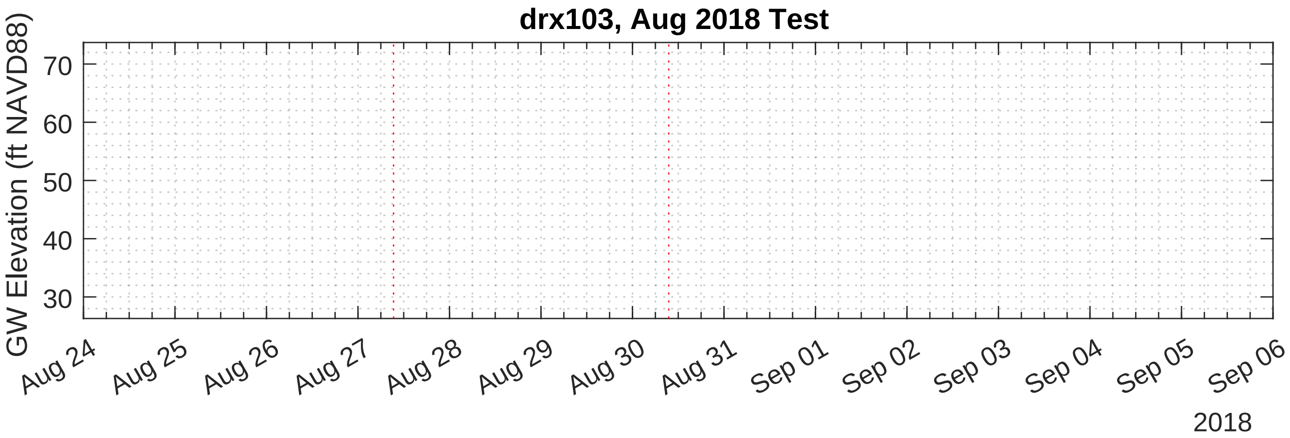

drx102, Apr 2018 Test


drx102, Aug 2018 Test


drx102, Nov 2018 Test


drx102, Jan 2019 Test


drx103, Apr 2018 Test
GW Elevation (ft NAVD88)
70
60
50
40
30
Transducer
Manual
Mar 31
Apr 01
Apr 02
Apr 03
Apr 04
Apr 05
Apr 06
Apr 07
Apr 08
Apr 09
Apr 10
Apr 11
Apr 12
2018


drx103, Aug 2018 Test
GW Elevation (ft NAVD88)
70
60
50
40
30
Aug 24
Aug 25
Aug 26
Aug 27
Aug 28
Aug 29
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Aug 31
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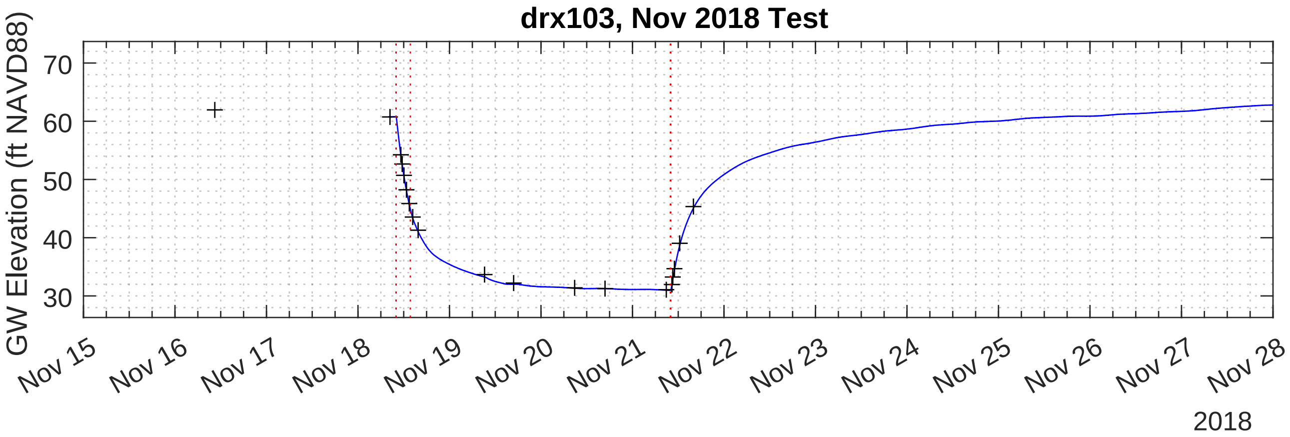
Sep 04
Sep 05
Sep 06
2018


drx103, Nov 2018 Test
GW Elevation (ft NAVD88)
70
60
50
40
30
Nov 15
Nov 16
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Nov 18
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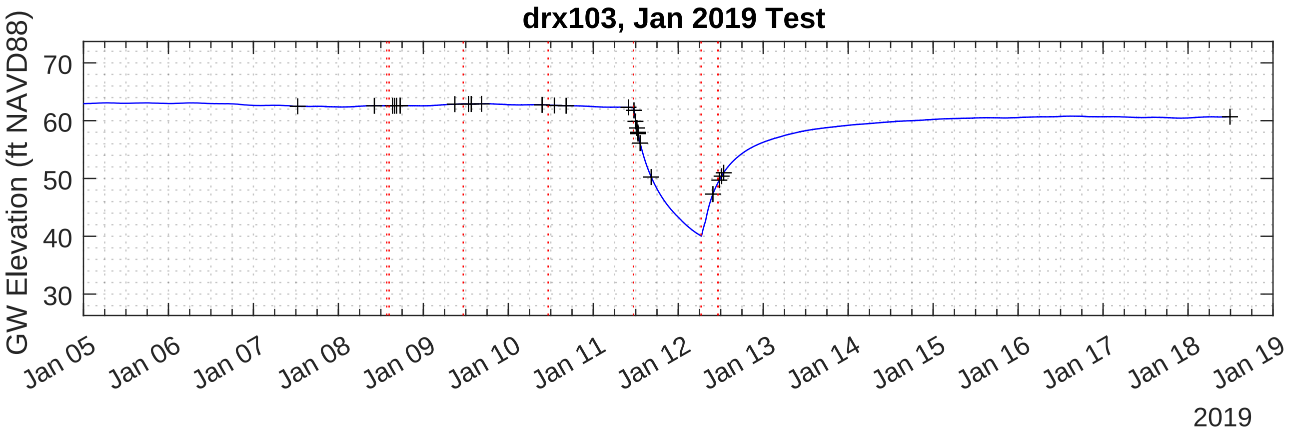
Nov 26
Nov 27
Nov 28
2018


drx103, Jan 2019 Test
GW Elevation (ft NAVD88)
70
60
50
40
30
Jan 05
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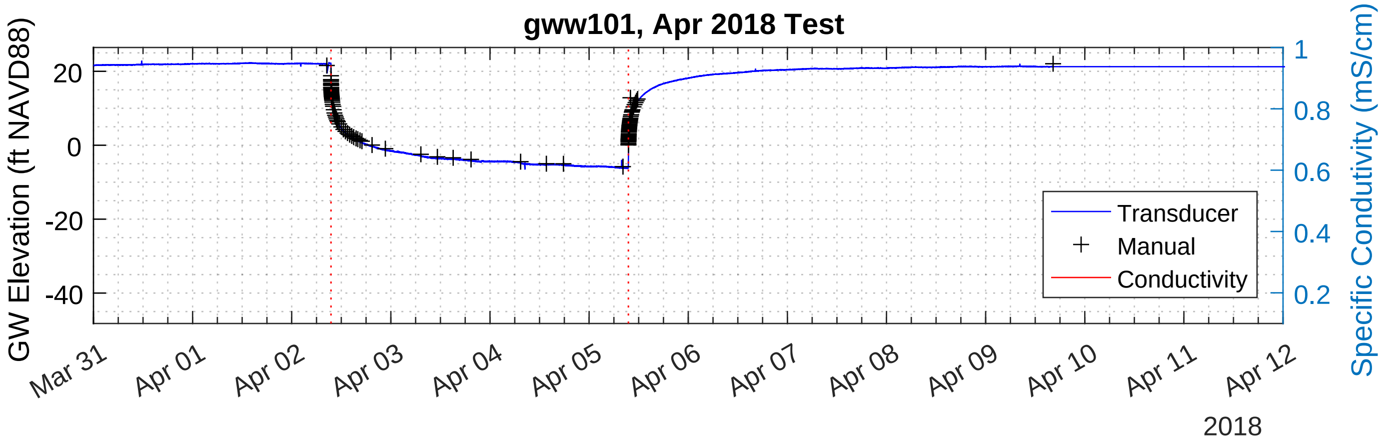
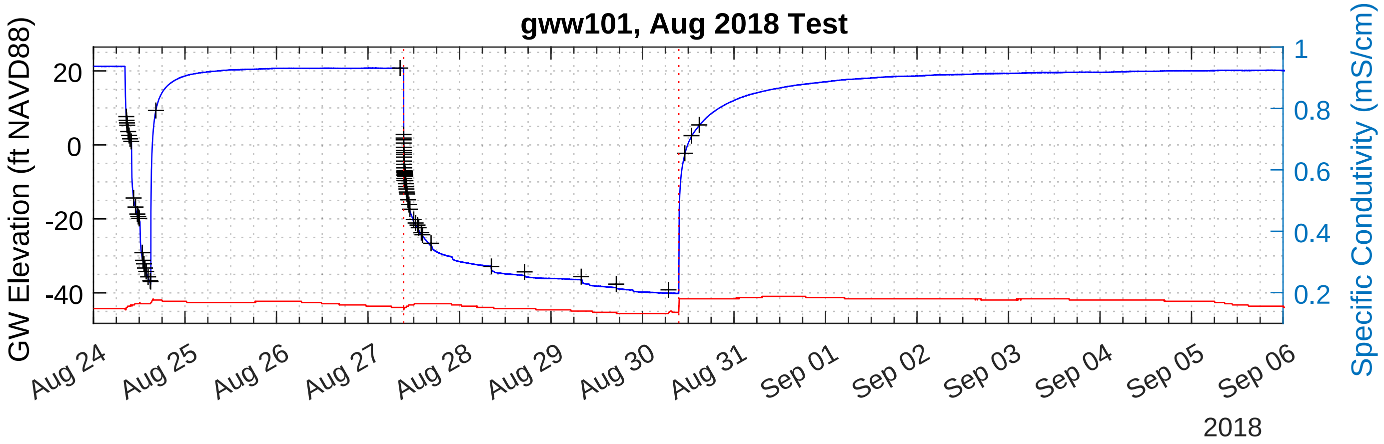
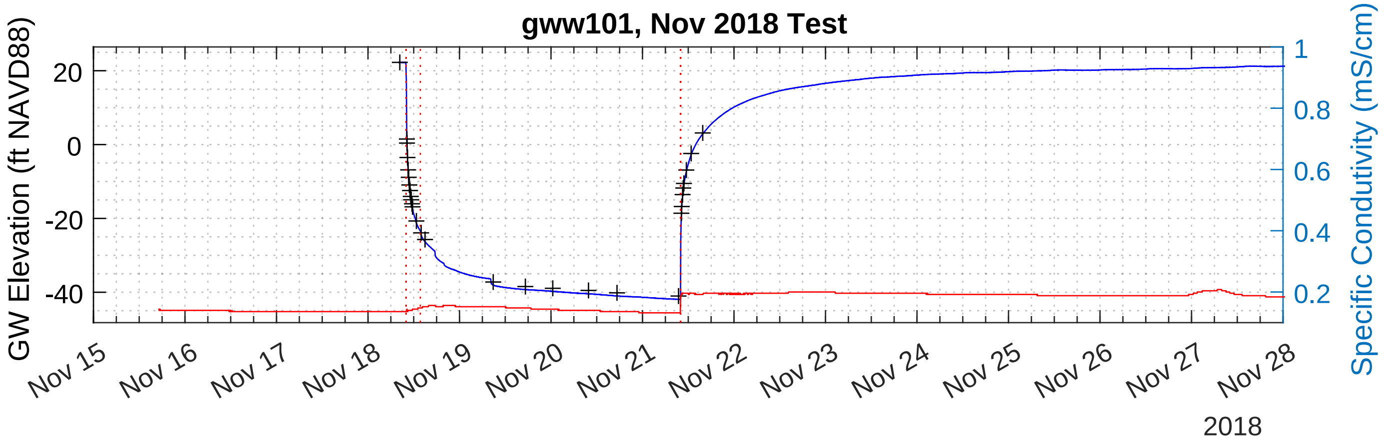
Jan 19
2019



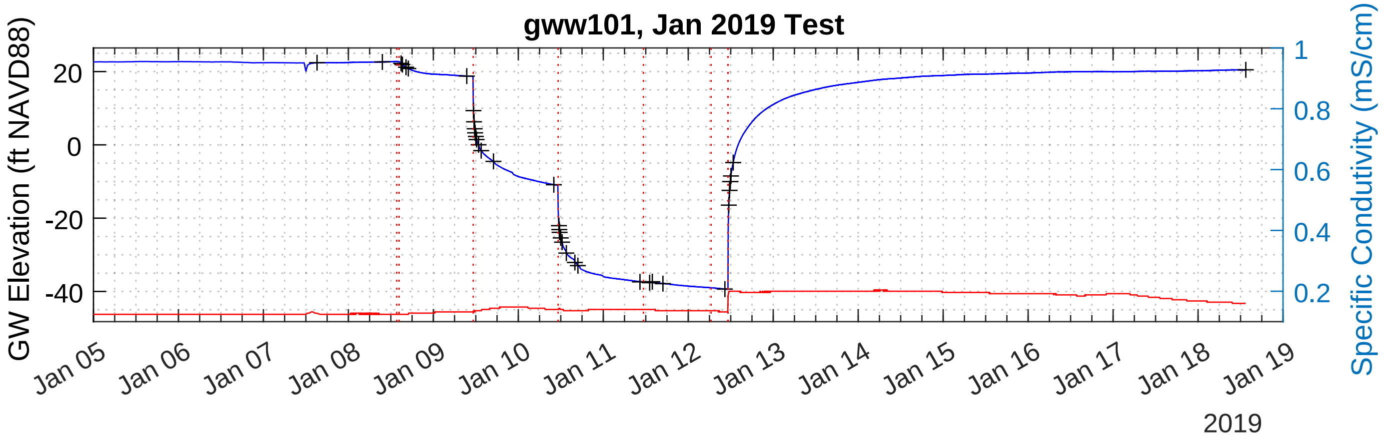
gww101, Apr 2018 Test



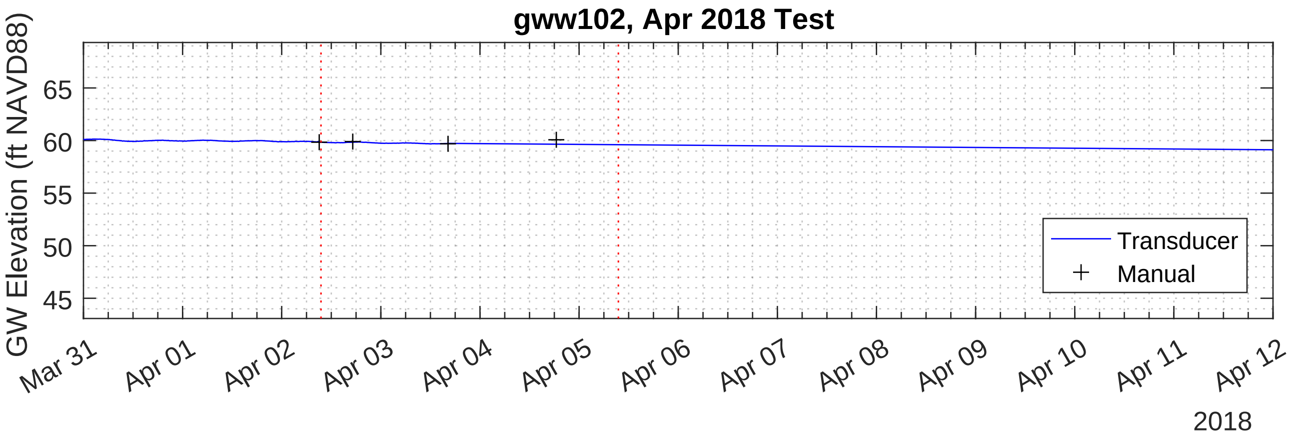
gww101, Aug 2018 Test

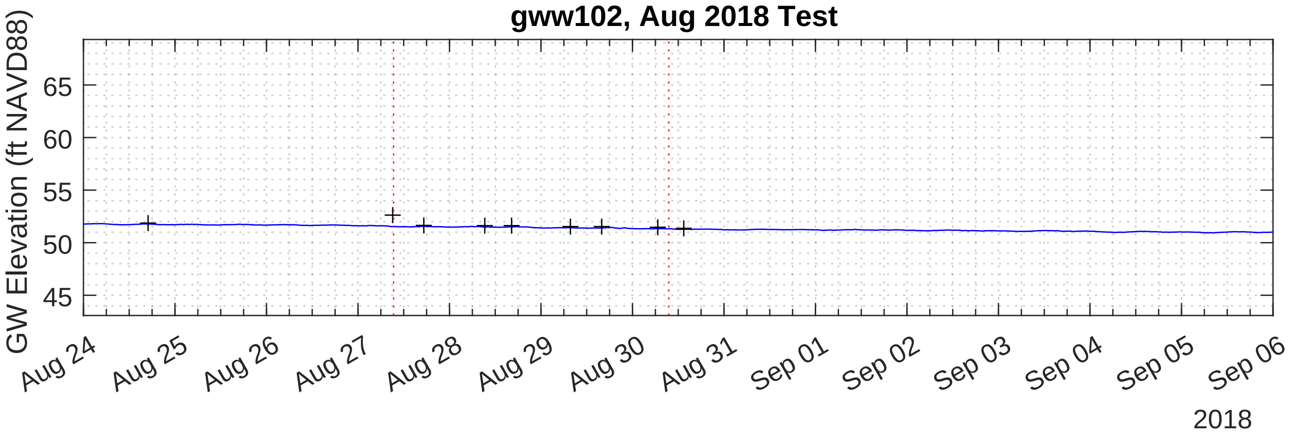


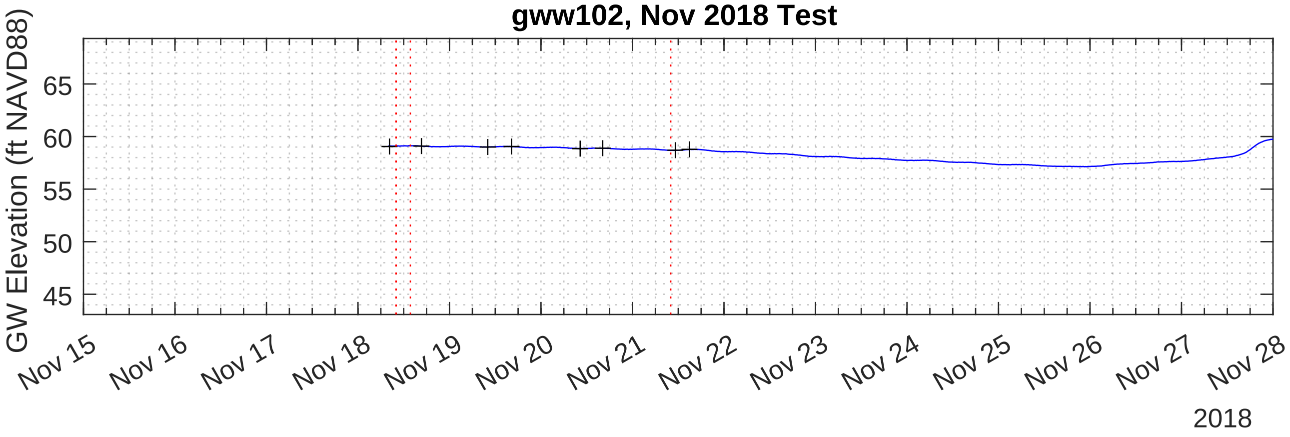
gww101, Nov 2018 Test

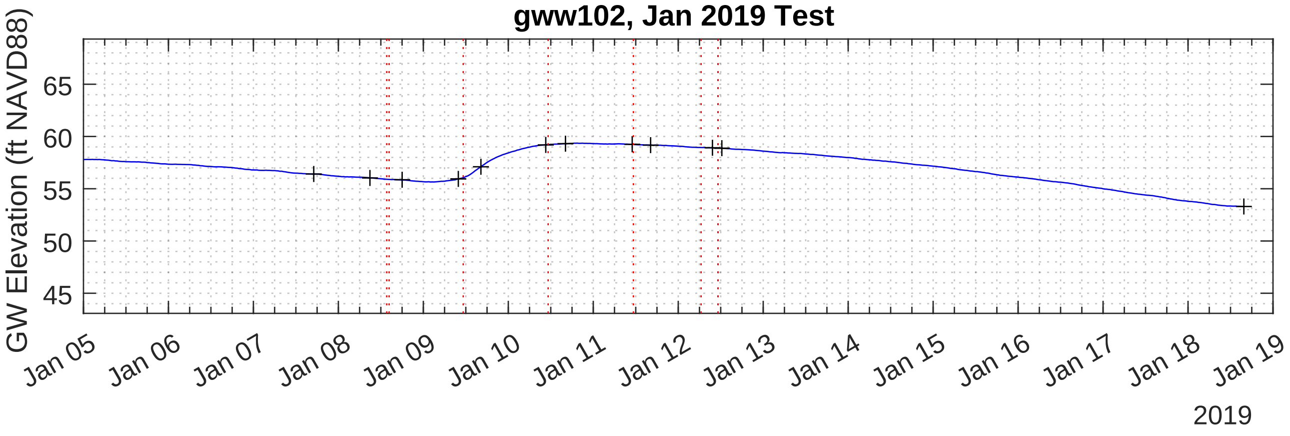


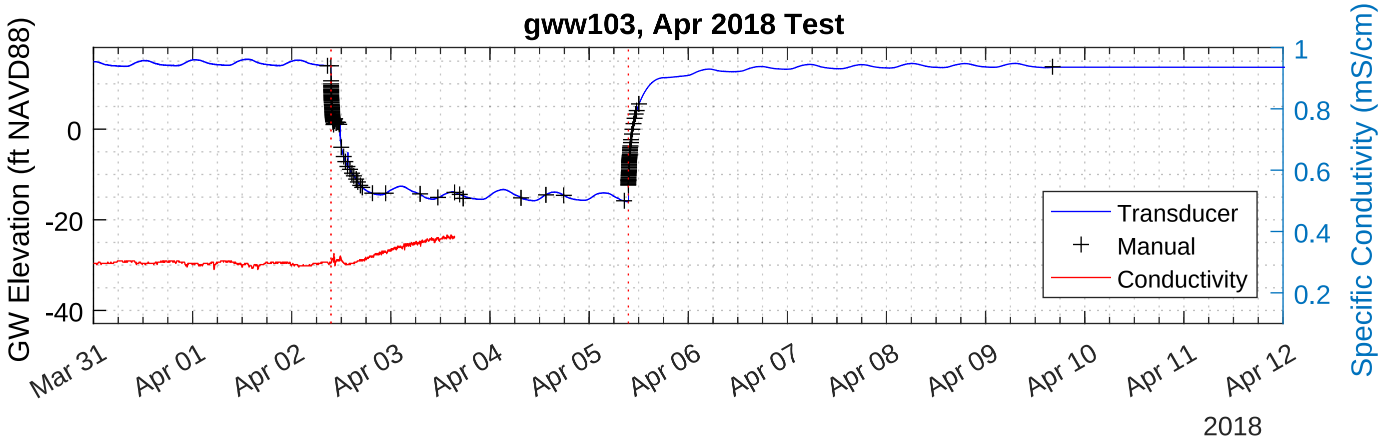
gww101, Jan 2019 Test

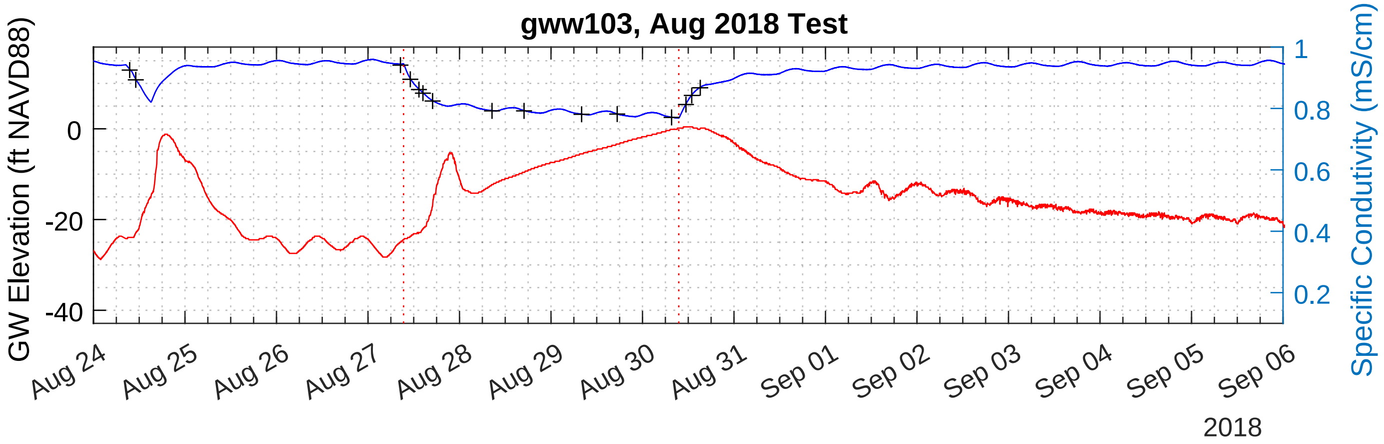

gww102, Apr 2018 Test

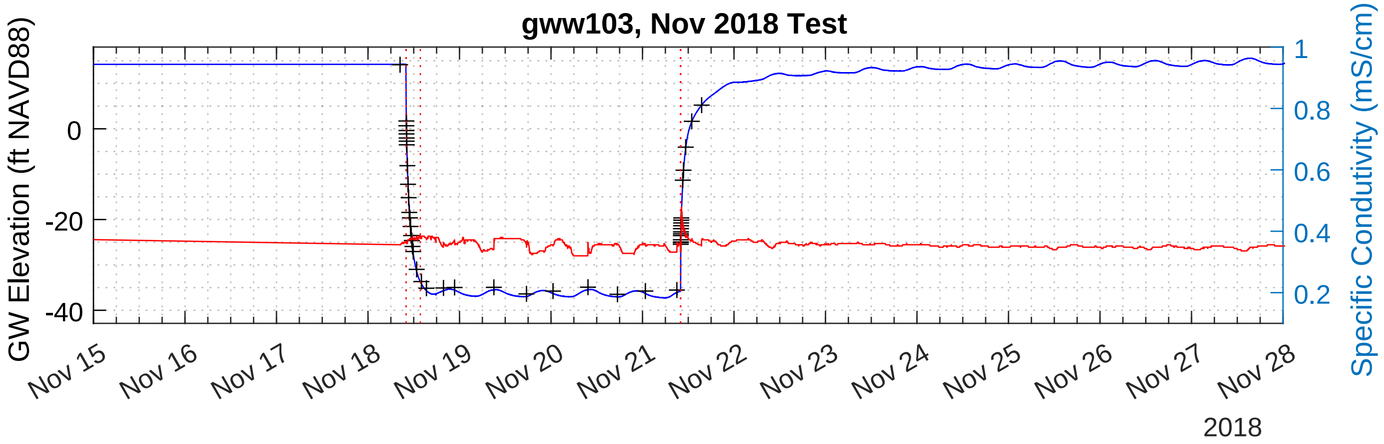

gww102, Aug 2018 Test

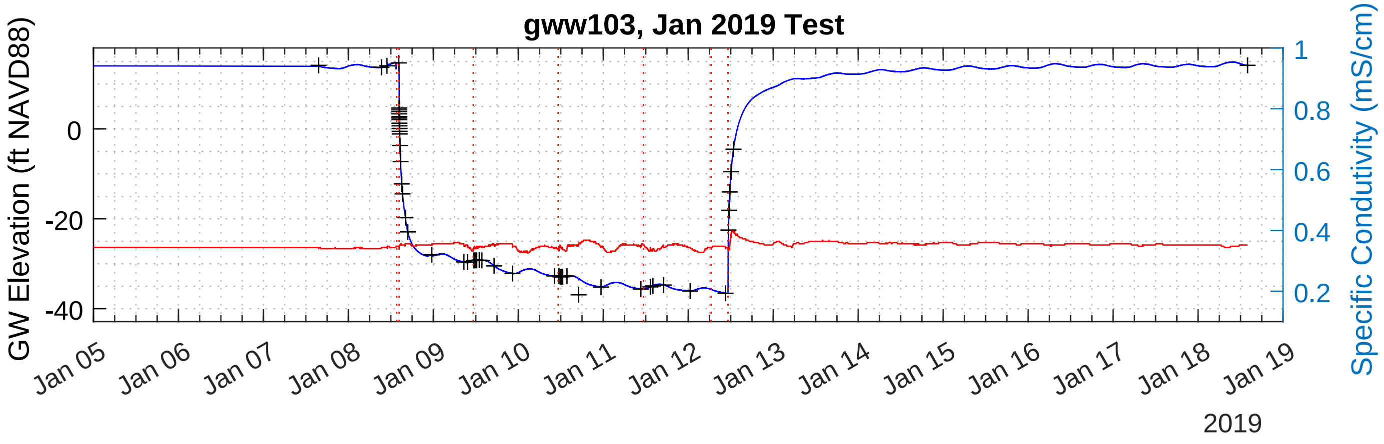

gww102, Nov 2018 Test

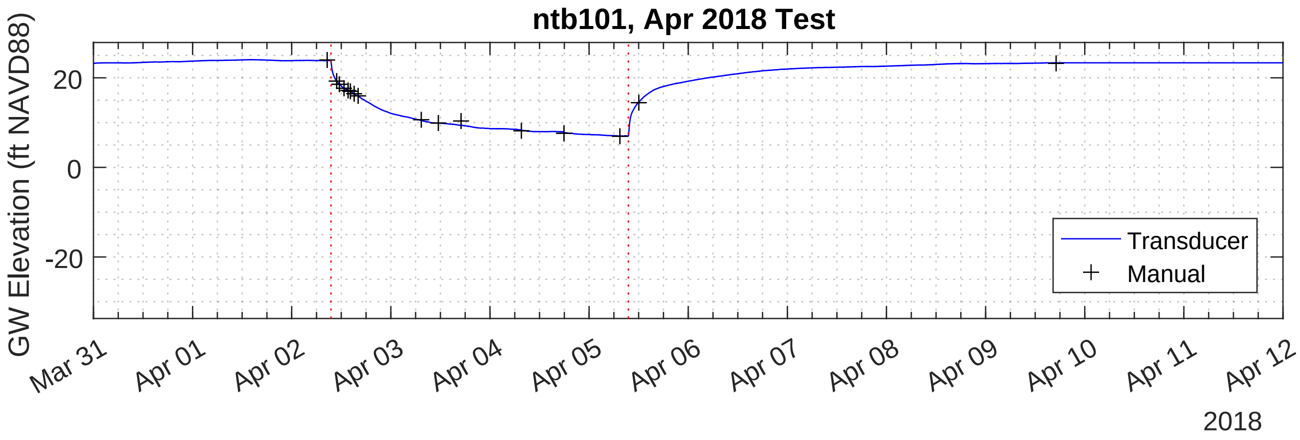

gww102, Jan 2019 Test

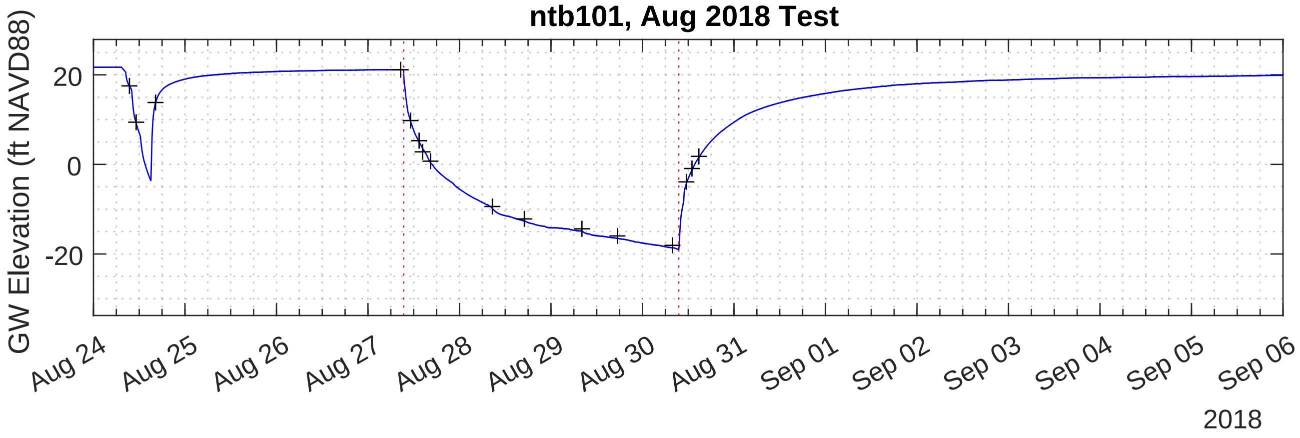

gww103, Apr 2018 Test

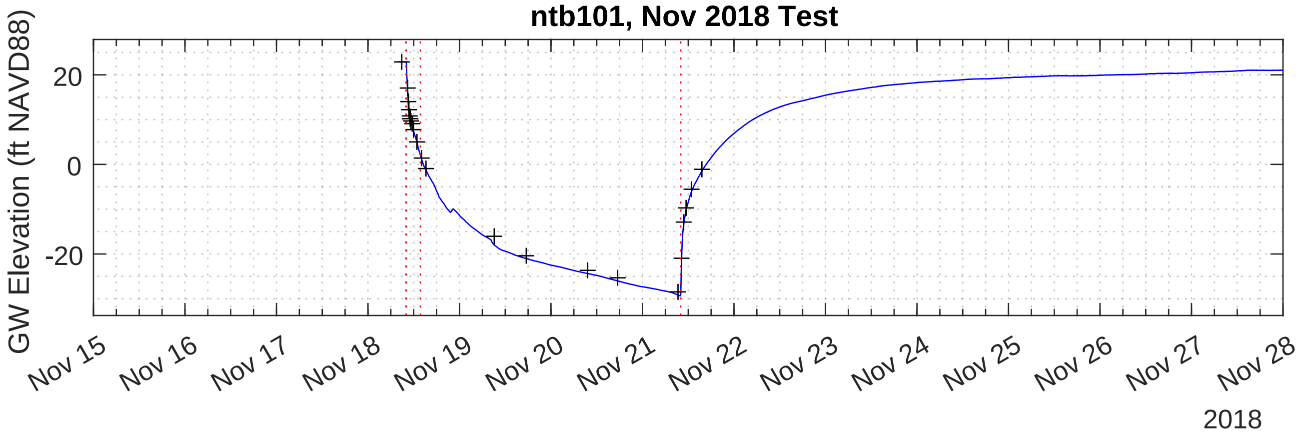

gww103, Aug 2018 Test

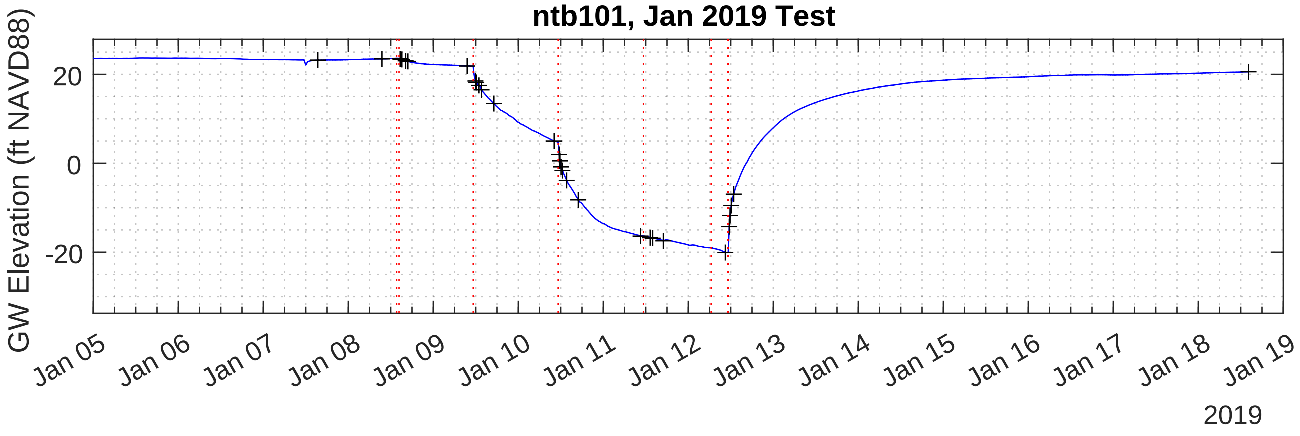

gww103, Nov 2018 Test

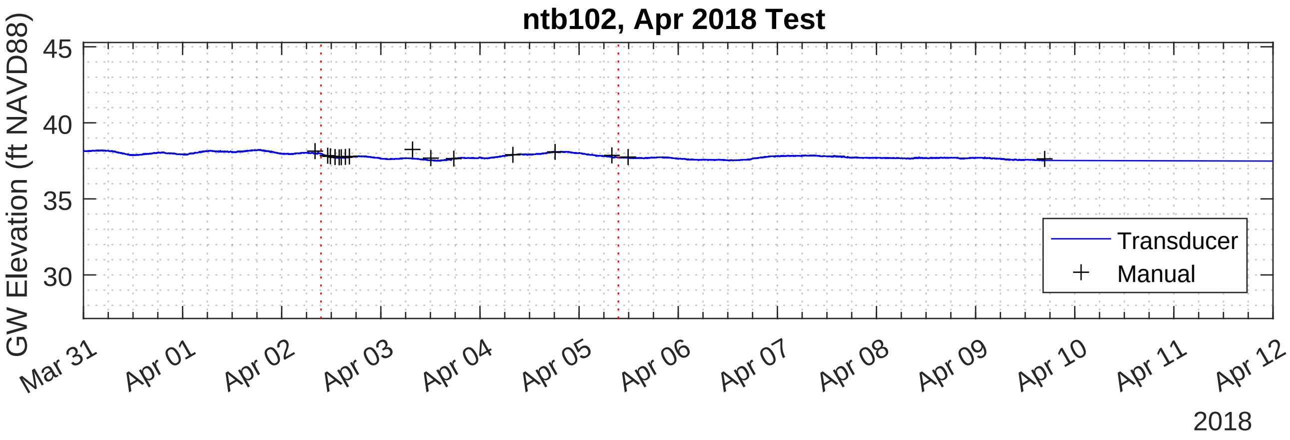

gww103, Jan 2019 Test


ntb101, Apr 2018 Test


ntb101, Aug 2018 Test


ntb101, Nov 2018 Test


ntb101, Jan 2019 Test


ntb102, Apr 2018 Test
GW Elevation (ft NAVD88)
45
40
35
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Mar 31
Apr 01
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Apr 10
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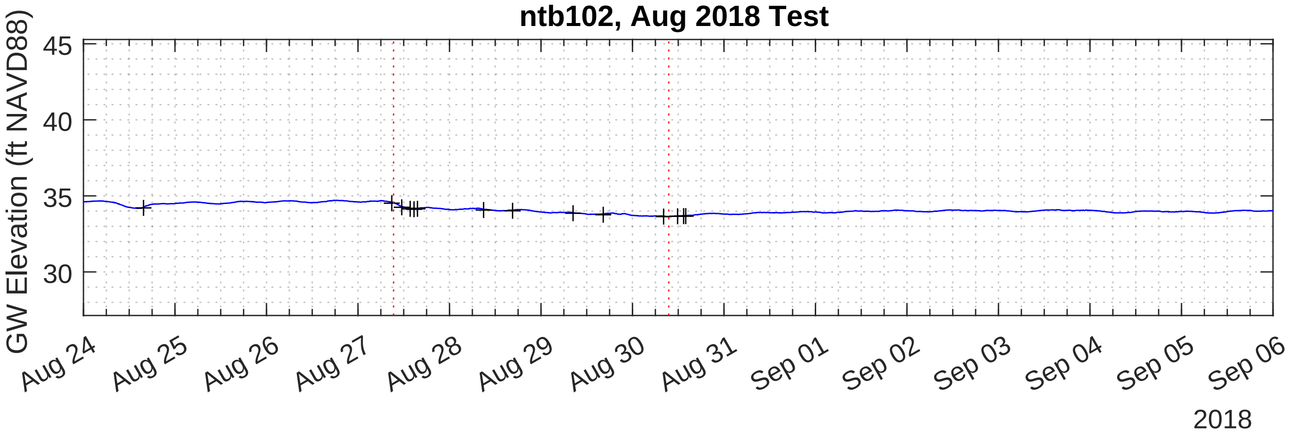
Apr 12
2018
Transducer
Manual


ntb102, Aug 2018 Test
GW Elevation (ft NAVD88)
45
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Aug 24
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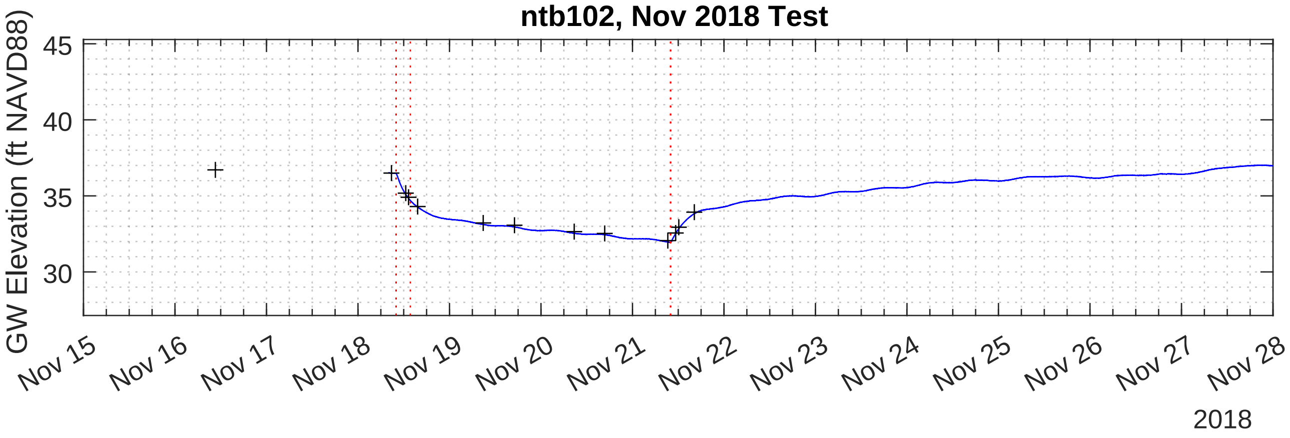
Sep 06
2018


ntb102, Nov 2018 Test
GW Elevation (ft NAVD88)
45
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Nov 15
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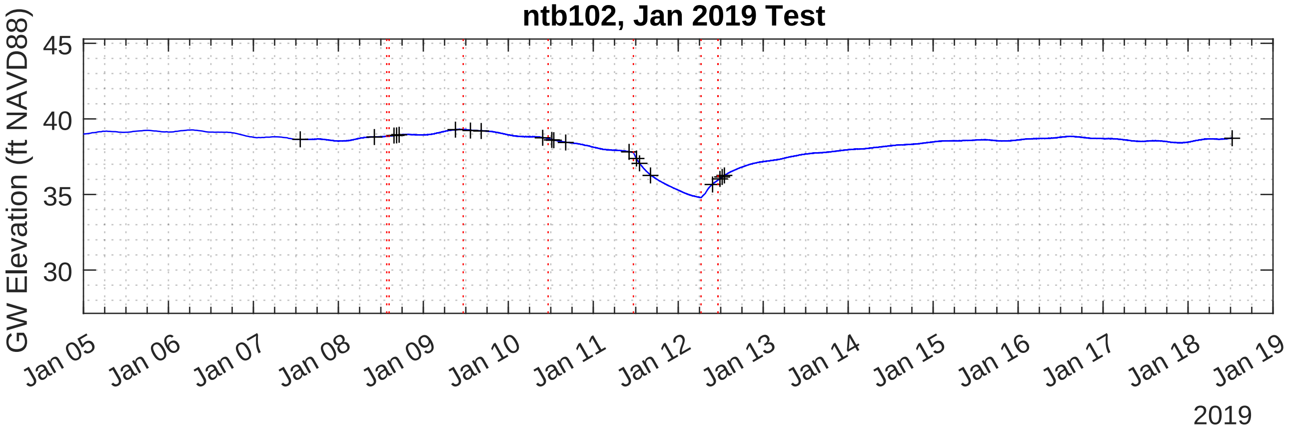
Nov 28
2018


ntb102, Jan 2019 Test
GW Elevation (ft NAVD88)
45
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Jan 05
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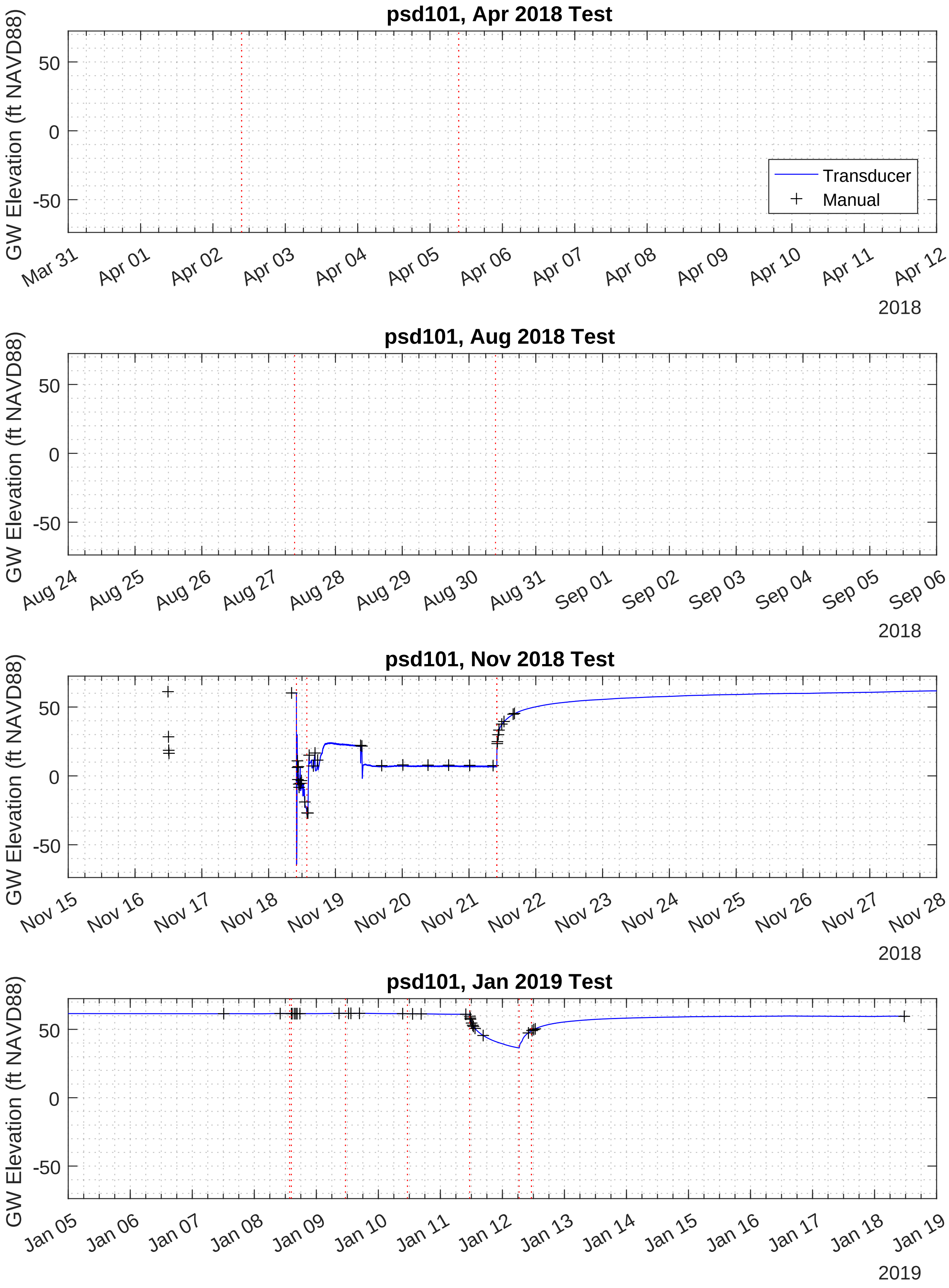
2019


psd101, Apr 2018 Test
GW Elevation (ft NAVD88)
50
0
-50
Transducer
Manual
Mar 31
Apr 01
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Apr 04
Apr 05
Apr 06
Apr 07
Apr 08
Apr 09
Apr 10
Apr 11
Apr 12
2018
psd101, Aug 2018 Test
GW Elevation (ft NAVD88)
50
0
-50
Aug 24
Aug 25
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Aug 27
Aug 28
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Aug 31
Sep 01
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Sep 03
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2018
psd101, Nov 2018 Test
GW Elevation (ft NAVD88)
50
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Nov 21
Nov 22
Nov 23
Nov 24
Nov 25
Nov 26
Nov 27
Nov 28
2018
psd101, Jan 2019 Test
GW Elevation (ft NAVD88)
50
0
-50
Jan 05
Jan 06
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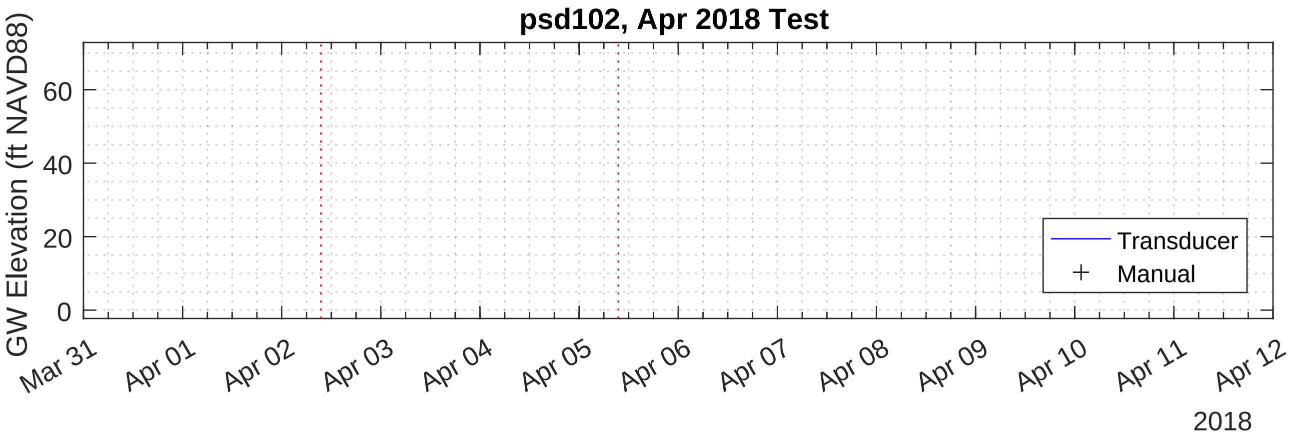
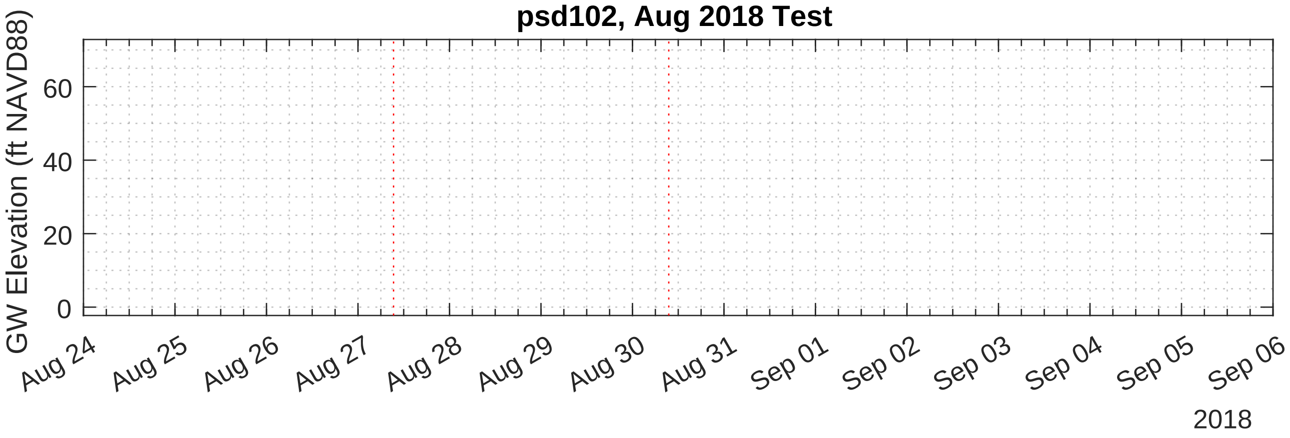
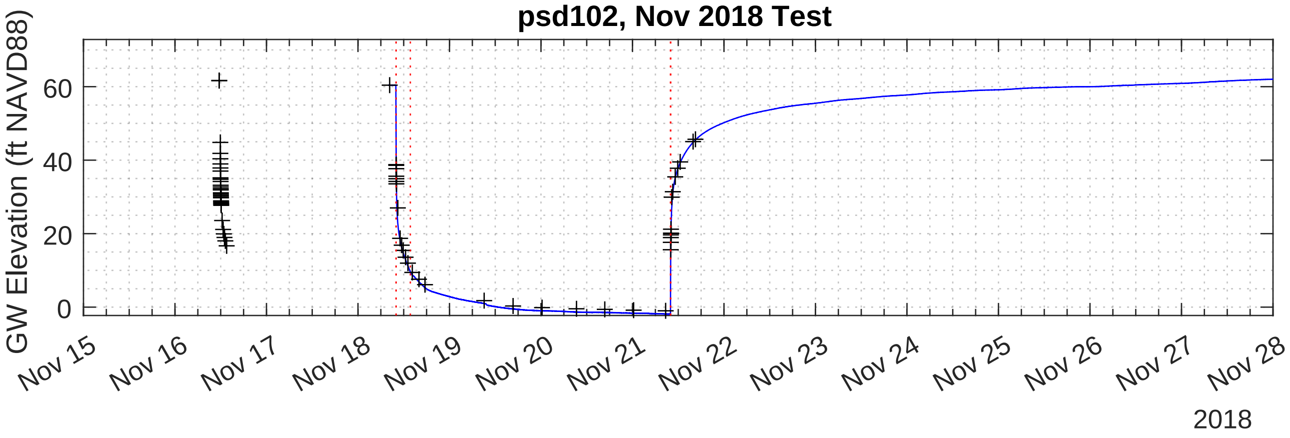
2019



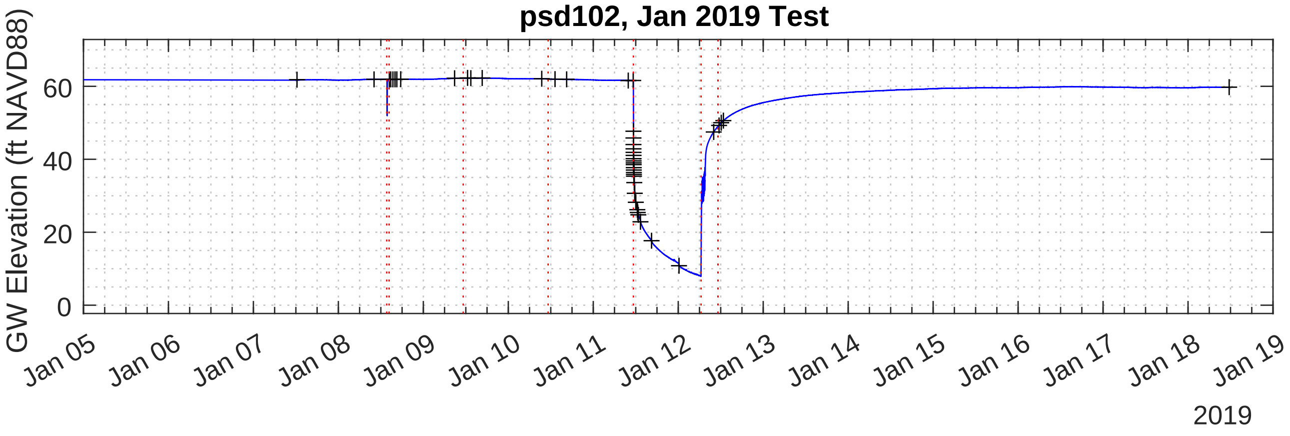
psd102, Apr 2018 Test



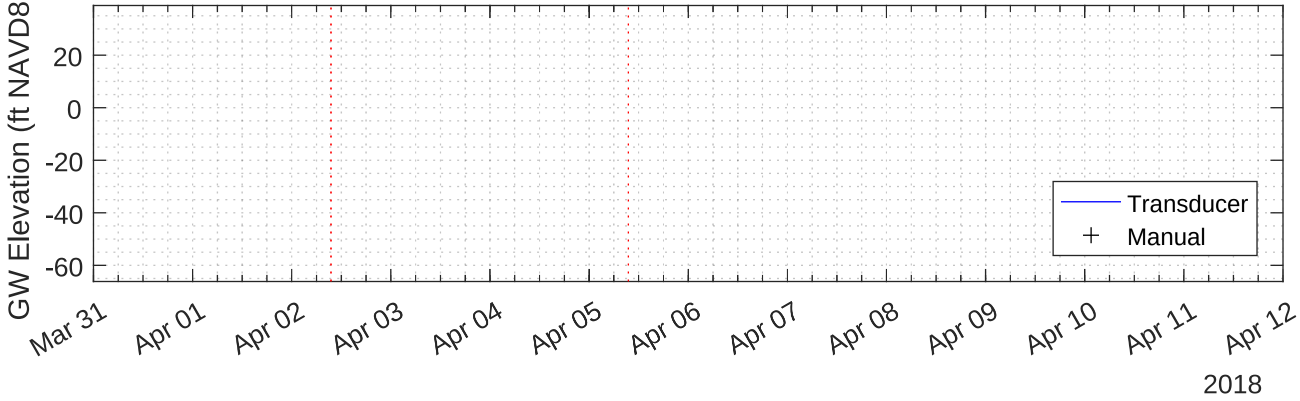
psd102, Aug 2018 Test

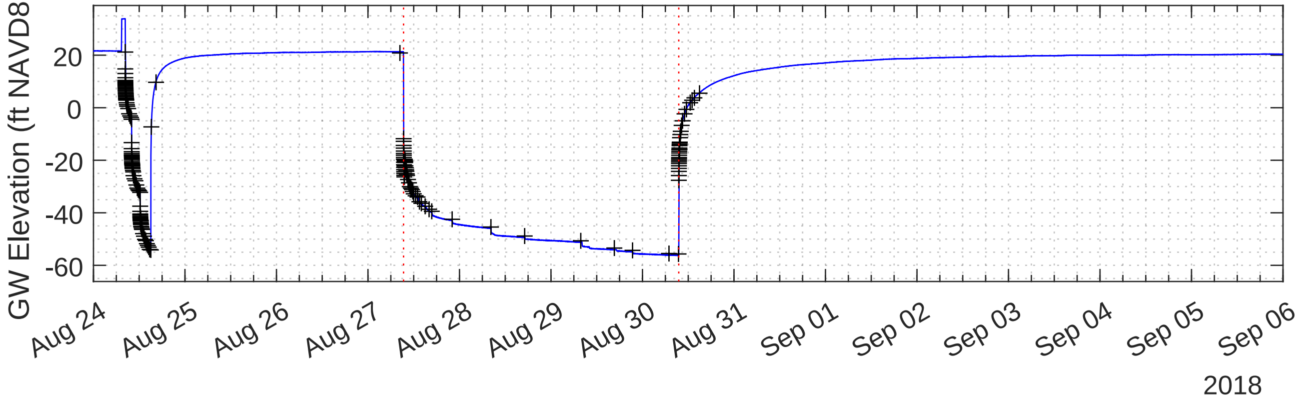


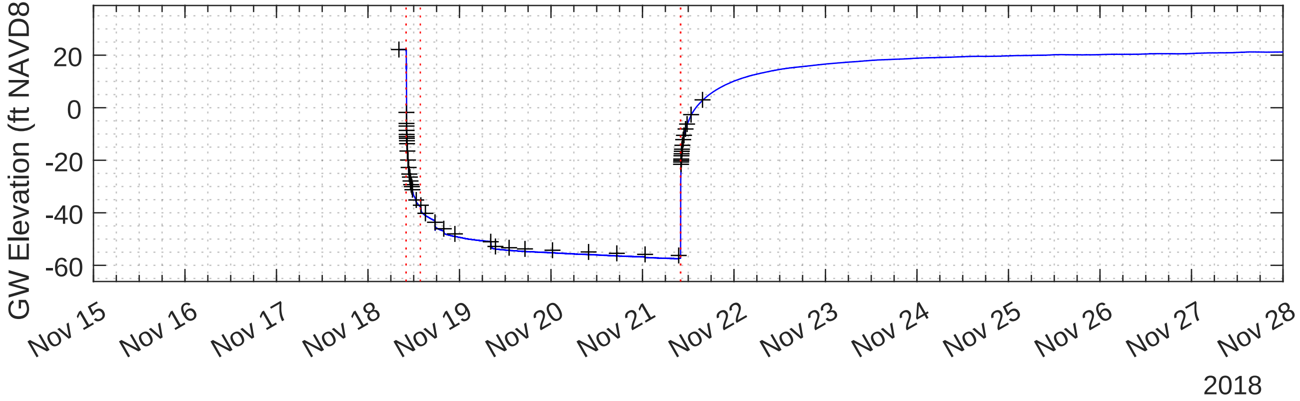
psd102, Nov 2018 Test

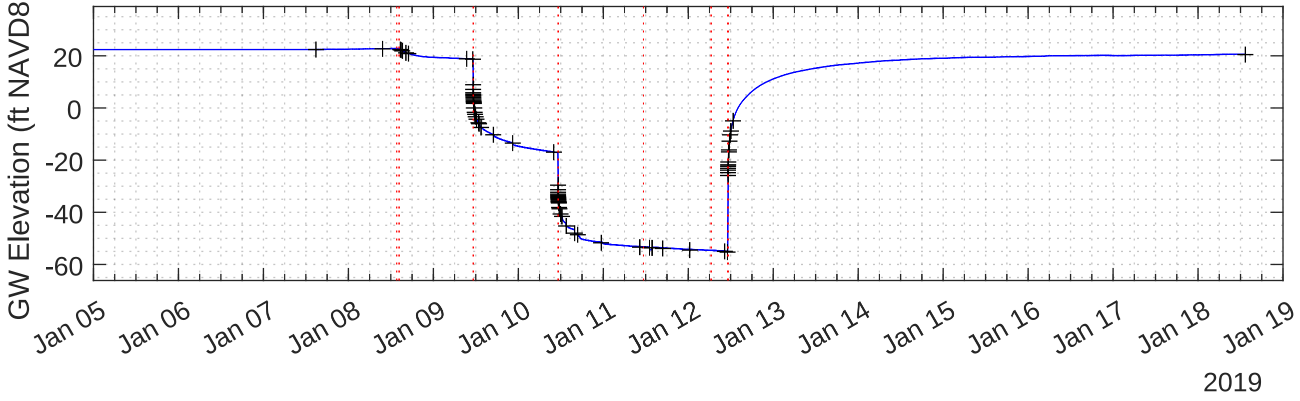


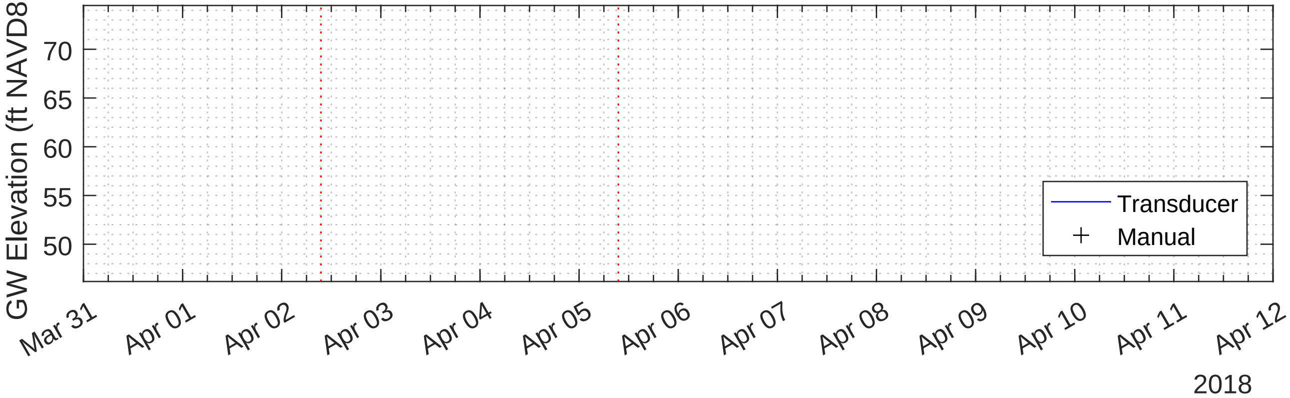
psd102, Jan 2019 Test


pw1, Apr 2018 Test

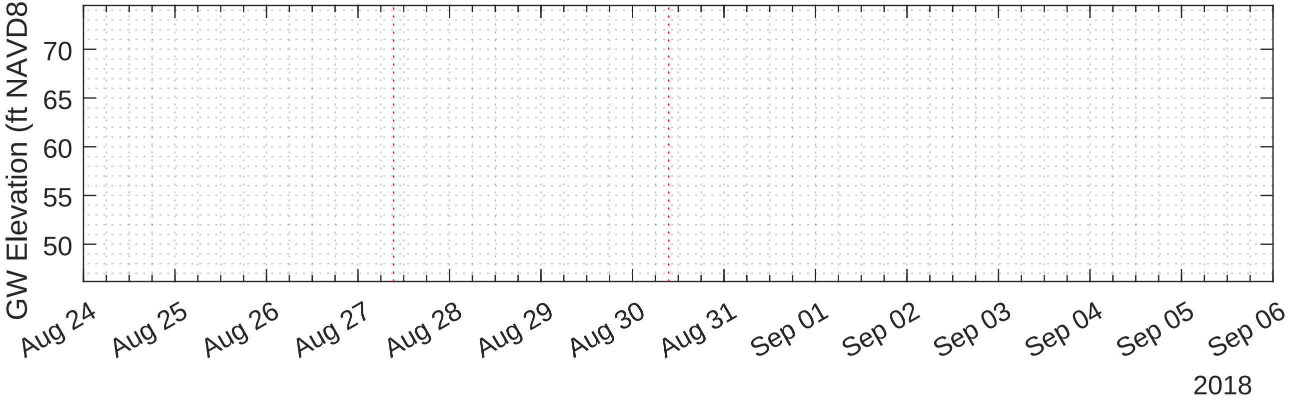

pw1, Aug 2018 Test


pw1, Nov 2018 Test

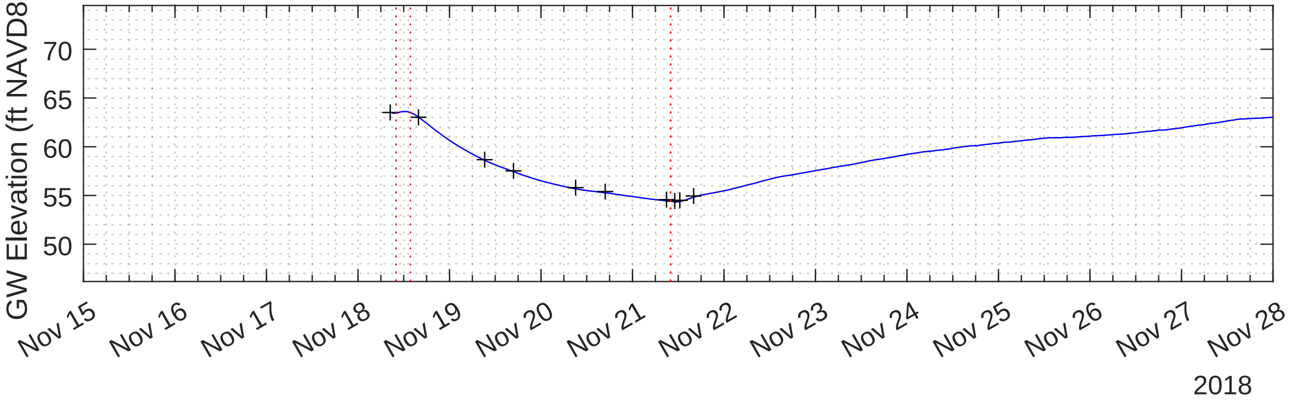

pw1, Jan 2019 Test



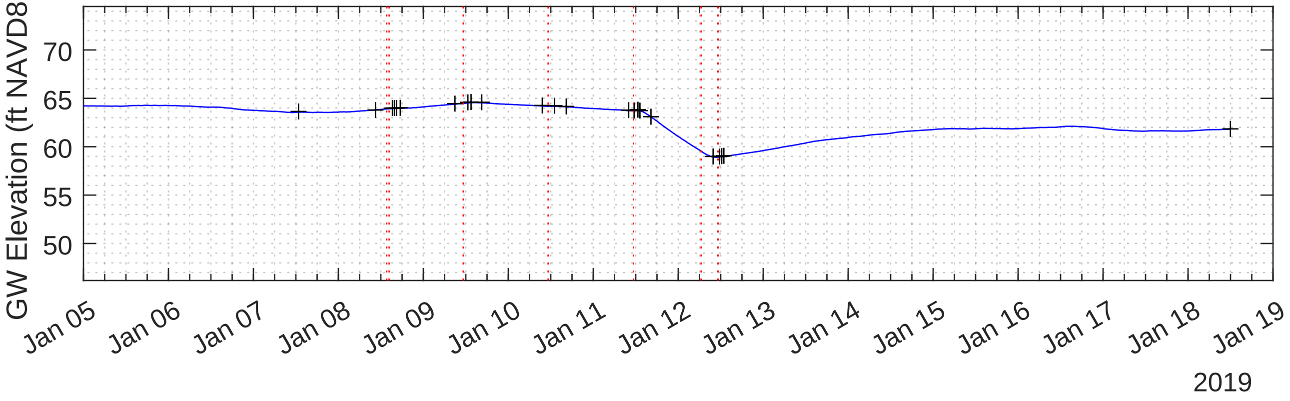
pz1d, Apr 2018 Test



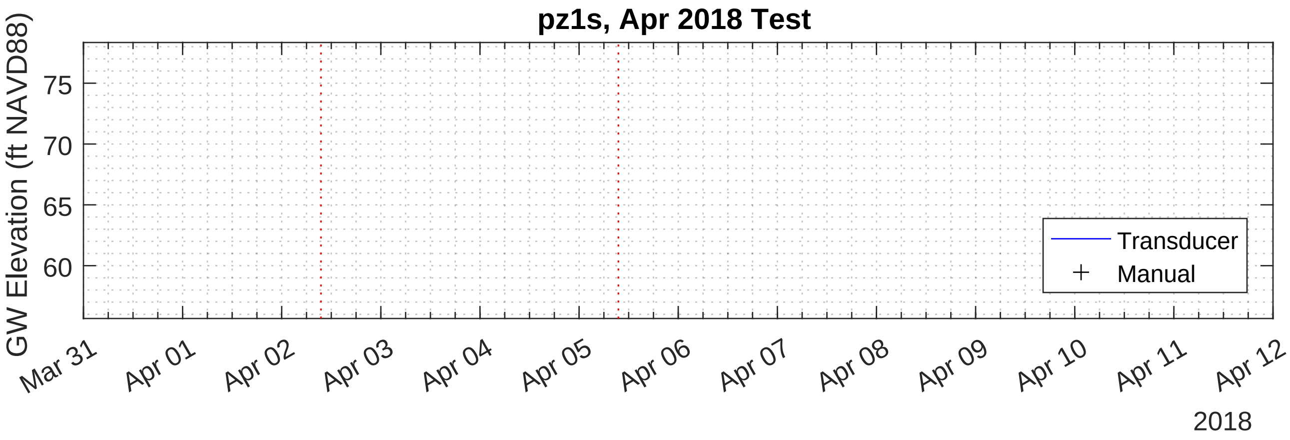
pz1d, Aug 2018 Test

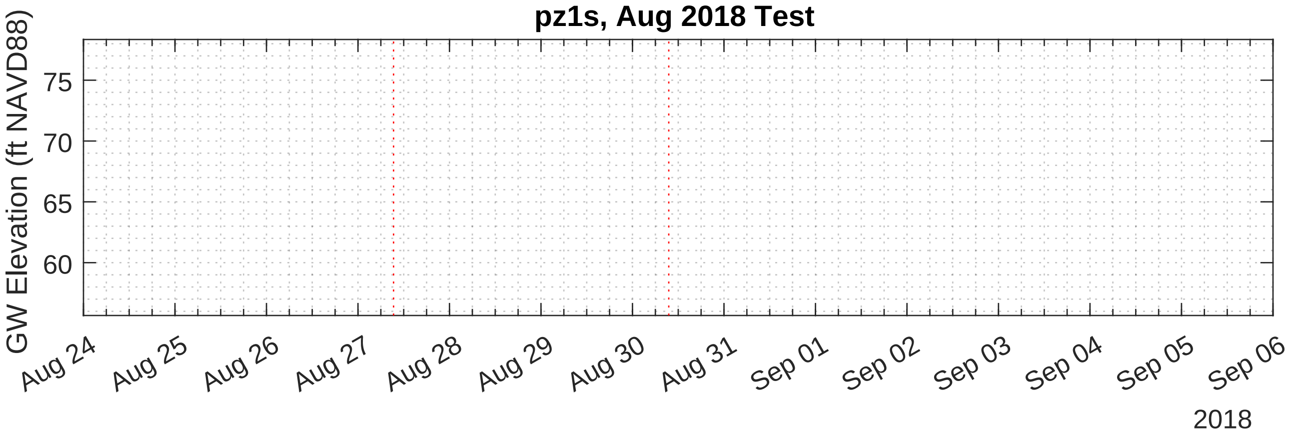


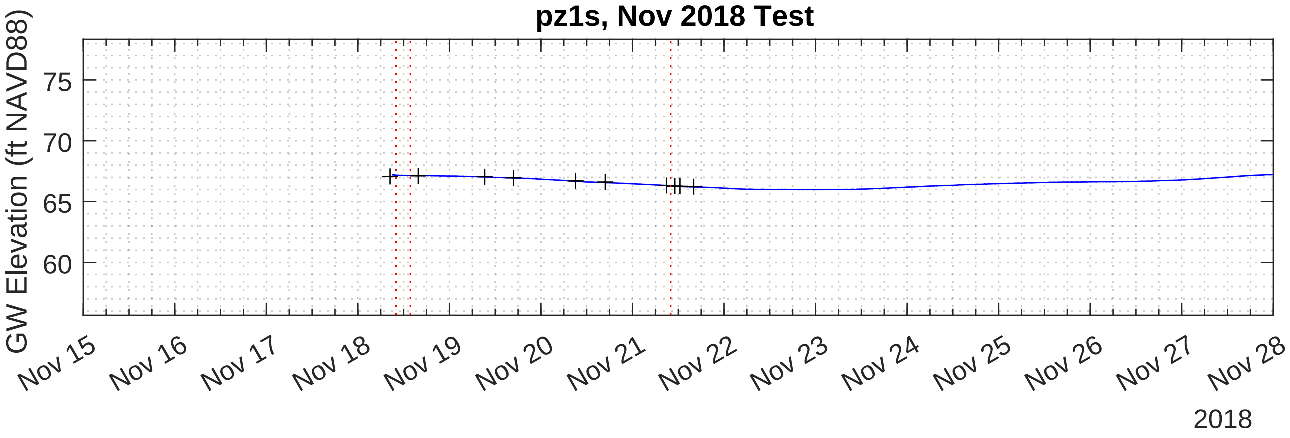
pz1d, Nov 2018 Test

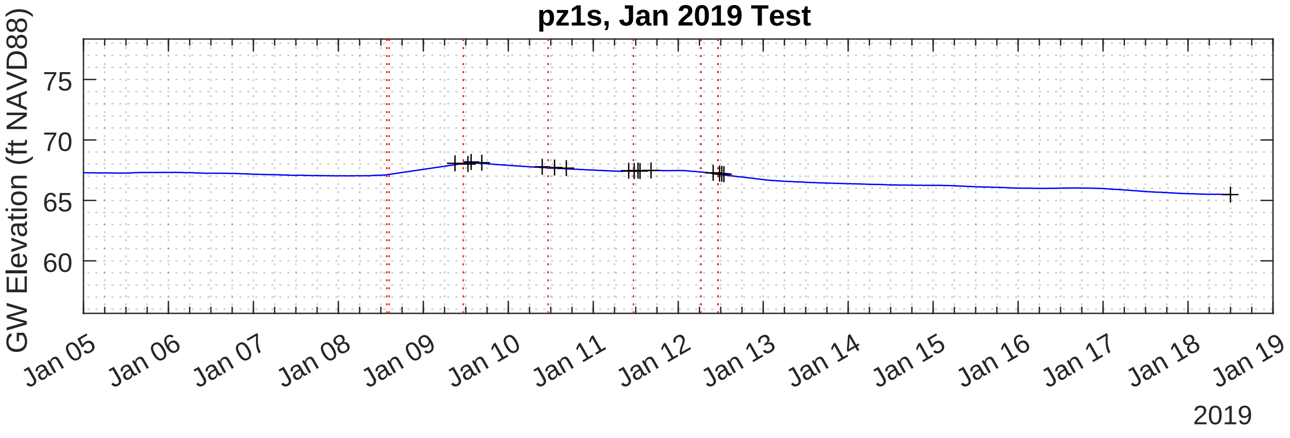


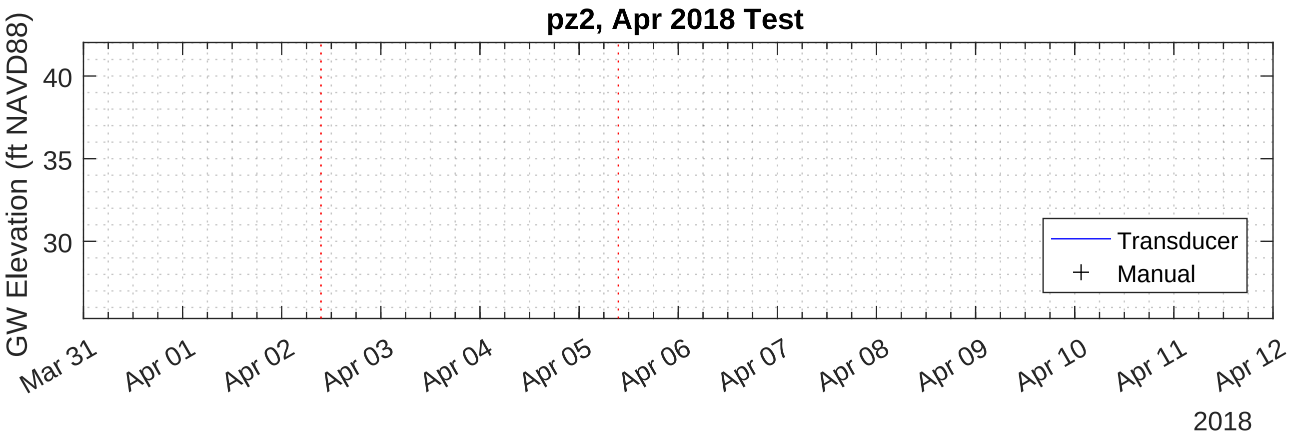
pz1d, Jan 2019 Test


pz1s, Apr 2018 Test

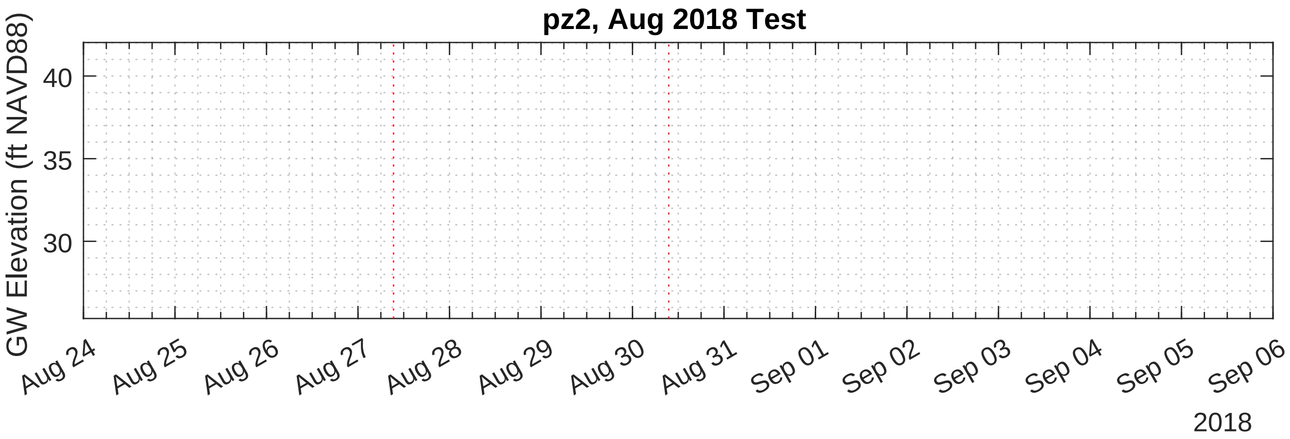

pz1s, Aug 2018 Test


pz1s, Nov 2018 Test

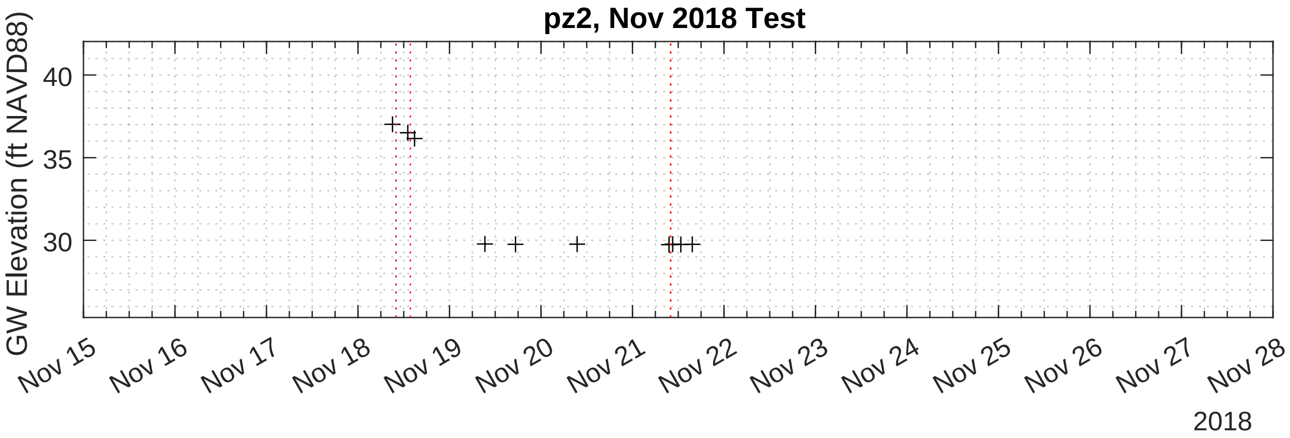

pz1s, Jan 2019 Test



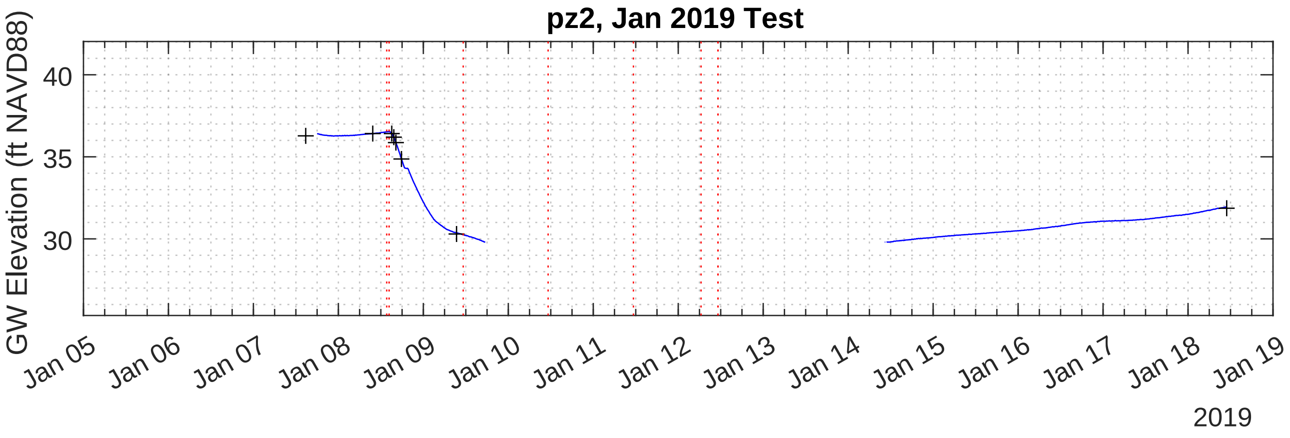
pz2, Apr 2018 Test



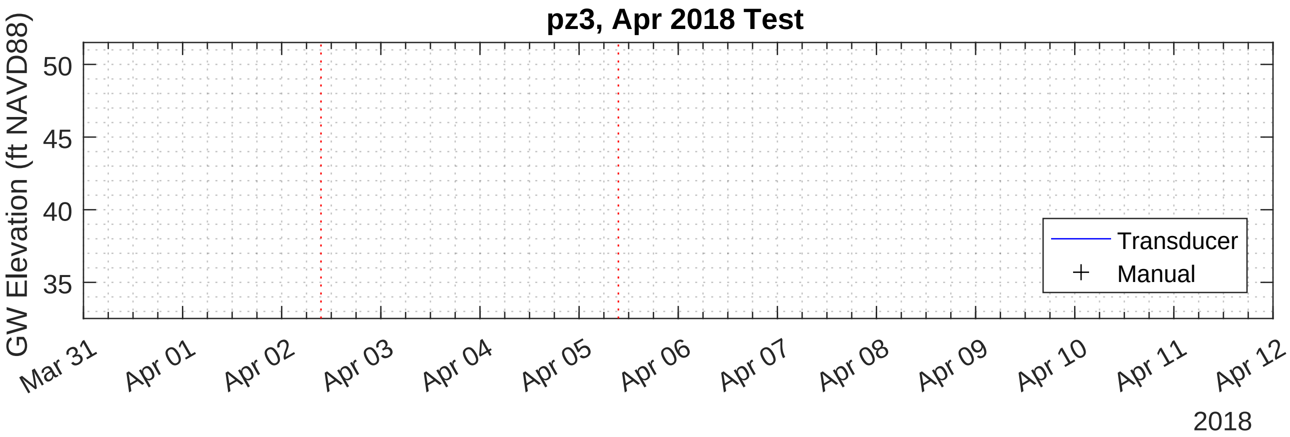
pz2, Aug 2018 Test



pz2, Nov 2018 Test



pz2, Jan 2019 Test


pz3, Apr 2018 Test
GW Elevation (ft NAVD88)
50
45
40
35
Transducer
Manual
Mar 31
Apr 01
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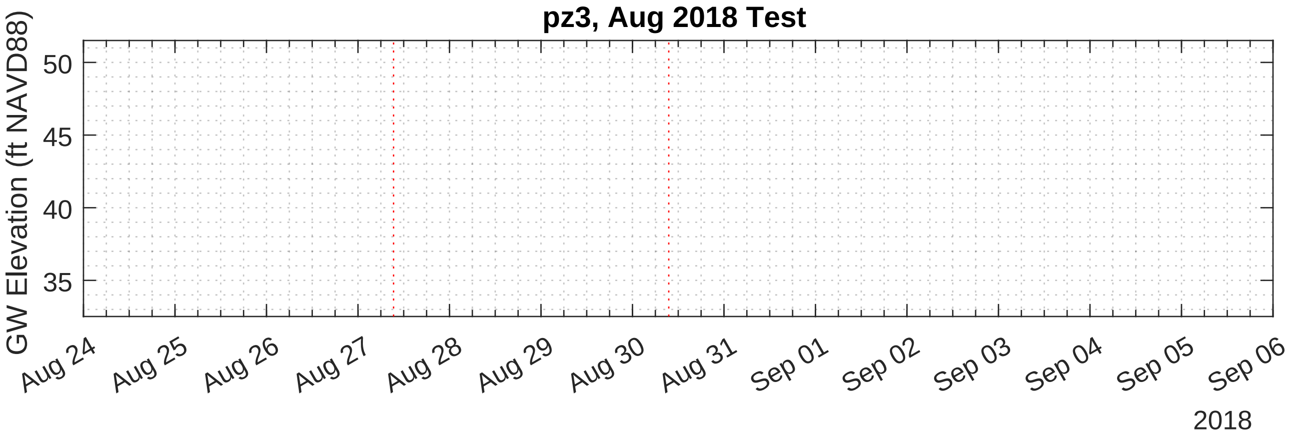
Apr 11
Apr 12
2018


pz3, Aug 2018 Test
GW Elevation (ft NAVD88)
50
45
40
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Aug 24
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Aug 31
Sep 01
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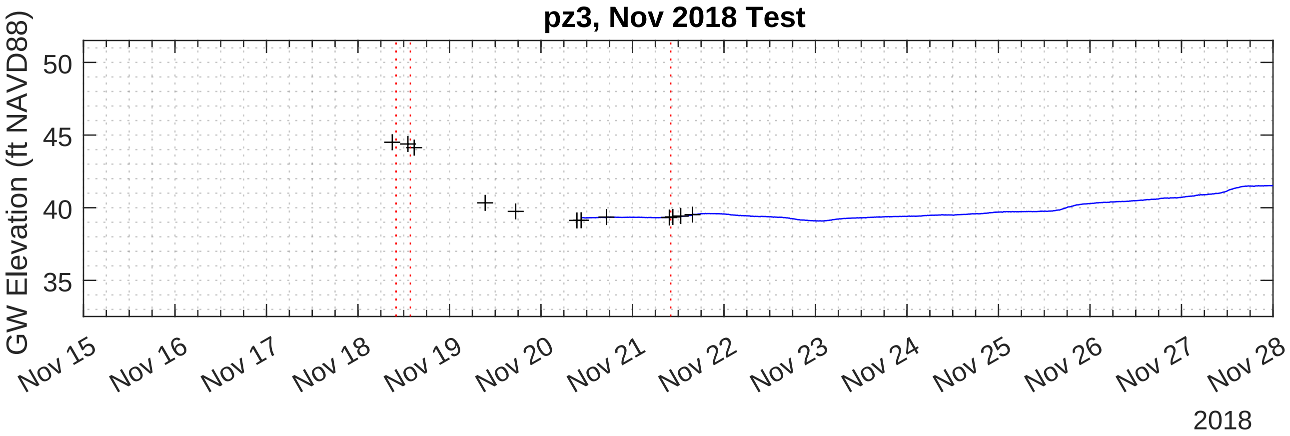
Sep 05
Sep 06
2018


pz3, Nov 2018 Test
GW Elevation (ft NAVD88)
50
45
40
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Nov 15
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Nov 24
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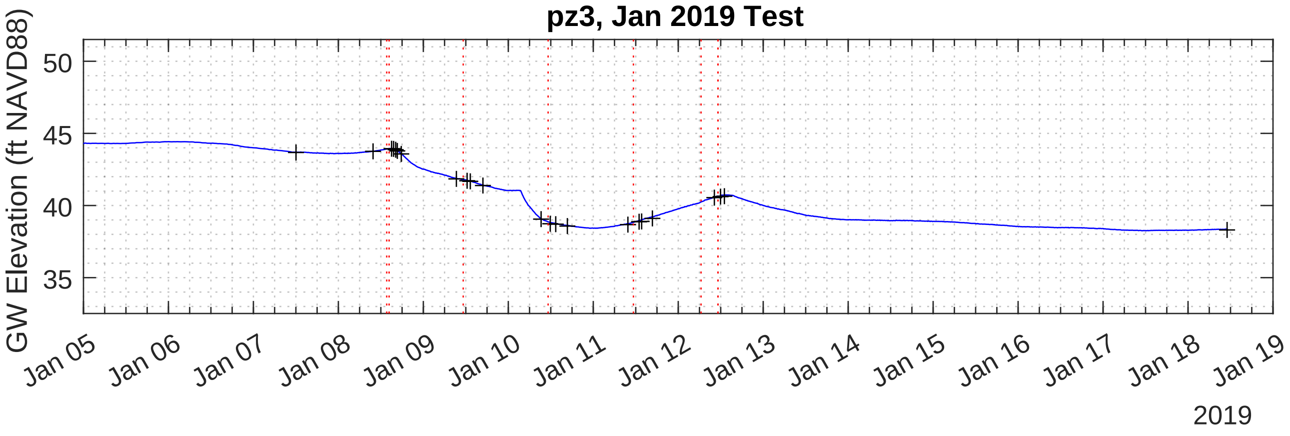
Nov 26
Nov 27
Nov 28
2018


pz3, Jan 2019 Test
GW Elevation (ft NAVD88)
50
45
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Jan 05
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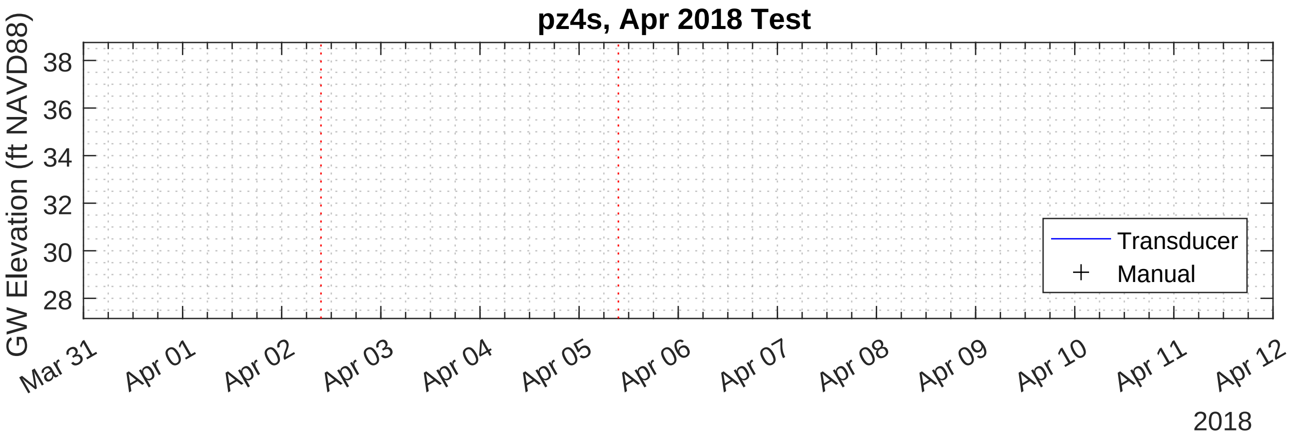
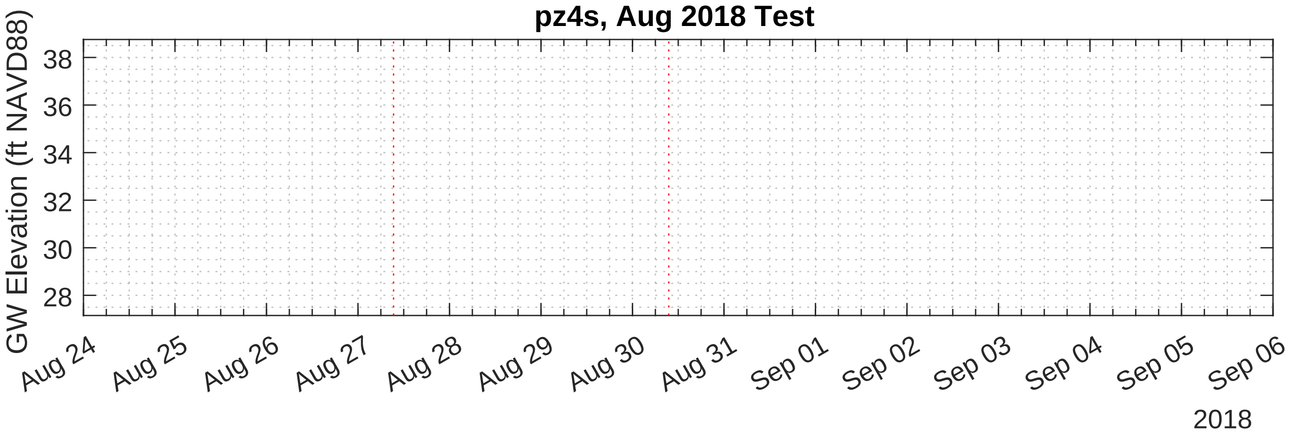
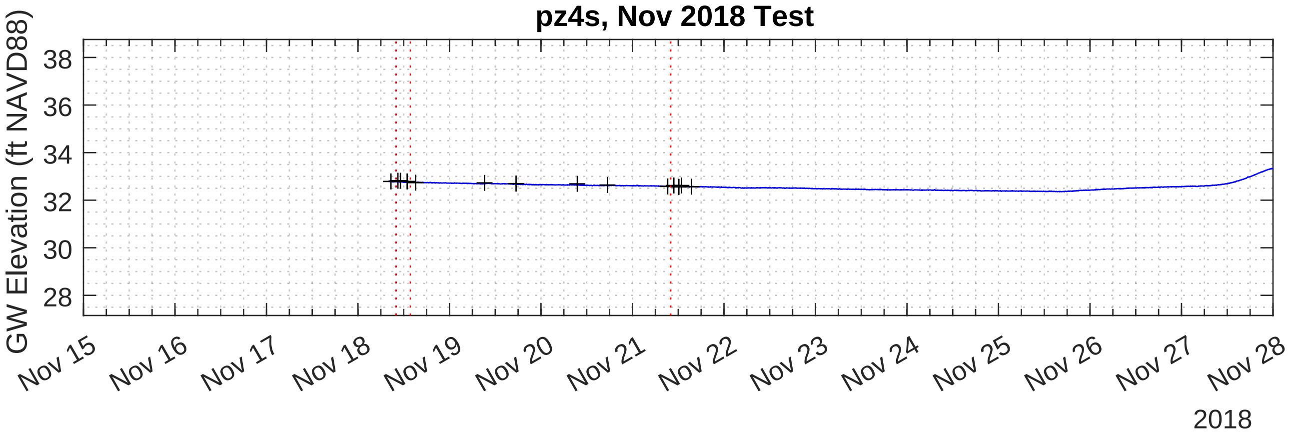
Jan 17
Jan 18
Jan 19
2019



pz4s, Apr 2018 Test



pz4s, Aug 2018 Test



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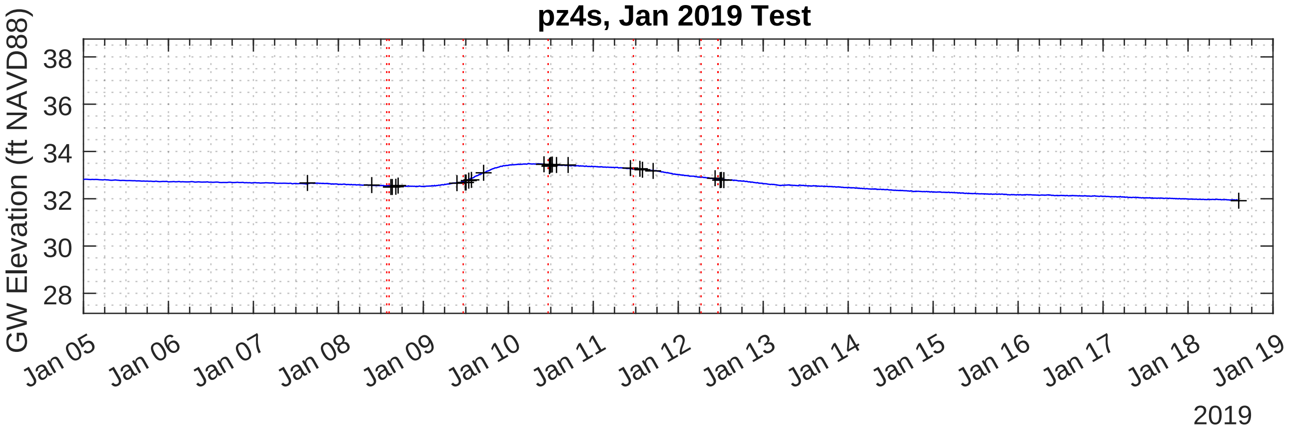

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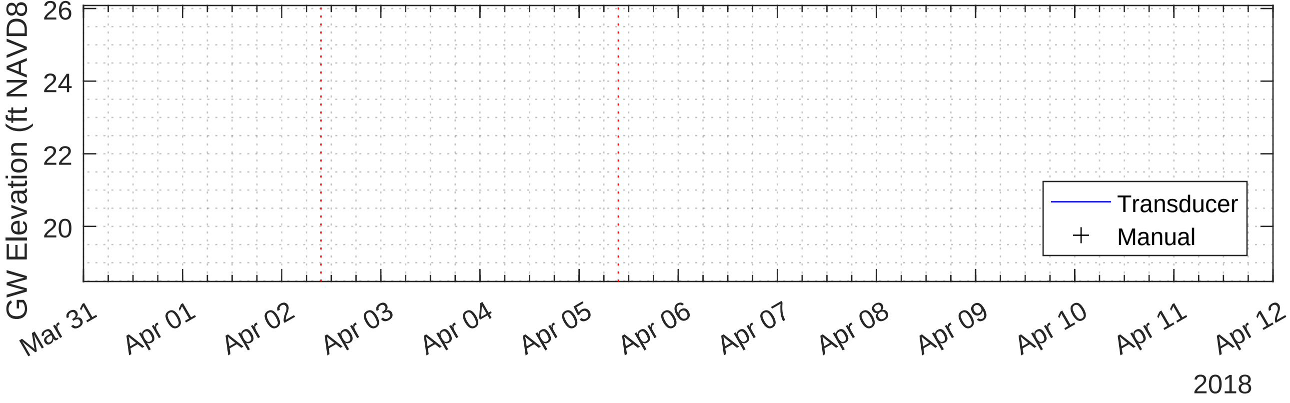
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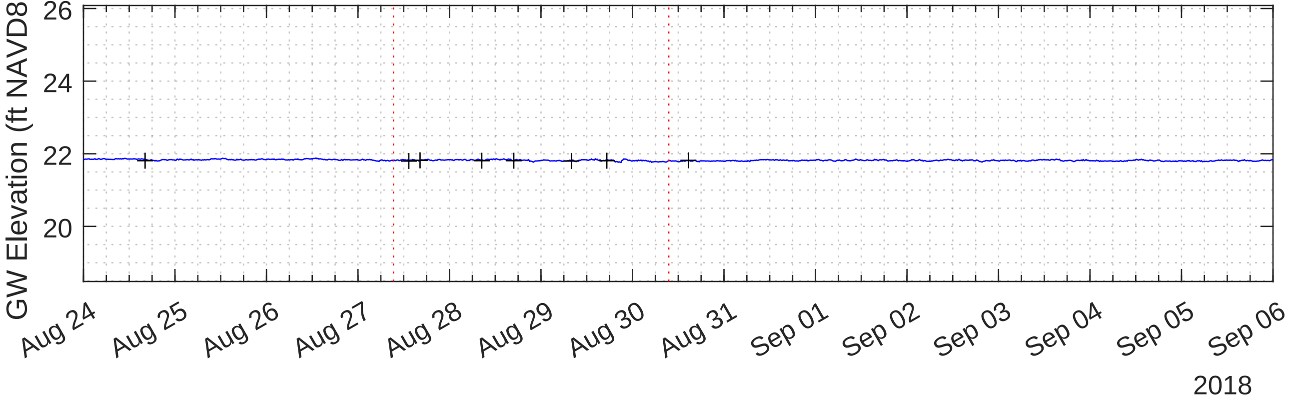
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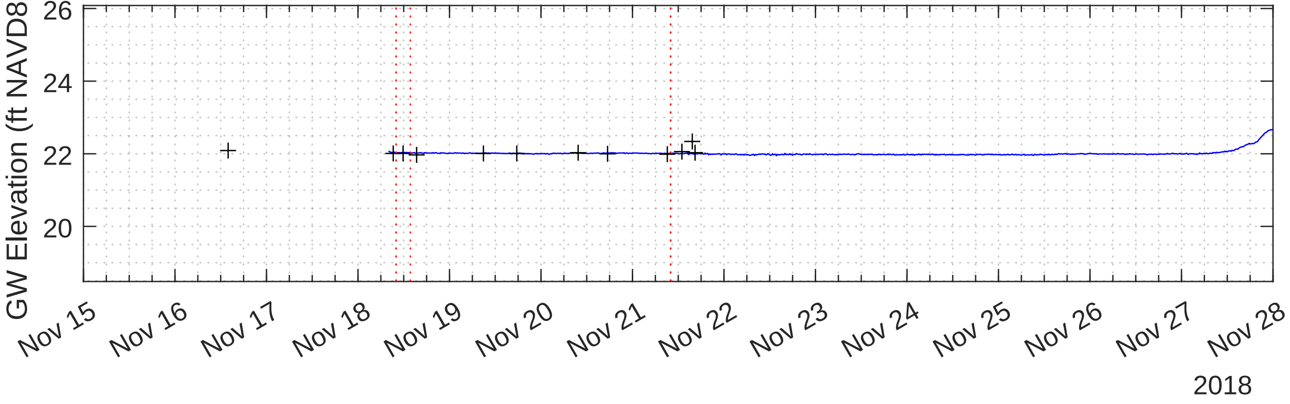
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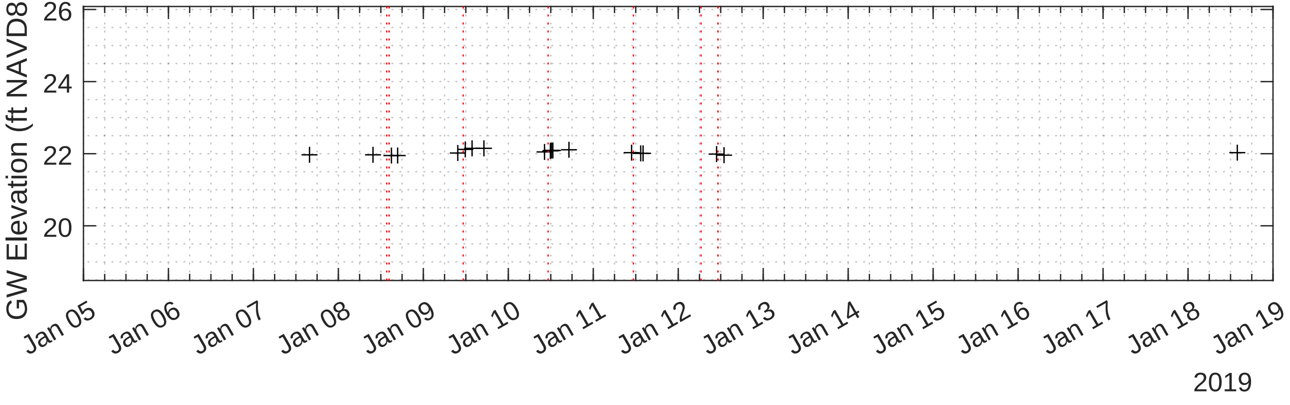
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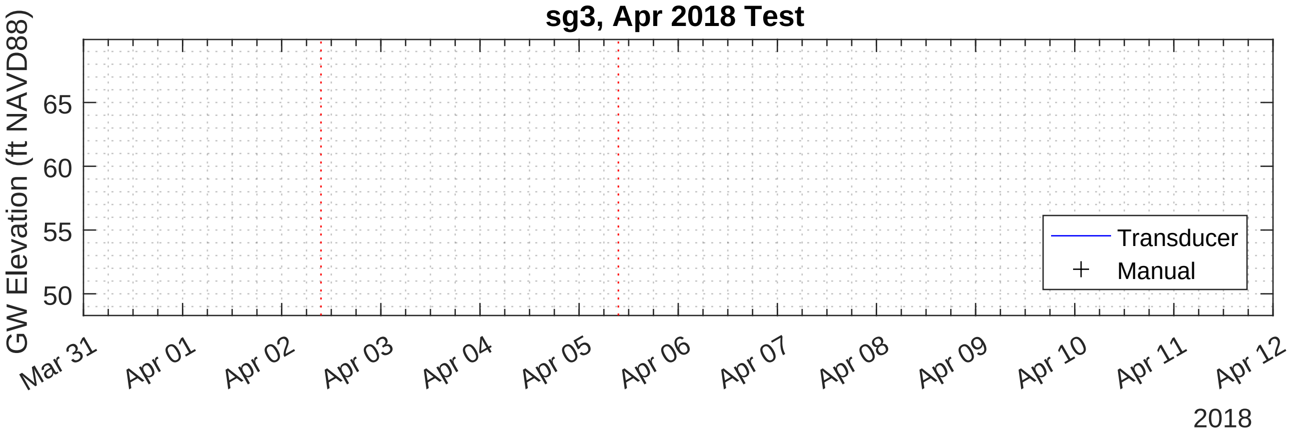

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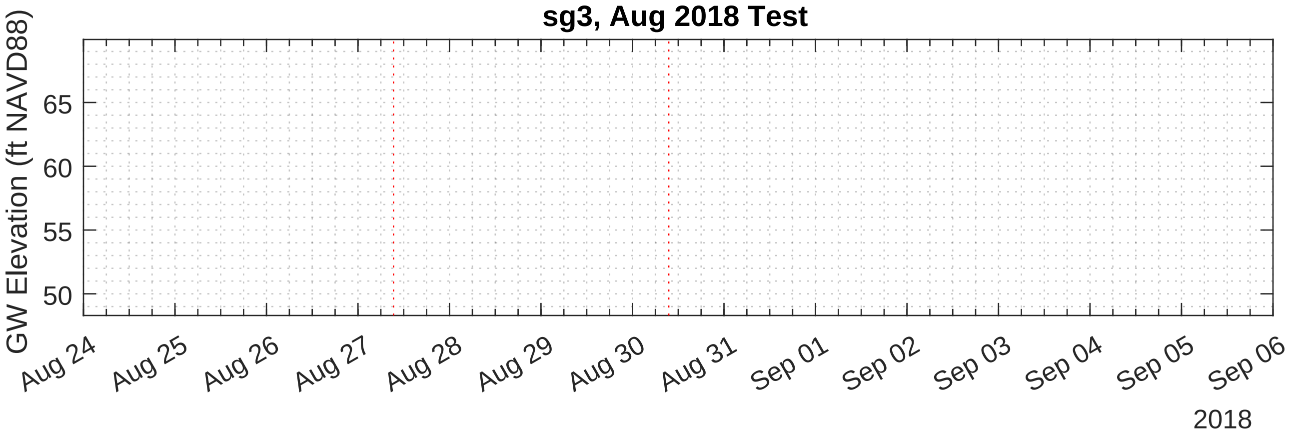

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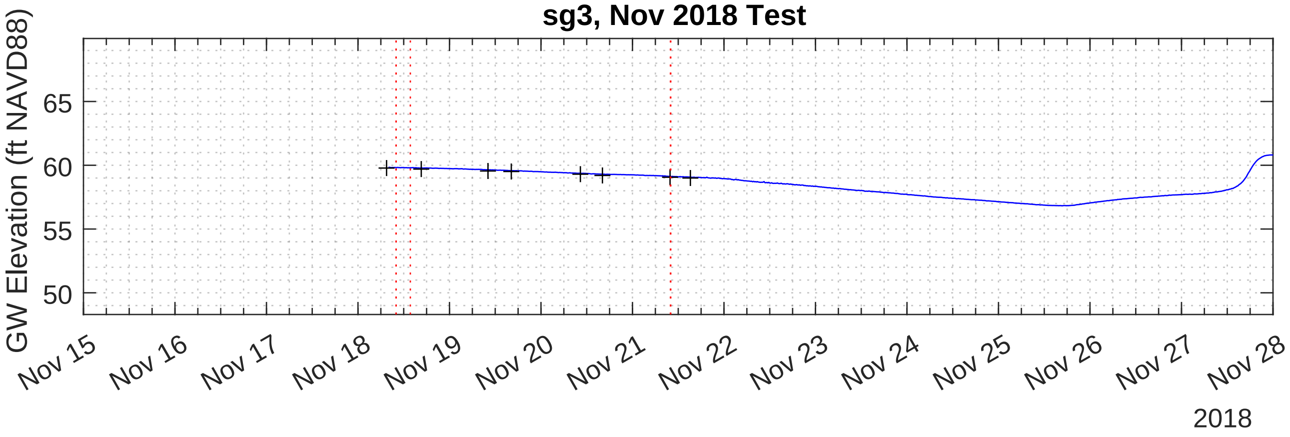

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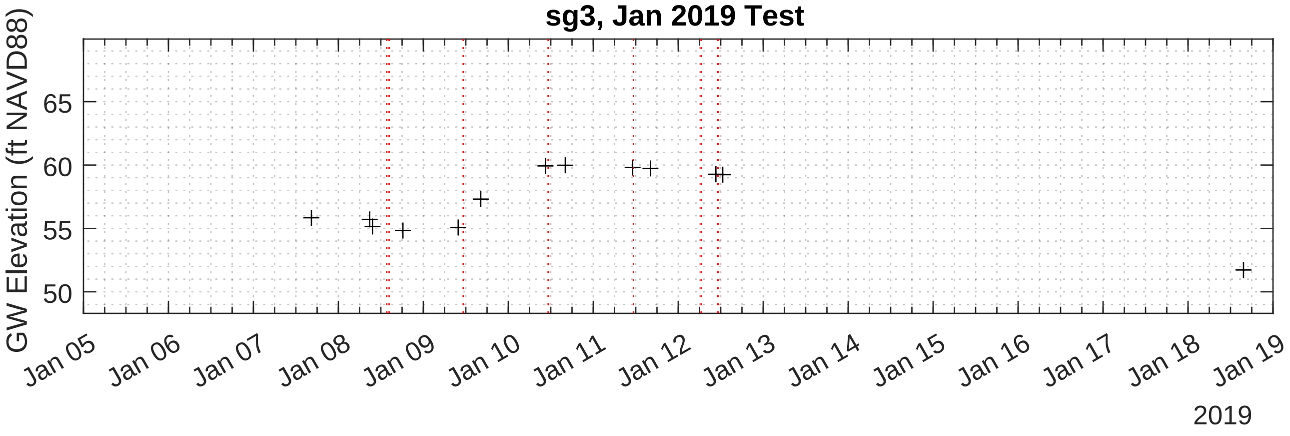

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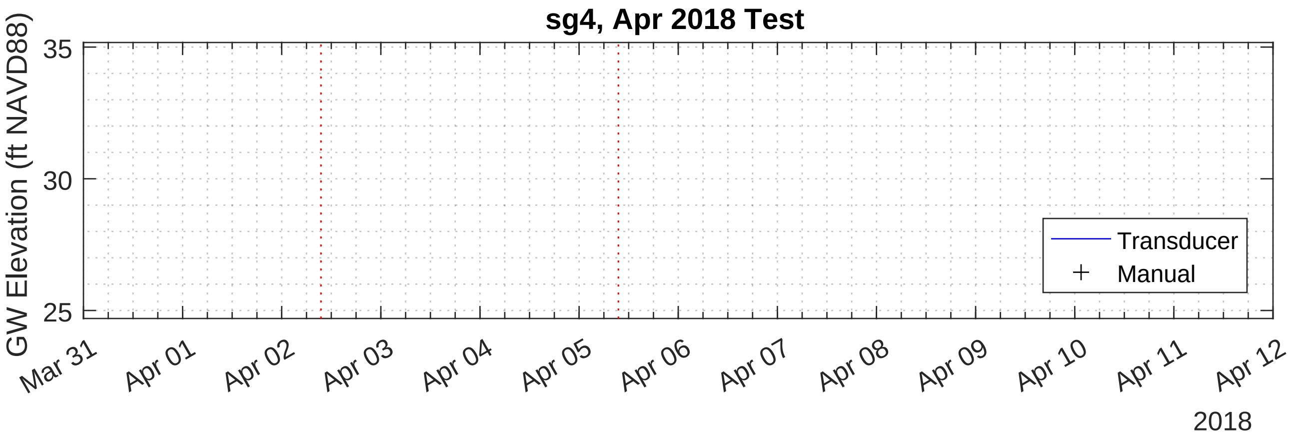
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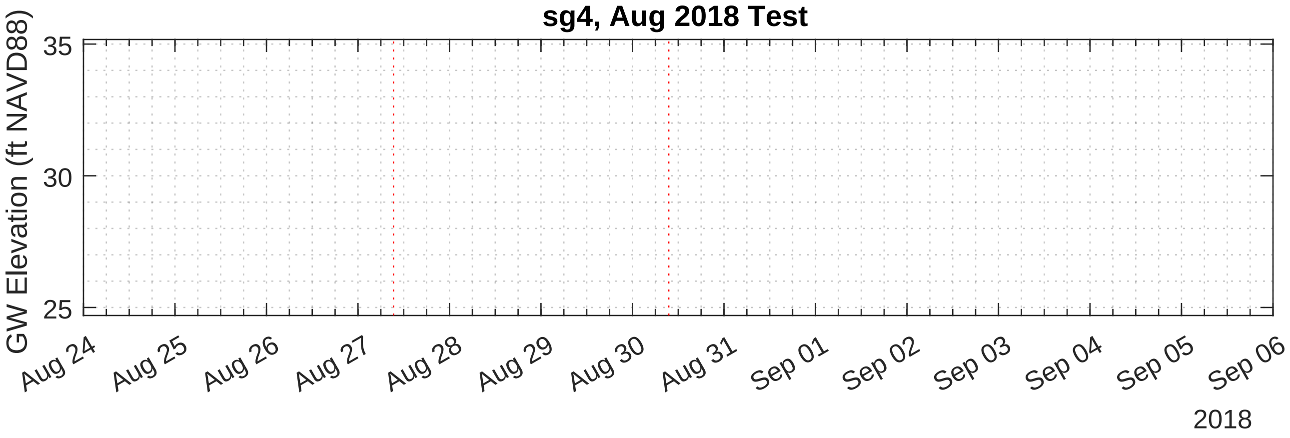
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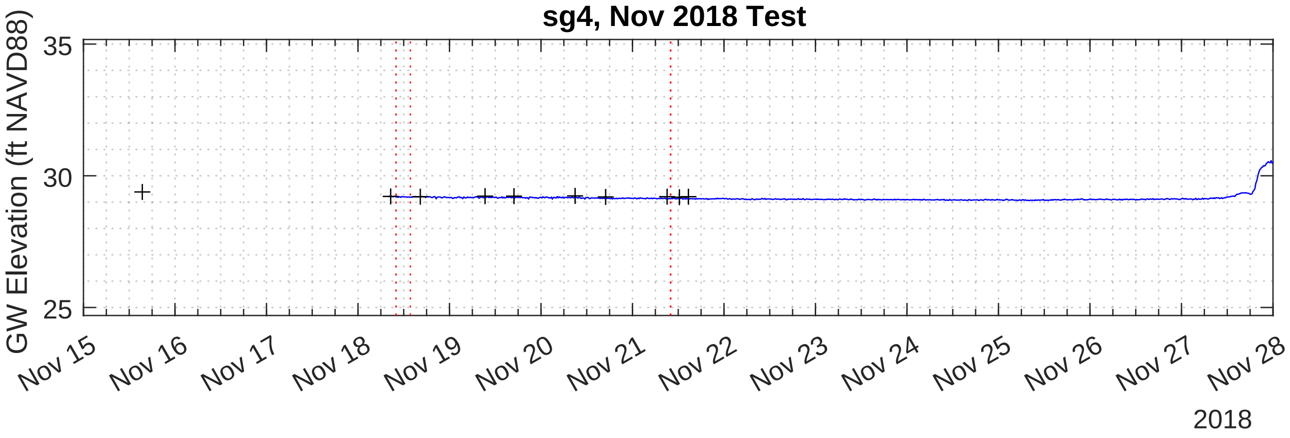
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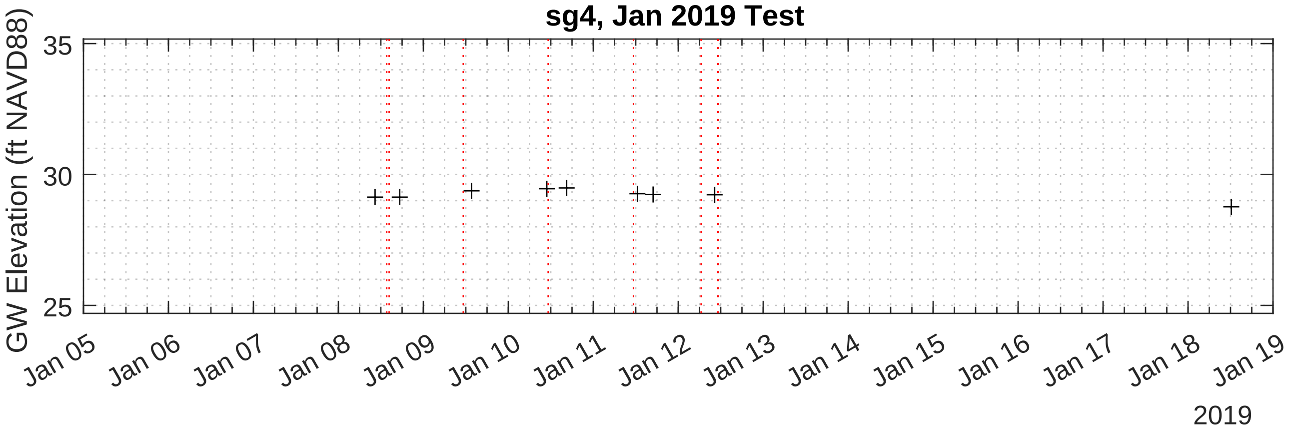
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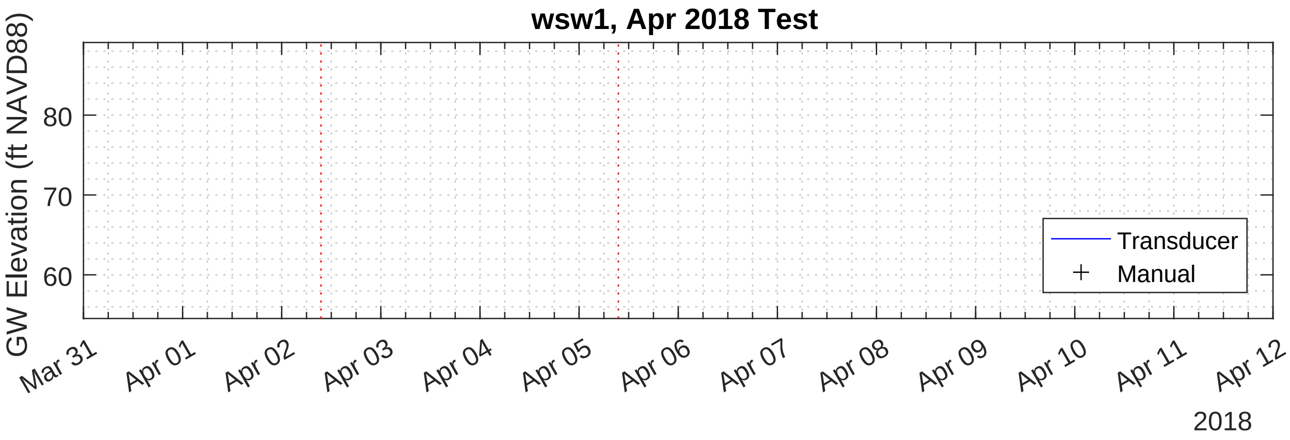

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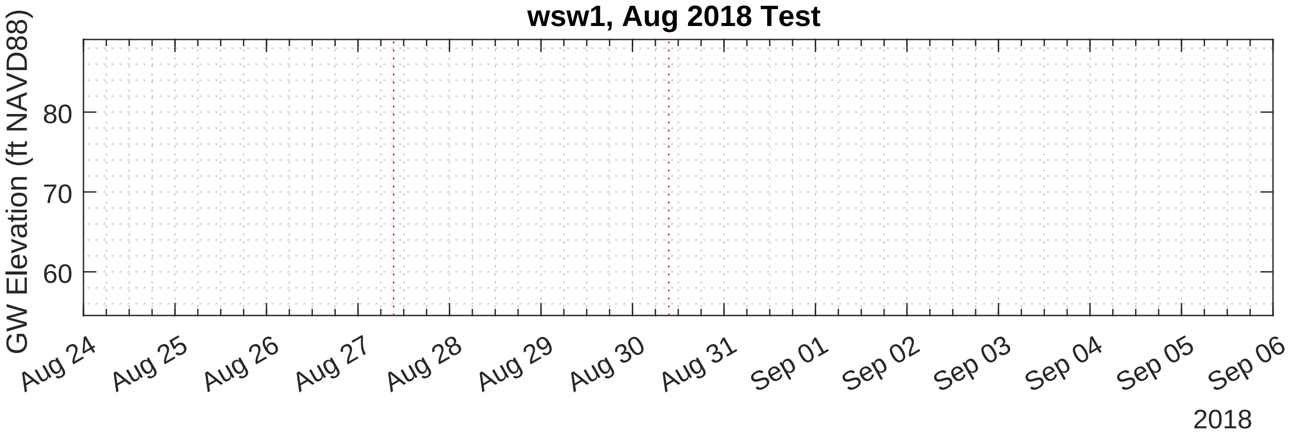

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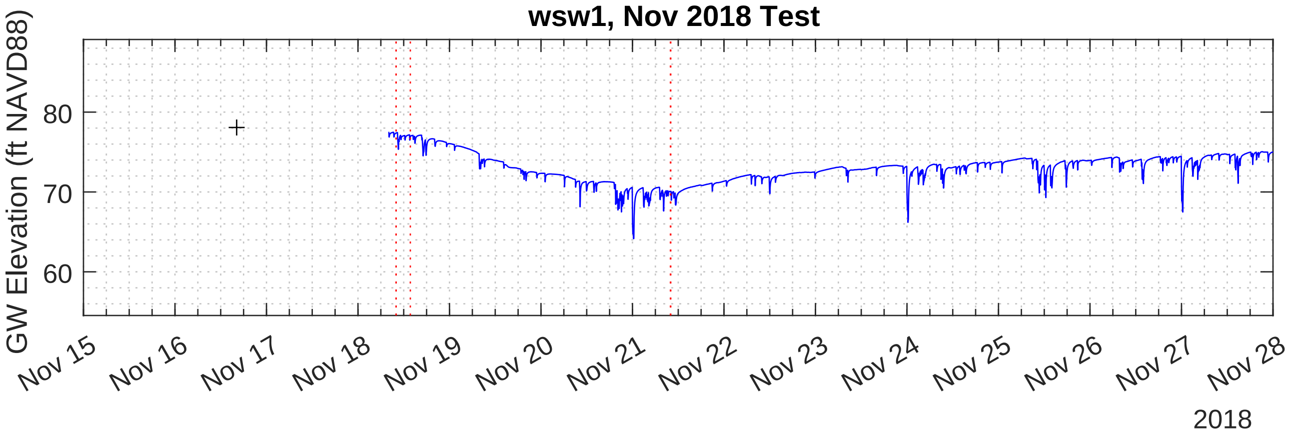

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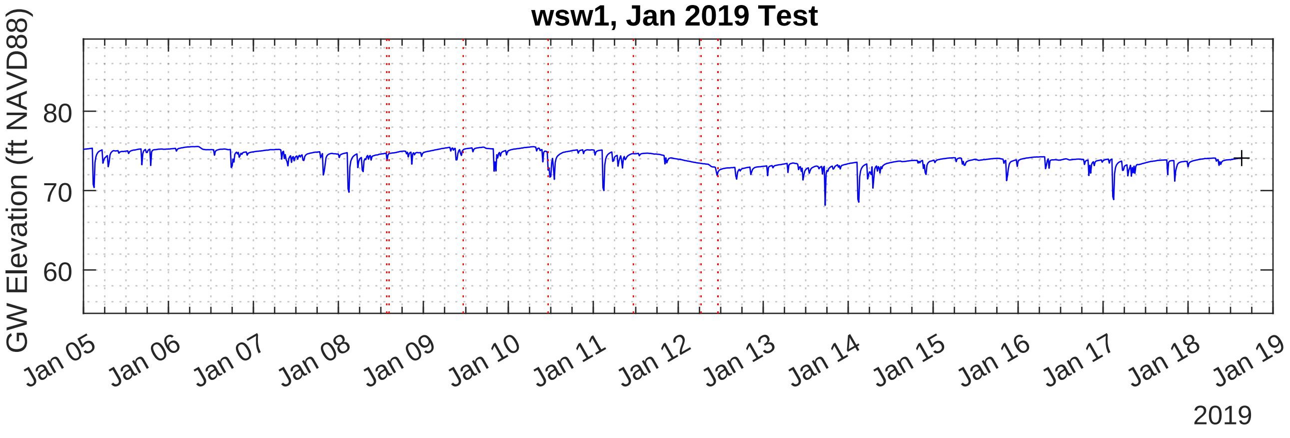

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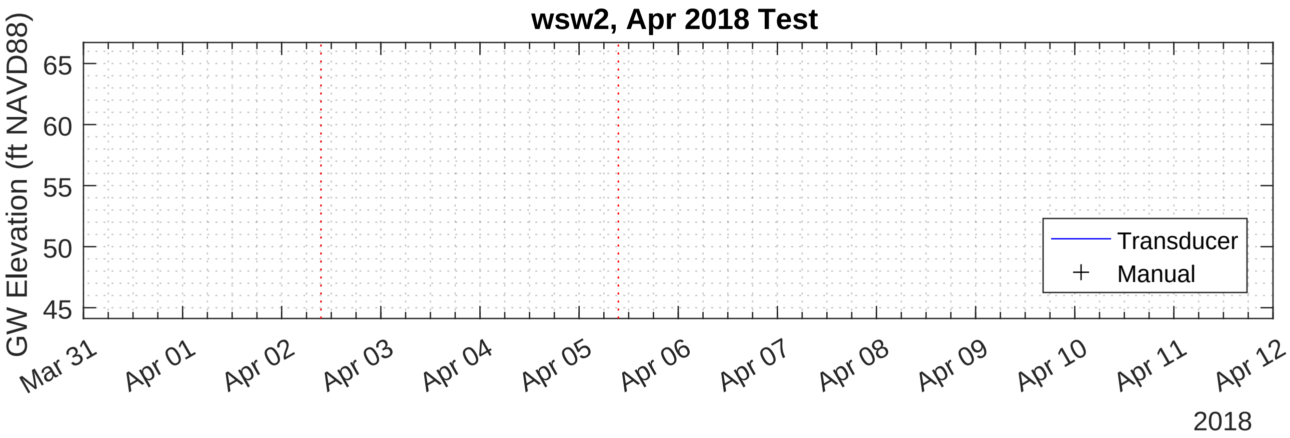
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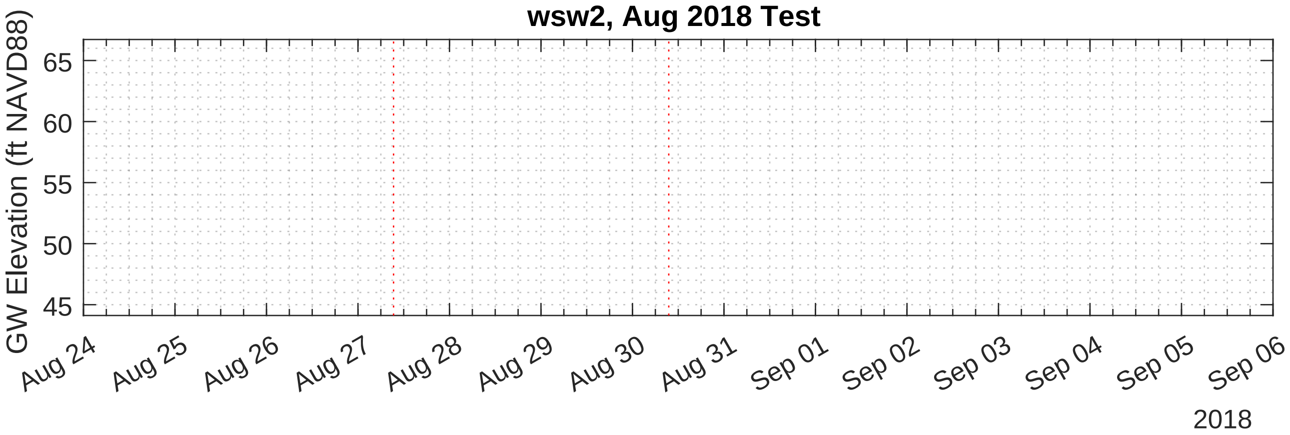
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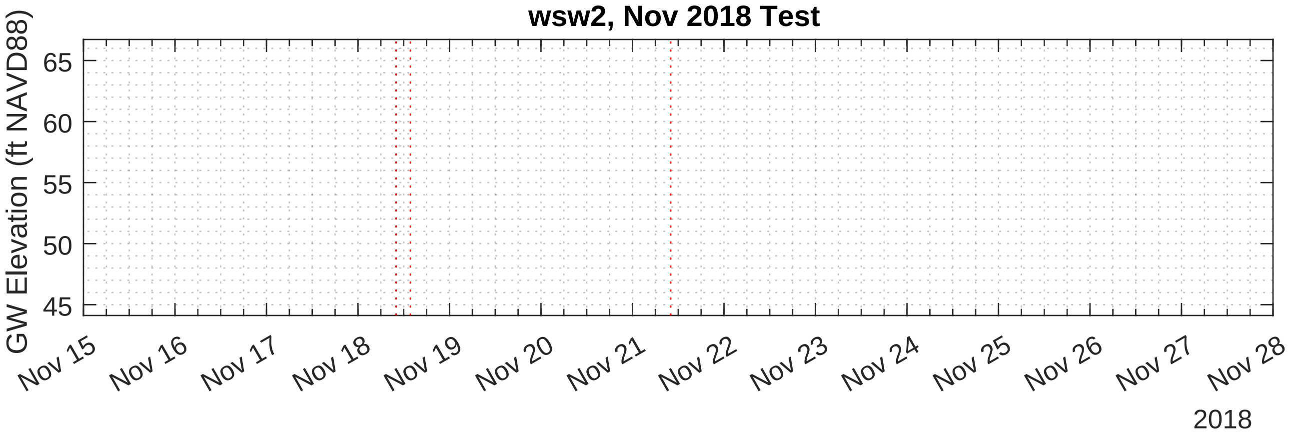
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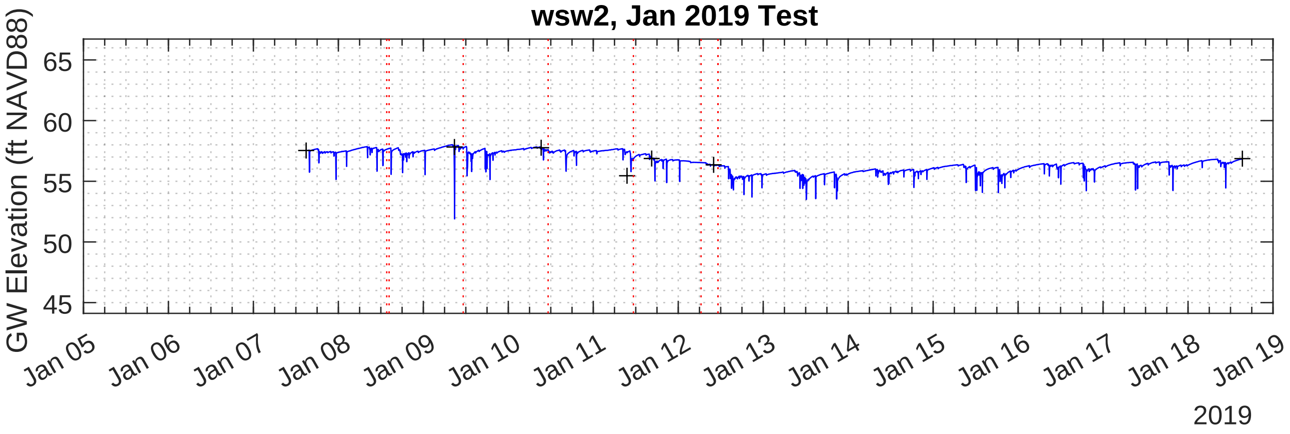
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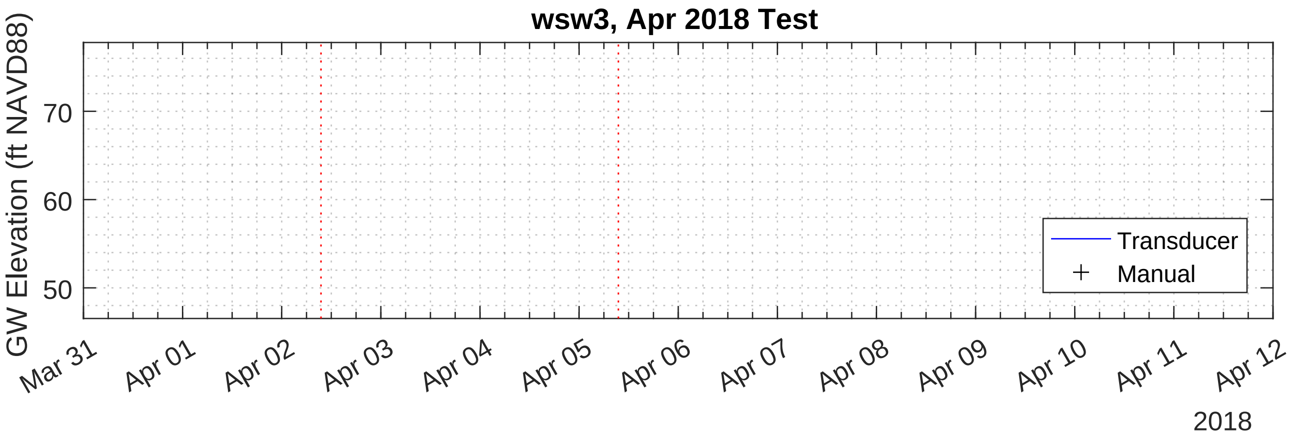
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GW Elevation (ft NAVD88)
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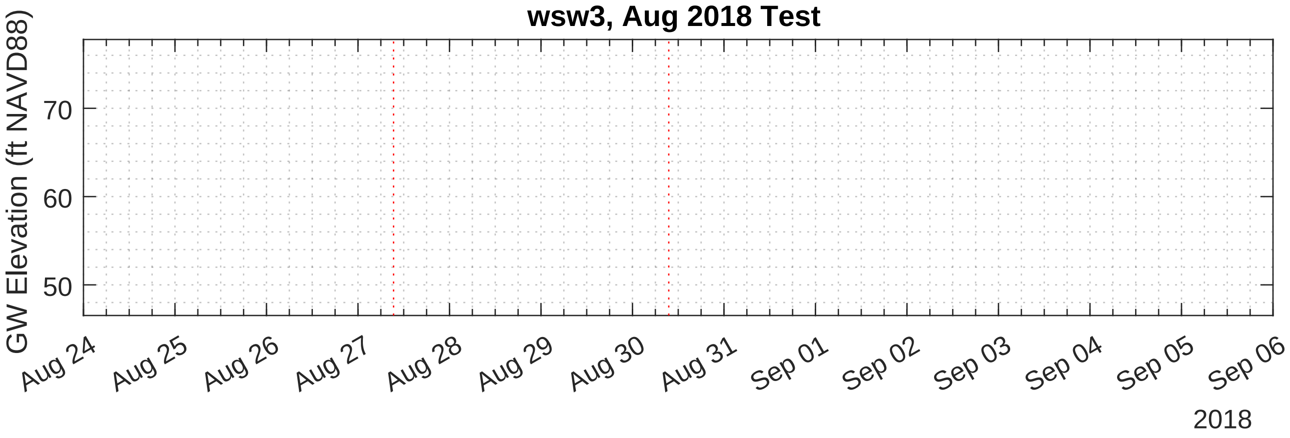
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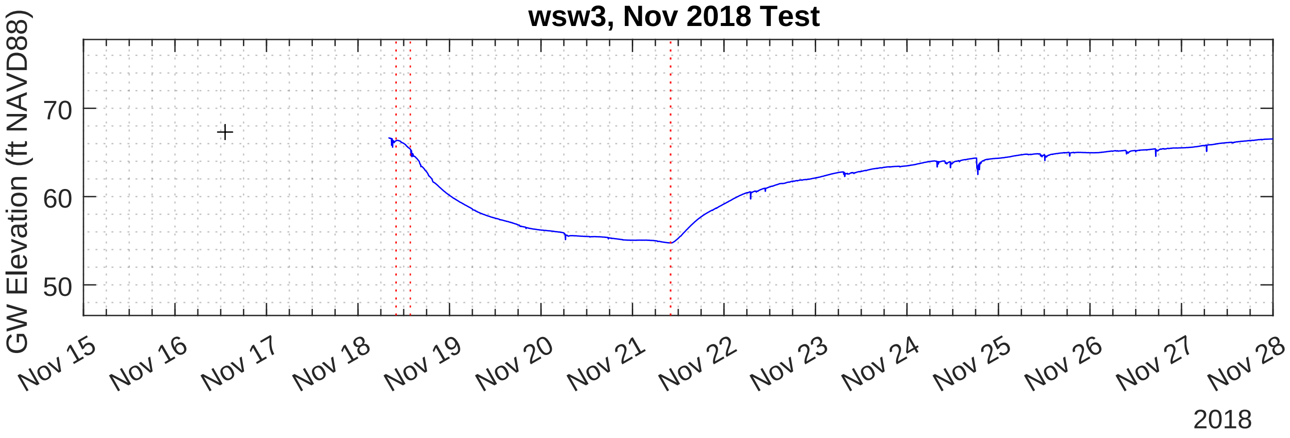
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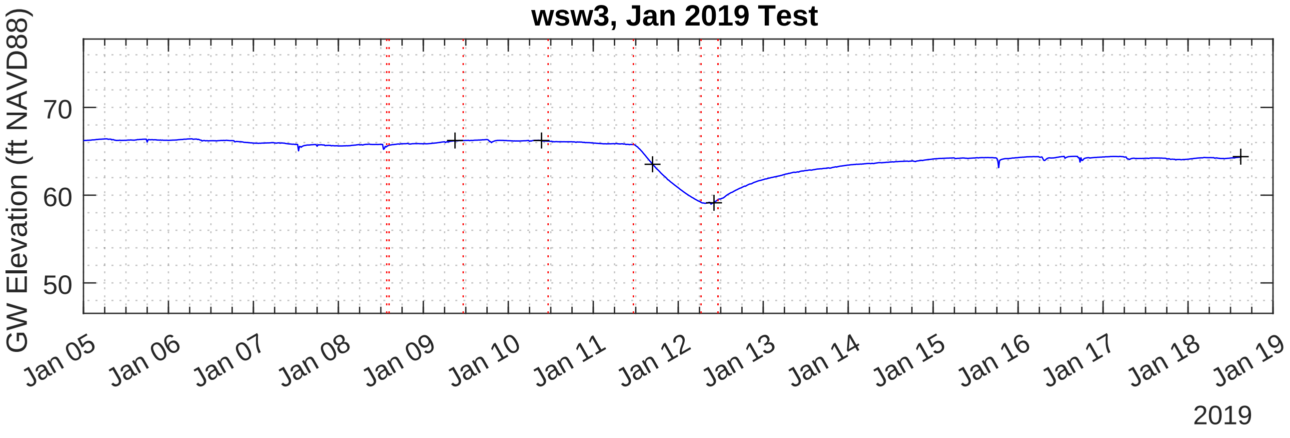
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GW Elevation (ft NAVD88)
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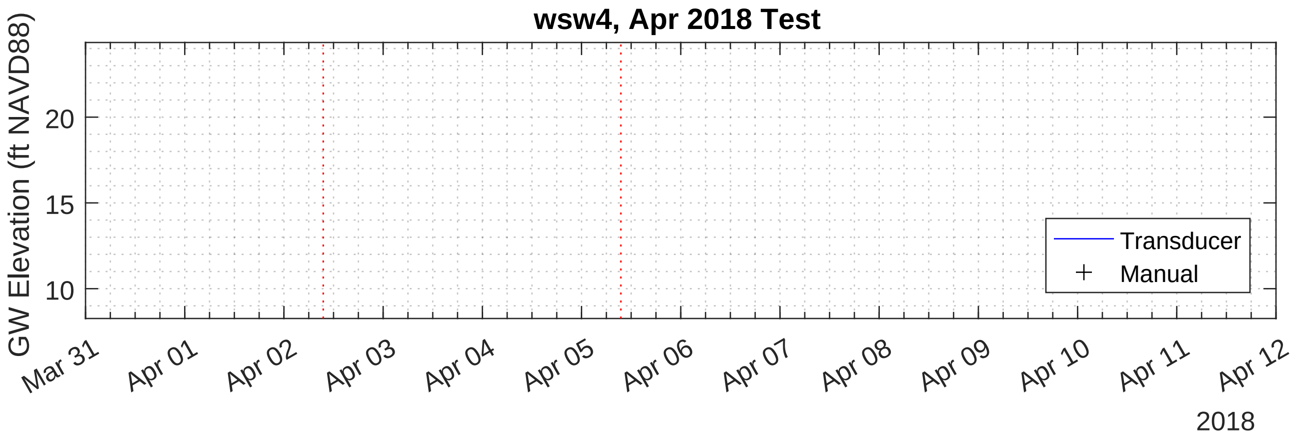

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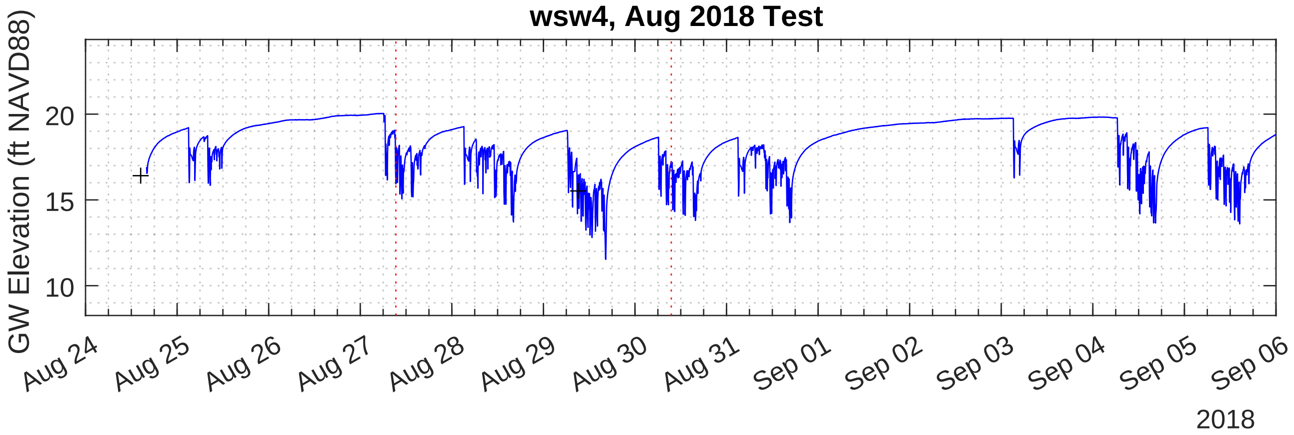

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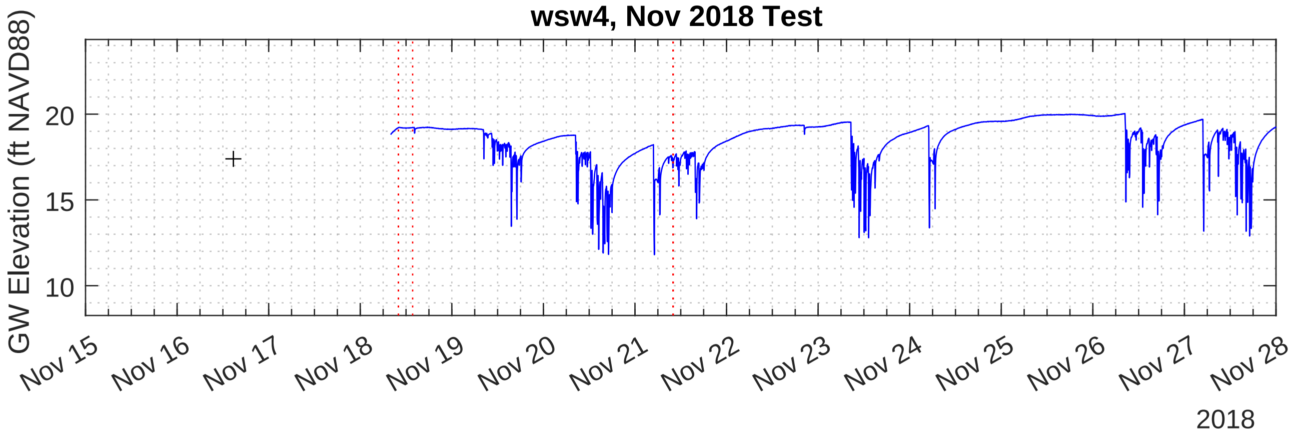

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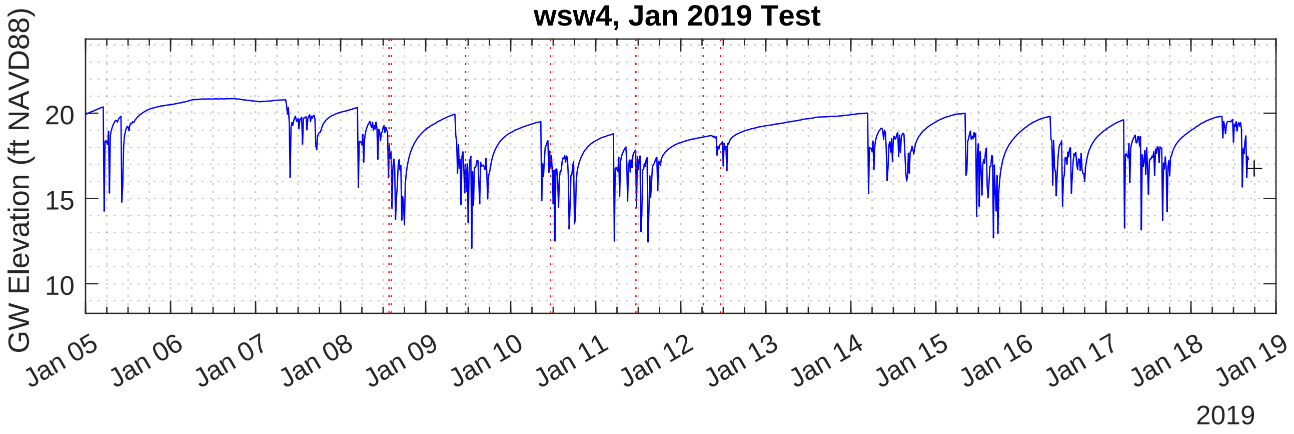

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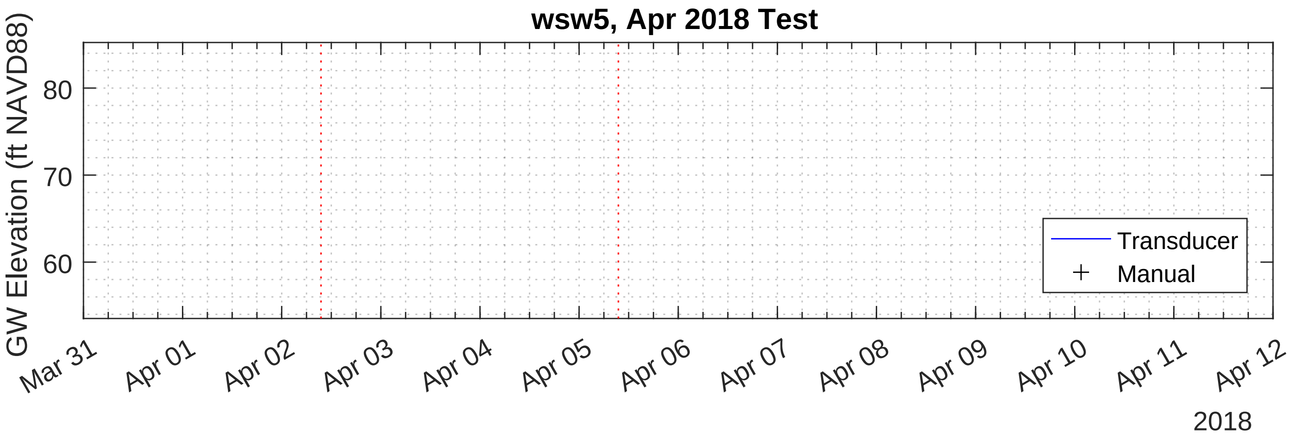

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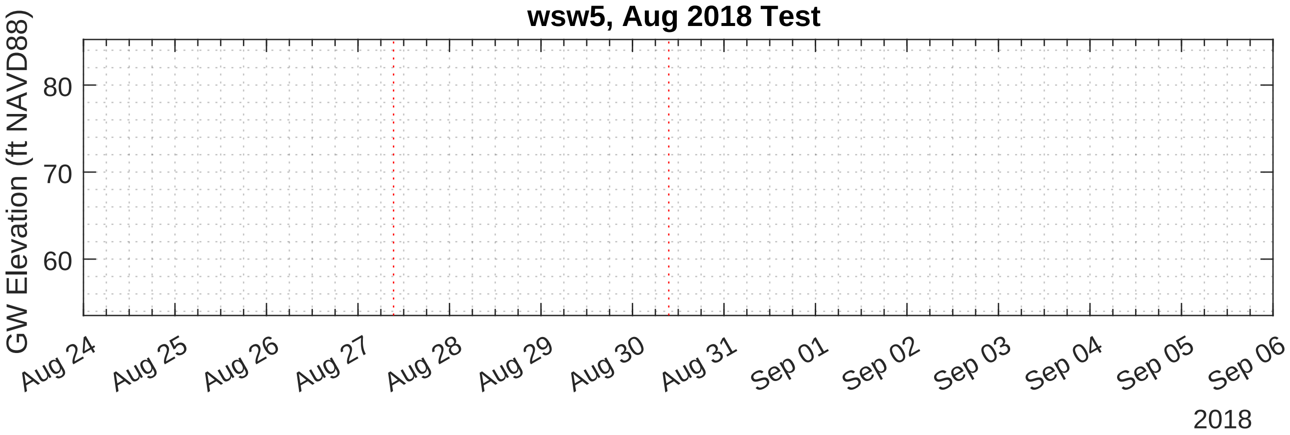

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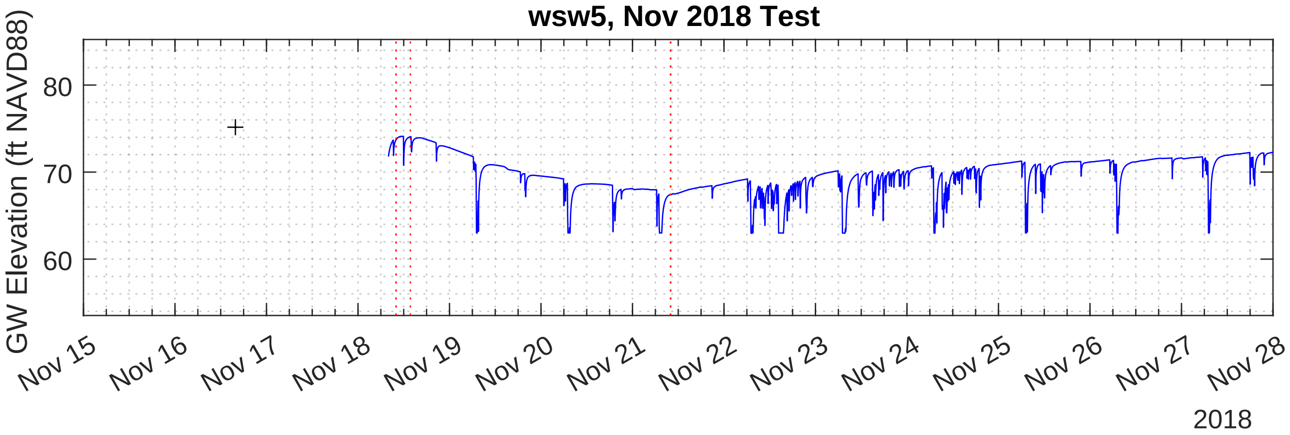

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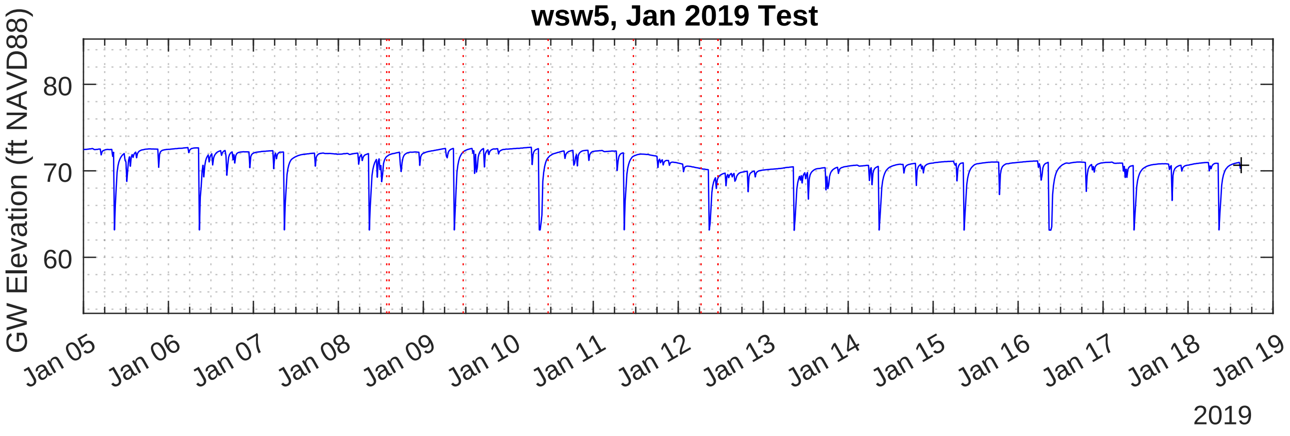

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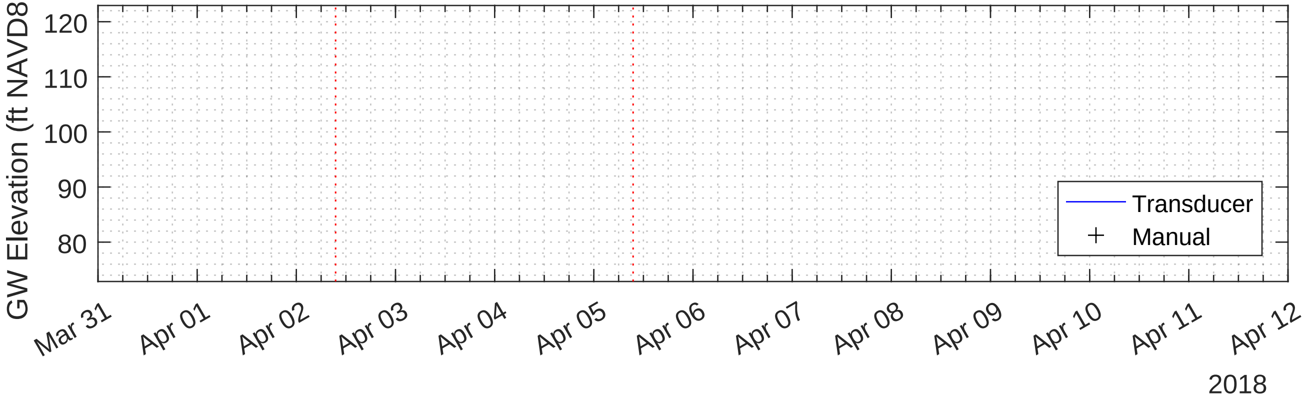
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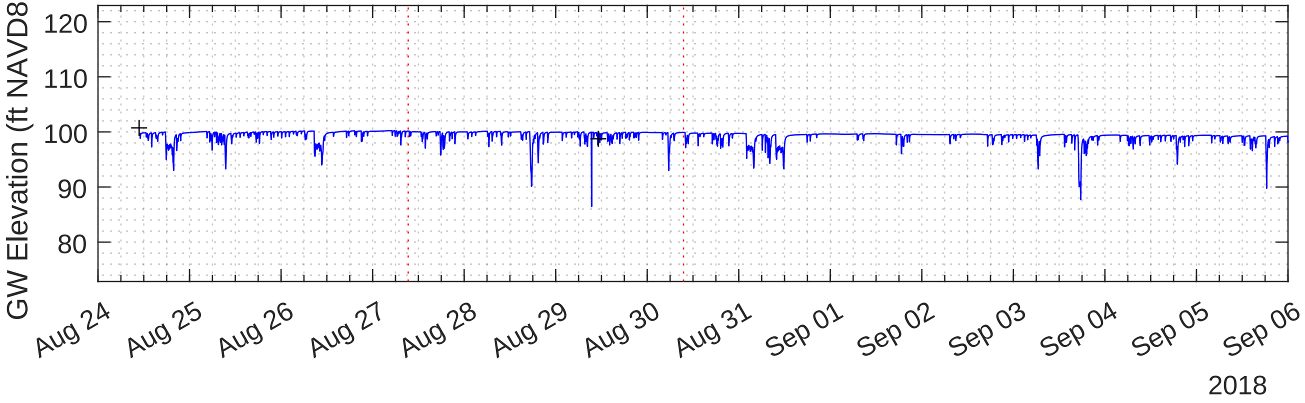
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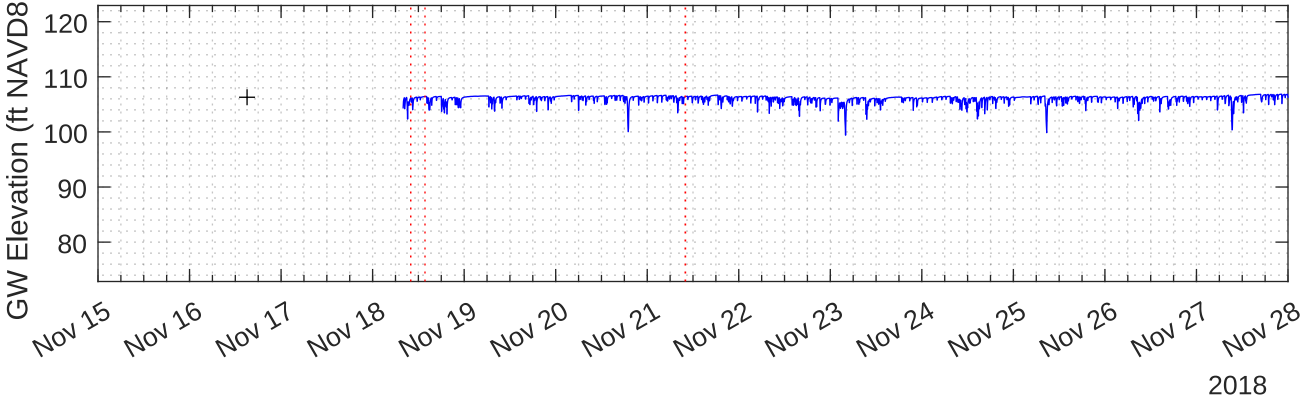
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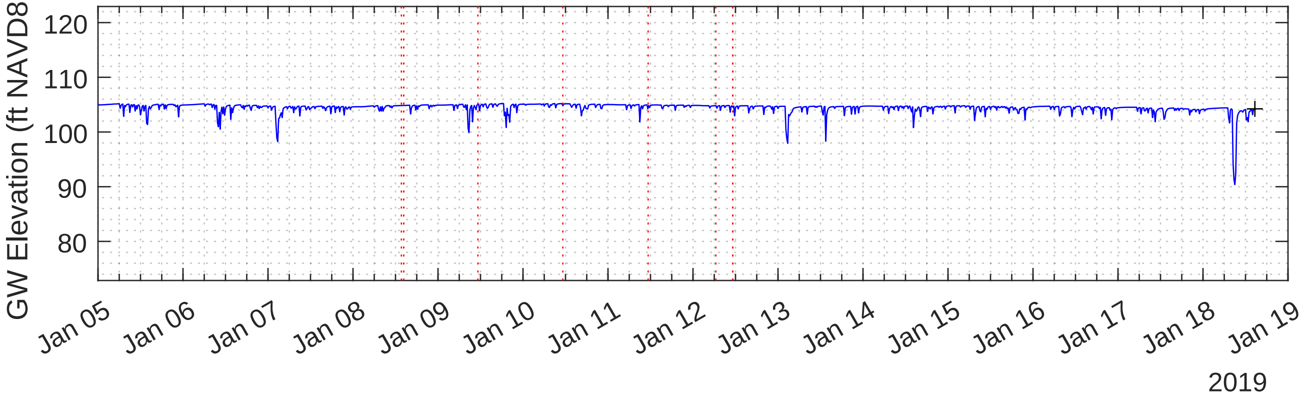
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APPENDIX F

Groundwater Modeling Technical Memo

Hydrogeologic Investigation Report
Proposed Commercial Land-Based Aquaculture Facility
Belfast Water District, Cassida Back Lot, and Mathews Brothers West Field Properties
285 Northport Avenue
Belfast, Maine

Ransom Consulting, Inc.
Project 171.05027.003

McDonald Morrissey
ASSOCIATES, LLC
GROUND WATER HYDROLOGISTS
280 Pleasant Street, Concord, NH 03301
Phone: (603) 228-2280
www.mcdonaldmorrissey.com

FROM: Michael A. Mobile, Ph.D., McDonald Morrissey Associates, LLC

TO: Elizabeth M. Ransom, P.G., Ransom Consulting, Inc.

DATE: April 10, 2019

SUBJECT: **Summary of Groundwater Modeling to Support Significant Groundwater Well Permit Application, Proposed Nordic Aquafarms Facility, Belfast, Maine**

Background

This technical memorandum summarizes a groundwater modeling assessment performed by McDonald Morrissey Associates, LLC (MMA) to support the Significant Groundwater Well permit application associated with the proposed Nordic Aquafarms facility located in Belfast, Maine. The wells associated with this proposed facility are located on property situated immediately north of the Lower Reservoir (an area generally referred to herein as the Site). A map showing the Site location and associated key features is included as **Figure 1**.

The objectives of the modeling effort summarized herein are as follows:

1. Construct a numerical groundwater flow model for the bedrock aquifer occurring in the Site vicinity based on available data and information;

2. With support from the model, assess primary source(s) of recharge to the local bedrock aquifer and proposed supply well network; and

3. With support from the model, assess potential long-term viability of proposed withdrawal rates based on drawdown effects occurring away from the proposed well network.

The following sections summarize development of the above-referenced numerical model and results produced from its application. Additional background information pertaining to the Site, including summaries of the hydrogeologic setting, the conceptual hydrogeologic model, and data collection activities, is presented in the Site's Hydrogeologic Investigation Report.

Code Selection and Model Construction

A three-dimensional numerical model of the Site vicinity was prepared using the MODFLOW-USG (Un-Structured Grid) numerical modeling code (Panday et al., 2017). MODFLOW-USG was developed by the U. S. Geological Survey (USGS) to support a variety of structured and unstructured grid types, including nested grids and grids based on prismatic triangles, rectangles, hexagons, and other cell shapes. The flexibility in grid design afforded by MODFLOW-USG was used in this project to focus resolution along certain boundary conditions and in the vicinity of active groundwater withdrawals where hydraulic gradient magnitudes were anticipated to be greatest. Model pre- and post-processing steps were completed using the Groundwater Modeling System (GMS) software package[1].

The following information was used to support construction of the numerical model:

- Publicly-available information from the Maine Office of GIS Data Catalog[2], including surficial geology mapping; LiDAR elevation data; and hydrography coverages.

- Publicly-available information on private wells in the Site vicinity obtained from the Maine Geological Survey's Water Well Database[3].

- Publicly-available predicted tide data obtained from the National Oceanographic and Atmospheric Administration (NOAA) Tides & Currents database[4].

- Data collected during investigations conducted within the study area vicinity, including geophysical survey results; boring logs; measured groundwater elevations; and streamflow measurements. Locations associated with these measurements are illustrated as **Figure 2**.

- Reports describing local and regional hydrology and hydrogeology, including reports prepared by the United States Geological Survey (USGS).

- Input and output files associated with a preliminary numerical groundwater flow model for the Site vicinity developed by Ransom.

Model Domain and Spatial Discretization

MODFLOW-USG provides flexibility to efficiently focus finite-difference grid resolution in areas of interest. This functionality was used, as illustrated by **Figure 3**, to focus grid resolution near pumping wells to model cell dimensions of approximately 9 inches by 9 inches relative to row and column orientation, respectively. At the perimeter

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[1] Groundwater Modeling System (GMS) – a software package developed by Aquaveo, LLC of Provo, UT. https://www.aquaveo.com/software/gms-groundwater-modeling-system-introduction

[2] Maine Office of GIS Data Catalog: https://www1.maine.gov/geolib/catalog/index.shtml

[3] Maine Geological Survey Water Well Database: https://www.maine.gov/dacf/mgs/pubs/digital/well.htm

[4] NOAA Tides & Currents Database: https://tidesandcurrents.noaa.gov/

of the model where grid resolution becomes coarse, model cell dimensions approach approximately 800 feet by 800 feet.

Vertically, the model domain was discretized using the following steps:

1. A generic model domain was developed and vertically divided into three (3) model layers[5]. Conceptually, layers 1 through 3 were created to approximately coincide with unconsolidated overburden materials (e.g., Presumpscot Formation, glacial till), the interfacial region between the unconsolidated overburden and competent bedrock (e.g., weathered bedrock zone), and the productive portion of the more-competent fractured bedrock aquifer, respectively.

2. The top of the model was designed based on LiDAR data available for the study area. LiDAR data were converted to a Triangulated Irregular Network (TIN), which was then converted to model layer 1 top elevation assignments within GMS using linear interpolation, as illustrated by **Figure 4**.

3. Bottom of layer 1 / top of layer 2 elevation assignments were supported by developing a data set containing reported bedrock depths from Site wells and the MGS private well database. **Figure 5** shows the locations associated with this data set. Where surveyed reference elevations were not available (e.g., private wells), bedrock elevations were estimated by offsetting reported bedrock depths using available LiDAR elevation data. The resultant data set was then converted to model input using linear interpolation.

4. Similar to step 3, bottom of layer 2 / top of layer 3 elevation assignments were supported by developing a data set containing reported casing depths from Site wells and the MGS private well database.

5. Finally, layer 3 bottom elevation assignments were developed based on a constant thickness approach, where thickness was determined based on the difference between the casing bottom elevation and elevation at the depth-of-penetration at PW-1.

Cross-sections illustrating the extent of the model domain and vertical grid discretization, or model layering, are included as **Figures 6a and 6b**.

Temporal Discretization

Individual simulations were performed to support calibration (and sensitivity testing), verification, and application of the numerical model. The following table summarizes periods of coverage and the general manner in which time is discretized within each simulation:

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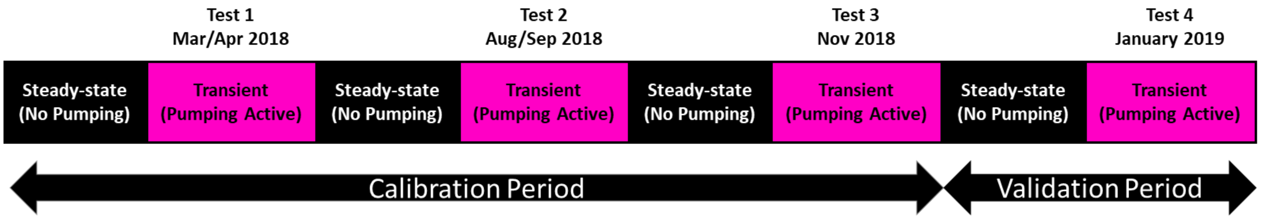
[5] Spatial discretization tasks were performed based on information projected using the Maine State Plane Coordinate System (East Zone) referenced horizontally to the North American Datum of 1983 (NAD83) and vertically to the North American Vertical Datum of 1988 (NAVD88), units of U.S. survey feet.

Simulation Type	Starting Date	Ending Date	Number of Stress Periods	Additional Notes
Calibration and Sensitivity Testing	3/30/2018	11/29/2018	133	Steady-state periods initialize transient periods spanning three pumping tests (1 through 3). Stress periods designed to represent variations in supply well pumping rates and predicted high and low tide conditions.
Verification	1/8/2019	1/18/2018	8	Single steady-state period initializing a transient period associated with pumping test 4. Stress periods designed to coincide with timing of well additions and rate increases.
Application	Not applicable		1	Steady-state projection runs performed with and without pumping to estimate maximum stabilized drawdown. Transient simulations used to estimate the time required for drawdowns to stabilize.

The simulation period associated with model calibration and verification can be schematically depicted relative to the pumping tests conducted at the Site as follows:



Boundary Conditions

A map showing the locations and types of boundary conditions represented within the model is included as **Figure 7**. These boundary types are described below by category:

No-Flow Boundaries

No-flow boundaries were used to limit the active portion of the model domain to an area coinciding with the approximate extent of the Little River watershed. These boundaries were assigned consistently in all model layers under the assumption that groundwater flow to-and-from the delineated drainage basin is small relative to flow within the active model area. A no-flow boundary was also assigned at the base of model layer 3, reflecting the assumption that deeper zones within the bedrock aquifer do not contribute significantly to wells drawing from shallower zones.

Specified Head Boundary

A combination of no-flow and constant head boundaries, the latter being assigned using the MODFLOW Time-Variant Specified Head or CHD package, was used to represent the freshwater/saltwater interface occurring along the coastline adjacent to Belfast Bay and within the tidal inlet below the Lower Reservoir.

Within model layer 1, these locations were treated as a specified head boundary. Tidal predictions at the NOAA subordinate station in Belfast (Station ID 8415191, refer to **Figure 8**) were used to support the development of CHD boundary head specifications. The approach used to convert this information to head specifications varied by simulation and stress period type. For transient stress periods associated with calibration simulations (i.e., where greater temporal definition was desired), head assignments were varied with time to account for the oscillating tidal condition. Head assignments pertaining to other simulations (i.e., verification and application) and all simulated steady-state stress periods are representative of a mean sea level condition[6], which is assumed to approximate the average hydraulic condition at this boundary. Prior to developing the boundary assignments, tidal predictions were adjusted based on Haitjema (2007) to appropriately estimate the so-called "freshwater head" condition influencing the simulated freshwater system[7].

Within model layers 2 and 3, the eastern limit of the active model domain was treated as no-flow boundary to reflect a steeply-dipping freshwater/saltwater interface. This approach is generally consistent with the Ghyben-Herzberg Relationship, which suggests that the depth to the position of the freshwater/saltwater interface can be estimated by multiplying the local freshwater hydraulic head by a factor of 40 (Masterson, 2004).

Head-Dependent Boundaries

The Little River and associated tributary network occurring above the Upper Reservoir and between the reservoirs were represented within the model using the MODFLOW Stream Flow Routing (SFR2) package. Stream top elevation inputs were estimated using available LiDAR data. Flow within the simulated streams was estimated using a wide channel approximation, as described by Niswonger and Prudic (2005).

The MODFLOW General Head Boundary (GHB) package was used to represent certain persistent water bodies, including the Upper Reservoir and the Lower Reservoir (refer to **Figure 7**). For the reservoirs, head assignments were developed by estimating an average representative stage based on available data collected from representative staff gages (SG-2 and SG-3). For smaller water bodies, representative heads were estimated using available LiDAR data.

The MODFLOW Drain (DRN) package was used to represent smaller streams and gullies occurring below the reservoirs. These features were assumed to represent limited sources of recharge to the local groundwater system. Drain bottom elevations were assigned based on available LiDAR data.

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[6] As reported as the Mean Sea Level (MSL) datum for NOAA subordinate station ID 8415191

[7] "Freshwater head" conditions were estimated via equation 3 from Haitjema (2007) under the assumption of a confined flow condition.

As required for head-dependent boundaries, cell-specific conductance parameters are specified in the GHB and DRN input files[8]. Similarly, the hydraulic conductivities of streambed sediments are specified in the SFR2 input file. These values were included as variable parameters in the calibration process, as discussed in the **Model Calibration** section below.

Hydraulic Properties

Hydraulic properties assigned to active model cells include horizontal hydraulic conductivity (K_h), horizontal anisotropy factor (HANI)[9], vertical anisotropy factor (VANI)[10], specific storage (S_s), and specific yield (S_y). Properties were either assigned as constant/uniform values for a given model layer or material type (i.e., based on surficial geology mapping) or as spatially-varying fields for given model layer or material type. The latter is an approach referred to as pilot-point parameter specification, which required an inverse-distance weighted (IDW) interpolation scheme to develop parameter value fields based on distributed point estimates.

The following table provides a summary of the techniques used to specify K_h, HANI, VANI, S_s, and S_y:

Model Layer	**Horiz. Hyd. Conductivity (K_h)**	**Horiz. Aniso. (HANI)**	**Vert. Aniso. (VANI)**	**Storage Parameter(s) (S_s and/or S_y)**
1	Constant value for areas generally mapped as glacial till; pilot point approach for Presumpscot Formation area	Constant value of 1.0	Variable for layer based on pilot point approach	Layer type set as convertible. S_y set to constant value of 0.1. S_s set to constant value of 3.4e-4 per foot (Anderson and Woessner, 1991).
2	Variable for layer based on pilot point approach	Constant value of 1.0	Variable for layer based on pilot point approach	Layer type set as convertible. S_y set to constant value of 0.1. S_s set to constant value of 3.4e-4 per foot (Anderson and Woessner, 1991).
3	Variable for layer based on pilot point approach	Constant value	Constant value	Layer type set as confined. S_s variable for layer based on pilot point approach.

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[8] GHB conductance per unit area of coverage within a given model cell was assumed to be equal to swamp deposit hydraulic conductivity, as estimated via calibration, divided by a wetland bottom thickness of 1 foot.

[9] Horizonal anisotropy factors (HANI) represent the ratio of horizontal hydraulic conductivity along model columns to horizontal hydraulic conductivity along model rows.

[10] Vertical anisotropy factors (VANI) represent the ratio of horizontal hydraulic conductivity to vertical hydraulic conductivity.

Where specific values are indicated in the table above, property value assignments were held constant through the model calibration process. Examples include constant HANI values of 1.0 in model layers 1 and 2, which reflect the general assumption of horizontally-isotropic hydraulic conductivity in unconsolidated deposits and highly-weathered bedrock, and uses of representative (i.e., mean), literature-supported values of storage parameters for model layers 1 and 2.

Where specific values are not provided (e.g., "constant value") or where the pilot point approach is referenced, parameter values are ultimately determined via the model calibration process, which is further discussed below in the **Model Calibration** section.

Recharge/Discharge

Recharge from Precipitation

Rates of groundwater recharge assigned to the model domain were guided by several studies of hydrogeologic conditions occurring in the Site vicinity. These studies focused on areas with hydrogeologic characteristics like those of the Site vicinity, including significant presences of glacial till and the glaciomarine Presumpscot formation.

A summary of the above-referenced studies presented by Nielsen and Locke (2014) was used to estimate representative mean annual recharge rates as input to the MODFLOW Recharge (RCH) package. Areas within the active model domain mapped as glacial till were assigned a mean annual recharge rate equivalent to 5.25 inches per year (based on an average of the reported range of 2.5 to 8 inches per year). Similarly, areas mapped as Presumpscot formation were assigned a mean annual recharge rate equivalent to 1.2 inches pear year (based on an average of the reported range of 0.5 to 1.9 inches per year). These rates were applied to steady-state stress periods; recharge was conservatively assumed to be inactive during transient periods with the exception of transient application simulations performed to estimate the time required for stabilization of drawdown.

The recharge rates described above are assumed to represent net aquifer recharge inclusive of unsaturated zone and shallow saturated zone effects, including evapotranspiration (ET). For this reason, ET was not explicitly simulated as an active process in this modeling effort.

Supply Well Withdrawals

Information describing timing, rates, and locations of pumping withdrawals occurring during the four pumping tests conducted at the Site was provided to MMA by Ransom. This information was used as input to the MODFLOW Well (WEL) package, which was used to represent supply well withdrawals in the form of specified flux to or from a given model cell. **Figures 9a and 9b** summarize the planned pumping rates associated with the pumping tests 1 through 3, which coincide with the simulation periods used for model calibration, and pumping test 4, which coincides with the simulation period used for model verification.

In developing input for calibration simulations, WEL package inputs were refined based on daily and sub-daily withdrawal records provided to MMA by Ransom, which highlighted generally minor deviations from the planned rates presented in **Figures 9a and 9b**. Examples include rare cases of pump downtime (e.g., DRX-102 during 11/18/2018 due to generator failure) and decreasing well yield due to hydraulic head reduction (e.g., PW-1 rate decreased from 250 gallons per minute [gpm] during 11/18/2018 to 230 gpm by the conclusion of the third pumping test on 11/21/2018).

Verification simulations used the planned rates directly, as daily/sub-daily field records suggested deviations, in most cases, were minimal during the fourth pumping test. However, based on these records, the withdrawal rate at PW-1 did appear to decrease as the test progressed and head above the pump was reduced, as was the case during the third pumping test. This difference between verification model input specifications and field conditions is further discussed below in the **Model Verification** section.

Note that residential pumping was not represented within the model due to limited information availability (e.g., unavailable well construction information, limited information describing timing and rates of active pumping, etc.). Furthermore, it was assumed that residential pumping represents a negligible consumptive component of the simulated system's volumetric balance, as residential pumping rates are generally low, wells are generally distributed in terms of their locations, and some return flow from private septic infiltration would be anticipated.

Model Calibration

Model calibration was accomplished using trial-and-error and automated techniques, with the latter approach involving use of a model-independent parameter estimation utilities called PEST (Watermark Numerical Computing, 2016) and PEST_HP (Watermark Numerical Computing, 2017). In using this utility, batches of parallel calibration simulations reflecting parameter value perturbations were performed to minimize an aggregated difference of simulated and measured hydraulic heads, the latter of which is referred to herein as the calibration target data set.

The calibration target data set was created using head measurements provided to MMA by Ransom. These head measurements were collected using a network of pressure transducers placed in shallow piezometers, monitoring wells, pumping wells, residential wells, and staff gages located throughout the Site vicinity. In generating the calibration target data set, only pressure transducer data were used; manual measurements were not included.

To support and constrain the calibration process, initial values and upper and lower limits for adjustable parameters were estimated based on site-specific information, where available, and published ranges consistent with the general descriptions of the material/deposit types (e.g., Anderson and Woessner, 1992). In select cases, a combination of modeling experience and relatively broad parameter value ranges was used to provide flexibility to the calibration process.

Model calibration results are summarized by **Figures 10a through 10c**, which compare measured hydraulic heads from the calibration target data set to comparable (i.e., in space and time) simulated conditions. These plots suggest general consistency between measured and modeled conditions. This consistency is further evidenced through the following tabulated statistical summary, which is presented in terms of Residual Mean (RM) values, which are arithmetic averages of residuals calculated using the calibration target data set (measured groundwater elevation minus the comparable simulated groundwater elevation):

	Residual Mean (RM) Statistics		
Pumping Test / Simulated Period	**Mean**	**10th Percentile**	**90th Percentile**
1 – March/April 2018	1.0	-1.0	3.0
2 – August/September 2018	-1.6	-4.1	0.1
3 – November 2018	0.2	-1.7	2.1

Additionally, the calibration simulation produces a reasonable balance between volumetric inflows and outflows, as evidenced by the following summary:

	Volumetric Balance Percent Discrepancy
Minimum[1]	**-0.34%**
Maximum[1]	**+0.01%**
Cumulative	**-0.15%**

[1]Calculated from percent discrepancies reported for all calibration simulation time steps

Final hydraulic parameter values and ranges (i.e., for parameters estimated using pilot points) are presented in the following table:

Horizontal Hydraulic Conductivity (feet/day)			
Model Layer	Mapped Material Type	Parameter Bounds (lower – upper)	Calibrated Value/Range (value / lower – upper)
1	Presumpscot formation	5.0E-04 - 150.0	5.0E-04 - 127.9
1	Glacial till	0.045 - 4.0	0.045
2	Shallow bedrock	0.05 - 10.0	0.05 - 9.9
3	Bedrock	0.001 - 50.0	0.001 - 49.9
Horizontal Anisotropy (dimensionless)			
3	Bedrock	0.005 - 1.0	0.01
Vertical Anisotropy (dimensionless)			
1	Presumpscot formation & glacial till	1.0 - 100.0	1.0 - 98.7
2	Shallow bedrock	1.0 - 100.0	1.0 - 100.0
3	Bedrock	1.0 - 100.0	1.0
Specific Storage (1/foot)			
3	Bedrock	1.0E-10 - 2.1E-05	3.8E-09 - 2.1E-05

Notes:

1. Calibrated ranges indicate the range of values for pilot points produced via calibration.
2. Horizonal Anisotropy and Vertical Anisotropy refer to the HANI and VANI factors, respectively.

Where applicable, IDW interpolation was used to convert parameter values estimated at pilot point locations to parameter fields. An example is shown in **Figure 11**, which depicts the final calibrated hydraulic conductivity fields for models layers 1 through 3.

Final parameter values associated with head-dependent boundaries are presented in the following table:

Drain Bed Conductance (feet^2/day)		
Location	Parameter Bounds (lower – upper)	Calibrated Value/Range (value / lower – upper)
Periphery	0.001 - 15.0	0.30
Near proposed site	0.001 - 15.0	0.001
Reservoir Bed Conductance (feet^2/day)		
Upstream pond	1.0E-4 - 15.0	15.0
Upper reservoir	1.0E-4 - 15.0	15.0
Lower reservoir	1.0E-4 - 15.0	7.7
Stream Bed Hydraulic Conductivity (feet/day)		
Streams draining to the Upper Reservoir	0.1 - 50.0	27.2
Reach connecting reservoirs	0.1 - 50.0	3.7
Streams draining to the Lower Reservoir	0.1 - 50.0	0.1

Additional summaries of calibration simulation results are provided within the attached **Appendix**.

Sensitivity Testing

Following calibration, sensitivity testing was performed to assess the influence of parameters on the quality of model calibration. This assessment was performed using RM and two additional statistical performance metrics:

1. The Absolute Residual Mean (ARM), which is the arithmetic average of the absolute values of residuals calculated using the calibration target data set; and

2. The Residual Sum of Squares (RSOS), which is the sum of the squared values of residuals calculated using the calibration target data set.

In general, it is desirable from a calibration perspective to have RM approach a value of zero (0) while simultaneously minimizing the values of ARM and RSOS. It is important to note, however, that RSOS will typically be significantly greater in magnitude than ARM due to squaring and summing of residual values.

With the results of the calibration simulation as a starting point, sensitivity tests were performed by increasing and decreasing values for several parameter groups. Dedicated simulations were performed for adjustments to values of horizontal hydraulic conductivity, vertical anisotropy, horizontal anisotropy (model layer 3 only), specific storage, specific yield, recharge rate, GHB conductance, DRN conductance, and streambed (SFR2) hydraulic conductivity. The following table summarizes the sensitivity testing results:

Parameter Group	**Change**	**RM (ft)**	**ARM (ft)**	**RSOS (ft^2)**
Baseline (no change)	None	-0.1	1.5	4.6E+05
Horizontal Hydraulic Conductivity	+50%	-3.1	5.1	5.2E+06
Horizontal Hydraulic Conductivity	-50%	10.2	11.8	3.7E+07
Vertical Anisotropy	+50%	-2.0	2.7	9.9E+05
Vertical Anisotropy	-50%	2.3	3.5	1.5E+06
Horizontal Anisotropy (model layer 3 only)	+50%	-1.0	2.7	1.2E+06
Horizontal Anisotropy (model layer 3 only)	-50%	1.8	3.6	2.7E+06
Specific Storage	+50%	-0.4	1.8	5.9E+05
Specific Storage	-50%	0.4	2.1	7.1E+05
Specific Yield	+50%	-0.3	1.5	4.6E+05
Specific Yield	-50%	0.5	1.7	5.0E+05
Recharge Rate	+50%	-1.8	2.2	8.1E+05
Recharge Rate	-50%	3.6	3.9	1.7E+06
GHB Conductance	×10	-0.1	1.5	4.5E+05
GHB Conductance	÷10	-0.1	1.5	4.5E+05
DRN Conductance	×10	0.0	1.5	4.5E+05
DRN Conductance	÷10	-0.1	1.5	4.5E+05
Streambed (SFR2) Hydraulic Conductivity	×10	0.3	1.6	4.7E+05
Streambed (SFR2) Hydraulic Conductivity	÷10	-1.5	2.1	6.8E+05

As indicated by this table, RM, ARM, and RSOS are generally quite sensitive to hydraulic parameter values, with particularly sensitivity evident for the horizontal hydraulic conductivity parameter group. Conversely, the model generally demonstrates limited sensitivity to conductance and hydraulic conductivity values associated with head-dependent boundary types (GHB, DRN, and SFR2). This result appears to be consistent with conditions predicted by the model at these boundaries (i.e., generally low volumetric rates of groundwater discharge to the boundary).

Model Verification

Following calibration, a simulation of pumping test 4 was performed as an additional assessment of model performance (referred to generally herein as verification). The assessment was supported by developing a verification data set, which was composed in the same manner as the calibration target data set, as described previously.

Results produced by the verification simulation are summarized by **Figure 12**, which compares measured hydraulic heads from the verification target data set to comparable (i.e., in space and time) simulated conditions. As was the case for the calibration results, these plots suggest general consistency between measured and modeled conditions. This consistency is further evidenced through the following tabulated summary of RM values:

	Residual Mean (RM) Statistics		
Pumping Test / Simulated Period	**Mean**	**10th Percentile**	**90th Percentile**
4 – January 2019	0.9	-1.6	4.0

As previously noted, the verification simulation included WEL package inputs reflecting planned pumping rates; though, a relatively minor deviation from the planned rate evident at PW-1 based on daily/sub-daily field records. As illustrated by **Figure 13** this difference appears to result in a continued downward trend in simulated hydraulic head at PW-1 that deviates slightly from the observed conditions at this location; whereas, the deviation is not as pronounced for the other active wells where planned rates were generally maintained throughout the duration of the pumping test.

Additional summaries of measured and simulated water levels from the verification simulation are provided within the attached **Appendix**.

Model Application

Following the calibration and verification steps, projection simulations were performed to estimate system responses under different pumping scenarios where locations and rates of withdrawal were varied. The objectives of these projection simulations were the following:

1. For a given pumping rate scenario, estimate the maximum amount of drawdown that may develop under long-term, average conditions; and

2. For a given pumping rate scenario, estimate the time required for drawdown to stabilize.

Relative to objective 1, above, estimates were generated using steady-state model simulations. First, a non-pumping (i.e., no active wells) simulation with estimated average recharge rate specifications was performed to create a baseline condition. Additional steady-state simulations were then performed for three pumping scenarios. Each pumping scenario was simulated three times: once with estimated average recharge rate specifications consistent with the baseline simulation, once with the estimated average recharge rates halved to roughly approximate the lower bounds of the material-specific recharge rate ranges reported by Nielsen and Locke (2014)[11], and once reflecting a 2-foot reduction in the head assigned to the Lower Reservoir head-dependent boundary. The second set of simulations (i.e., halved recharge rates) was performed to support a general assessment of the sensitivity of drawdown estimates to long-duration, reduced recharge conditions.

The third set of simulations was performed to support a general assessment of the sensitivity of drawdown estimates to long-duration changes to the stage of the Lower Reservoir. Minor modifications to model layering were required to support these simulations (i.e., lowering layer 1 bottom elevation assignments in the vicinity of the Lower Reservoir). No additional calibration or recalibration was performed using the modified version of the model grid; therefore, the results of the Lower Reservoir stage sensitivity assessment are considered to be general and qualitative.

Estimates of maximum drawdown under each pumping scenario and recharge condition were then generated by subtracting simulated heads for each model run from comparable (i.e., in terms of location) simulated heads from the baseline condition. Estimated maximum drawdown changes pertaining to the Lower Reservoir stage sensitivity assessment were generated by comparing simulated heads under normal stage (i.e., Lower Reservoir stage used during calibration) and modified stage (i.e., 2-foot reduction) conditions.

To address objective 2, above, the steady-state baseline simulation was extended by adding a second transient stress period with a duration of approximately 10 years. Simulations were performed with this version of the model with an initial, steady-state, non-pumping period followed by a transient period representative of each pumping scenario. Estimated average recharge rate specifications were used during the transient period.

The three pumping scenarios assessed using these approaches are summarized as follows:

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[11] For the glacial till material group, the specified recharge rate was 5.25 inches per year / 2 = 2.63 inches per year versus a lower bound of 2.5 inches per year per Nielsen and Locke (2014). For the Presumpscot formation material group, the specified recharge rate was 1.2 inches per year / 2 = 0.6 inches per year versus a lower bound of 0.5 inches per year per Nielsen and Locke (2014).

Scenario ID	PW-1 (gpm)	GWW-103 (gpm)	DRX-102 (gpm)	PSD-102 (gpm)	DRX-101 (gpm)	Total Pumping (gpm)
1	250	175	30	0	0	455
2	250	175	30	30	30	515
3	125	87.5	15	0	0	227.5

The bases for these pumping scenarios are summarized as follows:

- Scenario 1 was designed based on the locations and rates active during pumping test 4 prior to adding PSD-102, which appeared to be well connected with residential supply wells (e.g., WSW-03) located west of the Site based on monitoring data.

- Scenario 2 was designed to match the final design rates targeted during pumping test 4. Thus, this scenario was simulated in order to approximately extend the final stage of pumping test 4.

- Scenario 3 is based on Scenario 1, but all withdrawal rates were halved.

Figures 14a through 14c illustrate simulated maximum drawdown in model layer 3 (fractured bedrock aquifer) for each of the three pumping scenarios under estimated average recharge conditions. For Scenario 1, maximum drawdown estimates for an on-Site monitoring/supply well and an off-Site monitored residential well are approximately 200 feet (PW-1) and 15 feet (WSW-04), respectively. For Scenario 2, maximum drawdown estimates at these locations increase to approximately 220 feet and 18 feet, respectively. For Scenario 3, maximum drawdown estimates at these locations decrease to approximately 85 feet and 5 feet, respectively.

Results for shallow piezometer monitoring locations (i.e., model layer 1) are similar for all scenarios under estimated average recharge conditions, with the maximum simulated drawdown for each scenario slightly exceeding 5 feet (PZ-1S).

Under reduced recharge conditions (halved recharge rates), maximum drawdown estimates increase to slightly more than 20 feet at off-Site locations for Scenario 1 (WSW-04 and WSW-01). Similar proportional increases are noted relative to Scenarios 2 and 3 compared to results produced under estimated average recharge conditions.

Qualitatively, model simulations reflecting a 2-foot lowering of Lower Reservoir stage suggest limited sensitivity at off-Site locations. For all simulated pumping scenarios, increases in maximum estimated drawdown of several feet or more (i.e., compared to the normal stage condition) were generally limited to the Site vicinity. Overall, the largest estimated change in maximum drawdown associated with the 2-foot lowering of the

Lower Reservoir stage occurred in the vicinity of pumping well GWW-103 for all simulated pumping scenarios.

Additional summaries of simulated drawdown results are provided within the attached **Appendix**.

Figure 15 provides a comparison of the volumetric flow budgets for the baseline (no pumping) and Scenario 1 simulations, both under estimated average recharge conditions. In both cases, recharge from precipitation represents the major source of water to the modeled groundwater system, with supplemental volume being provided from reservoir/pond leakage. These sources are mostly offset, in both cases, by groundwater discharge to streams and the coastal boundary. With pumping active (Scenario 1 case), the withdrawal demand appears to be partly satisfied by interception of groundwater that was previously discharging to streams, reservoirs/ponds, and the coastal boundary; though, some inflow from the coastal boundary is predicted. Sensitivity testing performed during model application also suggests that the volumetric rate of inflow from the coastal boundary may increase under reduced recharge and reduced Lower Reservoir stage conditions.

Transient scenario simulation results are presented in **Figures 16a through 16c** for monitored residential wells in the Site vicinity. Based on these results, drawdown effects may develop more rapidly in areas located west-northwest of the Site (i.e., as indicated by the estimated responses at the WSW-01, WSW-03, and WSW-05 locations) compared to areas due west (i.e., as indicated by the estimated response at the WSW-02 location) and south (i.e., as indicated by the WSW-04 response) of the Site. Stabilization times, however, are estimated to be many years to more than a decade for all locations under all simulated scenarios.

Summary

The numerical modeling described herein generally supports a proposed withdrawal plan similar to the Scenario 1 condition (a total of 455 gpm from wells PW-1, GWW-103, and DRX-102). Because modeling suggests pumping of Site wells may result in condition changes under average conditions (e.g., drawdown and induced coastal boundary flow), and because deviations from average conditions, such as sustained drought conditions, may alter these estimates, the following is recommended:

- Conduct further assessment of residential supply wells located in the Site vicinity to better understand typical conditions (e.g., range of head fluctuations occurring under normal use) and physical characteristics (e.g., pump depth).

- Develop a plan for monitoring:
    - drawdown in bedrock supply wells located on- and off-Site;
    - drawdown of the water table near surface water features in the Site vicinity; and
    - in certain locations, water quality (e.g., total dissolved solids or TDS).

- Develop contingencies to address cases where current use changes (e.g., reduced well yield) can be attributed to effects caused by Site-related pumping.

Though calibration and verification simulations suggest good agreement between measured and simulated hydraulic conditions, it is important to note that model results are sensitive to key assumptions made in the modeling process that impact the availability of water within the simulated system. These assumptions include the conceptualization and representation (within the model) of system characteristics, including the key assumption that hydraulic properties controlling groundwater flow through porous media can be used to reasonably estimate bulk groundwater flow through the local fractured rock aquifer (generally referred to as the Equivalent Porous Medium or EPM assumption). Hydraulic controls that are not readily apparent from available data may alter model-based estimates, including point estimates of maximum anticipated drawdown and stabilization time for any pumping scenario, as well as the simulated extent of drawdown effects. Furthermore, scenario simulations (model application) were designed under the assumption that long-term conditions (e.g., estimated average and reduced annual recharge rates) reflect an appropriate basis for assessing drawdown effects in the Site vicinity. Shorter duration events, such as seasonal drought periods, were not assessed. Further discussion of limitations pertaining to the results presented herein is presented in the **Limitations** section.

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Attachments:

(1) Appendix A – Supplemental Tables and Figures

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Limitations

General

This technical memorandum was produced by McDonald Morrissey Associates, LLC (MMA) for exclusive use by our client and according to the purposes specifically described in the associated Scope of Work. MMA does not accept responsibility and/or liability for uses of the information contained within this memorandum by other parties and/or for other purposes without MMA's express written consent.

Additional Limitations

1. This technical memorandum summarizes a numerical model developed by MMA using data and information collected by and made available to MMA by other parties. The data and information represent discrete spatial and temporal measurements/interpretations of study area conditions, which may vary between points of measurement/information collection. No independent assessment of the quality of the data, including verification and/or validation, was performed by MMA.

2. In developing the numerical model described by this technical memorandum, simplifying assumptions and general simplifications pertaining to the simulated system were necessary and are inherent in any similar modeling assessment. Key assumptions and simplifications specific to the study area, which are summarized in the memorandum, were supported by MMA's professional judgement and were based on available information and data. Additional information and data collected and made available after the date of this memorandum may result in refinement or revision to the presented findings.

3. MMA performed the work described by this technical memorandum at a level of technical proficiency commensurate with that which would be anticipated from similar qualified professional practitioners provided with the same information, data, and objectives.

4. The work summarized by this technical memorandum is not subject to any form of warranty by MMA.

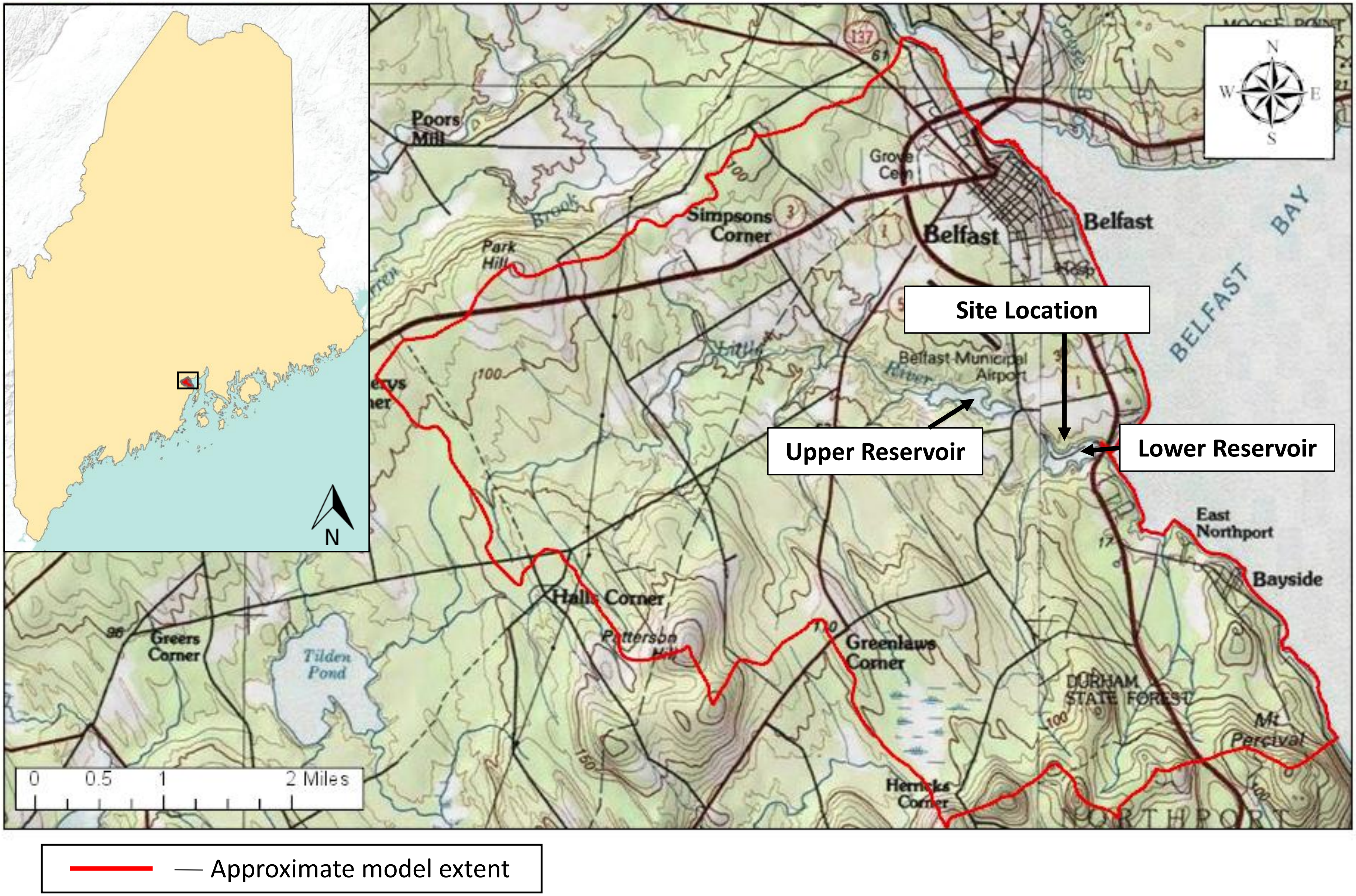

Figure 1 – Study area location.

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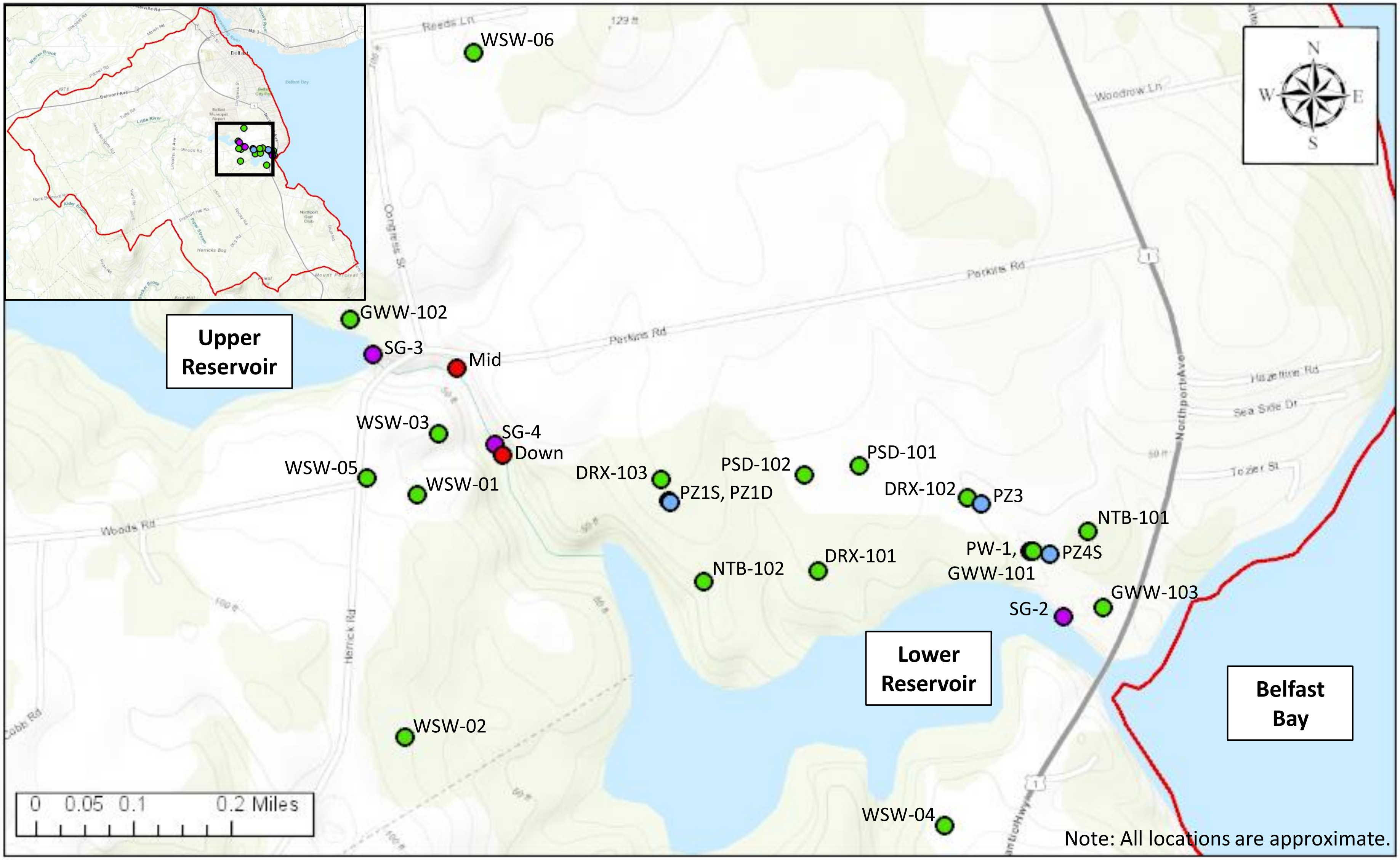

🟥 — Approximate model extent	● — Piezometer located in overburden
● — Bedrock well	● — Staff gage
	● — Little River gaging location

Figure 2 – Data collection locations.

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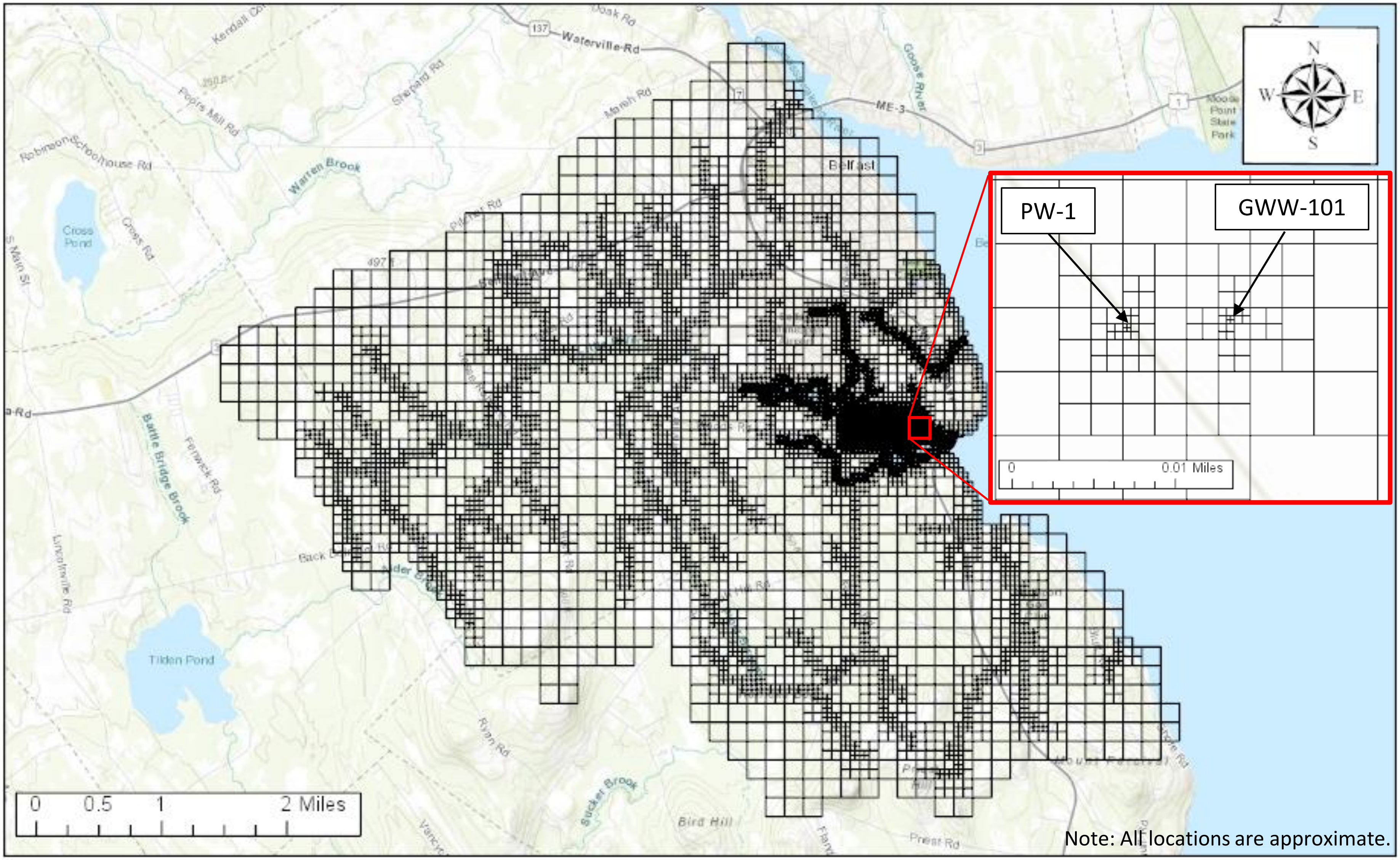

— Model grid cells

Figure 3 – Model domain and numerical grid discretization.

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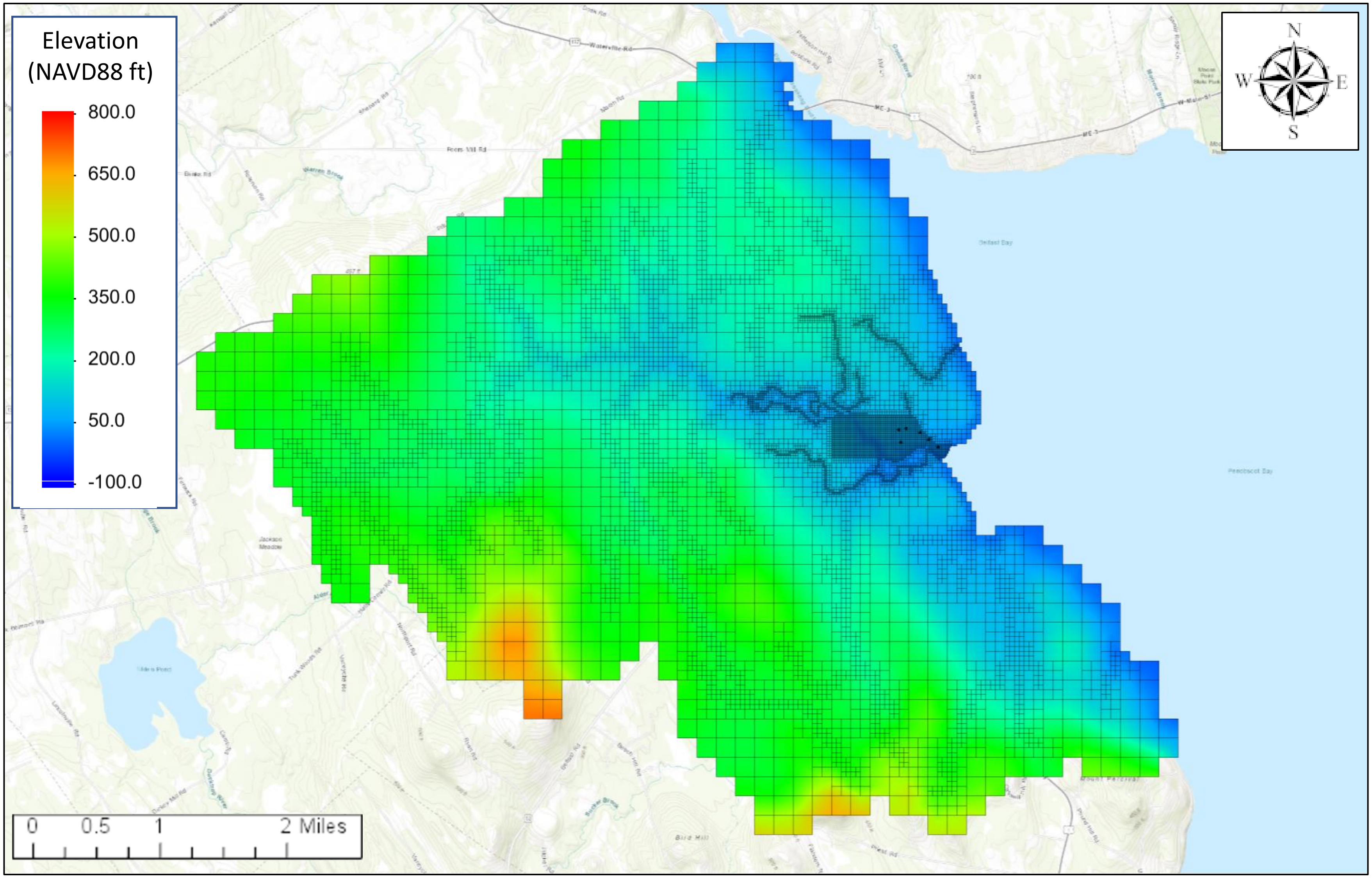

Figure 4 – Model top elevations.

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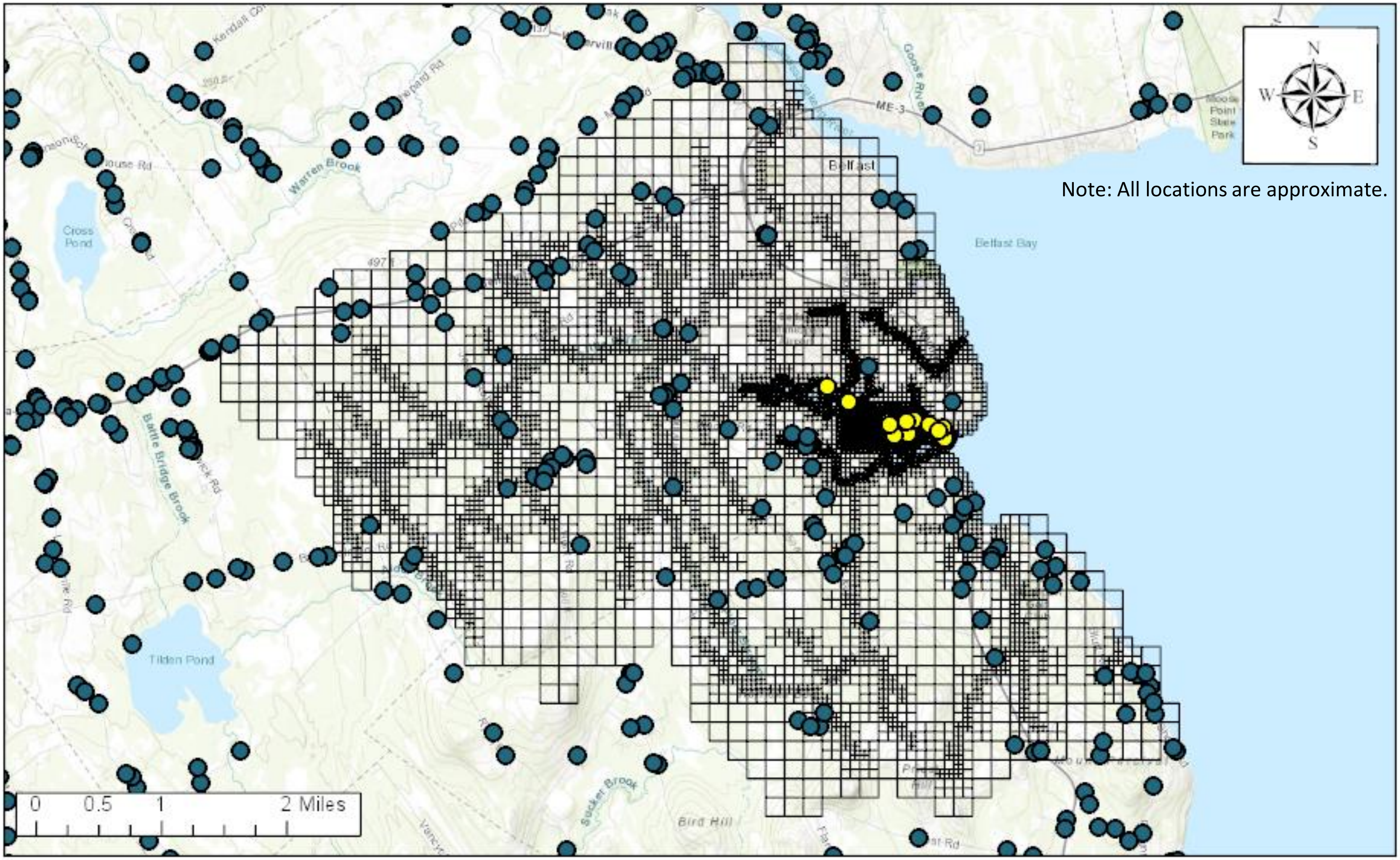

— Model grid cells ● — Site wells ● — Maine Geologic Survey private wells

Figure 5 – Locations of wells records used to support model layering.

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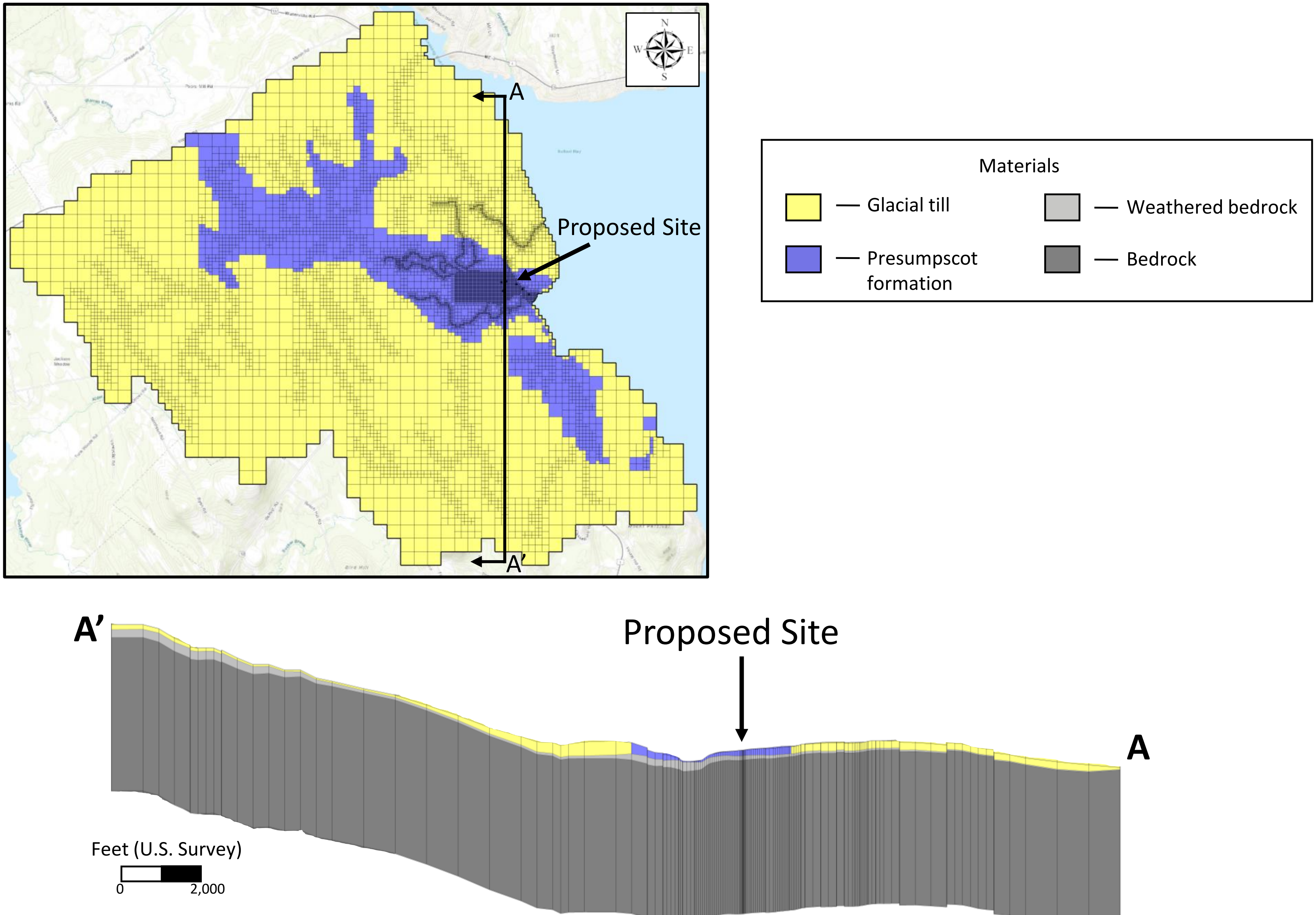

Note: 10:1 horizontal to vertical scale magnification.

Figure 6a – North/south cross-section illustrating model layering.

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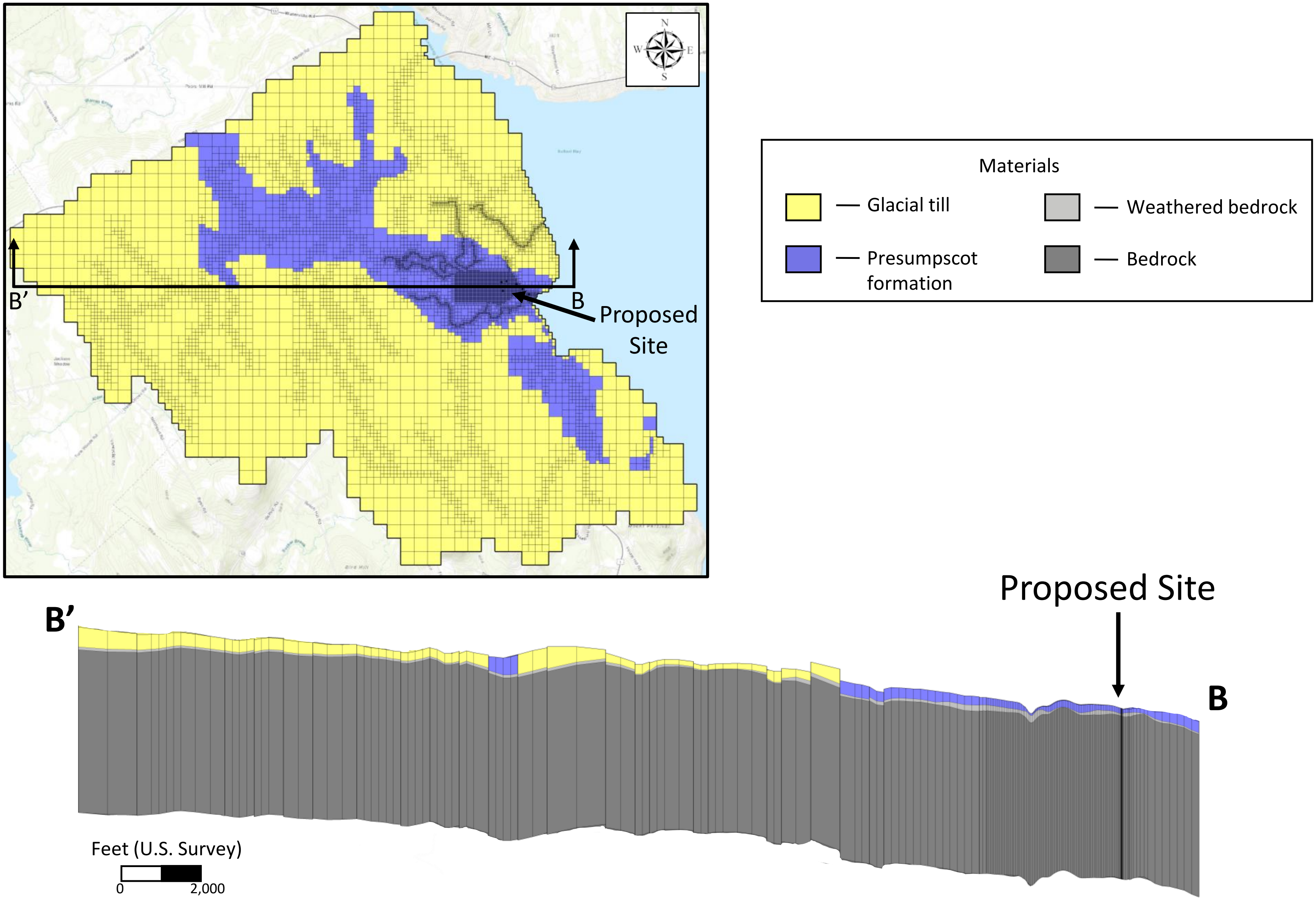

Note the 10:1 horizontal to vertical scale magnification.

Figure 6b – East-west cross-section illustrating model layering.

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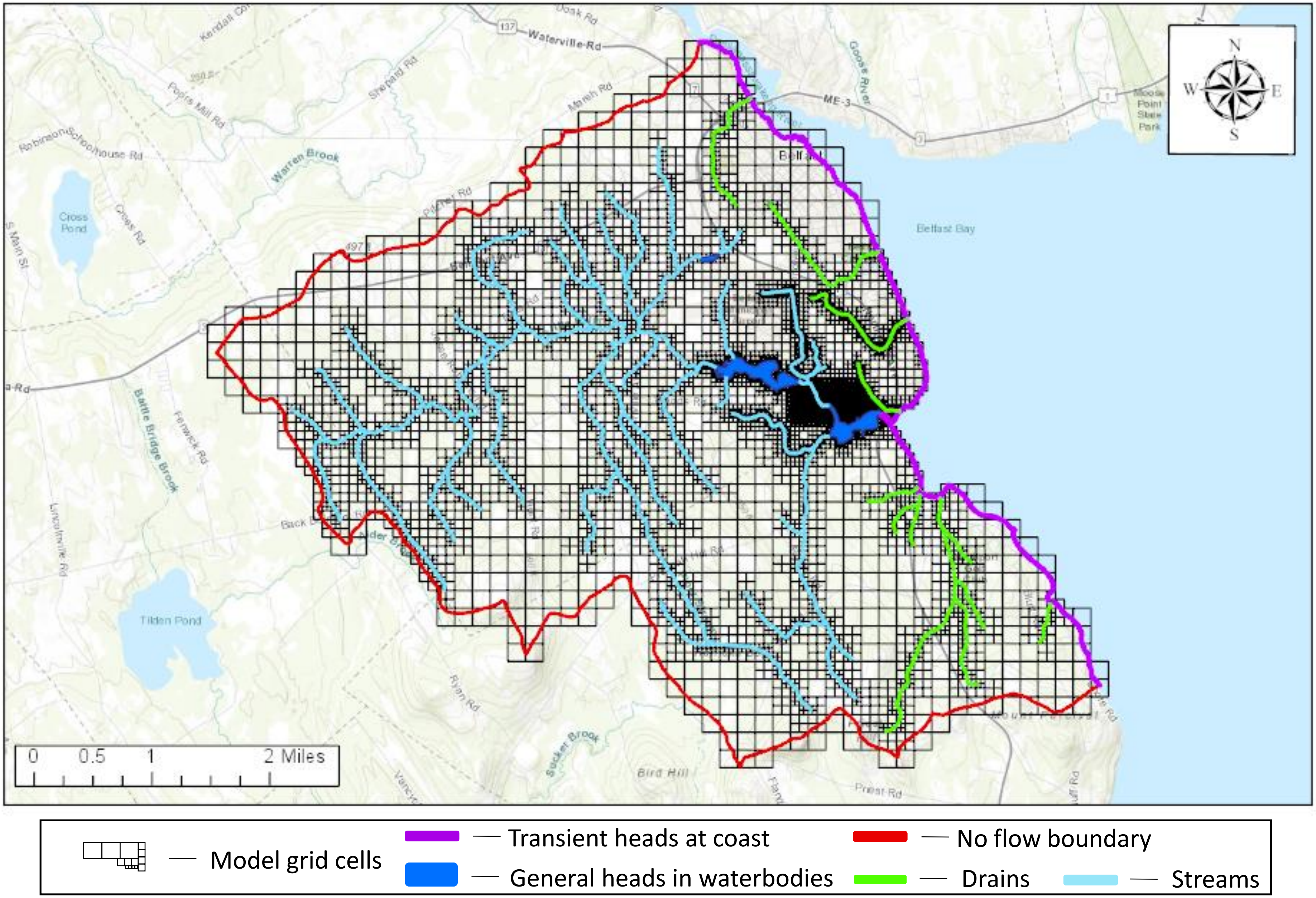

Figure 7 – Approximate locations of model boundary conditions in layer 1.

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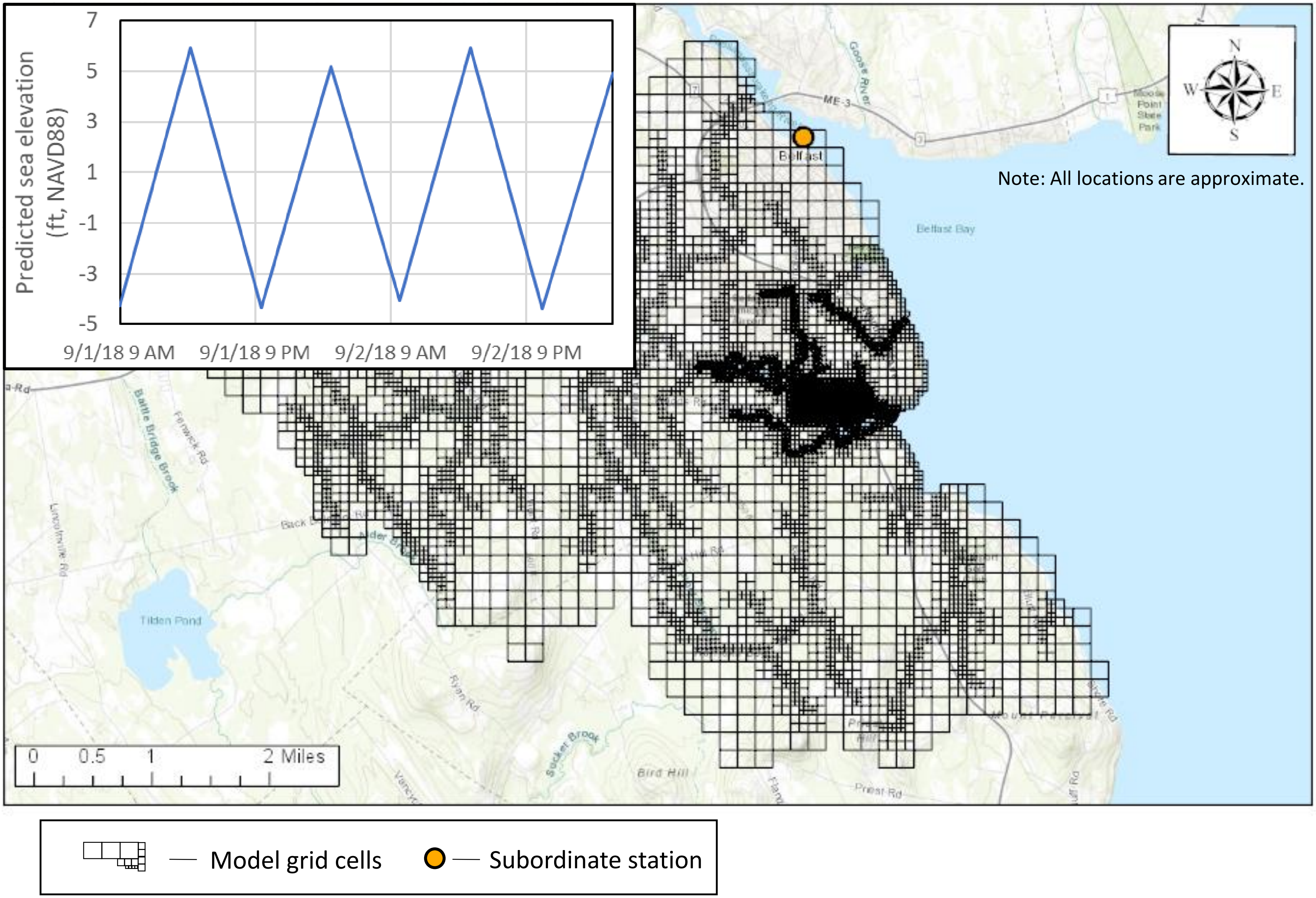

Figure 8 – Location of NOAA subordinate station ID 8415191.

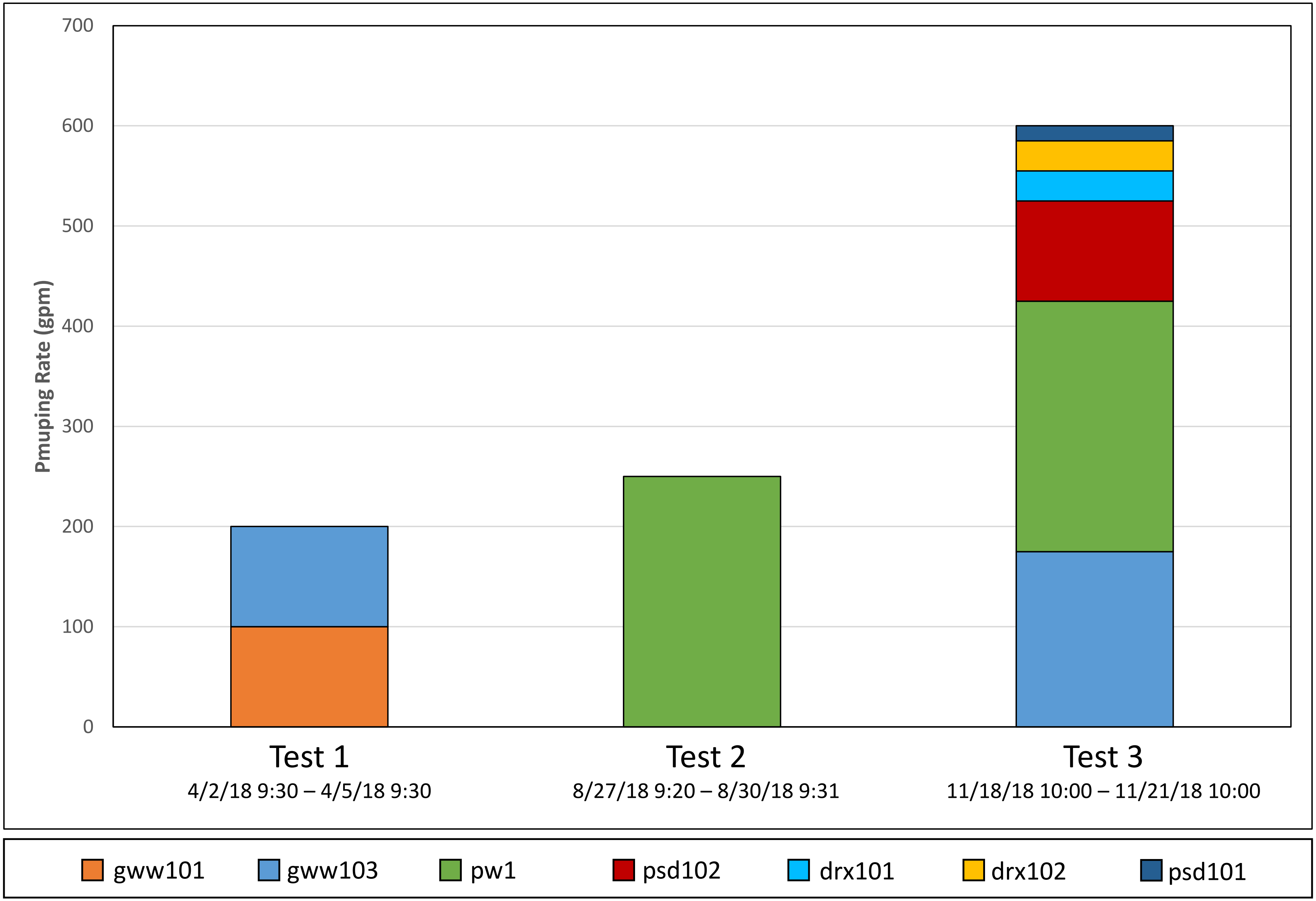

Figure 9a – Planned pumping rates during calibration stress periods.

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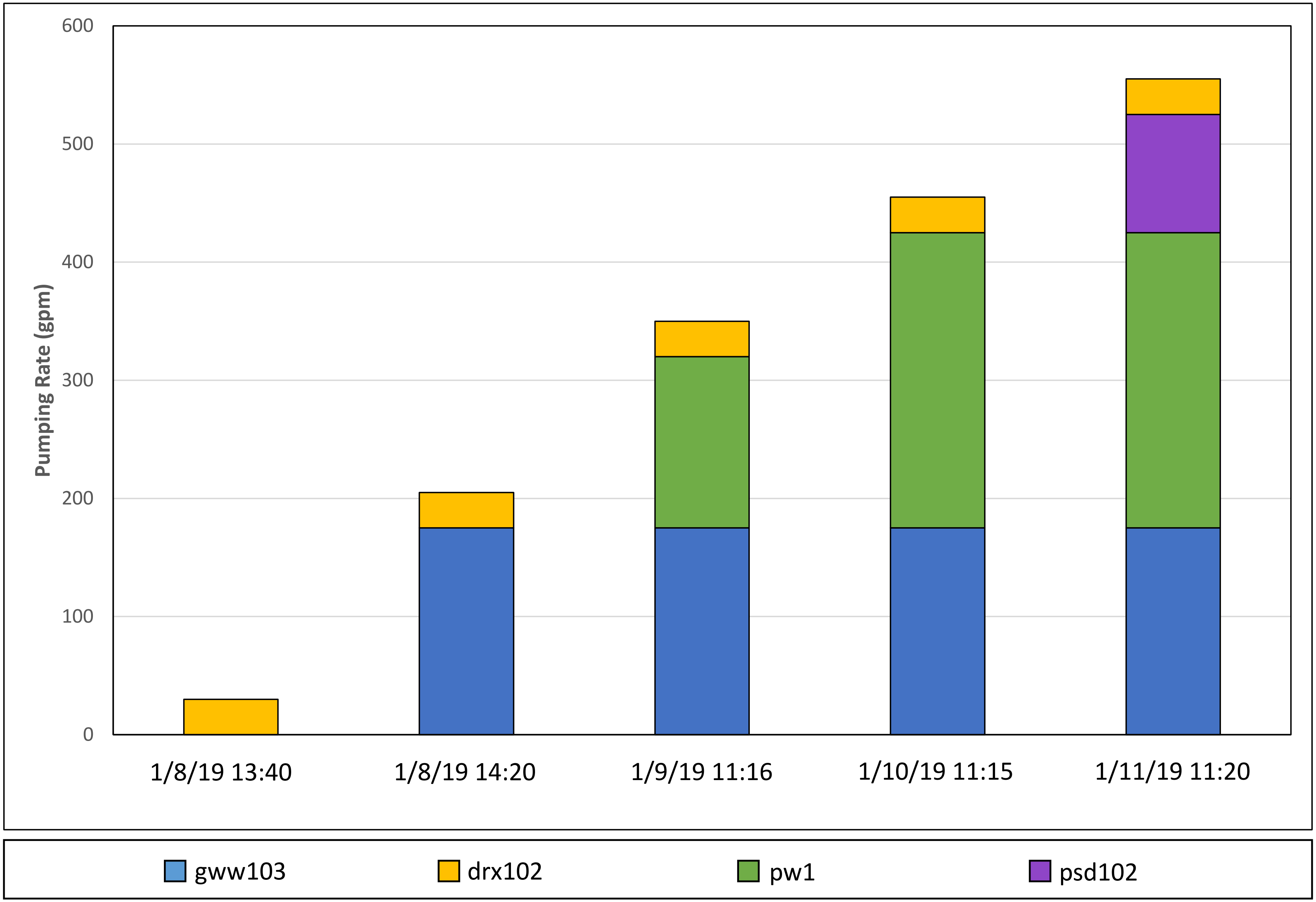

Figure 9b – Planned pumping rates during verification stress periods.

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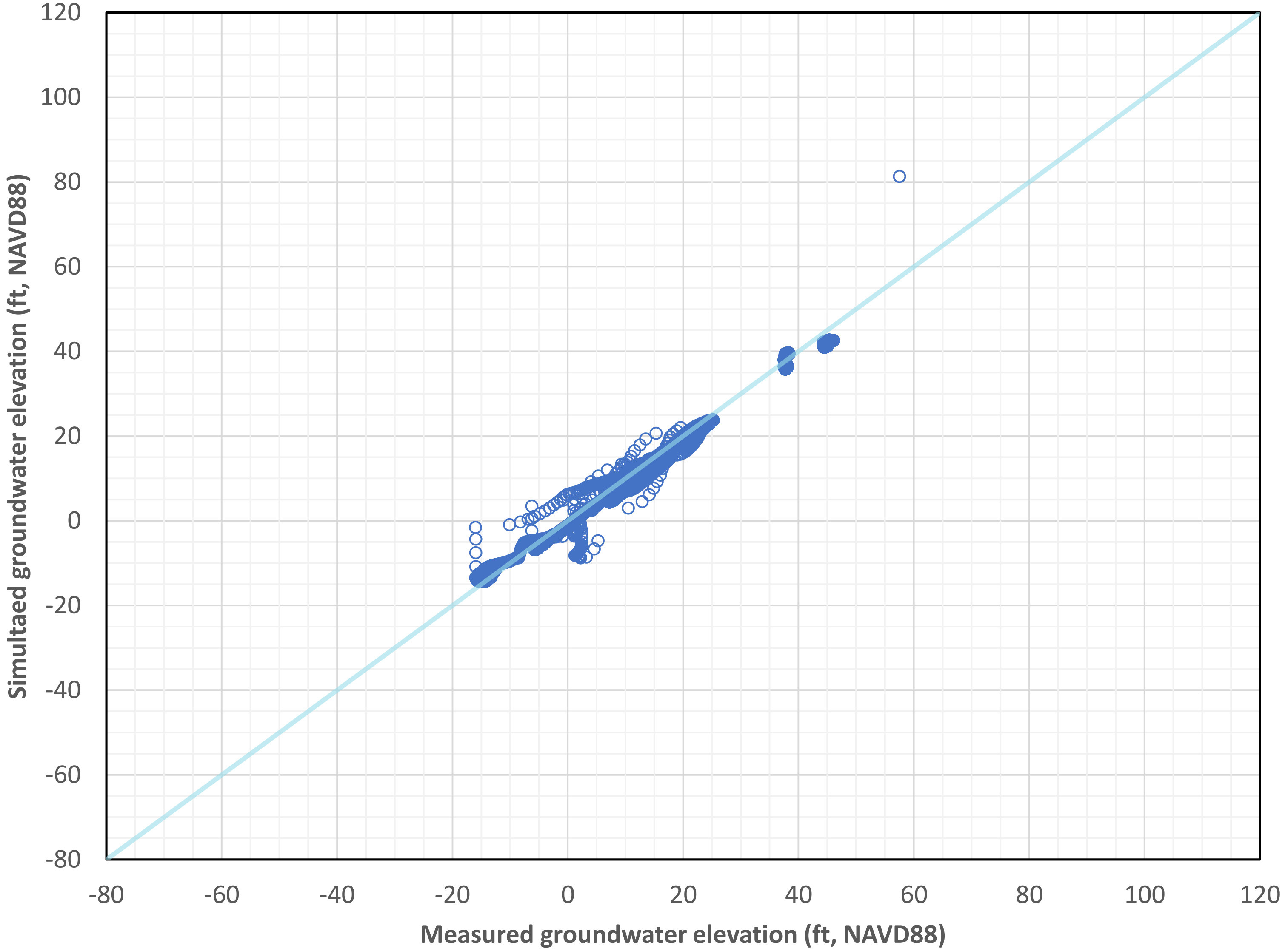

Figure 10a – Measured and simulated groundwater elevations at monitored wells for pumping test 1 (3/30/2018 - 4/9/2018).

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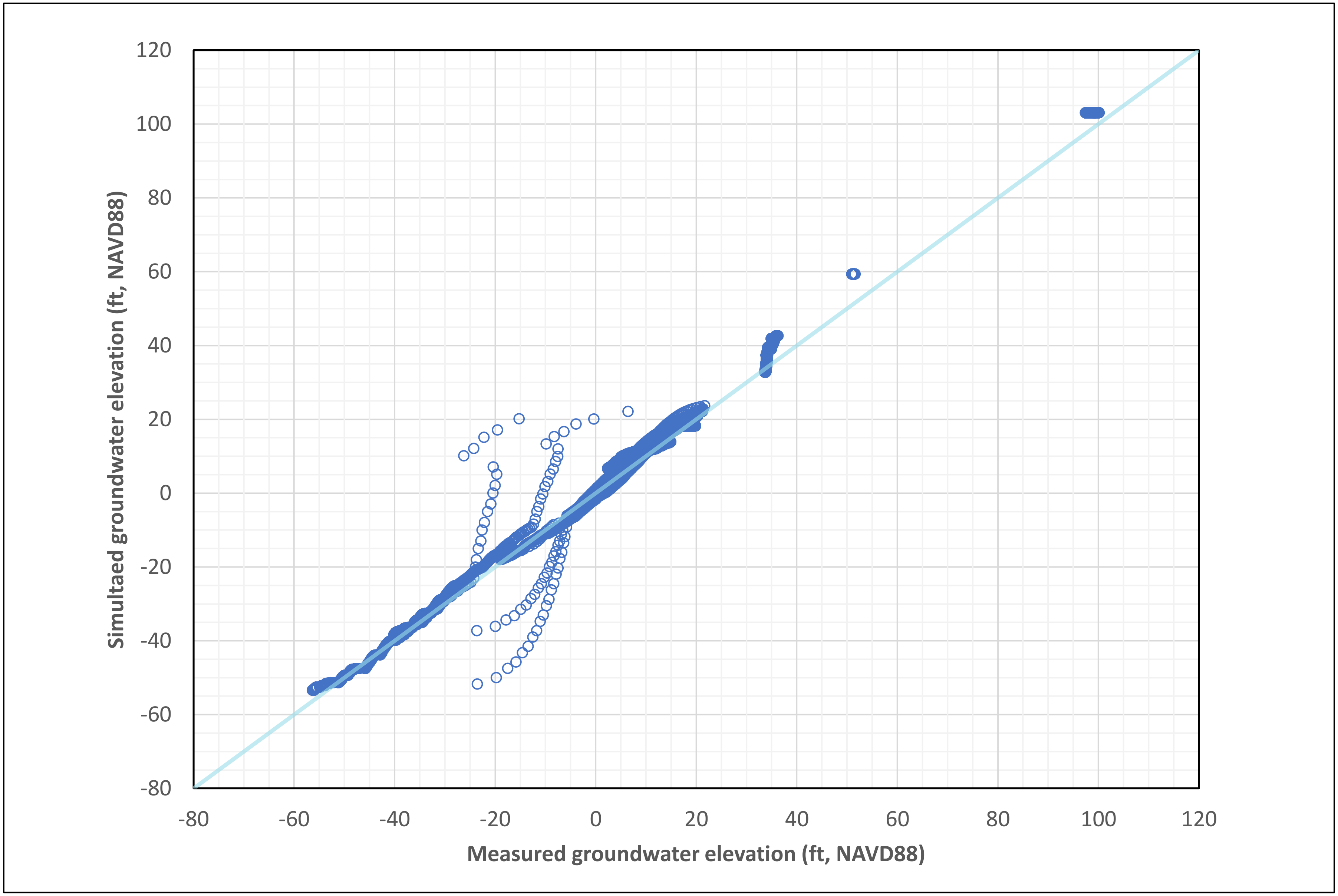

Figure 10b – Measured and simulated groundwater elevations at monitored wells for pumping test 2 (8/27/2018 - 9/5/2018).

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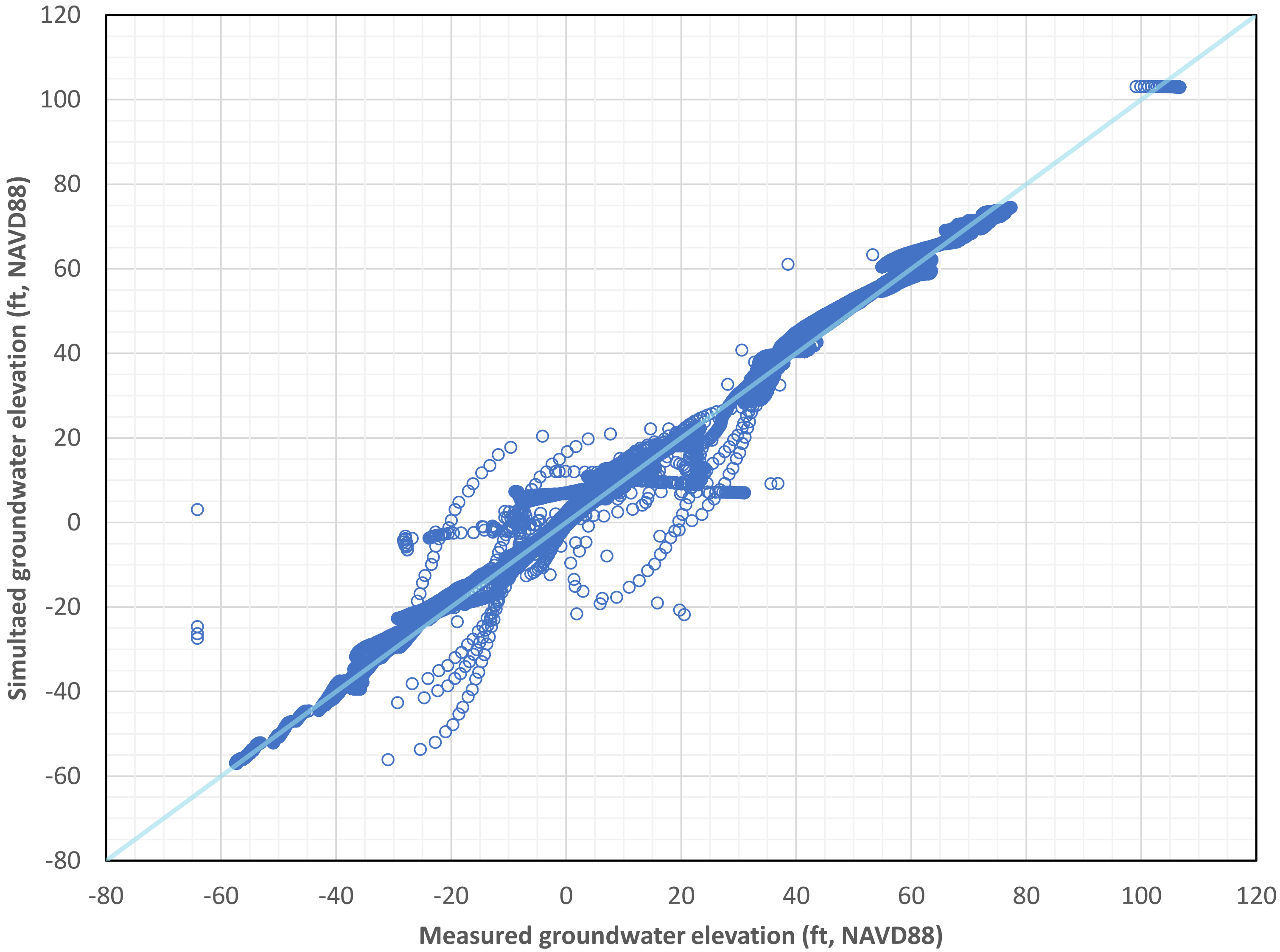

Figure 10c – Measured and simulated groundwater elevations at monitored wells for pumping test 3 (11/18/2018 – 11/29/2018).

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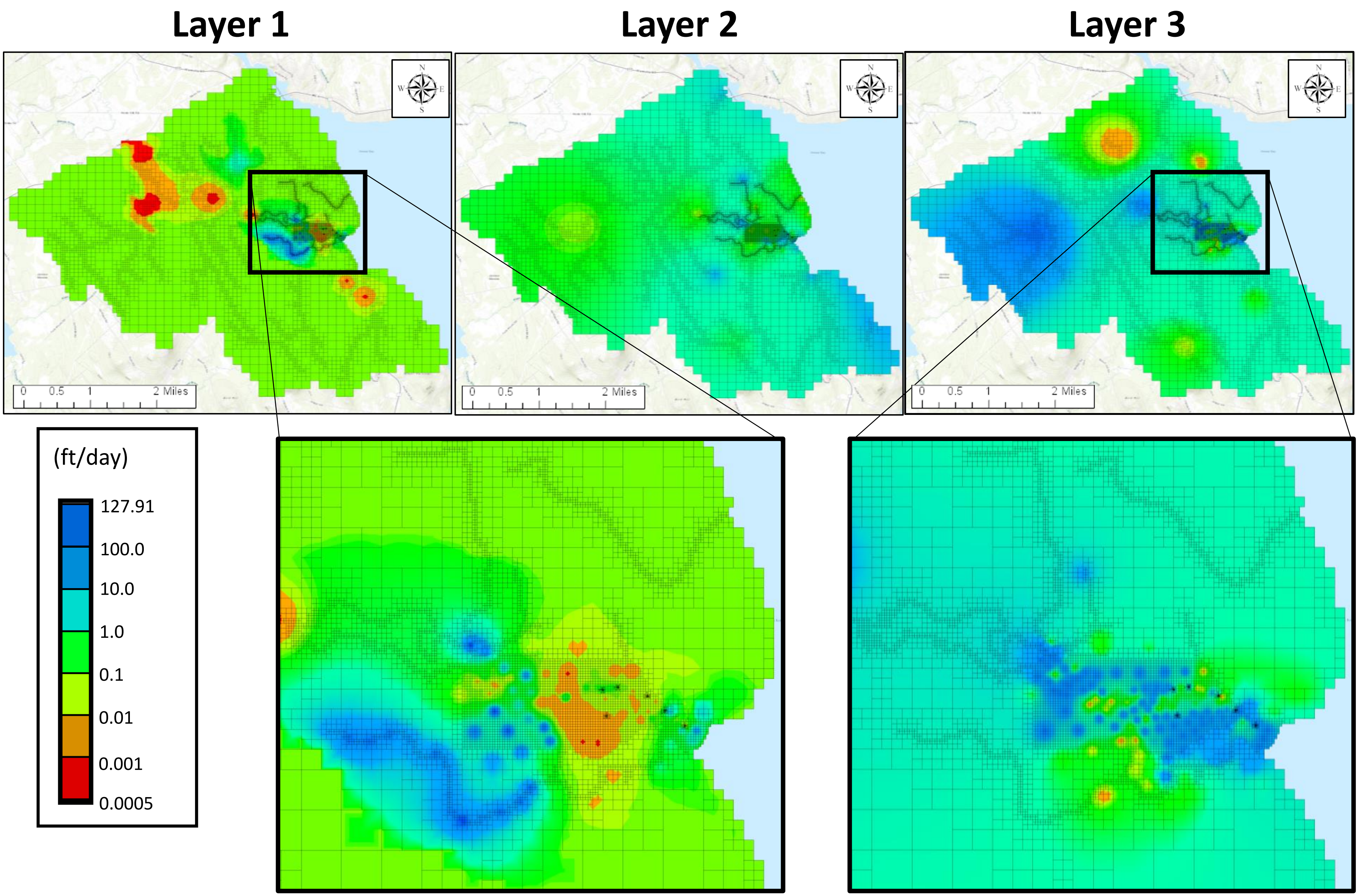

Layer 1

Layer 2

Layer 3

Figure 11 – Final calibrated hydraulic conductivity fields by model layer.

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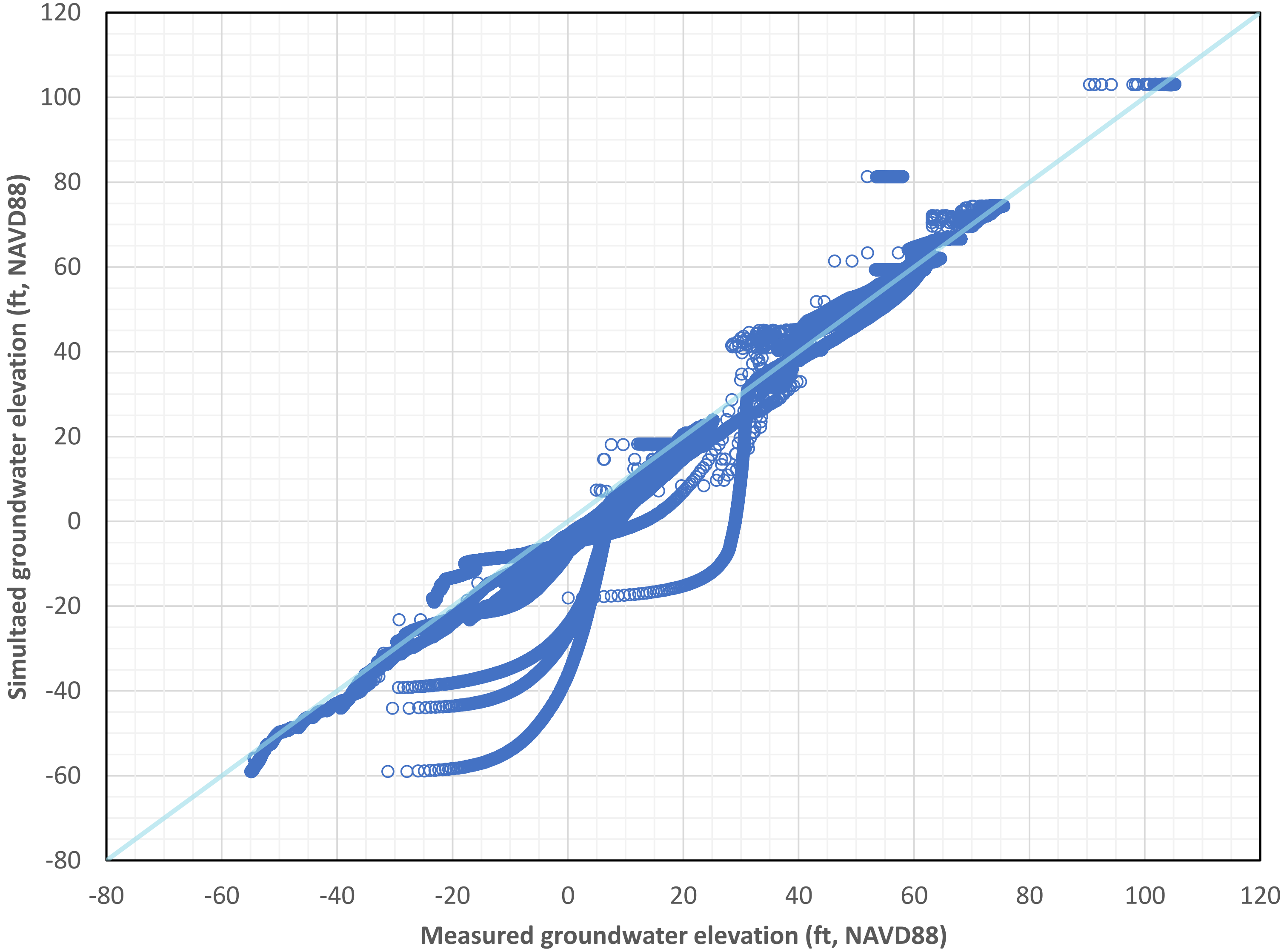

Figure 12 – Measured and simulated groundwater elevations at monitored wells for pumping test 4 (1/8/2019 – 1/18/2019).

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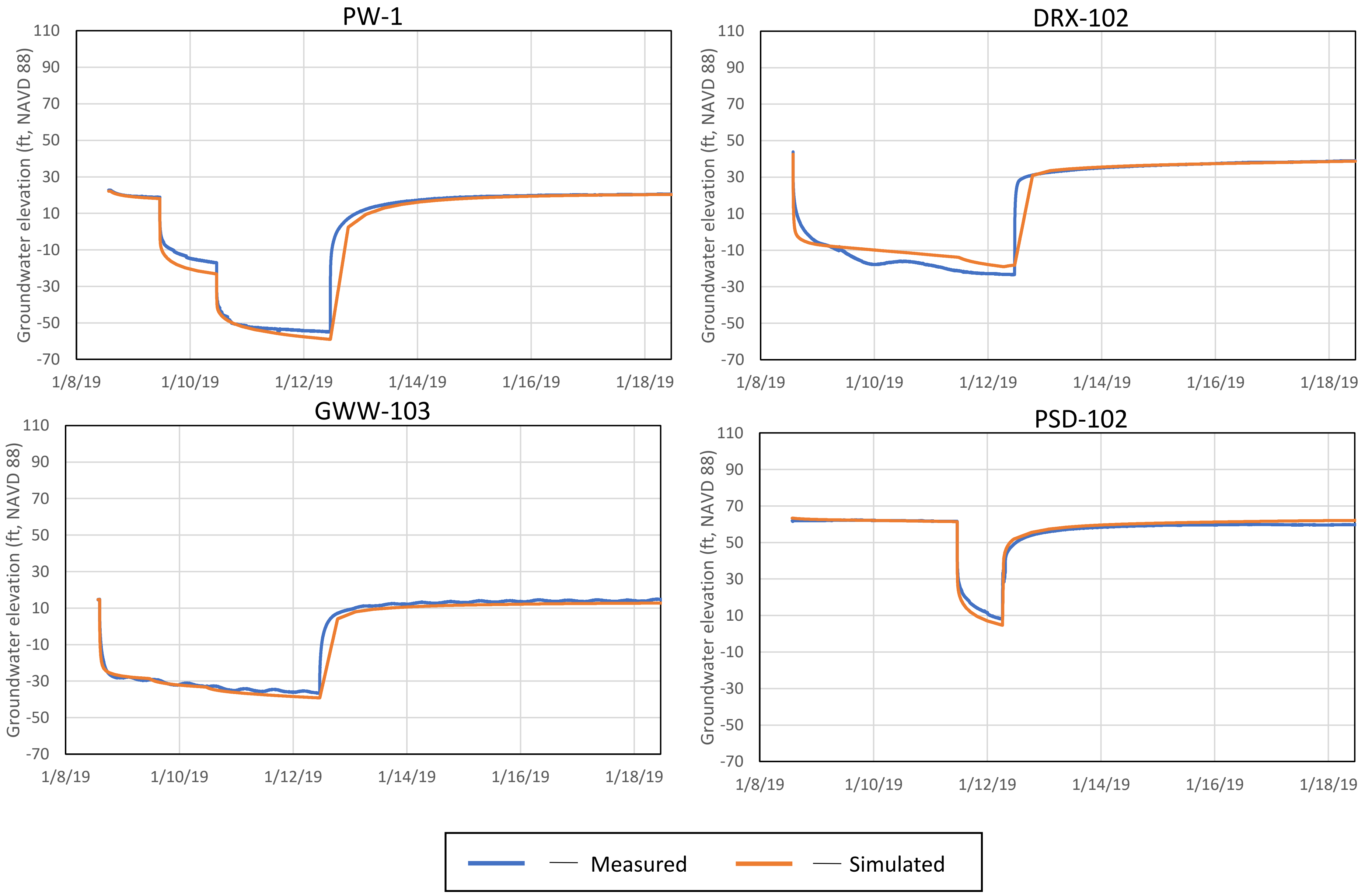

Figure 13 – Measured and simulated groundwater elevations at pumping wells PW-1, DRX-102, GWW-103, and PSD-102 for pumping test 4 (1/8/19 - 1/18/19).

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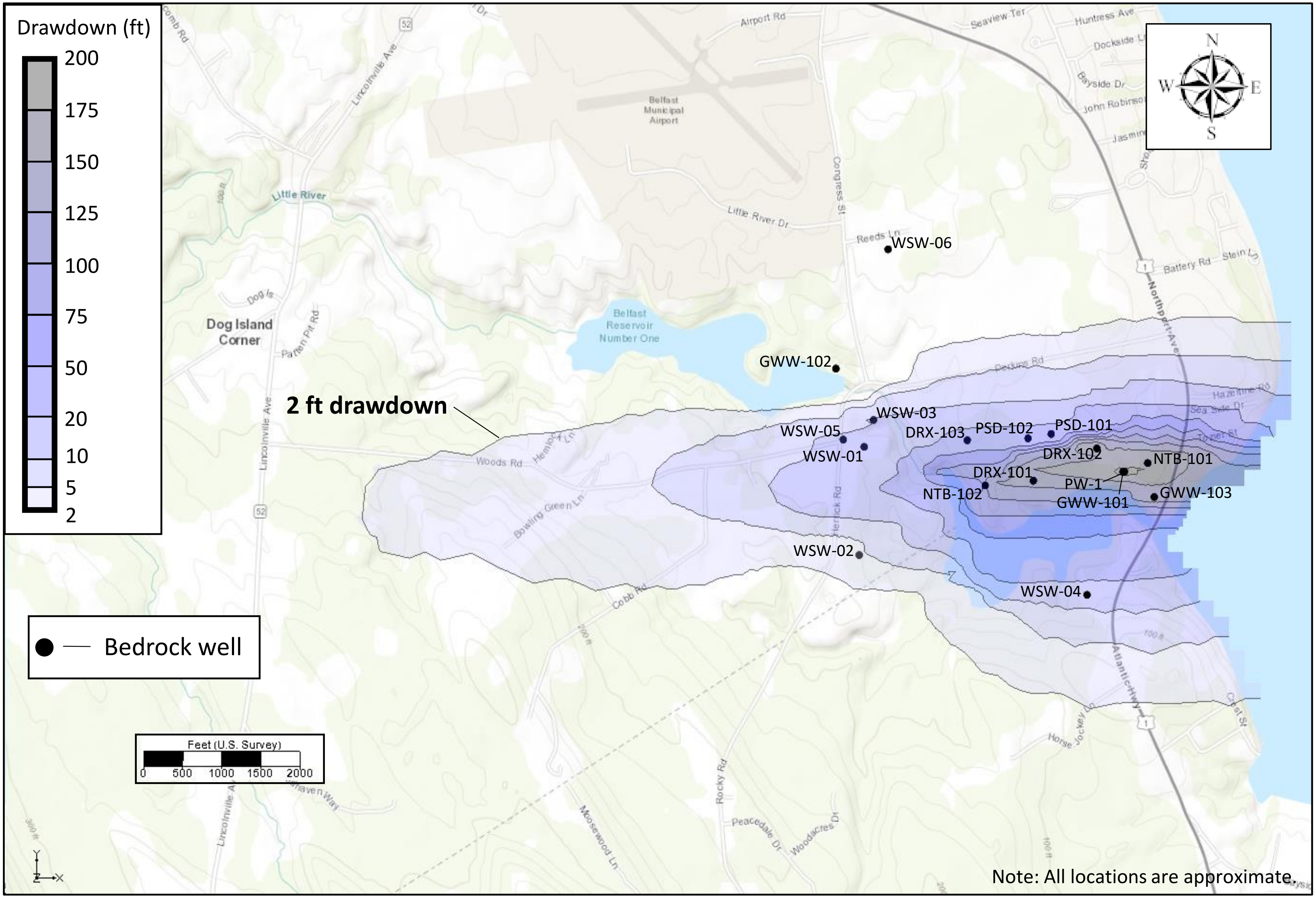

Figure 14a – Simulated maximum drawdown for scenario 1 within model layer 3.

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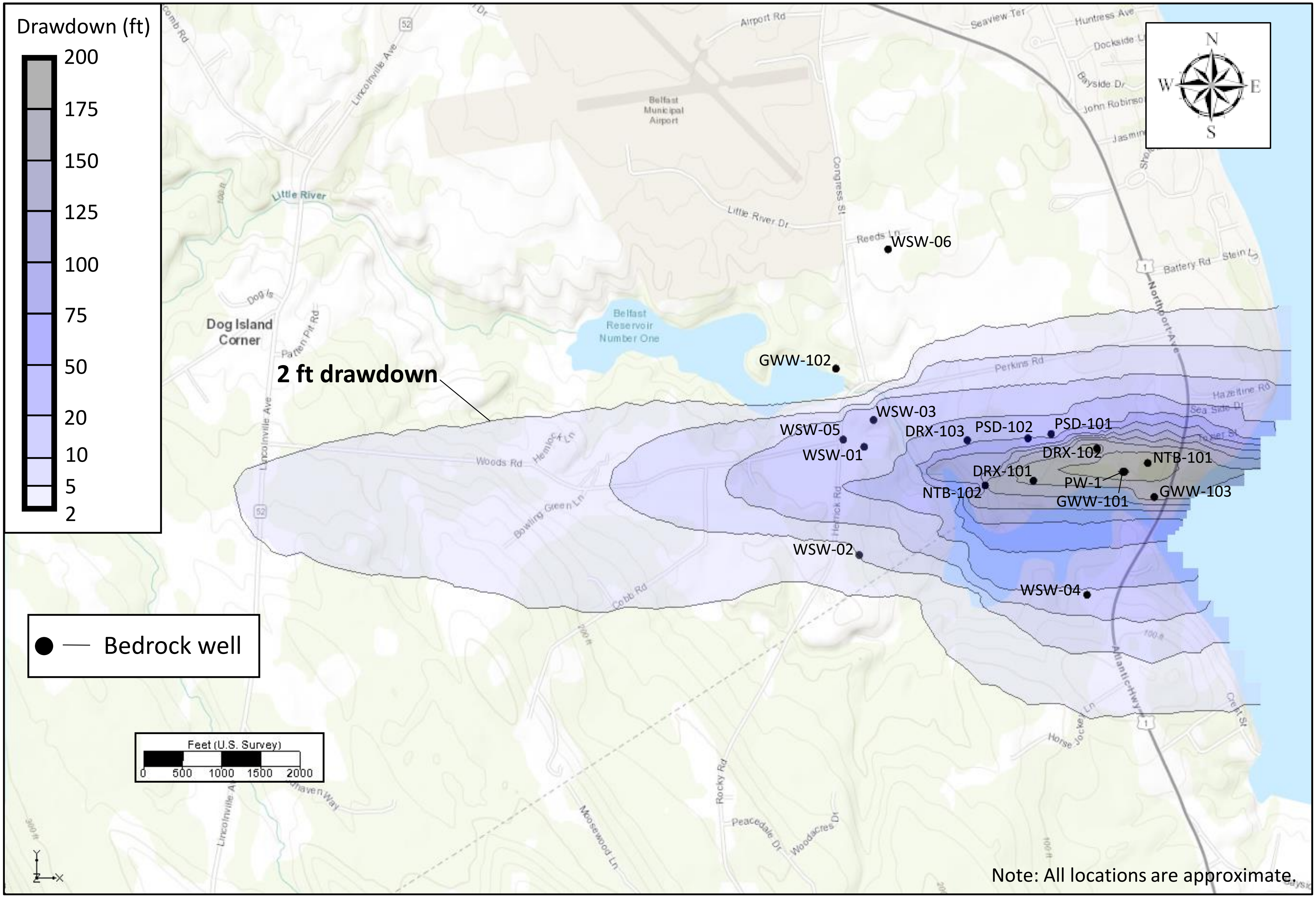

Figure 14b – Simulated maximum drawdown for scenario 2 within model layer 3.

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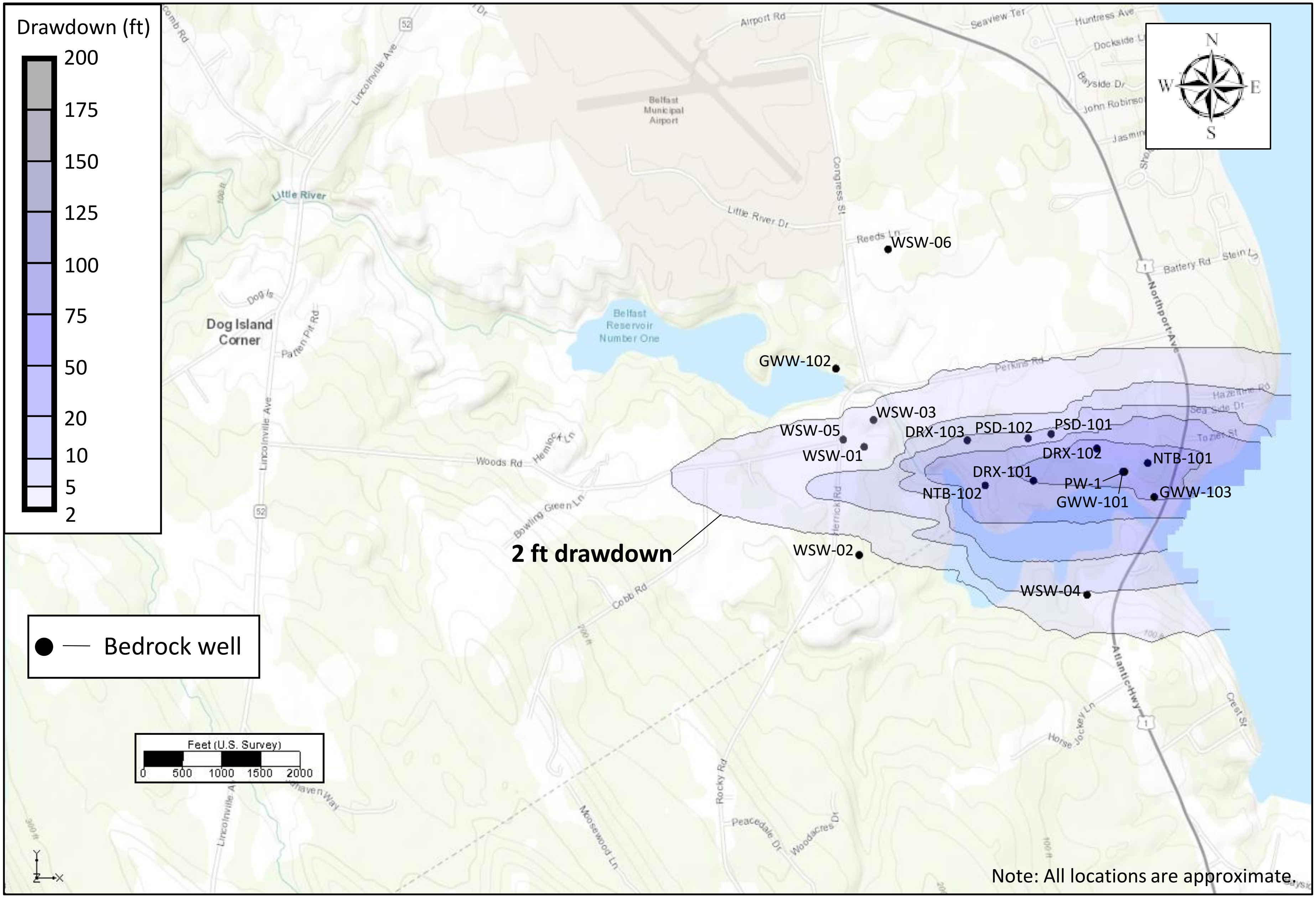

Figure 14c – Simulated maximum drawdown for scenario 3 within model layer 3.

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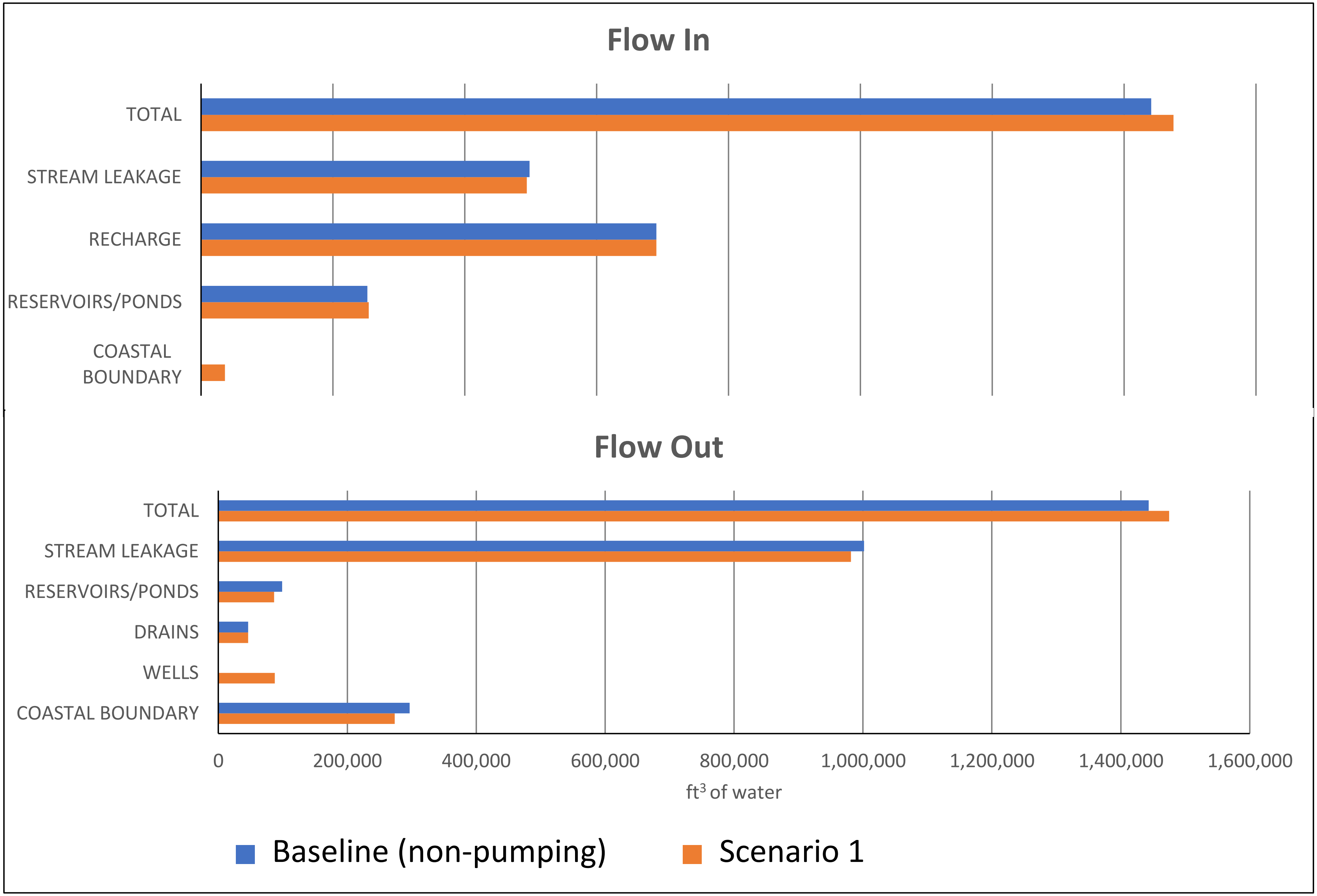

Figure 15 – Steady-state flow budget comparison.

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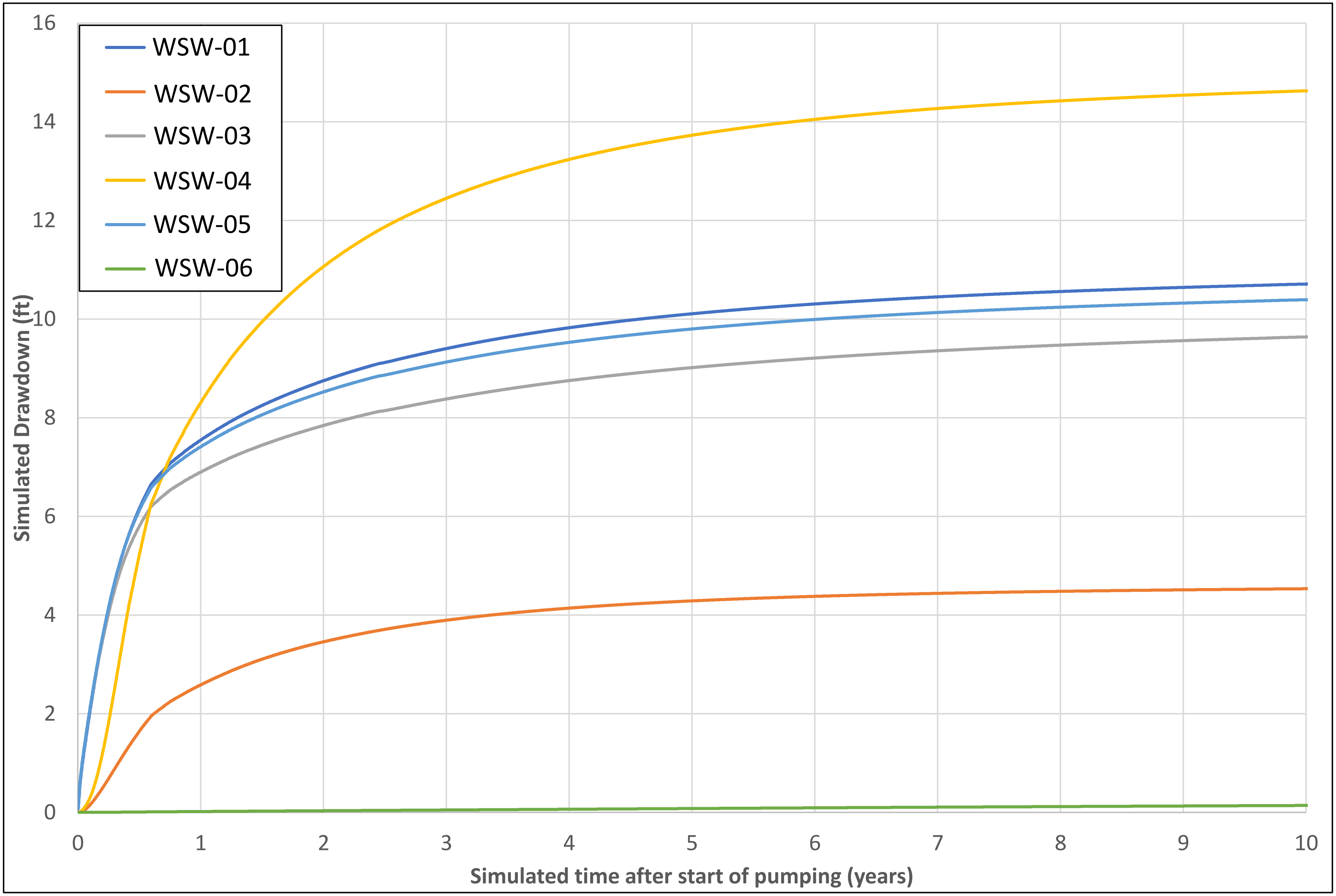

Figure 16a – Simulated drawdown at private bedrock wells for Scenario 1.

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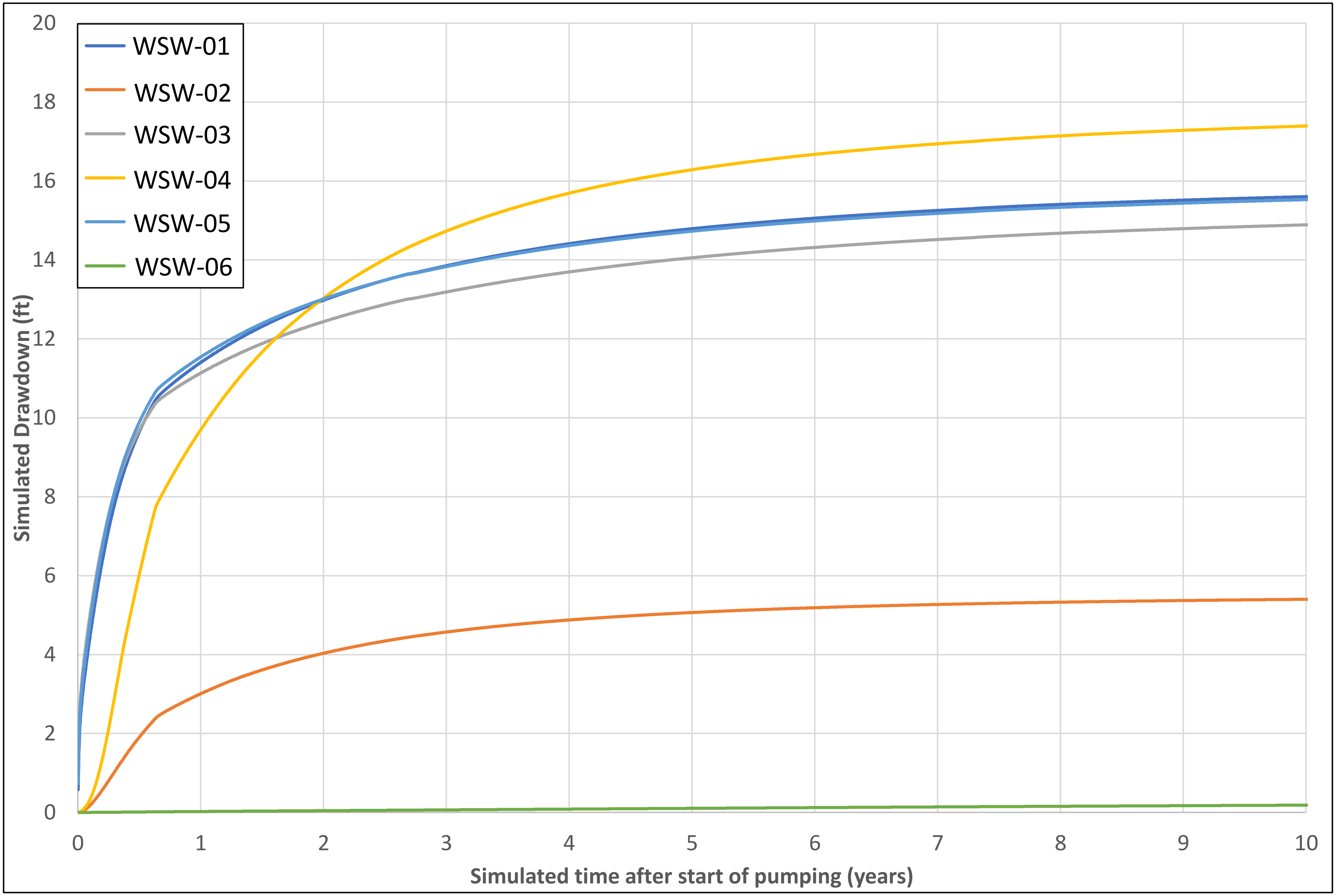

Figure 16b – Simulated drawdown at private bedrock wells for Scenario 2.

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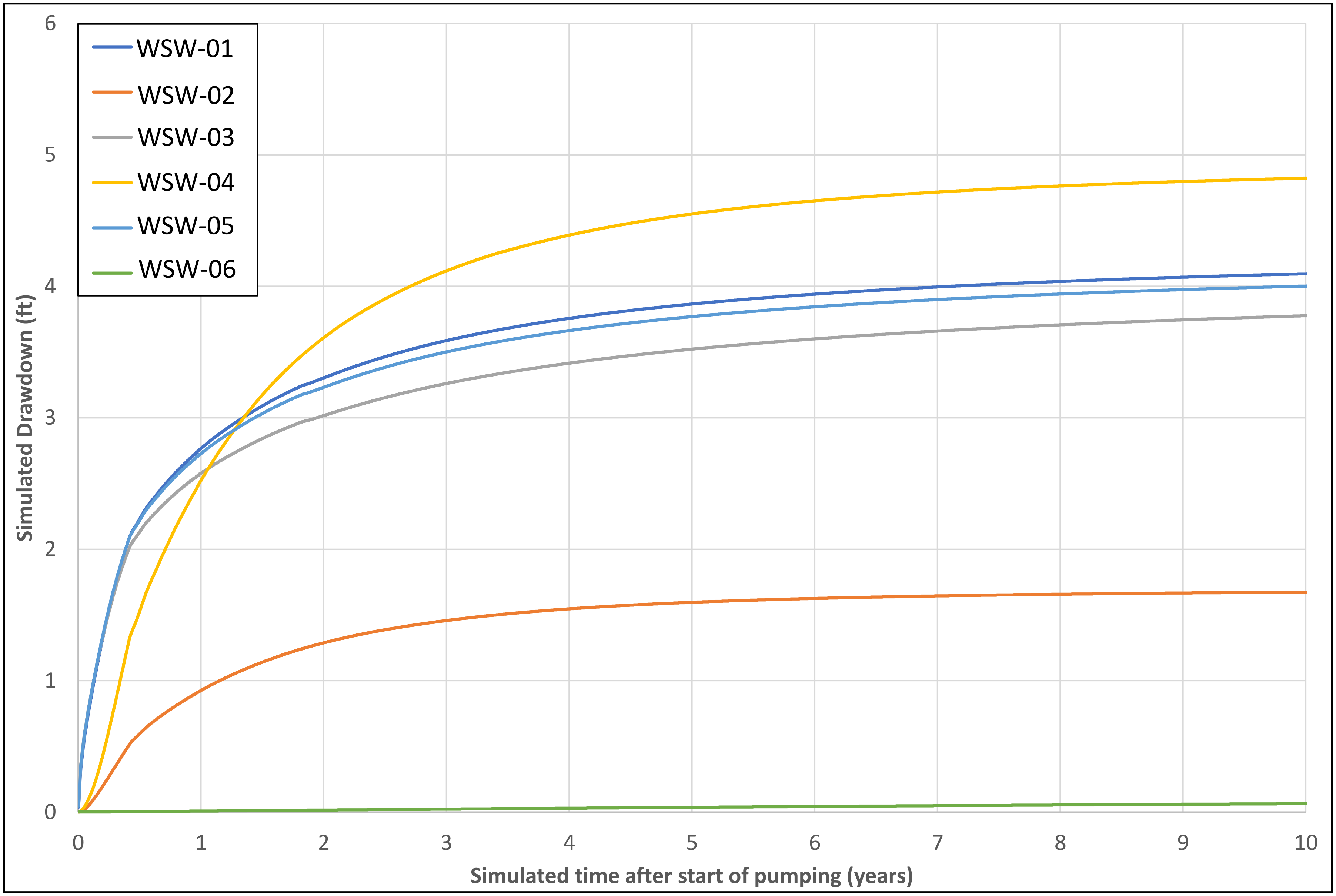

Figure 16c – Simulated drawdown at private bedrock wells for Scenario 3.

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Summary of Groundwater Modeling to Support Significant Groundwater Well Permit Application

Proposed Nordic Aquafarms Facility

Belfast, Maine

Appendix A

Supplemental Tables and Figures

Table A1. Target mean residuals and residual 10th and 90th percentiles during pumping test 1 (3/30/2018 – 4/9/2018).

	Residual Statistics (ft)		
Well ID	**Mean**	**10th Percentile**	**90th Percentile**
DRX-101	1.1	0.7	1.5
DRX-102	3.0	2.5	3.5
DRX-103	-	-	-
GWW-101	0.4	0.0	1.1
GWW-102	-	-	-
GWW-103	-0.2	-2.0	0.9
NTB-101	2.0	1.3	2.9
NTB-102	-0.1	-1.5	1.7
PSD-101	-	-	-
PSD-102	-	-	-
PW-1	-	-	-
PZ1D	-	-	-
PZ1S	-	-	-
PZ3	-	-	-
PZ4S	-	-	-
WSW-01	-	-	-
WSW-02	-	-	-
WSW-03	-	-	-
WSW-04	-	-	-
WSW-05	-	-	-
WSW-06	-	-	-

Note: Residual value calculated as [measured elevation – simulated elevation].

Table A2. Target mean residuals and residual 10th and 90th percentiles during pumping test 2 (8/27/2018 – 9/5/2018).

	Residual Statistics (ft)		
Well ID	**Mean**	**10th Percentile**	**90th Percentile**
DRX-101	-1.8	-3.1	-0.7
DRX-102	-5.8	-6.8	-4.6
DRX-103	-	-	-
GWW-101	-1.2	-1.9	-0.9
GWW-102	-8.1	-8.4	-7.9
GWW-103	-1.4	-4.2	0.6
NTB-101	-1.1	-2.3	0.9
NTB-102	-1.8	-3.7	0.5
PSD-101	-	-	-
PSD-102	-	-	-
PW-1	-0.9	-2.0	0.0
PZ1D	-	-	-
PZ1S	-	-	-
PZ3	-	-	-
PZ4S	-	-	-
WSW-01	-	-	-
WSW-02	-	-	-
WSW-03	-	-	-
WSW-04	-0.1	-1.7	1.5
WSW-05	-	-	-
WSW-06	-3.8	-4.4	-3.3

Note: Residual value calculated as [measured elevation – simulated elevation].

Table A3. Target mean residuals and residual 10th and 90th percentiles during pumping test 3 (11/18/2018 – 11/29/2018).

	Residual Statistics (ft)		
Well ID	**Mean**	**10th Percentile**	**90th Percentile**
DRX-101	0.0	-1.4	1.0
DRX-102	-0.2	-1.4	3.2
DRX-103	0.2	-1.6	1.8
GWW-101	0.5	0.0	1.0
GWW-102	-0.9	-2.0	0.2
GWW-103	0.9	-1.9	2.3
NTB-101	-1.1	-4.0	0.2
NTB-102	0.8	-2.2	4.0
PSD-101	0.2	-3.7	2.1
PSD-102	0.0	-1.8	1.8
PW-1	0.1	-0.7	0.9
PZ1D	1.7	-1.0	4.1
PZ1S	0.1	-0.6	0.7
PZ3	-0.3	-1.1	1.1
PZ4S	2.4	2.1	3.2
WSW-01	0.9	0.0	2.4
WSW-02	-	-	-
WSW-03	-2.0	-5.6	0.7
WSW-04	0.3	-1.1	1.4
WSW-05	0.3	-1.4	1.8
WSW-06	3.0	2.6	3.5

Note: Residual value calculated as [measured elevation – simulated elevation].

Table A4. Target mean residuals and residual 10th and 90th percentiles during pumping test 4 (1/8/2019 – 1/18/2019).

	Residual Statistics (ft)		
Well ID	**Mean**	**10th Percentile**	**90th Percentile**
DRX-101	3.3	0.9	7.8
DRX-102	-0.9	-6.3	0.4
DRX-103	-0.5	-1.8	0.2
GWW-101	2.1	0.0	4.1
GWW-102	-2.3	-5.1	-0.2
GWW-103	2.1	0.1	2.8
NTB-101	1.6	-0.4	5.6
NTB-102	2.8	0.2	5.2
PSD-101	-0.6	-1.8	1.0
PSD-102	-0.7	-2.3	0.1
PW-1	2.5	0.1	6.0
PZ1D	1.8	0.9	2.4
PZ1S	0.0	-0.9	1.1
PZ3	-0.9	-2.1	1.3
PZ4S	2.3	1.7	3.1
WSW-01	0.1	-0.6	0.8
WSW-02	-24.8	-25.7	-23.7
WSW-03	-2.1	-3.5	-0.7
WSW-04	0.1	-1.6	1.6
WSW-05	-0.7	-1.6	0.3
WSW-06	1.4	0.8	1.9

Note: Residual value calculated as [measured elevation – simulated elevation].

Table A5. Maximum simulated drawdowns under estimated average recharge conditions for scenarios 1 – 3.

	Drawdown (ft)		
Well ID	**Scenario 1**	**Scenario 2**	**Scenario 3**
DRX-101	133.2	158.2	50.9
DRX-102	180.4	198.1	75.7
DRX-103	28.8	46.3	11.3
GWW-101	187.2	206.3	76.3
GWW-102	0.2	0.2	0.1
GWW-103	153.6	169.0	58.9
NTB-101	172.6	191.6	68.4
NTB-102	90.8	106.1	33.9
PSD-101	29.7	45.4	11.7
PSD-102	29.6	56.8	11.6
PW-1	202.1	221.3	83.8
PZ1D	9.6	9.7	9.2
PZ1S	5.4	5.4	5.2
PZ3	4.2	4.2	4.1
PZ4S	0.1	0.1	0.1
WSW-01	11.1	16.1	4.3
WSW-02	4.6	5.6	1.7
WSW-03	10.1	15.4	4.0
WSW-04	15.0	17.9	4.9
WSW-05	10.8	16.0	4.2
WSW-06	0.2	0.3	0.1

Table A6. Maximum simulated drawdowns under estimated low recharge conditions for scenarios 1 – 3.

	Drawdown (ft)		
Well ID	**Scenario 1**	**Scenario 2**	**Scenario 3**
DRX-101	143.0	169.9	55.4
DRX-102	190.6	209.7	82.9
DRX-103	36.4	54.9	16.7
GWW-101	197.0	218.1	80.8
GWW-102	0.5	0.5	0.4
GWW-103	162.4	179.8	62.3
NTB-101	182.6	203.6	73.2
NTB-102	102.1	119.6	39.8
PSD-101	37.3	54.1	16.9
PSD-102	37.2	65.4	17.0
PW-1	211.9	233.1	88.3
PZ1D	9.8	9.8	9.6
PZ1S	8.1	8.1	8.0
PZ3	4.9	4.9	4.9
PZ4S	0.2	0.2	0.2
WSW-01	20.1	26.1	11.3
WSW-02	14.0	15.7	9.3
WSW-03	15.9	21.9	8.5
WSW-04	20.3	24.1	8.2
WSW-05	18.7	24.9	10.4
WSW-06	15.0	15.1	14.7

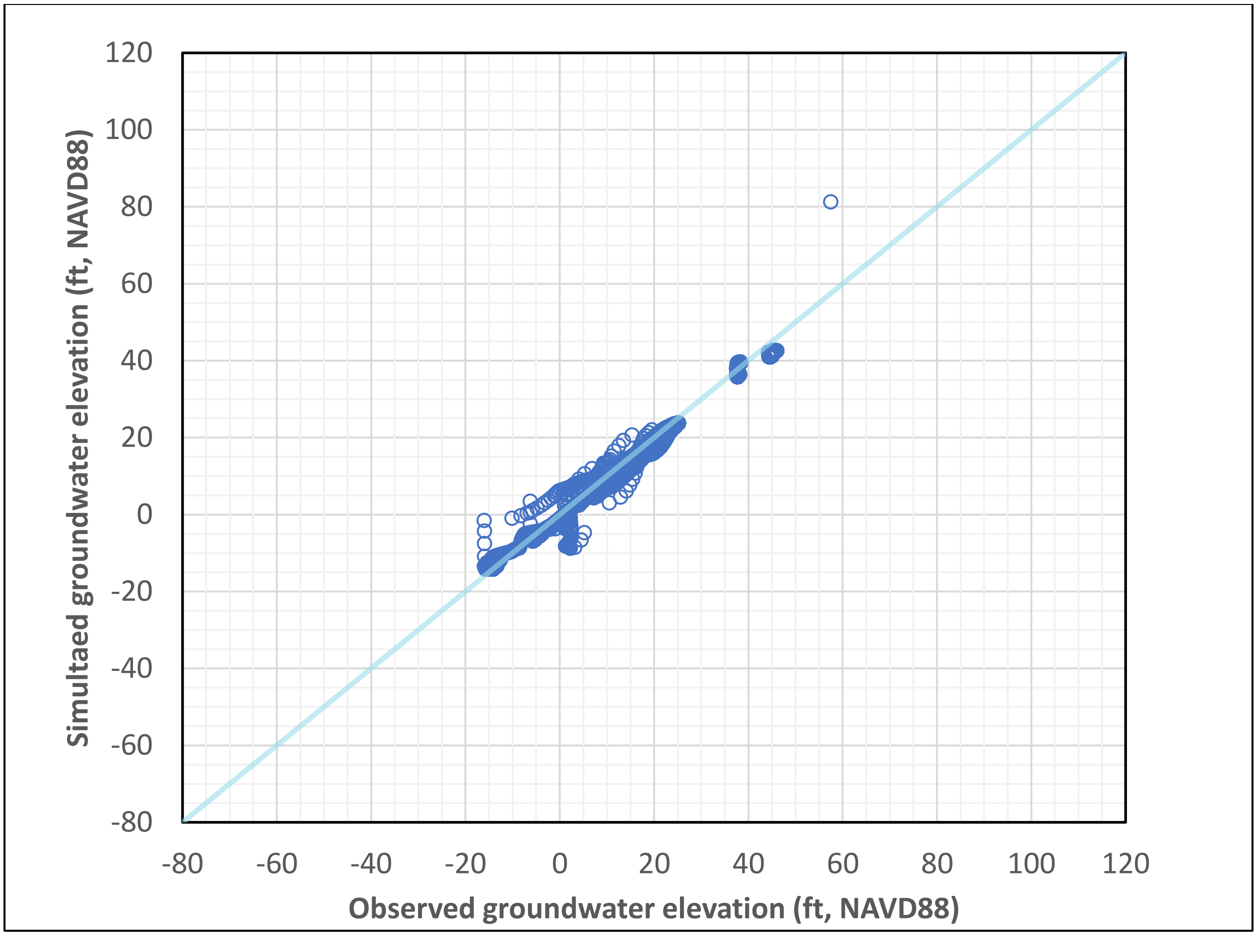


Figure A1. Observed and simulated groundwater elevations at bedrock wells for pumping test 1 (3/30/2018 - 4/9/2018).

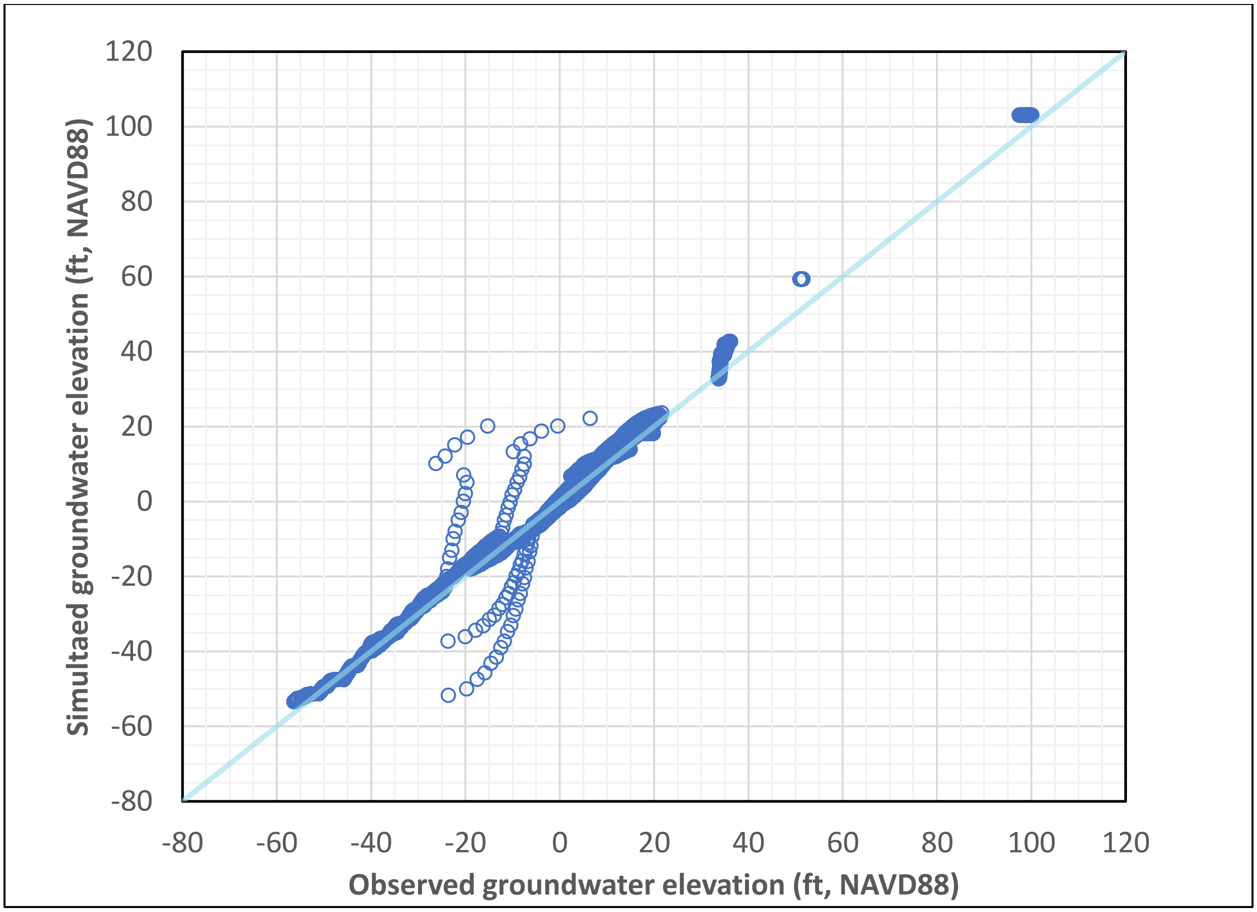


Figure A2. Observed and simulated groundwater elevations at bedrock wells for pumping test 2 (8/27/2018 - 9/5/2018).

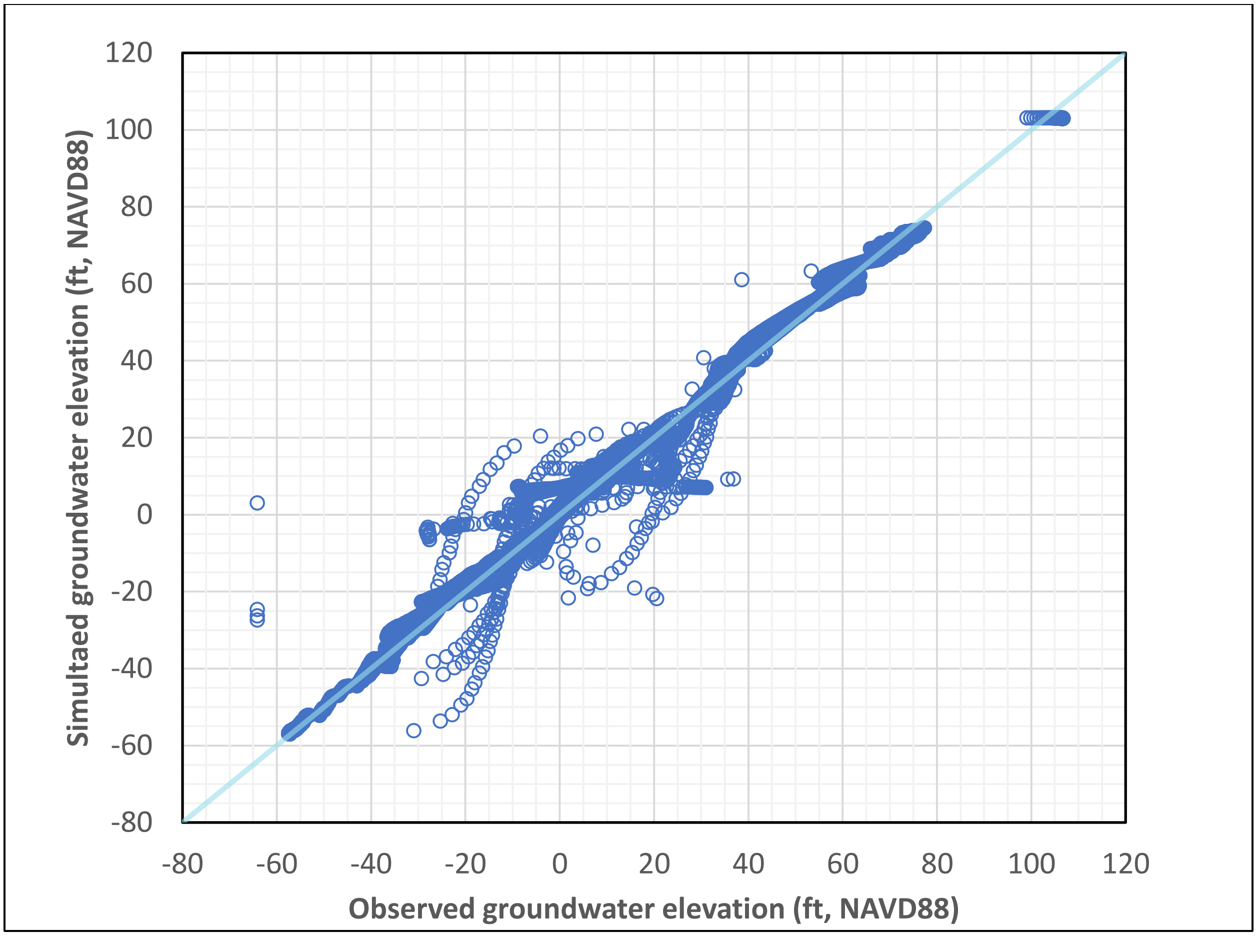


Figure A3. Observed and simulated groundwater elevations at bedrock wells and piezometers for pumping test 3 (11/18/2018 - 11/29/2018).

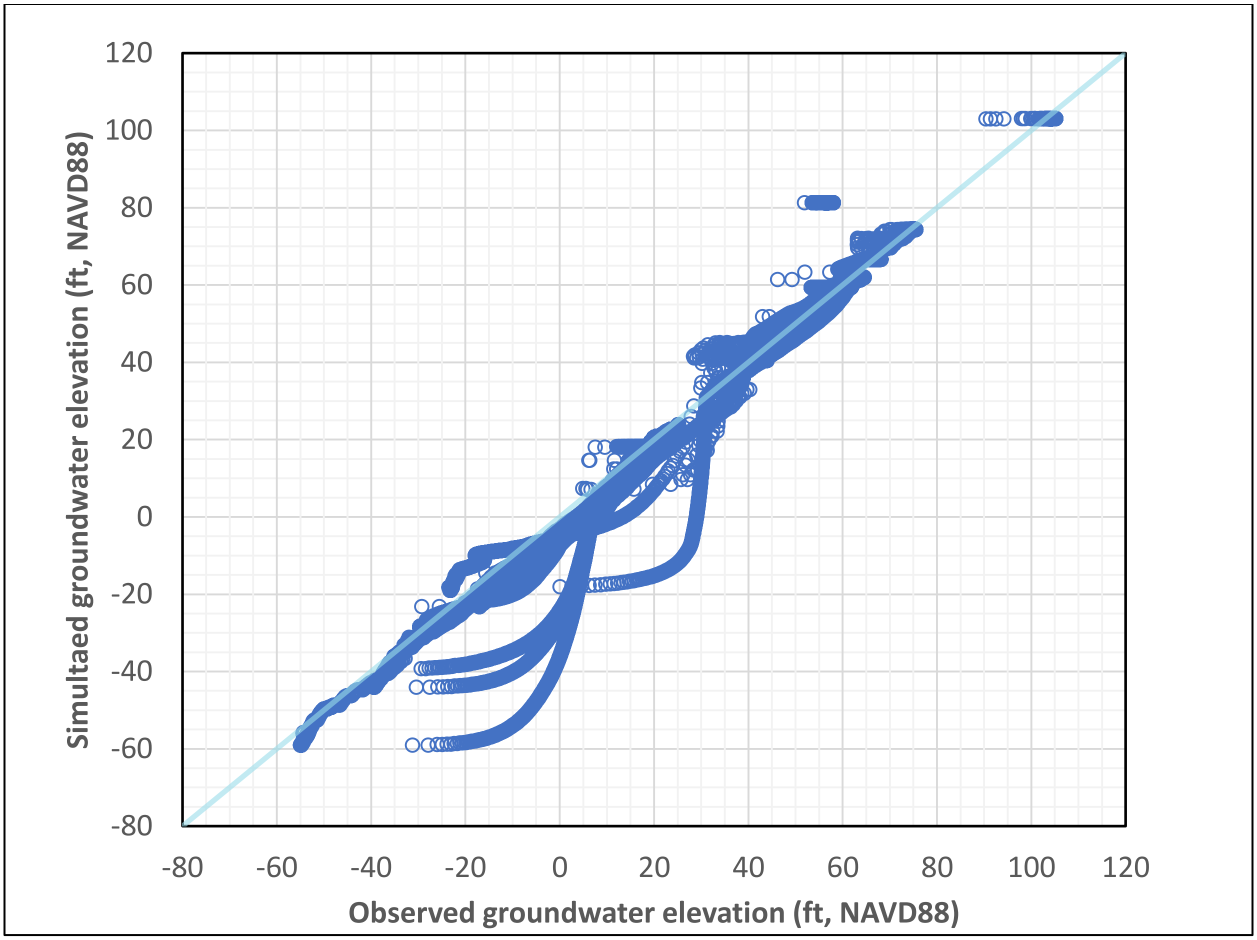


Figure A4. Observed and simulated groundwater elevations at bedrock wells and piezometers for pumping test 4 (1/8/2019 - 1/18/2019).

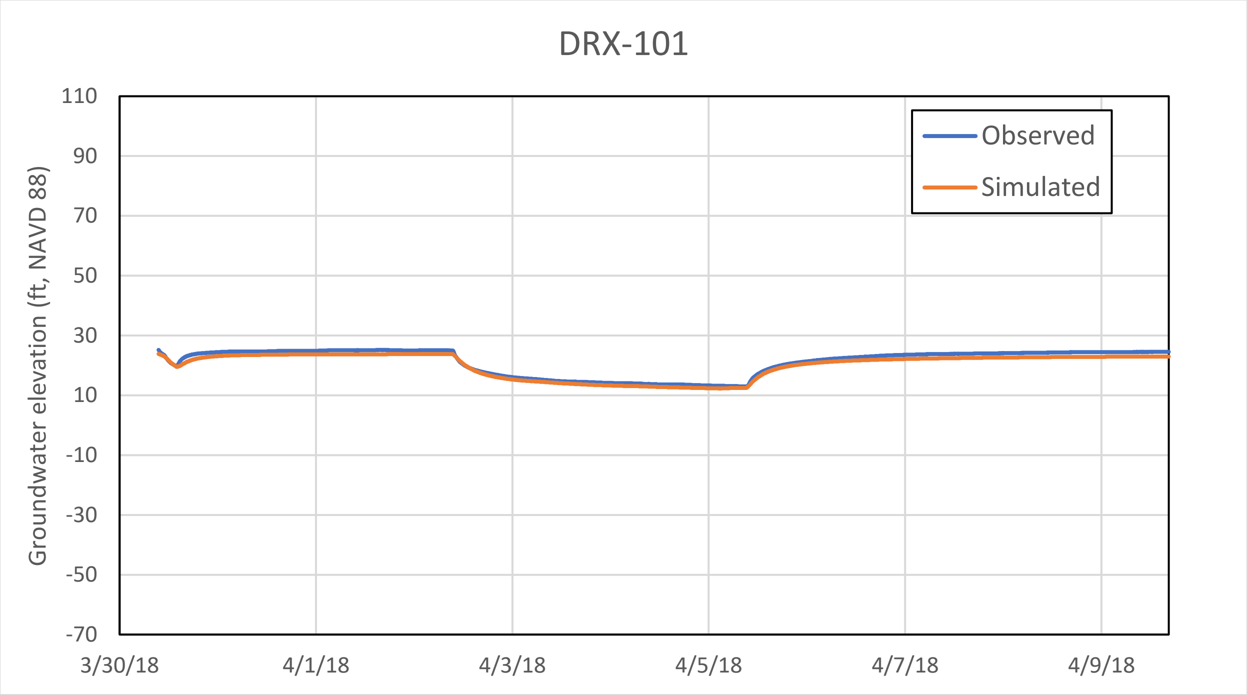


Figure A5. Observed and simulated groundwater elevations at pumping well DRX-101 during pump test 1 (3/30/2018 - 4/9/2018).

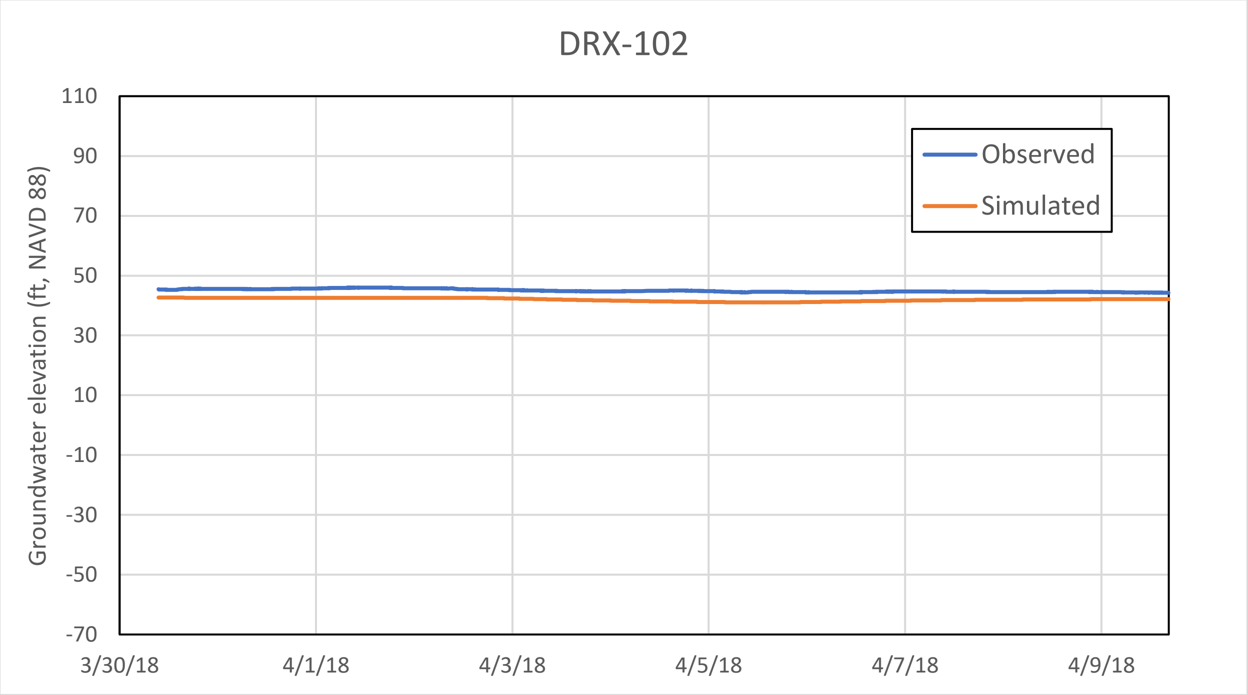


Figure A6. Observed and simulated groundwater elevations at pumping well DRX-102 during pump test 1 (3/30/2018 - 4/9/2018).

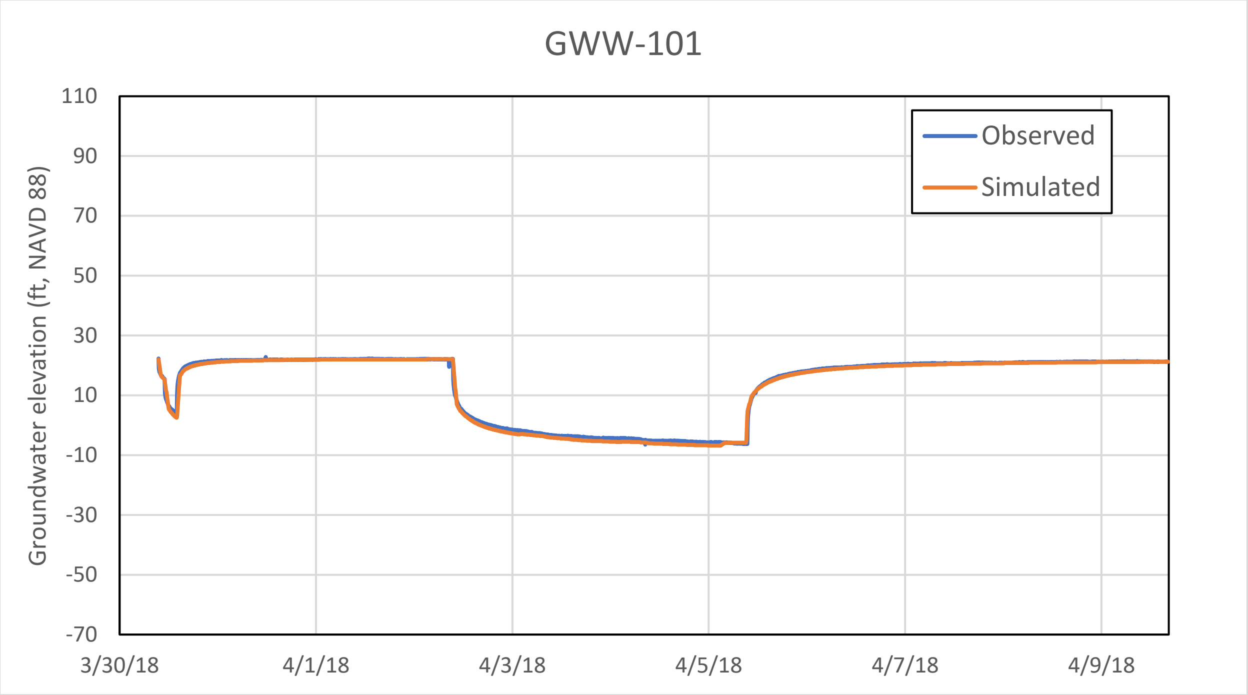


Figure A7. Observed and simulated groundwater elevations at pumping well GWW-101 during pump test 1 (3/30/2018 - 4/9/2018).

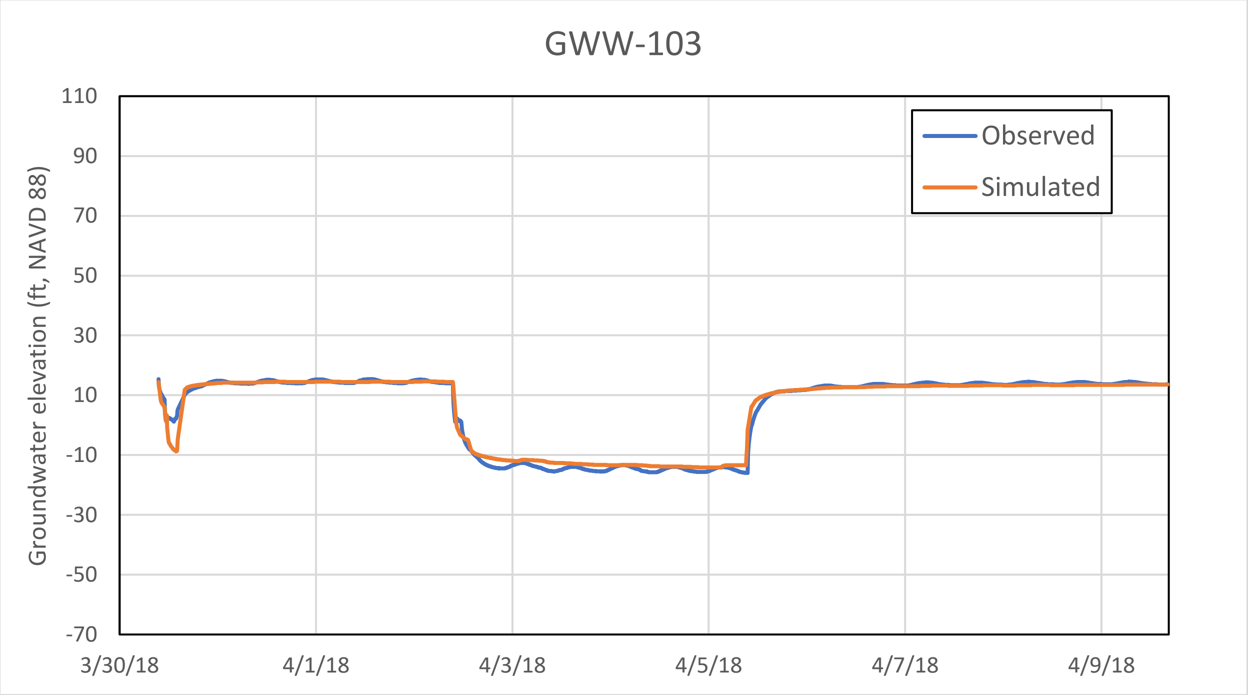


Figure A8. Observed and simulated groundwater elevations at pumping well GWW-103 during pump test 1 (3/30/2018 - 4/9/2018).

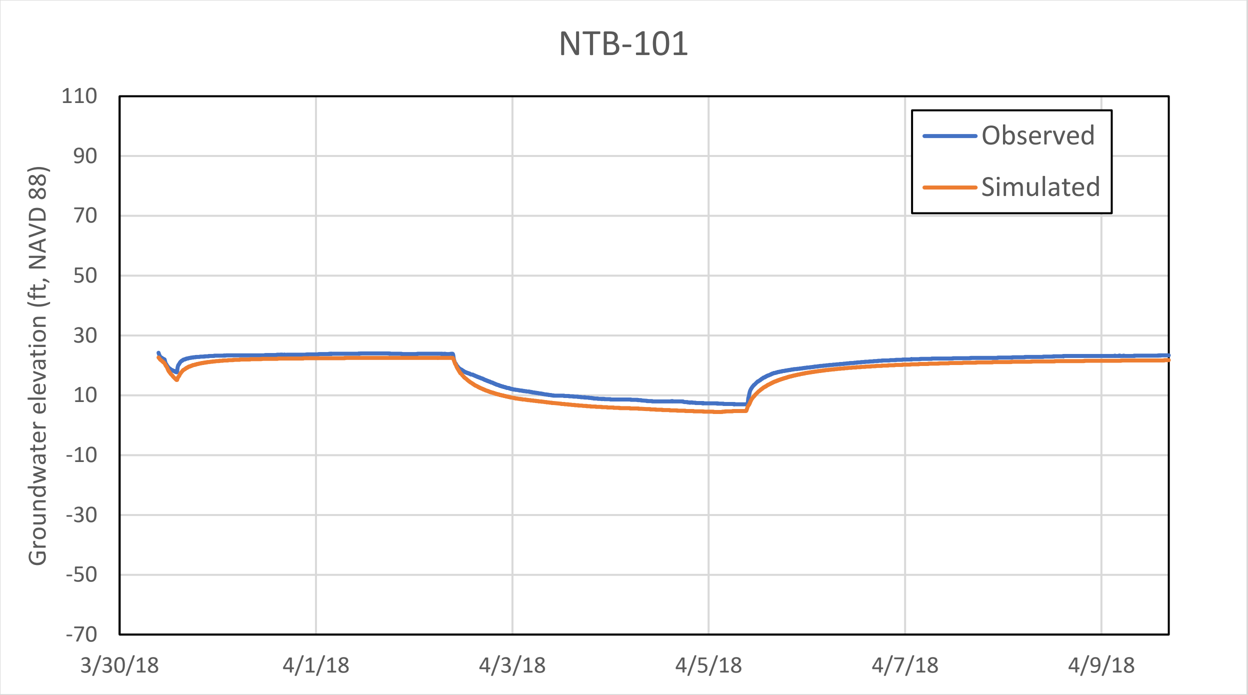


Figure A9. Observed and simulated groundwater elevations at bedrock well NTB-101 during pump test 1 (3/30/2018 - 4/9/2018).

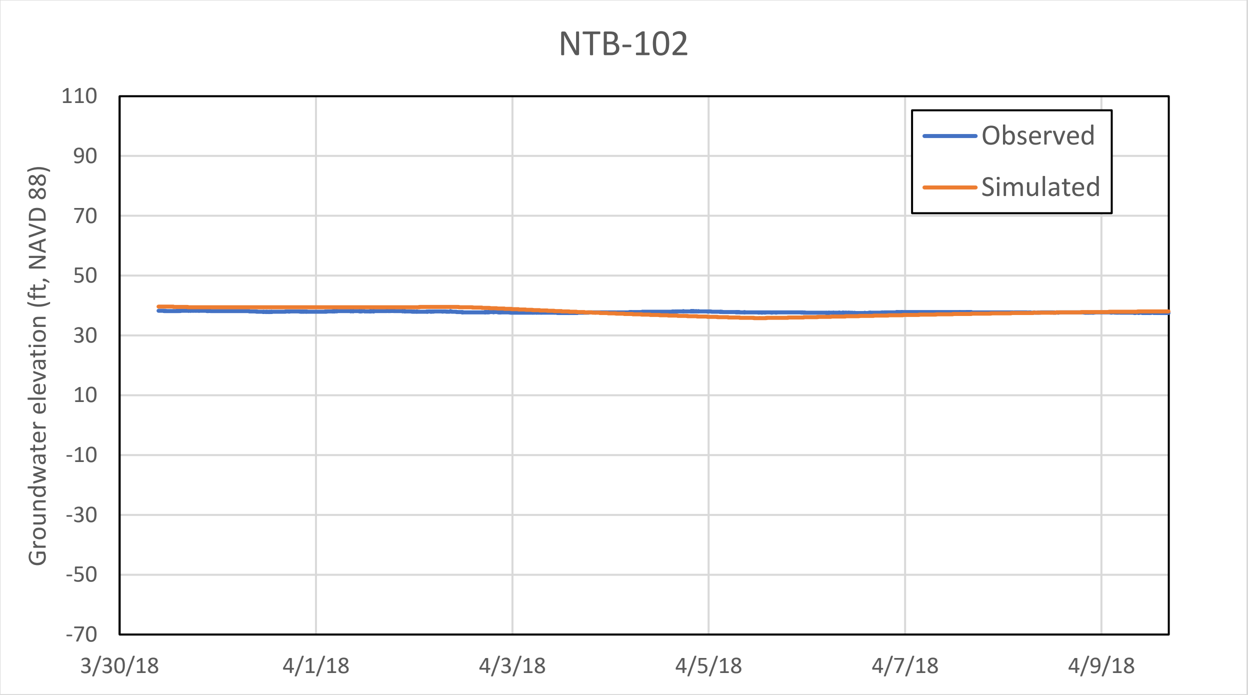


Figure A10. Observed and simulated groundwater elevations at bedrock well NTB-102 during pump test 1 (3/30/2018 - 4/9/2018).

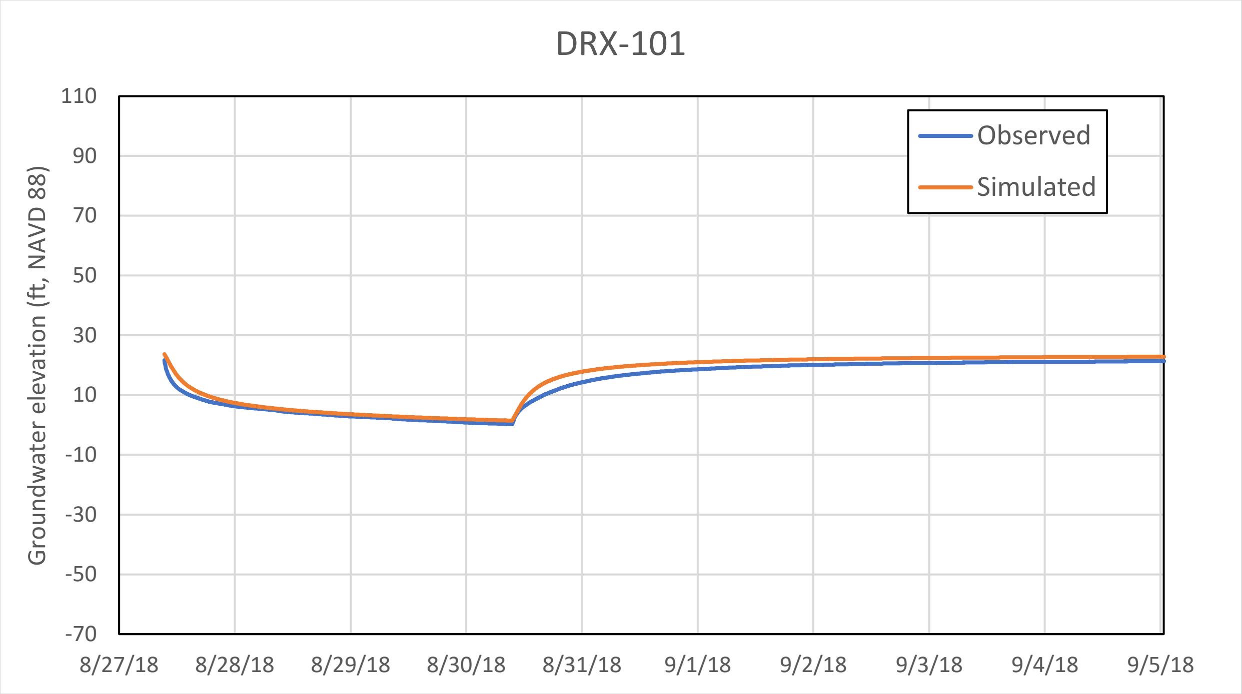


Figure A11. Observed and simulated groundwater elevations at pumping well DRX-101 during pump test 2 (8/27/2018 - 9/5/2018).

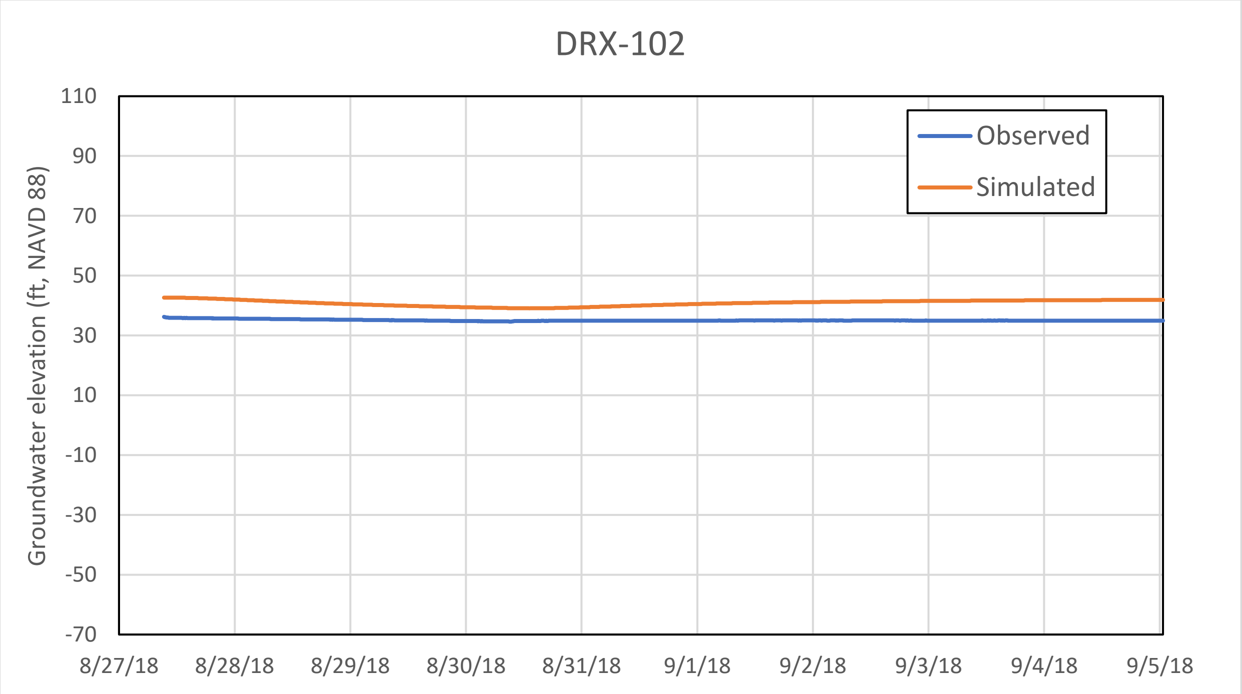


Figure A12. Observed and simulated groundwater elevations at pumping well DRX-102 during pump test 2 (8/27/2018 - 9/5/2018).

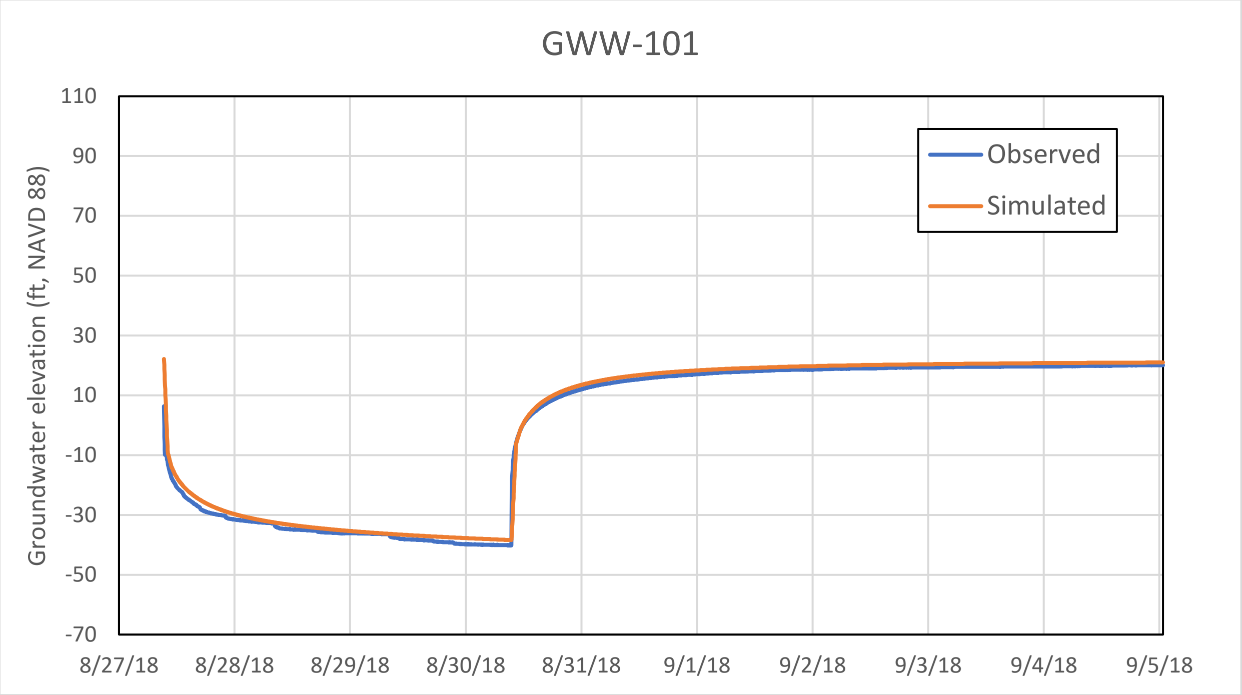


Figure A13. Observed and simulated groundwater elevations at pumping well GWW-101 during pump test 2 (8/27/2018 - 9/5/2018).

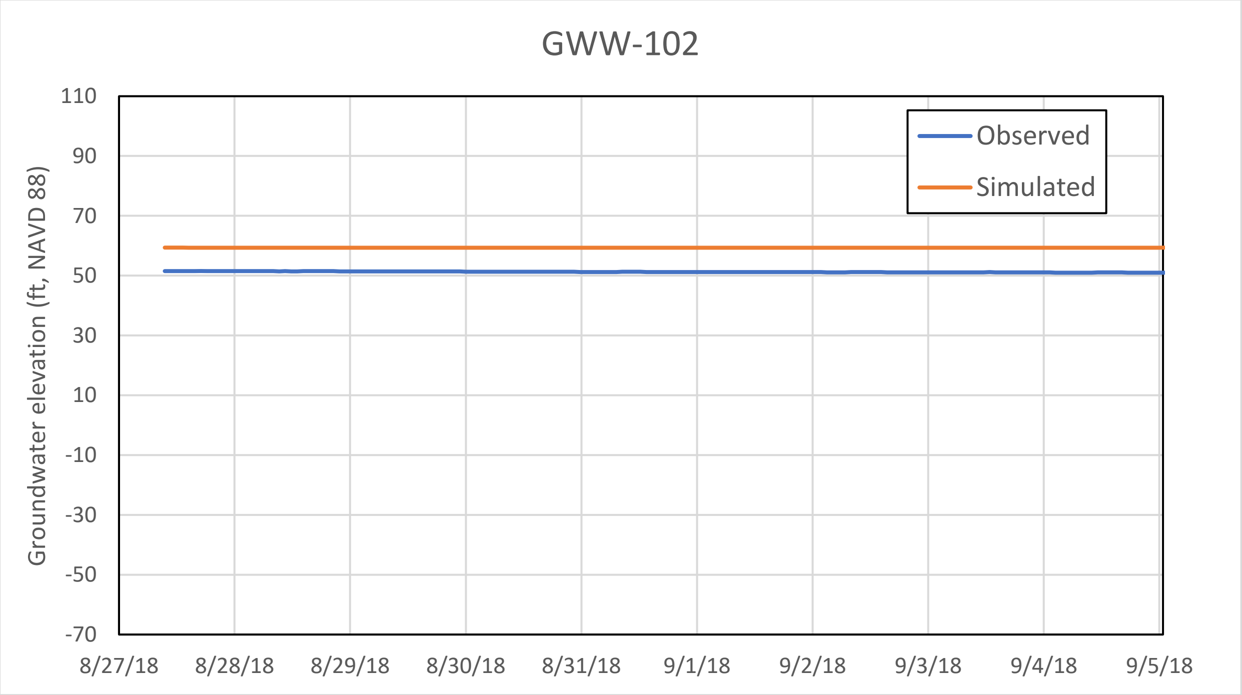


Figure A14. Observed and simulated groundwater elevations at bedrock well GWW-102 during pump test 2 (8/27/2018 - 9/5/2018).

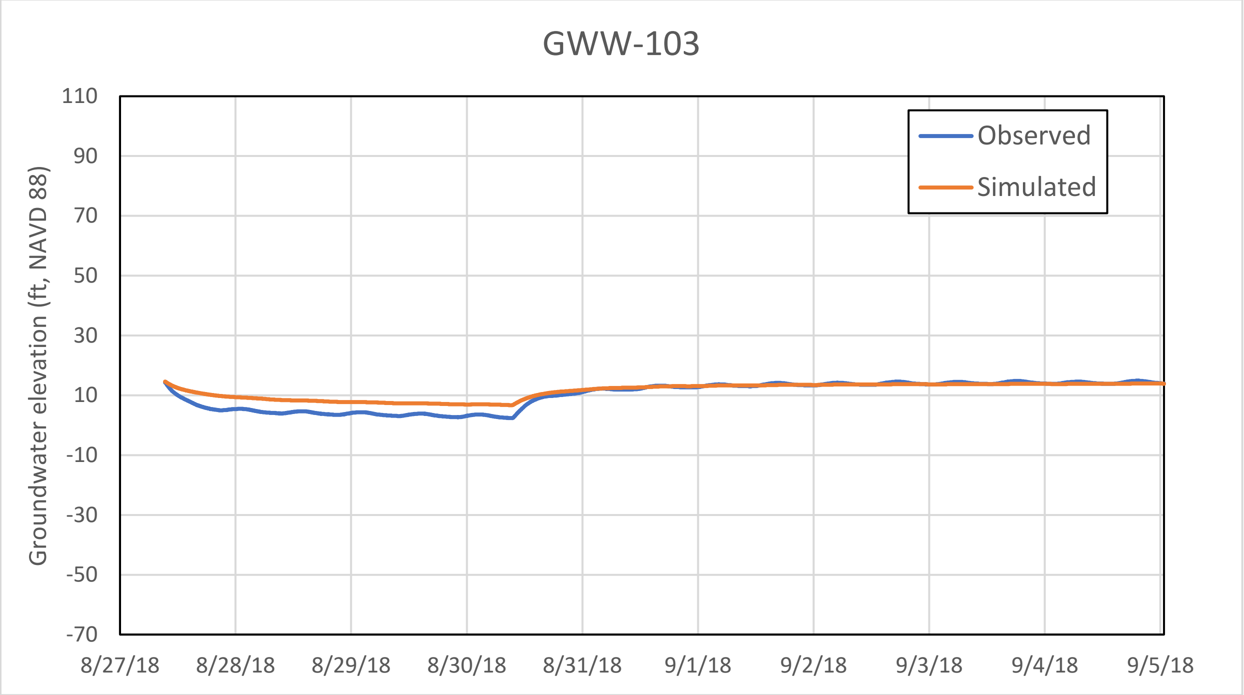


Figure A15. Observed and simulated groundwater elevations at pumping well GWW-103 during pump test 2 (8/27/2018 - 9/5/2018).

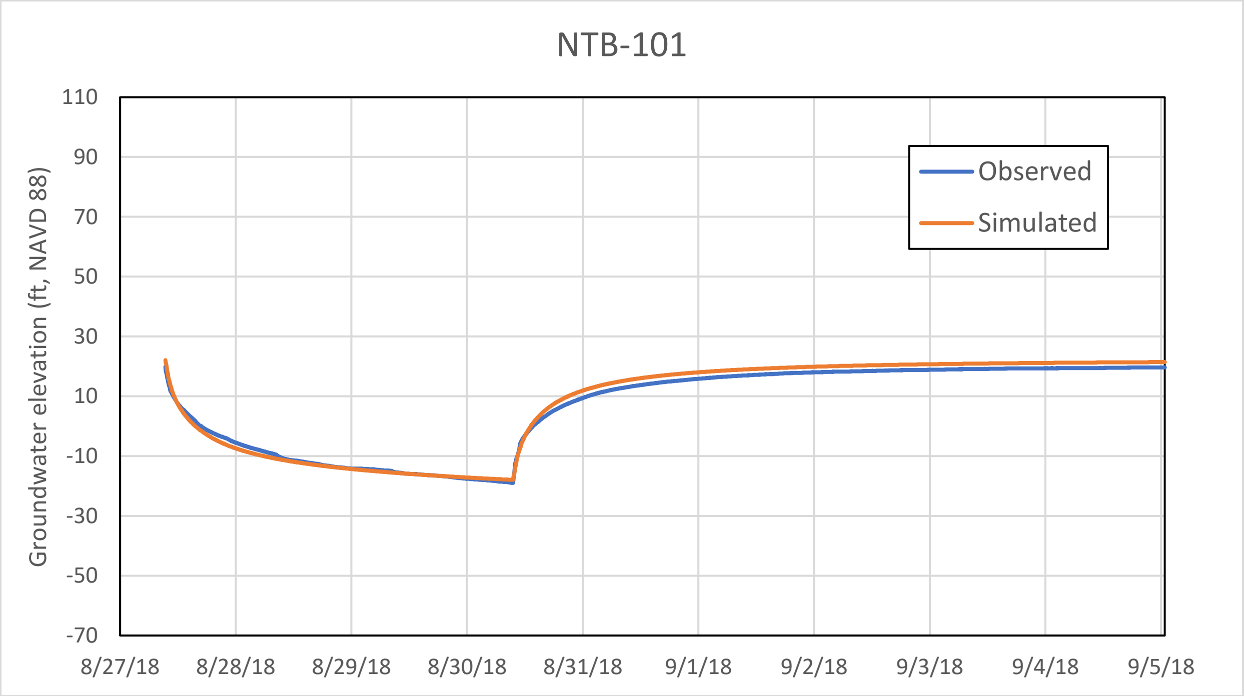


Figure A16. Observed and simulated groundwater elevations at bedrock well NTB-101 during pump test 2 (8/27/2018 - 9/5/2018).

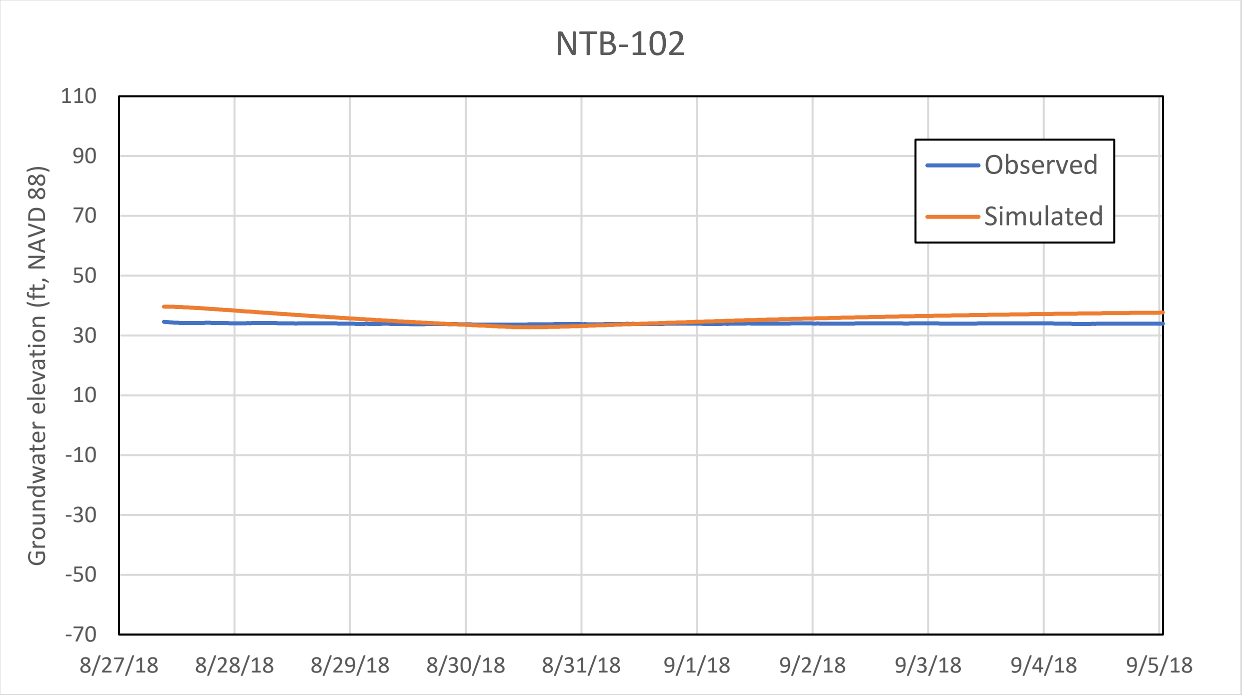


Figure A17. Observed and simulated groundwater elevations at bedrock well NTB-102 during pump test 2 (8/27/2018 - 9/5/2018).

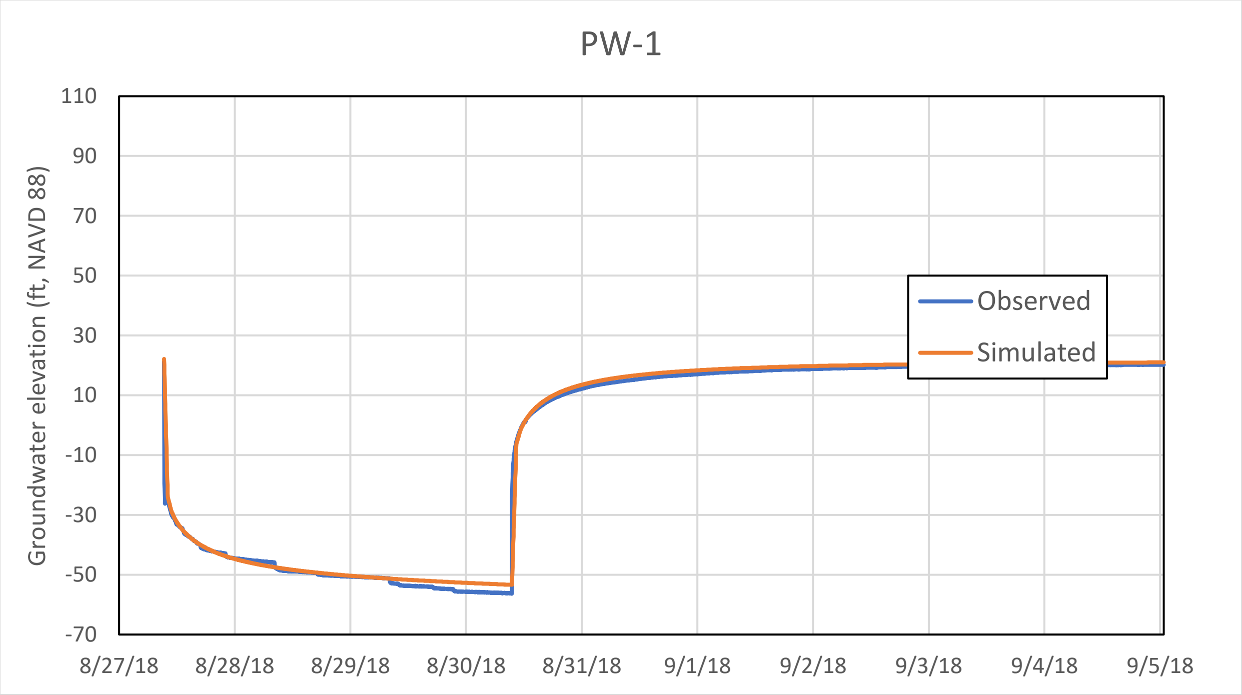


Figure A18. Observed and simulated groundwater elevations at pumping well PW-1 during pump test 2 (8/27/2018 - 9/5/2018).

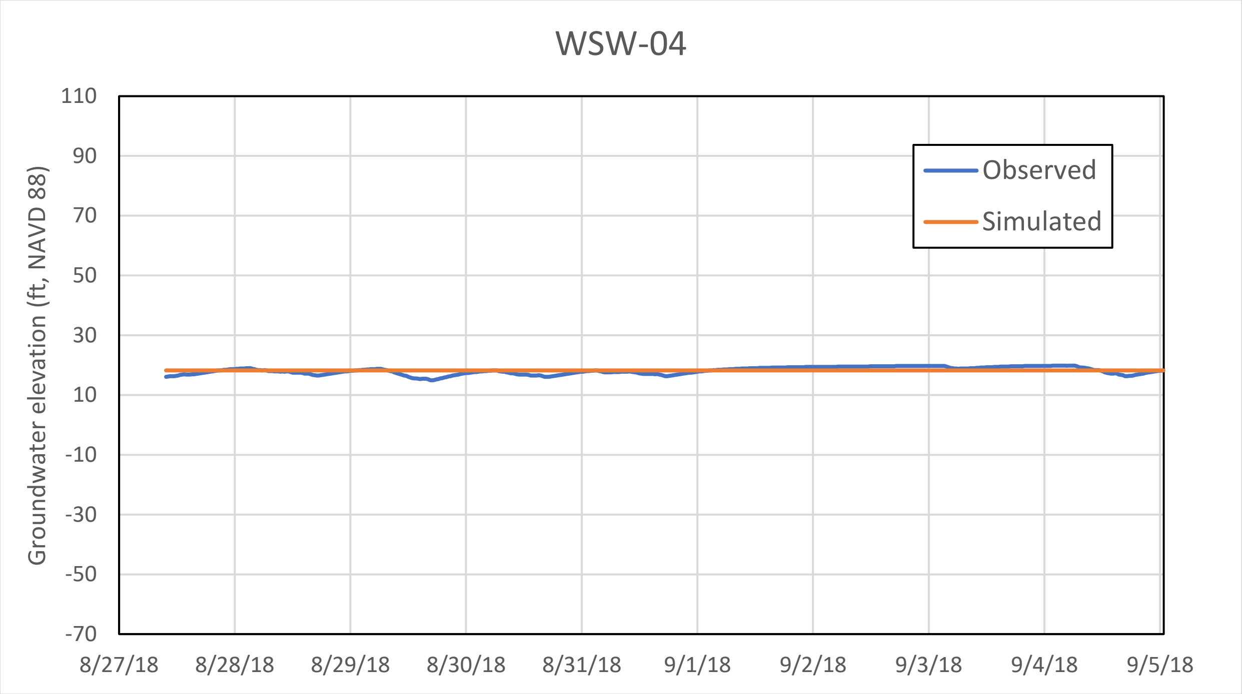


Figure A19. Observed and simulated groundwater elevations at bedrock well WSW-04 during pump test 2 (8/27/2018 - 9/5/2018).

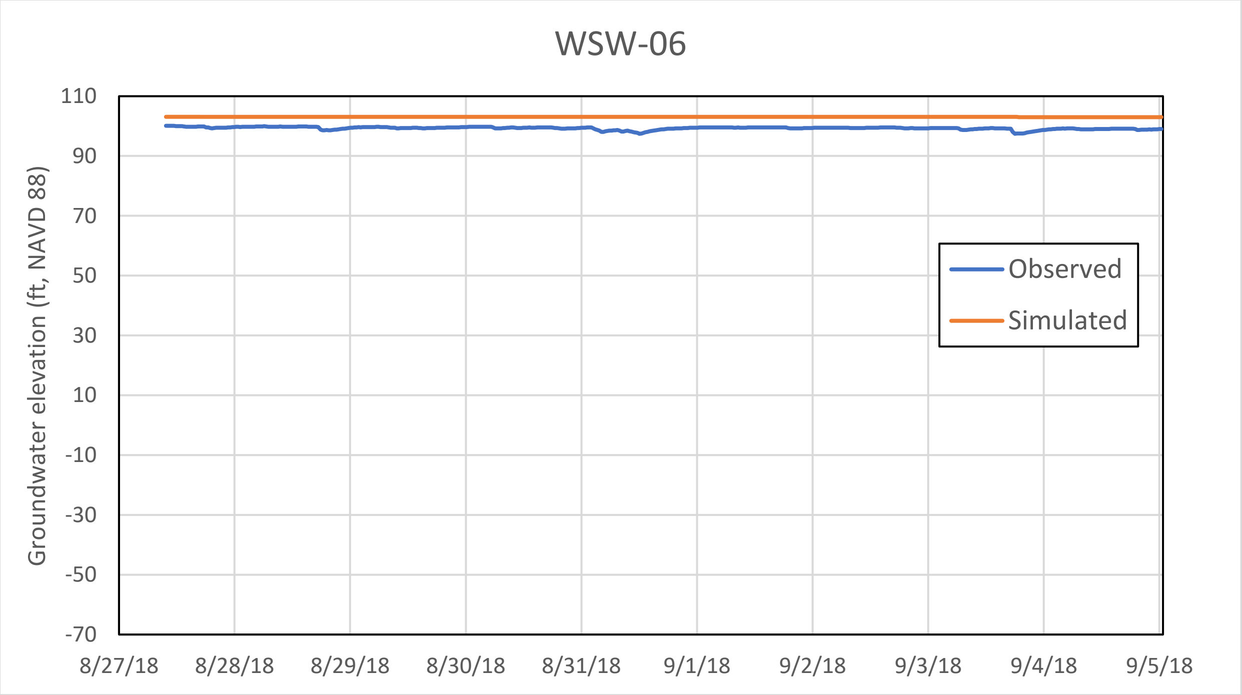


Figure A20. Observed and simulated groundwater elevations at bedrock well WSW-06 during pump test 2 (8/27/2018 - 9/5/2018).

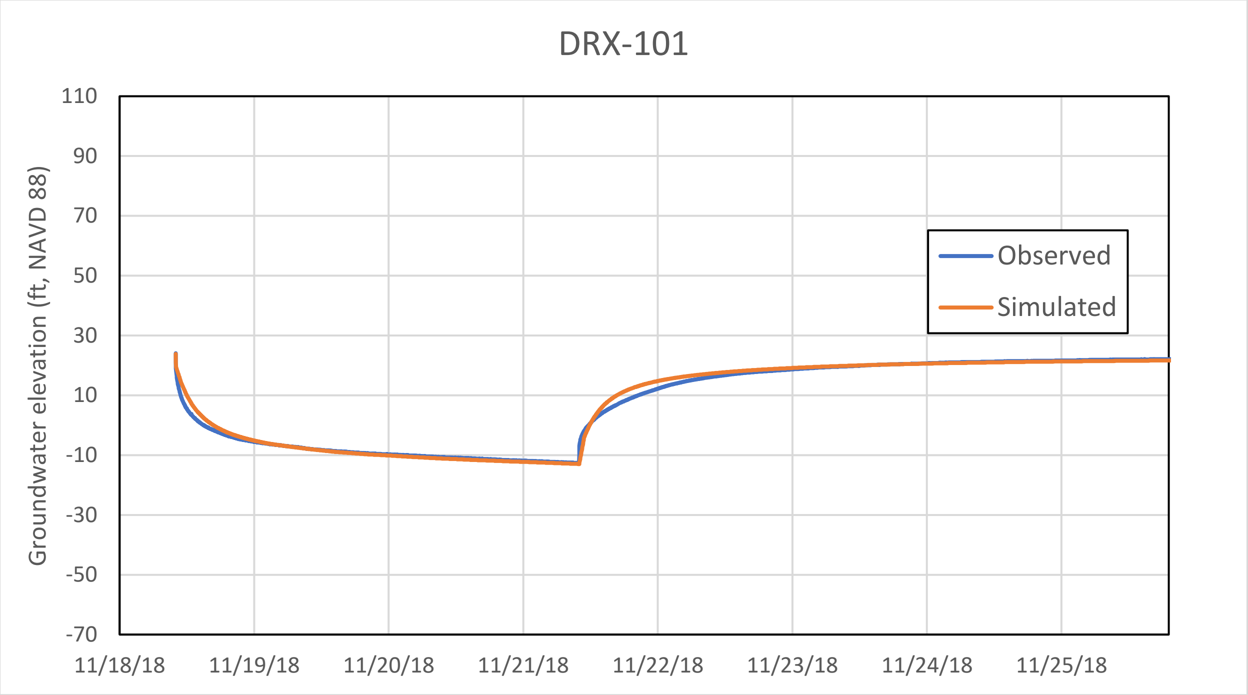


Figure A21. Observed and simulated groundwater elevation at pumping well DRX-101 during pump test 3 (11/18/2018 – 11/29/2018).

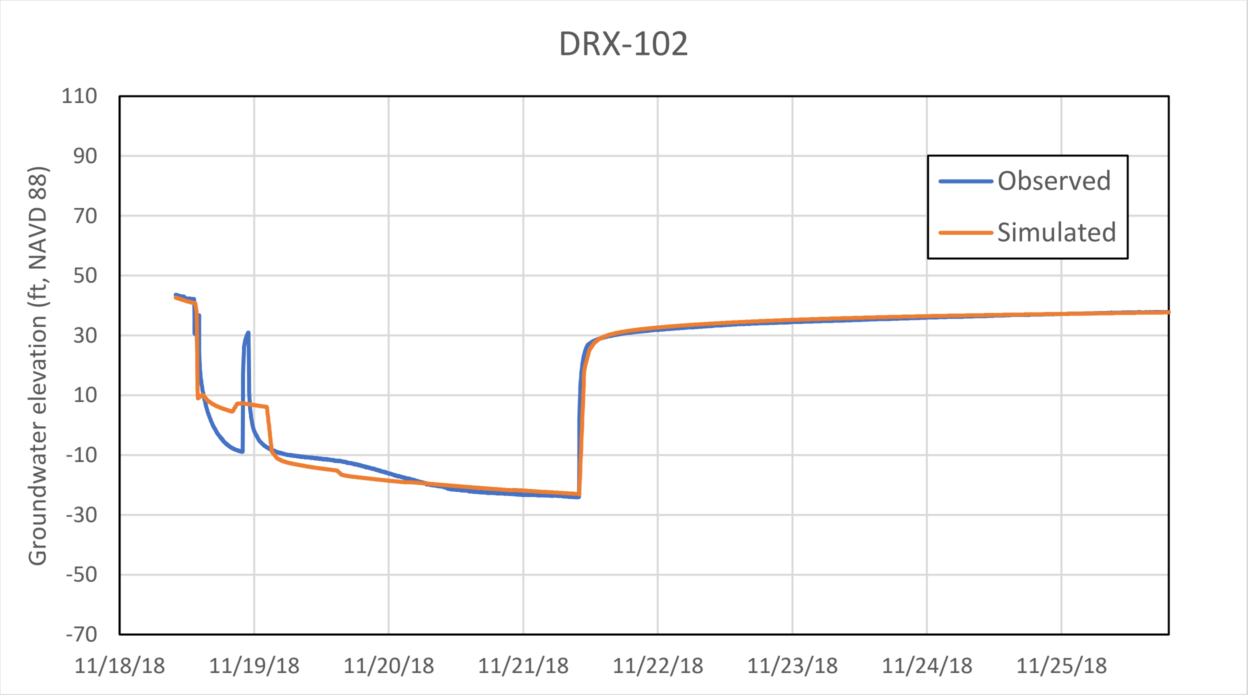


Figure A22. Observed and simulated groundwater elevation at pumping well DRX-102 during pump test 3 (11/18/2018 – 11/29/2018).

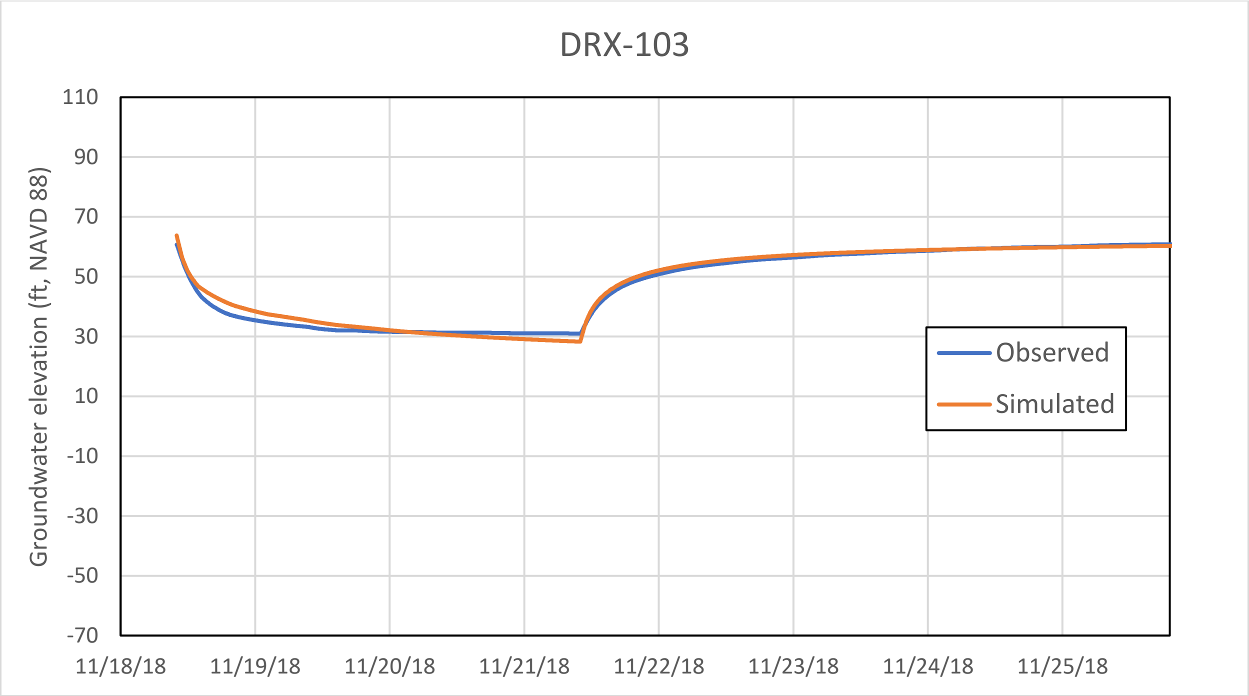


Figure A23. Observed and simulated groundwater elevation at bedrock well DRX-103 during pump test 3 (11/18/2018 – 11/29/2018).

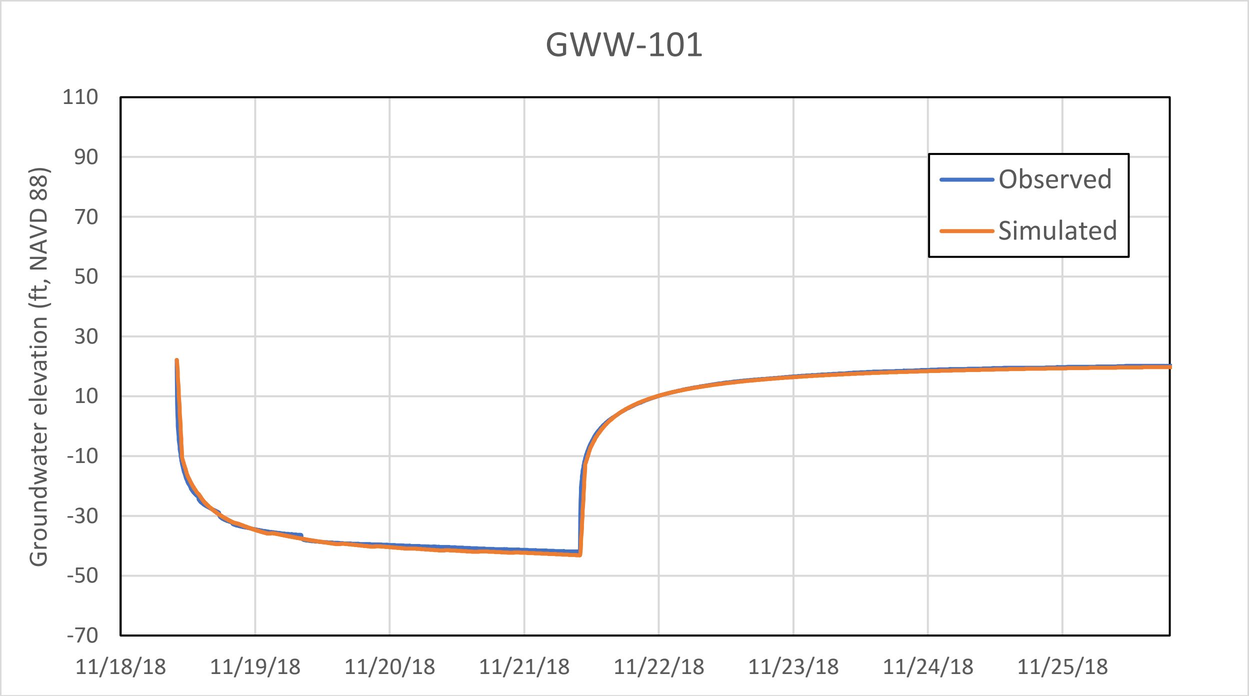


Figure A24. Observed and simulated groundwater elevation at pumping well GWW-101 during pump test 3 (11/18/2018 – 11/29/2018).

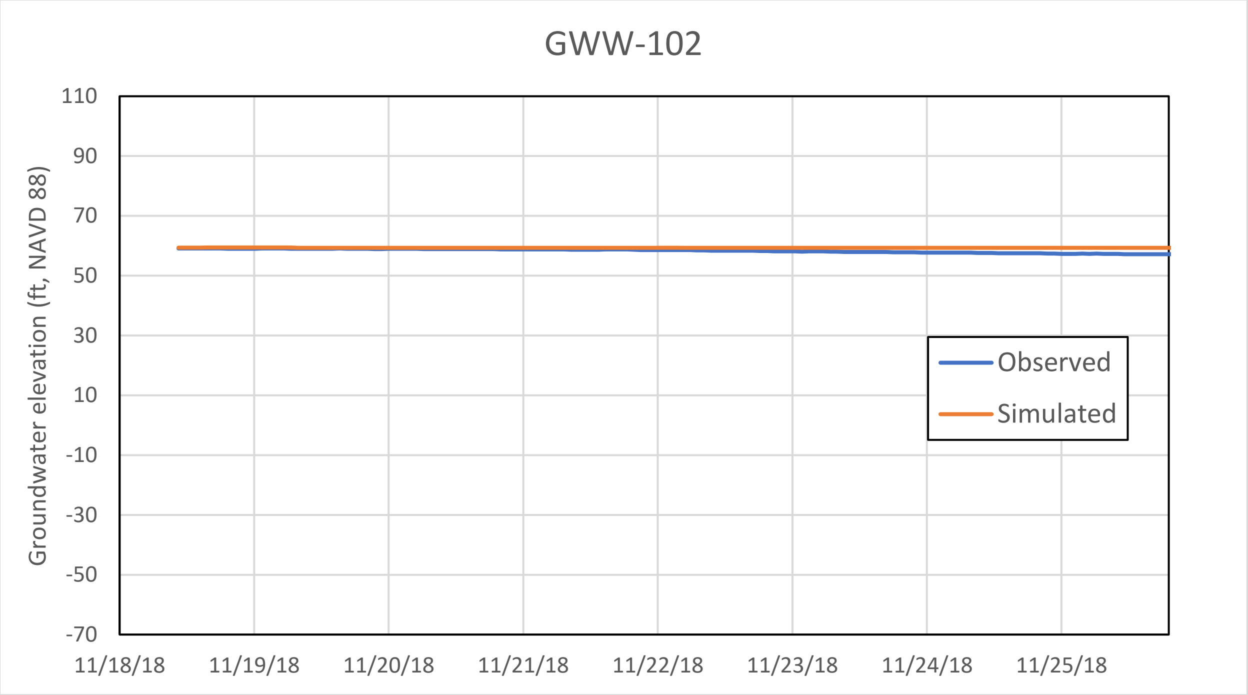


Figure A25. Observed and simulated groundwater elevation at bedrock well GWW-102 during pump test 3 (11/18/2018 – 11/29/2018).

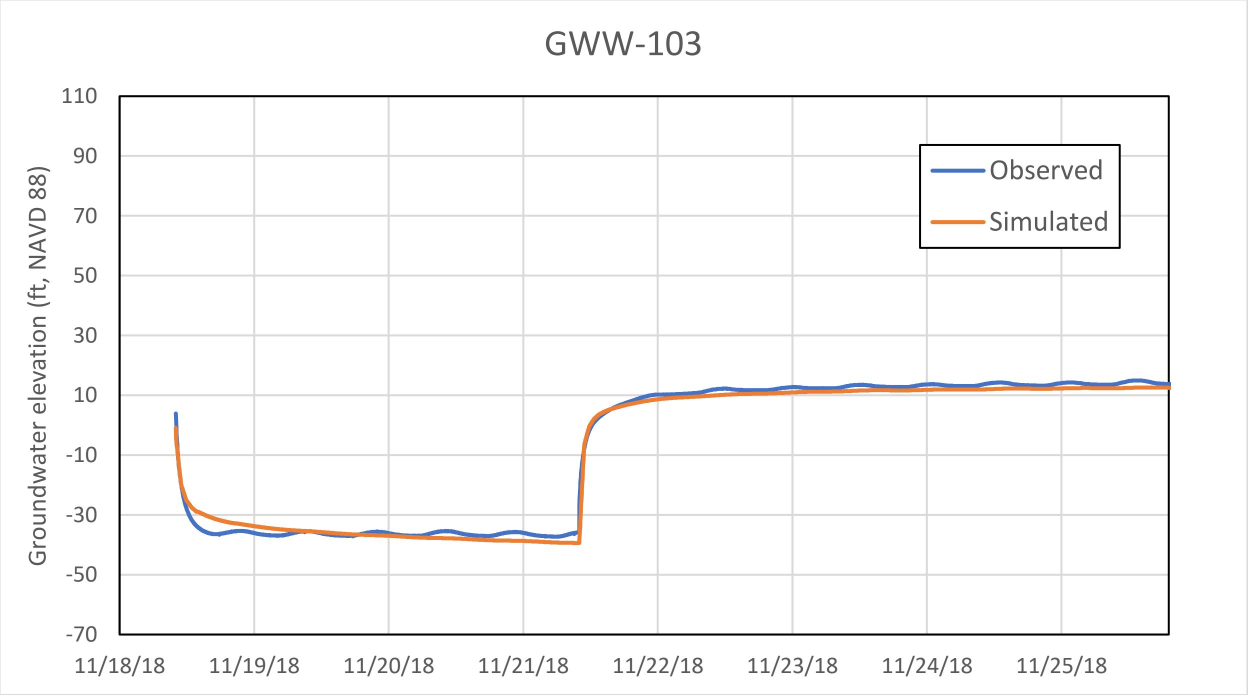


Figure A26. Observed and simulated groundwater elevation at pumping well GWW-103 during pump test 3 (11/18/2018 – 11/29/2018).

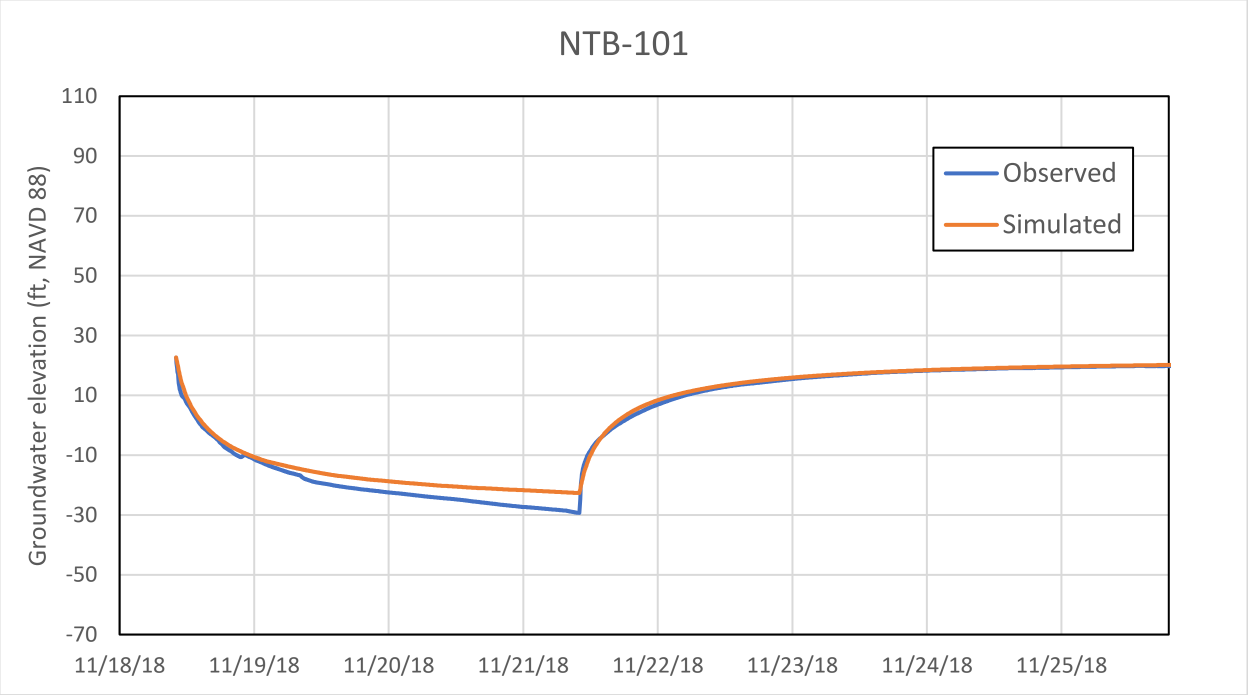


Figure A27. Observed and simulated groundwater elevation at bedrock well NTB-101 during pump test 3 (11/18/2018 – 11/29/2018).

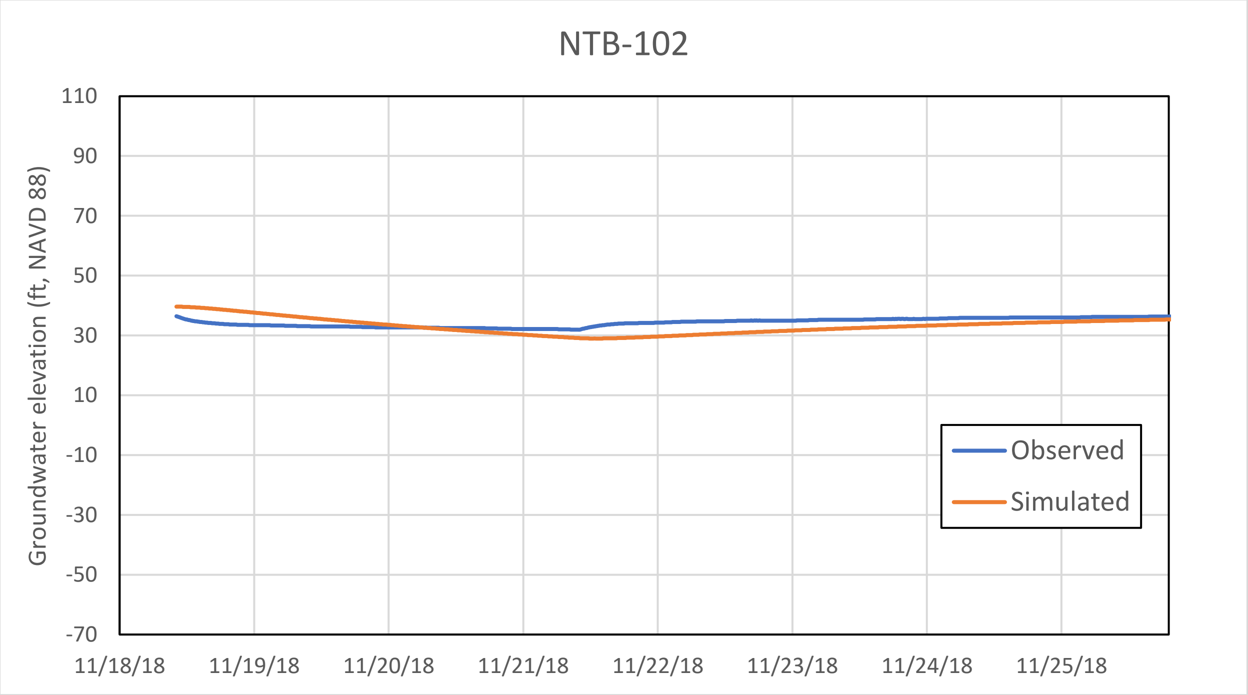


Figure A28. Observed and simulated groundwater elevation at bedrock well NTB-102 during pump test 3 (11/18/2018 – 11/29/2018).

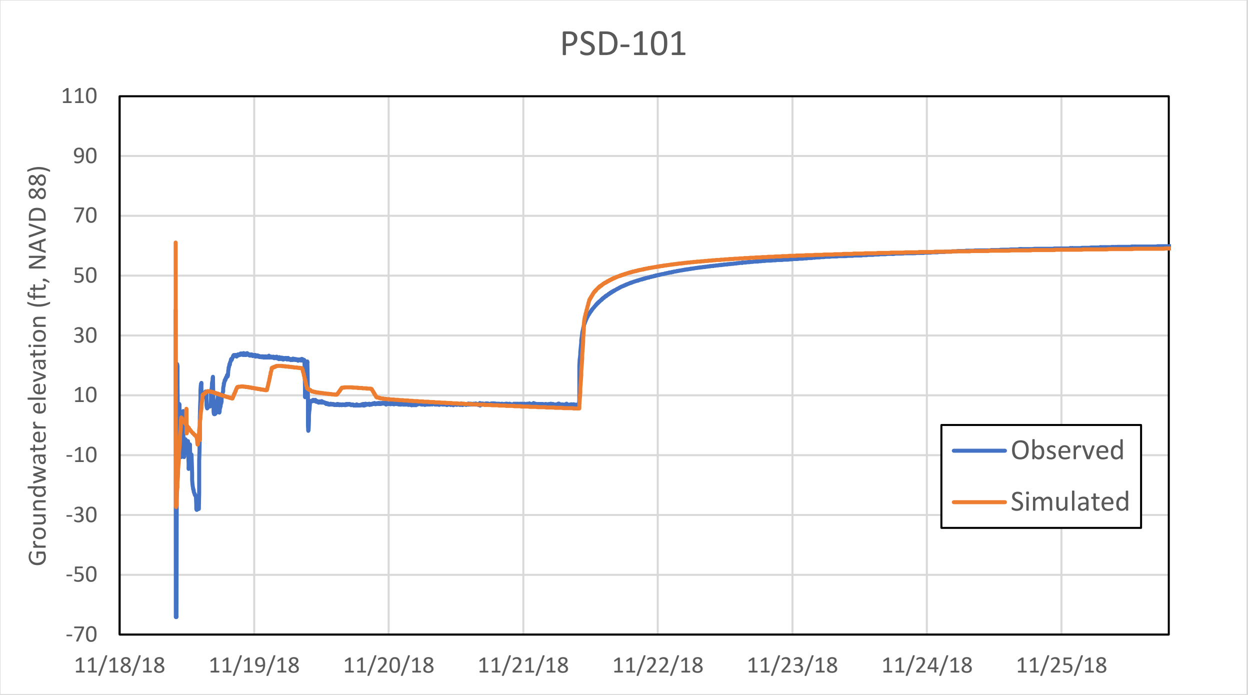


Figure A29. Observed and simulated groundwater elevation at pumping well PSD-101 during pump test 3 (11/18/2018 – 11/29/2018).

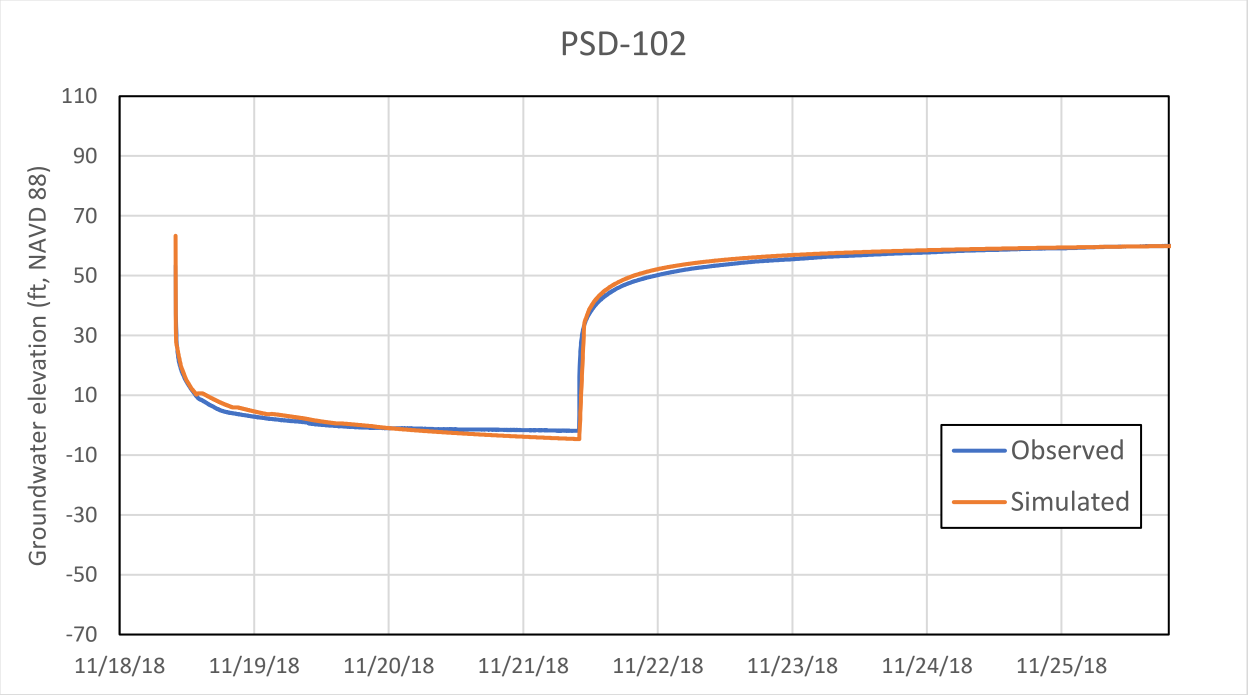


Figure A30. Observed and simulated groundwater elevation at pumping well PSD-102 during pump test 3 (11/18/2018 – 11/29/2018).

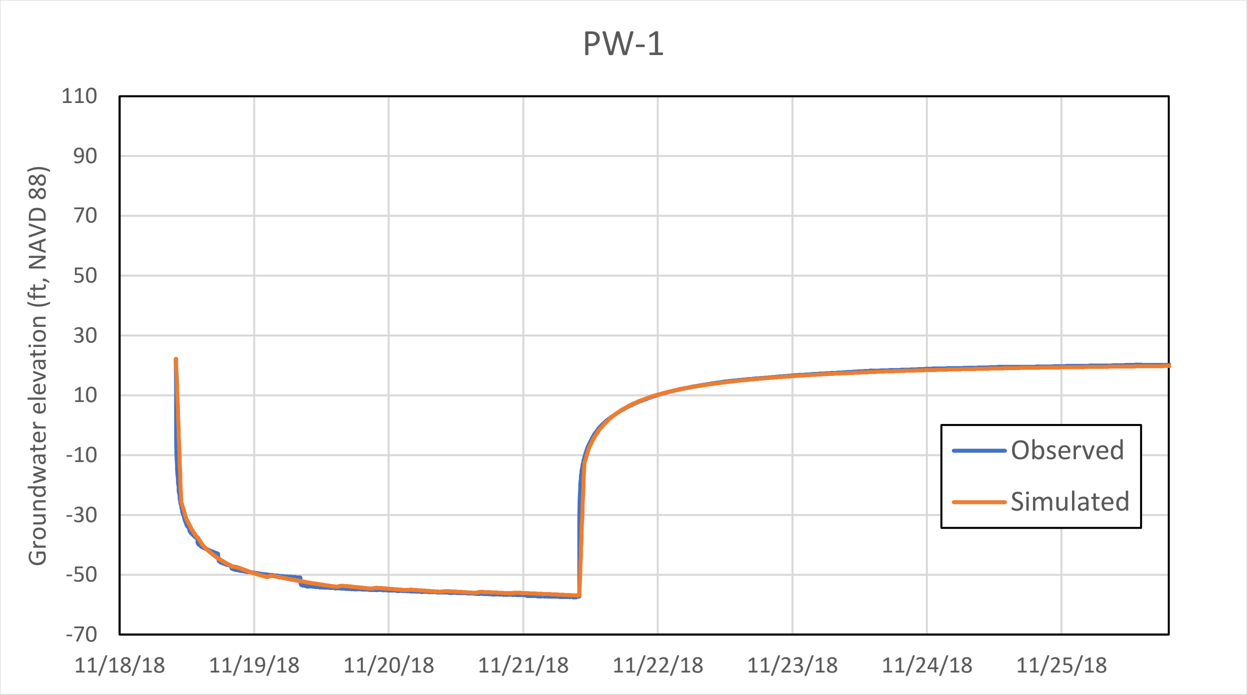


Figure A31. Observed and simulated groundwater elevation at pumping well PW-1 during pump test 3 (11/18/2018 – 11/29/2018).

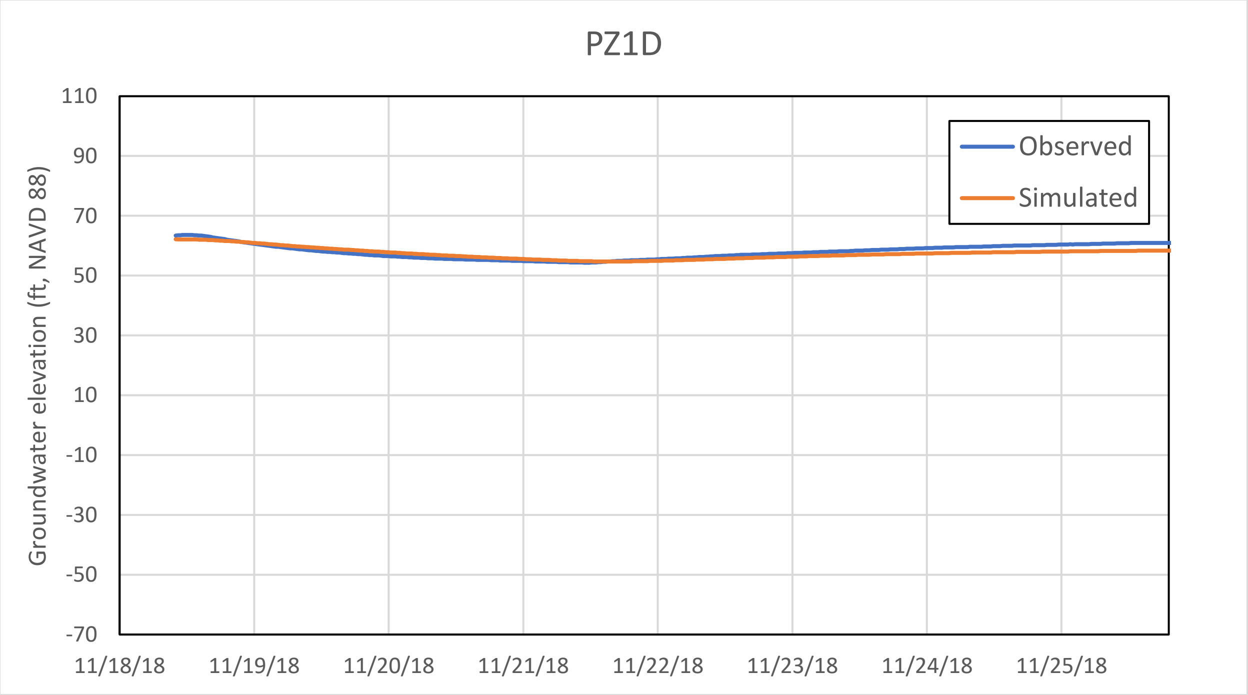


Figure A32. Observed and simulated groundwater elevation at piezometer PZ1D during pump test 3 (11/18/2018 – 11/29/2018).

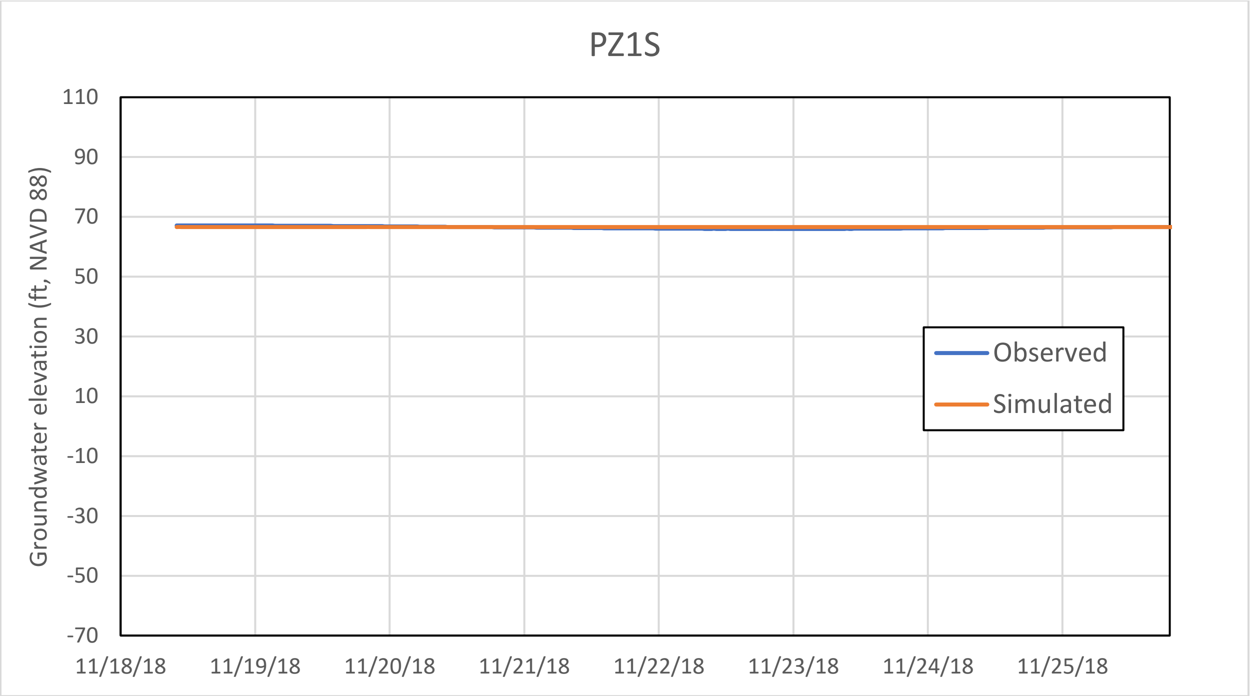


Figure A33. Observed and simulated groundwater elevation at piezometer PZ1S during pump test 3 (11/18/2018 – 11/29/2018).

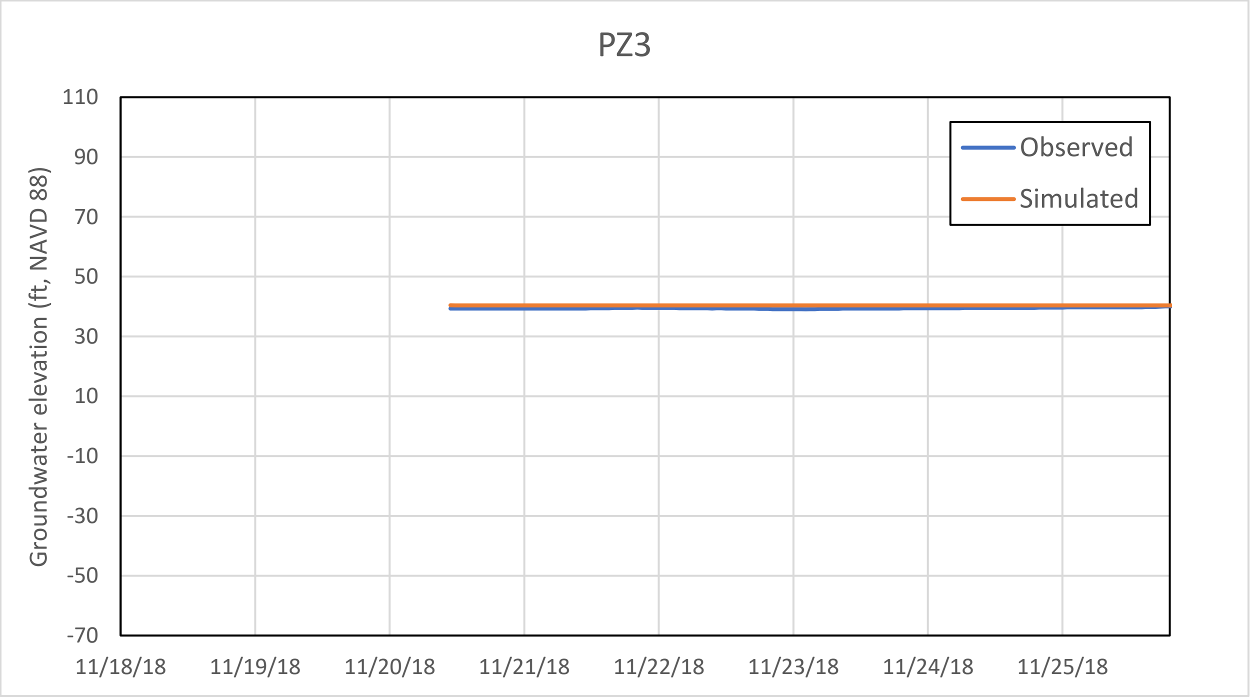


Figure A34. Observed and simulated groundwater elevation at piezometer PZ3 during pump test 3 (11/18/2018 – 11/29/2018).

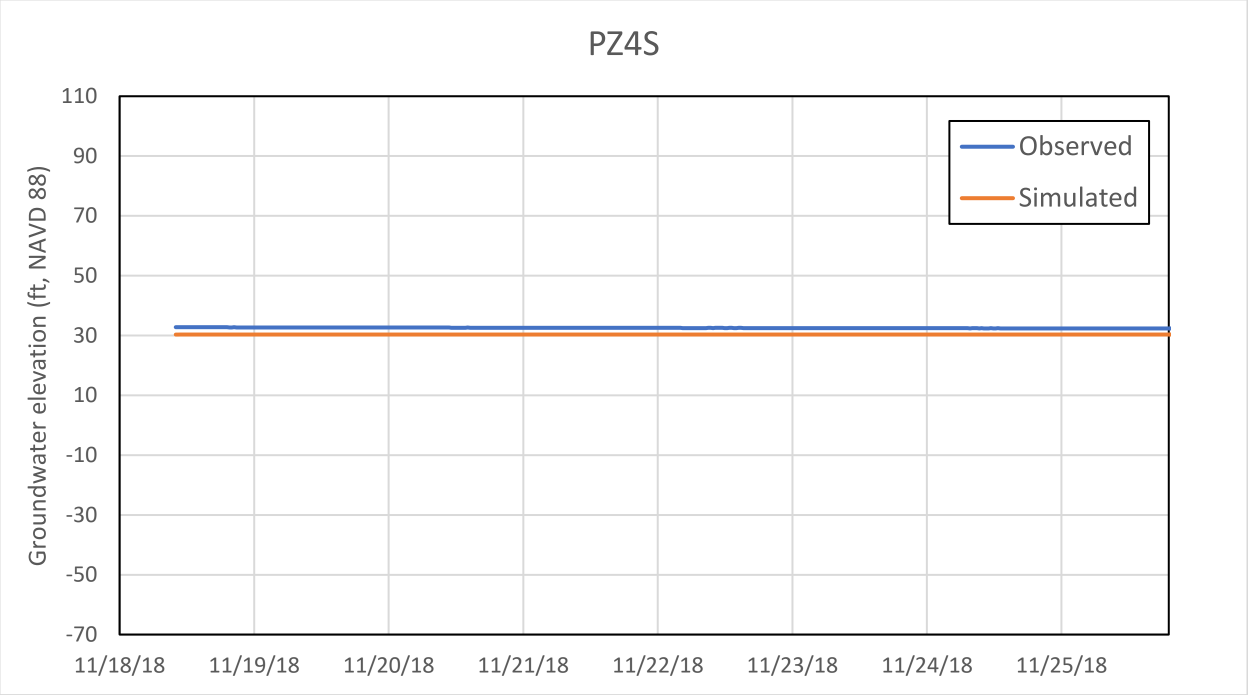


Figure A35. Observed and simulated groundwater elevation at piezometer PZ4S during pump test 3 (11/18/2018 – 11/29/2018).

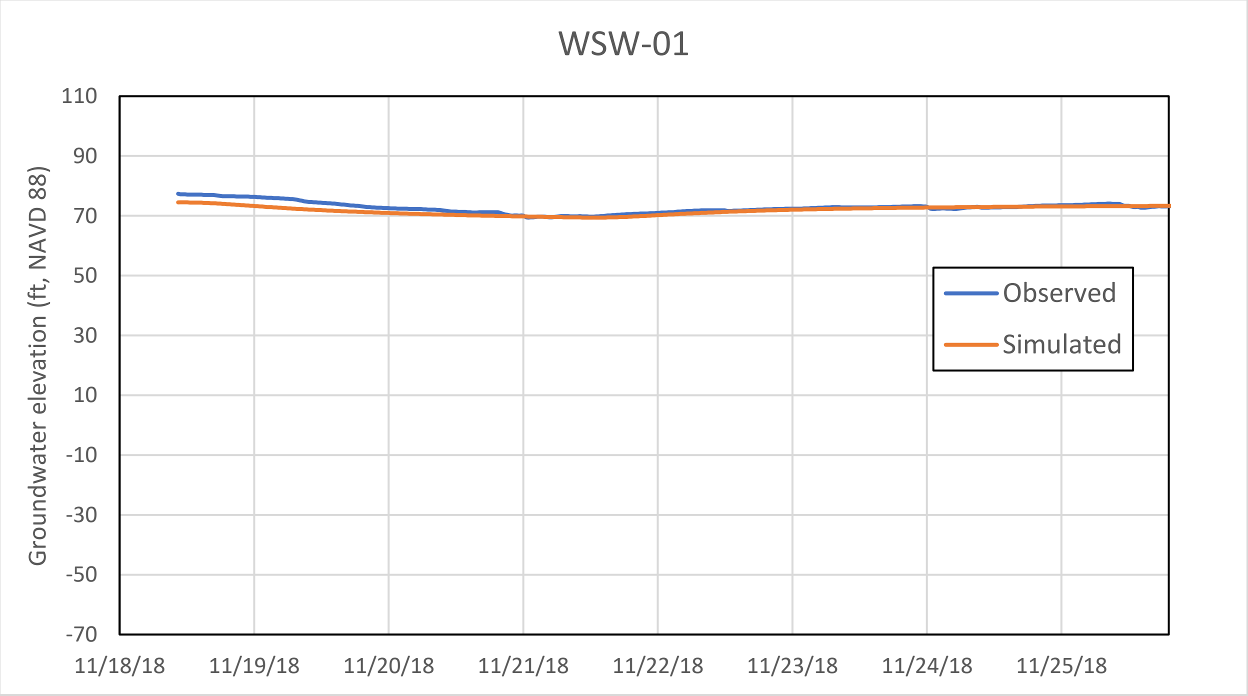


Figure A36. Observed and simulated groundwater elevation at bedrock well WSW-01 during pump test 3 (11/18/2018 – 11/29/2018).

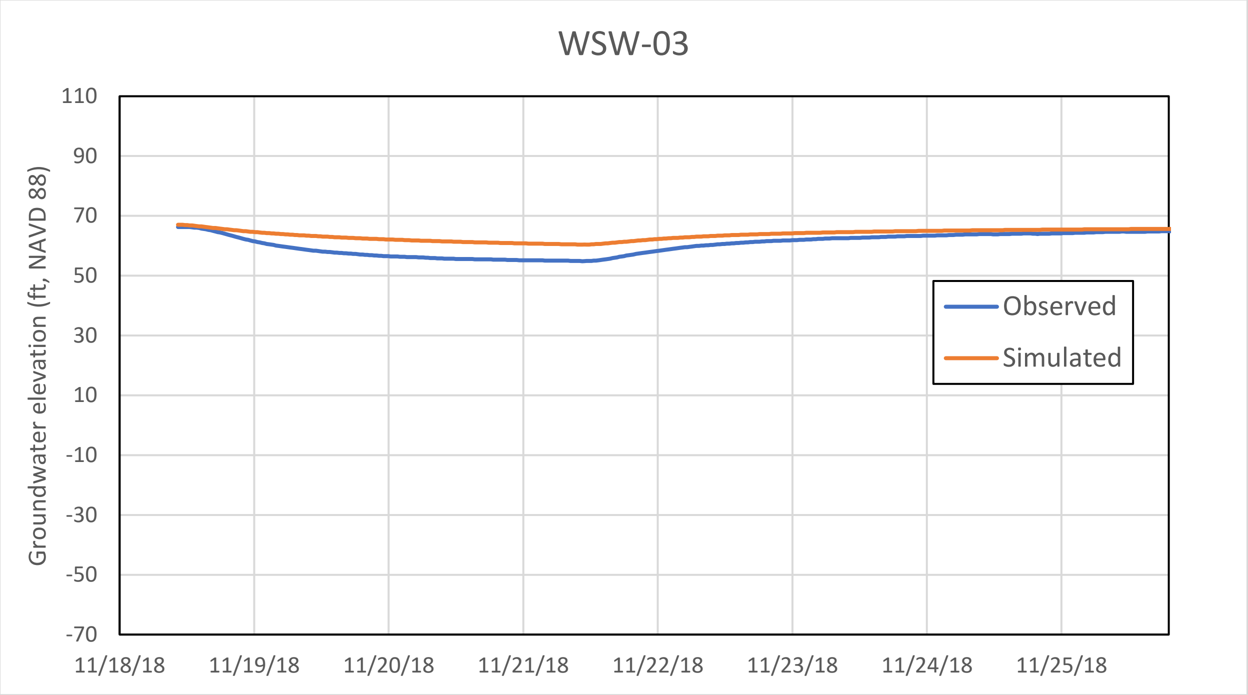


Figure A37. Observed and simulated groundwater elevation at bedrock well WSW-03 during pump test 3 (11/18/2018 – 11/29/2018).

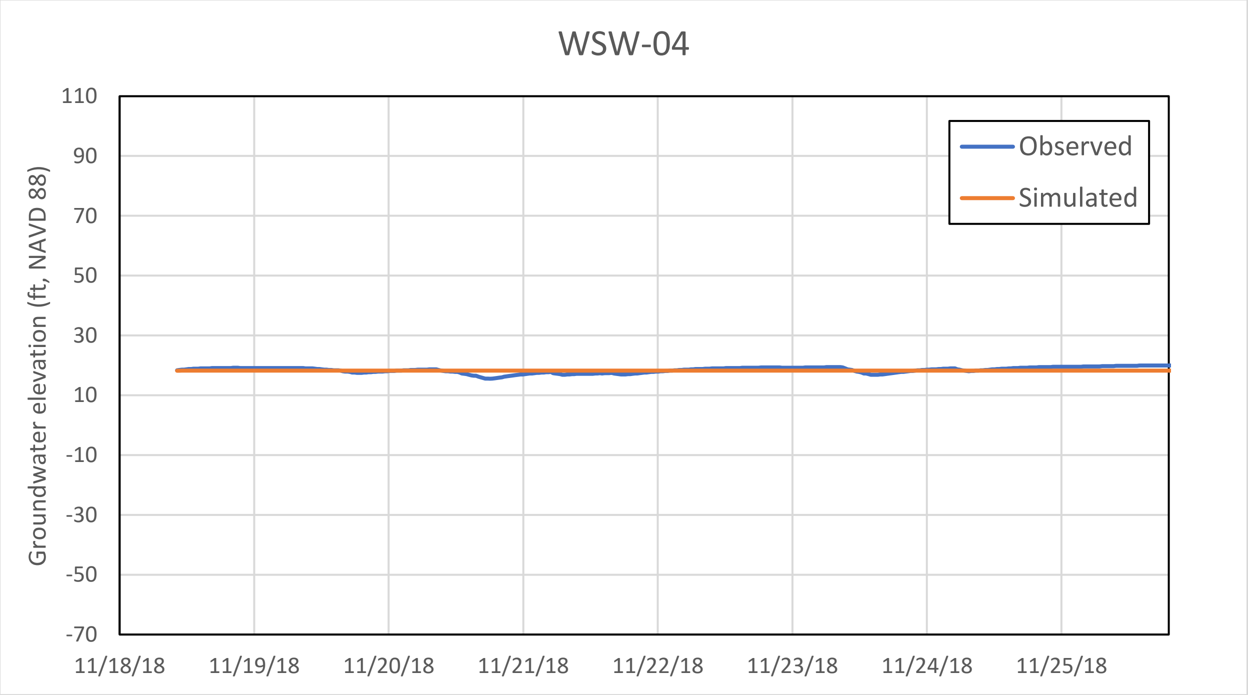


Figure A38. Observed and simulated groundwater elevation at bedrock well WSW-04 during pump test 3 (11/18/2018 – 11/29/2018).

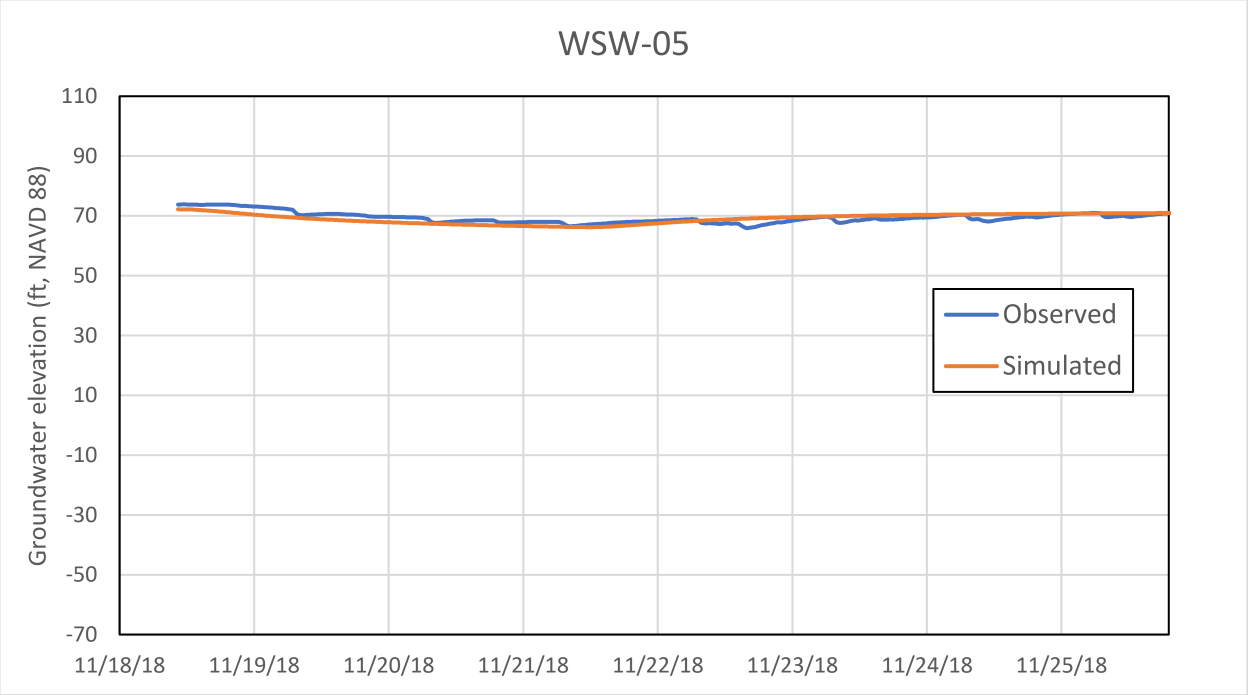


Figure A39. Observed and simulated groundwater elevation at bedrock well WSW-05 during pump test 3 (11/18/2018 – 11/29/2018).

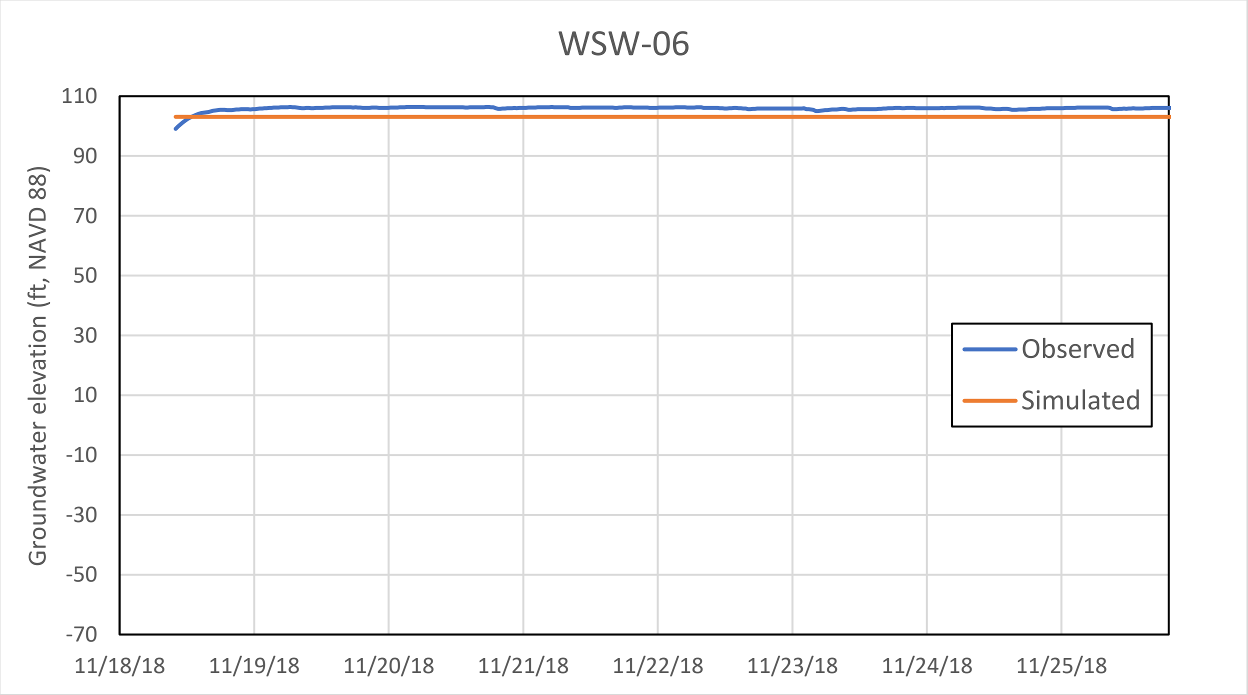


Figure A40. Observed and simulated groundwater elevation at bedrock well WSW-06 during pump test 3 (11/18/2018 – 11/29/2018).

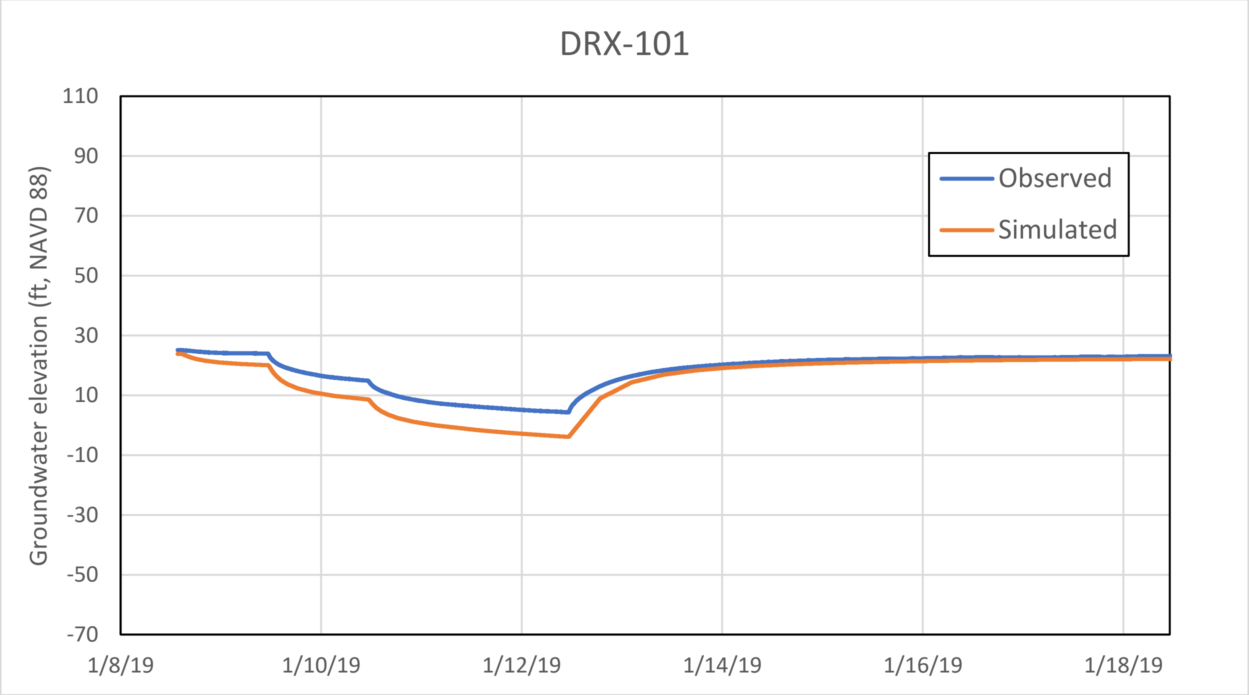


Figure A41. Observed and simulated groundwater elevation at pumping well DRX-101 during pump test 4 (1/8/2019 – 1/18/2019).

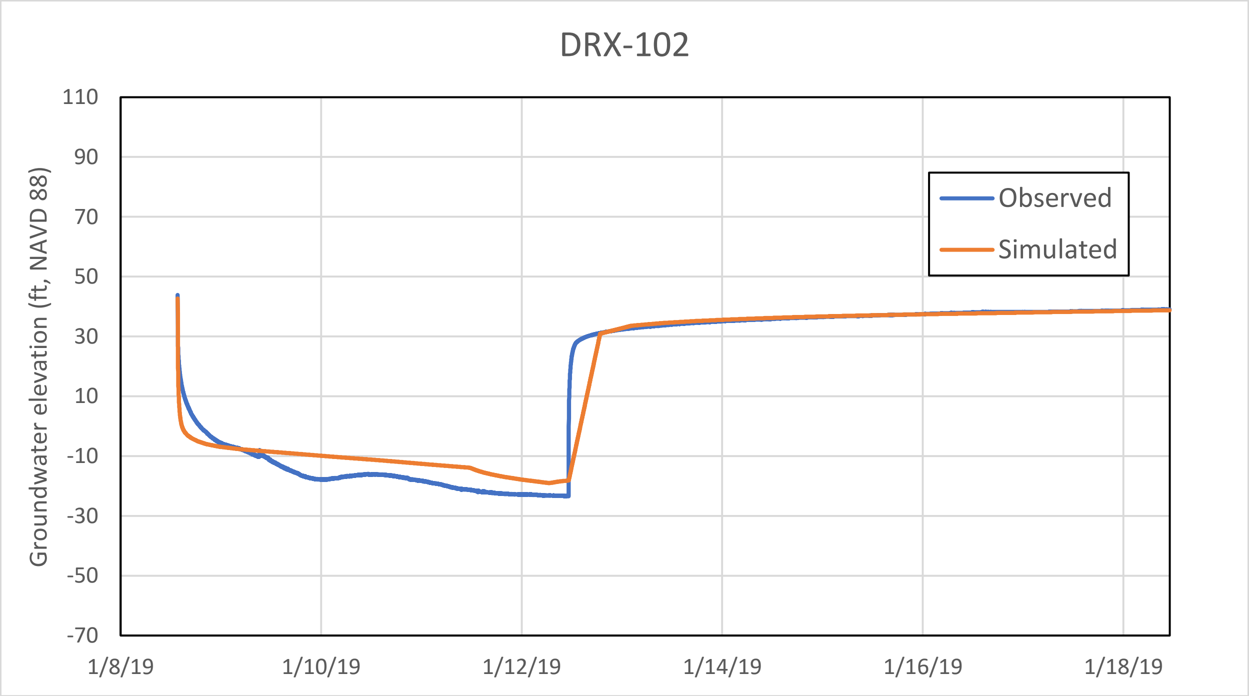


Figure A42. Observed and simulated groundwater elevation at pumping well DRX-102 during pump test 4 (1/8/2019 – 1/18/2019).

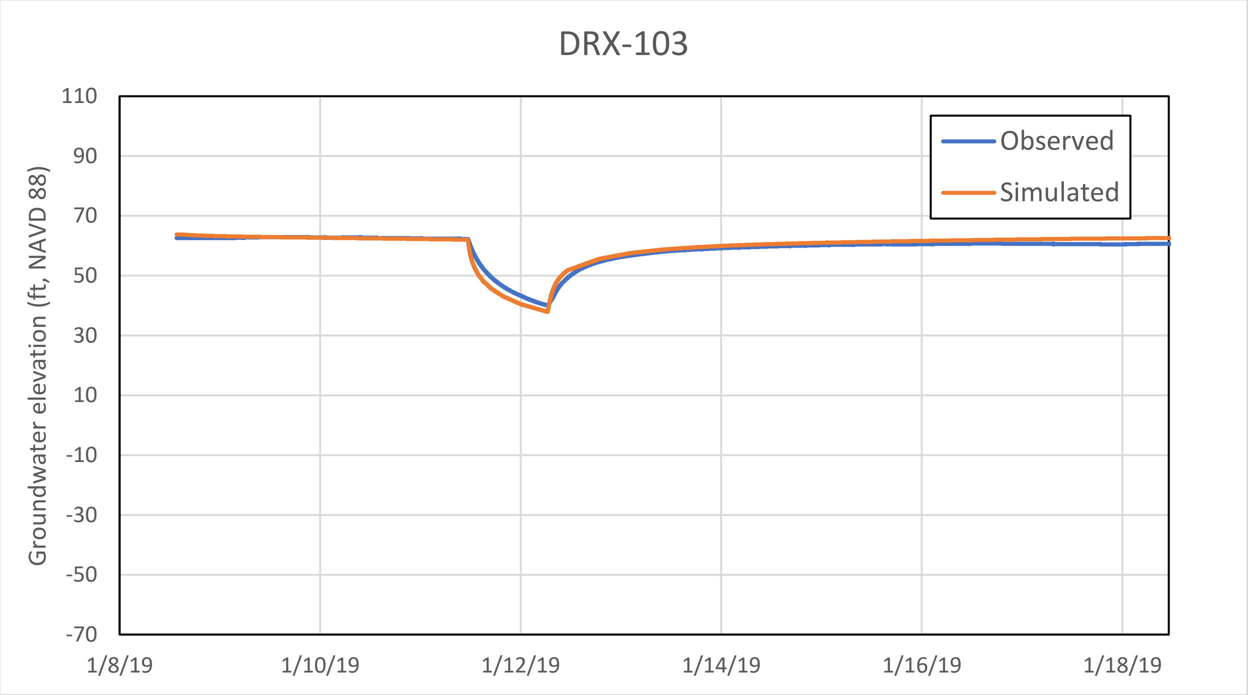


Figure A43. Observed and simulated groundwater elevation at bedrock well DRX-103 during pump test 4 (1/8/2019 – 1/18/2019).

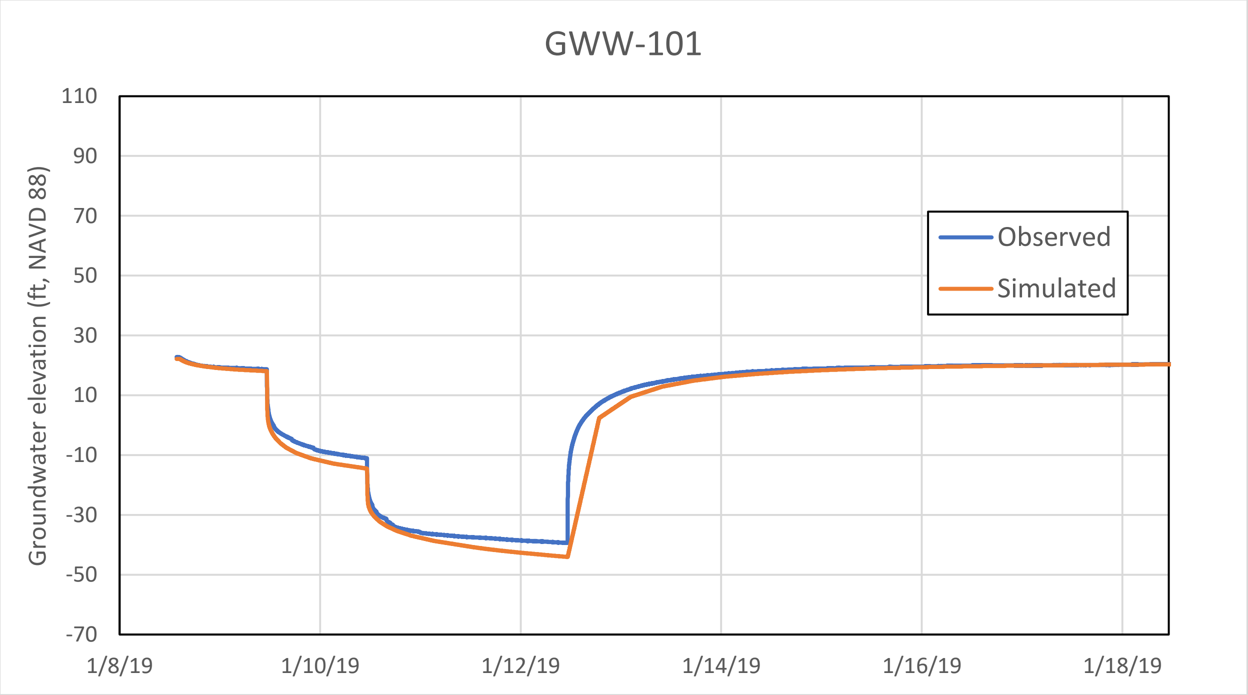


Figure A44. Observed and simulated groundwater elevation at pumping well GWW-101 during pump test 4 (1/8/2019 – 1/18/2019).

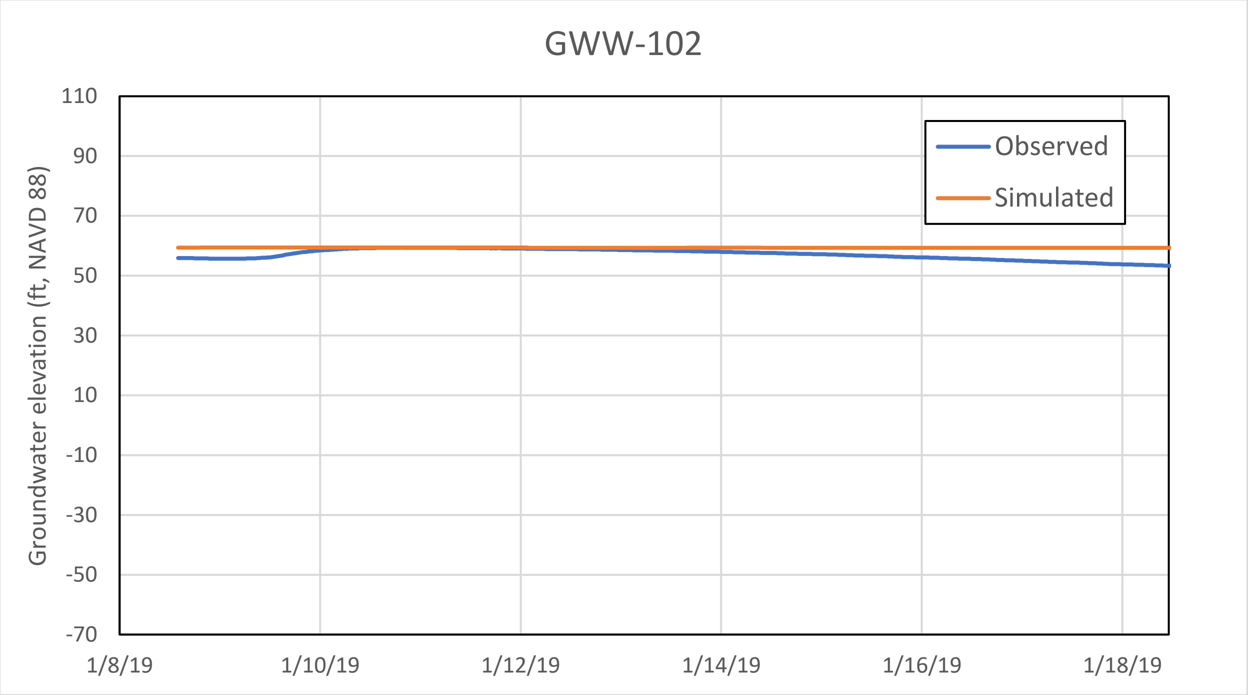


Figure A45. Observed and simulated groundwater elevation at bedrock well GWW-102 during pump test 4 (1/8/2019 – 1/18/2019).

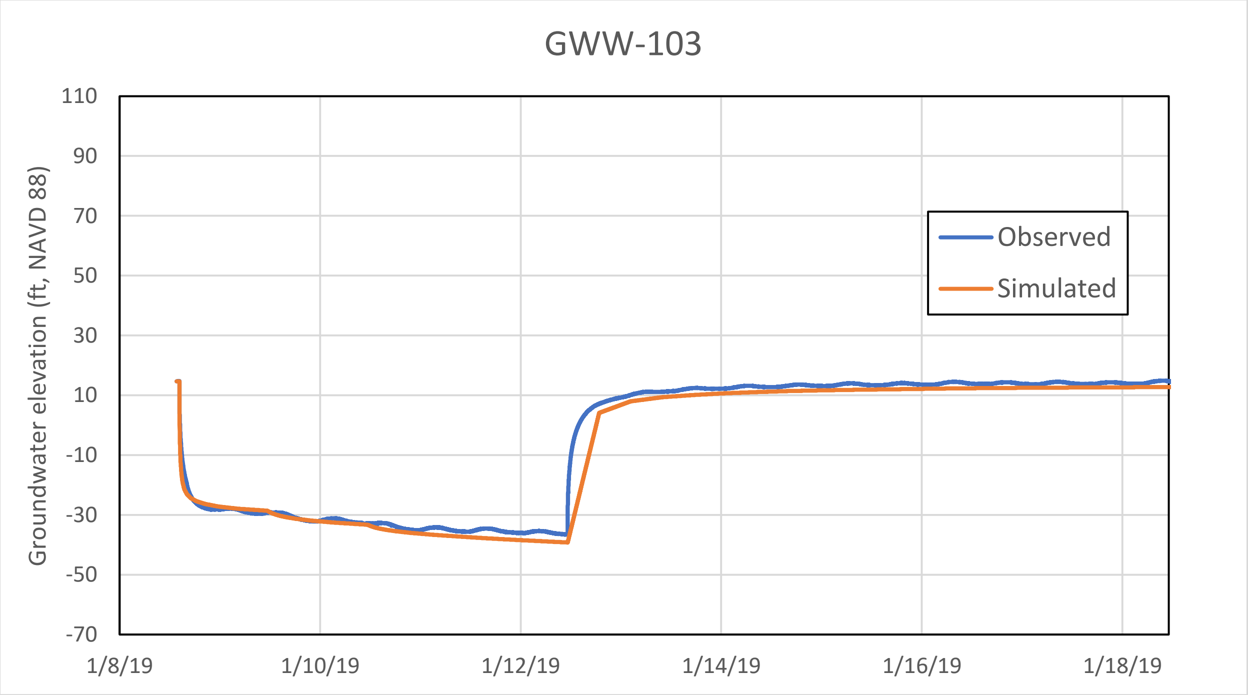


Figure A46. Observed and simulated groundwater elevation at pumping well GWW-103 during pump test 4 (1/8/2019 – 1/18/2019).

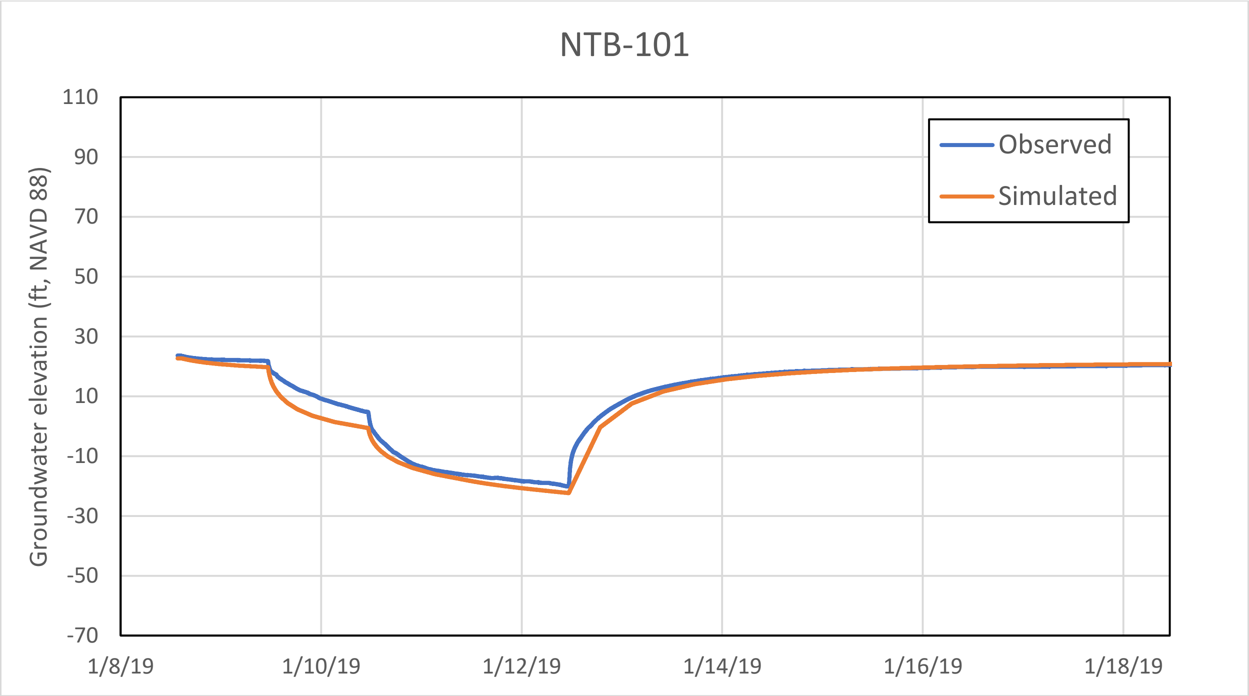


Figure A47. Observed and simulated groundwater elevation at bedrock well NTB-101 during pump test 4 (1/8/2019 – 1/18/2019).

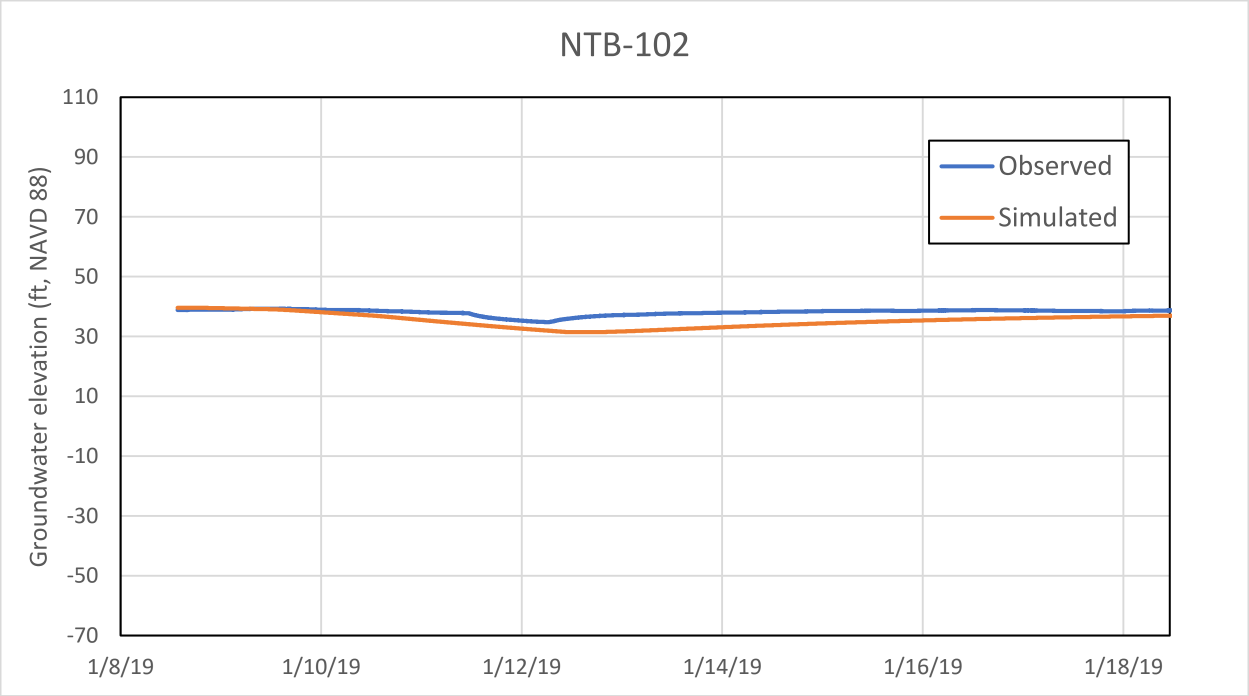


Figure A48. Observed and simulated groundwater elevation at bedrock well NTB-102 during pump test 4 (1/8/2019 – 1/18/2019).

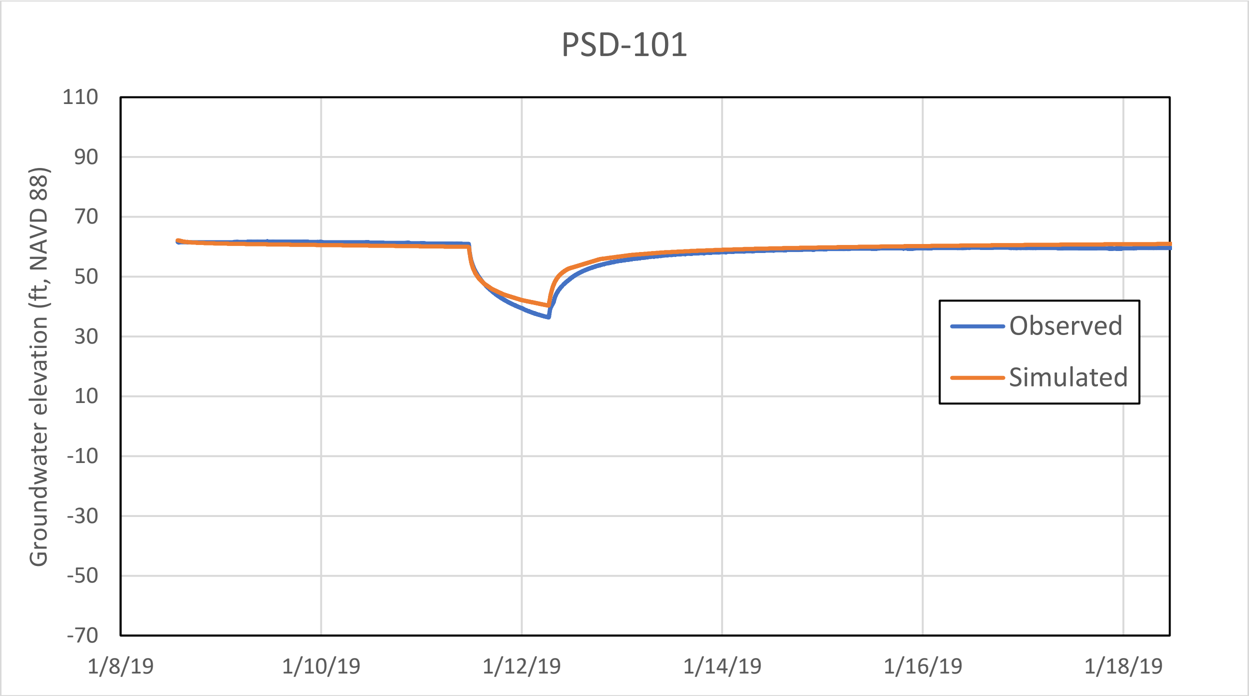


Figure A49. Observed and simulated groundwater elevation at pumping well PSD-101 during pump test 4 (1/8/2019 – 1/18/2019).

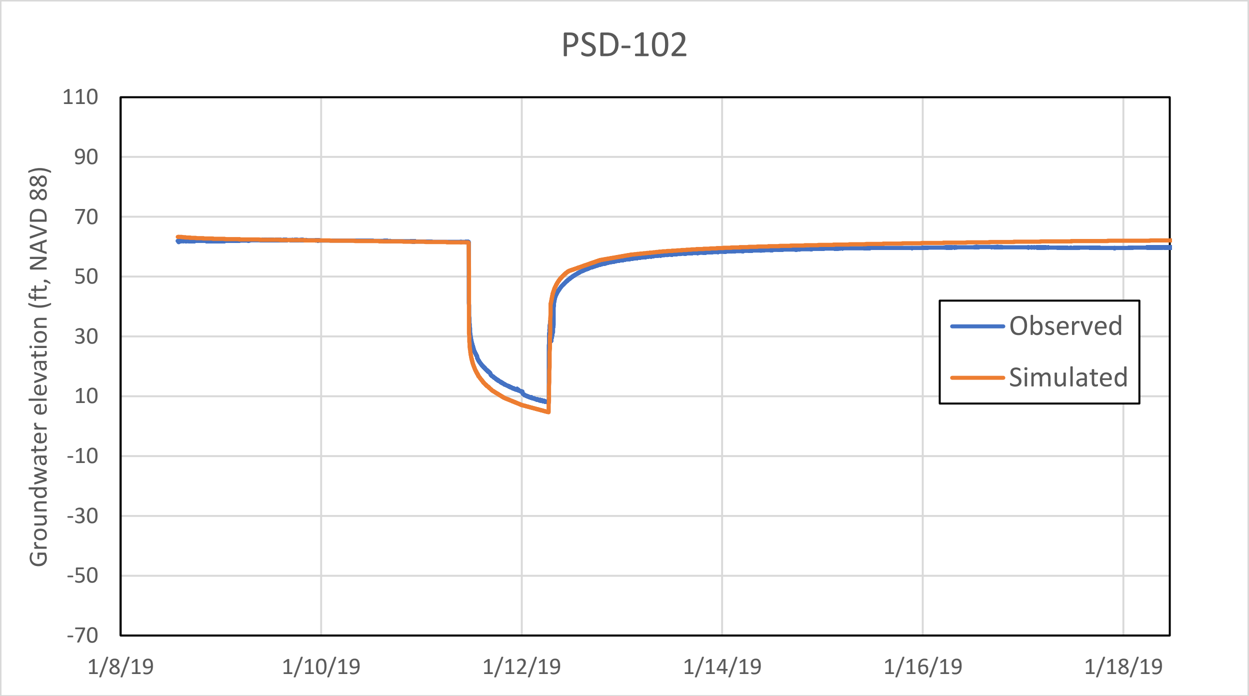


Figure A50. Observed and simulated groundwater elevation at pumping well PSD-102 during pump test 4 (1/8/2019 – 1/18/2019).

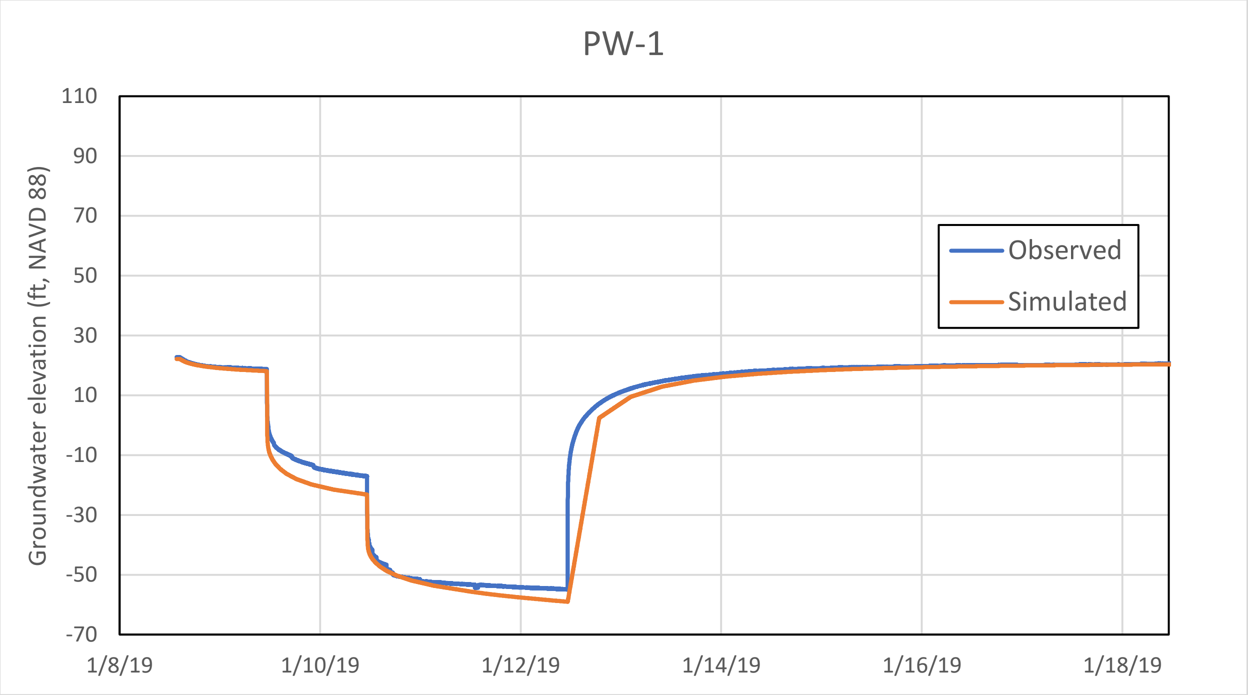


Figure A51. Observed and simulated groundwater elevation at pumping well PW-1 during pump test 4 (1/8/2019 – 1/18/2019).

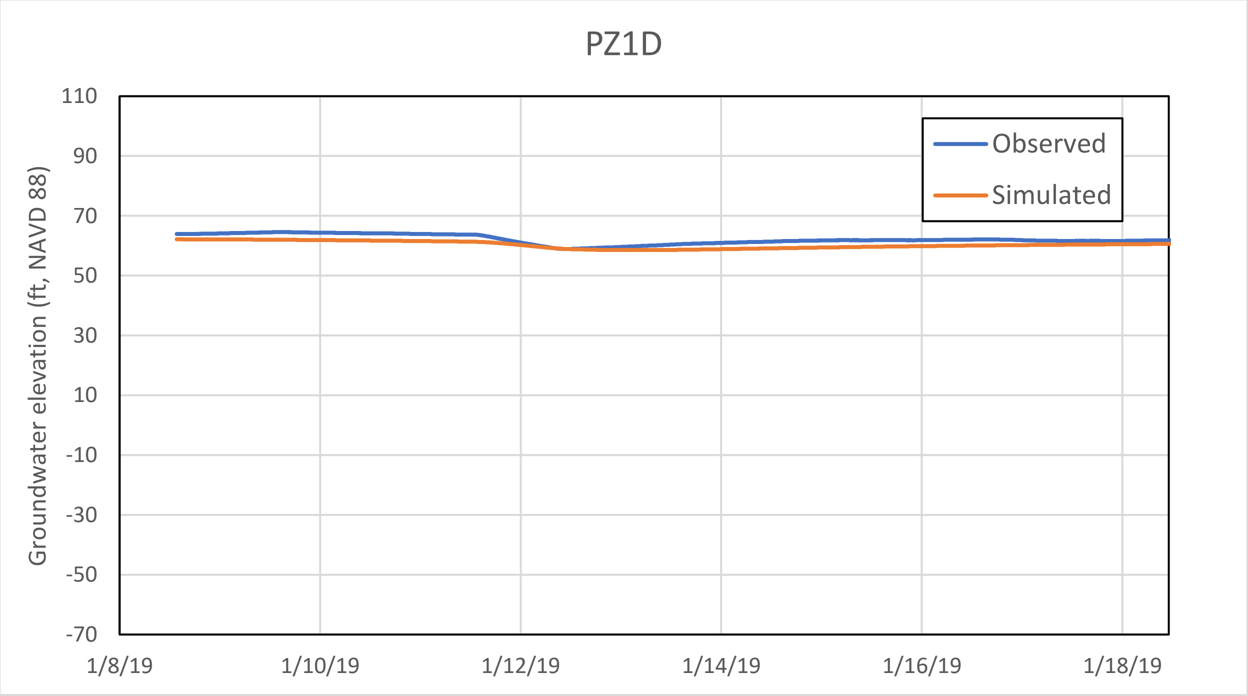


Figure A52. Observed and simulated groundwater elevation at piezometer PZ1D during pump test 4 (1/8/2019 – 1/18/2019).

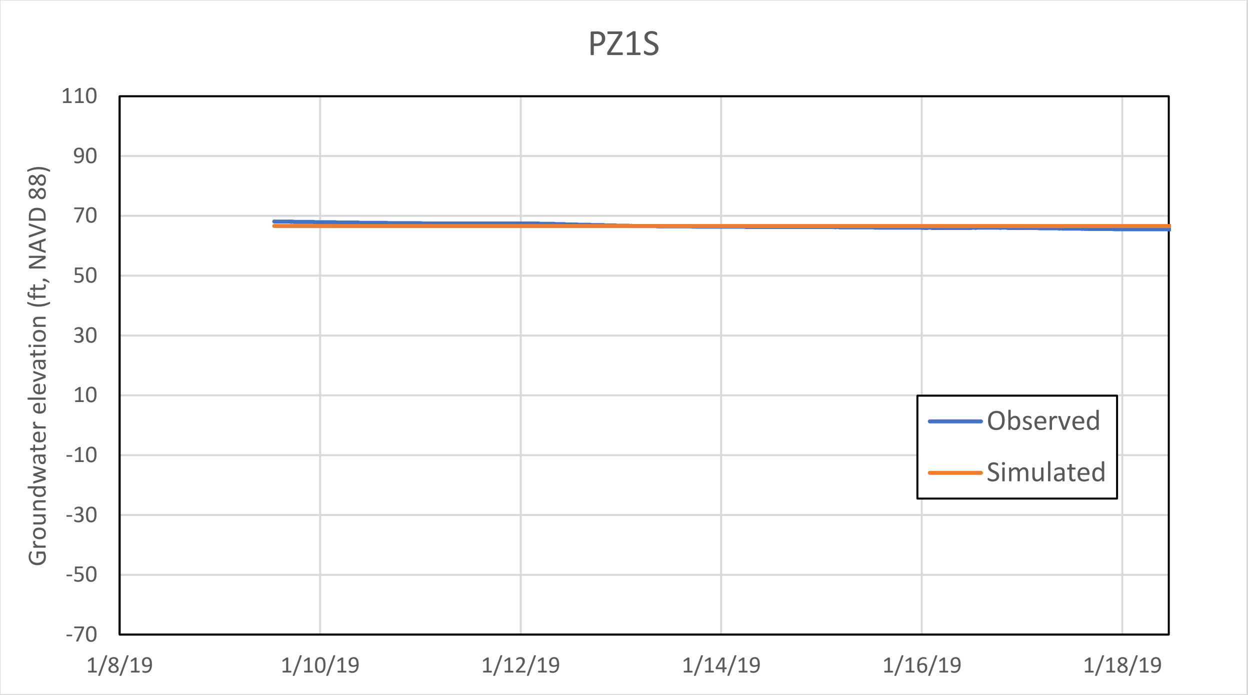


Figure A53. Observed and simulated groundwater elevation at piezometer PZ1S during pump test 4 (1/8/2019 – 1/18/2019).

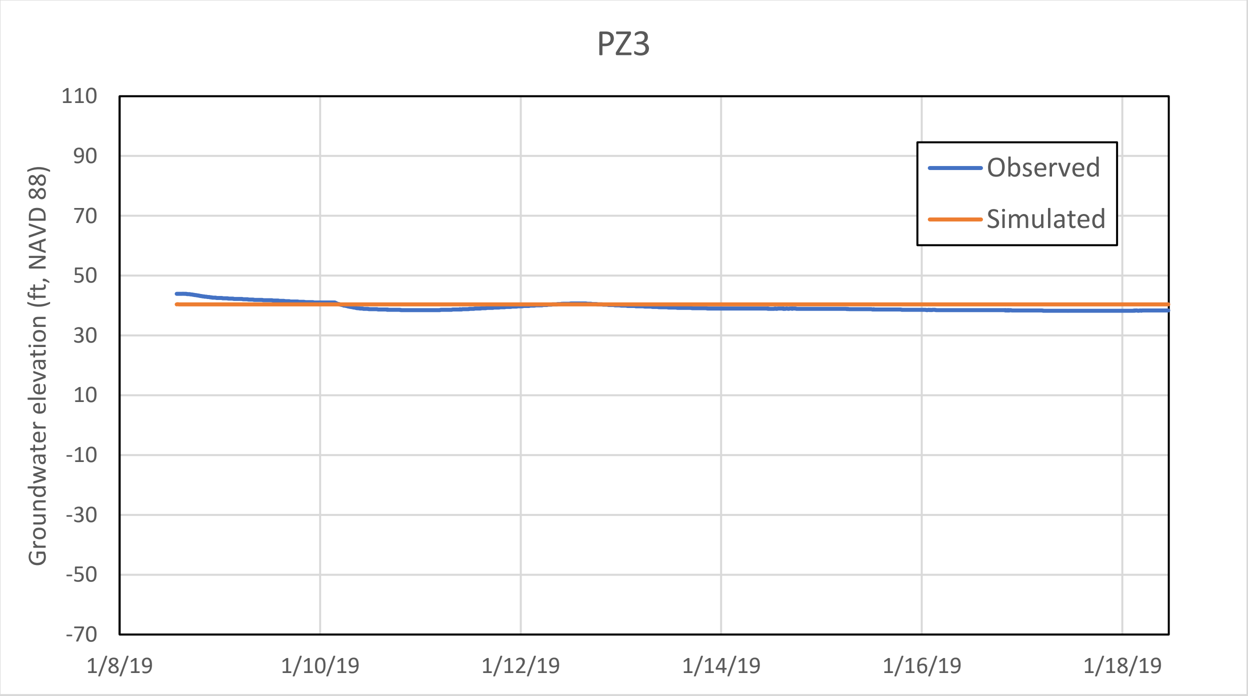


Figure A54. Observed and simulated groundwater elevation at piezometer PZ3 during pump test 4 (1/8/2019 – 1/18/2019).

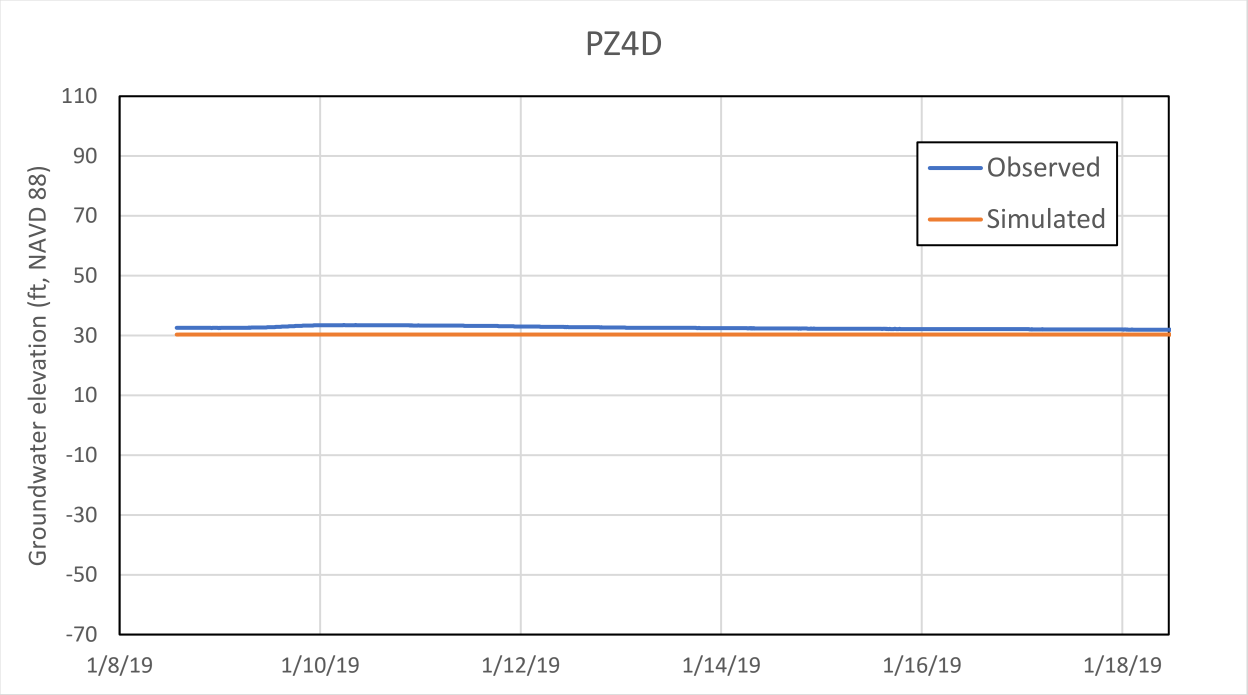


Figure A55. Observed and simulated groundwater elevation at piezometer PZ4D during pump test 4 (1/8/2019 – 1/18/2019).

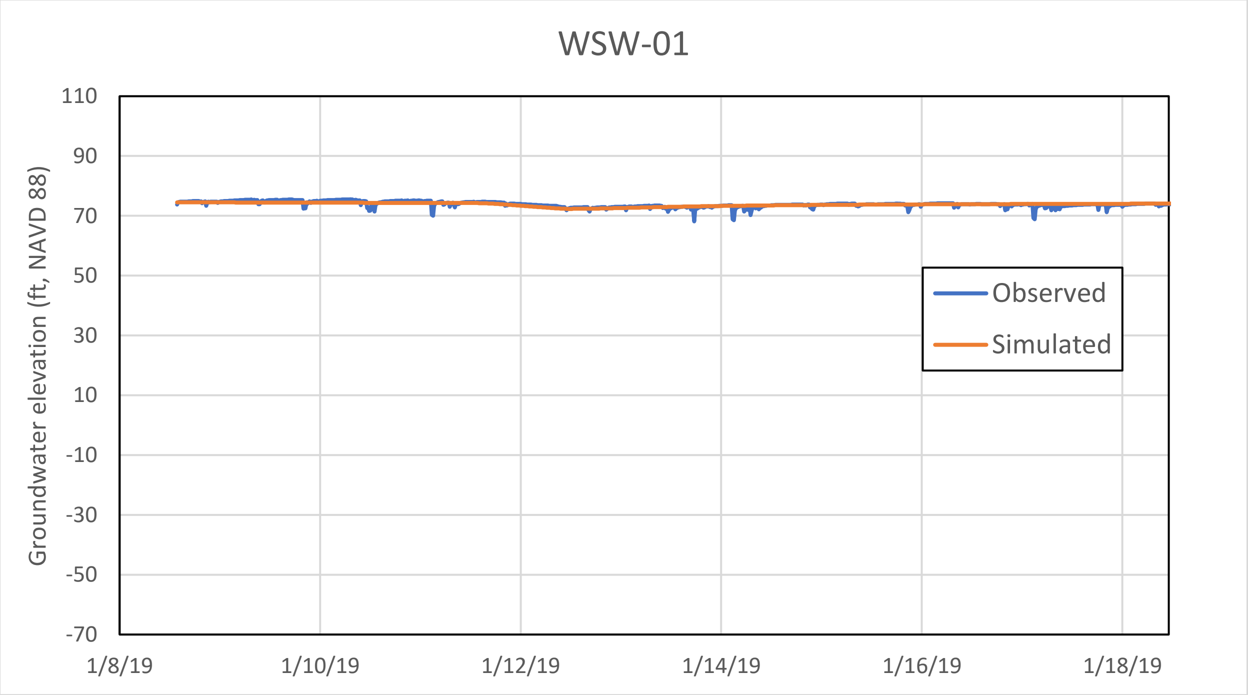


Figure A56. Observed and simulated groundwater elevation at bedrock well WSW-01 during pump test 4 (1/8/2019 – 1/18/2019).

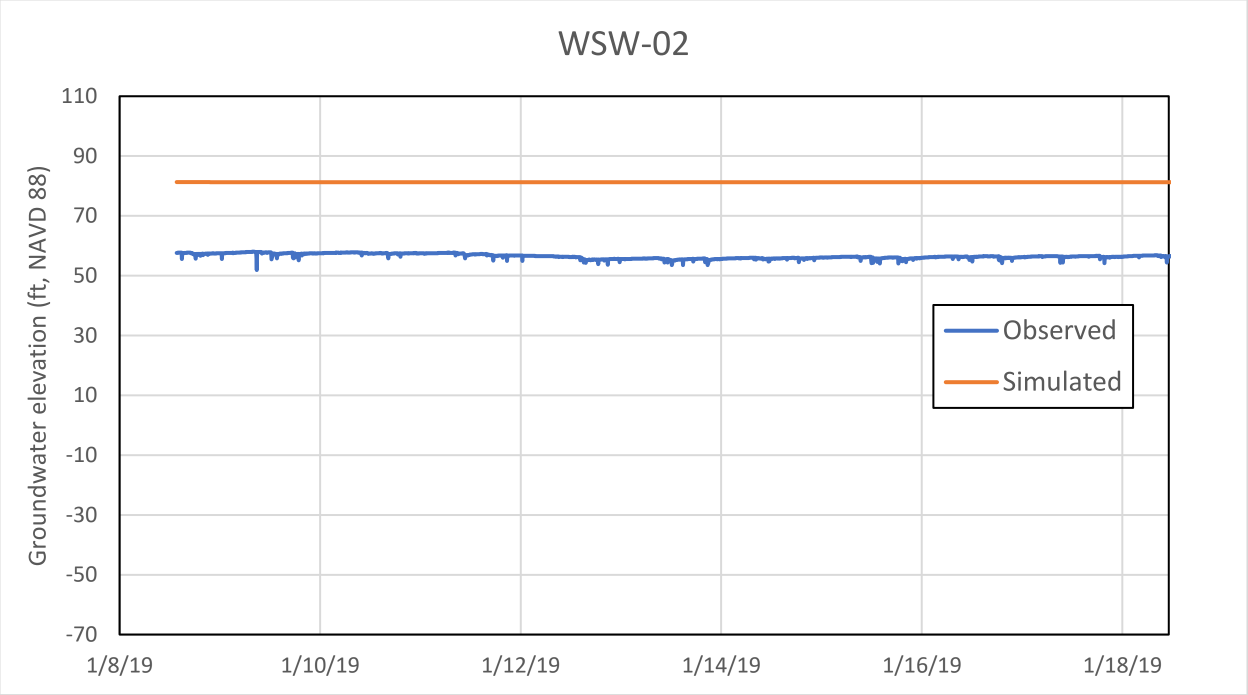


Figure A57. Observed and simulated groundwater elevation at bedrock well WSW-02 during pump test 4 (1/8/2019 – 1/18/2019).

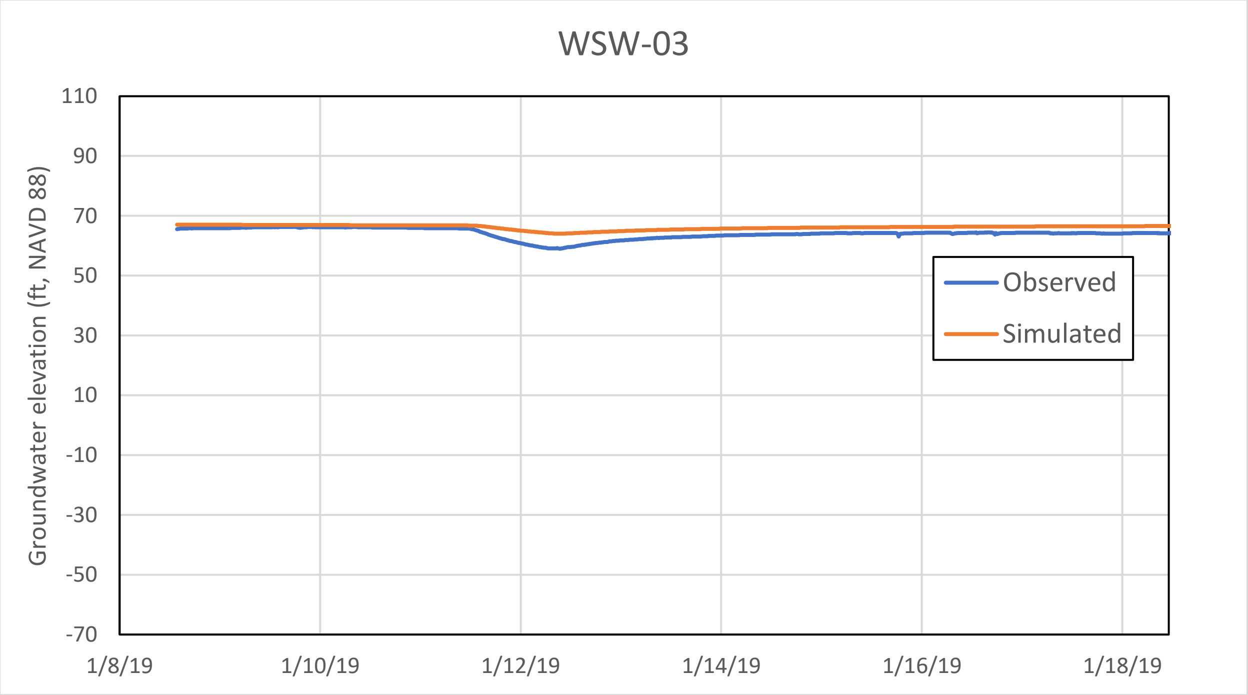


Figure A58. Observed and simulated groundwater elevation at bedrock well WSW-03 during pump test 4 (1/8/2019 – 1/18/2019).

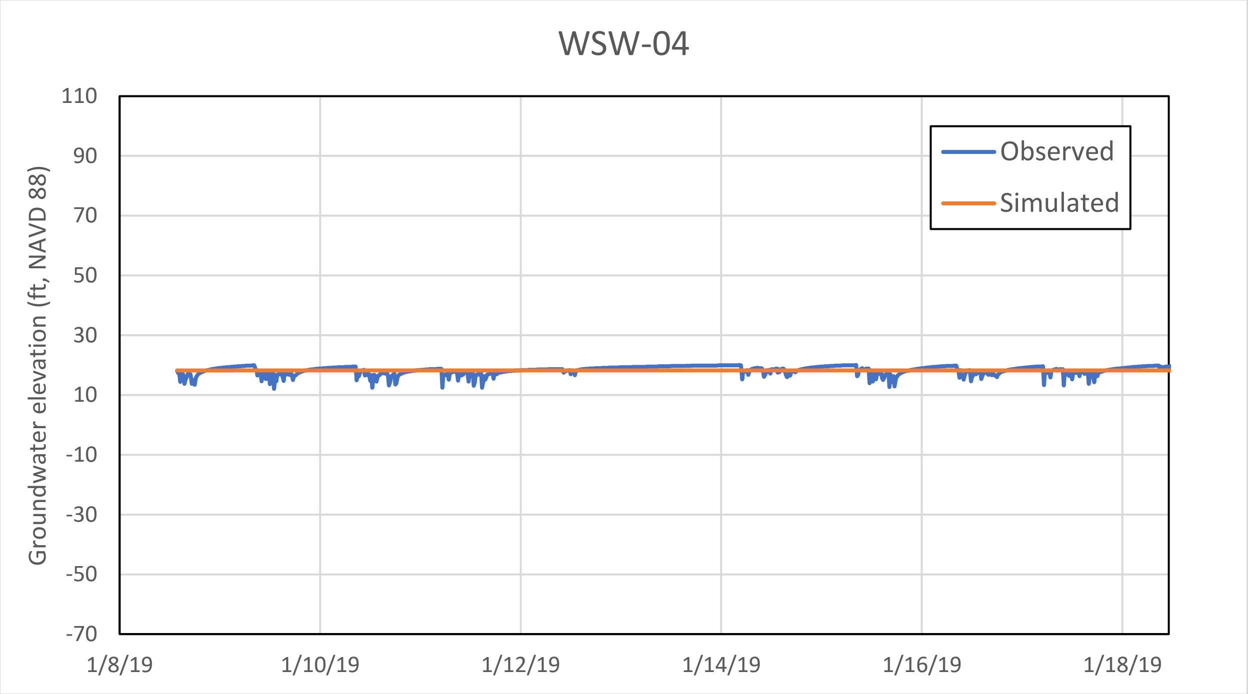


Figure A59. Observed and simulated groundwater elevation at bedrock well WSW-04 during pump test 4 (1/8/2019 – 1/18/2019).

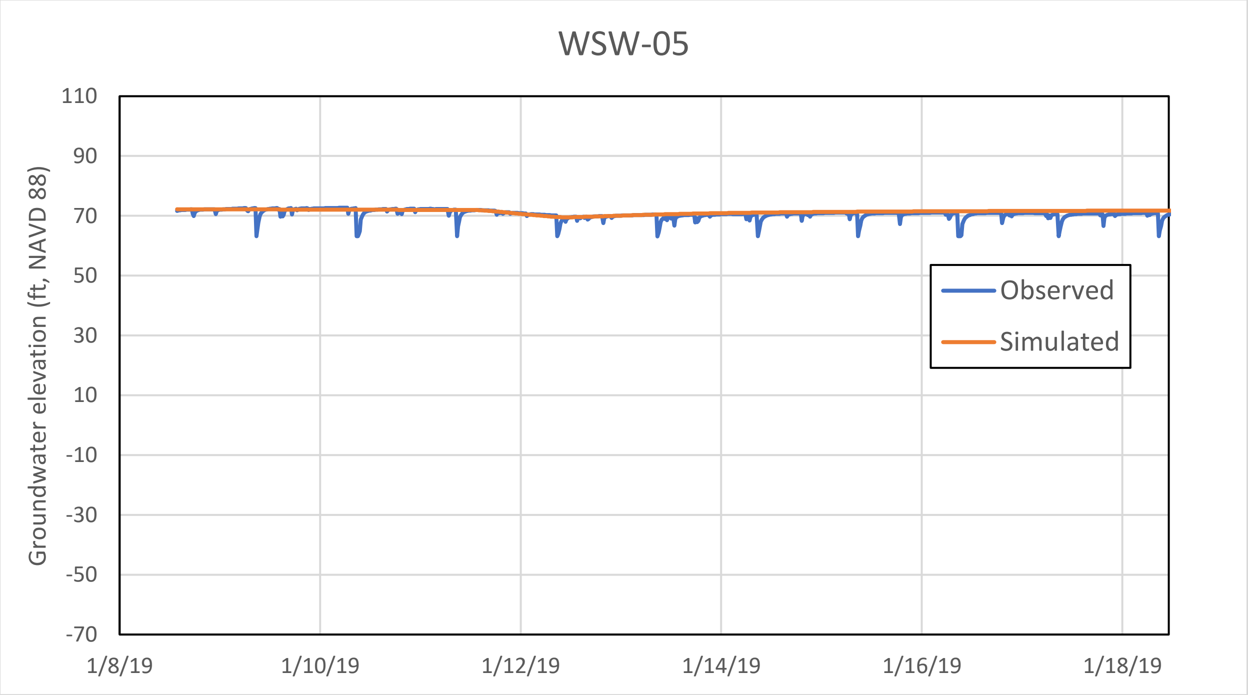


Figure A60. Observed and simulated groundwater elevation at bedrock well WSW-05 during pump test 4 (1/8/2019 – 1/18/2019).

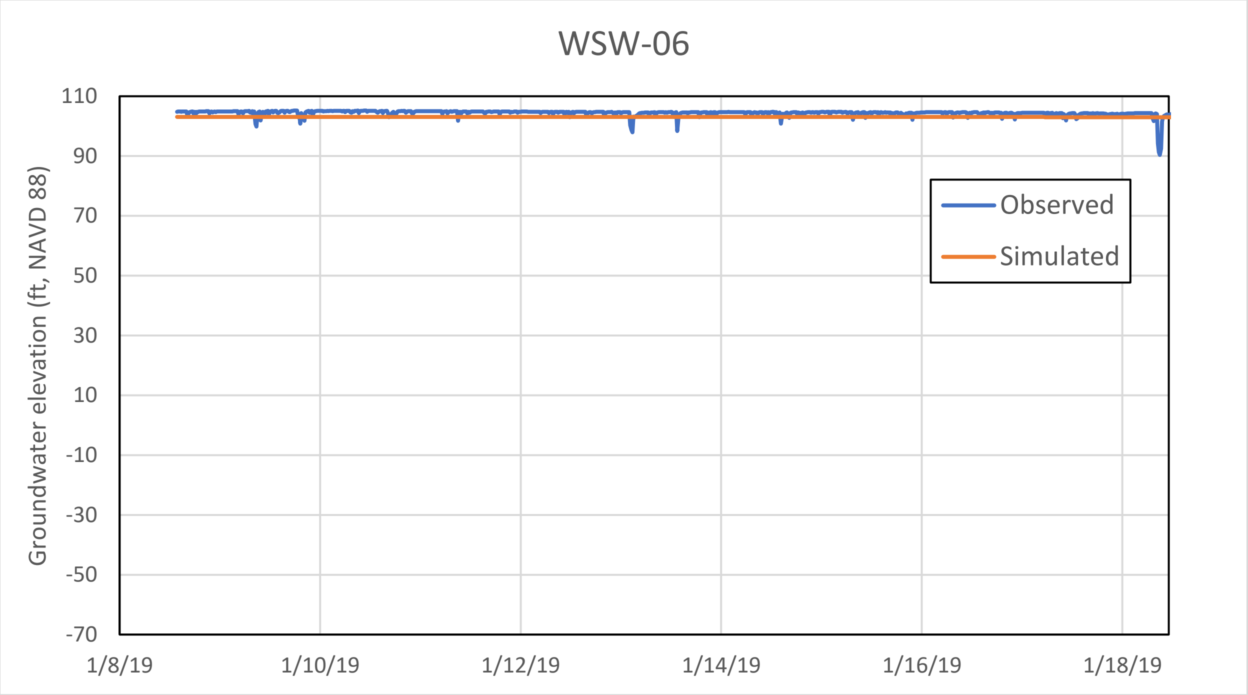


Figure A61. Observed and simulated groundwater elevation at bedrock well WSW-06 during pump test 4 (1/8/2019 – 1/18/2019).

APPENDIX G

Laboratory Analytical Reports

Hydrogeologic Investigation Report
Proposed Commercial Land-Based Aquaculture Facility
Belfast Water District, Cassida Back Lot, and Mathews Brothers West Field Properties
285 Northport Avenue
Belfast, Maine

Ransom Consulting, Inc.
Project 171.05027.003

ANALYTICAL REPORT

Lab Number:	L1807395
Client:	Ransom Consulting, Inc. 400 Commercial Street Suite 404 Portland, ME 04101-4660
ATTN:	Elizabeth Ransom
Phone:	(207) 772-2891
Project Name:	BELFAST WATER DISTRICT
Project Number:	171.05027.003
Report Date:	03/09/18

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), NJ NELAP (MA935), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-14-00197).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1807395
Report Date: 03/09/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1807395-01	NTB-102	WATER	BELFAST, ME	02/26/18 16:15	03/02/18
L1807395-02	NTB-103	WATER	BELFAST, ME	03/01/18 15:30	03/02/18
L1807395-03	GWW-101	WATER	BELFAST, ME	02/27/18 15:45	03/02/18
L1807395-04	GWW-102	WATER	BELFAST, ME	03/01/18 13:00	03/02/18
L1807395-05	TRIP BLANK	WATER	BELFAST, ME	02/26/18 00:00	03/02/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Case Narrative (continued)

Report Submission

The requested analyses were provided by the client.

Semivolatile Organics

L1807395-03: The surrogate recoveries are above the acceptance criteria for 2-fluorophenol (122%), nitrobenzene-d5 (153%), 2-fluorobiphenyl (170%), 2,4,6-tribromophenol (170%) and 4-terphenyl-d14 (184%). Since the sample was non-detect for all target analytes, re-analysis was not required.

Semivolatile Organics by SIM

L1807395-03: The surrogate recovery is above the acceptance criteria for 2-fluorophenol (122%), nitrobenzene-d5 (210%), 2-fluorobiphenyl (171%), 2,4,6-tribromophenol (162%) and 4-terphenyl-d14 (164%). Since the sample was non-detect for all target analytes, re-analysis was not required.

Total Metals

The WG1094454-1 Method Blank, associated with L1807395-03, has a concentration above the reporting limit for Sulfur. Since the associated sample concentration is greater than 10x the blank concentration for this analyte, no corrective action is required.

Phosphorus, Soluble

L1807395-03 was filtered with the method required holding time exceeded.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Cristin Walker Cristin Walker

Title: Technical Director/Representative Date: 03/09/18

ORGANICS

VOLATILES

SAMPLE RESULTS

Lab ID:	L1807395-03	Date Collected:	02/27/18 15:45
Client ID:	GWW-101	Date Received:	03/02/18
Sample Location:	BELFAST, ME	Field Prep:	Field Filtered (Dissolved Metals and phosphorus)
Sample Depth:			

Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 03/05/18 19:08
Analyst: AD

Parameter	**Result**	**Qualifier**	**Units**	**RL**	**MDL**	**Dilution Factor**
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	--	1
1,1-Dichloroethane	ND		ug/l	0.75	--	1
Chloroform	ND		ug/l	0.75	--	1
Carbon tetrachloride	ND		ug/l	0.50	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	0.50	--	1
1,1,2-Trichloroethane	ND		ug/l	0.75	--	1
Tetrachloroethene	ND		ug/l	0.50	--	1
Chlorobenzene	ND		ug/l	0.50	--	1
Trichlorofluoromethane	ND		ug/l	1.0	--	1
1,2-Dichloroethane	ND		ug/l	0.50	--	1
1,1,1-Trichloroethane	ND		ug/l	0.50	--	1
Bromodichloromethane	ND		ug/l	0.50	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	--	1
1,1-Dichloropropene	ND		ug/l	1.0	--	1
Bromoform	ND		ug/l	1.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	0.75	--	1
Ethylbenzene	ND		ug/l	0.50	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	1.0	--	1
Vinyl chloride	ND		ug/l	0.20	--	1
Chloroethane	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	0.50	--	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	--	1

SAMPLE RESULTS

Lab ID: L1807395-03
Client ID: GWW-101
Sample Location: BELFAST, ME
Sample Depth:
Date Collected: 02/27/18 15:45
Date Received: 03/02/18
Field Prep: Field Filtered (Dissolved Metals and phosphorus)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2-Dichloroethene, Total	ND		ug/l	0.50	--	1
Trichloroethene	ND		ug/l	0.50	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	1.0	--	1
p/m-Xylene	ND		ug/l	1.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	--	1
Dibromomethane	ND		ug/l	1.0	--	1
1,4-Dichlorobutane	ND		ug/l	5.0	--	1
1,2,3-Trichloropropane	ND		ug/l	1.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	1.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
Vinyl acetate	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Ethyl methacrylate	ND		ug/l	5.0	--	1
Acrylonitrile	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	1.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	1.0	--	1
1,2-Dibromoethane	ND		ug/l	1.0	--	1
1,3-Dichloropropane	ND		ug/l	1.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Bromobenzene	ND		ug/l	1.0	--	1
n-Butylbenzene	ND		ug/l	0.50	--	1
sec-Butylbenzene	ND		ug/l	0.50	--	1
tert-Butylbenzene	ND		ug/l	1.0	--	1
o-Chlorotoluene	ND		ug/l	1.0	--	1
p-Chlorotoluene	ND		ug/l	1.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	1.0	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1

SAMPLE RESULTS

Lab ID:	L1807395-03	Date Collected:	02/27/18 15:45
Client ID:	GWW-101	Date Received:	03/02/18
Sample Location:	BELFAST, ME	Field Prep:	Field Filtered (Dissolved Metals and phosphorus)
Sample Depth:			

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Isopropylbenzene	ND		ug/l	0.50	--	1
p-Isopropyltoluene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	1.0	--	1
n-Propylbenzene	ND		ug/l	0.50	--	1
1,2,3-Trichlorobenzene	ND		ug/l	1.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	1.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	1.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	1.0	--	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	--	1
Ethyl ether	ND		ug/l	1.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	104		70-130

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 03/05/18 12:03
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 03 Batch: WG1094780-5					
Methylene chloride	ND		ug/l	3.0	--
1,1-Dichloroethane	ND		ug/l	0.75	--
Chloroform	ND		ug/l	0.75	--
Carbon tetrachloride	ND		ug/l	0.50	--
1,2-Dichloropropane	ND		ug/l	1.0	--
Dibromochloromethane	ND		ug/l	0.50	--
1,1,2-Trichloroethane	ND		ug/l	0.75	--
2-Chloroethylvinyl ether	ND		ug/l	10	--
Tetrachloroethene	ND		ug/l	0.50	--
Chlorobenzene	ND		ug/l	0.50	--
Trichlorofluoromethane	ND		ug/l	1.0	--
1,2-Dichloroethane	ND		ug/l	0.50	--
1,1,1-Trichloroethane	ND		ug/l	0.50	--
Bromodichloromethane	ND		ug/l	0.50	--
trans-1,3-Dichloropropene	ND		ug/l	0.50	--
cis-1,3-Dichloropropene	ND		ug/l	0.50	--
1,3-Dichloropropene, Total	ND		ug/l	0.50	--
1,1-Dichloropropene	ND		ug/l	1.0	--
Bromoform	ND		ug/l	1.0	--
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--
Benzene	ND		ug/l	0.50	--
Toluene	ND		ug/l	0.75	--
Ethylbenzene	ND		ug/l	0.50	--
Chloromethane	ND		ug/l	2.0	--
Bromomethane	ND		ug/l	1.0	--
Vinyl chloride	ND		ug/l	0.20	--
Chloroethane	ND		ug/l	1.0	--
1,1-Dichloroethene	ND		ug/l	0.50	--
trans-1,2-Dichloroethene	ND		ug/l	0.75	--

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 03/05/18 12:03
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 03 Batch: WG1094780-5					
1,2-Dichloroethene, Total	ND		ug/l	0.50	--
Trichloroethene	ND		ug/l	0.50	--
1,2-Dichlorobenzene	ND		ug/l	1.0	--
1,3-Dichlorobenzene	ND		ug/l	1.0	--
1,4-Dichlorobenzene	ND		ug/l	1.0	--
Methyl tert butyl ether	ND		ug/l	1.0	--
p/m-Xylene	ND		ug/l	1.0	--
o-Xylene	ND		ug/l	1.0	--
Xylenes, Total	ND		ug/l	1.0	--
cis-1,2-Dichloroethene	ND		ug/l	0.50	--
Dibromomethane	ND		ug/l	1.0	--
1,4-Dichlorobutane	ND		ug/l	5.0	--
Iodomethane	ND		ug/l	5.0	--
1,2,3-Trichloropropane	ND		ug/l	1.0	--
Styrene	ND		ug/l	1.0	--
Dichlorodifluoromethane	ND		ug/l	2.0	--
Acetone	ND		ug/l	5.0	--
Carbon disulfide	ND		ug/l	1.0	--
2-Butanone	ND		ug/l	5.0	--
Vinyl acetate	ND		ug/l	5.0	--
4-Methyl-2-pentanone	ND		ug/l	5.0	--
2-Hexanone	ND		ug/l	5.0	--
Ethyl methacrylate	ND		ug/l	5.0	--
Acrolein	ND		ug/l	5.0	--
Acrylonitrile	ND		ug/l	5.0	--
Bromochloromethane	ND		ug/l	1.0	--
Tetrahydrofuran	ND		ug/l	2.0	--
2,2-Dichloropropane	ND		ug/l	1.0	--
1,2-Dibromoethane	ND		ug/l	1.0	--

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 03/05/18 12:03
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 03 Batch: WG1094780-5					
1,3-Dichloropropane	ND		ug/l	1.0	--
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--
Bromobenzene	ND		ug/l	1.0	--
n-Butylbenzene	ND		ug/l	0.50	--
sec-Butylbenzene	ND		ug/l	0.50	--
tert-Butylbenzene	ND		ug/l	1.0	--
o-Chlorotoluene	ND		ug/l	1.0	--
p-Chlorotoluene	ND		ug/l	1.0	--
1,2-Dibromo-3-chloropropane	ND		ug/l	1.0	--
Hexachlorobutadiene	ND		ug/l	0.50	--
Isopropylbenzene	ND		ug/l	0.50	--
p-Isopropyltoluene	ND		ug/l	0.50	--
Naphthalene	ND		ug/l	1.0	--
n-Propylbenzene	ND		ug/l	0.50	--
1,2,3-Trichlorobenzene	ND		ug/l	1.0	--
1,2,4-Trichlorobenzene	ND		ug/l	1.0	--
1,3,5-Trimethylbenzene	ND		ug/l	1.0	--
1,3,5-Trichlorobenzene	ND		ug/l	1.0	--
1,2,4-Trimethylbenzene	ND		ug/l	1.0	--
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	--
Halothane	ND		ug/l	2.5	--
Ethyl ether	ND		ug/l	1.0	--
Methyl Acetate	ND		ug/l	10	--
Ethyl Acetate	ND		ug/l	10	--
Isopropyl Ether	ND		ug/l	1.0	--
Cyclohexane	ND		ug/l	10	--
Tert-Butyl Alcohol	ND		ug/l	10	--
Ethyl-Tert-Butyl-Ether	ND		ug/l	1.0	--
Tertiary-Amyl Methyl Ether	ND		ug/l	1.0	--

Project Name: BELFAST WATER DISTRICT
Lab Number: L1807395
Project Number: 171.05027.003
Report Date: 03/09/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 03/05/18 12:03
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 03 Batch: WG1094780-5					
1,4-Dioxane	ND		ug/l	250	--
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/l	10	--
Methyl cyclohexane	ND		ug/l	10	--
p-Diethylbenzene	ND		ug/l	2.0	--
4-Ethyltoluene	ND		ug/l	2.0	--
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	104		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1807395

Report Date: 03/09/18

Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 03 Batch: WG1094780-3 WG1094780-4

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Methylene chloride	100		100		70-130	0		20
1,1-Dichloroethane	100		100		70-130	0		20
Chloroform	110		110		70-130	0		20
Carbon tetrachloride	120		110		63-132	9		20
1,2-Dichloropropane	110		110		70-130	0		20
Dibromochloromethane	100		100		63-130	0		20
1,1,2-Trichloroethane	100		100		70-130	0		20
2-Chloroethylvinyl ether	80		83		70-130	4		20
Tetrachloroethene	100		100		70-130	0		20
Chlorobenzene	100		100		75-130	0		25
Trichlorofluoromethane	110		110		62-150	0		20
1,2-Dichloroethane	100		100		70-130	0		20
1,1,1-Trichloroethane	110		110		67-130	0		20
Bromodichloromethane	110		110		67-130	0		20
trans-1,3-Dichloropropene	100		100		70-130	0		20
cis-1,3-Dichloropropene	110		110		70-130	0		20
1,1-Dichloropropene	110		110		70-130	0		20
Bromoform	95		96		54-136	1		20
1,1,2,2-Tetrachloroethane	100		110		67-130	10		20
Benzene	110		110		70-130	0		25
Toluene	100		100		70-130	0		25
Ethylbenzene	110		110		70-130	0		20
Chloromethane	110		110		64-130	0		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Lab Number: L1807395
Project Number: 171.05027.003
Report Date: 03/09/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 03 Batch: WG1094780-3 WG1094780-4								
Bromomethane	74		73		39-139	1		20
Vinyl chloride	110		110		55-140	0		20
Chloroethane	110		110		55-138	0		20
1,1-Dichloroethene	110		100		61-145	10		25
trans-1,2-Dichloroethene	100		100		70-130	0		20
Trichloroethene	100		110		70-130	10		25
1,2-Dichlorobenzene	100		100		70-130	0		20
1,3-Dichlorobenzene	100		100		70-130	0		20
1,4-Dichlorobenzene	110		100		70-130	10		20
Methyl tert butyl ether	98		99		63-130	1		20
p/m-Xylene	110		110		70-130	0		20
o-Xylene	110		110		70-130	0		20
cis-1,2-Dichloroethene	100		100		70-130	0		20
Dibromomethane	110		110		70-130	0		20
1,4-Dichlorobutane	100		100		70-130	0		20
Iodomethane	**58**	Q	**67**	Q	70-130	14		20
1,2,3-Trichloropropane	100		100		64-130	0		20
Styrene	115		115		70-130	0		20
Dichlorodifluoromethane	110		100		36-147	10		20
Acetone	120		120		58-148	0		20
Carbon disulfide	110		100		51-130	10		20
2-Butanone	130		130		63-138	0		20
Vinyl acetate	100		100		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1807395

Report Date: 03/09/18

Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 03 Batch: WG1094780-3 WG1094780-4

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
4-Methyl-2-pentanone	98		100		59-130	2		20
2-Hexanone	110		110		57-130	0		20
Ethyl methacrylate	99		99		70-130	0		20
Acrolein	130		130		70-130	0		20
Acrylonitrile	100		110		70-130	10		20
Bromochloromethane	110		100		70-130	10		20
Tetrahydrofuran	110		110		58-130	0		20
2,2-Dichloropropane	100		100		63-133	0		20
1,2-Dibromoethane	99		99		70-130	0		20
1,3-Dichloropropane	100		100		70-130	0		20
1,1,1,2-Tetrachloroethane	110		110		64-130	0		20
Bromobenzene	100		100		70-130	0		20
n-Butylbenzene	120		110		53-136	9		20
sec-Butylbenzene	120		110		70-130	9		20
tert-Butylbenzene	110		110		70-130	0		20
o-Chlorotoluene	110		100		70-130	10		20
p-Chlorotoluene	100		100		70-130	0		20
1,2-Dibromo-3-chloropropane	94		98		41-144	4		20
Hexachlorobutadiene	110		110		63-130	0		20
Isopropylbenzene	110		110		70-130	0		20
p-Isopropyltoluene	110		110		70-130	0		20
Naphthalene	110		120		70-130	9		20
n-Propylbenzene	110		110		69-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1807395

Report Date: 03/09/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 03 Batch: WG1094780-3 WG1094780-4								
1,2,3-Trichlorobenzene	110		120		70-130	9		20
1,2,4-Trichlorobenzene	100		110		70-130	10		20
1,3,5-Trimethylbenzene	110		110		64-130	0		20
1,3,5-Trichlorobenzene	100		100		70-130	0		20
1,2,4-Trimethylbenzene	110		110		70-130	0		20
trans-1,4-Dichloro-2-butene	98		100		70-130	2		20
Halothane	110		110		70-130	0		20
Ethyl ether	100		100		59-134	0		20
Methyl Acetate	100		100		70-130	0		20
Ethyl Acetate	110		120		70-130	9		20
Isopropyl Ether	100		110		70-130	10		20
Cyclohexane	120		110		70-130	9		20
Tert-Butyl Alcohol	**166**	Q	**164**	Q	70-130	1		20
Ethyl-Tert-Butyl-Ether	99		100		70-130	1		20
Tertiary-Amyl Methyl Ether	100		100		66-130	0		20
1,4-Dioxane	144		146		56-162	1		20
1,1,2-Trichloro-1,2,2-Trifluoroethane	120		110		70-130	9		20
Methyl cyclohexane	120		110		70-130	9		20
p-Diethylbenzene	120		110		70-130	9		20
4-Ethyltoluene	110		110		70-130	0		20
1,2,4,5-Tetramethylbenzene	110		110		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Lab Number: L1807395
Project Number: 171.05027.003
Report Date: 03/09/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 03 Batch: WG1094780-3 WG1094780-4								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	103		102		70-130
Toluene-d8	94		94		70-130
4-Bromofluorobenzene	99		100		70-130
Dibromofluoromethane	106		103		70-130

SEMIVOLATILES

Project Name: BELFAST WATER DISTRICT

Lab Number: L1807395

Project Number: 171.05027.003

Report Date: 03/09/18

SAMPLE RESULTS

Lab ID: L1807395-03

Client ID: GWW-101

Sample Location: BELFAST, ME

Sample Depth:

Date Collected: 02/27/18 15:45

Date Received: 03/02/18

Field Prep: Field Filtered (Dissolved Metals and phosphorus)

Matrix: Water

Analytical Method: 1,8270D

Analytical Date: 03/08/18 22:44

Analyst: PS

Extraction Method: EPA 3510C

Extraction Date: 03/06/18 00:05

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/l	2.0	--	1
Benzidine	ND		ug/l	20	--	1
1,2,4-Trichlorobenzene	ND		ug/l	5.0	--	1
Hexachlorobenzene	ND		ug/l	2.0	--	1
Bis(2-chloroethyl)ether	ND		ug/l	2.0	--	1
2-Chloronaphthalene	ND		ug/l	2.0	--	1
1,2-Dichlorobenzene	ND		ug/l	2.0	--	1
1,3-Dichlorobenzene	ND		ug/l	2.0	--	1
1,4-Dichlorobenzene	ND		ug/l	2.0	--	1
3,3'-Dichlorobenzidine	ND		ug/l	5.0	--	1
2,4-Dinitrotoluene	ND		ug/l	5.0	--	1
2,6-Dinitrotoluene	ND		ug/l	5.0	--	1
Azobenzene	ND		ug/l	2.0	--	1
Fluoranthene	ND		ug/l	2.0	--	1
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	--	1
4-Bromophenyl phenyl ether	ND		ug/l	2.0	--	1
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	--	1
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	--	1
Hexachlorobutadiene	ND		ug/l	2.0	--	1
Hexachlorocyclopentadiene	ND		ug/l	20	--	1
Hexachloroethane	ND		ug/l	2.0	--	1
Isophorone	ND		ug/l	5.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
Nitrobenzene	ND		ug/l	2.0	--	1
NDPA/DPA	ND		ug/l	2.0	--	1
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	--	1
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--	1
Butyl benzyl phthalate	ND		ug/l	5.0	--	1

SAMPLE RESULTS

Lab ID: L1807395-03
Client ID: GWW-101
Sample Location: BELFAST, ME
Sample Depth:

Date Collected: 02/27/18 15:45
Date Received: 03/02/18
Field Prep: Field Filtered (Dissolved Metals and phosphorus)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Di-n-butylphthalate	ND		ug/l	5.0	--	1
Di-n-octylphthalate	ND		ug/l	5.0	--	1
Diethyl phthalate	ND		ug/l	5.0	--	1
Dimethyl phthalate	ND		ug/l	5.0	--	1
Benzo(a)anthracene	ND		ug/l	2.0	--	1
Benzo(a)pyrene	ND		ug/l	2.0	--	1
Benzo(b)fluoranthene	ND		ug/l	2.0	--	1
Benzo(k)fluoranthene	ND		ug/l	2.0	--	1
Chrysene	ND		ug/l	2.0	--	1
Acenaphthylene	ND		ug/l	2.0	--	1
Anthracene	ND		ug/l	2.0	--	1
Benzo(ghi)perylene	ND		ug/l	2.0	--	1
Fluorene	ND		ug/l	2.0	--	1
Phenanthrene	ND		ug/l	2.0	--	1
Dibenzo(a,h)anthracene	ND		ug/l	2.0	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	2.0	--	1
Pyrene	ND		ug/l	2.0	--	1
Biphenyl	ND		ug/l	2.0	--	1
Aniline	ND		ug/l	2.0	--	1
4-Chloroaniline	ND		ug/l	5.0	--	1
1-Methylnaphthalene	ND		ug/l	2.0	--	1
2-Nitroaniline	ND		ug/l	5.0	--	1
3-Nitroaniline	ND		ug/l	5.0	--	1
4-Nitroaniline	ND		ug/l	5.0	--	1
Dibenzofuran	ND		ug/l	2.0	--	1
2-Methylnaphthalene	ND		ug/l	2.0	--	1
n-Nitrosodimethylamine	ND		ug/l	2.0	--	1
2,4,6-Trichlorophenol	ND		ug/l	5.0	--	1
p-Chloro-m-cresol	ND		ug/l	2.0	--	1
2-Chlorophenol	ND		ug/l	2.0	--	1
2,4-Dichlorophenol	ND		ug/l	5.0	--	1
2,4-Dimethylphenol	ND		ug/l	5.0	--	1
2-Nitrophenol	ND		ug/l	10	--	1
4-Nitrophenol	ND		ug/l	10	--	1
2,4-Dinitrophenol	ND		ug/l	20	--	1
4,6-Dinitro-o-cresol	ND		ug/l	10	--	1
Pentachlorophenol	ND		ug/l	10	--	1

SAMPLE RESULTS

Lab ID:	L1807395-03	Date Collected:	02/27/18 15:45
Client ID:	GWW-101	Date Received:	03/02/18
Sample Location:	BELFAST, ME	Field Prep:	Field Filtered (Dissolved Metals and phosphorus)
Sample Depth:			

Parameter	**Result**	**Qualifier**	**Units**	**RL**	**MDL**	**Dilution Factor**
Semivolatile Organics by GC/MS - Westborough Lab						
Phenol	ND		ug/l	5.0	--	1
2-Methylphenol	ND		ug/l	5.0	--	1
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	--	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	--	1
Benzoic Acid	ND		ug/l	50	--	1
Benzyl Alcohol	ND		ug/l	2.0	--	1
Carbazole	ND		ug/l	2.0	--	1
Pyridine	ND		ug/l	3.5	--	1

Surrogate	**% Recovery**	**Qualifier**	**Acceptance Criteria**
2-Fluorophenol	**122**	Q	21-120
Phenol-d6	84		10-120
Nitrobenzene-d5	**153**	Q	23-120
2-Fluorobiphenyl	**170**	Q	15-120
2,4,6-Tribromophenol	**170**	Q	10-120
4-Terphenyl-d14	**184**	Q	41-149

SAMPLE RESULTS

Lab ID:	L1807395-03	Date Collected:	02/27/18 15:45
Client ID:	GWW-101	Date Received:	03/02/18
Sample Location:	BELFAST, ME	Field Prep:	Field Filtered (Dissolved Metals and phosphorus)
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	03/06/18 00:09
Analytical Date:	03/07/18 14:58		
Analyst:	KL		

Parameter	**Result**	**Qualifier**	**Units**	**RL**	**MDL**	**Dilution Factor**
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	ND		ug/l	0.10	--	1
2-Chloronaphthalene	ND		ug/l	0.20	--	1
Fluoranthene	ND		ug/l	0.10	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	0.10	--	1
Benzo(a)anthracene	ND		ug/l	0.10	--	1
Benzo(a)pyrene	ND		ug/l	0.10	--	1
Benzo(b)fluoranthene	ND		ug/l	0.10	--	1
Benzo(k)fluoranthene	ND		ug/l	0.10	--	1
Chrysene	ND		ug/l	0.10	--	1
Acenaphthylene	ND		ug/l	0.10	--	1
Anthracene	ND		ug/l	0.10	--	1
Benzo(ghi)perylene	ND		ug/l	0.10	--	1
Fluorene	ND		ug/l	0.10	--	1
Phenanthrene	ND		ug/l	0.10	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.10	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	--	1
Pyrene	ND		ug/l	0.10	--	1
1-Methylnaphthalene	ND		ug/l	0.10	--	1
2-Methylnaphthalene	ND		ug/l	0.10	--	1
Pentachlorophenol	ND		ug/l	0.80	--	1
Hexachlorobenzene	ND		ug/l	0.80	--	1
Hexachloroethane	ND		ug/l	0.80	--	1

SAMPLE RESULTS

Lab ID: L1807395-03
Client ID: GWW-101
Sample Location: BELFAST, ME
Sample Depth:

Date Collected: 02/27/18 15:45
Date Received: 03/02/18
Field Prep: Field Filtered (Dissolved Metals and phosphorus)

Parameter	**Result**	**Qualifier**	**Units**	**RL**	**MDL**	**Dilution Factor**

Semivolatile Organics by GC/MS-SIM - Westborough Lab

Surrogate	**% Recovery**	**Qualifier**	**Acceptance Criteria**
2-Fluorophenol	**122**	Q	21-120
Phenol-d6	96		10-120
Nitrobenzene-d5	**210**	Q	23-120
2-Fluorobiphenyl	**171**	Q	15-120
2,4,6-Tribromophenol	**162**	Q	10-120
4-Terphenyl-d14	**164**	Q	41-149

Project Name:	BELFAST WATER DISTRICT	**Lab Number:**	L1807395
Project Number:	171.05027.003	**Report Date:**	03/09/18

Method Blank Analysis
Batch Quality Control

Analytical Method:	1,8270D	Extraction Method:	EPA 3510C
Analytical Date:	03/08/18 10:58	Extraction Date:	03/06/18 00:05
Analyst:	PS		

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 03 Batch: WG1094694-1					
Acenaphthene	ND		ug/l	2.0	--
Benzidine	ND		ug/l	20	--
1,2,4-Trichlorobenzene	ND		ug/l	5.0	--
Hexachlorobenzene	ND		ug/l	2.0	--
Bis(2-chloroethyl)ether	ND		ug/l	2.0	--
2-Chloronaphthalene	ND		ug/l	2.0	--
1,2-Dichlorobenzene	ND		ug/l	2.0	--
1,3-Dichlorobenzene	ND		ug/l	2.0	--
1,4-Dichlorobenzene	ND		ug/l	2.0	--
3,3'-Dichlorobenzidine	ND		ug/l	5.0	--
2,4-Dinitrotoluene	ND		ug/l	5.0	--
2,6-Dinitrotoluene	ND		ug/l	5.0	--
Azobenzene	ND		ug/l	2.0	--
Fluoranthene	ND		ug/l	2.0	--
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	--
4-Bromophenyl phenyl ether	ND		ug/l	2.0	--
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	--
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	--
Hexachlorobutadiene	ND		ug/l	2.0	--
Hexachlorocyclopentadiene	ND		ug/l	20	--
Hexachloroethane	ND		ug/l	2.0	--
Isophorone	ND		ug/l	5.0	--
Naphthalene	ND		ug/l	2.0	--
Nitrobenzene	ND		ug/l	2.0	--
NDPA/DPA	ND		ug/l	2.0	--
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	--
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--
Butyl benzyl phthalate	ND		ug/l	5.0	--
Di-n-butylphthalate	ND		ug/l	5.0	--

Project Name:	BELFAST WATER DISTRICT	**Lab Number:**	L1807395
Project Number:	171.05027.003	**Report Date:**	03/09/18

Method Blank Analysis

Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 03/08/18 10:58
Analyst: PS

Extraction Method: EPA 3510C
Extraction Date: 03/06/18 00:05

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 03 Batch: WG1094694-1					
Di-n-octylphthalate	ND		ug/l	5.0	--
Diethyl phthalate	ND		ug/l	5.0	--
Dimethyl phthalate	ND		ug/l	5.0	--
Benzo(a)anthracene	ND		ug/l	2.0	--
Benzo(a)pyrene	ND		ug/l	2.0	--
Benzo(b)fluoranthene	ND		ug/l	2.0	--
Benzo(k)fluoranthene	ND		ug/l	2.0	--
Chrysene	ND		ug/l	2.0	--
Acenaphthylene	ND		ug/l	2.0	--
Anthracene	ND		ug/l	2.0	--
Benzo(ghi)perylene	ND		ug/l	2.0	--
Fluorene	ND		ug/l	2.0	--
Phenanthrene	ND		ug/l	2.0	--
Dibenzo(a,h)anthracene	ND		ug/l	2.0	--
Indeno(1,2,3-cd)pyrene	ND		ug/l	2.0	--
Pyrene	ND		ug/l	2.0	--
Biphenyl	ND		ug/l	2.0	--
Aniline	ND		ug/l	2.0	--
4-Chloroaniline	ND		ug/l	5.0	--
1-Methylnaphthalene	ND		ug/l	2.0	--
2-Nitroaniline	ND		ug/l	5.0	--
3-Nitroaniline	ND		ug/l	5.0	--
4-Nitroaniline	ND		ug/l	5.0	--
Dibenzofuran	ND		ug/l	2.0	--
2-Methylnaphthalene	ND		ug/l	2.0	--
n-Nitrosodimethylamine	ND		ug/l	2.0	--
2,4,6-Trichlorophenol	ND		ug/l	5.0	--
p-Chloro-m-cresol	ND		ug/l	2.0	--
2-Chlorophenol	ND		ug/l	2.0	--

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 03/08/18 10:58
Analyst: PS

Extraction Method: EPA 3510C
Extraction Date: 03/06/18 00:05

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 03 Batch: WG1094694-1					
2,4-Dichlorophenol	ND		ug/l	5.0	--
2,4-Dimethylphenol	ND		ug/l	5.0	--
2-Nitrophenol	ND		ug/l	10	--
4-Nitrophenol	ND		ug/l	10	--
2,4-Dinitrophenol	ND		ug/l	20	--
4,6-Dinitro-o-cresol	ND		ug/l	10	--
Pentachlorophenol	ND		ug/l	10	--
Phenol	ND		ug/l	5.0	--
2-Methylphenol	ND		ug/l	5.0	--
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	--
2,4,5-Trichlorophenol	ND		ug/l	5.0	--
Benzoic Acid	ND		ug/l	50	--
Benzyl Alcohol	ND		ug/l	2.0	--
Carbazole	ND		ug/l	2.0	--
Pyridine	ND		ug/l	3.5	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	51		21-120
Phenol-d6	36		10-120
Nitrobenzene-d5	73		23-120
2-Fluorobiphenyl	79		15-120
2,4,6-Tribromophenol	69		10-120
4-Terphenyl-d14	86		41-149

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 03/07/18 12:53
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 03/06/18 00:09

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 03 Batch: WG1094697-1					
Acenaphthene	ND		ug/l	0.10	--
2-Chloronaphthalene	ND		ug/l	0.20	--
Fluoranthene	ND		ug/l	0.10	--
Hexachlorobutadiene	ND		ug/l	0.50	--
Naphthalene	ND		ug/l	0.10	--
Benzo(a)anthracene	ND		ug/l	0.10	--
Benzo(a)pyrene	ND		ug/l	0.10	--
Benzo(b)fluoranthene	ND		ug/l	0.10	--
Benzo(k)fluoranthene	ND		ug/l	0.10	--
Chrysene	ND		ug/l	0.10	--
Acenaphthylene	ND		ug/l	0.10	--
Anthracene	ND		ug/l	0.10	--
Benzo(ghi)perylene	ND		ug/l	0.10	--
Fluorene	ND		ug/l	0.10	--
Phenanthrene	ND		ug/l	0.10	--
Dibenzo(a,h)anthracene	ND		ug/l	0.10	--
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	--
Pyrene	ND		ug/l	0.10	--
1-Methylnaphthalene	ND		ug/l	0.10	--
2-Methylnaphthalene	ND		ug/l	0.10	--
Pentachlorophenol	ND		ug/l	0.80	--
Hexachlorobenzene	ND		ug/l	0.80	--
Hexachloroethane	ND		ug/l	0.80	--

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 03/07/18 12:53
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 03/06/18 00:09

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 03 Batch: WG1094697-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	57		21-120
Phenol-d6	43		10-120
Nitrobenzene-d5	96		23-120
2-Fluorobiphenyl	98		15-120
2,4,6-Tribromophenol	72		10-120
4-Terphenyl-d14	78		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1807395

Report Date: 03/09/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 03 Batch: WG1094694-2 WG1094694-3								
Acenaphthene	81		80		37-111	1		30
Benzidine	37		39		10-75	5		30
1,2,4-Trichlorobenzene	64		65		39-98	2		30
Hexachlorobenzene	83		84		40-140	1		30
Bis(2-chloroethyl)ether	73		74		40-140	1		30
2-Chloronaphthalene	81		80		40-140	1		30
1,2-Dichlorobenzene	63		63		40-140	0		30
1,3-Dichlorobenzene	61		60		40-140	2		30
1,4-Dichlorobenzene	61		61		36-97	0		30
3,3'-Dichlorobenzidine	78		81		40-140	4		30
2,4-Dinitrotoluene	90		89		48-143	1		30
2,6-Dinitrotoluene	89		88		40-140	1		30
Azobenzene	86		85		40-140	1		30
Fluoranthene	87		87		40-140	0		30
4-Chlorophenyl phenyl ether	84		82		40-140	2		30
4-Bromophenyl phenyl ether	82		82		40-140	0		30
Bis(2-chloroisopropyl)ether	72		71		40-140	1		30
Bis(2-chloroethoxy)methane	75		75		40-140	0		30
Hexachlorobutadiene	63		63		40-140	0		30
Hexachlorocyclopentadiene	58		42		40-140	**32**	Q	30
Hexachloroethane	60		59		40-140	2		30
Isophorone	76		76		40-140	0		30
Naphthalene	72		73		40-140	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Lab Number: L1807395
Project Number: 171.05027.003
Report Date: 03/09/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 03 Batch: WG1094694-2 WG1094694-3								
Nitrobenzene	75		75		40-140	0		30
NDPA/DPA	86		85		40-140	1		30
n-Nitrosodi-n-propylamine	75		76		29-132	1		30
Bis(2-ethylhexyl)phthalate	88		87		40-140	1		30
Butyl benzyl phthalate	94		94		40-140	0		30
Di-n-butylphthalate	85		85		40-140	0		30
Di-n-octylphthalate	91		90		40-140	1		30
Diethyl phthalate	88		86		40-140	2		30
Dimethyl phthalate	85		84		40-140	1		30
Benzo(a)anthracene	85		85		40-140	0		30
Benzo(a)pyrene	94		94		40-140	0		30
Benzo(b)fluoranthene	92		93		40-140	1		30
Benzo(k)fluoranthene	91		91		40-140	0		30
Chrysene	86		84		40-140	2		30
Acenaphthylene	83		83		45-123	0		30
Anthracene	82		83		40-140	1		30
Benzo(ghi)perylene	90		90		40-140	0		30
Fluorene	85		84		40-140	1		30
Phenanthrene	81		82		40-140	1		30
Dibenzo(a,h)anthracene	88		88		40-140	0		30
Indeno(1,2,3-cd)pyrene	88		88		40-140	0		30
Pyrene	85		86		26-127	1		30
Biphenyl	84		85		40-140	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1807395
Report Date: 03/09/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 03 Batch: WG1094694-2 WG1094694-3								
Aniline	**39**	Q	**38**	Q	40-140	3		30
4-Chloroaniline	62		62		40-140	0		30
1-Methylnaphthalene	75		76		41-103	1		30
2-Nitroaniline	88		88		52-143	0		30
3-Nitroaniline	70		70		25-145	0		30
4-Nitroaniline	87		88		51-143	1		30
Dibenzofuran	83		83		40-140	0		30
2-Methylnaphthalene	74		74		40-140	0		30
n-Nitrosodimethylamine	45		44		22-74	2		30
2,4,6-Trichlorophenol	83		83		30-130	0		30
p-Chloro-m-cresol	84		84		23-97	0		30
2-Chlorophenol	76		77		27-123	1		30
2,4-Dichlorophenol	81		81		30-130	0		30
2,4-Dimethylphenol	77		77		30-130	0		30
2-Nitrophenol	78		79		30-130	1		30
4-Nitrophenol	61		61		10-80	0		30
2,4-Dinitrophenol	76		76		20-130	0		30
4,6-Dinitro-o-cresol	89		89		20-164	0		30
Pentachlorophenol	76		78		9-103	3		30
Phenol	43		43		12-110	0		30
2-Methylphenol	72		72		30-130	0		30
3-Methylphenol/4-Methylphenol	68		69		30-130	1		30
2,4,5-Trichlorophenol	88		87		30-130	1		30

Lab Control Sample Analysis
Batch Quality Control

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 03 Batch: WG1094694-2 WG1094694-3								
Benzoic Acid	26		22		10-164	17		30
Benzyl Alcohol	64		63		26-116	2		30
Carbazole	87		86		55-144	1		30
Pyridine	29		27		10-66	7		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	60		61		21-120
Phenol-d6	44		45		10-120
Nitrobenzene-d5	79		80		23-120
2-Fluorobiphenyl	86		87		15-120
2,4,6-Tribromophenol	89		89		10-120
4-Terphenyl-d14	87		90		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1807395

Report Date: 03/09/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 03 Batch: WG1094697-2 WG1094697-3								
Acenaphthene	57		61		40-140	7		40
2-Chloronaphthalene	60		62		40-140	3		40
Fluoranthene	84		80		40-140	5		40
Hexachlorobutadiene	64		78		40-140	20		40
Naphthalene	64		65		40-140	2		40
Benzo(a)anthracene	73		80		40-140	9		40
Benzo(a)pyrene	83		89		40-140	7		40
Benzo(b)fluoranthene	82		88		40-140	7		40
Benzo(k)fluoranthene	78		81		40-140	4		40
Chrysene	66		73		40-140	10		40
Acenaphthylene	68		72		40-140	6		40
Anthracene	79		74		40-140	7		40
Benzo(ghi)perylene	62		82		40-140	28		40
Fluorene	68		79		40-140	15		40
Phenanthrene	66		67		40-140	2		40
Dibenzo(a,h)anthracene	65		87		40-140	29		40
Indeno(1,2,3-cd)pyrene	66		90		40-140	31		40
Pyrene	81		77		40-140	5		40
1-Methylnaphthalene	65		67		40-140	3		40
2-Methylnaphthalene	68		67		40-140	1		40
Pentachlorophenol	57		59		40-140	3		40
Hexachlorobenzene	62		64		40-140	3		40
Hexachloroethane	72		67		40-140	7		40

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1807395

Report Date: 03/09/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 03 Batch: WG1094697-2 WG1094697-3								

Surrogate	*LCS %Recovery*	*Qual*	*LCSD %Recovery*	*Qual*	*Acceptance Criteria*
2-Fluorophenol	54		56		21-120
Phenol-d6	45		46		10-120
Nitrobenzene-d5	95		102		23-120
2-Fluorobiphenyl	76		79		15-120
2,4,6-Tribromophenol	84		90		10-120
4-Terphenyl-d14	100		95		41-149

METALS

Project Name: BELFAST WATER DISTRICT
Lab Number: L1807395
Project Number: 171.05027.003
Report Date: 03/09/18

SAMPLE RESULTS

Lab ID: L1807395-03
Client ID: GWW-101
Sample Location: BELFAST, ME
Sample Depth:
Matrix: Water
Date Collected: 02/27/18 15:45
Date Received: 03/02/18
Field Prep: Field Filtered (Dissolved Metals and phosphorus)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.188		mg/l	0.100	--	1	03/07/18 07:30	03/07/18 16:47	EPA 3005A	1,6010C	PS
Antimony, Total	ND		mg/l	0.00400	--	1	03/07/18 07:30	03/07/18 12:51	EPA 3005A	1,6020A	AM
Arsenic, Total	0.006		mg/l	0.005	--	1	03/07/18 07:30	03/07/18 16:47	EPA 3005A	1,6010C	PS
Barium, Total	ND		mg/l	0.010	--	1	03/07/18 07:30	03/07/18 16:47	EPA 3005A	1,6010C	PS
Beryllium, Total	ND		mg/l	0.00050	--	1	03/07/18 07:30	03/07/18 12:51	EPA 3005A	1,6020A	AM
Boron, Total	ND		mg/l	0.030	--	1	03/07/18 07:30	03/07/18 16:47	EPA 3005A	1,6010C	PS
Cadmium, Total	ND		mg/l	0.00020	--	1	03/07/18 07:30	03/07/18 12:51	EPA 3005A	1,6020A	AM
Calcium, Total	8.35		mg/l	0.100	--	1	03/07/18 07:30	03/07/18 16:47	EPA 3005A	1,6010C	PS
Chromium, Total	ND		mg/l	0.010	--	1	03/07/18 07:30	03/07/18 16:47	EPA 3005A	1,6010C	PS
Cobalt, Total	ND		mg/l	0.020	--	1	03/07/18 07:30	03/07/18 16:47	EPA 3005A	1,6010C	PS
Copper, Total	ND		mg/l	0.010	--	1	03/07/18 07:30	03/07/18 16:47	EPA 3005A	1,6010C	PS
Iron, Total	2.49		mg/l	0.050	--	1	03/07/18 07:30	03/07/18 16:47	EPA 3005A	1,6010C	PS
Lead, Total	ND		mg/l	0.010	--	1	03/07/18 07:30	03/07/18 16:47	EPA 3005A	1,6010C	PS
Magnesium, Total	3.93		mg/l	0.100	--	1	03/07/18 07:30	03/07/18 16:47	EPA 3005A	1,6010C	PS
Manganese, Total	0.030		mg/l	0.010	--	1	03/07/18 07:30	03/07/18 16:47	EPA 3005A	1,6010C	PS
Mercury, Total	ND		mg/l	0.00020	--	1	03/05/18 11:03	03/05/18 14:33	EPA 7470A	1,7470A	MG
Molybdenum, Total	ND		mg/l	0.050	--	1	03/07/18 07:30	03/07/18 16:47	EPA 3005A	1,6010C	PS
Nickel, Total	ND		mg/l	0.025	--	1	03/07/18 07:30	03/07/18 16:47	EPA 3005A	1,6010C	PS
Potassium, Total	ND		mg/l	2.50	--	1	03/07/18 07:30	03/07/18 16:47	EPA 3005A	1,6010C	PS
Selenium, Total	ND		mg/l	0.010	--	1	03/07/18 07:30	03/07/18 16:47	EPA 3005A	1,6010C	PS
Silicon, Total	10.3		mg/l	0.500	--	1	03/07/18 07:30	03/07/18 16:47	EPA 3005A	1,6010C	PS
Silver, Total	ND		mg/l	0.007	--	1	03/07/18 07:30	03/07/18 16:47	EPA 3005A	1,6010C	PS
Sodium, Total	14.7		mg/l	2.00	--	1	03/07/18 07:30	03/07/18 16:47	EPA 3005A	1,6010C	PS
Strontium, Total	0.041		mg/l	0.010	--	1	03/07/18 07:30	03/07/18 16:47	EPA 3005A	1,6010C	PS
Sulfur, Total	38.7		mg/l	2.50	--	10	03/05/18 10:15	03/06/18 09:29	EPA 3015A	1,6010C	PS
Thallium, Total	ND		mg/l	0.00050	--	1	03/07/18 07:30	03/07/18 12:51	EPA 3005A	1,6020A	AM
Titanium, Total	ND		mg/l	0.010	--	1	03/07/18 07:30	03/07/18 16:47	EPA 3005A	1,6010C	PS
Vanadium, Total	ND		mg/l	0.010	--	1	03/07/18 07:30	03/07/18 16:47	EPA 3005A	1,6010C	PS
Zinc, Total	ND		mg/l	0.050	--	1	03/07/18 07:30	03/07/18 16:47	EPA 3005A	1,6010C	PS

SAMPLE RESULTS

Lab ID: L1807395-03
Client ID: GWW-101
Sample Location: BELFAST, ME
Sample Depth:
Matrix: Water

Date Collected: 02/27/18 15:45
Date Received: 03/02/18
Field Prep: Field Filtered (Dissolved Metals and phosphorus)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	37.0		mg/l	0.660	NA	1	03/07/18 07:30	03/07/18 16:47	EPA 3005A	1,6010C	PS
Dissolved Metals - Mansfield Lab											
Aluminum, Dissolved	ND		mg/l	0.100	--	1	03/03/18 13:30	03/08/18 20:51	EPA 3005A	1,6010C	AB
Antimony, Dissolved	ND		mg/l	0.00400	--	1	03/03/18 13:30	03/06/18 09:26	EPA 3005A	1,6020A	AM
Arsenic, Dissolved	ND		mg/l	0.005	--	1	03/03/18 13:30	03/08/18 20:51	EPA 3005A	1,6010C	AB
Arsenic, Dissolved	0.005		mg/l	0.005	--	1	03/03/18 13:30	03/09/18 09:57	EPA 3005A	1,6010C	AB
Barium, Dissolved	ND		mg/l	0.010	--	1	03/03/18 13:30	03/08/18 20:51	EPA 3005A	1,6010C	AB
Beryllium, Dissolved	ND		mg/l	0.00050	--	1	03/03/18 13:30	03/06/18 09:26	EPA 3005A	1,6020A	AM
Boron, Dissolved	ND		mg/l	0.030	--	1	03/03/18 13:30	03/08/18 20:51	EPA 3005A	1,6010C	AB
Cadmium, Dissolved	ND		mg/l	0.00020	--	1	03/03/18 13:30	03/06/18 09:26	EPA 3005A	1,6020A	AM
Calcium, Dissolved	8.97		mg/l	0.100	--	1	03/03/18 13:30	03/08/18 20:51	EPA 3005A	1,6010C	AB
Chromium, Dissolved	ND		mg/l	0.010	--	1	03/03/18 13:30	03/08/18 20:51	EPA 3005A	1,6010C	AB
Cobalt, Dissolved	ND		mg/l	0.020	--	1	03/03/18 13:30	03/08/18 20:51	EPA 3005A	1,6010C	AB
Copper, Dissolved	ND		mg/l	0.010	--	1	03/03/18 13:30	03/08/18 20:51	EPA 3005A	1,6010C	AB
Iron, Dissolved	2.05		mg/l	0.050	--	1	03/03/18 13:30	03/08/18 20:51	EPA 3005A	1,6010C	AB
Lead, Dissolved	ND		mg/l	0.010	--	1	03/03/18 13:30	03/08/18 20:51	EPA 3005A	1,6010C	AB
Magnesium, Dissolved	3.99		mg/l	0.100	--	1	03/03/18 13:30	03/08/18 20:51	EPA 3005A	1,6010C	AB
Manganese, Dissolved	0.028		mg/l	0.010	--	1	03/03/18 13:30	03/08/18 20:51	EPA 3005A	1,6010C	AB
Mercury, Dissolved	ND		mg/l	0.00020	--	1	03/07/18 14:07	03/08/18 14:41	EPA 7470A	1,7470A	MG
Molybdenum, Dissolved	ND		mg/l	0.050	--	1	03/03/18 13:30	03/08/18 20:51	EPA 3005A	1,6010C	AB
Nickel, Dissolved	ND		mg/l	0.025	--	1	03/03/18 13:30	03/08/18 20:51	EPA 3005A	1,6010C	AB
Potassium, Dissolved	ND		mg/l	2.50	--	1	03/03/18 13:30	03/08/18 20:51	EPA 3005A	1,6010C	AB
Selenium, Dissolved	ND		mg/l	0.010	--	1	03/03/18 13:30	03/08/18 20:51	EPA 3005A	1,6010C	AB
Silicon, Dissolved	10.5		mg/l	0.500	--	1	03/09/18 07:35	03/09/18 12:22	EPA 3005A	1,6010C	AB
Silver, Dissolved	ND		mg/l	0.007	--	1	03/03/18 13:30	03/08/18 20:51	EPA 3005A	1,6010C	AB
Sodium, Dissolved	15.2		mg/l	2.00	--	1	03/03/18 13:30	03/08/18 20:51	EPA 3005A	1,6010C	AB
Strontium, Dissolved	0.041		mg/l	0.010	--	1	03/03/18 13:30	03/08/18 20:51	EPA 3005A	1,6010C	AB

Project Name:	BELFAST WATER DISTRICT	**Lab Number:**	L1807395
Project Number:	171.05027.003	**Report Date:**	03/09/18

SAMPLE RESULTS

Lab ID:	L1807395-03	Date Collected:	02/27/18 15:45
Client ID:	GWW-101	Date Received:	03/02/18
Sample Location:	BELFAST, ME	Field Prep:	Field Filtered (Dissolved Metals and phosphorus)
Sample Depth:			
Matrix:	Water		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Thallium, Dissolved	ND		mg/l	0.00050	--	1	03/03/18 13:30	03/06/18 09:26	EPA 3005A	1,6020A	AM
Titanium, Dissolved	ND		mg/l	0.010	--	1	03/03/18 13:30	03/08/18 20:51	EPA 3005A	1,6010C	AB
Vanadium, Dissolved	ND		mg/l	0.010	--	1	03/03/18 13:30	03/08/18 20:51	EPA 3005A	1,6010C	AB
Zinc, Dissolved	ND		mg/l	0.050	--	1	03/03/18 13:30	03/08/18 20:51	EPA 3005A	1,6010C	AB

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 03 Batch: WG1094245-1										
Aluminum, Dissolved	ND		mg/l	0.100	--	1	03/03/18 13:30	03/08/18 20:18	1,6010C	AB
Arsenic, Dissolved	ND		mg/l	0.005	--	1	03/03/18 13:30	03/08/18 20:18	1,6010C	AB
Arsenic, Dissolved	ND		mg/l	0.005	--	1	03/03/18 13:30	03/09/18 10:26	1,6010C	AB
Barium, Dissolved	ND		mg/l	0.010	--	1	03/03/18 13:30	03/08/18 20:18	1,6010C	AB
Boron, Dissolved	ND		mg/l	0.030	--	1	03/03/18 13:30	03/08/18 20:18	1,6010C	AB
Calcium, Dissolved	ND		mg/l	0.100	--	1	03/03/18 13:30	03/08/18 20:18	1,6010C	AB
Chromium, Dissolved	ND		mg/l	0.010	--	1	03/03/18 13:30	03/08/18 20:18	1,6010C	AB
Cobalt, Dissolved	ND		mg/l	0.020	--	1	03/03/18 13:30	03/08/18 20:18	1,6010C	AB
Copper, Dissolved	ND		mg/l	0.010	--	1	03/03/18 13:30	03/08/18 20:18	1,6010C	AB
Iron, Dissolved	ND		mg/l	0.050	--	1	03/03/18 13:30	03/08/18 20:18	1,6010C	AB
Lead, Dissolved	ND		mg/l	0.010	--	1	03/03/18 13:30	03/08/18 20:18	1,6010C	AB
Magnesium, Dissolved	ND		mg/l	0.100	--	1	03/03/18 13:30	03/08/18 20:18	1,6010C	AB
Manganese, Dissolved	ND		mg/l	0.010	--	1	03/03/18 13:30	03/08/18 20:18	1,6010C	AB
Molybdenum, Dissolved	ND		mg/l	0.050	--	1	03/03/18 13:30	03/08/18 20:18	1,6010C	AB
Nickel, Dissolved	ND		mg/l	0.025	--	1	03/03/18 13:30	03/08/18 20:18	1,6010C	AB
Potassium, Dissolved	ND		mg/l	2.50	--	1	03/03/18 13:30	03/08/18 20:18	1,6010C	AB
Selenium, Dissolved	ND		mg/l	0.010	--	1	03/03/18 13:30	03/08/18 20:18	1,6010C	AB
Silver, Dissolved	ND		mg/l	0.007	--	1	03/03/18 13:30	03/08/18 20:18	1,6010C	AB
Sodium, Dissolved	ND		mg/l	2.00	--	1	03/03/18 13:30	03/08/18 20:18	1,6010C	AB
Strontium, Dissolved	ND		mg/l	0.010	--	1	03/03/18 13:30	03/08/18 20:18	1,6010C	AB
Titanium, Dissolved	ND		mg/l	0.010	--	1	03/03/18 13:30	03/08/18 20:18	1,6010C	AB
Vanadium, Dissolved	ND		mg/l	0.010	--	1	03/03/18 13:30	03/08/18 20:18	1,6010C	AB
Zinc, Dissolved	ND		mg/l	0.050	--	1	03/03/18 13:30	03/08/18 20:18	1,6010C	AB

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 03 Batch: WG1094248-1										
Antimony, Dissolved	ND		mg/l	0.00400	--	1	03/03/18 13:30	03/06/18 08:59	1,6020A	AM
Beryllium, Dissolved	ND		mg/l	0.00050	--	1	03/03/18 13:30	03/06/18 08:59	1,6020A	AM
Cadmium, Dissolved	ND		mg/l	0.00020	--	1	03/03/18 13:30	03/06/18 08:59	1,6020A	AM

Method Blank Analysis
Batch Quality Control

Thallium, Dissolved	ND		mg/l	0.00050	--	1	03/03/18 13:30	03/06/18 08:59	1,6020A	AM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 03 Batch: WG1094454-1										
Sulfur, Total	0.254		mg/l	0.250	--	1	03/05/18 10:15	03/06/18 08:47	1,6010C	PS

Prep Information

Digestion Method: EPA 3015A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 03 Batch: WG1094499-1										
Mercury, Total	ND		mg/l	0.00020	--	1	03/05/18 11:03	03/05/18 14:03	1,7470A	MG

Prep Information

Digestion Method: EPA 7470A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 03 Batch: WG1095168-1										
Aluminum, Total	ND		mg/l	0.100	--	1	03/07/18 07:30	03/07/18 16:10	1,6010C	PS
Arsenic, Total	ND		mg/l	0.005	--	1	03/07/18 07:30	03/07/18 16:10	1,6010C	PS
Barium, Total	ND		mg/l	0.010	--	1	03/07/18 07:30	03/07/18 16:10	1,6010C	PS
Boron, Total	ND		mg/l	0.030	--	1	03/07/18 07:30	03/07/18 16:10	1,6010C	PS
Calcium, Total	ND		mg/l	0.100	--	1	03/07/18 07:30	03/07/18 16:10	1,6010C	PS
Chromium, Total	ND		mg/l	0.010	--	1	03/07/18 07:30	03/07/18 16:10	1,6010C	PS
Cobalt, Total	ND		mg/l	0.020	--	1	03/07/18 07:30	03/07/18 16:10	1,6010C	PS
Copper, Total	ND		mg/l	0.010	--	1	03/07/18 07:30	03/07/18 16:10	1,6010C	PS
Iron, Total	ND		mg/l	0.050	--	1	03/07/18 07:30	03/07/18 16:10	1,6010C	PS
Lead, Total	ND		mg/l	0.010	--	1	03/07/18 07:30	03/07/18 16:10	1,6010C	PS

Method Blank Analysis
Batch Quality Control

Magnesium, Total	ND		mg/l	0.100	--	1	03/07/18 07:30	03/07/18 16:10	1,6010C	PS
Manganese, Total	ND		mg/l	0.010	--	1	03/07/18 07:30	03/07/18 16:10	1,6010C	PS
Molybdenum, Total	ND		mg/l	0.050	--	1	03/07/18 07:30	03/07/18 16:10	1,6010C	PS
Nickel, Total	ND		mg/l	0.025	--	1	03/07/18 07:30	03/07/18 16:10	1,6010C	PS
Potassium, Total	ND		mg/l	2.50	--	1	03/07/18 07:30	03/07/18 16:10	1,6010C	PS
Selenium, Total	ND		mg/l	0.010	--	1	03/07/18 07:30	03/07/18 16:10	1,6010C	PS
Silver, Total	ND		mg/l	0.007	--	1	03/07/18 07:30	03/07/18 16:10	1,6010C	PS
Sodium, Total	ND		mg/l	2.00	--	1	03/07/18 07:30	03/07/18 16:10	1,6010C	PS
Strontium, Total	ND		mg/l	0.010	--	1	03/07/18 07:30	03/07/18 16:10	1,6010C	PS
Titanium, Total	ND		mg/l	0.010	--	1	03/07/18 07:30	03/07/18 16:10	1,6010C	PS
Vanadium, Total	ND		mg/l	0.010	--	1	03/07/18 07:30	03/07/18 16:10	1,6010C	PS
Zinc, Total	ND		mg/l	0.050	--	1	03/07/18 07:30	03/07/18 16:10	1,6010C	PS

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 03 Batch: WG1095168-1										
Hardness	ND		mg/l	0.660	NA	1	03/07/18 07:30	03/07/18 16:10	1,6010C	PS

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 03 Batch: WG1095170-1										
Antimony, Total	ND		mg/l	0.00400	--	1	03/07/18 07:30	03/07/18 12:39	1,6020A	AM
Beryllium, Total	ND		mg/l	0.00050	--	1	03/07/18 07:30	03/07/18 12:39	1,6020A	AM
Cadmium, Total	ND		mg/l	0.00020	--	1	03/07/18 07:30	03/07/18 12:39	1,6020A	AM
Thallium, Total	ND		mg/l	0.00050	--	1	03/07/18 07:30	03/07/18 12:39	1,6020A	AM

Prep Information

Digestion Method: EPA 3005A

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 03 Batch: WG1095363-1										
Mercury, Dissolved	ND		mg/l	0.00020	--	1	03/07/18 14:07	03/08/18 14:32	1,7470A	MG

Prep Information

Digestion Method: EPA 7470A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 03 Batch: WG1095792-1										
Aluminum, Dissolved	ND		mg/l	0.100	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Arsenic, Dissolved	ND		mg/l	0.005	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Barium, Dissolved	ND		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Boron, Dissolved	ND		mg/l	0.030	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Calcium, Dissolved	ND		mg/l	0.100	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Chromium, Dissolved	ND		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Cobalt, Dissolved	ND		mg/l	0.020	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Copper, Dissolved	ND		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Iron, Dissolved	ND		mg/l	0.050	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Lead, Dissolved	ND		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Magnesium, Dissolved	ND		mg/l	0.100	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Manganese, Dissolved	ND		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Molybdenum, Dissolved	ND		mg/l	0.050	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Nickel, Dissolved	ND		mg/l	0.025	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Potassium, Dissolved	ND		mg/l	2.50	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Selenium, Dissolved	ND		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Silicon, Dissolved	ND		mg/l	0.500	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Silver, Dissolved	ND		mg/l	0.007	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Sodium, Dissolved	ND		mg/l	2.00	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Strontium, Dissolved	ND		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Titanium, Dissolved	ND		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Vanadium, Dissolved	ND		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Zinc, Dissolved	ND		mg/l	0.050	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB

Method Blank Analysis
Batch Quality Control

Prep Information

Digestion Method: EPA 3005A

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Lab Number: L1807395
Project Number: 171.05027.003
Report Date: 03/09/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 03 Batch: WG1094245-2								
Aluminum, Dissolved	110		-		80-120	-		
Arsenic, Dissolved	111		-		80-120	-		
Arsenic, Dissolved	112		-		80-120	-		
Barium, Dissolved	96		-		80-120	-		
Boron, Dissolved	113		-		80-120	-		
Calcium, Dissolved	106		-		80-120	-		
Chromium, Dissolved	98		-		80-120	-		
Cobalt, Dissolved	100		-		80-120	-		
Copper, Dissolved	102		-		80-120	-		
Iron, Dissolved	113		-		80-120	-		
Lead, Dissolved	104		-		80-120	-		
Magnesium, Dissolved	100		-		80-120	-		
Manganese, Dissolved	99		-		80-120	-		
Molybdenum, Dissolved	99		-		80-120	-		
Nickel, Dissolved	100		-		80-120	-		
Potassium, Dissolved	105		-		80-120	-		
Selenium, Dissolved	113		-		80-120	-		
Silver, Dissolved	109		-		80-120	-		
Sodium, Dissolved	104		-		80-120	-		
Strontium, Dissolved	100		-		80-120	-		
Titanium, Dissolved	103		-		80-120	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1807395

Report Date: 03/09/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 03 Batch: WG1094245-2					
Vanadium, Dissolved	103	-	80-120	-	
Zinc, Dissolved	107	-	80-120	-	
Dissolved Metals - Mansfield Lab Associated sample(s): 03 Batch: WG1094248-2					
Antimony, Dissolved	116	-	80-120	-	
Beryllium, Dissolved	97	-	80-120	-	
Cadmium, Dissolved	113	-	80-120	-	
Thallium, Dissolved	104	-	80-120	-	
Total Metals - Mansfield Lab Associated sample(s): 03 Batch: WG1094454-2					
Sulfur, Total	93	-	80-120	-	
Total Metals - Mansfield Lab Associated sample(s): 03 Batch: WG1094499-2					
Mercury, Total	110	-	80-120	-	

Lab Control Sample Analysis
Batch Quality Control

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 03 Batch: WG1095168-2					
Aluminum, Total	116	-	80-120	-	
Arsenic, Total	111	-	80-120	-	
Barium, Total	101	-	80-120	-	
Boron, Total	112	-	80-120	-	
Calcium, Total	105	-	80-120	-	
Chromium, Total	102	-	80-120	-	
Cobalt, Total	99	-	80-120	-	
Copper, Total	101	-	80-120	-	
Iron, Total	99	-	80-120	-	
Lead, Total	105	-	80-120	-	
Magnesium, Total	104	-	80-120	-	
Manganese, Total	95	-	80-120	-	
Molybdenum, Total	102	-	80-120	-	
Nickel, Total	100	-	80-120	-	
Potassium, Total	110	-	80-120	-	
Selenium, Total	102	-	80-120	-	
Silver, Total	107	-	80-120	-	
Sodium, Total	106	-	80-120	-	
Strontium, Total	105	-	80-120	-	
Titanium, Total	106	-	80-120	-	
Vanadium, Total	105	-	80-120	-	

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1807395
Report Date: 03/09/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 03 Batch: WG1095168-2					
Zinc, Total	103	-	80-120	-	
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 03 Batch: WG1095168-2					
Hardness	105	-	80-120	-	
Total Metals - Mansfield Lab Associated sample(s): 03 Batch: WG1095170-2					
Antimony, Total	120	-	80-120	-	
Beryllium, Total	97	-	80-120	-	
Cadmium, Total	112	-	80-120	-	
Thallium, Total	103	-	80-120	-	
Dissolved Metals - Mansfield Lab Associated sample(s): 03 Batch: WG1095363-2					
Mercury, Dissolved	93	-	80-120	-	

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1807395

Report Date: 03/09/18

Dissolved Metals - Mansfield Lab Associated sample(s): 03 Batch: WG1095792-2

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Aluminum, Dissolved	110	-	80-120	-	
Arsenic, Dissolved	111	-	80-120	-	
Barium, Dissolved	103	-	80-120	-	
Boron, Dissolved	114	-	80-120	-	
Calcium, Dissolved	104	-	80-120	-	
Chromium, Dissolved	106	-	80-120	-	
Cobalt, Dissolved	101	-	80-120	-	
Copper, Dissolved	107	-	80-120	-	
Iron, Dissolved	106	-	80-120	-	
Lead, Dissolved	106	-	80-120	-	
Magnesium, Dissolved	102	-	80-120	-	
Manganese, Dissolved	102	-	80-120	-	
Molybdenum, Dissolved	103	-	80-120	-	
Nickel, Dissolved	102	-	80-120	-	
Potassium, Dissolved	104	-	80-120	-	
Selenium, Dissolved	113	-	80-120	-	
Silicon, Dissolved	92	-	80-120	-	
Silver, Dissolved	108	-	80-120	-	
Sodium, Dissolved	108	-	80-120	-	
Strontium, Dissolved	102	-	80-120	-	
Titanium, Dissolved	107	-	80-120	-	

Lab Control Sample Analysis

Batch Quality Control

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 03 Batch: WG1095792-2					
Vanadium, Dissolved	107	-	80-120	-	
Zinc, Dissolved	105	-	80-120	-	

Matrix Spike Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1807395

Report Date: 03/09/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1094245-3 QC Sample: L1807395-03 Client ID: GWW-101												
Aluminum, Dissolved	ND	2	2.17	108		-	-		75-125	-		20
Arsenic, Dissolved	0.005	0.12	0.136	109		-	-		75-125	-		20
Arsenic, Dissolved	ND	0.12	0.132	110		-	-		75-125	-		20
Barium, Dissolved	ND	2	1.91	96		-	-		75-125	-		20
Boron, Dissolved	ND	1	1.13	113		-	-		75-125	-		20
Calcium, Dissolved	8.97	10	18.9	99		-	-		75-125	-		20
Chromium, Dissolved	ND	0.2	0.195	98		-	-		75-125	-		20
Cobalt, Dissolved	ND	0.5	0.491	98		-	-		75-125	-		20
Copper, Dissolved	ND	0.25	0.253	101		-	-		75-125	-		20
Iron, Dissolved	2.05	1	3.00	95		-	-		75-125	-		20
Lead, Dissolved	ND	0.51	0.517	101		-	-		75-125	-		20
Magnesium, Dissolved	3.99	10	13.5	95		-	-		75-125	-		20
Manganese, Dissolved	0.028	0.5	0.513	97		-	-		75-125	-		20
Molybdenum, Dissolved	ND	1	0.986	99		-	-		75-125	-		20
Nickel, Dissolved	ND	0.5	0.490	98		-	-		75-125	-		20
Potassium, Dissolved	ND	10	12.5	125		-	-		75-125	-		20
Selenium, Dissolved	ND	0.12	0.133	111		-	-		75-125	-		20
Silver, Dissolved	ND	0.05	0.054	107		-	-		75-125	-		20
Sodium, Dissolved	15.2	10	25.0	98		-	-		75-125	-		20
Strontium, Dissolved	0.041	1	1.02	98		-	-		75-125	-		20
Titanium, Dissolved	ND	1	1.02	102		-	-		75-125	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1807395

Report Date: 03/09/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1094245-3 QC Sample: L1807395-03 Client ID: GWW-101									
Vanadium, Dissolved	ND	0.5	0.509	102	-	-	75-125	-	20
Zinc, Dissolved	ND	0.5	0.527	105	-	-	75-125	-	20
Dissolved Metals - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1094248-3 QC Sample: L1807395-03 Client ID: GWW-101									
Antimony, Dissolved	ND	0.5	0.6037	121	-	-	75-125	-	20
Beryllium, Dissolved	ND	0.05	0.04971	99	-	-	75-125	-	20
Cadmium, Dissolved	ND	0.051	0.05453	107	-	-	75-125	-	20
Thallium, Dissolved	ND	0.12	0.1231	102	-	-	75-125	-	20

Lab Duplicate Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1807395
Report Date: 03/09/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1094245-4 QC Sample: L1807395-03 Client ID: GWW-101						
Aluminum, Dissolved	ND	ND	mg/l	NC		20
Arsenic, Dissolved	ND	ND	mg/l	NC		20
Barium, Dissolved	ND	ND	mg/l	NC		20
Boron, Dissolved	ND	ND	mg/l	NC		20
Calcium, Dissolved	8.97	9.12	mg/l	2		20
Chromium, Dissolved	ND	ND	mg/l	NC		20
Cobalt, Dissolved	ND	ND	mg/l	NC		20
Copper, Dissolved	ND	ND	mg/l	NC		20
Iron, Dissolved	2.05	2.08	mg/l	1		20
Lead, Dissolved	ND	ND	mg/l	NC		20
Magnesium, Dissolved	3.99	4.08	mg/l	2		20
Manganese, Dissolved	0.028	0.028	mg/l	1		20
Molybdenum, Dissolved	ND	ND	mg/l	NC		20
Nickel, Dissolved	ND	ND	mg/l	NC		20
Potassium, Dissolved	ND	ND	mg/l	NC		20
Selenium, Dissolved	ND	ND	mg/l	NC		20
Silver, Dissolved	ND	ND	mg/l	NC		20
Sodium, Dissolved	15.2	15.6	mg/l	3		20
Strontium, Dissolved	0.041	0.042	mg/l	2		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1807395
Report Date: 03/09/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1094245-4 QC Sample: L1807395-03 Client ID: GWW-101					
Titanium, Dissolved	ND	ND	mg/l	NC	20
Vanadium, Dissolved	ND	ND	mg/l	NC	20
Zinc, Dissolved	ND	ND	mg/l	NC	20
Dissolved Metals - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1094245-4 QC Sample: L1807395-03 Client ID: GWW-101					
Arsenic, Dissolved	0.005	0.005	mg/l	8	20
Dissolved Metals - Mansfield Lab Associated sample(s): 03 QC Batch ID: WG1094248-4 QC Sample: L1807395-03 Client ID: GWW-101					
Antimony, Dissolved	ND	ND	mg/l	NC	20
Beryllium, Dissolved	ND	ND	mg/l	NC	20
Cadmium, Dissolved	ND	ND	mg/l	NC	20
Thallium, Dissolved	ND	ND	mg/l	NC	20

INORGANICS
&
MISCELLANEOUS

SAMPLE RESULTS

Lab ID:	L1807395-03	Date Collected:	02/27/18 15:45
Client ID:	GWW-101	Date Received:	03/02/18
Sample Location:	BELFAST, ME	Field Prep:	Field Filtered (Dissolved Metals and phosphorus)
Sample Depth:			
Matrix:	Water		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	57.9		mg CaCO3/L	2.00	NA	1	-	03/05/18 09:20	121,2320B	BR
Phosphorus, Total	0.071		mg/l	0.010	--	1	03/06/18 12:20	03/07/18 09:29	121,4500P-E	SD
Phosphorus, Soluble	0.035		mg/l	0.010	--	1	03/06/18 12:20	03/07/18 09:36	121,4500P-E	SD

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 03 Batch: WG1094488-1										
Alkalinity, Total	ND		mg CaCO3/L	2.00	NA	1	-	03/05/18 09:20	121,2320B	BR
General Chemistry - Westborough Lab for sample(s): 03 Batch: WG1094909-1										
Phosphorus, Total	ND		mg/l	0.010	--	1	03/06/18 12:20	03/07/18 09:06	121,4500P-E	SD
General Chemistry - Westborough Lab for sample(s): 03 Batch: WG1094945-1										
Phosphorus, Soluble	ND		mg/l	0.010	--	1	03/06/18 12:20	03/07/18 09:33	121,4500P-E	SD

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Lab Number: L1807395
Project Number: 171.05027.003
Report Date: 03/09/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 03 Batch: WG1094488-2								
Alkalinity, Total	102		-		90-110	-		10
General Chemistry - Westborough Lab Associated sample(s): 03 Batch: WG1094909-2								
Phosphorus, Total	110		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 03 Batch: WG1094945-2								
Phosphorus, Soluble	102		-		80-120	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1807395
Report Date: 03/09/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 03 QC Batch ID: WG1094945-3 QC Sample: L1807395-03 Client ID: GWW-101												
Phosphorus, Soluble	0.035	0.5	0.546	102		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1807395
Report Date: 03/09/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 03 QC Batch ID: WG1094945-4 QC Sample: L1807395-03 Client ID: GWW-101						
Phosphorus, Soluble	0.035	0.034	mg/l	3		20

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	***Custody Seal***
A	Absent
B	Absent
C	Absent
D	Absent

Container Information

Container ID	***Container Type***	***Cooler***	***Initial pH***	***Final pH***	***Temp deg C***	***Pres***	***Seal***	***Frozen Date/Time***	***Analysis(*)***
L1807395-01A	Vial HCl preserved	A	NA		2.9	Y	Absent		HOLD-8260(14)
L1807395-01B	Vial HCl preserved	A	NA		2.9	Y	Absent		HOLD-8260(14)
L1807395-01C	Vial HCl preserved	A	NA		2.9	Y	Absent		HOLD-8260(14)
L1807395-01D	Plastic 250ml HNO3 preserved	A	<2	<2	2.9	Y	Absent		HOLD-METAL-DISSOLVED(180)
L1807395-01E	Plastic 250ml HNO3 preserved	A	<2	<2	2.9	Y	Absent		HOLD-METAL-TOTAL(180)
L1807395-01F	Plastic 250ml HNO3 preserved	A	<2	<2	2.9	Y	Absent		HOLD-METAL-TOTAL(180)
L1807395-01G	Plastic 120ml unpreserved	A	7	7	2.9	Y	Absent		HOLD-WETCHEM()
L1807395-01H	Plastic 250ml unpreserved/No Headspace	A	NA		2.9	Y	Absent		HOLD-WETCHEM()
L1807395-01J	Amber 120ml unpreserved	A	7	7	2.9	Y	Absent		HOLD-WETCHEM()
L1807395-01K	Plastic 250ml H2SO4 preserved	A	<2	<2	2.9	Y	Absent		HOLD-WETCHEM()
L1807395-01L	Plastic 250ml H2SO4 preserved	A	<2	<2	2.9	Y	Absent		HOLD-WETCHEM()
L1807395-01M	Plastic 950ml unpreserved	A	7	7	2.9	Y	Absent		HOLD-WETCHEM()
L1807395-01N	Amber 1000ml unpreserved	A	7	7	2.9	Y	Absent		HOLD-8270(7)
L1807395-01P	Amber 1000ml unpreserved	A	7	7	2.9	Y	Absent		HOLD-8270(7)
L1807395-01Q	Amber 1000ml unpreserved	A	7	7	2.9	Y	Absent		HOLD-8270(7)
L1807395-01R	Amber 1000ml unpreserved	A	7	7	2.9	Y	Absent		HOLD-8270(7)
L1807395-02A	Vial HCl preserved	B	NA		5.1	Y	Absent		HOLD-8260(14)
L1807395-02B	Vial HCl preserved	B	NA		5.1	Y	Absent		HOLD-8260(14)
L1807395-02C	Vial HCl preserved	B	NA		5.1	Y	Absent		HOLD-8260(14)
L1807395-02D	Plastic 250ml HNO3 preserved	B	<2	<2	5.1	Y	Absent		HOLD-METAL-DISSOLVED(180)

*Values in parentheses indicate holding time in days

Container Information

Container ID	*Container Type*	*Cooler*	*Initial pH*	*Final pH*	*Temp deg C*	*Pres*	*Seal*	*Frozen Date/Time*	*Analysis(*)*
L1807395-02E	Plastic 250ml HNO3 preserved	B	<2	<2	5.1	Y	Absent		HOLD-METAL-TOTAL(180)
L1807395-02F	Plastic 250ml HNO3 preserved	B	<2	<2	5.1	Y	Absent		HOLD-METAL-TOTAL(180)
L1807395-02G	Plastic 120ml unpreserved	B	7	7	5.1	Y	Absent		HOLD-WETCHEM()
L1807395-02H	Plastic 250ml unpreserved/No Headspace	B	NA		5.1	Y	Absent		HOLD-WETCHEM()
L1807395-02J	Amber 120ml unpreserved	B	7	7	5.1	Y	Absent		HOLD-WETCHEM()
L1807395-02K	Plastic 250ml H2SO4 preserved	B	<2	<2	5.1	Y	Absent		HOLD-WETCHEM()
L1807395-02L	Plastic 250ml H2SO4 preserved	B	<2	<2	5.1	Y	Absent		HOLD-WETCHEM()
L1807395-02M	Plastic 950ml unpreserved	B	7	7	5.1	Y	Absent		HOLD-WETCHEM()
L1807395-02N	Amber 1000ml unpreserved	B	7	7	5.1	Y	Absent		HOLD-8270(7)
L1807395-02P	Amber 1000ml unpreserved	B	7	7	5.1	Y	Absent		HOLD-8270(7)
L1807395-02Q	Amber 1000ml unpreserved	B	7	7	5.1	Y	Absent		HOLD-8270(7)
L1807395-02R	Amber 1000ml unpreserved	B	7	7	5.1	Y	Absent		HOLD-8270(7)
L1807395-03A	Vial HCl preserved	C	NA		2.6	Y	Absent		ME-8260(14)
L1807395-03B	Vial HCl preserved	C	NA		2.6	Y	Absent		ME-8260(14)
L1807395-03C	Vial HCl preserved	C	NA		2.6	Y	Absent		ME-8260(14)
L1807395-03D	Plastic 250ml unpreserved/No Headspace	C	NA		2.6	Y	Absent		ALK-T-2320(14)
L1807395-03E	Plastic 250ml H2SO4 preserved	C	<2	<2	2.6	Y	Absent		TPHOS-4500(28)
L1807395-03F	Plastic 250ml HNO3 preserved	C	<2	<2	2.6	Y	Absent		B-SI(180),PB-SI(180),FE-SI(180),BA-SI(180),BE-6020S(180),TI-SI(180),AG-SI(180),AS-SI(180),CU-SI(180),MN-SI(180),NA-SI(180),NI-SI(180),AL-SI(180),CO-SI(180),SI-SI(180),SR-SI(180),TL-6020S(180),CR-SI(180),K-SI(180),MG-SI(180),MO-SI(180),SB-6020S(180),CA-SI(180),CD-6020S(180),HG-S(28),SE-SI(180),V-SI(180),ZN-SI(180)
L1807395-03G	Plastic 250ml HNO3 preserved	C	<2	<2	2.6	Y	Absent		TL-6020T(180),AS-TI(180),BA-TI(180),AG-TI(180),SI-TI(180),AL-TI(180),B-TI(180),CR-TI(180),MO-TI(180),NI-TI(180),S-TI(180),BE-6020T(180),CU-TI(180),PB-TI(180),SE-TI(180),TI-TI(180),ZN-TI(180),CO-TI(180),SB-6020T(180),V-TI(180),CD-6020T(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),SR-TI(180),CA-TI(180),HARDT(180),K-TI(180),NA-TI(180)

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1807395-03H	Plastic 250ml HNO3 preserved	C	<2	<2	2.6	Y	Absent		TL-6020T(180),AS-TI(180),BA-TI(180),AG-TI(180),SI-TI(180),AL-TI(180),B-TI(180),CR-TI(180),MO-TI(180),NI-TI(180),S-TI(180),BE-6020T(180),CU-TI(180),PB-TI(180),SE-TI(180),TI-TI(180),ZN-TI(180),CO-TI(180),SB-6020T(180),V-TI(180),CD-6020T(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),SR-TI(180),CA-TI(180),HARDT(180),K-TI(180),NA-TI(180)
L1807395-03J	Amber 1000ml unpreserved	C	7	7	2.6	Y	Absent		8270TCL(7)
L1807395-03K	Amber 1000ml unpreserved	C	7	7	2.6	Y	Absent		8270TCL(7)
L1807395-03L	Amber 1000ml unpreserved	C	7	7	2.6	Y	Absent		8270TCL-SIM(7)
L1807395-03M	Amber 1000ml unpreserved	C	7	7	2.6	Y	Absent		8270TCL-SIM(7)
L1807395-03N	Plastic 120ml unpreserved	C	7	7	2.6	Y	Absent		HOLD-WETCHEM()
L1807395-03P	Amber 120ml unpreserved	C	7	7	2.6	Y	Absent		HOLD-WETCHEM()
L1807395-03Q	Plastic 250ml H2SO4 preserved	C	<2	<2	2.6	Y	Absent		SPHOS-4500(28)
L1807395-03R	Plastic 950ml unpreserved	C	7	7	2.6	Y	Absent		HOLD-WETCHEM()
L1807395-04A	Vial HCl preserved	D	NA		2.8	Y	Absent		HOLD-8260(14)
L1807395-04B	Vial HCl preserved	D	NA		2.8	Y	Absent		HOLD-8260(14)
L1807395-04C	Vial HCl preserved	D	NA		2.8	Y	Absent		HOLD-8260(14)
L1807395-04D	Plastic 250ml HNO3 preserved	D	<2	<2	2.8	Y	Absent		HOLD-METAL-DISSOLVED(180)
L1807395-04E	Plastic 250ml HNO3 preserved	D	<2	<2	2.8	Y	Absent		HOLD-METAL-TOTAL(180)
L1807395-04F	Plastic 250ml HNO3 preserved	D	<2	<2	2.8	Y	Absent		HOLD-METAL-TOTAL(180)
L1807395-04G	Plastic 120ml unpreserved	D	7	7	2.8	Y	Absent		HOLD-WETCHEM()
L1807395-04H	Plastic 250ml unpreserved/No Headspace	D	NA		2.8	Y	Absent		HOLD-WETCHEM()
L1807395-04J	Amber 120ml unpreserved	D	7	7	2.8	Y	Absent		HOLD-WETCHEM()
L1807395-04K	Plastic 250ml H2SO4 preserved	D	<2	<2	2.8	Y	Absent		HOLD-WETCHEM()
L1807395-04L	Plastic 250ml H2SO4 preserved	D	<2	<2	2.8	Y	Absent		HOLD-WETCHEM()
L1807395-04M	Plastic 950ml unpreserved	D	7	7	2.8	Y	Absent		HOLD-WETCHEM()
L1807395-04N	Amber 1000ml unpreserved	D	7	7	2.8	Y	Absent		HOLD-8270(7)
L1807395-04P	Amber 1000ml unpreserved	D	7	7	2.8	Y	Absent		HOLD-8270(7)
L1807395-04Q	Amber 1000ml unpreserved	D	7	7	2.8	Y	Absent		HOLD-8270(7)

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1807395-04R	Amber 1000ml unpreserved	D	7	7	2.8	Y	Absent		HOLD-8270(7)
L1807395-05A	Vial HCl preserved	D	NA		2.8	Y	Absent		HOLD-8260(14)
L1807395-05A1	Vial HCl preserved	D	NA		2.8	Y	Absent		HOLD-8260(14)
L1807395-05B	Vial HCl preserved	D	NA		2.8	Y	Absent		HOLD-8260(14)
L1807395-05B1	Vial HCl preserved	D	NA		2.8	Y	Absent		HOLD-8260(14)
L1807395-05C	Vial HCl preserved	D	NA		2.8	Y	Absent		HOLD-8260(14)
L1807395-05C1	Vial HCl preserved	D	NA		2.8	Y	Absent		HOLD-8260(14)

*Values in parentheses indicate holding time in days

GLOSSARY

Acronyms

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Be, Cd, Cr, Cu, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

RANSOM

Serial_No:03091814:39

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 03/02/18

ALPHA Job #: L1807395

8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Client Information

Client: Ransom Consulting Inc.
Address: 112 Corporate Drive
Portsmouth, NH 03801
Phone: 603-436-1490
Email: elizabeth.ransom@ransomenv.com
cc: drew.fuchs@ransomenv.com

Additional Project Information:

Please email drew.fuchs@ransomenv.com with any questions related to these samples.

Project Information

Project Name: Belfast Water District
Project Location: Belfast, ME
Project #: 171.05027.003
Project Manager: Elizabeth Ransom
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved)

Date Due:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☐ Same as Client info PO #: 10754

Regulatory Requirements & Project Information Requirements

☐ Yes ☒ No MA MCP Analytical Methods ☐ Yes ☒ No CT RCP Analytical Methods
☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☒ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☒ No NPDES RGP
☐ Other State /Fed Program ____________ Criteria ____________

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC: ☒8260 ☐624 ☐524.2	SVOC: ☐ABN ☒PAH 8270	METALS: ☐MCP 13 ☐MCP 14 ☐RCP 15	METALS: ☐RCRA5 ☐RCRA8 ☐PP13	EPH: ☐Ranges & Targets ☐ Ranges Only	VPH: ☐Ranges & Targets ☐ Ranges Only	☐PCB ☐PEST	TPH: ☐Quant Only ☐Fingerprint	Alkalinity & Hardness (CaCO3)	TAL Metals (Total)	TAL Metals (Dissolved)	Boron, Molybdenum, Silicon, Strontium, Titanium (both Total & Dissolved)	Total Phosphorus & Sulphur		Sample Comments	TOTAL # BOTTLES
07395-01	NTB-102	2-26-18	16:15	GW	DAF															HOLD	16
02	NTB-103	3-1-18	15:30	GW	TBN															HOLD	16
03	GWW-101	2-27-18	15:45	GW	DAF	X	X							X	X	X	X	X			16
04	GWW-102	3-1-18	13:00	GW	DAF															HOLD	16
05	Trip Blank					X														HOLD	2
Container Type						V	A							P	P	P	P	P			
Preservative						B	A							C	C	C	C	D			

SAMPLE INFO
Filtration
☐ Field
☐ Lab to do
Preservation
☐ Lab to do

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
Drew Fh	16:00/3/2/18	AAL	3/2/18 16:00
AAL	3/2/18	Rob Maesto AAL	3/2/18 1730
Rob Maesto AAL	3/2/18 1900	Mett	3/2/18 19:00

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

```
JOB: L1812057     REPORT STYLE: Data Usability Report
0010: Alpha Analytical Report Cover Page - OK
0015: Sample Cross Reference Summary - OK
0060: Case Narrative - OK
0100: Volatiles Cover Page - OK
0110: Volatiles Sample Results - OK
0120: Volatiles Method Blank Report - OK
0130: Volatiles LCS Report - OK
0180: Semivolatiles Cover Page - OK
0190: Semivolatiles Sample Results - OK
0200: Semivolatiles Method Blank Report - OK
0210: Semivolatiles LCS Report - OK
0900: Pesticides Cover Page - OK
0910: Pesticides Sample Results - OK
0920: Pesticides Method Blank Report - OK
0930: Pesticides LCS Report - OK
1005: Metals Sample Results - OK
1010: Metals Method Blank Report - OK
1020: Metals LCS Report - OK
1040: Metals Matrix Spike Report - OK
1050: Metals Duplicate Report - OK
1180: Inorganics Cover Page - OK
1200: Wet Chemistry Sample Results - OK
1210: Wet Chemistry Method Blank Report - OK
1220: Wet Chemistry LCS Report - OK
1250: Wet Chemistry Duplicate Report - OK
5100: Sample Receipt & Container Information Report - OK
5200: Glossary - OK
5400: References - OK
----------------------------------------------------------
```

ANALYTICAL REPORT

Lab Number:	L1812057
Client:	Ransom Consulting, Inc. 400 Commercial Street Suite 404 Portland, ME 04101-4660
ATTN:	Brian Pettingill
Phone:	(207) 772-2891
Project Name:	BELFAST WATER DISTRICT
Project Number:	171.05027.003
Report Date:	04/13/18

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), NJ NELAP (MA935), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-14-00197).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1812057-01	GWW-101	WATER	BELFAST, ME	04/05/18 08:15	04/06/18
L1812057-02	GWW-101	WATER	BELFAST, ME	04/05/18 08:15	04/06/18
L1812057-03	GWW-103	WATER	BELFAST, ME	04/05/18 08:45	04/06/18
L1812057-04	GWW-103	WATER	BELFAST, ME	04/05/18 08:45	04/06/18
L1812057-05	SS-1	SOIL	BELFAST, ME	04/05/18 09:15	04/06/18
L1812057-06	SS-2	SOIL	BELFAST, ME	04/05/18 11:30	04/06/18
L1812057-07	GWW-101	WATER	BELFAST, ME	04/04/18 08:30	04/06/18
L1812057-08	GWW-103	WATER	BELFAST, ME	04/04/18 09:15	04/06/18
L1812057-09	TRIP BLANK	WATER	BELFAST, ME	04/04/18 00:00	04/06/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Case Narrative (continued)

Report Submission

April 13, 2018: This is a preliminary report.

Sample Receipt

L1812057-06 and -07: The analysis of Pesticides was performed at the client's request.

Semivolatile Organics

The WG1104633-2/-3 LCS/LCSD recoveries, associated with L1812057-01 and -03, are below the acceptance criteria for benzidine (9%/6%); however, it has been identified as a "difficult" analyte. The results of the associated samples are reported.

Total Metals

The WG1105166-1 Method Blank, associated with L1812057-01 and -03, has a concentration above the reporting limit for iron. Since the associated sample concentrations are greater than 10x the blank concentration for this analyte, no corrective action is required.

The WG1105166-2 LCS recovery, associated with L1812057-01 and -03, is above the acceptance criteria for selenium (123%); however, the associated samples are non-detect to the RL for this target analyte. The results of the original analysis are reported.

The WG1105073-3 MS recovery for sulfur (20%), performed on L1812057-03, does not apply because the sample concentration is greater than four times the spike amount added.

Phosphorus, Soluble

The samples were field filtered; a filter blank was not received.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Kelly Stenstrom Kelly Stenstrom

Title: Technical Director/Representative Date: 04/13/18

ORGANICS

VOLATILES

SAMPLE RESULTS

Lab ID: L1812057-01
Client ID: GWW-101
Sample Location: BELFAST, ME

Date Collected: 04/05/18 08:15
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 04/11/18 21:21
Analyst: NLK

Parameter	**Result**	**Qualifier**	**Units**	**RL**	**MDL**	**Dilution Factor**
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	--	1
1,1-Dichloroethane	ND		ug/l	0.75	--	1
Chloroform	ND		ug/l	0.75	--	1
Carbon tetrachloride	ND		ug/l	0.50	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	0.50	--	1
1,1,2-Trichloroethane	ND		ug/l	0.75	--	1
Tetrachloroethene	ND		ug/l	0.50	--	1
Chlorobenzene	ND		ug/l	0.50	--	1
Trichlorofluoromethane	ND		ug/l	1.0	--	1
1,2-Dichloroethane	ND		ug/l	0.50	--	1
1,1,1-Trichloroethane	ND		ug/l	0.50	--	1
Bromodichloromethane	ND		ug/l	0.50	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	--	1
1,1-Dichloropropene	ND		ug/l	1.0	--	1
Bromoform	ND		ug/l	1.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	0.75	--	1
Ethylbenzene	ND		ug/l	0.50	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	1.0	--	1
Vinyl chloride	ND		ug/l	0.20	--	1
Chloroethane	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	0.50	--	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	--	1

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057

Project Number: 171.05027.003
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-01
Client ID: GWW-101
Sample Location: BELFAST, ME
Sample Depth:

Date Collected: 04/05/18 08:15
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2-Dichloroethene, Total	ND		ug/l	0.50	--	1
Trichloroethene	ND		ug/l	0.50	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	1.0	--	1
p/m-Xylene	ND		ug/l	1.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	--	1
Dibromomethane	ND		ug/l	1.0	--	1
1,4-Dichlorobutane	ND		ug/l	5.0	--	1
1,2,3-Trichloropropane	ND		ug/l	1.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	1.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
Vinyl acetate	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Ethyl methacrylate	ND		ug/l	5.0	--	1
Acrylonitrile	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	1.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	1.0	--	1
1,2-Dibromoethane	ND		ug/l	1.0	--	1
1,3-Dichloropropane	ND		ug/l	1.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Bromobenzene	ND		ug/l	1.0	--	1
n-Butylbenzene	ND		ug/l	0.50	--	1
sec-Butylbenzene	ND		ug/l	0.50	--	1
tert-Butylbenzene	ND		ug/l	1.0	--	1
o-Chlorotoluene	ND		ug/l	1.0	--	1
p-Chlorotoluene	ND		ug/l	1.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	1.0	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1

SAMPLE RESULTS

Lab ID: L1812057-01

Client ID: GWW-101

Sample Location: BELFAST, ME

Date Collected: 04/05/18 08:15

Date Received: 04/06/18

Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Sample Depth:

Parameter	**Result**	**Qualifier**	**Units**	**RL**	**MDL**	**Dilution Factor**
Volatile Organics by GC/MS - Westborough Lab						
Isopropylbenzene	ND		ug/l	0.50	--	1
p-Isopropyltoluene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	1.0	--	1
n-Propylbenzene	ND		ug/l	0.50	--	1
1,2,3-Trichlorobenzene	ND		ug/l	1.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	1.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	1.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	1.0	--	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	--	1
Ethyl ether	ND		ug/l	1.0	--	1

Surrogate	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	92		70-130

Project Name:	BELFAST WATER DISTRICT	**Lab Number:**	L1812057
Project Number:	171.05027.003	**Report Date:**	04/13/18

SAMPLE RESULTS

Lab ID:	L1812057-03	Date Collected:	04/05/18 08:45
Client ID:	GWW-103	Date Received:	04/06/18
Sample Location:	BELFAST, ME	Field Prep:	Field Filtered (Dissolved Metals & Phosphorus)
Sample Depth:			
Matrix:	Water		
Analytical Method:	1,8260C		
Analytical Date:	04/11/18 21:49		
Analyst:	NLK		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	--	1
1,1-Dichloroethane	ND		ug/l	0.75	--	1
Chloroform	ND		ug/l	0.75	--	1
Carbon tetrachloride	ND		ug/l	0.50	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	0.50	--	1
1,1,2-Trichloroethane	ND		ug/l	0.75	--	1
Tetrachloroethene	ND		ug/l	0.50	--	1
Chlorobenzene	ND		ug/l	0.50	--	1
Trichlorofluoromethane	ND		ug/l	1.0	--	1
1,2-Dichloroethane	ND		ug/l	0.50	--	1
1,1,1-Trichloroethane	ND		ug/l	0.50	--	1
Bromodichloromethane	ND		ug/l	0.50	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	--	1
1,1-Dichloropropene	ND		ug/l	1.0	--	1
Bromoform	ND		ug/l	1.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	0.75	--	1
Ethylbenzene	ND		ug/l	0.50	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	1.0	--	1
Vinyl chloride	ND		ug/l	0.20	--	1
Chloroethane	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	0.50	--	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	--	1

Project Name: BELFAST WATER DISTRICT **Lab Number:** L1812057
Project Number: 171.05027.003 **Report Date:** 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-03
Client ID: GWW-103
Sample Location: BELFAST, ME
Sample Depth:

Date Collected: 04/05/18 08:45
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2-Dichloroethene, Total	ND		ug/l	0.50	--	1
Trichloroethene	ND		ug/l	0.50	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	1.0	--	1
p/m-Xylene	ND		ug/l	1.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	--	1
Dibromomethane	ND		ug/l	1.0	--	1
1,4-Dichlorobutane	ND		ug/l	5.0	--	1
1,2,3-Trichloropropane	ND		ug/l	1.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	1.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
Vinyl acetate	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Ethyl methacrylate	ND		ug/l	5.0	--	1
Acrylonitrile	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	1.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	1.0	--	1
1,2-Dibromoethane	ND		ug/l	1.0	--	1
1,3-Dichloropropane	ND		ug/l	1.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Bromobenzene	ND		ug/l	1.0	--	1
n-Butylbenzene	ND		ug/l	0.50	--	1
sec-Butylbenzene	ND		ug/l	0.50	--	1
tert-Butylbenzene	ND		ug/l	1.0	--	1
o-Chlorotoluene	ND		ug/l	1.0	--	1
p-Chlorotoluene	ND		ug/l	1.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	1.0	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1

SAMPLE RESULTS

Lab ID:	L1812057-03	Date Collected:	04/05/18 08:45
Client ID:	GWW-103	Date Received:	04/06/18
Sample Location:	BELFAST, ME	Field Prep:	Field Filtered (Dissolved Metals & Phosphorus)
Sample Depth:			

Parameter	**Result**	**Qualifier**	**Units**	**RL**	**MDL**	**Dilution Factor**
Volatile Organics by GC/MS - Westborough Lab						
Isopropylbenzene	ND		ug/l	0.50	--	1
p-Isopropyltoluene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	1.0	--	1
n-Propylbenzene	ND		ug/l	0.50	--	1
1,2,3-Trichlorobenzene	ND		ug/l	1.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	1.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	1.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	1.0	--	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	--	1
Ethyl ether	ND		ug/l	1.0	--	1

Surrogate	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,2-Dichloroethane-d4	104		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	102		70-130
Dibromofluoromethane	94		70-130

SAMPLE RESULTS

Lab ID:	L1812057-05	Date Collected:	04/05/18 09:15
Client ID:	SS-1	Date Received:	04/06/18
Sample Location:	BELFAST, ME	Field Prep:	Not Specified

Sample Depth:

Matrix: Soil
Analytical Method: 1,8260C
Analytical Date: 04/11/18 09:26
Analyst: JC
Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Methylene chloride	ND		ug/kg	14	--	1
1,1-Dichloroethane	ND		ug/kg	2.1	--	1
Chloroform	ND		ug/kg	2.1	--	1
Carbon tetrachloride	ND		ug/kg	1.4	--	1
1,2-Dichloropropane	ND		ug/kg	5.0	--	1
Dibromochloromethane	ND		ug/kg	1.4	--	1
1,1,2-Trichloroethane	ND		ug/kg	2.1	--	1
Tetrachloroethene	ND		ug/kg	1.4	--	1
Chlorobenzene	ND		ug/kg	1.4	--	1
Trichlorofluoromethane	ND		ug/kg	7.1	--	1
1,2-Dichloroethane	ND		ug/kg	1.4	--	1
1,1,1-Trichloroethane	ND		ug/kg	1.4	--	1
Bromodichloromethane	ND		ug/kg	1.4	--	1
trans-1,3-Dichloropropene	ND		ug/kg	1.4	--	1
cis-1,3-Dichloropropene	ND		ug/kg	1.4	--	1
1,3-Dichloropropene, Total	ND		ug/kg	1.4	--	1
1,1-Dichloropropene	ND		ug/kg	7.1	--	1
Bromoform	ND		ug/kg	5.7	--	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	1.4	--	1
Benzene	ND		ug/kg	1.4	--	1
Toluene	ND		ug/kg	2.1	--	1
Ethylbenzene	ND		ug/kg	1.4	--	1
Chloromethane	ND		ug/kg	7.1	--	1
Bromomethane	ND		ug/kg	2.8	--	1
Vinyl chloride	ND		ug/kg	2.8	--	1
Chloroethane	ND		ug/kg	2.8	--	1
1,1-Dichloroethene	ND		ug/kg	1.4	--	1
trans-1,2-Dichloroethene	ND		ug/kg	2.1	--	1

SAMPLE RESULTS

Lab ID: L1812057-05
Client ID: SS-1
Sample Location: BELFAST, ME
Date Collected: 04/05/18 09:15
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS-5035 - Westborough Lab						
Trichloroethene	ND		ug/kg	1.4	--	1
1,2-Dichlorobenzene	ND		ug/kg	7.1	--	1
1,3-Dichlorobenzene	ND		ug/kg	7.1	--	1
1,4-Dichlorobenzene	ND		ug/kg	7.1	--	1
Methyl tert butyl ether	ND		ug/kg	2.8	--	1
p/m-Xylene	ND		ug/kg	2.8	--	1
o-Xylene	ND		ug/kg	2.8	--	1
Xylenes, Total	ND		ug/kg	2.8	--	1
cis-1,2-Dichloroethene	ND		ug/kg	1.4	--	1
1,2-Dichloroethene, Total	ND		ug/kg	1.4	--	1
Dibromomethane	ND		ug/kg	14	--	1
1,4-Dichlorobutane	ND		ug/kg	14	--	1
1,2,3-Trichloropropane	ND		ug/kg	14	--	1
Styrene	ND		ug/kg	2.8	--	1
Dichlorodifluoromethane	ND		ug/kg	14	--	1
Acetone	ND		ug/kg	51	--	1
Carbon disulfide	ND		ug/kg	14	--	1
2-Butanone	ND		ug/kg	14	--	1
Vinyl acetate	ND		ug/kg	14	--	1
4-Methyl-2-pentanone	ND		ug/kg	14	--	1
2-Hexanone	ND		ug/kg	14	--	1
Ethyl methacrylate	ND		ug/kg	14	--	1
Acrylonitrile	ND		ug/kg	5.7	--	1
Bromochloromethane	ND		ug/kg	7.1	--	1
Tetrahydrofuran	ND		ug/kg	28	--	1
2,2-Dichloropropane	ND		ug/kg	7.1	--	1
1,2-Dibromoethane	ND		ug/kg	5.7	--	1
1,3-Dichloropropane	ND		ug/kg	7.1	--	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	1.4	--	1
Bromobenzene	ND		ug/kg	7.1	--	1
n-Butylbenzene	ND		ug/kg	1.4	--	1
sec-Butylbenzene	ND		ug/kg	1.4	--	1
tert-Butylbenzene	ND		ug/kg	7.1	--	1
o-Chlorotoluene	ND		ug/kg	7.1	--	1
p-Chlorotoluene	ND		ug/kg	7.1	--	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	7.1	--	1
Hexachlorobutadiene	ND		ug/kg	7.1	--	1

SAMPLE RESULTS

Lab ID:	L1812057-05	Date Collected:	04/05/18 09:15
Client ID:	SS-1	Date Received:	04/06/18
Sample Location:	BELFAST, ME	Field Prep:	Not Specified

Sample Depth:

Parameter	**Result**	**Qualifier**	**Units**	**RL**	**MDL**	**Dilution Factor**
Volatile Organics by GC/MS-5035 - Westborough Lab						
Isopropylbenzene	ND		ug/kg	1.4	--	1
p-Isopropyltoluene	ND		ug/kg	1.4	--	1
Naphthalene	ND		ug/kg	7.1	--	1
n-Propylbenzene	ND		ug/kg	1.4	--	1
1,2,3-Trichlorobenzene	ND		ug/kg	7.1	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	7.1	--	1
1,3,5-Trimethylbenzene	ND		ug/kg	7.1	--	1
1,2,4-Trimethylbenzene	ND		ug/kg	7.1	--	1
trans-1,4-Dichloro-2-butene	ND		ug/kg	7.1	--	1
Ethyl ether	ND		ug/kg	7.1	--	1

Surrogate	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	91		70-130
4-Bromofluorobenzene	82		70-130
Dibromofluoromethane	110		70-130

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 04/11/18 09:00
Analyst: JC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 05 Batch: WG1105519-5					
Methylene chloride	ND		ug/kg	10	--
1,1-Dichloroethane	ND		ug/kg	1.5	--
Chloroform	ND		ug/kg	1.5	--
Carbon tetrachloride	ND		ug/kg	1.0	--
1,2-Dichloropropane	ND		ug/kg	3.5	--
Dibromochloromethane	ND		ug/kg	1.0	--
1,1,2-Trichloroethane	ND		ug/kg	1.5	--
2-Chloroethylvinyl ether	ND		ug/kg	20	--
Tetrachloroethene	ND		ug/kg	1.0	--
Chlorobenzene	ND		ug/kg	1.0	--
Trichlorofluoromethane	ND		ug/kg	5.0	--
1,2-Dichloroethane	ND		ug/kg	1.0	--
1,1,1-Trichloroethane	ND		ug/kg	1.0	--
Bromodichloromethane	ND		ug/kg	1.0	--
trans-1,3-Dichloropropene	ND		ug/kg	1.0	--
cis-1,3-Dichloropropene	ND		ug/kg	1.0	--
1,3-Dichloropropene, Total	ND		ug/kg	1.0	--
1,1-Dichloropropene	ND		ug/kg	5.0	--
Bromoform	ND		ug/kg	4.0	--
1,1,2,2-Tetrachloroethane	ND		ug/kg	1.0	--
Benzene	ND		ug/kg	1.0	--
Toluene	ND		ug/kg	1.5	--
Ethylbenzene	ND		ug/kg	1.0	--
Chloromethane	ND		ug/kg	5.0	--
Bromomethane	ND		ug/kg	2.0	--
Vinyl chloride	ND		ug/kg	2.0	--
Chloroethane	ND		ug/kg	2.0	--
1,1-Dichloroethene	ND		ug/kg	1.0	--
trans-1,2-Dichloroethene	ND		ug/kg	1.5	--

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 04/11/18 09:00
Analyst: JC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 05 Batch: WG1105519-5					
Trichloroethene	ND		ug/kg	1.0	--
1,2-Dichlorobenzene	ND		ug/kg	5.0	--
1,3-Dichlorobenzene	ND		ug/kg	5.0	--
1,4-Dichlorobenzene	ND		ug/kg	5.0	--
Methyl tert butyl ether	ND		ug/kg	2.0	--
p/m-Xylene	ND		ug/kg	2.0	--
o-Xylene	ND		ug/kg	2.0	--
Xylenes, Total	ND		ug/kg	2.0	--
cis-1,2-Dichloroethene	ND		ug/kg	1.0	--
1,2-Dichloroethene, Total	ND		ug/kg	1.0	--
Dibromomethane	ND		ug/kg	10	--
1,4-Dichlorobutane	ND		ug/kg	10	--
1,2,3-Trichloropropane	ND		ug/kg	10	--
Styrene	ND		ug/kg	2.0	--
Dichlorodifluoromethane	ND		ug/kg	10	--
Acetone	ND		ug/kg	36	--
Carbon disulfide	ND		ug/kg	10	--
2-Butanone	ND		ug/kg	10	--
Vinyl acetate	ND		ug/kg	10	--
4-Methyl-2-pentanone	ND		ug/kg	10	--
2-Hexanone	ND		ug/kg	10	--
Ethyl methacrylate	ND		ug/kg	10	--
Acrolein	ND		ug/kg	25	--
Acrylonitrile	ND		ug/kg	4.0	--
Bromochloromethane	ND		ug/kg	5.0	--
Tetrahydrofuran	ND		ug/kg	20	--
2,2-Dichloropropane	ND		ug/kg	5.0	--
1,2-Dibromoethane	ND		ug/kg	4.0	--
1,3-Dichloropropane	ND		ug/kg	5.0	--

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 04/11/18 09:00
Analyst: JC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 05 Batch: WG1105519-5					
1,1,1,2-Tetrachloroethane	ND		ug/kg	1.0	--
Bromobenzene	ND		ug/kg	5.0	--
n-Butylbenzene	ND		ug/kg	1.0	--
sec-Butylbenzene	ND		ug/kg	1.0	--
tert-Butylbenzene	ND		ug/kg	5.0	--
1,3,5-Trichlorobenzene	ND		ug/kg	4.0	--
o-Chlorotoluene	ND		ug/kg	5.0	--
p-Chlorotoluene	ND		ug/kg	5.0	--
1,2-Dibromo-3-chloropropane	ND		ug/kg	5.0	--
Hexachlorobutadiene	ND		ug/kg	5.0	--
Isopropylbenzene	ND		ug/kg	1.0	--
p-Isopropyltoluene	ND		ug/kg	1.0	--
Naphthalene	ND		ug/kg	5.0	--
n-Propylbenzene	ND		ug/kg	1.0	--
1,2,3-Trichlorobenzene	ND		ug/kg	5.0	--
1,2,4-Trichlorobenzene	ND		ug/kg	5.0	--
1,3,5-Trimethylbenzene	ND		ug/kg	5.0	--
1,2,4-Trimethylbenzene	ND		ug/kg	5.0	--
trans-1,4-Dichloro-2-butene	ND		ug/kg	5.0	--
Ethyl ether	ND		ug/kg	5.0	--
Methyl Acetate	ND		ug/kg	20	--
Ethyl Acetate	ND		ug/kg	20	--
Isopropyl Ether	ND		ug/kg	4.0	--
Cyclohexane	ND		ug/kg	20	--
Tert-Butyl Alcohol	ND		ug/kg	100	--
Ethyl-Tert-Butyl-Ether	ND		ug/kg	4.0	--
Tertiary-Amyl Methyl Ether	ND		ug/kg	4.0	--
1,4-Dioxane	ND		ug/kg	40	--
Methyl cyclohexane	ND		ug/kg	4.0	--

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 04/11/18 09:00
Analyst: JC

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS-5035 - Westborough Lab for sample(s): 05 Batch: WG1105519-5					
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/kg	20	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	87		70-130
Toluene-d8	91		70-130
4-Bromofluorobenzene	81		70-130
Dibromofluoromethane	105		70-130

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 04/11/18 19:58
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01,03 Batch: WG1105890-5					
Methylene chloride	ND		ug/l	3.0	--
1,1-Dichloroethane	ND		ug/l	0.75	--
Chloroform	ND		ug/l	0.75	--
Carbon tetrachloride	ND		ug/l	0.50	--
1,2-Dichloropropane	ND		ug/l	1.0	--
Dibromochloromethane	ND		ug/l	0.50	--
1,1,2-Trichloroethane	ND		ug/l	0.75	--
2-Chloroethylvinyl ether	ND		ug/l	10	--
Tetrachloroethene	ND		ug/l	0.50	--
Chlorobenzene	ND		ug/l	0.50	--
Trichlorofluoromethane	ND		ug/l	1.0	--
1,2-Dichloroethane	ND		ug/l	0.50	--
1,1,1-Trichloroethane	ND		ug/l	0.50	--
Bromodichloromethane	ND		ug/l	0.50	--
trans-1,3-Dichloropropene	ND		ug/l	0.50	--
cis-1,3-Dichloropropene	ND		ug/l	0.50	--
1,3-Dichloropropene, Total	ND		ug/l	0.50	--
1,1-Dichloropropene	ND		ug/l	1.0	--
Bromoform	ND		ug/l	1.0	--
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--
Benzene	ND		ug/l	0.50	--
Toluene	ND		ug/l	0.75	--
Ethylbenzene	ND		ug/l	0.50	--
Chloromethane	ND		ug/l	2.0	--
Bromomethane	ND		ug/l	1.0	--
Vinyl chloride	ND		ug/l	0.20	--
Chloroethane	ND		ug/l	1.0	--
1,1-Dichloroethene	ND		ug/l	0.50	--
trans-1,2-Dichloroethene	ND		ug/l	0.75	--

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 04/11/18 19:58
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01,03 Batch: WG1105890-5					
1,2-Dichloroethene, Total	ND		ug/l	0.50	--
Trichloroethene	ND		ug/l	0.50	--
1,2-Dichlorobenzene	ND		ug/l	1.0	--
1,3-Dichlorobenzene	ND		ug/l	1.0	--
1,4-Dichlorobenzene	ND		ug/l	1.0	--
Methyl tert butyl ether	ND		ug/l	1.0	--
p/m-Xylene	ND		ug/l	1.0	--
o-Xylene	ND		ug/l	1.0	--
Xylenes, Total	ND		ug/l	1.0	--
cis-1,2-Dichloroethene	ND		ug/l	0.50	--
Dibromomethane	ND		ug/l	1.0	--
1,4-Dichlorobutane	ND		ug/l	5.0	--
Iodomethane	ND		ug/l	5.0	--
1,2,3-Trichloropropane	ND		ug/l	1.0	--
Styrene	ND		ug/l	1.0	--
Dichlorodifluoromethane	ND		ug/l	2.0	--
Acetone	ND		ug/l	5.0	--
Carbon disulfide	ND		ug/l	1.0	--
2-Butanone	ND		ug/l	5.0	--
Vinyl acetate	ND		ug/l	5.0	--
4-Methyl-2-pentanone	ND		ug/l	5.0	--
2-Hexanone	ND		ug/l	5.0	--
Ethyl methacrylate	ND		ug/l	5.0	--
Acrolein	ND		ug/l	5.0	--
Acrylonitrile	ND		ug/l	5.0	--
Bromochloromethane	ND		ug/l	1.0	--
Tetrahydrofuran	ND		ug/l	2.0	--
2,2-Dichloropropane	ND		ug/l	1.0	--
1,2-Dibromoethane	ND		ug/l	1.0	--

Project Name:	BELFAST WATER DISTRICT	**Lab Number:**	L1812057
Project Number:	171.05027.003	**Report Date:**	04/13/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 04/11/18 19:58
Analyst: AD

Parameter	**Result**	**Qualifier**	**Units**	**RL**	**MDL**
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01,03 Batch: WG1105890-5					
1,3-Dichloropropane	ND		ug/l	1.0	--
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--
Bromobenzene	ND		ug/l	1.0	--
n-Butylbenzene	ND		ug/l	0.50	--
sec-Butylbenzene	ND		ug/l	0.50	--
tert-Butylbenzene	ND		ug/l	1.0	--
o-Chlorotoluene	ND		ug/l	1.0	--
p-Chlorotoluene	ND		ug/l	1.0	--
1,2-Dibromo-3-chloropropane	ND		ug/l	1.0	--
Hexachlorobutadiene	ND		ug/l	0.50	--
Isopropylbenzene	ND		ug/l	0.50	--
p-Isopropyltoluene	ND		ug/l	0.50	--
Naphthalene	ND		ug/l	1.0	--
n-Propylbenzene	ND		ug/l	0.50	--
1,2,3-Trichlorobenzene	ND		ug/l	1.0	--
1,2,4-Trichlorobenzene	ND		ug/l	1.0	--
1,3,5-Trimethylbenzene	ND		ug/l	1.0	--
1,3,5-Trichlorobenzene	ND		ug/l	1.0	--
1,2,4-Trimethylbenzene	ND		ug/l	1.0	--
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	--
Halothane	ND		ug/l	2.5	--
Ethyl ether	ND		ug/l	1.0	--
Methyl Acetate	ND		ug/l	10	--
Ethyl Acetate	ND		ug/l	10	--
Isopropyl Ether	ND		ug/l	1.0	--
Cyclohexane	ND		ug/l	10	--
Tert-Butyl Alcohol	ND		ug/l	10	--
Ethyl-Tert-Butyl-Ether	ND		ug/l	1.0	--
Tertiary-Amyl Methyl Ether	ND		ug/l	1.0	--

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 04/11/18 19:58
Analyst: AD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01,03 Batch: WG1105890-5					
1,4-Dioxane	ND		ug/l	250	--
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/l	10	--
Methyl cyclohexane	ND		ug/l	10	--
p-Diethylbenzene	ND		ug/l	2.0	--
4-Ethyltoluene	ND		ug/l	2.0	--
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	95		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 05 Batch: WG1105519-3 WG1105519-4								
Methylene chloride	92		92		70-130	0		30
1,1-Dichloroethane	96		94		70-130	2		30
Chloroform	83		81		70-130	2		30
Carbon tetrachloride	88		83		70-130	6		30
1,2-Dichloropropane	106		104		70-130	2		30
Dibromochloromethane	80		83		70-130	4		30
1,1,2-Trichloroethane	83		83		70-130	0		30
2-Chloroethylvinyl ether	87		85		70-130	2		30
Tetrachloroethene	98		93		70-130	5		30
Chlorobenzene	92		89		70-130	3		30
Trichlorofluoromethane	80		76		70-139	5		30
1,2-Dichloroethane	84		82		70-130	2		30
1,1,1-Trichloroethane	80		76		70-130	5		30
Bromodichloromethane	83		83		70-130	0		30
trans-1,3-Dichloropropene	71		70		70-130	1		30
cis-1,3-Dichloropropene	92		90		70-130	2		30
1,1-Dichloropropene	84		79		70-130	6		30
Bromoform	75		77		70-130	3		30
1,1,2,2-Tetrachloroethane	84		86		70-130	2		30
Benzene	90		86		70-130	5		30
Toluene	82		79		70-130	4		30
Ethylbenzene	78		75		70-130	4		30
Chloromethane	107		104		52-130	3		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 05 Batch: WG1105519-3 WG1105519-4								
Bromomethane	94		93		57-147	1		30
Vinyl chloride	99		93		67-130	6		30
Chloroethane	92		90		50-151	2		30
1,1-Dichloroethene	91		84		65-135	8		30
trans-1,2-Dichloroethene	91		87		70-130	4		30
Trichloroethene	86		82		70-130	5		30
1,2-Dichlorobenzene	96		97		70-130	1		30
1,3-Dichlorobenzene	95		96		70-130	1		30
1,4-Dichlorobenzene	94		96		70-130	2		30
Methyl tert butyl ether	83		83		66-130	0		30
p/m-Xylene	94		90		70-130	4		30
o-Xylene	93		90		70-130	3		30
cis-1,2-Dichloroethene	93		90		70-130	3		30
Dibromomethane	91		92		70-130	1		30
1,4-Dichlorobutane	91		93		70-130	2		30
1,2,3-Trichloropropane	74		75		68-130	1		30
Styrene	94		92		70-130	2		30
Dichlorodifluoromethane	62		58		30-146	7		30
Acetone	**154**	Q	**151**	Q	54-140	2		30
Carbon disulfide	90		84		59-130	7		30
2-Butanone	114		109		70-130	4		30
Vinyl acetate	100		97		70-130	3		30
4-Methyl-2-pentanone	85		80		70-130	6		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 05 Batch: WG1105519-3 WG1105519-4

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
2-Hexanone	79		81		70-130	3		30
Ethyl methacrylate	**68**	Q	**67**	Q	70-130	1		30
Acrolein	108		110		70-130	2		30
Acrylonitrile	104		106		70-130	2		30
Bromochloromethane	112		112		70-130	0		30
Tetrahydrofuran	108		110		66-130	2		30
2,2-Dichloropropane	87		82		70-130	6		30
1,2-Dibromoethane	90		90		70-130	0		30
1,3-Dichloropropane	81		80		69-130	1		30
1,1,1,2-Tetrachloroethane	90		88		70-130	2		30
Bromobenzene	87		88		70-130	1		30
n-Butylbenzene	77		75		70-130	3		30
sec-Butylbenzene	84		83		70-130	1		30
tert-Butylbenzene	84		82		70-130	2		30
1,3,5-Trichlorobenzene	96		96		70-139	0		30
o-Chlorotoluene	75		74		70-130	1		30
p-Chlorotoluene	74		75		70-130	1		30
1,2-Dibromo-3-chloropropane	82		84		68-130	2		30
Hexachlorobutadiene	82		81		67-130	1		30
Isopropylbenzene	81		79		70-130	3		30
p-Isopropyltoluene	87		84		70-130	4		30
Naphthalene	86		87		70-130	1		30
n-Propylbenzene	75		74		70-130	1		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS-5035 - Westborough Lab Associated sample(s): 05 Batch: WG1105519-3 WG1105519-4								
1,2,3-Trichlorobenzene	95		97		70-130	2		30
1,2,4-Trichlorobenzene	93		94		70-130	1		30
1,3,5-Trimethylbenzene	83		82		70-130	1		30
1,2,4-Trimethylbenzene	85		84		70-130	1		30
trans-1,4-Dichloro-2-butene	76		72		70-130	5		30
Ethyl ether	85		86		67-130	1		30
Methyl Acetate	100		98		65-130	2		30
Ethyl Acetate	94		92		70-130	2		30
Isopropyl Ether	101		101		66-130	0		30
Cyclohexane	105		98		70-130	7		30
Tert-Butyl Alcohol	87		87		70-130	0		30
Ethyl-Tert-Butyl-Ether	96		96		70-130	0		30
Tertiary-Amyl Methyl Ether	86		85		70-130	1		30
1,4-Dioxane	133		132		65-136	1		30
Methyl cyclohexane	90		82		70-130	9		30
1,1,2-Trichloro-1,2,2-Trifluoroethane	92		86		70-130	7		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	87		87		70-130
Toluene-d8	90		91		70-130
4-Bromofluorobenzene	82		81		70-130
Dibromofluoromethane	107		107		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1105890-3 WG1105890-4

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Methylene chloride	100		100		70-130	0		20
1,1-Dichloroethane	110		110		70-130	0		20
Chloroform	97		99		70-130	2		20
Carbon tetrachloride	86		89		63-132	3		20
1,2-Dichloropropane	110		110		70-130	0		20
Dibromochloromethane	91		92		63-130	1		20
1,1,2-Trichloroethane	110		110		70-130	0		20
2-Chloroethylvinyl ether	90		90		70-130	0		20
Tetrachloroethene	86		89		70-130	3		20
Chlorobenzene	96		98		75-130	2		25
Trichlorofluoromethane	91		96		62-150	5		20
1,2-Dichloroethane	100		100		70-130	0		20
1,1,1-Trichloroethane	91		95		67-130	4		20
Bromodichloromethane	93		94		67-130	1		20
trans-1,3-Dichloropropene	100		100		70-130	0		20
cis-1,3-Dichloropropene	99		100		70-130	1		20
1,1-Dichloropropene	97		100		70-130	3		20
Bromoform	87		87		54-136	0		20
1,1,2,2-Tetrachloroethane	110		110		67-130	0		20
Benzene	94		97		70-130	3		25
Toluene	98		100		70-130	2		25
Ethylbenzene	97		100		70-130	3		20
Chloromethane	120		130		64-130	8		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1812057
Report Date: 04/13/18

Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1105890-3 WG1105890-4

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Bromomethane	73		78		39-139	7		20
Vinyl chloride	110		120		55-140	9		20
Chloroethane	110		120		55-138	9		20
1,1-Dichloroethene	93		96		61-145	3		25
trans-1,2-Dichloroethene	94		99		70-130	5		20
Trichloroethene	88		91		70-130	3		25
1,2-Dichlorobenzene	93		96		70-130	3		20
1,3-Dichlorobenzene	94		96		70-130	2		20
1,4-Dichlorobenzene	94		96		70-130	2		20
Methyl tert butyl ether	100		100		63-130	0		20
p/m-Xylene	95		100		70-130	5		20
o-Xylene	95		100		70-130	5		20
cis-1,2-Dichloroethene	94		96		70-130	2		20
Dibromomethane	93		94		70-130	1		20
1,4-Dichlorobutane	120		120		70-130	0		20
Iodomethane	**37**	Q	**42**	Q	70-130	13		20
1,2,3-Trichloropropane	110		110		64-130	0		20
Styrene	125		130		70-130	4		20
Dichlorodifluoromethane	110		110		36-147	0		20
Acetone	96		100		58-148	4		20
Carbon disulfide	100		100		51-130	0		20
2-Butanone	120		120		63-138	0		20
Vinyl acetate	110		110		70-130	0		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1105890-3 WG1105890-4								
4-Methyl-2-pentanone	110		110		59-130	0		20
2-Hexanone	110		110		57-130	0		20
Ethyl methacrylate	94		93		70-130	1		20
Acrolein	**280**	Q	**280**	Q	70-130	0		20
Acrylonitrile	110		120		70-130	9		20
Bromochloromethane	90		91		70-130	1		20
Tetrahydrofuran	130		130		58-130	0		20
2,2-Dichloropropane	100		100		63-133	0		20
1,2-Dibromoethane	98		96		70-130	2		20
1,3-Dichloropropane	110		110		70-130	0		20
1,1,1,2-Tetrachloroethane	92		94		64-130	2		20
Bromobenzene	90		94		70-130	4		20
n-Butylbenzene	100		110		53-136	10		20
sec-Butylbenzene	99		100		70-130	1		20
tert-Butylbenzene	95		100		70-130	5		20
o-Chlorotoluene	100		100		70-130	0		20
p-Chlorotoluene	100		100		70-130	0		20
1,2-Dibromo-3-chloropropane	90		90		41-144	0		20
Hexachlorobutadiene	66		71		63-130	7		20
Isopropylbenzene	99		100		70-130	1		20
p-Isopropyltoluene	97		100		70-130	3		20
Naphthalene	91		91		70-130	0		20
n-Propylbenzene	100		110		69-130	10		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1105890-3 WG1105890-4								
1,2,3-Trichlorobenzene	80		82		70-130	2		20
1,2,4-Trichlorobenzene	81		83		70-130	2		20
1,3,5-Trimethylbenzene	99		100		64-130	1		20
1,3,5-Trichlorobenzene	83		85		70-130	2		20
1,2,4-Trimethylbenzene	90		95		70-130	5		20
trans-1,4-Dichloro-2-butene	110		100		70-130	10		20
Halothane	84		87		70-130	4		20
Ethyl ether	110		110		59-134	0		20
Methyl Acetate	**140**	Q	130		70-130	7		20
Ethyl Acetate	120		120		70-130	0		20
Isopropyl Ether	120		120		70-130	0		20
Cyclohexane	110		120		70-130	9		20
Tert-Butyl Alcohol	86		92		70-130	7		20
Ethyl-Tert-Butyl-Ether	110		110		70-130	0		20
Tertiary-Amyl Methyl Ether	99		100		66-130	1		20
1,4-Dioxane	**48**	Q	60		56-162	**22**	Q	20
1,1,2-Trichloro-1,2,2-Trifluoroethane	93		99		70-130	6		20
Methyl cyclohexane	94		100		70-130	6		20
p-Diethylbenzene	95		98		70-130	3		20
4-Ethyltoluene	100		100		70-130	0		20
1,2,4,5-Tetramethylbenzene	90		93		70-130	3		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1105890-3 WG1105890-4								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	103		102		70-130
Toluene-d8	102		102		70-130
4-Bromofluorobenzene	102		101		70-130
Dibromofluoromethane	93		94		70-130

SEMIVOLATILES

Project Name:	BELFAST WATER DISTRICT	**Lab Number:**	L1812057
Project Number:	171.05027.003	**Report Date:**	04/13/18

SAMPLE RESULTS

Lab ID:	L1812057-01	Date Collected:	04/05/18 08:15
Client ID:	GWW-101	Date Received:	04/06/18
Sample Location:	BELFAST, ME	Field Prep:	Field Filtered (Dissolved Metals & Phosphorus)
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D	Extraction Date:	04/08/18 23:42
Analytical Date:	04/10/18 16:30		
Analyst:	EK		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzidine	ND		ug/l	20	--	1
1,2,4-Trichlorobenzene	ND		ug/l	5.0	--	1
Bis(2-chloroethyl)ether	ND		ug/l	2.0	--	1
1,2-Dichlorobenzene	ND		ug/l	2.0	--	1
1,3-Dichlorobenzene	ND		ug/l	2.0	--	1
1,4-Dichlorobenzene	ND		ug/l	2.0	--	1
3,3'-Dichlorobenzidine	ND		ug/l	5.0	--	1
2,4-Dinitrotoluene	ND		ug/l	5.0	--	1
2,6-Dinitrotoluene	ND		ug/l	5.0	--	1
Azobenzene	ND		ug/l	2.0	--	1
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	--	1
4-Bromophenyl phenyl ether	ND		ug/l	2.0	--	1
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	--	1
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	--	1
Hexachlorocyclopentadiene	ND		ug/l	20	--	1
Isophorone	ND		ug/l	5.0	--	1
Nitrobenzene	ND		ug/l	2.0	--	1
NDPA/DPA	ND		ug/l	2.0	--	1
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	--	1
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--	1
Butyl benzyl phthalate	ND		ug/l	5.0	--	1
Di-n-butylphthalate	ND		ug/l	5.0	--	1
Di-n-octylphthalate	ND		ug/l	5.0	--	1
Diethyl phthalate	ND		ug/l	5.0	--	1
Dimethyl phthalate	ND		ug/l	5.0	--	1
Biphenyl	ND		ug/l	2.0	--	1
Aniline	ND		ug/l	2.0	--	1
4-Chloroaniline	ND		ug/l	5.0	--	1

SAMPLE RESULTS

Lab ID:	L1812057-01	Date Collected:	04/05/18 08:15
Client ID:	GWW-101	Date Received:	04/06/18
Sample Location:	BELFAST, ME	Field Prep:	Field Filtered (Dissolved Metals & Phosphorus)
Sample Depth:			

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
2-Nitroaniline	ND		ug/l	5.0	--	1
3-Nitroaniline	ND		ug/l	5.0	--	1
4-Nitroaniline	ND		ug/l	5.0	--	1
Dibenzofuran	ND		ug/l	2.0	--	1
n-Nitrosodimethylamine	ND		ug/l	2.0	--	1
2,4,6-Trichlorophenol	ND		ug/l	5.0	--	1
p-Chloro-m-cresol	ND		ug/l	2.0	--	1
2-Chlorophenol	ND		ug/l	2.0	--	1
2,4-Dichlorophenol	ND		ug/l	5.0	--	1
2,4-Dimethylphenol	ND		ug/l	5.0	--	1
2-Nitrophenol	ND		ug/l	10	--	1
4-Nitrophenol	ND		ug/l	10	--	1
2,4-Dinitrophenol	ND		ug/l	20	--	1
4,6-Dinitro-o-cresol	ND		ug/l	10	--	1
Phenol	ND		ug/l	5.0	--	1
2-Methylphenol	ND		ug/l	5.0	--	1
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	--	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	--	1
Benzoic Acid	ND		ug/l	50	--	1
Benzyl Alcohol	ND		ug/l	2.0	--	1
Carbazole	ND		ug/l	2.0	--	1
Pyridine	ND		ug/l	3.5	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	68		21-120
Phenol-d6	47		10-120
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	85		15-120
2,4,6-Tribromophenol	97		10-120
4-Terphenyl-d14	91		41-149

SAMPLE RESULTS

Lab ID:	L1812057-01	Date Collected:	04/05/18 08:15
Client ID:	GWW-101	Date Received:	04/06/18
Sample Location:	BELFAST, ME	Field Prep:	Field Filtered (Dissolved Metals & Phosphorus)
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D-SIM	Extraction Date:	04/09/18 07:16
Analytical Date:	04/10/18 17:23		
Analyst:	CB		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	ND		ug/l	0.10	--	1
2-Chloronaphthalene	ND		ug/l	0.20	--	1
Fluoranthene	ND		ug/l	0.10	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	0.10	--	1
Benzo(a)anthracene	ND		ug/l	0.10	--	1
Benzo(a)pyrene	ND		ug/l	0.10	--	1
Benzo(b)fluoranthene	ND		ug/l	0.10	--	1
Benzo(k)fluoranthene	ND		ug/l	0.10	--	1
Chrysene	ND		ug/l	0.10	--	1
Acenaphthylene	ND		ug/l	0.10	--	1
Anthracene	ND		ug/l	0.10	--	1
Benzo(ghi)perylene	ND		ug/l	0.10	--	1
Fluorene	ND		ug/l	0.10	--	1
Phenanthrene	ND		ug/l	0.10	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.10	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	--	1
Pyrene	ND		ug/l	0.10	--	1
1-Methylnaphthalene	ND		ug/l	0.10	--	1
2-Methylnaphthalene	0.13		ug/l	0.10	--	1
Pentachlorophenol	ND		ug/l	0.80	--	1
Hexachlorobenzene	ND		ug/l	0.80	--	1
Hexachloroethane	ND		ug/l	0.80	--	1

SAMPLE RESULTS

Lab ID:	L1812057-01	Date Collected:	04/05/18 08:15
Client ID:	GWW-101	Date Received:	04/06/18
Sample Location:	BELFAST, ME	Field Prep:	Field Filtered (Dissolved Metals & Phosphorus)
Sample Depth:			

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Semivolatile Organics by GC/MS-SIM - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	57		21-120
Phenol-d6	40		10-120
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	89		15-120
2,4,6-Tribromophenol	73		10-120
4-Terphenyl-d14	96		41-149

SAMPLE RESULTS

Lab ID: L1812057-03
Client ID: GWW-103
Sample Location: BELFAST, ME

Date Collected: 04/05/18 08:45
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D
Analytical Date: 04/10/18 18:39
Analyst: EK

Extraction Method: EPA 3510C
Extraction Date: 04/08/18 23:42

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzidine	ND		ug/l	20	--	1
1,2,4-Trichlorobenzene	ND		ug/l	5.0	--	1
Bis(2-chloroethyl)ether	ND		ug/l	2.0	--	1
1,2-Dichlorobenzene	ND		ug/l	2.0	--	1
1,3-Dichlorobenzene	ND		ug/l	2.0	--	1
1,4-Dichlorobenzene	ND		ug/l	2.0	--	1
3,3'-Dichlorobenzidine	ND		ug/l	5.0	--	1
2,4-Dinitrotoluene	ND		ug/l	5.0	--	1
2,6-Dinitrotoluene	ND		ug/l	5.0	--	1
Azobenzene	ND		ug/l	2.0	--	1
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	--	1
4-Bromophenyl phenyl ether	ND		ug/l	2.0	--	1
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	--	1
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	--	1
Hexachlorocyclopentadiene	ND		ug/l	20	--	1
Isophorone	ND		ug/l	5.0	--	1
Nitrobenzene	ND		ug/l	2.0	--	1
NDPA/DPA	ND		ug/l	2.0	--	1
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	--	1
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--	1
Butyl benzyl phthalate	ND		ug/l	5.0	--	1
Di-n-butylphthalate	ND		ug/l	5.0	--	1
Di-n-octylphthalate	ND		ug/l	5.0	--	1
Diethyl phthalate	ND		ug/l	5.0	--	1
Dimethyl phthalate	ND		ug/l	5.0	--	1
Biphenyl	ND		ug/l	2.0	--	1
Aniline	ND		ug/l	2.0	--	1
4-Chloroaniline	ND		ug/l	5.0	--	1

SAMPLE RESULTS

Lab ID:	L1812057-03	Date Collected:	04/05/18 08:45
Client ID:	GWW-103	Date Received:	04/06/18
Sample Location:	BELFAST, ME	Field Prep:	Field Filtered (Dissolved Metals & Phosphorus)
Sample Depth:			

Semivolatile Organics by GC/MS - Westborough Lab

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
2-Nitroaniline	ND		ug/l	5.0	--	1
3-Nitroaniline	ND		ug/l	5.0	--	1
4-Nitroaniline	ND		ug/l	5.0	--	1
Dibenzofuran	ND		ug/l	2.0	--	1
n-Nitrosodimethylamine	ND		ug/l	2.0	--	1
2,4,6-Trichlorophenol	ND		ug/l	5.0	--	1
p-Chloro-m-cresol	ND		ug/l	2.0	--	1
2-Chlorophenol	ND		ug/l	2.0	--	1
2,4-Dichlorophenol	ND		ug/l	5.0	--	1
2,4-Dimethylphenol	ND		ug/l	5.0	--	1
2-Nitrophenol	ND		ug/l	10	--	1
4-Nitrophenol	ND		ug/l	10	--	1
2,4-Dinitrophenol	ND		ug/l	20	--	1
4,6-Dinitro-o-cresol	ND		ug/l	10	--	1
Phenol	ND		ug/l	5.0	--	1
2-Methylphenol	ND		ug/l	5.0	--	1
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	--	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	--	1
Benzoic Acid	ND		ug/l	50	--	1
Benzyl Alcohol	ND		ug/l	2.0	--	1
Carbazole	ND		ug/l	2.0	--	1
Pyridine	ND		ug/l	3.5	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	67		21-120
Phenol-d6	48		10-120
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	86		15-120
2,4,6-Tribromophenol	97		10-120
4-Terphenyl-d14	91		41-149

SAMPLE RESULTS

Lab ID: L1812057-03
Client ID: GWW-103
Sample Location: BELFAST, ME

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 04/10/18 17:48
Analyst: CB

Date Collected: 04/05/18 08:45
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Extraction Method: EPA 3510C
Extraction Date: 04/09/18 07:16

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	ND		ug/l	0.10	--	1
2-Chloronaphthalene	ND		ug/l	0.20	--	1
Fluoranthene	ND		ug/l	0.10	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	0.10	--	1
Benzo(a)anthracene	ND		ug/l	0.10	--	1
Benzo(a)pyrene	ND		ug/l	0.10	--	1
Benzo(b)fluoranthene	ND		ug/l	0.10	--	1
Benzo(k)fluoranthene	ND		ug/l	0.10	--	1
Chrysene	ND		ug/l	0.10	--	1
Acenaphthylene	ND		ug/l	0.10	--	1
Anthracene	ND		ug/l	0.10	--	1
Benzo(ghi)perylene	ND		ug/l	0.10	--	1
Fluorene	ND		ug/l	0.10	--	1
Phenanthrene	ND		ug/l	0.10	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.10	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	--	1
Pyrene	ND		ug/l	0.10	--	1
1-Methylnaphthalene	ND		ug/l	0.10	--	1
2-Methylnaphthalene	ND		ug/l	0.10	--	1
Pentachlorophenol	ND		ug/l	0.80	--	1
Hexachlorobenzene	ND		ug/l	0.80	--	1
Hexachloroethane	ND		ug/l	0.80	--	1

Project Name:	BELFAST WATER DISTRICT	**Lab Number:**	L1812057
Project Number:	171.05027.003	**Report Date:**	04/13/18

SAMPLE RESULTS

Lab ID:	L1812057-03	Date Collected:	04/05/18 08:45
Client ID:	GWW-103	Date Received:	04/06/18
Sample Location:	BELFAST, ME	Field Prep:	Field Filtered (Dissolved Metals & Phosphorus)
Sample Depth:			

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Semivolatile Organics by GC/MS-SIM - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	54		21-120
Phenol-d6	42		10-120
Nitrobenzene-d5	78		23-120
2-Fluorobiphenyl	81		15-120
2,4,6-Tribromophenol	64		10-120
4-Terphenyl-d14	121		41-149

SAMPLE RESULTS

Lab ID: L1812057-05
Client ID: SS-1
Sample Location: BELFAST, ME

Date Collected: 04/05/18 09:15
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Analytical Method: 1,8270D
Analytical Date: 04/12/18 02:11
Analyst: CB
Percent Solids: 78%

Extraction Method: EPA 3546
Extraction Date: 04/08/18 01:29

Parameter	**Result**	**Qualifier**	**Units**	**RL**	**MDL**	**Dilution Factor**
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/kg	170	--	1
Benzidine	ND		ug/kg	700	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	210	--	1
Hexachlorobenzene	ND		ug/kg	130	--	1
Bis(2-chloroethyl)ether	ND		ug/kg	190	--	1
2-Chloronaphthalene	ND		ug/kg	210	--	1
1,2-Dichlorobenzene	ND		ug/kg	210	--	1
1,3-Dichlorobenzene	ND		ug/kg	210	--	1
1,4-Dichlorobenzene	ND		ug/kg	210	--	1
3,3'-Dichlorobenzidine	ND		ug/kg	210	--	1
2,4-Dinitrotoluene	ND		ug/kg	210	--	1
2,6-Dinitrotoluene	ND		ug/kg	210	--	1
Azobenzene	ND		ug/kg	210	--	1
Fluoranthene	330		ug/kg	130	--	1
4-Chlorophenyl phenyl ether	ND		ug/kg	210	--	1
4-Bromophenyl phenyl ether	ND		ug/kg	210	--	1
Bis(2-chloroisopropyl)ether	ND		ug/kg	260	--	1
Bis(2-chloroethoxy)methane	ND		ug/kg	230	--	1
Hexachlorobutadiene	ND		ug/kg	210	--	1
Hexachlorocyclopentadiene	ND		ug/kg	610	--	1
Hexachloroethane	ND		ug/kg	170	--	1
Isophorone	ND		ug/kg	190	--	1
Naphthalene	ND		ug/kg	210	--	1
Nitrobenzene	ND		ug/kg	190	--	1
NDPA/DPA	ND		ug/kg	170	--	1
n-Nitrosodi-n-propylamine	ND		ug/kg	210	--	1
Bis(2-ethylhexyl)phthalate	ND		ug/kg	210	--	1
Butyl benzyl phthalate	ND		ug/kg	210	--	1

SAMPLE RESULTS

Lab ID: L1812057-05
Client ID: SS-1
Sample Location: BELFAST, ME

Date Collected: 04/05/18 09:15
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Di-n-butylphthalate	ND		ug/kg	210	--	1
Di-n-octylphthalate	ND		ug/kg	210	--	1
Diethyl phthalate	ND		ug/kg	210	--	1
Dimethyl phthalate	ND		ug/kg	210	--	1
Benzo(a)anthracene	240		ug/kg	130	--	1
Benzo(a)pyrene	230		ug/kg	170	--	1
Benzo(b)fluoranthene	340		ug/kg	130	--	1
Benzo(k)fluoranthene	ND		ug/kg	130	--	1
Chrysene	250		ug/kg	130	--	1
Acenaphthylene	ND		ug/kg	170	--	1
Anthracene	ND		ug/kg	130	--	1
Benzo(ghi)perylene	ND		ug/kg	170	--	1
Fluorene	ND		ug/kg	210	--	1
Phenanthrene	ND		ug/kg	130	--	1
Dibenzo(a,h)anthracene	ND		ug/kg	130	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/kg	170	--	1
Pyrene	320		ug/kg	130	--	1
Aniline	ND		ug/kg	260	--	1
4-Chloroaniline	ND		ug/kg	210	--	1
1-Methylnaphthalene	ND		ug/kg	210	--	1
2-Nitroaniline	ND		ug/kg	210	--	1
3-Nitroaniline	ND		ug/kg	210	--	1
4-Nitroaniline	ND		ug/kg	210	--	1
Dibenzofuran	ND		ug/kg	210	--	1
2-Methylnaphthalene	ND		ug/kg	260	--	1
n-Nitrosodimethylamine	ND		ug/kg	430	--	1
2,4,6-Trichlorophenol	ND		ug/kg	130	--	1
p-Chloro-m-cresol	ND		ug/kg	210	--	1
2-Chlorophenol	ND		ug/kg	210	--	1
2,4-Dichlorophenol	ND		ug/kg	190	--	1
2,4-Dimethylphenol	ND		ug/kg	210	--	1
2-Nitrophenol	ND		ug/kg	460	--	1
4-Nitrophenol	ND		ug/kg	300	--	1
2,4-Dinitrophenol	ND		ug/kg	1000	--	1
4,6-Dinitro-o-cresol	ND		ug/kg	550	--	1
Pentachlorophenol	ND		ug/kg	170	--	1
Phenol	ND		ug/kg	210	--	1

SAMPLE RESULTS

Lab ID:	L1812057-05	Date Collected:	04/05/18 09:15
Client ID:	SS-1	Date Received:	04/06/18
Sample Location:	BELFAST, ME	Field Prep:	Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
2-Methylphenol	ND		ug/kg	210	--	1
3-Methylphenol/4-Methylphenol	ND		ug/kg	310	--	1
2,4,5-Trichlorophenol	ND		ug/kg	210	--	1
Benzoic Acid	ND		ug/kg	690	--	1
Benzyl Alcohol	ND		ug/kg	210	--	1
Carbazole	ND		ug/kg	210	--	1
Pyridine	ND		ug/kg	230	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	36		25-120
Phenol-d6	50		10-120
Nitrobenzene-d5	99		23-120
2-Fluorobiphenyl	84		30-120
2,4,6-Tribromophenol	88		10-136
4-Terphenyl-d14	71		18-120

SAMPLE RESULTS

Lab ID:	L1812057-06	Date Collected:	04/05/18 11:30
Client ID:	SS-2	Date Received:	04/06/18
Sample Location:	BELFAST, ME	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Soil	Extraction Method:	EPA 3546
Analytical Method:	1,8270D	Extraction Date:	04/11/18 14:53
Analytical Date:	04/12/18 08:44		
Analyst:	TT		
Percent Solids:	73%		

Parameter	**Result**	**Qualifier**	**Units**	**RL**	**MDL**	**Dilution Factor**
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	12000	E	ug/kg	180	--	1
2-Chloronaphthalene	ND		ug/kg	220	--	1
Fluoranthene	78000	E	ug/kg	140	--	1
Naphthalene	9900	E	ug/kg	220	--	1
Benzo(a)anthracene	57000	E	ug/kg	140	--	1
Benzo(a)pyrene	48000	E	ug/kg	180	--	1
Benzo(b)fluoranthene	76000	E	ug/kg	140	--	1
Benzo(k)fluoranthene	11000	E	ug/kg	140	--	1
Chrysene	34000	E	ug/kg	140	--	1
Acenaphthylene	1100		ug/kg	180	--	1
Anthracene	22000	E	ug/kg	140	--	1
Benzo(ghi)perylene	28000	E	ug/kg	180	--	1
Fluorene	15000	E	ug/kg	220	--	1
Phenanthrene	66000	E	ug/kg	140	--	1
Dibenzo(a,h)anthracene	6300		ug/kg	140	--	1
Indeno(1,2,3-cd)pyrene	35000	E	ug/kg	180	--	1
Pyrene	61000	E	ug/kg	140	--	1
1-Methylnaphthalene	3200		ug/kg	220	--	1
2-Methylnaphthalene	4100		ug/kg	270	--	1

Surrogate	**% Recovery**	**Qualifier**	**Acceptance Criteria**
Nitrobenzene-d5	95		23-120
2-Fluorobiphenyl	72		30-120
4-Terphenyl-d14	56		18-120

SAMPLE RESULTS

Lab ID: L1812057-06 D

Client ID: SS-2

Sample Location: BELFAST, ME

Date Collected: 04/05/18 11:30

Date Received: 04/06/18

Field Prep: Not Specified

Sample Depth:

Matrix: Soil

Analytical Method: 1,8270D

Analytical Date: 04/13/18 04:51

Analyst: PS

Percent Solids: 73%

Extraction Method: EPA 3546

Extraction Date: 04/11/18 14:53

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	10000		ug/kg	3600	--	20
Fluoranthene	90000		ug/kg	2700	--	20
Naphthalene	8200		ug/kg	4500	--	20
Benzo(a)anthracene	45000		ug/kg	2700	--	20
Benzo(a)pyrene	35000		ug/kg	3600	--	20
Benzo(b)fluoranthene	50000		ug/kg	2700	--	20
Benzo(k)fluoranthene	15000		ug/kg	2700	--	20
Chrysene	41000		ug/kg	2700	--	20
Anthracene	23000		ug/kg	2700	--	20
Benzo(ghi)perylene	20000		ug/kg	3600	--	20
Fluorene	14000		ug/kg	4500	--	20
Phenanthrene	82000		ug/kg	2700	--	20
Indeno(1,2,3-cd)pyrene	24000		ug/kg	3600	--	20
Pyrene	70000		ug/kg	2700	--	20

Project Name:	BELFAST WATER DISTRICT	**Lab Number:**	L1812057
Project Number:	171.05027.003	**Report Date:**	04/13/18

Method Blank Analysis
Batch Quality Control

Analytical Method:	1,8270D	Extraction Method:	EPA 3546
Analytical Date:	04/10/18 15:07	Extraction Date:	04/08/18 01:14
Analyst:	CB		

Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 05 Batch: WG1104559-1

Parameter	Result	Qualifier	Units	RL	MDL
Acenaphthene	ND		ug/kg	130	--
Benzidine	ND		ug/kg	540	--
1,2,4-Trichlorobenzene	ND		ug/kg	160	--
Hexachlorobenzene	ND		ug/kg	98	--
Bis(2-chloroethyl)ether	ND		ug/kg	150	--
2-Chloronaphthalene	ND		ug/kg	160	--
1,2-Dichlorobenzene	ND		ug/kg	160	--
1,3-Dichlorobenzene	ND		ug/kg	160	--
1,4-Dichlorobenzene	ND		ug/kg	160	--
3,3'-Dichlorobenzidine	ND		ug/kg	160	--
2,4-Dinitrotoluene	ND		ug/kg	160	--
2,6-Dinitrotoluene	ND		ug/kg	160	--
Azobenzene	ND		ug/kg	160	--
Fluoranthene	ND		ug/kg	98	--
4-Chlorophenyl phenyl ether	ND		ug/kg	160	--
4-Bromophenyl phenyl ether	ND		ug/kg	160	--
Bis(2-chloroisopropyl)ether	ND		ug/kg	200	--
Bis(2-chloroethoxy)methane	ND		ug/kg	180	--
Hexachlorobutadiene	ND		ug/kg	160	--
Hexachlorocyclopentadiene	ND		ug/kg	470	--
Hexachloroethane	ND		ug/kg	130	--
Isophorone	ND		ug/kg	150	--
Naphthalene	ND		ug/kg	160	--
Nitrobenzene	ND		ug/kg	150	--
NDPA/DPA	ND		ug/kg	130	--
n-Nitrosodi-n-propylamine	ND		ug/kg	160	--
Bis(2-ethylhexyl)phthalate	ND		ug/kg	160	--
Butyl benzyl phthalate	ND		ug/kg	160	--
Di-n-butylphthalate	ND		ug/kg	160	--

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 04/10/18 15:07
Analyst: CB

Extraction Method: EPA 3546
Extraction Date: 04/08/18 01:14

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 05 Batch: WG1104559-1					
Di-n-octylphthalate	ND		ug/kg	160	--
Diethyl phthalate	ND		ug/kg	160	--
Dimethyl phthalate	ND		ug/kg	160	--
Benzo(a)anthracene	ND		ug/kg	98	--
Benzo(a)pyrene	ND		ug/kg	130	--
Benzo(b)fluoranthene	ND		ug/kg	98	--
Benzo(k)fluoranthene	ND		ug/kg	98	--
Chrysene	ND		ug/kg	98	--
Acenaphthylene	ND		ug/kg	130	--
Anthracene	ND		ug/kg	98	--
Benzo(ghi)perylene	ND		ug/kg	130	--
Fluorene	ND		ug/kg	160	--
Phenanthrene	ND		ug/kg	98	--
Dibenzo(a,h)anthracene	ND		ug/kg	98	--
Indeno(1,2,3-cd)pyrene	ND		ug/kg	130	--
Pyrene	ND		ug/kg	98	--
Biphenyl	ND		ug/kg	370	--
Aniline	ND		ug/kg	200	--
4-Chloroaniline	ND		ug/kg	160	--
1-Methylnaphthalene	ND		ug/kg	160	--
2-Nitroaniline	ND		ug/kg	160	--
3-Nitroaniline	ND		ug/kg	160	--
4-Nitroaniline	ND		ug/kg	160	--
Dibenzofuran	ND		ug/kg	160	--
2-Methylnaphthalene	ND		ug/kg	200	--
n-Nitrosodimethylamine	ND		ug/kg	330	--
2,4,6-Trichlorophenol	ND		ug/kg	98	--
p-Chloro-m-cresol	ND		ug/kg	160	--
2-Chlorophenol	ND		ug/kg	160	--

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 04/10/18 15:07
Analyst: CB

Extraction Method: EPA 3546
Extraction Date: 04/08/18 01:14

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 05 Batch: WG1104559-1					
2,4-Dichlorophenol	ND		ug/kg	150	--
2,4-Dimethylphenol	ND		ug/kg	160	--
2-Nitrophenol	ND		ug/kg	350	--
4-Nitrophenol	ND		ug/kg	230	--
2,4-Dinitrophenol	ND		ug/kg	780	--
4,6-Dinitro-o-cresol	ND		ug/kg	420	--
Pentachlorophenol	ND		ug/kg	130	--
Phenol	ND		ug/kg	160	--
2-Methylphenol	ND		ug/kg	160	--
3-Methylphenol/4-Methylphenol	ND		ug/kg	240	--
2,4,5-Trichlorophenol	ND		ug/kg	160	--
Benzoic Acid	ND		ug/kg	530	--
Benzyl Alcohol	ND		ug/kg	160	--
Carbazole	ND		ug/kg	160	--
Pyridine	ND		ug/kg	180	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	96		25-120
Phenol-d6	105		10-120
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	86		30-120
2,4,6-Tribromophenol	100		10-136
4-Terphenyl-d14	93		18-120

Project Name:	BELFAST WATER DISTRICT	**Lab Number:**	L1812057
Project Number:	171.05027.003	**Report Date:**	04/13/18

Method Blank Analysis
Batch Quality Control

Analytical Method:	1,8270D	Extraction Method:	EPA 3510C
Analytical Date:	04/10/18 15:12	Extraction Date:	04/08/18 23:42
Analyst:	EK		

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01,03 Batch: WG1104633-1					
Acenaphthene	ND		ug/l	2.0	--
Benzidine	ND		ug/l	20	--
1,2,4-Trichlorobenzene	ND		ug/l	5.0	--
Hexachlorobenzene	ND		ug/l	2.0	--
Bis(2-chloroethyl)ether	ND		ug/l	2.0	--
2-Chloronaphthalene	ND		ug/l	2.0	--
1,2-Dichlorobenzene	ND		ug/l	2.0	--
1,3-Dichlorobenzene	ND		ug/l	2.0	--
1,4-Dichlorobenzene	ND		ug/l	2.0	--
3,3'-Dichlorobenzidine	ND		ug/l	5.0	--
2,4-Dinitrotoluene	ND		ug/l	5.0	--
2,6-Dinitrotoluene	ND		ug/l	5.0	--
Azobenzene	ND		ug/l	2.0	--
Fluoranthene	ND		ug/l	2.0	--
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	--
4-Bromophenyl phenyl ether	ND		ug/l	2.0	--
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	--
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	--
Hexachlorobutadiene	ND		ug/l	2.0	--
Hexachlorocyclopentadiene	ND		ug/l	20	--
Hexachloroethane	ND		ug/l	2.0	--
Isophorone	ND		ug/l	5.0	--
Naphthalene	ND		ug/l	2.0	--
Nitrobenzene	ND		ug/l	2.0	--
NDPA/DPA	ND		ug/l	2.0	--
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	--
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--
Butyl benzyl phthalate	ND		ug/l	5.0	--
Di-n-butylphthalate	ND		ug/l	5.0	--

Method Blank Analysis
Batch Quality Control

Analytical Method:	1,8270D
Analytical Date:	04/10/18 15:12
Analyst:	EK

Extraction Method:	EPA 3510C
Extraction Date:	04/08/18 23:42

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01,03 Batch: WG1104633-1					
Di-n-octylphthalate	ND		ug/l	5.0	--
Diethyl phthalate	ND		ug/l	5.0	--
Dimethyl phthalate	ND		ug/l	5.0	--
Benzo(a)anthracene	ND		ug/l	2.0	--
Benzo(a)pyrene	ND		ug/l	2.0	--
Benzo(b)fluoranthene	ND		ug/l	2.0	--
Benzo(k)fluoranthene	ND		ug/l	2.0	--
Chrysene	ND		ug/l	2.0	--
Acenaphthylene	ND		ug/l	2.0	--
Anthracene	ND		ug/l	2.0	--
Benzo(ghi)perylene	ND		ug/l	2.0	--
Fluorene	ND		ug/l	2.0	--
Phenanthrene	ND		ug/l	2.0	--
Dibenzo(a,h)anthracene	ND		ug/l	2.0	--
Indeno(1,2,3-cd)pyrene	ND		ug/l	2.0	--
Pyrene	ND		ug/l	2.0	--
Biphenyl	ND		ug/l	2.0	--
Aniline	ND		ug/l	2.0	--
4-Chloroaniline	ND		ug/l	5.0	--
1-Methylnaphthalene	ND		ug/l	2.0	--
2-Nitroaniline	ND		ug/l	5.0	--
3-Nitroaniline	ND		ug/l	5.0	--
4-Nitroaniline	ND		ug/l	5.0	--
Dibenzofuran	ND		ug/l	2.0	--
2-Methylnaphthalene	ND		ug/l	2.0	--
n-Nitrosodimethylamine	ND		ug/l	2.0	--
2,4,6-Trichlorophenol	ND		ug/l	5.0	--
p-Chloro-m-cresol	ND		ug/l	2.0	--
2-Chlorophenol	ND		ug/l	2.0	--

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 04/10/18 15:12
Analyst: EK

Extraction Method: EPA 3510C
Extraction Date: 04/08/18 23:42

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01,03 Batch: WG1104633-1					
2,4-Dichlorophenol	ND		ug/l	5.0	--
2,4-Dimethylphenol	ND		ug/l	5.0	--
2-Nitrophenol	ND		ug/l	10	--
4-Nitrophenol	ND		ug/l	10	--
2,4-Dinitrophenol	ND		ug/l	20	--
4,6-Dinitro-o-cresol	ND		ug/l	10	--
Pentachlorophenol	ND		ug/l	10	--
Phenol	ND		ug/l	5.0	--
2-Methylphenol	ND		ug/l	5.0	--
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	--
2,4,5-Trichlorophenol	ND		ug/l	5.0	--
Benzoic Acid	ND		ug/l	50	--
Benzyl Alcohol	ND		ug/l	2.0	--
Carbazole	ND		ug/l	2.0	--
Pyridine	ND		ug/l	3.5	--

Tentatively Identified Compounds					
No Tentatively Identified Compounds	ND		ug/l		

Project Name: BELFAST WATER DISTRICT **Lab Number:** L1812057
Project Number: 171.05027.003 **Report Date:** 04/13/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 04/10/18 15:12
Analyst: EK

Extraction Method: EPA 3510C
Extraction Date: 04/08/18 23:42

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01,03 Batch: WG1104633-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	54		21-120
Phenol-d6	40		10-120
Nitrobenzene-d5	68		23-120
2-Fluorobiphenyl	72		15-120
2,4,6-Tribromophenol	83		10-120
4-Terphenyl-d14	84		41-149

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 04/10/18 09:56
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 04/08/18 23:49

Parameter	**Result**	**Qualifier**	**Units**	**RL**	**MDL**
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01,03 Batch: WG1104635-1					
Acenaphthene	ND		ug/l	0.10	--
2-Chloronaphthalene	ND		ug/l	0.20	--
Fluoranthene	ND		ug/l	0.10	--
Hexachlorobutadiene	ND		ug/l	0.50	--
Naphthalene	ND		ug/l	0.10	--
Benzo(a)anthracene	ND		ug/l	0.10	--
Benzo(a)pyrene	ND		ug/l	0.10	--
Benzo(b)fluoranthene	ND		ug/l	0.10	--
Benzo(k)fluoranthene	ND		ug/l	0.10	--
Chrysene	ND		ug/l	0.10	--
Acenaphthylene	ND		ug/l	0.10	--
Anthracene	ND		ug/l	0.10	--
Benzo(ghi)perylene	ND		ug/l	0.10	--
Fluorene	ND		ug/l	0.10	--
Phenanthrene	ND		ug/l	0.10	--
Dibenzo(a,h)anthracene	ND		ug/l	0.10	--
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	--
Pyrene	ND		ug/l	0.10	--
1-Methylnaphthalene	ND		ug/l	0.10	--
2-Methylnaphthalene	ND		ug/l	0.10	--
Pentachlorophenol	ND		ug/l	0.80	--
Hexachlorobenzene	ND		ug/l	0.80	--
Hexachloroethane	ND		ug/l	0.80	--

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 04/10/18 09:56
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 04/08/18 23:49

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01,03 Batch: WG1104635-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	45		21-120
Phenol-d6	35		10-120
Nitrobenzene-d5	64		23-120
2-Fluorobiphenyl	68		15-120
2,4,6-Tribromophenol	64		10-120
4-Terphenyl-d14	82		41-149

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 04/11/18 22:56
Analyst: TT

Extraction Method: EPA 3546
Extraction Date: 04/10/18 17:49

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 06 Batch: WG1105283-1					
Acenaphthene	ND		ug/kg	130	--
2-Chloronaphthalene	ND		ug/kg	160	--
Fluoranthene	ND		ug/kg	97	--
Naphthalene	ND		ug/kg	160	--
Benzo(a)anthracene	ND		ug/kg	97	--
Benzo(a)pyrene	ND		ug/kg	130	--
Benzo(b)fluoranthene	ND		ug/kg	97	--
Benzo(k)fluoranthene	ND		ug/kg	97	--
Chrysene	ND		ug/kg	97	--
Acenaphthylene	ND		ug/kg	130	--
Anthracene	ND		ug/kg	97	--
Benzo(ghi)perylene	ND		ug/kg	130	--
Fluorene	ND		ug/kg	160	--
Phenanthrene	ND		ug/kg	97	--
Dibenzo(a,h)anthracene	ND		ug/kg	97	--
Indeno(1,2,3-cd)pyrene	ND		ug/kg	130	--
Pyrene	ND		ug/kg	97	--
1-Methylnaphthalene	ND		ug/kg	160	--
2-Methylnaphthalene	ND		ug/kg	190	--

Tentatively Identified Compounds		
No Tentatively Identified Compounds	ND	ug/kg

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 04/11/18 22:56
Analyst: TT

Extraction Method: EPA 3546
Extraction Date: 04/10/18 17:49

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 06 Batch: WG1105283-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Nitrobenzene-d5	72		23-120
2-Fluorobiphenyl	71		30-120
4-Terphenyl-d14	76		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 05 Batch: WG1104559-2 WG1104559-3								
Acenaphthene	96		99		31-137	3		50
Benzidine	21		23		10-66	9		50
1,2,4-Trichlorobenzene	96		97		38-107	1		50
Hexachlorobenzene	96		102		40-140	6		50
Bis(2-chloroethyl)ether	88		94		40-140	7		50
2-Chloronaphthalene	99		102		40-140	3		50
1,2-Dichlorobenzene	91		94		40-140	3		50
1,3-Dichlorobenzene	91		94		40-140	3		50
1,4-Dichlorobenzene	91		94		28-104	3		50
3,3'-Dichlorobenzidine	61		70		40-140	14		50
2,4-Dinitrotoluene	104		109		40-132	5		50
2,6-Dinitrotoluene	108		106		40-140	2		50
Azobenzene	122		130		40-140	6		50
Fluoranthene	100		104		40-140	4		50
4-Chlorophenyl phenyl ether	94		100		40-140	6		50
4-Bromophenyl phenyl ether	99		103		40-140	4		50
Bis(2-chloroisopropyl)ether	105		106		40-140	1		50
Bis(2-chloroethoxy)methane	99		96		40-117	3		50
Hexachlorobutadiene	101		108		40-140	7		50
Hexachlorocyclopentadiene	81		77		40-140	5		50
Hexachloroethane	102		105		40-140	3		50
Isophorone	99		98		40-140	1		50
Naphthalene	96		94		40-140	2		50

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 05 Batch: WG1104559-2 WG1104559-3								
Nitrobenzene	102		102		40-140	0		50
NDPA/DPA	100		105		36-157	5		50
n-Nitrosodi-n-propylamine	103		103		32-121	0		50
Bis(2-ethylhexyl)phthalate	112		120		40-140	7		50
Butyl benzyl phthalate	112		119		40-140	6		50
Di-n-butylphthalate	108		112		40-140	4		50
Di-n-octylphthalate	109		117		40-140	7		50
Diethyl phthalate	104		108		40-140	4		50
Dimethyl phthalate	103		100		40-140	3		50
Benzo(a)anthracene	100		107		40-140	7		50
Benzo(a)pyrene	103		111		40-140	7		50
Benzo(b)fluoranthene	103		110		40-140	7		50
Benzo(k)fluoranthene	99		109		40-140	10		50
Chrysene	100		105		40-140	5		50
Acenaphthylene	102		102		40-140	0		50
Anthracene	100		103		40-140	3		50
Benzo(ghi)perylene	103		110		40-140	7		50
Fluorene	100		103		40-140	3		50
Phenanthrene	100		103		40-140	3		50
Dibenzo(a,h)anthracene	101		107		40-140	6		50
Indeno(1,2,3-cd)pyrene	106		113		40-140	6		50
Pyrene	98		101		35-142	3		50
Biphenyl	100		102		54-104	2		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 05 Batch: WG1104559-2 WG1104559-3

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Aniline	56		56		40-140	0		50
4-Chloroaniline	104		99		40-140	5		50
1-Methylnaphthalene	108		107		26-130	1		50
2-Nitroaniline	109		106		47-134	3		50
3-Nitroaniline	56		58		26-129	4		50
4-Nitroaniline	90		94		41-125	4		50
Dibenzofuran	97		101		40-140	4		50
2-Methylnaphthalene	95		95		40-140	0		50
n-Nitrosodimethylamine	98		92		22-100	6		50
2,4,6-Trichlorophenol	105		104		30-130	1		50
p-Chloro-m-cresol	**114**	Q	**110**	Q	26-103	4		50
2-Chlorophenol	101		**103**	Q	25-102	2		50
2,4-Dichlorophenol	113		111		30-130	2		50
2,4-Dimethylphenol	111		105		30-130	6		50
2-Nitrophenol	105		108		30-130	3		50
4-Nitrophenol	111		**119**	Q	11-114	7		50
2,4-Dinitrophenol	87		90		4-130	3		50
4,6-Dinitro-o-cresol	105		116		10-130	10		50
Pentachlorophenol	89		94		17-109	5		50
Phenol	**98**	Q	**98**	Q	26-90	0		50
2-Methylphenol	106		109		30-130.	3		50
3-Methylphenol/4-Methylphenol	112		112		30-130	0		50
2,4,5-Trichlorophenol	119		115		30-130	3		50

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 05 Batch: WG1104559-2 WG1104559-3								
Benzoic Acid	60		54		10-110	11		50
Benzyl Alcohol	111		109		40-140	2		50
Carbazole	101		104		54-128	3		50
Pyridine	80		80		10-93	0		50

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	96		100		25-120
Phenol-d6	105		107		10-120
Nitrobenzene-d5	87		89		23-120
2-Fluorobiphenyl	88		89		30-120
2,4,6-Tribromophenol	100		110		10-136
4-Terphenyl-d14	87		90		18-120

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1104633-2 WG1104633-3								
Acenaphthene	85		78		37-111	9		30
Benzidine	**9**	Q	**6**	Q	10-75	**40**	Q	30
1,2,4-Trichlorobenzene	76		69		39-98	10		30
Hexachlorobenzene	96		90		40-140	6		30
Bis(2-chloroethyl)ether	93		83		40-140	11		30
2-Chloronaphthalene	82		76		40-140	8		30
1,2-Dichlorobenzene	73		64		40-140	13		30
1,3-Dichlorobenzene	70		61		40-140	14		30
1,4-Dichlorobenzene	70		62		36-97	12		30
3,3'-Dichlorobenzidine	63		65		40-140	3		30
2,4-Dinitrotoluene	98		92		48-143	6		30
2,6-Dinitrotoluene	110		104		40-140	6		30
Azobenzene	103		96		40-140	7		30
Fluoranthene	92		86		40-140	7		30
4-Chlorophenyl phenyl ether	88		81		40-140	8		30
4-Bromophenyl phenyl ether	86		80		40-140	7		30
Bis(2-chloroisopropyl)ether	97		87		40-140	11		30
Bis(2-chloroethoxy)methane	98		91		40-140	7		30
Hexachlorobutadiene	68		61		40-140	11		30
Hexachlorocyclopentadiene	51		48		40-140	6		30
Hexachloroethane	73		65		40-140	12		30
Isophorone	110		102		40-140	8		30
Naphthalene	76		69		40-140	10		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1104633-2 WG1104633-3								
Nitrobenzene	98		90		40-140	9		30
NDPA/DPA	90		84		40-140	7		30
n-Nitrosodi-n-propylamine	107		99		29-132	8		30
Bis(2-ethylhexyl)phthalate	106		99		40-140	7		30
Butyl benzyl phthalate	102		96		40-140	6		30
Di-n-butylphthalate	95		90		40-140	5		30
Di-n-octylphthalate	98		92		40-140	6		30
Diethyl phthalate	96		90		40-140	6		30
Dimethyl phthalate	96		93		40-140	3		30
Benzo(a)anthracene	94		88		40-140	7		30
Benzo(a)pyrene	96		89		40-140	8		30
Benzo(b)fluoranthene	95		88		40-140	8		30
Benzo(k)fluoranthene	95		89		40-140	7		30
Chrysene	96		89		40-140	8		30
Acenaphthylene	90		84		45-123	7		30
Anthracene	88		84		40-140	5		30
Benzo(ghi)perylene	98		93		40-140	5		30
Fluorene	89		82		40-140	8		30
Phenanthrene	87		82		40-140	6		30
Dibenzo(a,h)anthracene	95		91		40-140	4		30
Indeno(1,2,3-cd)pyrene	98		92		40-140	6		30
Pyrene	90		86		26-127	5		30
Biphenyl	83		77		40-140	8		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1104633-2 WG1104633-3								
Aniline	**39**	Q	**33**	Q	40-140	17		30
4-Chloroaniline	86		70		40-140	21		30
1-Methylnaphthalene	87		80		41-103	8		30
2-Nitroaniline	99		94		52-143	5		30
3-Nitroaniline	50		48		25-145	4		30
4-Nitroaniline	78		79		51-143	1		30
Dibenzofuran	86		79		40-140	8		30
2-Methylnaphthalene	77		71		40-140	8		30
n-Nitrosodimethylamine	62		52		22-74	18		30
2,4,6-Trichlorophenol	95		91		30-130	4		30
p-Chloro-m-cresol	**98**	Q	94		23-97	4		30
2-Chlorophenol	89		79		27-123	12		30
2,4-Dichlorophenol	96		87		30-130	10		30
2,4-Dimethylphenol	88		76		30-130	15		30
2-Nitrophenol	100		89		30-130	12		30
4-Nitrophenol	62		60		10-80	3		30
2,4-Dinitrophenol	72		70		20-130	3		30
4,6-Dinitro-o-cresol	94		92		20-164	2		30
Pentachlorophenol	74		70		9-103	6		30
Phenol	49		43		12-110	13		30
2-Methylphenol	87		80		30-130	8		30
3-Methylphenol/4-Methylphenol	90		82		30-130	9		30
2,4,5-Trichlorophenol	100		97		30-130	3		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01,03 Batch: WG1104633-2 WG1104633-3								
Benzoic Acid	28		22		10-164	24		30
Benzyl Alcohol	82		74		26-116	10		30
Carbazole	89		84		55-144	6		30
Pyridine	46		32		10-66	**36**	Q	30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	73		64		21-120
Phenol-d6	59		52		10-120
Nitrobenzene-d5	101		89		23-120
2-Fluorobiphenyl	90		84		15-120
2,4,6-Tribromophenol	117		107		10-120
4-Terphenyl-d14	94		87		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01,03 Batch: WG1104635-2 WG1104635-3								
Acenaphthene	76		85		40-140	11		40
2-Chloronaphthalene	72		81		40-140	12		40
Fluoranthene	82		73		40-140	12		40
Hexachlorobutadiene	58		63		40-140	8		40
Naphthalene	71		78		40-140	9		40
Benzo(a)anthracene	75		83		40-140	10		40
Benzo(a)pyrene	76		85		40-140	11		40
Benzo(b)fluoranthene	81		92		40-140	13		40
Benzo(k)fluoranthene	72		81		40-140	12		40
Chrysene	73		80		40-140	9		40
Acenaphthylene	70		78		40-140	11		40
Anthracene	79		85		40-140	7		40
Benzo(ghi)perylene	78		76		40-140	3		40
Fluorene	82		89		40-140	8		40
Phenanthrene	77		84		40-140	9		40
Dibenzo(a,h)anthracene	80		78		40-140	3		40
Indeno(1,2,3-cd)pyrene	79		76		40-140	4		40
Pyrene	78		86		40-140	10		40
1-Methylnaphthalene	69		77		40-140	11		40
2-Methylnaphthalene	70		80		40-140	13		40
Pentachlorophenol	98		104		40-140	6		40
Hexachlorobenzene	70		77		40-140	10		40
Hexachloroethane	59		64		40-140	8		40

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01,03 Batch: WG1104635-2 WG1104635-3								

Surrogate	*LCS %Recovery*	*Qual*	*LCSD %Recovery*	*Qual*	*Acceptance Criteria*
2-Fluorophenol	51		62		21-120
Phenol-d6	38		44		10-120
Nitrobenzene-d5	69		75		23-120
2-Fluorobiphenyl	73		79		15-120
2,4,6-Tribromophenol	63		76		10-120
4-Terphenyl-d14	80		88		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 06 Batch: WG1105283-2 WG1105283-3

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Acenaphthene	69		67		31-137	3		50
2-Chloronaphthalene	71		69		40-140	3		50
Fluoranthene	68		66		40-140	3		50
Naphthalene	67		67		40-140	0		50
Benzo(a)anthracene	72		70		40-140	3		50
Benzo(a)pyrene	73		71		40-140	3		50
Benzo(b)fluoranthene	72		70		40-140	3		50
Benzo(k)fluoranthene	69		68		40-140	1		50
Chrysene	71		70		40-140	1		50
Acenaphthylene	76		75		40-140	1		50
Anthracene	67		67		40-140	0		50
Benzo(ghi)perylene	72		72		40-140	0		50
Fluorene	69		67		40-140	3		50
Phenanthrene	66		65		40-140	2		50
Dibenzo(a,h)anthracene	71		71		40-140	0		50
Indeno(1,2,3-cd)pyrene	74		72		40-140	3		50
Pyrene	67		66		35-142	2		50
1-Methylnaphthalene	77		77		26-130	0		50
2-Methylnaphthalene	71		69		40-140	3		50

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 06 Batch: WG1105283-2 WG1105283-3								

Surrogate	*LCS %Recovery*	*Qual*	*LCSD %Recovery*	*Qual*	*Acceptance Criteria*
Nitrobenzene-d5	72		71		23-120
2-Fluorobiphenyl	65		64		30-120
4-Terphenyl-d14	64		61		18-120

PESTICIDES

SAMPLE RESULTS

Lab ID: L1812057-07
Client ID: GWW-101
Sample Location: BELFAST, ME

Sample Depth:
Matrix: Water
Analytical Method: 1,8081B
Analytical Date: 04/12/18 08:08
Analyst: SL

Date Collected: 04/04/18 08:30
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Extraction Method: EPA 3510C
Extraction Date: 04/11/18 00:31

Parameter	**Result**	**Qualifier**	**Units**	**RL**	**MDL**	**Dilution Factor**	**Column**
Pesticides by GC - Westborough Lab							
Delta-BHC	ND		ug/l	0.020	--	1	A
Lindane	ND		ug/l	0.020	--	1	A
Alpha-BHC	ND		ug/l	0.020	--	1	A
Beta-BHC	ND		ug/l	0.020	--	1	A
Heptachlor	ND		ug/l	0.020	--	1	A
Aldrin	ND		ug/l	0.020	--	1	A
Heptachlor epoxide	ND		ug/l	0.020	--	1	A
Endrin	ND		ug/l	0.040	--	1	A
Endrin aldehyde	ND		ug/l	0.040	--	1	A
Endrin ketone	ND		ug/l	0.040	--	1	A
Dieldrin	ND		ug/l	0.040	--	1	A
4,4'-DDE	ND		ug/l	0.040	--	1	A
4,4'-DDD	ND		ug/l	0.040	--	1	A
4,4'-DDT	ND		ug/l	0.040	--	1	A
Endosulfan I	ND		ug/l	0.020	--	1	A
Endosulfan II	ND		ug/l	0.040	--	1	A
Endosulfan sulfate	ND		ug/l	0.040	--	1	A
Methoxychlor	ND		ug/l	0.200	--	1	A
Toxaphene	ND		ug/l	0.200	--	1	A
Chlordane	ND		ug/l	0.200	--	1	A
cis-Chlordane	ND		ug/l	0.020	--	1	A
trans-Chlordane	ND		ug/l	0.020	--	1	A

SAMPLE RESULTS

Lab ID:	L1812057-07	Date Collected:	04/04/18 08:30
Client ID:	GWW-101	Date Received:	04/06/18
Sample Location:	BELFAST, ME	Field Prep:	Field Filtered (Dissolved Metals & Phosphorus)
Sample Depth:			

Parameter	**Result**	**Qualifier**	**Units**	**RL**	**MDL**	**Dilution Factor**	**Column**

Pesticides by GC - Westborough Lab

Surrogate	**% Recovery**	**Qualifier**	**Acceptance Criteria**	**Column**
2,4,5,6-Tetrachloro-m-xylene	136		30-150	A
Decachlorobiphenyl	117		30-150	A
2,4,5,6-Tetrachloro-m-xylene	133		30-150	B
Decachlorobiphenyl	124		30-150	B

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 04/12/18 07:29
Analyst: SL

Extraction Method: EPA 3510C
Extraction Date: 04/11/18 00:31

Parameter	Result	Qualifier	Units	RL	MDL	Column
Pesticides by GC - Westborough Lab for sample(s): 07 Batch: WG1105367-1						
Delta-BHC	ND		ug/l	0.020	--	A
Lindane	ND		ug/l	0.020	--	A
Alpha-BHC	ND		ug/l	0.020	--	A
Beta-BHC	ND		ug/l	0.020	--	A
Heptachlor	ND		ug/l	0.020	--	A
Aldrin	ND		ug/l	0.020	--	A
Heptachlor epoxide	ND		ug/l	0.020	--	A
Endrin	ND		ug/l	0.040	--	A
Endrin aldehyde	ND		ug/l	0.040	--	A
Endrin ketone	ND		ug/l	0.040	--	A
Dieldrin	ND		ug/l	0.040	--	A
4,4'-DDE	ND		ug/l	0.040	--	A
4,4'-DDD	ND		ug/l	0.040	--	A
4,4'-DDT	ND		ug/l	0.040	--	A
Endosulfan I	ND		ug/l	0.020	--	A
Endosulfan II	ND		ug/l	0.040	--	A
Endosulfan sulfate	ND		ug/l	0.040	--	A
Methoxychlor	ND		ug/l	0.200	--	A
Toxaphene	ND		ug/l	0.200	--	A
Chlordane	ND		ug/l	0.200	--	A
cis-Chlordane	ND		ug/l	0.020	--	A
trans-Chlordane	ND		ug/l	0.020	--	A

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8081B
Analytical Date: 04/12/18 07:29
Analyst: SL

Extraction Method: EPA 3510C
Extraction Date: 04/11/18 00:31

Parameter	Result	Qualifier	Units	RL	MDL	Column
Pesticides by GC - Westborough Lab for sample(s): 07 Batch: WG1105367-1						

Surrogate	%Recovery	Qualifier	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	116		30-150	A
Decachlorobiphenyl	98		30-150	A
2,4,5,6-Tetrachloro-m-xylene	113		30-150	B
Decachlorobiphenyl	108		30-150	B

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

Pesticides by GC - Westborough Lab Associated sample(s): 07 Batch: WG1105367-2 WG1105367-3

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits	Column
Delta-BHC	147		147		30-150	0		20	A
Lindane	132		131		30-150	1		20	A
Alpha-BHC	145		144		30-150	1		20	A
Beta-BHC	122		122		30-150	0		20	A
Heptachlor	124		123		30-150	1		20	A
Aldrin	126		125		30-150	1		20	A
Heptachlor epoxide	123		123		30-150	0		20	A
Endrin	123		124		30-150	1		20	A
Endrin aldehyde	121		124		30-150	2		20	A
Endrin ketone	130		132		30-150	2		20	A
Dieldrin	132		133		30-150	1		20	A
4,4'-DDE	134		135		30-150	1		20	A
4,4'-DDD	128		130		30-150	2		20	A
4,4'-DDT	129		130		30-150	1		20	A
Endosulfan I	125		126		30-150	1		20	A
Endosulfan II	125		126		30-150	1		20	A
Endosulfan sulfate	131		134		30-150	2		20	A
Methoxychlor	116		120		30-150	3		20	A
cis-Chlordane	109		110		30-150	1		20	A
trans-Chlordane	123		123		30-150	0		20	A

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Pesticides by GC - Westborough Lab Associated sample(s): 07 Batch: WG1105367-2 WG1105367-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria	Column
2,4,5,6-Tetrachloro-m-xylene	134		130		30-150	A
Decachlorobiphenyl	105		110		30-150	A
2,4,5,6-Tetrachloro-m-xylene	128		127		30-150	B
Decachlorobiphenyl	106		115		30-150	B

METALS

SAMPLE RESULTS

Lab ID: L1812057-01
Client ID: GWW-101
Sample Location: BELFAST, ME
Sample Depth:
Matrix: Water
Date Collected: 04/05/18 08:15
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	ND		mg/l	0.100	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Antimony, Total	ND		mg/l	0.00400	--	1	04/09/18 15:30	04/10/18 10:18	EPA 3005A	1,6020A	AM
Arsenic, Total	0.007		mg/l	0.005	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Barium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Beryllium, Total	ND		mg/l	0.00050	--	1	04/09/18 15:30	04/10/18 10:18	EPA 3005A	1,6020A	AM
Boron, Total	ND		mg/l	0.030	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Cadmium, Total	ND		mg/l	0.00020	--	1	04/09/18 15:30	04/10/18 10:18	EPA 3005A	1,6020A	AM
Calcium, Total	10.8		mg/l	0.100	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Chromium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Cobalt, Total	ND		mg/l	0.020	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Copper, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Iron, Total	3.20		mg/l	0.050	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Lead, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Magnesium, Total	4.72		mg/l	0.100	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Manganese, Total	0.035		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Mercury, Total	ND		mg/l	0.00020	--	1	04/09/18 11:15	04/10/18 20:33	EPA 7470A	1,7470A	EA
Molybdenum, Total	ND		mg/l	0.050	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Nickel, Total	ND		mg/l	0.025	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Potassium, Total	ND		mg/l	2.50	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Selenium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Silicon, Total	11.4		mg/l	0.500	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Silver, Total	ND		mg/l	0.007	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Sodium, Total	12.6		mg/l	2.00	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Strontium, Total	0.048		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Sulfur, Total	4.51		mg/l	0.250	--	1	04/10/18 12:55	04/10/18 19:29	EPA 3015A	1,6010C	AB
Thallium, Total	ND		mg/l	0.00050	--	1	04/09/18 15:30	04/10/18 10:18	EPA 3005A	1,6020A	AM
Titanium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Vanadium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC
Zinc, Total	ND		mg/l	0.050	--	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-01
Date Collected: 04/05/18 08:15
Client ID: GWW-101
Date Received: 04/06/18
Sample Location: BELFAST, ME
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)
Sample Depth:
Matrix: Water

Total Hardness by SM 2340B - Mansfield Lab

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Hardness	46.5		mg/l	0.660	NA	1	04/09/18 15:30	04/11/18 19:00	EPA 3005A	1,6010C	LC

Dissolved Metals - Mansfield Lab

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Aluminum, Dissolved	ND		mg/l	0.100	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Antimony, Dissolved	ND		mg/l	0.00400	--	1	04/09/18 14:20	04/10/18 11:18	EPA 3005A	1,6020A	AM
Arsenic, Dissolved	0.008		mg/l	0.005	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Barium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Beryllium, Dissolved	ND		mg/l	0.00050	--	1	04/09/18 14:20	04/10/18 11:18	EPA 3005A	1,6020A	AM
Boron, Dissolved	ND		mg/l	0.030	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Cadmium, Dissolved	ND		mg/l	0.00020	--	1	04/09/18 14:20	04/10/18 11:18	EPA 3005A	1,6020A	AM
Calcium, Dissolved	10.1		mg/l	0.100	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Chromium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Cobalt, Dissolved	ND		mg/l	0.020	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Copper, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Iron, Dissolved	3.00		mg/l	0.050	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Lead, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Magnesium, Dissolved	4.20		mg/l	0.100	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Manganese, Dissolved	0.033		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Mercury, Dissolved	ND		mg/l	0.00020	--	1	04/11/18 12:20	04/11/18 17:34	EPA 7470A	1,7470A	MG
Molybdenum, Dissolved	ND		mg/l	0.050	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Nickel, Dissolved	ND		mg/l	0.025	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Potassium, Dissolved	ND		mg/l	2.50	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Selenium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Silicon, Dissolved	10.7		mg/l	0.500	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Silver, Dissolved	ND		mg/l	0.007	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Sodium, Dissolved	12.1		mg/l	2.00	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Strontium, Dissolved	0.051		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Thallium, Dissolved	ND		mg/l	0.00050	--	1	04/09/18 14:20	04/10/18 11:18	EPA 3005A	1,6020A	AM

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-01
Date Collected: 04/05/18 08:15
Client ID: GWW-101
Date Received: 04/06/18
Sample Location: BELFAST, ME
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)
Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Titanium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Vanadium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC
Zinc, Dissolved	ND		mg/l	0.050	--	1	04/09/18 14:20	04/10/18 09:55	EPA 3005A	1,6010C	LC

Project Name:	BELFAST WATER DISTRICT	**Lab Number:**	L1812057
Project Number:	171.05027.003	**Report Date:**	04/13/18

SAMPLE RESULTS

Lab ID:	L1812057-03	Date Collected:	04/05/18 08:45
Client ID:	GWW-103	Date Received:	04/06/18
Sample Location:	BELFAST, ME	Field Prep:	Field Filtered (Dissolved Metals & Phosphorus)
Sample Depth:			
Matrix:	Water		

Total Metals - Mansfield Lab

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Aluminum, Total	ND		mg/l	0.100	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Antimony, Total	ND		mg/l	0.00400	--	1	04/09/18 15:30	04/10/18 10:22	EPA 3005A	1,6020A	AM
Arsenic, Total	0.005		mg/l	0.005	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Barium, Total	0.023		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Beryllium, Total	ND		mg/l	0.00050	--	1	04/09/18 15:30	04/10/18 10:22	EPA 3005A	1,6020A	AM
Boron, Total	0.087		mg/l	0.030	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Cadmium, Total	ND		mg/l	0.00020	--	1	04/09/18 15:30	04/10/18 10:22	EPA 3005A	1,6020A	AM
Calcium, Total	21.0		mg/l	0.100	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Chromium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Cobalt, Total	ND		mg/l	0.020	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Copper, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Iron, Total	1.51		mg/l	0.050	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Lead, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Magnesium, Total	10.2		mg/l	0.100	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Manganese, Total	0.029		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Mercury, Total	ND		mg/l	0.00020	--	1	04/09/18 11:15	04/10/18 20:35	EPA 7470A	1,7470A	EA
Molybdenum, Total	ND		mg/l	0.050	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Nickel, Total	ND		mg/l	0.025	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Potassium, Total	6.58		mg/l	2.50	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Selenium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Silicon, Total	9.04		mg/l	0.500	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Silver, Total	ND		mg/l	0.007	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Sodium, Total	135		mg/l	2.00	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Strontium, Total	0.195		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Sulfur, Total	23.2		mg/l	0.250	--	1	04/10/18 12:55	04/10/18 18:43	EPA 3015A	1,6010C	AB
Thallium, Total	ND		mg/l	0.00050	--	1	04/09/18 15:30	04/10/18 10:22	EPA 3005A	1,6020A	AM
Titanium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Vanadium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Zinc, Total	0.059		mg/l	0.050	--	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC

Project Name:	BELFAST WATER DISTRICT	**Lab Number:**	L1812057
Project Number:	171.05027.003	**Report Date:**	04/13/18

SAMPLE RESULTS

Lab ID:	L1812057-03	Date Collected:	04/05/18 08:45
Client ID:	GWW-103	Date Received:	04/06/18
Sample Location:	BELFAST, ME	Field Prep:	Field Filtered (Dissolved Metals & Phosphorus)
Sample Depth:			
Matrix:	Water		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	94.5		mg/l	0.660	NA	1	04/09/18 15:30	04/11/18 19:05	EPA 3005A	1,6010C	LC
Dissolved Metals - Mansfield Lab											
Aluminum, Dissolved	ND		mg/l	0.100	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Antimony, Dissolved	ND		mg/l	0.00400	--	1	04/09/18 14:20	04/10/18 11:22	EPA 3005A	1,6020A	AM
Arsenic, Dissolved	ND		mg/l	0.005	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Barium, Dissolved	0.026		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Beryllium, Dissolved	ND		mg/l	0.00050	--	1	04/09/18 14:20	04/10/18 11:22	EPA 3005A	1,6020A	AM
Boron, Dissolved	0.081		mg/l	0.030	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Cadmium, Dissolved	ND		mg/l	0.00020	--	1	04/09/18 14:20	04/10/18 11:22	EPA 3005A	1,6020A	AM
Calcium, Dissolved	20.5		mg/l	0.100	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Chromium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Cobalt, Dissolved	ND		mg/l	0.020	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Copper, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Iron, Dissolved	1.45		mg/l	0.050	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Lead, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Magnesium, Dissolved	9.36		mg/l	0.100	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Manganese, Dissolved	0.030		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Mercury, Dissolved	ND		mg/l	0.00020	--	1	04/11/18 12:20	04/11/18 17:39	EPA 7470A	1,7470A	MG
Molybdenum, Dissolved	ND		mg/l	0.050	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Nickel, Dissolved	ND		mg/l	0.025	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Potassium, Dissolved	6.25		mg/l	2.50	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Selenium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Silicon, Dissolved	8.65		mg/l	0.500	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Silver, Dissolved	ND		mg/l	0.007	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Sodium, Dissolved	134		mg/l	2.00	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Strontium, Dissolved	0.218		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Thallium, Dissolved	ND		mg/l	0.00050	--	1	04/09/18 14:20	04/10/18 11:22	EPA 3005A	1,6020A	AM

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-03
Client ID: GWW-103
Sample Location: BELFAST, ME
Sample Depth:
Matrix: Water

Date Collected: 04/05/18 08:45
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Titanium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Vanadium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC
Zinc, Dissolved	0.055		mg/l	0.050	--	1	04/09/18 14:20	04/10/18 11:14	EPA 3005A	1,6010C	LC

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-05
Client ID: SS-1
Sample Location: BELFAST, ME

Date Collected: 04/05/18 09:15
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil
Percent Solids: 78%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Antimony, Total	ND		mg/kg	2.48	--	1	04/07/18 07:20	04/07/18 13:18	EPA 3050B	1,6010C	PE
Arsenic, Total	13.9		mg/kg	0.496	--	1	04/07/18 07:20	04/07/18 13:18	EPA 3050B	1,6010C	PE
Beryllium, Total	0.293		mg/kg	0.248	--	1	04/07/18 07:20	04/07/18 13:18	EPA 3050B	1,6010C	PE
Cadmium, Total	0.700		mg/kg	0.496	--	1	04/07/18 07:20	04/07/18 13:18	EPA 3050B	1,6010C	PE
Chromium, Total	15.7		mg/kg	0.496	--	1	04/07/18 07:20	04/07/18 13:18	EPA 3050B	1,6010C	PE
Copper, Total	36.3		mg/kg	0.496	--	1	04/07/18 07:20	04/07/18 13:18	EPA 3050B	1,6010C	PE
Lead, Total	263		mg/kg	2.48	--	1	04/07/18 07:20	04/07/18 13:18	EPA 3050B	1,6010C	PE
Mercury, Total	0.204		mg/kg	0.081	--	1	04/07/18 09:00	04/09/18 16:04	EPA 7471B	1,7471B	EA
Nickel, Total	22.8		mg/kg	1.24	--	1	04/07/18 07:20	04/07/18 13:18	EPA 3050B	1,6010C	PE
Selenium, Total	4.29		mg/kg	0.992	--	1	04/07/18 07:20	04/07/18 13:18	EPA 3050B	1,6010C	PE
Silver, Total	ND		mg/kg	0.496	--	1	04/07/18 07:20	04/07/18 13:18	EPA 3050B	1,6010C	PE
Thallium, Total	11.8		mg/kg	0.992	--	1	04/07/18 07:20	04/07/18 13:18	EPA 3050B	1,6010C	PE
Zinc, Total	66.5		mg/kg	2.48	--	1	04/07/18 07:20	04/07/18 13:18	EPA 3050B	1,6010C	PE

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 05 Batch: WG1104409-1										
Antimony, Total	ND		mg/kg	2.00	--	1	04/07/18 07:20	04/07/18 11:34	1,6010C	PE
Arsenic, Total	ND		mg/kg	0.400	--	1	04/07/18 07:20	04/07/18 11:34	1,6010C	PE
Beryllium, Total	ND		mg/kg	0.200	--	1	04/07/18 07:20	04/07/18 11:34	1,6010C	PE
Cadmium, Total	ND		mg/kg	0.400	--	1	04/07/18 07:20	04/07/18 11:34	1,6010C	PE
Chromium, Total	ND		mg/kg	0.400	--	1	04/07/18 07:20	04/07/18 11:34	1,6010C	PE
Copper, Total	ND		mg/kg	0.400	--	1	04/07/18 07:20	04/07/18 11:34	1,6010C	PE
Lead, Total	ND		mg/kg	2.00	--	1	04/07/18 07:20	04/07/18 11:34	1,6010C	PE
Nickel, Total	ND		mg/kg	1.00	--	1	04/07/18 07:20	04/07/18 11:34	1,6010C	PE
Selenium, Total	ND		mg/kg	0.800	--	1	04/07/18 07:20	04/07/18 11:34	1,6010C	PE
Silver, Total	ND		mg/kg	0.400	--	1	04/07/18 07:20	04/07/18 11:34	1,6010C	PE
Thallium, Total	ND		mg/kg	0.800	--	1	04/07/18 07:20	04/07/18 11:34	1,6010C	PE
Zinc, Total	ND		mg/kg	2.00	--	1	04/07/18 07:20	04/07/18 11:34	1,6010C	PE

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 05 Batch: WG1104410-1										
Mercury, Total	ND		mg/kg	0.083	--	1	04/07/18 09:00	04/09/18 15:27	1,7471B	EA

Prep Information

Digestion Method: EPA 7471B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01,03 Batch: WG1104756-1										
Mercury, Total	ND		mg/l	0.00020	--	1	04/09/18 11:15	04/10/18 20:11	1,7470A	EA

Method Blank Analysis
Batch Quality Control

Prep Information

Digestion Method: EPA 7470A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01,03 Batch: WG1104824-1										
Aluminum, Dissolved	ND		mg/l	0.100	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Arsenic, Dissolved	ND		mg/l	0.005	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Barium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Boron, Dissolved	ND		mg/l	0.030	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Calcium, Dissolved	ND		mg/l	0.100	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Chromium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Cobalt, Dissolved	ND		mg/l	0.020	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Copper, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Iron, Dissolved	ND		mg/l	0.050	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Lead, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Magnesium, Dissolved	ND		mg/l	0.100	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Manganese, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Molybdenum, Dissolved	ND		mg/l	0.050	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Nickel, Dissolved	ND		mg/l	0.025	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Potassium, Dissolved	ND		mg/l	2.50	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Selenium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Silicon, Dissolved	ND		mg/l	0.500	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Silver, Dissolved	ND		mg/l	0.007	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Sodium, Dissolved	ND		mg/l	2.00	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Strontium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Titanium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Vanadium, Dissolved	ND		mg/l	0.010	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC
Zinc, Dissolved	ND		mg/l	0.050	--	1	04/09/18 14:20	04/10/18 09:46	1,6010C	LC

Prep Information

Digestion Method: EPA 3005A

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01,03 Batch: WG1104839-1										
Antimony, Dissolved	ND		mg/l	0.00400	--	1	04/09/18 14:20	04/10/18 10:54	1,6020A	AM
Beryllium, Dissolved	ND		mg/l	0.00050	--	1	04/09/18 14:20	04/10/18 10:54	1,6020A	AM
Cadmium, Dissolved	ND		mg/l	0.00020	--	1	04/09/18 14:20	04/10/18 10:54	1,6020A	AM
Thallium, Dissolved	ND		mg/l	0.00050	--	1	04/09/18 14:20	04/10/18 10:54	1,6020A	AM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01,03 Batch: WG1104843-1										
Antimony, Total	ND		mg/l	0.00400	--	1	04/09/18 15:30	04/10/18 09:17	1,6020A	AM
Beryllium, Total	ND		mg/l	0.00050	--	1	04/09/18 15:30	04/10/18 09:17	1,6020A	AM
Cadmium, Total	ND		mg/l	0.00020	--	1	04/09/18 15:30	04/10/18 09:17	1,6020A	AM
Thallium, Total	ND		mg/l	0.00050	--	1	04/09/18 15:30	04/10/18 09:17	1,6020A	AM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01,03 Batch: WG1105073-1										
Sulfur, Total	ND		mg/l	0.250	--	1	04/10/18 12:55	04/10/18 18:39	1,6010C	AB

Prep Information

Digestion Method: EPA 3015A

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01,03 Batch: WG1105166-1										
Aluminum, Total	ND		mg/l	0.100	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Arsenic, Total	ND		mg/l	0.005	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Barium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Boron, Total	ND		mg/l	0.030	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Calcium, Total	ND		mg/l	0.100	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Chromium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Cobalt, Total	ND		mg/l	0.020	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Copper, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Iron, Total	0.081		mg/l	0.050	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Lead, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Magnesium, Total	ND		mg/l	0.100	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Manganese, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Molybdenum, Total	ND		mg/l	0.050	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Nickel, Total	ND		mg/l	0.025	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Potassium, Total	ND		mg/l	2.50	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Selenium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Silicon, Total	ND		mg/l	0.500	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Silver, Total	ND		mg/l	0.007	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Sodium, Total	ND		mg/l	2.00	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Strontium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Titanium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Vanadium, Total	ND		mg/l	0.010	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC
Zinc, Total	ND		mg/l	0.050	--	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01,03 Batch: WG1105166-1										
Hardness	ND		mg/l	0.660	NA	1	04/09/18 15:30	04/11/18 17:50	1,6010C	LC

Method Blank Analysis
Batch Quality Control

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01,03 Batch: WG1105586-1										
Mercury, Dissolved	ND		mg/l	0.00020	--	1	04/11/18 12:20	04/11/18 17:30	1,7470A	MG

Prep Information

Digestion Method: EPA 7470A

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 05 Batch: WG1104409-2 SRM Lot Number: D098-540								
Antimony, Total	140		-		6-194	-		
Arsenic, Total	93		-		83-117	-		
Beryllium, Total	87		-		83-117	-		
Cadmium, Total	90		-		82-117	-		
Chromium, Total	89		-		83-119	-		
Copper, Total	89		-		84-116	-		
Lead, Total	85		-		82-117	-		
Nickel, Total	88		-		82-117	-		
Selenium, Total	92		-		78-121	-		
Silver, Total	97		-		80-120	-		
Thallium, Total	89		-		80-119	-		
Zinc, Total	87		-		81-119	-		
Total Metals - Mansfield Lab Associated sample(s): 05 Batch: WG1104410-2 SRM Lot Number: D098-540								
Mercury, Total	115		-		50-149	-		
Total Metals - Mansfield Lab Associated sample(s): 01,03 Batch: WG1104756-2								
Mercury, Total	90		-		80-120	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01,03 Batch: WG1104824-2					
Aluminum, Dissolved	104	-	80-120	-	
Arsenic, Dissolved	106	-	80-120	-	
Barium, Dissolved	98	-	80-120	-	
Boron, Dissolved	103	-	80-120	-	
Calcium, Dissolved	100	-	80-120	-	
Chromium, Dissolved	102	-	80-120	-	
Cobalt, Dissolved	95	-	80-120	-	
Copper, Dissolved	99	-	80-120	-	
Iron, Dissolved	101	-	80-120	-	
Lead, Dissolved	101	-	80-120	-	
Magnesium, Dissolved	95	-	80-120	-	
Manganese, Dissolved	99	-	80-120	-	
Molybdenum, Dissolved	94	-	80-120	-	
Nickel, Dissolved	96	-	80-120	-	
Potassium, Dissolved	95	-	80-120	-	
Selenium, Dissolved	112	-	80-120	-	
Silicon, Dissolved	105	-	80-120	-	
Silver, Dissolved	100	-	80-120	-	
Sodium, Dissolved	101	-	80-120	-	
Strontium, Dissolved	104	-	80-120	-	
Titanium, Dissolved	99	-	80-120	-	

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01,03 Batch: WG1104824-2					
Vanadium, Dissolved	103	-	80-120	-	
Zinc, Dissolved	100	-	80-120	-	
Dissolved Metals - Mansfield Lab Associated sample(s): 01,03 Batch: WG1104839-2					
Antimony, Dissolved	99	-	80-120	-	
Beryllium, Dissolved	105	-	80-120	-	
Cadmium, Dissolved	108	-	80-120	-	
Thallium, Dissolved	99	-	80-120	-	
Total Metals - Mansfield Lab Associated sample(s): 01,03 Batch: WG1104843-2					
Antimony, Total	108	-	80-120	-	
Beryllium, Total	107	-	80-120	-	
Cadmium, Total	112	-	80-120	-	
Thallium, Total	104	-	80-120	-	
Total Metals - Mansfield Lab Associated sample(s): 01,03 Batch: WG1105073-2					
Sulfur, Total	115	-	80-120	-	

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery		LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01,03 Batch: WG1105166-2						
Aluminum, Total	114		-	80-120	-	
Arsenic, Total	115		-	80-120	-	
Barium, Total	102		-	80-120	-	
Boron, Total	110		-	80-120	-	
Calcium, Total	109		-	80-120	-	
Chromium, Total	106		-	80-120	-	
Cobalt, Total	104		-	80-120	-	
Copper, Total	102		-	80-120	-	
Iron, Total	111		-	80-120	-	
Lead, Total	98		-	80-120	-	
Magnesium, Total	108		-	80-120	-	
Manganese, Total	104		-	80-120	-	
Molybdenum, Total	90		-	80-120	-	
Nickel, Total	104		-	80-120	-	
Potassium, Total	104		-	80-120	-	
Selenium, Total	**123**	Q	-	80-120	-	
Silicon, Total	84		-	80-120	-	
Silver, Total	107		-	80-120	-	
Sodium, Total	107		-	80-120	-	
Strontium, Total	100		-	80-120	-	
Titanium, Total	104		-	80-120	-	

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01,03 Batch: WG1105166-2					
Vanadium, Total	105	-	80-120	-	
Zinc, Total	109	-	80-120	-	
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01,03 Batch: WG1105166-2					
Hardness	108	-	80-120	-	
Dissolved Metals - Mansfield Lab Associated sample(s): 01,03 Batch: WG1105586-2					
Mercury, Dissolved	102	-	80-120	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1104824-3 QC Sample: L1812057-01 Client ID: GWW-101												
Aluminum, Dissolved	ND	2	2.12	106		-	-		75-125	-		20
Arsenic, Dissolved	0.008	0.12	0.132	103		-	-		75-125	-		20
Barium, Dissolved	ND	2	1.97	98		-	-		75-125	-		20
Boron, Dissolved	ND	1	1.05	105		-	-		75-125	-		20
Calcium, Dissolved	10.1	10	19.8	97		-	-		75-125	-		20
Chromium, Dissolved	ND	0.2	0.204	102		-	-		75-125	-		20
Cobalt, Dissolved	ND	0.5	0.476	95		-	-		75-125	-		20
Copper, Dissolved	ND	0.25	0.252	101		-	-		75-125	-		20
Iron, Dissolved	3.00	1	3.95	95		-	-		75-125	-		20
Lead, Dissolved	ND	0.51	0.514	101		-	-		75-125	-		20
Magnesium, Dissolved	4.20	10	13.6	94		-	-		75-125	-		20
Manganese, Dissolved	0.033	0.5	0.526	98		-	-		75-125	-		20
Molybdenum, Dissolved	ND	1	0.940	94		-	-		75-125	-		20
Nickel, Dissolved	ND	0.5	0.477	95		-	-		75-125	-		20
Potassium, Dissolved	ND	10	11.6	116		-	-		75-125	-		20
Selenium, Dissolved	ND	0.12	0.131	109		-	-		75-125	-		20
Silicon, Dissolved	10.7	1	11.5	80		-	-		75-125	-		20
Silver, Dissolved	ND	0.05	0.050	100		-	-		75-125	-		20
Sodium, Dissolved	12.1	10	22.0	99		-	-		75-125	-		20
Strontium, Dissolved	0.051	1	1.09	104		-	-		75-125	-		20
Titanium, Dissolved	ND	1	0.991	99		-	-		75-125	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery		MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1104824-3 QC Sample: L1812057-01 Client ID: GWW-101										
Vanadium, Dissolved	ND	0.5	0.519	104		-	-	75-125	-	20
Zinc, Dissolved	ND	0.5	0.532	106		-	-	75-125	-	20
Dissolved Metals - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1104839-3 QC Sample: L1812057-01 Client ID: GWW-101										
Antimony, Dissolved	ND	0.5	0.5680	114		-	-	75-125	-	20
Beryllium, Dissolved	ND	0.05	0.05356	107		-	-	75-125	-	20
Cadmium, Dissolved	ND	0.051	0.05627	110		-	-	75-125	-	20
Thallium, Dissolved	ND	0.12	0.1210	101		-	-	75-125	-	20
Total Metals - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1105073-3 QC Sample: L1812057-03 Client ID: GWW-103										
Sulfur, Total	23.2	0.5	23.3	**20**	Q	-	-	75-125	-	20
Dissolved Metals - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1105586-3 QC Sample: L1812057-01 Client ID: GWW-101										
Mercury, Dissolved	ND	0.005	0.00480	96		-	-	75-125	-	20

Lab Duplicate Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1104824-4 QC Sample: L1812057-01 Client ID: GWW-101						
Aluminum, Dissolved	ND	ND	mg/l	NC		20
Arsenic, Dissolved	0.008	0.008	mg/l	2		20
Barium, Dissolved	ND	ND	mg/l	NC		20
Boron, Dissolved	ND	ND	mg/l	NC		20
Calcium, Dissolved	10.1	10.1	mg/l	0		20
Chromium, Dissolved	ND	ND	mg/l	NC		20
Cobalt, Dissolved	ND	ND	mg/l	NC		20
Copper, Dissolved	ND	ND	mg/l	NC		20
Iron, Dissolved	3.00	3.01	mg/l	0		20
Lead, Dissolved	ND	ND	mg/l	NC		20
Magnesium, Dissolved	4.20	4.25	mg/l	1		20
Manganese, Dissolved	0.033	0.034	mg/l	2		20
Molybdenum, Dissolved	ND	ND	mg/l	NC		20
Nickel, Dissolved	ND	ND	mg/l	NC		20
Potassium, Dissolved	ND	ND	mg/l	NC		20
Selenium, Dissolved	ND	ND	mg/l	NC		20
Silicon, Dissolved	10.7	10.7	mg/l	0		20
Silver, Dissolved	ND	ND	mg/l	NC		20
Sodium, Dissolved	12.1	12.1	mg/l	0		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1104824-4 QC Sample: L1812057-01 Client ID: GWW-101					
Strontium, Dissolved	0.051	0.051	mg/l	0	20
Titanium, Dissolved	ND	ND	mg/l	NC	20
Vanadium, Dissolved	ND	ND	mg/l	NC	20
Zinc, Dissolved	ND	ND	mg/l	NC	20
Dissolved Metals - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1104839-4 QC Sample: L1812057-01 Client ID: GWW-101					
Antimony, Dissolved	ND	ND	mg/l	NC	20
Beryllium, Dissolved	ND	ND	mg/l	NC	20
Cadmium, Dissolved	ND	ND	mg/l	NC	20
Thallium, Dissolved	ND	ND	mg/l	NC	20
Total Metals - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1105073-4 QC Sample: L1812057-03 Client ID: GWW-103					
Sulfur, Total	23.2	23.2	mg/l	0	20
Dissolved Metals - Mansfield Lab Associated sample(s): 01,03 QC Batch ID: WG1105586-4 QC Sample: L1812057-01 Client ID: GWW-101					
Mercury, Dissolved	ND	ND	mg/l	NC	20

INORGANICS
&
MISCELLANEOUS

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-01
Client ID: GWW-101
Sample Location: BELFAST, ME
Sample Depth:
Matrix: Water
Date Collected: 04/05/18 08:15
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
UV Absorbance @ 254nm	0.023		Abs/cm	0.005	NA	1	-	04/07/18 06:10	121,5910B	GD
Alkalinity, Total	54.9		mg CaCO3/L	2.00	NA	1	-	04/10/18 09:33	121,2320B	BR
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	04/09/18 13:45	121,2540D	DW
Phosphorus, Total	0.122		mg/l	0.010	--	1	04/09/18 12:40	04/10/18 09:37	121,4500P-E	SD
Phosphorus, Soluble	0.125		mg/l	0.010	--	1	04/11/18 11:45	04/12/18 11:10	121,4500P-E	SD

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

SAMPLE RESULTS

Lab ID: L1812057-03
Client ID: GWW-103
Sample Location: BELFAST, ME

Sample Depth:
Matrix: Water

Date Collected: 04/05/18 08:45
Date Received: 04/06/18
Field Prep: Field Filtered (Dissolved Metals & Phosphorus)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
UV Absorbance @ 254nm	0.011		Abs/cm	0.005	NA	1	-	04/07/18 06:10	121,5910B	GD
Alkalinity, Total	116.		mg CaCO3/L	2.00	NA	1	-	04/10/18 09:33	121,2320B	BR
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	04/09/18 13:45	121,2540D	DW
Phosphorus, Total	0.048		mg/l	0.010	--	1	04/09/18 12:40	04/10/18 09:38	121,4500P-E	SD
Phosphorus, Soluble	0.049		mg/l	0.010	--	1	04/11/18 11:45	04/12/18 11:11	121,4500P-E	SD

SAMPLE RESULTS

Lab ID: L1812057-05
Client ID: SS-1
Sample Location: BELFAST, ME
Date Collected: 04/05/18 09:15
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	78.1		%	0.100	NA	1	-	04/07/18 13:53	121,2540G	RI

SAMPLE RESULTS

Lab ID: L1812057-06
Client ID: SS-2
Sample Location: BELFAST, ME
Date Collected: 04/05/18 11:30
Date Received: 04/06/18
Field Prep: Not Specified

Sample Depth:
Matrix: Soil

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Solids, Total	73.2		%	0.100	NA	1	-	04/11/18 11:10	121,2540G	RI

Project Name: BELFAST WATER DISTRICT
Lab Number: L1812057
Project Number: 171.05027.003
Report Date: 04/13/18

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01,03 Batch: WG1104402-1										
UV Absorbance @ 254nm	ND		Abs/cm	0.005	NA	1	-	04/07/18 06:10	121,5910B	GD
General Chemistry - Westborough Lab for sample(s): 01,03 Batch: WG1104700-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	04/09/18 13:45	121,2540D	DW
General Chemistry - Westborough Lab for sample(s): 01,03 Batch: WG1104782-1										
Phosphorus, Total	ND		mg/l	0.010	--	1	04/09/18 12:40	04/10/18 09:11	121,4500P-E	SD
General Chemistry - Westborough Lab for sample(s): 01,03 Batch: WG1105083-1										
Alkalinity, Total	ND		mg CaCO3/L	2.00	NA	1	-	04/10/18 09:33	121,2320B	BR
General Chemistry - Westborough Lab for sample(s): 01,03 Batch: WG1105479-1										
Phosphorus, Soluble	ND		mg/l	0.010	--	1	04/11/18 11:45	04/12/18 10:58	121,4500P-E	SD

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1812057

Report Date: 04/13/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,03 Batch: WG1104402-2								
UV Absorbance @ 254nm	100		-			-		
General Chemistry - Westborough Lab Associated sample(s): 01,03 Batch: WG1104782-2								
Phosphorus, Total	99		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 01,03 Batch: WG1105083-2								
Alkalinity, Total	103		-		90-110	-		10
General Chemistry - Westborough Lab Associated sample(s): 01,03 Batch: WG1105479-2								
Phosphorus, Soluble	102		-		80-120	-		

Lab Duplicate Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1812057
Report Date: 04/13/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01,03 QC Batch ID: WG1104402-3 QC Sample: L1812057-03 Client ID: GWW-103						
UV Absorbance @ 254nm	0.011	0.010	Abs/cm	10		
General Chemistry - Westborough Lab Associated sample(s): 05 QC Batch ID: WG1104512-1 QC Sample: L1812057-05 Client ID: SS-1						
Solids, Total	78.1	79.0	%	1		20

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	*Custody Seal*
A	Absent
B	Absent
C	Absent

Container Information

Container ID	*Container Type*	*Cooler*	*Initial pH*	*Final pH*	*Temp deg C*	*Pres*	*Seal*	*Frozen Date/Time*	*Analysis(*)*
L1812057-01A	Vial HCl preserved	A	NA		2.8	Y	Absent		ME-8260(14)
L1812057-01B	Vial HCl preserved	A	NA		2.8	Y	Absent		ME-8260(14)
L1812057-01C	Vial HCl preserved	A	NA		2.8	Y	Absent		ME-8260(14)
L1812057-01D	Plastic 250ml unpreserved/No Headspace	A	NA		2.8	Y	Absent		ALK-T-2320(14)
L1812057-01E	Plastic 250ml H2SO4 preserved	A	<2	<2	2.8	Y	Absent		SPHOS-4500(28)
L1812057-01F	Plastic 250ml H2SO4 preserved	A	<2	<2	2.8	Y	Absent		TPHOS-4500(28)
L1812057-01G	Plastic 250ml HNO3 preserved	A	<2	<2	2.8	Y	Absent		B-SI(180),PB-SI(180),FE-SI(180),BA-SI(180),BE-6020S(180),TI-SI(180),AG-SI(180),AS-SI(180),CU-SI(180),MN-SI(180),NA-SI(180),NI-SI(180),AL-SI(180),CO-SI(180),SI-SI(180),SR-SI(180),TL-6020S(180),CR-SI(180),K-SI(180),MG-SI(180),MO-SI(180),SB-6020S(180),CA-SI(180),CD-6020S(180),HG-S(28),SE-SI(180),V-SI(180),ZN-SI(180)
L1812057-01H	Plastic 250ml HNO3 preserved	A	<2	<2	2.8	Y	Absent		TL-6020T(180),AS-TI(180),BA-TI(180),AG-TI(180),SI-TI(180),AL-TI(180),B-TI(180),CR-TI(180),MO-TI(180),NI-TI(180),S-TI(180),BE-6020T(180),CU-TI(180),PB-TI(180),SE-TI(180),TI-TI(180),ZN-TI(180),CO-TI(180),SB-6020T(180),V-TI(180),CD-6020T(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),SR-TI(180),CA-TI(180),HARDT(180),K-TI(180),NA-TI(180)
L1812057-01I	Amber 500ml unpreserved	A	7	7	2.8	Y	Absent		UV-254(2)
L1812057-01J	Plastic 950ml unpreserved	A	7	7	2.8	Y	Absent		TSS-2540(7)
L1812057-01K	Amber 1000ml unpreserved	A	7	7	2.8	Y	Absent		8270TCL(7),8270TCL-SIM(7)
L1812057-01L	Amber 1000ml unpreserved	A	7	7	2.8	Y	Absent		8270TCL(7),8270TCL-SIM(7)
L1812057-02A	Plastic 250ml unpreserved/No Headspace	A	NA		2.8	Y	Absent		HOLD-WETCHEM()

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1812057-03A	Vial HCl preserved	A	NA		2.8	Y	Absent		ME-8260(14)
L1812057-03B	Vial HCl preserved	A	NA		2.8	Y	Absent		ME-8260(14)
L1812057-03C	Vial HCl preserved	A	NA		2.8	Y	Absent		ME-8260(14)
L1812057-03D	Plastic 250ml unpreserved/No Headspace	A	NA		2.8	Y	Absent		ALK-T-2320(14)
L1812057-03E	Plastic 250ml H2SO4 preserved	A	<2	<2	2.8	Y	Absent		SPHOS-4500(28)
L1812057-03F	Plastic 250ml H2SO4 preserved	A	<2	<2	2.8	Y	Absent		TPHOS-4500(28)
L1812057-03G	Plastic 250ml HNO3 preserved	A	<2	<2	2.8	Y	Absent		B-SI(180),PB-SI(180),FE-SI(180),BA-SI(180),BE-6020S(180),TI-SI(180),AG-SI(180),AS-SI(180),CU-SI(180),MN-SI(180),NA-SI(180),NI-SI(180),AL-SI(180),CO-SI(180),SI-SI(180),SR-SI(180),TL-6020S(180),CR-SI(180),K-SI(180),MG-SI(180),MO-SI(180),SB-6020S(180),CA-SI(180),CD-6020S(180),HG-S(28),SE-SI(180),V-SI(180),ZN-SI(180)
L1812057-03H	Plastic 250ml HNO3 preserved	A	<2	<2	2.8	Y	Absent		TL-6020T(180),AS-TI(180),BA-TI(180),AG-TI(180),SI-TI(180),AL-TI(180),B-TI(180),CR-TI(180),MO-TI(180),NI-TI(180),S-TI(180),BE-6020T(180),CU-TI(180),PB-TI(180),SE-TI(180),TI-TI(180),ZN-TI(180),CO-TI(180),SB-6020T(180),V-TI(180),CD-6020T(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),SR-TI(180),CA-TI(180),HARDT(180),K-TI(180),NA-TI(180)
L1812057-03I	Amber 500ml unpreserved	A	7	7	2.8	Y	Absent		UV-254(2)
L1812057-03J	Plastic 950ml unpreserved	A	7	7	2.8	Y	Absent		TSS-2540(7)
L1812057-03K	Amber 1000ml unpreserved	A	7	7	2.8	Y	Absent		8270TCL(7),8270TCL-SIM(7)
L1812057-03L	Amber 1000ml unpreserved	A	7	7	2.8	Y	Absent		8270TCL(7),8270TCL-SIM(7)
L1812057-04A	Plastic 250ml unpreserved/No Headspace	A	NA		2.8	Y	Absent		HOLD-WETCHEM()
L1812057-05A	Vial MeOH preserved	C	NA		4.2	Y	Absent		8260HLW(14)
L1812057-05B	Vial water preserved	C	NA		4.2	Y	Absent	06-APR-18 12:00	8260HLW(14)
L1812057-05C	Vial water preserved	C	NA		4.2	Y	Absent	06-APR-18 12:00	8260HLW(14)
L1812057-05D	Plastic 2oz unpreserved for TS	C	NA		4.2	Y	Absent		ME-TS-2540(7)
L1812057-05E	Metals Only-Glass 60mL/2oz unpreserved	C	NA		4.2	Y	Absent		BE-TI(180),AS-TI(180),AG-TI(180),CR-TI(180),NI-TI(180),TL-TI(180),CU-TI(180),PB-TI(180),SB-TI(180),SE-TI(180),ZN-TI(180),HG-T(28),CD-TI(180)
L1812057-05F	Glass 250ml/8oz unpreserved	C	NA		4.2	Y	Absent		8270TCL(14)

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1812057-06A	Vial MeOH preserved	C	NA		4.2	Y	Absent		HOLD-8260HLW(14)
L1812057-06B	Vial water preserved	C	NA		4.2	Y	Absent	06-APR-18 12:00	HOLD-8260HLW(14)
L1812057-06C	Vial water preserved	C	NA		4.2	Y	Absent	06-APR-18 12:00	HOLD-8260HLW(14)
L1812057-06D	Plastic 2oz unpreserved for TS	C	NA		4.2	Y	Absent		HOLD-WETCHEM(),ME-TS-2540(7)
L1812057-06E	Glass 60mL/2oz unpreserved	C	NA		4.2	Y	Absent		HOLD-METAL(180)
L1812057-06F	Glass 250ml/8oz unpreserved	C	NA		4.2	Y	Absent		8270TCL-PAH(14)
L1812057-07A	Vial HCl preserved	B	NA		2.4	Y	Absent		HOLD-8260(14)
L1812057-07B	Vial HCl preserved	B	NA		2.4	Y	Absent		HOLD-8260(14)
L1812057-07C	Vial HCl preserved	B	NA		2.4	Y	Absent		HOLD-8260(14)
L1812057-07D	Plastic 250ml unpreserved/No Headspace	B	NA		2.4	Y	Absent		HOLD-WETCHEM()
L1812057-07E	Plastic 250ml unpreserved/No Headspace	B	NA		2.4	Y	Absent		HOLD-WETCHEM()
L1812057-07F	Plastic 250ml H2SO4 preserved	B	<2	<2	2.4	Y	Absent		HOLD-WETCHEM()
L1812057-07G	Plastic 250ml H2SO4 preserved	B	<2	<2	2.4	Y	Absent		HOLD-WETCHEM()
L1812057-07H	Plastic 250ml HNO3 preserved	B	<2	<2	2.4	Y	Absent		HOLD-METAL-DISSOLVED(180)
L1812057-07I	Plastic 250ml HNO3 preserved	B	<2	<2	2.4	Y	Absent		HOLD-METAL-TOTAL(180)
L1812057-07J	Amber 500ml unpreserved	B	7	7	2.4	Y	Absent		HOLD-WETCHEM(),PEST-8081(7)
L1812057-07K	Plastic 950ml unpreserved	B	7	7	2.4	Y	Absent		HOLD-WETCHEM()
L1812057-07L	Amber 1000ml unpreserved	B	7	7	2.4	Y	Absent		HOLD-8270(7)
L1812057-07M	Amber 1000ml unpreserved	B	7	7	2.4	Y	Absent		HOLD-8270(7)
L1812057-08A	Vial HCl preserved	B	NA		2.4	Y	Absent		HOLD-8260(14)
L1812057-08B	Vial HCl preserved	B	NA		2.4	Y	Absent		HOLD-8260(14)
L1812057-08C	Vial HCl preserved	B	NA		2.4	Y	Absent		HOLD-8260(14)
L1812057-08D	Plastic 250ml unpreserved/No Headspace	B	NA		2.4	Y	Absent		HOLD-WETCHEM()
L1812057-08E	Plastic 250ml unpreserved/No Headspace	B	NA		2.4	Y	Absent		HOLD-WETCHEM()
L1812057-08F	Plastic 250ml H2SO4 preserved	B	<2	<2	2.4	Y	Absent		HOLD-WETCHEM()
L1812057-08G	Plastic 250ml H2SO4 preserved	B	<2	<2	2.4	Y	Absent		HOLD-WETCHEM()
L1812057-08H	Plastic 250ml HNO3 preserved	B	<2	<2	2.4	Y	Absent		HOLD-METAL-DISSOLVED(180)
L1812057-08I	Plastic 250ml HNO3 preserved	B	<2	<2	2.4	Y	Absent		HOLD-METAL-TOTAL(180)

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1812057-08J	Amber 500ml unpreserved	B	7	7	2.4	Y	Absent		HOLD-WETCHEM()
L1812057-08K	Plastic 950ml unpreserved	B	7	7	2.4	Y	Absent		HOLD-WETCHEM()
L1812057-08L	Amber 1000ml unpreserved	B	7	7	2.4	Y	Absent		HOLD-8270(7)
L1812057-08M	Amber 1000ml unpreserved	B	7	7	2.4	Y	Absent		HOLD-8270(7)
L1812057-09A	Vial HCl preserved	B	NA		2.4	Y	Absent		HOLD-8260(14)
L1812057-09B	Vial HCl preserved	B	NA		2.4	Y	Absent		HOLD-8260(14)
L1812057-09C	Vial HCl preserved	A	NA		2.8	Y	Absent		HOLD-8260(14)
L1812057-09D	Vial HCl preserved	A	NA		2.8	Y	Absent		HOLD-8260(14)

*Values in parentheses indicate holding time in days

GLOSSARY

Acronyms

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Alpha Analytical, Inc. ID No.:**17873**
Facility: **Company-wide** Revision 11
Department: **Quality Assurance** Published Date: 1/8/2018 4:15:49 PM
Title: **Certificate/Approval Program Summary** Page 1 of 1

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Be, Cd, Cr, Cu, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

3 coolers

ALPHA ANALYTICAL

8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 4/6/18

ALPHA Job #: L1812057

Client Information

Client: Ransom Consulting Inc.
Address: 112 Corporate Drive
Portsmouth, NH 03801
Phone: 603-436-1490
Email: elizabeth.ransom@ransomenv.com
cc: drew.fuchs@ransomenv.com

Project Information

Project Name: Belfast Water District
Project Location: Belfast, ME
Project #: 171.05027.003
Project Manager: Elizabeth Ransom
ALPHA Quote #:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☐ Same as Client info
PO #: 10754

Regulatory Requirements & Project Information Requirements

☐ Yes ☒ No MA MCP Analytical Methods
☐ Yes ☒ No CT RCP Analytical Methods
☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☒ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☒ No NPDES RGP
☐ Other State /Fed Program Criteria

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due:

Additional Project Information:

1. Dissolved metals & dissolved phosphorus were field filtered.
2. low level VOC samples for SS-1 & SS-2 were frozen 4/6/18 @ 12:00.

SAMPLE INFO

Filtration
☒ Field
☐ Lab to do

Preservation
☐ Lab to do

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC: ☒ 8260 ☐ 624 ☐ 524.2	SVOC: ☒ ABN ☒ PAH 8270	TAL Metals (Total & Dissolved)	Phosphorus (Total & Dissolved)	~~EPH~~	~~VPH~~	~~PCB~~ Total Sulfur	TPH: ☐ Quant Only ☐ Fingerprint	Boron, Molybdenum, Silicon, Strontium, Titanium (Total & Dissolved)	Alkalinity & Hardness	Total Suspended Solids	UV Absorbance	Total PP13 Metals	Color/Turbidity/Dissolved CO2	Sample Comments	TOTAL # BOTTLES
12057-01	GWW-101	4/5/18	8:15	GW	DAF	X	X	X	X			X		X	X	X	X			Field filtered dissolved metals + SPhos	11
-02	~~[illegible]~~ DAF 4/6/18 GWW-101	4/5/18	8:15	GW	DAF														X	HOLD	2
-03	GWW-103	4/5/18	8:45	GW	DAF	X	X	X	X			X		X	X	X	X			Field filtered dissolved metals + SPhos	11
-04	GWW-103	4/5/18	8:45	GW	DAF														X	HOLD	2
-05	SS-1	4/5/18	9:15	Soil	DAF	X	X											X		low level VOCs frozen 4/6/18@12:00	6
	~~[illegible]~~ DAF 4/6/18	~~[illegible]~~	~~[illegible]~~	~~Soil~~	~~DAF~~																
-06	SS-2	4/5/18	11:30	Soil	DAF															HOLD ALL	frozen 6 DAF
-07	GWW-101	4/4/18	8:30	GW	DAF															HOLD ALL	13
-08	GWW-103	4/4/18	9:15	GW	DAF															HOLD ALL	13
-09	Trip Blank					X														HOLD	2
					Container Type	V	A	P	P	P		P		P	P	P	P	A	P/A		
					Preservative	B/F	A	C	D	C		C		C	A	A	A	N	A		

Container Type	Preservative
P= Plastic	A= None
A= Amber glass	B= HCl
V= Vial	C= HNO_3
G= Glass	D= H_2SO_4
B= Bacteria cup	E= NaOH
C= Cube	F= MeOH
O= Other	G= $NaHSO_4$
E= Encore	H = $Na_2S_2O_3$
D= BOD Bottle	I= Ascorbic Acid
	J = NH_4Cl
	K= Zn Acetate
	O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
Drew Fuchs	4/6/18 16:20	AAL	4/6/18 16:20
AAL	4/6/18	AAL	4/6/18 1750
AAL	4/6/18 1930		4/6/18 1930

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

ANALYTICAL REPORT

Lab Number:	L1807820
Client:	Ransom Consulting, Inc. 400 Commercial Street Suite 404 Portland, ME 04101-4660
ATTN:	Elizabeth Ransom
Phone:	(207) 772-2891
Project Name:	BELFAST WATER DISTRICT
Project Number:	171.05027.003
Report Date:	03/15/18

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), NJ NELAP (MA935), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-14-00197).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1807820
Report Date: 03/15/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1807820-01	GWW-103	WATER	BELFAST, ME	03/06/18 13:30	03/07/18
L1807820-02	TRIP BLANK	WATER	BELFAST, ME	03/06/18 00:00	03/07/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Case Narrative (continued)

Dissolved Metals

The WG1095792-3 MS recovery for sodium (10%), performed on L1807820-01, does not apply because the sample concentration is greater than four times the spike amount added.

Total Metals

The WG1096871-3 MS recovery for silicon (244%), performed on L1807820-01, does not apply because the sample concentration is greater than four times the spike amount added.

Phosphorus, Soluble

The samples were field filtered; a filter blank was not received.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Kelly Stenstrom Kelly Stenstrom

Title: Technical Director/Representative Date: 03/15/18

ORGANICS

VOLATILES

SAMPLE RESULTS

Lab ID:	L1807820-01	Date Collected:	03/06/18 13:30
Client ID:	GWW-103	Date Received:	03/07/18
Sample Location:	BELFAST, ME	Field Prep:	Field Filtered (Dissolved Metals and SPhos)
Sample Depth:			

Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 03/12/18 09:33
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	--	1
1,1-Dichloroethane	ND		ug/l	0.75	--	1
Chloroform	ND		ug/l	0.75	--	1
Carbon tetrachloride	ND		ug/l	0.50	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	0.50	--	1
1,1,2-Trichloroethane	ND		ug/l	0.75	--	1
Tetrachloroethene	ND		ug/l	0.50	--	1
Chlorobenzene	ND		ug/l	0.50	--	1
Trichlorofluoromethane	ND		ug/l	1.0	--	1
1,2-Dichloroethane	ND		ug/l	0.50	--	1
1,1,1-Trichloroethane	ND		ug/l	0.50	--	1
Bromodichloromethane	ND		ug/l	0.50	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	--	1
1,1-Dichloropropene	ND		ug/l	1.0	--	1
Bromoform	ND		ug/l	1.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	0.75	--	1
Ethylbenzene	ND		ug/l	0.50	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	1.0	--	1
Vinyl chloride	ND		ug/l	0.20	--	1
Chloroethane	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	0.50	--	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	--	1

SAMPLE RESULTS

Lab ID:	L1807820-01	Date Collected:	03/06/18 13:30
Client ID:	GWW-103	Date Received:	03/07/18
Sample Location:	BELFAST, ME	Field Prep:	Field Filtered (Dissolved Metals and SPhos)
Sample Depth:			

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2-Dichloroethene, Total	ND		ug/l	0.50	--	1
Trichloroethene	ND		ug/l	0.50	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	1.0	--	1
p/m-Xylene	ND		ug/l	1.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	--	1
Dibromomethane	ND		ug/l	1.0	--	1
1,4-Dichlorobutane	ND		ug/l	5.0	--	1
1,2,3-Trichloropropane	ND		ug/l	1.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	1.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
Vinyl acetate	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Ethyl methacrylate	ND		ug/l	5.0	--	1
Acrylonitrile	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	1.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	1.0	--	1
1,2-Dibromoethane	ND		ug/l	1.0	--	1
1,3-Dichloropropane	ND		ug/l	1.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Bromobenzene	ND		ug/l	1.0	--	1
n-Butylbenzene	ND		ug/l	0.50	--	1
sec-Butylbenzene	ND		ug/l	0.50	--	1
tert-Butylbenzene	ND		ug/l	1.0	--	1
o-Chlorotoluene	ND		ug/l	1.0	--	1
p-Chlorotoluene	ND		ug/l	1.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	1.0	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1

SAMPLE RESULTS

Lab ID:	L1807820-01	Date Collected:	03/06/18 13:30
Client ID:	GWW-103	Date Received:	03/07/18
Sample Location:	BELFAST, ME	Field Prep:	Field Filtered (Dissolved Metals and SPhos)
Sample Depth:			

Parameter	**Result**	**Qualifier**	**Units**	**RL**	**MDL**	**Dilution Factor**
Volatile Organics by GC/MS - Westborough Lab						
Isopropylbenzene	ND		ug/l	0.50	--	1
p-Isopropyltoluene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	1.0	--	1
n-Propylbenzene	ND		ug/l	0.50	--	1
1,2,3-Trichlorobenzene	ND		ug/l	1.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	1.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	1.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	1.0	--	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	--	1
Ethyl ether	ND		ug/l	1.0	--	1

Surrogate	**% Recovery**	**Qualifier**	**Acceptance Criteria**
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	95		70-130

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 03/12/18 09:05
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1096515-5					
Methylene chloride	ND		ug/l	3.0	--
1,1-Dichloroethane	ND		ug/l	0.75	--
Chloroform	ND		ug/l	0.75	--
Carbon tetrachloride	ND		ug/l	0.50	--
1,2-Dichloropropane	ND		ug/l	1.0	--
Dibromochloromethane	ND		ug/l	0.50	--
1,1,2-Trichloroethane	ND		ug/l	0.75	--
2-Chloroethylvinyl ether	ND		ug/l	10	--
Tetrachloroethene	ND		ug/l	0.50	--
Chlorobenzene	ND		ug/l	0.50	--
Trichlorofluoromethane	ND		ug/l	1.0	--
1,2-Dichloroethane	ND		ug/l	0.50	--
1,1,1-Trichloroethane	ND		ug/l	0.50	--
Bromodichloromethane	ND		ug/l	0.50	--
trans-1,3-Dichloropropene	ND		ug/l	0.50	--
cis-1,3-Dichloropropene	ND		ug/l	0.50	--
1,3-Dichloropropene, Total	ND		ug/l	0.50	--
1,1-Dichloropropene	ND		ug/l	1.0	--
Bromoform	ND		ug/l	1.0	--
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--
Benzene	ND		ug/l	0.50	--
Toluene	ND		ug/l	0.75	--
Ethylbenzene	ND		ug/l	0.50	--
Chloromethane	ND		ug/l	2.0	--
Bromomethane	ND		ug/l	1.0	--
Vinyl chloride	ND		ug/l	0.20	--
Chloroethane	ND		ug/l	1.0	--
1,1-Dichloroethene	ND		ug/l	0.50	--
trans-1,2-Dichloroethene	ND		ug/l	0.75	--

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 03/12/18 09:05
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1096515-5					
1,2-Dichloroethene, Total	ND		ug/l	0.50	--
Trichloroethene	ND		ug/l	0.50	--
1,2-Dichlorobenzene	ND		ug/l	1.0	--
1,3-Dichlorobenzene	ND		ug/l	1.0	--
1,4-Dichlorobenzene	ND		ug/l	1.0	--
Methyl tert butyl ether	ND		ug/l	1.0	--
p/m-Xylene	ND		ug/l	1.0	--
o-Xylene	ND		ug/l	1.0	--
Xylenes, Total	ND		ug/l	1.0	--
cis-1,2-Dichloroethene	ND		ug/l	0.50	--
Dibromomethane	ND		ug/l	1.0	--
1,4-Dichlorobutane	ND		ug/l	5.0	--
Iodomethane	ND		ug/l	5.0	--
1,2,3-Trichloropropane	ND		ug/l	1.0	--
Styrene	ND		ug/l	1.0	--
Dichlorodifluoromethane	ND		ug/l	2.0	--
Acetone	ND		ug/l	5.0	--
Carbon disulfide	ND		ug/l	1.0	--
2-Butanone	ND		ug/l	5.0	--
Vinyl acetate	ND		ug/l	5.0	--
4-Methyl-2-pentanone	ND		ug/l	5.0	--
2-Hexanone	ND		ug/l	5.0	--
Ethyl methacrylate	ND		ug/l	5.0	--
Acrolein	ND		ug/l	5.0	--
Acrylonitrile	ND		ug/l	5.0	--
Bromochloromethane	ND		ug/l	1.0	--
Tetrahydrofuran	ND		ug/l	2.0	--
2,2-Dichloropropane	ND		ug/l	1.0	--
1,2-Dibromoethane	ND		ug/l	1.0	--

Project Name:	BELFAST WATER DISTRICT	**Lab Number:**	L1807820
Project Number:	171.05027.003	**Report Date:**	03/15/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 03/12/18 09:05
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1096515-5					
1,3-Dichloropropane	ND		ug/l	1.0	--
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--
Bromobenzene	ND		ug/l	1.0	--
n-Butylbenzene	ND		ug/l	0.50	--
sec-Butylbenzene	ND		ug/l	0.50	--
tert-Butylbenzene	ND		ug/l	1.0	--
o-Chlorotoluene	ND		ug/l	1.0	--
p-Chlorotoluene	ND		ug/l	1.0	--
1,2-Dibromo-3-chloropropane	ND		ug/l	1.0	--
Hexachlorobutadiene	ND		ug/l	0.50	--
Isopropylbenzene	ND		ug/l	0.50	--
p-Isopropyltoluene	ND		ug/l	0.50	--
Naphthalene	ND		ug/l	1.0	--
n-Propylbenzene	ND		ug/l	0.50	--
1,2,3-Trichlorobenzene	ND		ug/l	1.0	--
1,2,4-Trichlorobenzene	ND		ug/l	1.0	--
1,3,5-Trimethylbenzene	ND		ug/l	1.0	--
1,3,5-Trichlorobenzene	ND		ug/l	1.0	--
1,2,4-Trimethylbenzene	ND		ug/l	1.0	--
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	--
Halothane	ND		ug/l	2.5	--
Ethyl ether	ND		ug/l	1.0	--
Methyl Acetate	ND		ug/l	10	--
Ethyl Acetate	ND		ug/l	10	--
Isopropyl Ether	ND		ug/l	1.0	--
Cyclohexane	ND		ug/l	10	--
Tert-Butyl Alcohol	ND		ug/l	10	--
Ethyl-Tert-Butyl-Ether	ND		ug/l	1.0	--
Tertiary-Amyl Methyl Ether	ND		ug/l	1.0	--

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 03/12/18 09:05
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1096515-5					
1,4-Dioxane	ND		ug/l	250	--
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/l	10	--
Methyl cyclohexane	ND		ug/l	10	--
p-Diethylbenzene	ND		ug/l	2.0	--
4-Ethyltoluene	ND		ug/l	2.0	--
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	89		70-130
Toluene-d8	100		70-130
4-Bromofluorobenzene	94		70-130
Dibromofluoromethane	95		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1807820
Report Date: 03/15/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1096515-3 WG1096515-4								
Methylene chloride	100		100		70-130	0		20
1,1-Dichloroethane	100		95		70-130	5		20
Chloroform	95		92		70-130	3		20
Carbon tetrachloride	88		84		63-132	5		20
1,2-Dichloropropane	98		94		70-130	4		20
Dibromochloromethane	92		92		63-130	0		20
1,1,2-Trichloroethane	97		97		70-130	0		20
2-Chloroethylvinyl ether	93		91		70-130	2		20
Tetrachloroethene	88		86		70-130	2		20
Chlorobenzene	95		93		75-130	2		25
Trichlorofluoromethane	94		88		62-150	7		20
1,2-Dichloroethane	93		88		70-130	6		20
1,1,1-Trichloroethane	92		88		67-130	4		20
Bromodichloromethane	91		87		67-130	4		20
trans-1,3-Dichloropropene	95		93		70-130	2		20
cis-1,3-Dichloropropene	94		92		70-130	2		20
1,1-Dichloropropene	95		90		70-130	5		20
Bromoform	88		84		54-136	5		20
1,1,2,2-Tetrachloroethane	100		98		67-130	2		20
Benzene	93		90		70-130	3		25
Toluene	95		92		70-130	3		25
Ethylbenzene	94		91		70-130	3		20
Chloromethane	98		92		64-130	6		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1807820
Report Date: 03/15/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1096515-3 WG1096515-4								
Bromomethane	120		110		39-139	9		20
Vinyl chloride	120		110		55-140	9		20
Chloroethane	120		110		55-138	9		20
1,1-Dichloroethene	96		91		61-145	5		25
trans-1,2-Dichloroethene	99		93		70-130	6		20
Trichloroethene	90		84		70-130	7		25
1,2-Dichlorobenzene	95		92		70-130	3		20
1,3-Dichlorobenzene	95		92		70-130	3		20
1,4-Dichlorobenzene	96		92		70-130	4		20
Methyl tert butyl ether	96		93		63-130	3		20
p/m-Xylene	95		95		70-130	0		20
o-Xylene	95		95		70-130	0		20
cis-1,2-Dichloroethene	97		91		70-130	6		20
Dibromomethane	92		91		70-130	1		20
1,4-Dichlorobutane	93		91		70-130	2		20
Iodomethane	**54**	Q	**55**	Q	70-130	2		20
1,2,3-Trichloropropane	99		93		64-130	6		20
Styrene	115		110		70-130	4		20
Dichlorodifluoromethane	89		83		36-147	7		20
Acetone	77		78		58-148	1		20
Carbon disulfide	100		96		51-130	4		20
2-Butanone	92		92		63-138	0		20
Vinyl acetate	86		84		70-130	2		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1807820

Report Date: 03/15/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1096515-3 WG1096515-4								
4-Methyl-2-pentanone	90		94		59-130	4		20
2-Hexanone	74		76		57-130	3		20
Ethyl methacrylate	80		80		70-130	0		20
Acrolein	**230**	Q	**220**	Q	70-130	4		20
Acrylonitrile	99		99		70-130	0		20
Bromochloromethane	96		91		70-130	5		20
Tetrahydrofuran	99		98		58-130	1		20
2,2-Dichloropropane	98		91		63-133	7		20
1,2-Dibromoethane	92		90		70-130	2		20
1,3-Dichloropropane	98		96		70-130	2		20
1,1,1,2-Tetrachloroethane	92		92		64-130	0		20
Bromobenzene	93		90		70-130	3		20
n-Butylbenzene	97		92		53-136	5		20
sec-Butylbenzene	97		92		70-130	5		20
tert-Butylbenzene	96		90		70-130	6		20
o-Chlorotoluene	95		92		70-130	3		20
p-Chlorotoluene	95		90		70-130	5		20
1,2-Dibromo-3-chloropropane	86		90		41-144	5		20
Hexachlorobutadiene	80		75		63-130	6		20
Isopropylbenzene	96		91		70-130	5		20
p-Isopropyltoluene	97		92		70-130	5		20
Naphthalene	89		86		70-130	3		20
n-Propylbenzene	97		93		69-130	4		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1807820

Report Date: 03/15/18

Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1096515-3 WG1096515-4

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
1,2,3-Trichlorobenzene	88		86		70-130	2		20
1,2,4-Trichlorobenzene	88		84		70-130	5		20
1,3,5-Trimethylbenzene	95		91		64-130	4		20
1,3,5-Trichlorobenzene	91		88		70-130	3		20
1,2,4-Trimethylbenzene	93		89		70-130	4		20
trans-1,4-Dichloro-2-butene	90		86		70-130	5		20
Halothane	90		84		70-130	7		20
Ethyl ether	100		98		59-134	2		20
Methyl Acetate	110		100		70-130	10		20
Ethyl Acetate	93		91		70-130	2		20
Isopropyl Ether	93		92		70-130	1		20
Cyclohexane	97		92		70-130	5		20
Tert-Butyl Alcohol	118		114		70-130	3		20
Ethyl-Tert-Butyl-Ether	96		93		70-130	3		20
Tertiary-Amyl Methyl Ether	93		90		66-130	3		20
1,4-Dioxane	140		122		56-162	14		20
1,1,2-Trichloro-1,2,2-Trifluoroethane	97		90		70-130	7		20
Methyl cyclohexane	96		89		70-130	8		20
p-Diethylbenzene	96		90		70-130	6		20
4-Ethyltoluene	99		95		70-130	4		20
1,2,4,5-Tetramethylbenzene	91		88		70-130	3		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1807820

Report Date: 03/15/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1096515-3 WG1096515-4								

Surrogate	*LCS %Recovery*	*Qual*	*LCSD %Recovery*	*Qual*	*Acceptance Criteria*
1,2-Dichloroethane-d4	91		93		70-130
Toluene-d8	99		99		70-130
4-Bromofluorobenzene	93		92		70-130
Dibromofluoromethane	96		97		70-130

SEMIVOLATILES

SAMPLE RESULTS

Lab ID: L1807820-01
Client ID: GWW-103
Sample Location: BELFAST, ME
Sample Depth:

Date Collected: 03/06/18 13:30
Date Received: 03/07/18
Field Prep: Field Filtered (Dissolved Metals and SPhos)

Matrix: Water
Analytical Method: 1,8270D
Analytical Date: 03/13/18 02:50
Analyst: EK

Extraction Method:EPA 3510C
Extraction Date: 03/08/18 17:18

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzidine	ND		ug/l	20	--	1
1,2,4-Trichlorobenzene	ND		ug/l	5.0	--	1
Bis(2-chloroethyl)ether	ND		ug/l	2.0	--	1
1,2-Dichlorobenzene	ND		ug/l	2.0	--	1
1,3-Dichlorobenzene	ND		ug/l	2.0	--	1
1,4-Dichlorobenzene	ND		ug/l	2.0	--	1
3,3'-Dichlorobenzidine	ND		ug/l	5.0	--	1
2,4-Dinitrotoluene	ND		ug/l	5.0	--	1
2,6-Dinitrotoluene	ND		ug/l	5.0	--	1
Azobenzene	ND		ug/l	2.0	--	1
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	--	1
4-Bromophenyl phenyl ether	ND		ug/l	2.0	--	1
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	--	1
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	--	1
Hexachlorocyclopentadiene	ND		ug/l	20	--	1
Isophorone	ND		ug/l	5.0	--	1
Nitrobenzene	ND		ug/l	2.0	--	1
NDPA/DPA	ND		ug/l	2.0	--	1
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	--	1
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--	1
Butyl benzyl phthalate	ND		ug/l	5.0	--	1
Di-n-butylphthalate	ND		ug/l	5.0	--	1
Di-n-octylphthalate	ND		ug/l	5.0	--	1
Diethyl phthalate	ND		ug/l	5.0	--	1
Dimethyl phthalate	ND		ug/l	5.0	--	1
Biphenyl	ND		ug/l	2.0	--	1
Aniline	ND		ug/l	2.0	--	1
4-Chloroaniline	ND		ug/l	5.0	--	1

SAMPLE RESULTS

Lab ID:	L1807820-01	Date Collected:	03/06/18 13:30
Client ID:	GWW-103	Date Received:	03/07/18
Sample Location:	BELFAST, ME	Field Prep:	Field Filtered (Dissolved Metals and SPhos)
Sample Depth:			

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
2-Nitroaniline	ND		ug/l	5.0	--	1
3-Nitroaniline	ND		ug/l	5.0	--	1
4-Nitroaniline	ND		ug/l	5.0	--	1
Dibenzofuran	ND		ug/l	2.0	--	1
n-Nitrosodimethylamine	ND		ug/l	2.0	--	1
2,4,6-Trichlorophenol	ND		ug/l	5.0	--	1
p-Chloro-m-cresol	ND		ug/l	2.0	--	1
2-Chlorophenol	ND		ug/l	2.0	--	1
2,4-Dichlorophenol	ND		ug/l	5.0	--	1
2,4-Dimethylphenol	ND		ug/l	5.0	--	1
2-Nitrophenol	ND		ug/l	10	--	1
4-Nitrophenol	ND		ug/l	10	--	1
2,4-Dinitrophenol	ND		ug/l	20	--	1
4,6-Dinitro-o-cresol	ND		ug/l	10	--	1
Phenol	ND		ug/l	5.0	--	1
2-Methylphenol	ND		ug/l	5.0	--	1
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	--	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	--	1
Benzoic Acid	ND		ug/l	50	--	1
Benzyl Alcohol	ND		ug/l	2.0	--	1
Carbazole	ND		ug/l	2.0	--	1
Pyridine	ND		ug/l	3.5	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	55		21-120
Phenol-d6	35		10-120
Nitrobenzene-d5	99		23-120
2-Fluorobiphenyl	89		15-120
2,4,6-Tribromophenol	83		10-120
4-Terphenyl-d14	89		41-149

SAMPLE RESULTS

Lab ID: L1807820-01
Client ID: GWW-103
Sample Location: BELFAST, ME
Sample Depth:

Date Collected: 03/06/18 13:30
Date Received: 03/07/18
Field Prep: Field Filtered (Dissolved Metals and SPhos)

Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 03/10/18 16:25
Analyst: KL

Extraction Method: EPA 3510C
Extraction Date: 03/08/18 17:19

Parameter	**Result**	**Qualifier**	**Units**	**RL**	**MDL**	**Dilution Factor**
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	ND		ug/l	0.10	--	1
2-Chloronaphthalene	ND		ug/l	0.20	--	1
Fluoranthene	ND		ug/l	0.10	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	0.10	--	1
Benzo(a)anthracene	ND		ug/l	0.10	--	1
Benzo(a)pyrene	ND		ug/l	0.10	--	1
Benzo(b)fluoranthene	ND		ug/l	0.10	--	1
Benzo(k)fluoranthene	ND		ug/l	0.10	--	1
Chrysene	ND		ug/l	0.10	--	1
Acenaphthylene	ND		ug/l	0.10	--	1
Anthracene	ND		ug/l	0.10	--	1
Benzo(ghi)perylene	ND		ug/l	0.10	--	1
Fluorene	ND		ug/l	0.10	--	1
Phenanthrene	ND		ug/l	0.10	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.10	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	--	1
Pyrene	ND		ug/l	0.10	--	1
1-Methylnaphthalene	ND		ug/l	0.10	--	1
2-Methylnaphthalene	ND		ug/l	0.10	--	1
Pentachlorophenol	ND		ug/l	0.80	--	1
Hexachlorobenzene	ND		ug/l	0.80	--	1
Hexachloroethane	ND		ug/l	0.80	--	1

SAMPLE RESULTS

Lab ID:	L1807820-01	Date Collected:	03/06/18 13:30
Client ID:	GWW-103	Date Received:	03/07/18
Sample Location:	BELFAST, ME	Field Prep:	Field Filtered (Dissolved Metals and SPhos)
Sample Depth:			

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	48		21-120
Phenol-d6	33		10-120
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	80		15-120
2,4,6-Tribromophenol	104		10-120
4-Terphenyl-d14	88		41-149

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 03/09/18 10:03
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 03/08/18 08:52

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1095448-1					
Acenaphthene	ND		ug/l	0.10	--
2-Chloronaphthalene	ND		ug/l	0.20	--
Fluoranthene	ND		ug/l	0.10	--
Hexachlorobutadiene	ND		ug/l	0.50	--
Naphthalene	ND		ug/l	0.10	--
Benzo(a)anthracene	ND		ug/l	0.10	--
Benzo(a)pyrene	ND		ug/l	0.10	--
Benzo(b)fluoranthene	ND		ug/l	0.10	--
Benzo(k)fluoranthene	ND		ug/l	0.10	--
Chrysene	ND		ug/l	0.10	--
Acenaphthylene	ND		ug/l	0.10	--
Anthracene	ND		ug/l	0.10	--
Benzo(ghi)perylene	ND		ug/l	0.10	--
Fluorene	ND		ug/l	0.10	--
Phenanthrene	ND		ug/l	0.10	--
Dibenzo(a,h)anthracene	ND		ug/l	0.10	--
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	--
Pyrene	ND		ug/l	0.10	--
1-Methylnaphthalene	ND		ug/l	0.10	--
2-Methylnaphthalene	ND		ug/l	0.10	--
Pentachlorophenol	ND		ug/l	0.80	--
Hexachlorobenzene	ND		ug/l	0.80	--
Hexachloroethane	ND		ug/l	0.80	--

Project Name:	BELFAST WATER DISTRICT	**Lab Number:**	L1807820
Project Number:	171.05027.003	**Report Date:**	03/15/18

Method Blank Analysis
Batch Quality Control

Analytical Method:	1,8270D-SIM	Extraction Method:	EPA 3510C
Analytical Date:	03/09/18 10:03	Extraction Date:	03/08/18 08:52
Analyst:	DV		

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1095448-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	26		21-120
Phenol-d6	26		10-120
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	85		15-120
2,4,6-Tribromophenol	48		10-120
4-Terphenyl-d14	100		41-149

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 03/08/18 22:28
Analyst: RC

Extraction Method: EPA 3510C
Extraction Date: 03/08/18 11:00

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1095492-1					
Acenaphthene	ND		ug/l	2.0	--
Benzidine	ND		ug/l	20	--
1,2,4-Trichlorobenzene	ND		ug/l	5.0	--
Hexachlorobenzene	ND		ug/l	2.0	--
Bis(2-chloroethyl)ether	ND		ug/l	2.0	--
2-Chloronaphthalene	ND		ug/l	2.0	--
1,2-Dichlorobenzene	ND		ug/l	2.0	--
1,3-Dichlorobenzene	ND		ug/l	2.0	--
1,4-Dichlorobenzene	ND		ug/l	2.0	--
3,3'-Dichlorobenzidine	ND		ug/l	5.0	--
2,4-Dinitrotoluene	ND		ug/l	5.0	--
2,6-Dinitrotoluene	ND		ug/l	5.0	--
Azobenzene	ND		ug/l	2.0	--
Fluoranthene	ND		ug/l	2.0	--
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	--
4-Bromophenyl phenyl ether	ND		ug/l	2.0	--
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	--
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	--
Hexachlorobutadiene	ND		ug/l	2.0	--
Hexachlorocyclopentadiene	ND		ug/l	20	--
Hexachloroethane	ND		ug/l	2.0	--
Isophorone	ND		ug/l	5.0	--
Naphthalene	ND		ug/l	2.0	--
Nitrobenzene	ND		ug/l	2.0	--
NDPA/DPA	ND		ug/l	2.0	--
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	--
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--
Butyl benzyl phthalate	ND		ug/l	5.0	--
Di-n-butylphthalate	ND		ug/l	5.0	--

Method Blank Analysis
Batch Quality Control

Analytical Method:	1,8270D	Extraction Method:	EPA 3510C
Analytical Date:	03/08/18 22:28	Extraction Date:	03/08/18 11:00
Analyst:	RC		

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1095492-1					
Di-n-octylphthalate	ND		ug/l	5.0	--
Diethyl phthalate	ND		ug/l	5.0	--
Dimethyl phthalate	ND		ug/l	5.0	--
Benzo(a)anthracene	ND		ug/l	2.0	--
Benzo(a)pyrene	ND		ug/l	2.0	--
Benzo(b)fluoranthene	ND		ug/l	2.0	--
Benzo(k)fluoranthene	ND		ug/l	2.0	--
Chrysene	ND		ug/l	2.0	--
Acenaphthylene	ND		ug/l	2.0	--
Anthracene	ND		ug/l	2.0	--
Benzo(ghi)perylene	ND		ug/l	2.0	--
Fluorene	ND		ug/l	2.0	--
Phenanthrene	ND		ug/l	2.0	--
Dibenzo(a,h)anthracene	ND		ug/l	2.0	--
Indeno(1,2,3-cd)pyrene	ND		ug/l	2.0	--
Pyrene	ND		ug/l	2.0	--
Biphenyl	ND		ug/l	2.0	--
Aniline	ND		ug/l	2.0	--
4-Chloroaniline	ND		ug/l	5.0	--
1-Methylnaphthalene	ND		ug/l	2.0	--
2-Nitroaniline	ND		ug/l	5.0	--
3-Nitroaniline	ND		ug/l	5.0	--
4-Nitroaniline	ND		ug/l	5.0	--
Dibenzofuran	ND		ug/l	2.0	--
2-Methylnaphthalene	ND		ug/l	2.0	--
n-Nitrosodimethylamine	ND		ug/l	2.0	--
2,4,6-Trichlorophenol	ND		ug/l	5.0	--
p-Chloro-m-cresol	ND		ug/l	2.0	--
2-Chlorophenol	ND		ug/l	2.0	--

Method Blank Analysis

Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 03/08/18 22:28
Analyst: RC

Extraction Method: EPA 3510C
Extraction Date: 03/08/18 11:00

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1095492-1					
2,4-Dichlorophenol	ND		ug/l	5.0	--
2,4-Dimethylphenol	ND		ug/l	5.0	--
2-Nitrophenol	ND		ug/l	10	--
4-Nitrophenol	ND		ug/l	10	--
2,4-Dinitrophenol	ND		ug/l	20	--
4,6-Dinitro-o-cresol	ND		ug/l	10	--
Pentachlorophenol	ND		ug/l	10	--
Phenol	ND		ug/l	5.0	--
2-Methylphenol	ND		ug/l	5.0	--
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	--
2,4,5-Trichlorophenol	ND		ug/l	5.0	--
Benzoic Acid	ND		ug/l	50	--
Benzyl Alcohol	ND		ug/l	2.0	--
Carbazole	ND		ug/l	2.0	--
Pyridine	ND		ug/l	3.5	--

Tentatively Identified Compounds		
No Tentatively Identified Compounds	ND	ug/l

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 03/08/18 22:28
Analyst: RC

Extraction Method: EPA 3510C
Extraction Date: 03/08/18 11:00

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1095492-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	45		21-120
Phenol-d6	31		10-120
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	88		15-120
2,4,6-Tribromophenol	110		10-120
4-Terphenyl-d14	97		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1807820
Report Date: 03/15/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1095448-2 WG1095448-3								
Acenaphthene	65		54		40-140	18		40
2-Chloronaphthalene	76		63		40-140	19		40
Fluoranthene	81		73		40-140	10		40
Hexachlorobutadiene	72		75		40-140	4		40
Naphthalene	68		56		40-140	19		40
Benzo(a)anthracene	82		73		40-140	12		40
Benzo(a)pyrene	92		84		40-140	9		40
Benzo(b)fluoranthene	87		82		40-140	6		40
Benzo(k)fluoranthene	88		75		40-140	16		40
Chrysene	76		68		40-140	11		40
Acenaphthylene	86		72		40-140	18		40
Anthracene	77		69		40-140	11		40
Benzo(ghi)perylene	86		78		40-140	10		40
Fluorene	73		63		40-140	15		40
Phenanthrene	69		61		40-140	12		40
Dibenzo(a,h)anthracene	89		81		40-140	9		40
Indeno(1,2,3-cd)pyrene	92		84		40-140	9		40
Pyrene	78		70		40-140	11		40
1-Methylnaphthalene	77		64		40-140	18		40
2-Methylnaphthalene	76		62		40-140	20		40
Pentachlorophenol	50		44		40-140	13		40
Hexachlorobenzene	70		60		40-140	15		40
Hexachloroethane	72		60		40-140	18		40

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Lab Number: L1807820
Project Number: 171.05027.003
Report Date: 03/15/18

Parameter	*LCS %Recovery*	*Qual*	*LCSD %Recovery*	*Qual*	*%Recovery Limits*	*RPD*	*Qual*	*RPD Limits*

Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1095448-2 WG1095448-3

Surrogate	*LCS %Recovery*	*Qual*	*LCSD %Recovery*	*Qual*	*Acceptance Criteria*
2-Fluorophenol	50		42		21-120
Phenol-d6	38		32		10-120
Nitrobenzene-d5	94		76		23-120
2-Fluorobiphenyl	92		76		15-120
2,4,6-Tribromophenol	82		72		10-120
4-Terphenyl-d14	95		86		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1807820

Report Date: 03/15/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1095492-2 WG1095492-3								
Acenaphthene	79		82		37-111	4		30
Benzidine	33		39		10-75	17		30
1,2,4-Trichlorobenzene	84		85		39-98	1		30
Hexachlorobenzene	98		99		40-140	1		30
Bis(2-chloroethyl)ether	74		74		40-140	0		30
2-Chloronaphthalene	95		96		40-140	1		30
1,2-Dichlorobenzene	75		74		40-140	1		30
1,3-Dichlorobenzene	72		70		40-140	3		30
1,4-Dichlorobenzene	72		72		36-97	0		30
3,3'-Dichlorobenzidine	89		96		40-140	8		30
2,4-Dinitrotoluene	100		106		48-143	6		30
2,6-Dinitrotoluene	106		110		40-140	4		30
Azobenzene	96		99		40-140	3		30
Fluoranthene	88		90		40-140	2		30
4-Chlorophenyl phenyl ether	90		92		40-140	2		30
4-Bromophenyl phenyl ether	95		98		40-140	3		30
Bis(2-chloroisopropyl)ether	50		49		40-140	2		30
Bis(2-chloroethoxy)methane	82		83		40-140	1		30
Hexachlorobutadiene	97		94		40-140	3		30
Hexachlorocyclopentadiene	100		101		40-140	1		30
Hexachloroethane	78		77		40-140	1		30
Isophorone	93		94		40-140	1		30
Naphthalene	81		82		40-140	1		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1807820
Report Date: 03/15/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1095492-2 WG1095492-3								
Nitrobenzene	90		90		40-140	0		30
NDPA/DPA	90		93		40-140	3		30
n-Nitrosodi-n-propylamine	89		90		29-132	1		30
Bis(2-ethylhexyl)phthalate	103		108		40-140	5		30
Butyl benzyl phthalate	103		105		40-140	2		30
Di-n-butylphthalate	97		101		40-140	4		30
Di-n-octylphthalate	106		108		40-140	2		30
Diethyl phthalate	102		106		40-140	4		30
Dimethyl phthalate	107		107		40-140	0		30
Benzo(a)anthracene	89		94		40-140	5		30
Benzo(a)pyrene	89		94		40-140	5		30
Benzo(b)fluoranthene	89		84		40-140	6		30
Benzo(k)fluoranthene	85		97		40-140	13		30
Chrysene	84		86		40-140	2		30
Acenaphthylene	96		97		45-123	1		30
Anthracene	85		87		40-140	2		30
Benzo(ghi)perylene	104		106		40-140	2		30
Fluorene	87		89		40-140	2		30
Phenanthrene	81		84		40-140	4		30
Dibenzo(a,h)anthracene	100		106		40-140	6		30
Indeno(1,2,3-cd)pyrene	100		105		40-140	5		30
Pyrene	84		86		26-127	2		30
Biphenyl	96		97		40-140	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1807820

Report Date: 03/15/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1095492-2 WG1095492-3								
Aniline	58		59		40-140	2		30
4-Chloroaniline	80		85		40-140	6		30
1-Methylnaphthalene	**114**	Q	**115**	Q	41-103	1		30
2-Nitroaniline	100		101		52-143	1		30
3-Nitroaniline	75		81		25-145	8		30
4-Nitroaniline	85		88		51-143	3		30
Dibenzofuran	84		88		40-140	5		30
2-Methylnaphthalene	84		85		40-140	1		30
n-Nitrosodimethylamine	42		42		22-74	0		30
2,4,6-Trichlorophenol	108		109		30-130	1		30
p-Chloro-m-cresol	**105**	Q	**108**	Q	23-97	3		30
2-Chlorophenol	77		77		27-123	0		30
2,4-Dichlorophenol	90		93		30-130	3		30
2,4-Dimethylphenol	101		102		30-130	1		30
2-Nitrophenol	90		89		30-130	1		30
4-Nitrophenol	72		72		10-80	0		30
2,4-Dinitrophenol	89		92		20-130	3		30
4,6-Dinitro-o-cresol	113		114		20-164	1		30
Pentachlorophenol	88		90		9-103	2		30
Phenol	38		37		12-110	3		30
2-Methylphenol	74		74		30-130	0		30
3-Methylphenol/4-Methylphenol	76		76		30-130	0		30
2,4,5-Trichlorophenol	109		110		30-130	1		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1807820

Report Date: 03/15/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1095492-2 WG1095492-3								
Benzoic Acid	38		33		10-164	14		30
Benzyl Alcohol	89		89		26-116	0		30
Carbazole	85		87		55-144	2		30
Pyridine	31		30		10-66	3		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	54		52		21-120
Phenol-d6	38		38		10-120
Nitrobenzene-d5	98		98		23-120
2-Fluorobiphenyl	95		98		15-120
2,4,6-Tribromophenol	106		112		10-120
4-Terphenyl-d14	88		94		41-149

METALS

Project Name:	BELFAST WATER DISTRICT	**Lab Number:**	L1807820
Project Number:	171.05027.003	**Report Date:**	03/15/18

SAMPLE RESULTS

Lab ID:	L1807820-01	Date Collected:	03/06/18 13:30
Client ID:	GWW-103	Date Received:	03/07/18
Sample Location:	BELFAST, ME	Field Prep:	Field Filtered (Dissolved Metals and SPhos)
Sample Depth:			
Matrix:	Water		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	0.468		mg/l	0.100	--	1	03/09/18 11:25	03/12/18 19:29	EPA 3005A	1,6010C	AB
Antimony, Total	ND		mg/l	0.00400	--	1	03/09/18 11:25	03/12/18 12:00	EPA 3005A	1,6020A	AM
Arsenic, Total	ND		mg/l	0.005	--	1	03/09/18 11:25	03/12/18 19:29	EPA 3005A	1,6010C	AB
Barium, Total	0.016		mg/l	0.010	--	1	03/09/18 11:25	03/12/18 19:29	EPA 3005A	1,6010C	AB
Beryllium, Total	ND		mg/l	0.00050	--	1	03/09/18 11:25	03/12/18 12:00	EPA 3005A	1,6020A	AM
Boron, Total	0.117		mg/l	0.030	--	1	03/09/18 11:25	03/12/18 19:29	EPA 3005A	1,6010C	AB
Cadmium, Total	ND		mg/l	0.00020	--	1	03/09/18 11:25	03/12/18 12:00	EPA 3005A	1,6020A	AM
Calcium, Total	35.4		mg/l	0.100	--	1	03/09/18 11:25	03/12/18 19:29	EPA 3005A	1,6010C	AB
Chromium, Total	ND		mg/l	0.010	--	1	03/09/18 11:25	03/12/18 19:29	EPA 3005A	1,6010C	AB
Cobalt, Total	ND		mg/l	0.020	--	1	03/09/18 11:25	03/12/18 19:29	EPA 3005A	1,6010C	AB
Copper, Total	ND		mg/l	0.010	--	1	03/09/18 11:25	03/12/18 19:29	EPA 3005A	1,6010C	AB
Iron, Total	2.08		mg/l	0.050	--	1	03/09/18 11:25	03/12/18 19:29	EPA 3005A	1,6010C	AB
Lead, Total	ND		mg/l	0.010	--	1	03/09/18 11:25	03/12/18 19:29	EPA 3005A	1,6010C	AB
Magnesium, Total	14.1		mg/l	0.100	--	1	03/09/18 11:25	03/12/18 19:29	EPA 3005A	1,6010C	AB
Manganese, Total	0.046		mg/l	0.010	--	1	03/09/18 11:25	03/12/18 19:29	EPA 3005A	1,6010C	AB
Mercury, Total	ND		mg/l	0.00020	--	1	03/08/18 15:20	03/08/18 20:12	EPA 7470A	1,7470A	EA
Molybdenum, Total	ND		mg/l	0.050	--	1	03/09/18 11:25	03/12/18 19:29	EPA 3005A	1,6010C	AB
Nickel, Total	ND		mg/l	0.025	--	1	03/09/18 11:25	03/12/18 19:29	EPA 3005A	1,6010C	AB
Potassium, Total	9.26		mg/l	2.50	--	1	03/09/18 11:25	03/12/18 19:29	EPA 3005A	1,6010C	AB
Selenium, Total	ND		mg/l	0.010	--	1	03/09/18 11:25	03/12/18 19:29	EPA 3005A	1,6010C	AB
Silicon, Total	8.26		mg/l	0.500	--	1	03/14/18 09:30	03/14/18 15:38	EPA 3005A	1,6010C	LC
Silver, Total	ND		mg/l	0.007	--	1	03/09/18 11:25	03/12/18 19:29	EPA 3005A	1,6010C	AB
Sodium, Total	254		mg/l	2.00	--	1	03/09/18 11:25	03/12/18 19:29	EPA 3005A	1,6010C	AB
Strontium, Total	0.440		mg/l	0.010	--	1	03/09/18 11:25	03/12/18 19:29	EPA 3005A	1,6010C	AB
Sulfur, Total	46.2		mg/l	0.250	--	1	03/14/18 09:45	03/14/18 18:40	EPA 3015A	1,6010C	AB
Thallium, Total	ND		mg/l	0.00050	--	1	03/09/18 11:25	03/12/18 12:00	EPA 3005A	1,6020A	AM
Titanium, Total	0.016		mg/l	0.010	--	1	03/09/18 11:25	03/12/18 19:29	EPA 3005A	1,6010C	AB
Vanadium, Total	ND		mg/l	0.010	--	1	03/09/18 11:25	03/12/18 19:29	EPA 3005A	1,6010C	AB
Zinc, Total	ND		mg/l	0.050	--	1	03/09/18 11:25	03/12/18 19:29	EPA 3005A	1,6010C	AB

Project Name: BELFAST WATER DISTRICT
Lab Number: L1807820
Project Number: 171.05027.003
Report Date: 03/15/18

SAMPLE RESULTS

Lab ID: L1807820-01
Client ID: GWW-103
Sample Location: BELFAST, ME
Sample Depth:
Matrix: Water
Date Collected: 03/06/18 13:30
Date Received: 03/07/18
Field Prep: Field Filtered (Dissolved Metals and SPhos)

Total Hardness by SM 2340B - Mansfield Lab

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Hardness	146		mg/l	0.660	NA	1	03/09/18 11:25	03/12/18 19:29	EPA 3005A	1,6010C	AB

Dissolved Metals - Mansfield Lab

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Aluminum, Dissolved	ND		mg/l	0.100	--	1	03/09/18 07:35	03/09/18 11:58	EPA 3005A	1,6010C	AB
Antimony, Dissolved	ND		mg/l	0.00400	--	1	03/09/18 07:35	03/12/18 10:48	EPA 3005A	1,6020A	AM
Arsenic, Dissolved	ND		mg/l	0.0050	--	1	03/09/18 07:35	03/09/18 11:58	EPA 3005A	1,6010C	AB
Barium, Dissolved	0.015		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:58	EPA 3005A	1,6010C	AB
Beryllium, Dissolved	ND		mg/l	0.00050	--	1	03/09/18 07:35	03/12/18 10:48	EPA 3005A	1,6020A	AM
Boron, Dissolved	0.116		mg/l	0.030	--	1	03/09/18 07:35	03/09/18 11:58	EPA 3005A	1,6010C	AB
Cadmium, Dissolved	ND		mg/l	0.00020	--	1	03/09/18 07:35	03/12/18 10:48	EPA 3005A	1,6020A	AM
Calcium, Dissolved	36.4		mg/l	0.100	--	1	03/09/18 07:35	03/09/18 11:58	EPA 3005A	1,6010C	AB
Chromium, Dissolved	ND		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:58	EPA 3005A	1,6010C	AB
Cobalt, Dissolved	ND		mg/l	0.020	--	1	03/09/18 07:35	03/09/18 11:58	EPA 3005A	1,6010C	AB
Copper, Dissolved	ND		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:58	EPA 3005A	1,6010C	AB
Iron, Dissolved	0.784		mg/l	0.050	--	1	03/09/18 07:35	03/09/18 11:58	EPA 3005A	1,6010C	AB
Lead, Dissolved	ND		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:58	EPA 3005A	1,6010C	AB
Magnesium, Dissolved	13.9		mg/l	0.100	--	1	03/09/18 07:35	03/09/18 11:58	EPA 3005A	1,6010C	AB
Manganese, Dissolved	0.041		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:58	EPA 3005A	1,6010C	AB
Mercury, Dissolved	ND		mg/l	0.00020	--	1	03/08/18 15:20	03/08/18 20:18	EPA 7470A	1,7470A	EA
Molybdenum, Dissolved	ND		mg/l	0.050	--	1	03/09/18 07:35	03/09/18 11:58	EPA 3005A	1,6010C	AB
Nickel, Dissolved	ND		mg/l	0.025	--	1	03/09/18 07:35	03/09/18 11:58	EPA 3005A	1,6010C	AB
Potassium, Dissolved	8.78		mg/l	2.50	--	1	03/09/18 07:35	03/09/18 11:58	EPA 3005A	1,6010C	AB
Selenium, Dissolved	ND		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:58	EPA 3005A	1,6010C	AB
Silicon, Dissolved	7.97		mg/l	0.500	--	1	03/09/18 07:35	03/09/18 11:58	EPA 3005A	1,6010C	AB
Silver, Dissolved	ND		mg/l	0.007	--	1	03/09/18 07:35	03/09/18 11:58	EPA 3005A	1,6010C	AB
Sodium, Dissolved	253		mg/l	2.00	--	1	03/09/18 07:35	03/09/18 11:58	EPA 3005A	1,6010C	AB
Strontium, Dissolved	0.422		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:58	EPA 3005A	1,6010C	AB
Thallium, Dissolved	ND		mg/l	0.00050	--	1	03/09/18 07:35	03/12/18 10:48	EPA 3005A	1,6020A	AM

SAMPLE RESULTS

Lab ID: L1807820-01
Client ID: GWW-103
Sample Location: BELFAST, ME
Sample Depth:
Matrix: Water

Date Collected: 03/06/18 13:30
Date Received: 03/07/18
Field Prep: Field Filtered (Dissolved Metals and SPhos)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Titanium, Dissolved	ND		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:58	EPA 3005A	1,6010C	AB
Vanadium, Dissolved	ND		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:58	EPA 3005A	1,6010C	AB
Zinc, Dissolved	ND		mg/l	0.050	--	1	03/09/18 07:35	03/09/18 11:58	EPA 3005A	1,6010C	AB

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1095572-1										
Mercury, Total	ND		mg/l	0.00020	--	1	03/08/18 15:20	03/08/18 19:53	1,7470A	EA

Prep Information

Digestion Method: EPA 7470A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01 Batch: WG1095574-1										
Mercury, Dissolved	ND		mg/l	0.00020	--	1	03/08/18 15:20	03/08/18 20:14	1,7470A	EA

Prep Information

Digestion Method: EPA 7470A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01 Batch: WG1095792-1										
Aluminum, Dissolved	ND		mg/l	0.100	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Arsenic, Dissolved	ND		mg/l	0.005	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Barium, Dissolved	ND		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Boron, Dissolved	ND		mg/l	0.030	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Calcium, Dissolved	ND		mg/l	0.100	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Chromium, Dissolved	ND		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Cobalt, Dissolved	ND		mg/l	0.020	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Copper, Dissolved	ND		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Iron, Dissolved	ND		mg/l	0.050	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Lead, Dissolved	ND		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Magnesium, Dissolved	ND		mg/l	0.100	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Manganese, Dissolved	ND		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Molybdenum, Dissolved	ND		mg/l	0.050	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Nickel, Dissolved	ND		mg/l	0.025	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Potassium, Dissolved	ND		mg/l	2.50	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Selenium, Dissolved	ND		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB

Method Blank Analysis
Batch Quality Control

Silicon, Dissolved	ND		mg/l	0.500	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Silver, Dissolved	ND		mg/l	0.007	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Sodium, Dissolved	ND		mg/l	2.00	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Strontium, Dissolved	ND		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Titanium, Dissolved	ND		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Vanadium, Dissolved	ND		mg/l	0.010	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB
Zinc, Dissolved	ND		mg/l	0.050	--	1	03/09/18 07:35	03/09/18 11:49	1,6010C	AB

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01 Batch: WG1095796-1										
Antimony, Dissolved	ND		mg/l	0.00400	--	1	03/09/18 07:35	03/12/18 11:05	1,6020A	AM
Beryllium, Dissolved	ND		mg/l	0.00050	--	1	03/09/18 07:35	03/12/18 11:05	1,6020A	AM
Cadmium, Dissolved	ND		mg/l	0.00020	--	1	03/09/18 07:35	03/12/18 11:05	1,6020A	AM
Thallium, Dissolved	ND		mg/l	0.00050	--	1	03/09/18 07:35	03/12/18 11:05	1,6020A	AM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1095916-1										
Antimony, Total	ND		mg/l	0.00400	--	1	03/09/18 11:25	03/12/18 10:51	1,6020A	AM
Beryllium, Total	ND		mg/l	0.00050	--	1	03/09/18 11:25	03/12/18 10:51	1,6020A	AM
Cadmium, Total	ND		mg/l	0.00020	--	1	03/09/18 11:25	03/12/18 10:51	1,6020A	AM
Thallium, Total	ND		mg/l	0.00050	--	1	03/09/18 11:25	03/12/18 10:51	1,6020A	AM

Prep Information

Digestion Method: EPA 3005A

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1095917-1										
Aluminum, Total	ND		mg/l	0.100	--	1	03/09/18 11:25	03/12/18 17:43	1,6010C	AB
Arsenic, Total	ND		mg/l	0.005	--	1	03/09/18 11:25	03/12/18 17:43	1,6010C	AB
Barium, Total	ND		mg/l	0.010	--	1	03/09/18 11:25	03/12/18 17:43	1,6010C	AB
Boron, Total	ND		mg/l	0.030	--	1	03/09/18 11:25	03/12/18 17:43	1,6010C	AB
Calcium, Total	ND		mg/l	0.100	--	1	03/09/18 11:25	03/12/18 17:43	1,6010C	AB
Chromium, Total	ND		mg/l	0.010	--	1	03/09/18 11:25	03/12/18 17:43	1,6010C	AB
Cobalt, Total	ND		mg/l	0.020	--	1	03/09/18 11:25	03/12/18 17:43	1,6010C	AB
Copper, Total	ND		mg/l	0.010	--	1	03/09/18 11:25	03/12/18 17:43	1,6010C	AB
Iron, Total	ND		mg/l	0.050	--	1	03/09/18 11:25	03/12/18 17:43	1,6010C	AB
Lead, Total	ND		mg/l	0.010	--	1	03/09/18 11:25	03/12/18 17:43	1,6010C	AB
Magnesium, Total	ND		mg/l	0.100	--	1	03/09/18 11:25	03/12/18 17:43	1,6010C	AB
Manganese, Total	ND		mg/l	0.010	--	1	03/09/18 11:25	03/12/18 17:43	1,6010C	AB
Molybdenum, Total	ND		mg/l	0.050	--	1	03/09/18 11:25	03/12/18 17:43	1,6010C	AB
Nickel, Total	ND		mg/l	0.025	--	1	03/09/18 11:25	03/12/18 17:43	1,6010C	AB
Potassium, Total	ND		mg/l	2.50	--	1	03/09/18 11:25	03/12/18 17:43	1,6010C	AB
Selenium, Total	ND		mg/l	0.010	--	1	03/09/18 11:25	03/12/18 17:43	1,6010C	AB
Silicon, Total	ND		mg/l	0.500	--	1	03/09/18 11:25	03/12/18 17:43	1,6010C	AB
Silver, Total	ND		mg/l	0.007	--	1	03/09/18 11:25	03/12/18 17:43	1,6010C	AB
Sodium, Total	ND		mg/l	2.00	--	1	03/09/18 11:25	03/12/18 17:43	1,6010C	AB
Strontium, Total	ND		mg/l	0.010	--	1	03/09/18 11:25	03/12/18 17:43	1,6010C	AB
Titanium, Total	ND		mg/l	0.010	--	1	03/09/18 11:25	03/12/18 17:43	1,6010C	AB
Vanadium, Total	ND		mg/l	0.010	--	1	03/09/18 11:25	03/12/18 17:43	1,6010C	AB
Zinc, Total	ND		mg/l	0.050	--	1	03/09/18 11:25	03/12/18 17:43	1,6010C	AB

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01 Batch: WG1095917-1										
Hardness	ND		mg/l	0.660	NA	1	03/09/18 11:25	03/12/18 17:43	1,6010C	AB

Method Blank Analysis
Batch Quality Control

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1096871-1										
Silicon, Total	ND		mg/l	0.500	--	1	03/14/18 09:30	03/14/18 14:43	1,6010C	LC

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1096872-1										
Sulfur, Total	ND		mg/l	0.250	--	1	03/14/18 09:45	03/14/18 18:18	1,6010C	AB

Prep Information

Digestion Method: EPA 3015A

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1807820

Report Date: 03/15/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1095572-2								
Mercury, Total	94		-		80-120	-		
Dissolved Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1095574-2								
Mercury, Dissolved	88		-		80-120	-		

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1807820
Report Date: 03/15/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1095792-2					
Aluminum, Dissolved	110	-	80-120	-	
Arsenic, Dissolved	111	-	80-120	-	
Barium, Dissolved	103	-	80-120	-	
Boron, Dissolved	114	-	80-120	-	
Calcium, Dissolved	104	-	80-120	-	
Chromium, Dissolved	106	-	80-120	-	
Cobalt, Dissolved	101	-	80-120	-	
Copper, Dissolved	107	-	80-120	-	
Iron, Dissolved	106	-	80-120	-	
Lead, Dissolved	106	-	80-120	-	
Magnesium, Dissolved	102	-	80-120	-	
Manganese, Dissolved	102	-	80-120	-	
Molybdenum, Dissolved	103	-	80-120	-	
Nickel, Dissolved	102	-	80-120	-	
Potassium, Dissolved	104	-	80-120	-	
Selenium, Dissolved	113	-	80-120	-	
Silicon, Dissolved	92	-	80-120	-	
Silver, Dissolved	108	-	80-120	-	
Sodium, Dissolved	108	-	80-120	-	
Strontium, Dissolved	102	-	80-120	-	
Titanium, Dissolved	107	-	80-120	-	

Lab Control Sample Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1807820
Report Date: 03/15/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1095792-2					
Vanadium, Dissolved	107	-	80-120	-	
Zinc, Dissolved	105	-	80-120	-	
Dissolved Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1095796-2					
Antimony, Dissolved	108	-	80-120	-	
Beryllium, Dissolved	113	-	80-120	-	
Cadmium, Dissolved	115	-	80-120	-	
Thallium, Dissolved	93	-	80-120	-	
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1095916-2					
Antimony, Total	116	-	80-120	-	
Beryllium, Total	114	-	80-120	-	
Cadmium, Total	117	-	80-120	-	
Thallium, Total	107	-	80-120	-	

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1807820

Report Date: 03/15/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1095917-2					
Aluminum, Total	110	-	80-120	-	
Arsenic, Total	108	-	80-120	-	
Barium, Total	103	-	80-120	-	
Boron, Total	107	-	80-120	-	
Calcium, Total	97	-	80-120	-	
Chromium, Total	103	-	80-120	-	
Cobalt, Total	98	-	80-120	-	
Copper, Total	104	-	80-120	-	
Iron, Total	102	-	80-120	-	
Lead, Total	103	-	80-120	-	
Magnesium, Total	101	-	80-120	-	
Manganese, Total	97	-	80-120	-	
Molybdenum, Total	93	-	80-120	-	
Nickel, Total	99	-	80-120	-	
Potassium, Total	102	-	80-120	-	
Selenium, Total	110	-	80-120	-	
Silver, Total	107	-	80-120	-	
Sodium, Total	104	-	80-120	-	
Strontium, Total	99	-	80-120	-	
Titanium, Total	102	-	80-120	-	
Vanadium, Total	105	-	80-120	-	

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1807820

Report Date: 03/15/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1095917-2					
Zinc, Total	102	-	80-120	-	
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 Batch: WG1095917-2					
Hardness	99	-	80-120	-	
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1096871-2					
Silicon, Total	105	-	80-120	-	
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1096872-2					
Sulfur, Total	119	-	80-120	-	

Matrix Spike Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1807820

Report Date: 03/15/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1095574-3 QC Sample: L1807820-01 Client ID: GWW-103												
Mercury, Dissolved	ND	0.005	0.00464	93		-	-		75-125	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003
Lab Number: L1807820
Report Date: 03/15/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery		MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1095792-3 QC Sample: L1807820-01 Client ID: GWW-103										
Aluminum, Dissolved	ND	2	2.17	108		-	-	75-125	-	20
Arsenic, Dissolved	ND	0.12	0.143	119		-	-	75-125	-	20
Barium, Dissolved	0.015	2	2.03	101		-	-	75-125	-	20
Boron, Dissolved	0.116	1	1.26	114		-	-	75-125	-	20
Calcium, Dissolved	36.4	10	45.4	90		-	-	75-125	-	20
Chromium, Dissolved	ND	0.2	0.211	106		-	-	75-125	-	20
Cobalt, Dissolved	ND	0.5	0.491	98		-	-	75-125	-	20
Copper, Dissolved	ND	0.25	0.268	107		-	-	75-125	-	20
Iron, Dissolved	0.784	1	1.80	102		-	-	75-125	-	20
Lead, Dissolved	ND	0.51	0.514	101		-	-	75-125	-	20
Magnesium, Dissolved	13.9	10	22.9	90		-	-	75-125	-	20
Manganese, Dissolved	0.041	0.5	0.539	100		-	-	75-125	-	20
Molybdenum, Dissolved	ND	1	1.04	104		-	-	75-125	-	20
Nickel, Dissolved	ND	0.5	0.493	99		-	-	75-125	-	20
Potassium, Dissolved	8.78	10	18.8	100		-	-	75-125	-	20
Selenium, Dissolved	ND	0.12	0.136	113		-	-	75-125	-	20
Silicon, Dissolved	7.97	1	8.86	89		-	-	75-125	-	20
Silver, Dissolved	ND	0.05	0.054	109		-	-	75-125	-	20
Sodium, Dissolved	253	10	254	**10**	Q	-	-	75-125	-	20
Strontium, Dissolved	0.422	1	1.42	100		-	-	75-125	-	20
Titanium, Dissolved	ND	1	1.08	108		-	-	75-125	-	20

Matrix Spike Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1807820
Report Date: 03/15/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery		MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1095792-3 QC Sample: L1807820-01 Client ID: GWW-103										
Vanadium, Dissolved	ND	0.5	0.538	108		-	-	75-125	-	20
Zinc, Dissolved	ND	0.5	0.521	104		-	-	75-125	-	20
Dissolved Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1095796-3 QC Sample: L1807820-01 Client ID: GWW-103										
Antimony, Dissolved	ND	0.5	0.5568	111		-	-	75-125	-	20
Beryllium, Dissolved	ND	0.05	0.05480	110		-	-	75-125	-	20
Cadmium, Dissolved	ND	0.051	0.05734	112		-	-	75-125	-	20
Thallium, Dissolved	ND	0.12	0.1112	93		-	-	75-125	-	20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1096871-3 QC Sample: L1807820-01 Client ID: GWW-103										
Silicon, Total	8.26	1	10.7	**244**	Q	-	-	75-125	-	20

Lab Duplicate Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1807820

Report Date: 03/15/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1095574-4 QC Sample: L1807820-01 Client ID: GWW-103						
Mercury, Dissolved	ND	ND	mg/l	NC		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1807820
Report Date: 03/15/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1095792-4 QC Sample: L1807820-01 Client ID: GWW-103					
Aluminum, Dissolved	ND	ND	mg/l	NC	20
Arsenic, Dissolved	ND	ND	mg/l	NC	20
Barium, Dissolved	0.015	0.015	mg/l	5	20
Boron, Dissolved	0.116	0.115	mg/l	1	20
Calcium, Dissolved	36.4	36.2	mg/l	1	20
Chromium, Dissolved	ND	ND	mg/l	NC	20
Cobalt, Dissolved	ND	ND	mg/l	NC	20
Copper, Dissolved	ND	ND	mg/l	NC	20
Iron, Dissolved	0.784	0.782	mg/l	0	20
Lead, Dissolved	ND	ND	mg/l	NC	20
Magnesium, Dissolved	13.9	13.7	mg/l	1	20
Manganese, Dissolved	0.041	0.041	mg/l	1	20
Molybdenum, Dissolved	ND	ND	mg/l	NC	20
Nickel, Dissolved	ND	ND	mg/l	NC	20
Potassium, Dissolved	8.78	8.74	mg/l	0	20
Selenium, Dissolved	ND	ND	mg/l	NC	20
Silicon, Dissolved	7.97	7.96	mg/l	0	20
Silver, Dissolved	ND	ND	mg/l	NC	20
Sodium, Dissolved	253	248	mg/l	2	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1807820
Report Date: 03/15/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1095792-4 QC Sample: L1807820-01 Client ID: GWW-103					
Strontium, Dissolved	0.422	0.421	mg/l	0	20
Titanium, Dissolved	ND	ND	mg/l	NC	20
Vanadium, Dissolved	ND	ND	mg/l	NC	20
Zinc, Dissolved	ND	ND	mg/l	NC	20
Dissolved Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1095796-4 QC Sample: L1807820-01 Client ID: GWW-103					
Antimony, Dissolved	ND	ND	mg/l	NC	20
Beryllium, Dissolved	ND	ND	mg/l	NC	20
Cadmium, Dissolved	ND	ND	mg/l	NC	20
Thallium, Dissolved	ND	ND	mg/l	NC	20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1096871-4 QC Sample: L1807820-01 Client ID: GWW-103					
Silicon, Total	8.26	8.42	mg/l	2	20

INORGANICS
&
MISCELLANEOUS

SAMPLE RESULTS

Lab ID: L1807820-01
Client ID: GWW-103
Sample Location: BELFAST, ME
Sample Depth:
Matrix: Water

Date Collected: 03/06/18 13:30
Date Received: 03/07/18
Field Prep: Field Filtered (Dissolved Metals and SPhos)

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Alkalinity, Total	143.		mg CaCO3/L	2.00	NA	1	-	03/08/18 08:45	121,2320B	BR
Phosphorus, Total	0.101		mg/l	0.010	--	1	03/09/18 12:10	03/12/18 13:01	121,4500P-E	SD
Phosphorus, Soluble	0.018		mg/l	0.010	--	1	03/09/18 12:10	03/12/18 13:26	121,4500P-E	SD

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1095458-1										
Alkalinity, Total	ND		mg CaCO3/L	2.00	NA	1	-	03/08/18 08:45	121,2320B	BR
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1095938-1										
Phosphorus, Total	ND		mg/l	0.010	--	1	03/09/18 12:10	03/12/18 12:59	121,4500P-E	SD
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1095940-1										
Phosphorus, Soluble	ND		mg/l	0.010	--	1	03/09/18 12:10	03/12/18 13:23	121,4500P-E	SD

Lab Control Sample Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1807820
Report Date: 03/15/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1095458-2								
Alkalinity, Total	103		-		90-110	-		10
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1095938-2								
Phosphorus, Total	100		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1095940-2								
Phosphorus, Soluble	101		-		80-120	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: BELFAST WATER DISTRICT

Project Number: 171.05027.003

Lab Number: L1807820

Report Date: 03/15/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1095938-3 QC Sample: L1807820-01 Client ID: GWW-103												
Phosphorus, Total	0.101	0.5	0.584	97		-	-		75-125	-		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1095940-4 QC Sample: L1807820-01 Client ID: GWW-103												
Phosphorus, Soluble	0.018	0.5	0.567	110		-	-		75-125	-		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: BELFAST WATER DISTRICT
Project Number: 171.05027.003

Lab Number: L1807820
Report Date: 03/15/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1095938-4 QC Sample: L1807820-01 Client ID: GWW-103						
Phosphorus, Total	0.101	0.089	mg/l	13		20
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1095940-3 QC Sample: L1807820-01 Client ID: GWW-103						
Phosphorus, Soluble	0.018	0.016	mg/l	12		20

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	*Custody Seal*
A	Absent

Container Information

Container ID	*Container Type*	*Cooler*	*Initial pH*	*Final pH*	*Temp deg C*	*Pres*	*Seal*	*Frozen Date/Time*	*Analysis(*)*
L1807820-01A	Vial HCl preserved	A	NA		5.0	Y	Absent		ME-8260(14)
L1807820-01B	Vial HCl preserved	A	NA		5.0	Y	Absent		ME-8260(14)
L1807820-01C	Vial HCl preserved	A	NA		5.0	Y	Absent		ME-8260(14)
L1807820-01D	Amber 1000ml unpreserved	A	7	7	5.0	Y	Absent		8270TCL(7),8270TCL-SIM(7)
L1807820-01E	Amber 1000ml unpreserved	A	7	7	5.0	Y	Absent		8270TCL(7),8270TCL-SIM(7)
L1807820-01F	Plastic 250ml unpreserved/No Headspace	A	NA		5.0	Y	Absent		ALK-T-2320(14)
L1807820-01G	Plastic 250ml H2SO4 preserved	A	<2	<2	5.0	Y	Absent		SPHOS-4500(28)
L1807820-01H	Plastic 250ml H2SO4 preserved	A	<2	<2	5.0	Y	Absent		TPHOS-4500(28)
L1807820-01I	Plastic 250ml HNO3 preserved	A	<2	<2	5.0	Y	Absent		TL-6020T(180),AS-TI(180),BA-TI(180),AG-TI(180),SI-TI(180),AL-TI(180),B-TI(180),CR-TI(180),MO-TI(180),NI-TI(180),S-TI(180),BE-6020T(180),CU-TI(180),PB-TI(180),SE-TI(180),TI-TI(180),ZN-TI(180),CO-TI(180),SB-6020T(180),V-TI(180),CD-6020T(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),SR-TI(180),CA-TI(180),HARDT(180),K-TI(180),NA-TI(180)
L1807820-01I1	Plastic 250ml HNO3 preserved	A	<2	<2	5.0	Y	Absent		-
L1807820-01J	Plastic 250ml HNO3 preserved	A	<2	<2	5.0	Y	Absent		B-SI(180),PB-SI(180),FE-SI(180),BA-SI(180),BE-6020S(180),TI-SI(180),AG-SI(180),AS-SI(180),CU-SI(180),MN-SI(180),NA-SI(180),NI-SI(180),AL-SI(180),CO-SI(180),SI-SI(180),SR-SI(180),TL-6020S(180),CR-SI(180),K-SI(180),MG-SI(180),MO-SI(180),SB-6020S(180),CA-SI(180),CD-6020S(180),HG-S(28),SE-SI(180),V-SI(180),ZN-SI(180)
L1807820-01V	Plastic 950ml unpreserved	A	7	7	5.0	Y	Absent		HOLD-WETCHEM()
L1807820-01W	Plastic 120ml unpreserved	A	7	7	5.0	Y	Absent		HOLD-WETCHEM()
L1807820-01X	Amber 120ml unpreserved	A	7	7	5.0	Y	Absent		HOLD-WETCHEM()
L1807820-01Y	Amber 1000ml unpreserved	A	7	7	5.0	Y	Absent		HOLD-8082()

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1807820-01Z	Amber 1000ml unpreserved	A	7	7	5.0	Y	Absent		HOLD-8082()
L1807820-02A	Vial HCl preserved	A	NA		5.0	Y	Absent		HOLD-8260(14)
L1807820-02B	Vial HCl preserved	A	NA		5.0	Y	Absent		HOLD-8260(14)
L1807820-02C	Vial HCl preserved	A	NA		5.0	Y	Absent		HOLD-8260(14)
L1807820-02D	Vial HCl preserved	A	NA		5.0	Y	Absent		HOLD-8260(14)

*Values in parentheses indicate holding time in days

GLOSSARY

Acronyms

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NDPA/DPA - N-Nitrosodiphenylamine/Diphenylamine.

NI - Not Ignitable.

NP - Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

STLP - Semi-dynamic Tank Leaching Procedure per EPA Method 1315.

TIC - Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related

Data Qualifiers

projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Be, Cd, Cr, Cu, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

ALPHA ANALYTICAL

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 3/7/18

ALPHA Job #: L1807820

8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Project Information

Project Name: Belfast Water District

Project Location: Belfast, ME

Project #: 171.05027.0003

Project Manager: Elizabeth Ransom

ALPHA Quote #:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☐ Same as Client info PO #: 10754

Client Information

Client: Ransom Consulting, Inc.

Address: 112 Corporate Drive
Portsmouth NH 03801

Phone: 603-436-1490

Email: elizabeth.ransom@ransomenv.com
cc: drew.fuchs@ransomenv.com

Regulatory Requirements & Project Information Requirements

☐ Yes ☒ No MA MCP Analytical Methods
☐ Yes ☒ No CT RCP Analytical Methods
☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☒ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☒ No NPDES RGP
☐ Other State /Fed Program ______ Criteria ______

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due:

Additional Project Information:

1. Dissolved metals & dissolved phosphorus were field filtered.
2. Extra bottle ware has been submitted; please keep these containers on hold pending results of tests listed.

SAMPLE INFO

Filtration
☒ Field
☐ Lab to do

Preservation
☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	Sample Comments	TOTAL # BOTTLES
07820-01	GWW-103	3-6-18	13:30	GW	DAF		16
02	Trip Blank					HOLD	2

ANALYSIS	07820-01	02	Container Type	Preservative
VOC: ☒ 8260 ☐ 624 ☐ 524.2	X	X	V	B
SVOC: ☒ ABN ☒ PAH 8270	X		A	A
METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15				
METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13				
EPH: ☐ Ranges & Targets ☐ Ranges Only				
VPH: ☐ Ranges & Targets ☐ Ranges Only				
☐ PCB ☐ PEST				
TPH: ☐ Quant Only ☐ Fingerprint				
TAL Metals (Total)	X		P	C
TAL Metals (Dissolved)	X		P	C
Total & Dissolved Phosphorus	X		P	C
Boron, Molybdenum, Silicon, Strontium, Titanium (Total & Dissolved)	X		P	C
Alkalinity & Hardness (CaCO3)	X		P	D
Total Sulfur	X		P	C

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
Drew Fuchs	3-7-18/10:40	AAL	3/7/18 10:40
	3/7/18 1245		3/7/18 1245
	3/7/18 1400		3-7-18 14:15

All samples submitted are subject to Alpha's Terms and Conditions.
See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

ANALYTICAL REPORT

Lab Number:	L1847957
Client:	Ransom Consulting, Inc. 112 Corporate Drive Pease International Tradeport Portsmouth, NH 03801
ATTN:	Elizabeth Ransom
Phone:	(603) 436-1490
Project Name:	NORDIC AQUAFARMS
Project Number:	171.05027.003
Report Date:	11/30/18

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: NORDIC AQUAFARMS
Project Number: 171.05027.003

Lab Number: L1847957
Report Date: 11/30/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1847957-01	PSD-101	WATER	BELFAST, ME	11/21/18 08:00	11/21/18
L1847957-02	PSD-102	WATER	BELFAST, ME	11/21/18 07:30	11/21/18
L1847957-03	DRX-101	WATER	BELFAST, ME	11/21/18 08:30	11/21/18
L1847957-04	DRX-102	WATER	BELFAST, ME	11/21/18 08:15	11/21/18
L1847957-05	TRIP BLANK	WATER	BELFAST, ME	11/21/18 00:00	11/21/18

Project Name: NORDIC AQUAFARMS **Lab Number:** L1847957
Project Number: 171.05027.003 **Report Date:** 11/30/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Cristin Walker Cristin Walker

Title: Technical Director/Representative Date: 11/30/18

ORGANICS

VOLATILES

SAMPLE RESULTS

Lab ID: L1847957-01
Client ID: PSD-101
Sample Location: BELFAST, ME

Date Collected: 11/21/18 08:00
Date Received: 11/21/18
Field Prep: Refer to COC

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 11/29/18 10:08
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	--	1
1,1-Dichloroethane	ND		ug/l	0.75	--	1
Chloroform	ND		ug/l	0.75	--	1
Carbon tetrachloride	ND		ug/l	0.50	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	0.50	--	1
1,1,2-Trichloroethane	ND		ug/l	0.75	--	1
Tetrachloroethene	ND		ug/l	0.50	--	1
Chlorobenzene	ND		ug/l	0.50	--	1
Trichlorofluoromethane	ND		ug/l	1.0	--	1
1,2-Dichloroethane	ND		ug/l	0.50	--	1
1,1,1-Trichloroethane	ND		ug/l	0.50	--	1
Bromodichloromethane	ND		ug/l	0.50	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	--	1
1,1-Dichloropropene	ND		ug/l	1.0	--	1
Bromoform	ND		ug/l	1.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	1.9		ug/l	0.75	--	1
Ethylbenzene	ND		ug/l	0.50	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	1.0	--	1
Vinyl chloride	ND		ug/l	0.20	--	1
Chloroethane	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	0.50	--	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	--	1

SAMPLE RESULTS

Lab ID: L1847957-01
Client ID: PSD-101
Sample Location: BELFAST, ME

Date Collected: 11/21/18 08:00
Date Received: 11/21/18
Field Prep: Refer to COC

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
1,2-Dichloroethene, Total	ND		ug/l	0.50	--	1
Trichloroethene	ND		ug/l	0.50	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	1.0	--	1
p/m-Xylene	ND		ug/l	1.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	--	1
Dibromomethane	ND		ug/l	1.0	--	1
1,4-Dichlorobutane	ND		ug/l	5.0	--	1
1,2,3-Trichloropropane	ND		ug/l	1.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	1.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
Vinyl acetate	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Ethyl methacrylate	ND		ug/l	5.0	--	1
Acrylonitrile	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	1.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	1.0	--	1
1,2-Dibromoethane	ND		ug/l	1.0	--	1
1,3-Dichloropropane	ND		ug/l	1.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Bromobenzene	ND		ug/l	1.0	--	1
n-Butylbenzene	ND		ug/l	0.50	--	1
sec-Butylbenzene	ND		ug/l	0.50	--	1
tert-Butylbenzene	ND		ug/l	1.0	--	1
o-Chlorotoluene	ND		ug/l	1.0	--	1
p-Chlorotoluene	ND		ug/l	1.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	1.0	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1

SAMPLE RESULTS

Lab ID: L1847957-01
Client ID: PSD-101
Sample Location: BELFAST, ME

Date Collected: 11/21/18 08:00
Date Received: 11/21/18
Field Prep: Refer to COC

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Isopropylbenzene	ND		ug/l	0.50	--	1
p-Isopropyltoluene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	1.0	--	1
n-Propylbenzene	ND		ug/l	0.50	--	1
1,2,3-Trichlorobenzene	ND		ug/l	1.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	1.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	1.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	1.0	--	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	--	1
Ethyl ether	ND		ug/l	1.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	97		70-130
Dibromofluoromethane	99		70-130

SAMPLE RESULTS

Lab ID: L1847957-02
Client ID: PSD-102
Sample Location: BELFAST, ME

Date Collected: 11/21/18 07:30
Date Received: 11/21/18
Field Prep: Refer to COC

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 11/29/18 10:30
Analyst: NLK

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	--	1
1,1-Dichloroethane	ND		ug/l	0.75	--	1
Chloroform	ND		ug/l	0.75	--	1
Carbon tetrachloride	ND		ug/l	0.50	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	0.50	--	1
1,1,2-Trichloroethane	ND		ug/l	0.75	--	1
Tetrachloroethene	ND		ug/l	0.50	--	1
Chlorobenzene	ND		ug/l	0.50	--	1
Trichlorofluoromethane	ND		ug/l	1.0	--	1
1,2-Dichloroethane	ND		ug/l	0.50	--	1
1,1,1-Trichloroethane	ND		ug/l	0.50	--	1
Bromodichloromethane	ND		ug/l	0.50	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	--	1
1,1-Dichloropropene	ND		ug/l	1.0	--	1
Bromoform	ND		ug/l	1.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	0.75	--	1
Ethylbenzene	ND		ug/l	0.50	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	1.0	--	1
Vinyl chloride	ND		ug/l	0.20	--	1
Chloroethane	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	0.50	--	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	--	1

SAMPLE RESULTS

Lab ID: L1847957-02
Client ID: PSD-102
Sample Location: BELFAST, ME

Date Collected: 11/21/18 07:30
Date Received: 11/21/18
Field Prep: Refer to COC

Sample Depth:

Parameter	**Result**	**Qualifier**	**Units**	**RL**	**MDL**	**Dilution Factor**
Volatile Organics by GC/MS - Westborough Lab						
1,2-Dichloroethene, Total	ND		ug/l	0.50	--	1
Trichloroethene	ND		ug/l	0.50	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	1.0	--	1
p/m-Xylene	ND		ug/l	1.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	--	1
Dibromomethane	ND		ug/l	1.0	--	1
1,4-Dichlorobutane	ND		ug/l	5.0	--	1
1,2,3-Trichloropropane	ND		ug/l	1.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	1.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
Vinyl acetate	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Ethyl methacrylate	ND		ug/l	5.0	--	1
Acrylonitrile	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	1.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	1.0	--	1
1,2-Dibromoethane	ND		ug/l	1.0	--	1
1,3-Dichloropropane	ND		ug/l	1.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Bromobenzene	ND		ug/l	1.0	--	1
n-Butylbenzene	ND		ug/l	0.50	--	1
sec-Butylbenzene	ND		ug/l	0.50	--	1
tert-Butylbenzene	ND		ug/l	1.0	--	1
o-Chlorotoluene	ND		ug/l	1.0	--	1
p-Chlorotoluene	ND		ug/l	1.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	1.0	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1

SAMPLE RESULTS

Lab ID: L1847957-02
Client ID: PSD-102
Sample Location: BELFAST, ME

Date Collected: 11/21/18 07:30
Date Received: 11/21/18
Field Prep: Refer to COC

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Isopropylbenzene	ND		ug/l	0.50	--	1
p-Isopropyltoluene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	1.0	--	1
n-Propylbenzene	ND		ug/l	0.50	--	1
1,2,3-Trichlorobenzene	ND		ug/l	1.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	1.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	1.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	1.0	--	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	--	1
Ethyl ether	ND		ug/l	1.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	112		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	99		70-130

SAMPLE RESULTS

Lab ID: L1847957-04
Client ID: DRX-102
Sample Location: BELFAST, ME
Date Collected: 11/21/18 08:15
Date Received: 11/21/18
Field Prep: Refer to COC

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 11/29/18 10:52
Analyst: NLK

Parameter	**Result**	**Qualifier**	**Units**	**RL**	**MDL**	**Dilution Factor**
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	--	1
1,1-Dichloroethane	ND		ug/l	0.75	--	1
Chloroform	ND		ug/l	0.75	--	1
Carbon tetrachloride	ND		ug/l	0.50	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	0.50	--	1
1,1,2-Trichloroethane	ND		ug/l	0.75	--	1
Tetrachloroethene	ND		ug/l	0.50	--	1
Chlorobenzene	ND		ug/l	0.50	--	1
Trichlorofluoromethane	ND		ug/l	1.0	--	1
1,2-Dichloroethane	ND		ug/l	0.50	--	1
1,1,1-Trichloroethane	ND		ug/l	0.50	--	1
Bromodichloromethane	ND		ug/l	0.50	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	--	1
1,1-Dichloropropene	ND		ug/l	1.0	--	1
Bromoform	ND		ug/l	1.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	0.75	--	1
Ethylbenzene	ND		ug/l	0.50	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	1.0	--	1
Vinyl chloride	ND		ug/l	0.20	--	1
Chloroethane	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	0.50	--	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	--	1

SAMPLE RESULTS

Lab ID: L1847957-04 Date Collected: 11/21/18 08:15

Client ID: DRX-102 Date Received: 11/21/18

Sample Location: BELFAST, ME Field Prep: Refer to COC

Sample Depth:

Parameter	**Result**	**Qualifier**	**Units**	**RL**	**MDL**	**Dilution Factor**
Volatile Organics by GC/MS - Westborough Lab						
1,2-Dichloroethene, Total	ND		ug/l	0.50	--	1
Trichloroethene	ND		ug/l	0.50	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	1.0	--	1
p/m-Xylene	ND		ug/l	1.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	--	1
Dibromomethane	ND		ug/l	1.0	--	1
1,4-Dichlorobutane	ND		ug/l	5.0	--	1
1,2,3-Trichloropropane	ND		ug/l	1.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	1.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
Vinyl acetate	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Ethyl methacrylate	ND		ug/l	5.0	--	1
Acrylonitrile	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	1.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	1.0	--	1
1,2-Dibromoethane	ND		ug/l	1.0	--	1
1,3-Dichloropropane	ND		ug/l	1.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Bromobenzene	ND		ug/l	1.0	--	1
n-Butylbenzene	ND		ug/l	0.50	--	1
sec-Butylbenzene	ND		ug/l	0.50	--	1
tert-Butylbenzene	ND		ug/l	1.0	--	1
o-Chlorotoluene	ND		ug/l	1.0	--	1
p-Chlorotoluene	ND		ug/l	1.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	1.0	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1

SAMPLE RESULTS

Lab ID: L1847957-04
Client ID: DRX-102
Sample Location: BELFAST, ME

Date Collected: 11/21/18 08:15
Date Received: 11/21/18
Field Prep: Refer to COC

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Isopropylbenzene	ND		ug/l	0.50	--	1
p-Isopropyltoluene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	1.0	--	1
n-Propylbenzene	ND		ug/l	0.50	--	1
1,2,3-Trichlorobenzene	ND		ug/l	1.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	1.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	1.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	1.0	--	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	--	1
Ethyl ether	ND		ug/l	1.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	111		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	98		70-130
Dibromofluoromethane	98		70-130

Project Name:	NORDIC AQUAFARMS	**Lab Number:**	L1847957
Project Number:	171.05027.003	**Report Date:**	11/30/18

Method Blank Analysis
Batch Quality Control

Analytical Method:	1,8260C
Analytical Date:	11/29/18 08:19
Analyst:	PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-02,04 Batch: WG1183891-5					
Methylene chloride	ND		ug/l	3.0	--
1,1-Dichloroethane	ND		ug/l	0.75	--
Chloroform	ND		ug/l	0.75	--
Carbon tetrachloride	ND		ug/l	0.50	--
1,2-Dichloropropane	ND		ug/l	1.0	--
Dibromochloromethane	ND		ug/l	0.50	--
1,1,2-Trichloroethane	ND		ug/l	0.75	--
2-Chloroethylvinyl ether	ND		ug/l	10	--
Tetrachloroethene	ND		ug/l	0.50	--
Chlorobenzene	ND		ug/l	0.50	--
Trichlorofluoromethane	ND		ug/l	1.0	--
1,2-Dichloroethane	ND		ug/l	0.50	--
1,1,1-Trichloroethane	ND		ug/l	0.50	--
Bromodichloromethane	ND		ug/l	0.50	--
trans-1,3-Dichloropropene	ND		ug/l	0.50	--
cis-1,3-Dichloropropene	ND		ug/l	0.50	--
1,3-Dichloropropene, Total	ND		ug/l	0.50	--
1,1-Dichloropropene	ND		ug/l	1.0	--
Bromoform	ND		ug/l	1.0	--
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--
Benzene	ND		ug/l	0.50	--
Toluene	ND		ug/l	0.75	--
Ethylbenzene	ND		ug/l	0.50	--
Chloromethane	ND		ug/l	2.0	--
Bromomethane	ND		ug/l	1.0	--
Vinyl chloride	ND		ug/l	0.20	--
Chloroethane	ND		ug/l	1.0	--
1,1-Dichloroethene	ND		ug/l	0.50	--
trans-1,2-Dichloroethene	ND		ug/l	0.75	--

Project Name: NORDIC AQUAFARMS
Lab Number: L1847957
Project Number: 171.05027.003
Report Date: 11/30/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 11/29/18 08:19
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-02,04 Batch: WG1183891-5					
1,2-Dichloroethene, Total	ND		ug/l	0.50	--
Trichloroethene	ND		ug/l	0.50	--
1,2-Dichlorobenzene	ND		ug/l	1.0	--
1,3-Dichlorobenzene	ND		ug/l	1.0	--
1,4-Dichlorobenzene	ND		ug/l	1.0	--
Methyl tert butyl ether	ND		ug/l	1.0	--
p/m-Xylene	ND		ug/l	1.0	--
o-Xylene	ND		ug/l	1.0	--
Xylenes, Total	ND		ug/l	1.0	--
cis-1,2-Dichloroethene	ND		ug/l	0.50	--
Dibromomethane	ND		ug/l	1.0	--
1,4-Dichlorobutane	ND		ug/l	5.0	--
Iodomethane	ND		ug/l	5.0	--
1,2,3-Trichloropropane	ND		ug/l	1.0	--
Styrene	ND		ug/l	1.0	--
Dichlorodifluoromethane	ND		ug/l	2.0	--
Acetone	ND		ug/l	5.0	--
Carbon disulfide	ND		ug/l	1.0	--
2-Butanone	ND		ug/l	5.0	--
Vinyl acetate	ND		ug/l	5.0	--
4-Methyl-2-pentanone	ND		ug/l	5.0	--
2-Hexanone	ND		ug/l	5.0	--
Ethyl methacrylate	ND		ug/l	5.0	--
Acrolein	ND		ug/l	5.0	--
Acrylonitrile	ND		ug/l	5.0	--
Bromochloromethane	ND		ug/l	1.0	--
Tetrahydrofuran	ND		ug/l	2.0	--
2,2-Dichloropropane	ND		ug/l	1.0	--
1,2-Dibromoethane	ND		ug/l	1.0	--

Project Name:	NORDIC AQUAFARMS	**Lab Number:**	L1847957
Project Number:	171.05027.003	**Report Date:**	11/30/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 11/29/18 08:19
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-02,04 Batch: WG1183891-5					
1,3-Dichloropropane	ND		ug/l	1.0	--
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--
Bromobenzene	ND		ug/l	1.0	--
n-Butylbenzene	ND		ug/l	0.50	--
sec-Butylbenzene	ND		ug/l	0.50	--
tert-Butylbenzene	ND		ug/l	1.0	--
o-Chlorotoluene	ND		ug/l	1.0	--
p-Chlorotoluene	ND		ug/l	1.0	--
1,2-Dibromo-3-chloropropane	ND		ug/l	1.0	--
Hexachlorobutadiene	ND		ug/l	0.50	--
Isopropylbenzene	ND		ug/l	0.50	--
p-Isopropyltoluene	ND		ug/l	0.50	--
Naphthalene	ND		ug/l	1.0	--
n-Propylbenzene	ND		ug/l	0.50	--
1,2,3-Trichlorobenzene	ND		ug/l	1.0	--
1,2,4-Trichlorobenzene	ND		ug/l	1.0	--
1,3,5-Trimethylbenzene	ND		ug/l	1.0	--
1,3,5-Trichlorobenzene	ND		ug/l	1.0	--
1,2,4-Trimethylbenzene	ND		ug/l	1.0	--
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	--
Halothane	ND		ug/l	2.5	--
Ethyl ether	ND		ug/l	1.0	--
Methyl Acetate	ND		ug/l	10	--
Ethyl Acetate	ND		ug/l	10	--
Isopropyl Ether	ND		ug/l	1.0	--
Cyclohexane	ND		ug/l	10	--
Tert-Butyl Alcohol	ND		ug/l	10	--
Ethyl-Tert-Butyl-Ether	ND		ug/l	1.0	--
Tertiary-Amyl Methyl Ether	ND		ug/l	1.0	--

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 11/29/18 08:19
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01-02,04 Batch: WG1183891-5					
1,4-Dioxane	ND		ug/l	250	--
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/l	10	--
Methyl cyclohexane	ND		ug/l	10	--
p-Diethylbenzene	ND		ug/l	2.0	--
4-Ethyltoluene	ND		ug/l	2.0	--
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	109		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	99		70-130
Dibromofluoromethane	96		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: NORDIC AQUAFARMS
Project Number: 171.05027.003

Lab Number: L1847957
Report Date: 11/30/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02,04 Batch: WG1183891-3 WG1183891-4								
Methylene chloride	100		100		70-130	0		20
1,1-Dichloroethane	100		100		70-130	0		20
Chloroform	98		97		70-130	1		20
Carbon tetrachloride	83		79		63-132	5		20
1,2-Dichloropropane	100		97		70-130	3		20
Dibromochloromethane	92		92		63-130	0		20
1,1,2-Trichloroethane	99		99		70-130	0		20
2-Chloroethylvinyl ether	91		92		70-130	1		20
Tetrachloroethene	82		81		70-130	1		20
Chlorobenzene	96		95		75-130	1		25
Trichlorofluoromethane	86		83		62-150	4		20
1,2-Dichloroethane	100		98		70-130	2		20
1,1,1-Trichloroethane	86		84		67-130	2		20
Bromodichloromethane	97		96		67-130	1		20
trans-1,3-Dichloropropene	90		88		70-130	2		20
cis-1,3-Dichloropropene	91		92		70-130	1		20
1,1-Dichloropropene	90		87		70-130	3		20
Bromoform	90		93		54-136	3		20
1,1,2,2-Tetrachloroethane	100		100		67-130	0		20
Benzene	94		94		70-130	0		25
Toluene	98		95		70-130	3		25
Ethylbenzene	97		96		70-130	1		20
Chloromethane	100		100		64-130	0		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: NORDIC AQUAFARMS
Lab Number: L1847957
Project Number: 171.05027.003
Report Date: 11/30/18

Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02,04 Batch: WG1183891-3 WG1183891-4

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Bromomethane	81		77		39-139	5		20
Vinyl chloride	96		93		55-140	3		20
Chloroethane	120		120		55-138	0		20
1,1-Dichloroethene	89		85		61-145	5		25
trans-1,2-Dichloroethene	92		92		70-130	0		20
Trichloroethene	93		89		70-130	4		25
1,2-Dichlorobenzene	96		95		70-130	1		20
1,3-Dichlorobenzene	99		97		70-130	2		20
1,4-Dichlorobenzene	97		96		70-130	1		20
Methyl tert butyl ether	88		87		63-130	1		20
p/m-Xylene	95		95		70-130	0		20
o-Xylene	95		95		70-130	0		20
cis-1,2-Dichloroethene	93		94		70-130	1		20
Dibromomethane	92		92		70-130	0		20
1,4-Dichlorobutane	110		110		70-130	0		20
Iodomethane	**22**	Q	**24**	Q	70-130	9		20
1,2,3-Trichloropropane	100		100		64-130	0		20
Styrene	100		100		70-130	0		20
Dichlorodifluoromethane	78		74		36-147	5		20
Acetone	90		95		58-148	5		20
Carbon disulfide	96		93		51-130	3		20
2-Butanone	93		92		63-138	1		20
Vinyl acetate	100		100		70-130	0		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: NORDIC AQUAFARMS

Project Number: 171.05027.003

Lab Number: L1847957

Report Date: 11/30/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02,04 Batch: WG1183891-3 WG1183891-4								
4-Methyl-2-pentanone	88		92		59-130	4		20
2-Hexanone	87		86		57-130	1		20
Ethyl methacrylate	82		83		70-130	1		20
Acrolein	94		99		70-130	5		20
Acrylonitrile	100		100		70-130	0		20
Bromochloromethane	91		94		70-130	3		20
Tetrahydrofuran	85		88		58-130	3		20
2,2-Dichloropropane	84		82		63-133	2		20
1,2-Dibromoethane	92		93		70-130	1		20
1,3-Dichloropropane	100		100		70-130	0		20
1,1,1,2-Tetrachloroethane	92		90		64-130	2		20
Bromobenzene	94		96		70-130	2		20
n-Butylbenzene	100		100		53-136	0		20
sec-Butylbenzene	100		95		70-130	5		20
tert-Butylbenzene	84		82		70-130	2		20
o-Chlorotoluene	100		100		70-130	0		20
p-Chlorotoluene	100		100		70-130	0		20
1,2-Dibromo-3-chloropropane	81		87		41-144	7		20
Hexachlorobutadiene	83		83		63-130	0		20
Isopropylbenzene	100		96		70-130	4		20
p-Isopropyltoluene	96		95		70-130	1		20
Naphthalene	83		84		70-130	1		20
n-Propylbenzene	100		100		69-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: NORDIC AQUAFARMS
Lab Number: L1847957
Project Number: 171.05027.003
Report Date: 11/30/18

Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02,04 Batch: WG1183891-3 WG1183891-4

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
1,2,3-Trichlorobenzene	88		86		70-130	2		20
1,2,4-Trichlorobenzene	89		88		70-130	1		20
1,3,5-Trimethylbenzene	100		98		64-130	2		20
1,3,5-Trichlorobenzene	92		92		70-130	0		20
1,2,4-Trimethylbenzene	100		98		70-130	2		20
trans-1,4-Dichloro-2-butene	100		96		70-130	4		20
Halothane	88		83		70-130	6		20
Ethyl ether	96		99		59-134	3		20
Methyl Acetate	94		93		70-130	1		20
Ethyl Acetate	98		94		70-130	4		20
Isopropyl Ether	100		100		70-130	0		20
Cyclohexane	90		87		70-130	3		20
Tert-Butyl Alcohol	78		78		70-130	0		20
Ethyl-Tert-Butyl-Ether	92		91		70-130	1		20
Tertiary-Amyl Methyl Ether	83		83		66-130	0		20
1,4-Dioxane	120		108		56-162	11		20
1,1,2-Trichloro-1,2,2-Trifluoroethane	86		82		70-130	5		20
Methyl cyclohexane	86		78		70-130	10		20
p-Diethylbenzene	94		93		70-130	1		20
4-Ethyltoluene	100		99		70-130	1		20
1,2,4,5-Tetramethylbenzene	91		91		70-130	0		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: NORDIC AQUAFARMS

Project Number: 171.05027.003

Lab Number: L1847957

Report Date: 11/30/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02,04 Batch: WG1183891-3 WG1183891-4								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	106		106		70-130
Toluene-d8	104		103		70-130
4-Bromofluorobenzene	98		99		70-130
Dibromofluoromethane	96		93		70-130

SEMIVOLATILES

Project Name: NORDIC AQUAFARMS
Project Number: 171.05027.003

Lab Number: L1847957
Report Date: 11/30/18

SAMPLE RESULTS

Lab ID: L1847957-01
Client ID: PSD-101
Sample Location: BELFAST, ME

Date Collected: 11/21/18 08:00
Date Received: 11/21/18
Field Prep: Refer to COC

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D
Analytical Date: 11/28/18 13:11
Analyst: JG

Extraction Method: EPA 3510C
Extraction Date: 11/26/18 00:12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/l	2.0	--	1
Benzidine	ND		ug/l	20	--	1
1,2,4-Trichlorobenzene	ND		ug/l	5.0	--	1
Hexachlorobenzene	ND		ug/l	2.0	--	1
Bis(2-chloroethyl)ether	ND		ug/l	2.0	--	1
2-Chloronaphthalene	ND		ug/l	2.0	--	1
1,2-Dichlorobenzene	ND		ug/l	2.0	--	1
1,3-Dichlorobenzene	ND		ug/l	2.0	--	1
1,4-Dichlorobenzene	ND		ug/l	2.0	--	1
3,3'-Dichlorobenzidine	ND		ug/l	5.0	--	1
2,4-Dinitrotoluene	ND		ug/l	5.0	--	1
2,6-Dinitrotoluene	ND		ug/l	5.0	--	1
Azobenzene	ND		ug/l	2.0	--	1
Fluoranthene	ND		ug/l	2.0	--	1
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	--	1
4-Bromophenyl phenyl ether	ND		ug/l	2.0	--	1
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	--	1
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	--	1
Hexachlorobutadiene	ND		ug/l	2.0	--	1
Hexachlorocyclopentadiene	ND		ug/l	20	--	1
Hexachloroethane	ND		ug/l	2.0	--	1
Isophorone	ND		ug/l	5.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
Nitrobenzene	ND		ug/l	2.0	--	1
NDPA/DPA	ND		ug/l	2.0	--	1
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	--	1
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--	1
Butyl benzyl phthalate	ND		ug/l	5.0	--	1

SAMPLE RESULTS

Lab ID: L1847957-01
Client ID: PSD-101
Sample Location: BELFAST, ME

Date Collected: 11/21/18 08:00
Date Received: 11/21/18
Field Prep: Refer to COC

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Di-n-butylphthalate	ND		ug/l	5.0	--	1
Di-n-octylphthalate	ND		ug/l	5.0	--	1
Diethyl phthalate	ND		ug/l	5.0	--	1
Dimethyl phthalate	ND		ug/l	5.0	--	1
Benzo(a)anthracene	ND		ug/l	2.0	--	1
Benzo(a)pyrene	ND		ug/l	2.0	--	1
Benzo(b)fluoranthene	ND		ug/l	2.0	--	1
Benzo(k)fluoranthene	ND		ug/l	2.0	--	1
Chrysene	ND		ug/l	2.0	--	1
Acenaphthylene	ND		ug/l	2.0	--	1
Anthracene	ND		ug/l	2.0	--	1
Benzo(ghi)perylene	ND		ug/l	2.0	--	1
Fluorene	ND		ug/l	2.0	--	1
Phenanthrene	ND		ug/l	2.0	--	1
Dibenzo(a,h)anthracene	ND		ug/l	2.0	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	2.0	--	1
Pyrene	ND		ug/l	2.0	--	1
Biphenyl	ND		ug/l	2.0	--	1
Aniline	ND		ug/l	2.0	--	1
4-Chloroaniline	ND		ug/l	5.0	--	1
1-Methylnaphthalene	ND		ug/l	2.0	--	1
2-Nitroaniline	ND		ug/l	5.0	--	1
3-Nitroaniline	ND		ug/l	5.0	--	1
4-Nitroaniline	ND		ug/l	5.0	--	1
Dibenzofuran	ND		ug/l	2.0	--	1
2-Methylnaphthalene	ND		ug/l	2.0	--	1
n-Nitrosodimethylamine	ND		ug/l	2.0	--	1
2,4,6-Trichlorophenol	ND		ug/l	5.0	--	1
p-Chloro-m-cresol	ND		ug/l	2.0	--	1
2-Chlorophenol	ND		ug/l	2.0	--	1
2,4-Dichlorophenol	ND		ug/l	5.0	--	1
2,4-Dimethylphenol	ND		ug/l	5.0	--	1
2-Nitrophenol	ND		ug/l	10	--	1
4-Nitrophenol	ND		ug/l	10	--	1
2,4-Dinitrophenol	ND		ug/l	20	--	1
4,6-Dinitro-o-cresol	ND		ug/l	10	--	1
Pentachlorophenol	ND		ug/l	10	--	1

SAMPLE RESULTS

Lab ID:	L1847957-01	Date Collected:	11/21/18 08:00
Client ID:	PSD-101	Date Received:	11/21/18
Sample Location:	BELFAST, ME	Field Prep:	Refer to COC

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Phenol	ND		ug/l	5.0	--	1
2-Methylphenol	ND		ug/l	5.0	--	1
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	--	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	--	1
Benzoic Acid	ND		ug/l	50	--	1
Benzyl Alcohol	ND		ug/l	2.0	--	1
Carbazole	ND		ug/l	2.0	--	1
Pyridine	ND		ug/l	3.5	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	51		21-120
Phenol-d6	35		10-120
Nitrobenzene-d5	88		23-120
2-Fluorobiphenyl	92		15-120
2,4,6-Tribromophenol	106		10-120
4-Terphenyl-d14	93		41-149

SAMPLE RESULTS

Lab ID: L1847957-01
Client ID: PSD-101
Sample Location: BELFAST, ME

Date Collected: 11/21/18 08:00
Date Received: 11/21/18
Field Prep: Refer to COC

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 11/29/18 15:01
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 11/26/18 00:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	ND		ug/l	0.10	--	1
2-Chloronaphthalene	ND		ug/l	0.20	--	1
Fluoranthene	ND		ug/l	0.10	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	0.10	--	1
Benzo(a)anthracene	ND		ug/l	0.10	--	1
Benzo(a)pyrene	ND		ug/l	0.10	--	1
Benzo(b)fluoranthene	ND		ug/l	0.10	--	1
Benzo(k)fluoranthene	ND		ug/l	0.10	--	1
Chrysene	ND		ug/l	0.10	--	1
Acenaphthylene	ND		ug/l	0.10	--	1
Anthracene	ND		ug/l	0.10	--	1
Benzo(ghi)perylene	ND		ug/l	0.10	--	1
Fluorene	ND		ug/l	0.10	--	1
Phenanthrene	ND		ug/l	0.10	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.10	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	--	1
Pyrene	ND		ug/l	0.10	--	1
1-Methylnaphthalene	ND		ug/l	0.10	--	1
2-Methylnaphthalene	ND		ug/l	0.10	--	1
Pentachlorophenol	ND		ug/l	0.80	--	1
Hexachlorobenzene	ND		ug/l	0.80	--	1
Hexachloroethane	ND		ug/l	0.80	--	1

SAMPLE RESULTS

Lab ID: L1847957-01
Client ID: PSD-101
Sample Location: BELFAST, ME
Date Collected: 11/21/18 08:00
Date Received: 11/21/18
Field Prep: Refer to COC

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	45		21-120
Phenol-d6	33		10-120
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	98		15-120
2,4,6-Tribromophenol	86		10-120
4-Terphenyl-d14	74		41-149

SAMPLE RESULTS

Lab ID: L1847957-02
Client ID: PSD-102
Sample Location: BELFAST, ME

Date Collected: 11/21/18 07:30
Date Received: 11/21/18
Field Prep: Refer to COC

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D
Analytical Date: 11/28/18 13:38
Analyst: JG

Extraction Method: EPA 3510C
Extraction Date: 11/26/18 00:12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/l	2.0	--	1
Benzidine	ND		ug/l	20	--	1
1,2,4-Trichlorobenzene	ND		ug/l	5.0	--	1
Hexachlorobenzene	ND		ug/l	2.0	--	1
Bis(2-chloroethyl)ether	ND		ug/l	2.0	--	1
2-Chloronaphthalene	ND		ug/l	2.0	--	1
1,2-Dichlorobenzene	ND		ug/l	2.0	--	1
1,3-Dichlorobenzene	ND		ug/l	2.0	--	1
1,4-Dichlorobenzene	ND		ug/l	2.0	--	1
3,3'-Dichlorobenzidine	ND		ug/l	5.0	--	1
2,4-Dinitrotoluene	ND		ug/l	5.0	--	1
2,6-Dinitrotoluene	ND		ug/l	5.0	--	1
Azobenzene	ND		ug/l	2.0	--	1
Fluoranthene	ND		ug/l	2.0	--	1
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	--	1
4-Bromophenyl phenyl ether	ND		ug/l	2.0	--	1
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	--	1
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	--	1
Hexachlorobutadiene	ND		ug/l	2.0	--	1
Hexachlorocyclopentadiene	ND		ug/l	20	--	1
Hexachloroethane	ND		ug/l	2.0	--	1
Isophorone	ND		ug/l	5.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
Nitrobenzene	ND		ug/l	2.0	--	1
NDPA/DPA	ND		ug/l	2.0	--	1
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	--	1
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--	1
Butyl benzyl phthalate	ND		ug/l	5.0	--	1

SAMPLE RESULTS

Lab ID: L1847957-02
Client ID: PSD-102
Sample Location: BELFAST, ME

Date Collected: 11/21/18 07:30
Date Received: 11/21/18
Field Prep: Refer to COC

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Di-n-butylphthalate	ND		ug/l	5.0	--	1
Di-n-octylphthalate	ND		ug/l	5.0	--	1
Diethyl phthalate	ND		ug/l	5.0	--	1
Dimethyl phthalate	ND		ug/l	5.0	--	1
Benzo(a)anthracene	ND		ug/l	2.0	--	1
Benzo(a)pyrene	ND		ug/l	2.0	--	1
Benzo(b)fluoranthene	ND		ug/l	2.0	--	1
Benzo(k)fluoranthene	ND		ug/l	2.0	--	1
Chrysene	ND		ug/l	2.0	--	1
Acenaphthylene	ND		ug/l	2.0	--	1
Anthracene	ND		ug/l	2.0	--	1
Benzo(ghi)perylene	ND		ug/l	2.0	--	1
Fluorene	ND		ug/l	2.0	--	1
Phenanthrene	ND		ug/l	2.0	--	1
Dibenzo(a,h)anthracene	ND		ug/l	2.0	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	2.0	--	1
Pyrene	ND		ug/l	2.0	--	1
Biphenyl	ND		ug/l	2.0	--	1
Aniline	ND		ug/l	2.0	--	1
4-Chloroaniline	ND		ug/l	5.0	--	1
1-Methylnaphthalene	ND		ug/l	2.0	--	1
2-Nitroaniline	ND		ug/l	5.0	--	1
3-Nitroaniline	ND		ug/l	5.0	--	1
4-Nitroaniline	ND		ug/l	5.0	--	1
Dibenzofuran	ND		ug/l	2.0	--	1
2-Methylnaphthalene	ND		ug/l	2.0	--	1
n-Nitrosodimethylamine	ND		ug/l	2.0	--	1
2,4,6-Trichlorophenol	ND		ug/l	5.0	--	1
p-Chloro-m-cresol	ND		ug/l	2.0	--	1
2-Chlorophenol	ND		ug/l	2.0	--	1
2,4-Dichlorophenol	ND		ug/l	5.0	--	1
2,4-Dimethylphenol	ND		ug/l	5.0	--	1
2-Nitrophenol	ND		ug/l	10	--	1
4-Nitrophenol	ND		ug/l	10	--	1
2,4-Dinitrophenol	ND		ug/l	20	--	1
4,6-Dinitro-o-cresol	ND		ug/l	10	--	1
Pentachlorophenol	ND		ug/l	10	--	1

SAMPLE RESULTS

Lab ID:	L1847957-02	Date Collected:	11/21/18 07:30
Client ID:	PSD-102	Date Received:	11/21/18
Sample Location:	BELFAST, ME	Field Prep:	Refer to COC

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Phenol	ND		ug/l	5.0	--	1
2-Methylphenol	ND		ug/l	5.0	--	1
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	--	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	--	1
Benzoic Acid	ND		ug/l	50	--	1
Benzyl Alcohol	ND		ug/l	2.0	--	1
Carbazole	ND		ug/l	2.0	--	1
Pyridine	ND		ug/l	3.5	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	50		21-120
Phenol-d6	31		10-120
Nitrobenzene-d5	83		23-120
2-Fluorobiphenyl	91		15-120
2,4,6-Tribromophenol	102		10-120
4-Terphenyl-d14	96		41-149

SAMPLE RESULTS

Lab ID: L1847957-02
Client ID: PSD-102
Sample Location: BELFAST, ME

Date Collected: 11/21/18 07:30
Date Received: 11/21/18
Field Prep: Refer to COC

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 11/29/18 15:32
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 11/26/18 00:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	ND		ug/l	0.10	--	1
2-Chloronaphthalene	ND		ug/l	0.20	--	1
Fluoranthene	ND		ug/l	0.10	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	0.10	--	1
Benzo(a)anthracene	ND		ug/l	0.10	--	1
Benzo(a)pyrene	ND		ug/l	0.10	--	1
Benzo(b)fluoranthene	ND		ug/l	0.10	--	1
Benzo(k)fluoranthene	ND		ug/l	0.10	--	1
Chrysene	ND		ug/l	0.10	--	1
Acenaphthylene	ND		ug/l	0.10	--	1
Anthracene	ND		ug/l	0.10	--	1
Benzo(ghi)perylene	ND		ug/l	0.10	--	1
Fluorene	ND		ug/l	0.10	--	1
Phenanthrene	ND		ug/l	0.10	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.10	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	--	1
Pyrene	ND		ug/l	0.10	--	1
1-Methylnaphthalene	ND		ug/l	0.10	--	1
2-Methylnaphthalene	ND		ug/l	0.10	--	1
Pentachlorophenol	ND		ug/l	0.80	--	1
Hexachlorobenzene	ND		ug/l	0.80	--	1
Hexachloroethane	ND		ug/l	0.80	--	1

SAMPLE RESULTS

Lab ID: L1847957-02
Client ID: PSD-102
Sample Location: BELFAST, ME

Date Collected: 11/21/18 07:30
Date Received: 11/21/18
Field Prep: Refer to COC

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	34		21-120
Phenol-d6	28		10-120
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	94		15-120
2,4,6-Tribromophenol	76		10-120
4-Terphenyl-d14	75		41-149

SAMPLE RESULTS

Lab ID: L1847957-04
Client ID: DRX-102
Sample Location: BELFAST, ME

Date Collected: 11/21/18 08:15
Date Received: 11/21/18
Field Prep: Refer to COC

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D
Analytical Date: 11/28/18 14:04
Analyst: JG

Extraction Method: EPA 3510C
Extraction Date: 11/26/18 00:12

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Acenaphthene	ND		ug/l	2.0	--	1
Benzidine	ND		ug/l	20	--	1
1,2,4-Trichlorobenzene	ND		ug/l	5.0	--	1
Hexachlorobenzene	ND		ug/l	2.0	--	1
Bis(2-chloroethyl)ether	ND		ug/l	2.0	--	1
2-Chloronaphthalene	ND		ug/l	2.0	--	1
1,2-Dichlorobenzene	ND		ug/l	2.0	--	1
1,3-Dichlorobenzene	ND		ug/l	2.0	--	1
1,4-Dichlorobenzene	ND		ug/l	2.0	--	1
3,3'-Dichlorobenzidine	ND		ug/l	5.0	--	1
2,4-Dinitrotoluene	ND		ug/l	5.0	--	1
2,6-Dinitrotoluene	ND		ug/l	5.0	--	1
Azobenzene	ND		ug/l	2.0	--	1
Fluoranthene	ND		ug/l	2.0	--	1
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	--	1
4-Bromophenyl phenyl ether	ND		ug/l	2.0	--	1
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	--	1
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	--	1
Hexachlorobutadiene	ND		ug/l	2.0	--	1
Hexachlorocyclopentadiene	ND		ug/l	20	--	1
Hexachloroethane	ND		ug/l	2.0	--	1
Isophorone	ND		ug/l	5.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
Nitrobenzene	ND		ug/l	2.0	--	1
NDPA/DPA	ND		ug/l	2.0	--	1
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	--	1
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--	1
Butyl benzyl phthalate	ND		ug/l	5.0	--	1

SAMPLE RESULTS

Lab ID: L1847957-04
Client ID: DRX-102
Sample Location: BELFAST, ME
Date Collected: 11/21/18 08:15
Date Received: 11/21/18
Field Prep: Refer to COC

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Di-n-butylphthalate	ND		ug/l	5.0	--	1
Di-n-octylphthalate	ND		ug/l	5.0	--	1
Diethyl phthalate	ND		ug/l	5.0	--	1
Dimethyl phthalate	ND		ug/l	5.0	--	1
Benzo(a)anthracene	ND		ug/l	2.0	--	1
Benzo(a)pyrene	ND		ug/l	2.0	--	1
Benzo(b)fluoranthene	ND		ug/l	2.0	--	1
Benzo(k)fluoranthene	ND		ug/l	2.0	--	1
Chrysene	ND		ug/l	2.0	--	1
Acenaphthylene	ND		ug/l	2.0	--	1
Anthracene	ND		ug/l	2.0	--	1
Benzo(ghi)perylene	ND		ug/l	2.0	--	1
Fluorene	ND		ug/l	2.0	--	1
Phenanthrene	ND		ug/l	2.0	--	1
Dibenzo(a,h)anthracene	ND		ug/l	2.0	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	2.0	--	1
Pyrene	ND		ug/l	2.0	--	1
Biphenyl	ND		ug/l	2.0	--	1
Aniline	ND		ug/l	2.0	--	1
4-Chloroaniline	ND		ug/l	5.0	--	1
1-Methylnaphthalene	ND		ug/l	2.0	--	1
2-Nitroaniline	ND		ug/l	5.0	--	1
3-Nitroaniline	ND		ug/l	5.0	--	1
4-Nitroaniline	ND		ug/l	5.0	--	1
Dibenzofuran	ND		ug/l	2.0	--	1
2-Methylnaphthalene	ND		ug/l	2.0	--	1
n-Nitrosodimethylamine	ND		ug/l	2.0	--	1
2,4,6-Trichlorophenol	ND		ug/l	5.0	--	1
p-Chloro-m-cresol	ND		ug/l	2.0	--	1
2-Chlorophenol	ND		ug/l	2.0	--	1
2,4-Dichlorophenol	ND		ug/l	5.0	--	1
2,4-Dimethylphenol	ND		ug/l	5.0	--	1
2-Nitrophenol	ND		ug/l	10	--	1
4-Nitrophenol	ND		ug/l	10	--	1
2,4-Dinitrophenol	ND		ug/l	20	--	1
4,6-Dinitro-o-cresol	ND		ug/l	10	--	1
Pentachlorophenol	ND		ug/l	10	--	1

SAMPLE RESULTS

Lab ID:	L1847957-04	Date Collected:	11/21/18 08:15
Client ID:	DRX-102	Date Received:	11/21/18
Sample Location:	BELFAST, ME	Field Prep:	Refer to COC

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Phenol	ND		ug/l	5.0	--	1
2-Methylphenol	ND		ug/l	5.0	--	1
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	--	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	--	1
Benzoic Acid	ND		ug/l	50	--	1
Benzyl Alcohol	ND		ug/l	2.0	--	1
Carbazole	ND		ug/l	2.0	--	1
Pyridine	ND		ug/l	3.5	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	58		21-120
Phenol-d6	42		10-120
Nitrobenzene-d5	84		23-120
2-Fluorobiphenyl	87		15-120
2,4,6-Tribromophenol	102		10-120
4-Terphenyl-d14	91		41-149

SAMPLE RESULTS

Lab ID: L1847957-04
Client ID: DRX-102
Sample Location: BELFAST, ME

Date Collected: 11/21/18 08:15
Date Received: 11/21/18
Field Prep: Refer to COC

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 11/29/18 16:03
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 11/26/18 00:15

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	ND		ug/l	0.10	--	1
2-Chloronaphthalene	ND		ug/l	0.20	--	1
Fluoranthene	ND		ug/l	0.10	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	0.10	--	1
Benzo(a)anthracene	ND		ug/l	0.10	--	1
Benzo(a)pyrene	ND		ug/l	0.10	--	1
Benzo(b)fluoranthene	ND		ug/l	0.10	--	1
Benzo(k)fluoranthene	ND		ug/l	0.10	--	1
Chrysene	ND		ug/l	0.10	--	1
Acenaphthylene	ND		ug/l	0.10	--	1
Anthracene	ND		ug/l	0.10	--	1
Benzo(ghi)perylene	ND		ug/l	0.10	--	1
Fluorene	ND		ug/l	0.10	--	1
Phenanthrene	ND		ug/l	0.10	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.10	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	--	1
Pyrene	ND		ug/l	0.10	--	1
1-Methylnaphthalene	ND		ug/l	0.10	--	1
2-Methylnaphthalene	ND		ug/l	0.10	--	1
Pentachlorophenol	ND		ug/l	0.80	--	1
Hexachlorobenzene	ND		ug/l	0.80	--	1
Hexachloroethane	ND		ug/l	0.80	--	1

Project Name:	NORDIC AQUAFARMS	**Lab Number:**	L1847957
Project Number:	171.05027.003	**Report Date:**	11/30/18

SAMPLE RESULTS

Lab ID:	L1847957-04	Date Collected:	11/21/18 08:15
Client ID:	DRX-102	Date Received:	11/21/18
Sample Location:	BELFAST, ME	Field Prep:	Refer to COC

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Semivolatile Organics by GC/MS-SIM - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	41		21-120
Phenol-d6	31		10-120
Nitrobenzene-d5	87		23-120
2-Fluorobiphenyl	94		15-120
2,4,6-Tribromophenol	82		10-120
4-Terphenyl-d14	73		41-149

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 11/27/18 11:36
Analyst: ALS

Extraction Method: EPA 3510C
Extraction Date: 11/25/18 19:33

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-02,04 Batch: WG1182353-1					
Acenaphthene	ND		ug/l	2.0	--
Benzidine	ND		ug/l	20	--
1,2,4-Trichlorobenzene	ND		ug/l	5.0	--
Hexachlorobenzene	ND		ug/l	2.0	--
Bis(2-chloroethyl)ether	ND		ug/l	2.0	--
2-Chloronaphthalene	ND		ug/l	2.0	--
1,2-Dichlorobenzene	ND		ug/l	2.0	--
1,3-Dichlorobenzene	ND		ug/l	2.0	--
1,4-Dichlorobenzene	ND		ug/l	2.0	--
3,3'-Dichlorobenzidine	ND		ug/l	5.0	--
2,4-Dinitrotoluene	ND		ug/l	5.0	--
2,6-Dinitrotoluene	ND		ug/l	5.0	--
Azobenzene	ND		ug/l	2.0	--
Fluoranthene	ND		ug/l	2.0	--
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	--
4-Bromophenyl phenyl ether	ND		ug/l	2.0	--
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	--
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	--
Hexachlorobutadiene	ND		ug/l	2.0	--
Hexachlorocyclopentadiene	ND		ug/l	20	--
Hexachloroethane	ND		ug/l	2.0	--
Isophorone	ND		ug/l	5.0	--
Naphthalene	ND		ug/l	2.0	--
Nitrobenzene	ND		ug/l	2.0	--
NDPA/DPA	ND		ug/l	2.0	--
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	--
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--
Butyl benzyl phthalate	ND		ug/l	5.0	--
Di-n-butylphthalate	ND		ug/l	5.0	--

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 11/27/18 11:36
Analyst: ALS

Extraction Method: EPA 3510C
Extraction Date: 11/25/18 19:33

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-02,04 Batch: WG1182353-1					
Di-n-octylphthalate	ND		ug/l	5.0	--
Diethyl phthalate	ND		ug/l	5.0	--
Dimethyl phthalate	ND		ug/l	5.0	--
Benzo(a)anthracene	ND		ug/l	2.0	--
Benzo(a)pyrene	ND		ug/l	2.0	--
Benzo(b)fluoranthene	ND		ug/l	2.0	--
Benzo(k)fluoranthene	ND		ug/l	2.0	--
Chrysene	ND		ug/l	2.0	--
Acenaphthylene	ND		ug/l	2.0	--
Anthracene	ND		ug/l	2.0	--
Benzo(ghi)perylene	ND		ug/l	2.0	--
Fluorene	ND		ug/l	2.0	--
Phenanthrene	ND		ug/l	2.0	--
Dibenzo(a,h)anthracene	ND		ug/l	2.0	--
Indeno(1,2,3-cd)pyrene	ND		ug/l	2.0	--
Pyrene	ND		ug/l	2.0	--
Biphenyl	ND		ug/l	2.0	--
Aniline	ND		ug/l	2.0	--
4-Chloroaniline	ND		ug/l	5.0	--
1-Methylnaphthalene	ND		ug/l	2.0	--
2-Nitroaniline	ND		ug/l	5.0	--
3-Nitroaniline	ND		ug/l	5.0	--
4-Nitroaniline	ND		ug/l	5.0	--
Dibenzofuran	ND		ug/l	2.0	--
2-Methylnaphthalene	ND		ug/l	2.0	--
n-Nitrosodimethylamine	ND		ug/l	2.0	--
2,4,6-Trichlorophenol	ND		ug/l	5.0	--
p-Chloro-m-cresol	ND		ug/l	2.0	--
2-Chlorophenol	ND		ug/l	2.0	--

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 11/27/18 11:36
Analyst: ALS

Extraction Method: EPA 3510C
Extraction Date: 11/25/18 19:33

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01-02,04 Batch: WG1182353-1					
2,4-Dichlorophenol	ND		ug/l	5.0	--
2,4-Dimethylphenol	ND		ug/l	5.0	--
2-Nitrophenol	ND		ug/l	10	--
4-Nitrophenol	ND		ug/l	10	--
2,4-Dinitrophenol	ND		ug/l	20	--
4,6-Dinitro-o-cresol	ND		ug/l	10	--
Pentachlorophenol	ND		ug/l	10	--
Phenol	ND		ug/l	5.0	--
2-Methylphenol	ND		ug/l	5.0	--
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	--
2,4,5-Trichlorophenol	ND		ug/l	5.0	--
Benzoic Acid	ND		ug/l	50	--
Benzyl Alcohol	ND		ug/l	2.0	--
Carbazole	ND		ug/l	2.0	--
Pyridine	ND		ug/l	3.5	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	44		21-120
Phenol-d6	30		10-120
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	85		15-120
2,4,6-Tribromophenol	79		10-120
4-Terphenyl-d14	81		41-149

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 11/27/18 21:31
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 11/25/18 19:35

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01-02,04 Batch: WG1182354-1					
Acenaphthene	ND		ug/l	0.10	--
2-Chloronaphthalene	ND		ug/l	0.20	--
Fluoranthene	ND		ug/l	0.10	--
Hexachlorobutadiene	ND		ug/l	0.50	--
Naphthalene	ND		ug/l	0.10	--
Benzo(a)anthracene	ND		ug/l	0.10	--
Benzo(a)pyrene	ND		ug/l	0.10	--
Benzo(b)fluoranthene	ND		ug/l	0.10	--
Benzo(k)fluoranthene	ND		ug/l	0.10	--
Chrysene	ND		ug/l	0.10	--
Acenaphthylene	ND		ug/l	0.10	--
Anthracene	ND		ug/l	0.10	--
Benzo(ghi)perylene	ND		ug/l	0.10	--
Fluorene	ND		ug/l	0.10	--
Phenanthrene	ND		ug/l	0.10	--
Dibenzo(a,h)anthracene	ND		ug/l	0.10	--
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	--
Pyrene	ND		ug/l	0.10	--
1-Methylnaphthalene	ND		ug/l	0.10	--
2-Methylnaphthalene	ND		ug/l	0.10	--
Pentachlorophenol	ND		ug/l	0.80	--
Hexachlorobenzene	ND		ug/l	0.80	--
Hexachloroethane	ND		ug/l	0.80	--

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 11/27/18 21:31
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 11/25/18 19:35

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01-02,04 Batch: WG1182354-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	50		21-120
Phenol-d6	38		10-120
Nitrobenzene-d5	93		23-120
2-Fluorobiphenyl	115		15-120
2,4,6-Tribromophenol	87		10-120
4-Terphenyl-d14	85		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: NORDIC AQUAFARMS

Project Number: 171.05027.003

Lab Number: L1847957

Report Date: 11/30/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02,04 Batch: WG1182353-2 WG1182353-3								
Acenaphthene	63		66		37-111	5		30
Benzidine	13		13		10-75	0		30
1,2,4-Trichlorobenzene	66		66		39-98	0		30
Hexachlorobenzene	67		70		40-140	4		30
Bis(2-chloroethyl)ether	61		62		40-140	2		30
2-Chloronaphthalene	74		77		40-140	4		30
1,2-Dichlorobenzene	60		61		40-140	2		30
1,3-Dichlorobenzene	59		59		40-140	0		30
1,4-Dichlorobenzene	58		60		36-97	3		30
3,3'-Dichlorobenzidine	68		74		40-140	8		30
2,4-Dinitrotoluene	78		83		48-143	6		30
2,6-Dinitrotoluene	88		92		40-140	4		30
Azobenzene	64		66		40-140	3		30
Fluoranthene	78		83		40-140	6		30
4-Chlorophenyl phenyl ether	67		71		40-140	6		30
4-Bromophenyl phenyl ether	69		72		40-140	4		30
Bis(2-chloroisopropyl)ether	95		97		40-140	2		30
Bis(2-chloroethoxy)methane	70		71		40-140	1		30
Hexachlorobutadiene	61		63		40-140	3		30
Hexachlorocyclopentadiene	48		50		40-140	4		30
Hexachloroethane	55		56		40-140	2		30
Isophorone	72		74		40-140	3		30
Naphthalene	66		68		40-140	3		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: NORDIC AQUAFARMS

Project Number: 171.05027.003

Lab Number: L1847957

Report Date: 11/30/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02,04 Batch: WG1182353-2 WG1182353-3								
Nitrobenzene	66		68		40-140	3		30
NDPA/DPA	71		74		40-140	4		30
n-Nitrosodi-n-propylamine	71		72		29-132	1		30
Bis(2-ethylhexyl)phthalate	86		89		40-140	3		30
Butyl benzyl phthalate	86		90		40-140	5		30
Di-n-butylphthalate	78		83		40-140	6		30
Di-n-octylphthalate	91		95		40-140	4		30
Diethyl phthalate	72		76		40-140	5		30
Dimethyl phthalate	83		87		40-140	5		30
Benzo(a)anthracene	71		74		40-140	4		30
Benzo(a)pyrene	79		83		40-140	5		30
Benzo(b)fluoranthene	82		86		40-140	5		30
Benzo(k)fluoranthene	73		77		40-140	5		30
Chrysene	71		75		40-140	5		30
Acenaphthylene	78		81		45-123	4		30
Anthracene	73		77		40-140	5		30
Benzo(ghi)perylene	73		76		40-140	4		30
Fluorene	68		71		40-140	4		30
Phenanthrene	70		75		40-140	7		30
Dibenzo(a,h)anthracene	75		78		40-140	4		30
Indeno(1,2,3-cd)pyrene	78		80		40-140	3		30
Pyrene	76		81		26-127	6		30
Biphenyl	77		80		40-140	4		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: NORDIC AQUAFARMS
Lab Number: L1847957
Project Number: 171.05027.003
Report Date: 11/30/18

Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02,04 Batch: WG1182353-2 WG1182353-3

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Aniline	**35**	Q	**36**	Q	40-140	3		30
4-Chloroaniline	60		60		40-140	0		30
1-Methylnaphthalene	68		70		41-103	3		30
2-Nitroaniline	90		94		52-143	4		30
3-Nitroaniline	61		64		25-145	5		30
4-Nitroaniline	73		78		51-143	7		30
Dibenzofuran	65		68		40-140	5		30
2-Methylnaphthalene	69		72		40-140	4		30
n-Nitrosodimethylamine	36		35		22-74	3		30
2,4,6-Trichlorophenol	85		88		30-130	3		30
p-Chloro-m-cresol	80		82		23-97	2		30
2-Chlorophenol	66		67		27-123	2		30
2,4-Dichlorophenol	81		80		30-130	1		30
2,4-Dimethylphenol	75		76		30-130	1		30
2-Nitrophenol	82		85		30-130	4		30
4-Nitrophenol	43		44		10-80	2		30
2,4-Dinitrophenol	77		79		20-130	3		30
4,6-Dinitro-o-cresol	78		82		20-164	5		30
Pentachlorophenol	60		62		9-103	3		30
Phenol	33		33		12-110	0		30
2-Methylphenol	60		60		30-130	0		30
3-Methylphenol/4-Methylphenol	62		63		30-130	2		30
2,4,5-Trichlorophenol	87		89		30-130	2		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: NORDIC AQUAFARMS

Project Number: 171.05027.003

Lab Number: L1847957

Report Date: 11/30/18

Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01-02,04 Batch: WG1182353-2 WG1182353-3

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Benzoic Acid	32		30		10-164	6		30
Benzyl Alcohol	61		62		26-116	2		30
Carbazole	74		78		55-144	5		30
Pyridine	15		14		10-66	7		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	43		43		21-120
Phenol-d6	30		31		10-120
Nitrobenzene-d5	69		71		23-120
2-Fluorobiphenyl	74		77		15-120
2,4,6-Tribromophenol	71		78		10-120
4-Terphenyl-d14	67		73		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: NORDIC AQUAFARMS
Lab Number: L1847957
Project Number: 171.05027.003
Report Date: 11/30/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-02,04 Batch: WG1182354-2 WG1182354-3								
Acenaphthene	88		78		40-140	12		40
2-Chloronaphthalene	71		64		40-140	10		40
Fluoranthene	96		82		40-140	16		40
Hexachlorobutadiene	59		57		40-140	3		40
Naphthalene	62		59		40-140	5		40
Benzo(a)anthracene	93		79		40-140	16		40
Benzo(a)pyrene	105		89		40-140	16		40
Benzo(b)fluoranthene	105		85		40-140	21		40
Benzo(k)fluoranthene	100		91		40-140	9		40
Chrysene	92		80		40-140	14		40
Acenaphthylene	73		65		40-140	12		40
Anthracene	98		85		40-140	14		40
Benzo(ghi)perylene	110		92		40-140	18		40
Fluorene	93		82		40-140	13		40
Phenanthrene	107		92		40-140	15		40
Dibenzo(a,h)anthracene	112		96		40-140	15		40
Indeno(1,2,3-cd)pyrene	111		94		40-140	17		40
Pyrene	97		84		40-140	14		40
1-Methylnaphthalene	67		61		40-140	9		40
2-Methylnaphthalene	67		61		40-140	9		40
Pentachlorophenol	100		85		40-140	16		40
Hexachlorobenzene	90		80		40-140	12		40
Hexachloroethane	69		68		40-140	1		40

Lab Control Sample Analysis

Batch Quality Control

Project Name: NORDIC AQUAFARMS

Project Number: 171.05027.003

Lab Number: L1847957

Report Date: 11/30/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01-02,04 Batch: WG1182354-2 WG1182354-3								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	47		46		21-120
Phenol-d6	36		34		10-120
Nitrobenzene-d5	86		79		23-120
2-Fluorobiphenyl	72		64		15-120
2,4,6-Tribromophenol	87		78		10-120
4-Terphenyl-d14	77		70		41-149

METALS

Project Name: NORDIC AQUAFARMS **Lab Number:** L1847957
Project Number: 171.05027.003 **Report Date:** 11/30/18

SAMPLE RESULTS

Lab ID: L1847957-01 Date Collected: 11/21/18 08:00
Client ID: PSD-101 Date Received: 11/21/18
Sample Location: BELFAST, ME Field Prep: Refer to COC

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Arsenic, Dissolved	ND		mg/l	0.005	--	1	11/29/18 12:50	11/29/18 18:46	EPA 3005A	1,6010D	MC
Barium, Dissolved	ND		mg/l	0.010	--	1	11/29/18 12:50	11/29/18 18:46	EPA 3005A	1,6010D	MC
Cadmium, Dissolved	ND		mg/l	0.005	--	1	11/29/18 12:50	11/29/18 18:46	EPA 3005A	1,6010D	MC
Chromium, Dissolved	ND		mg/l	0.010	--	1	11/29/18 12:50	11/29/18 18:46	EPA 3005A	1,6010D	MC
Copper, Dissolved	ND		mg/l	0.010	--	1	11/29/18 12:50	11/29/18 18:46	EPA 3005A	1,6010D	MC
Lead, Dissolved	ND		mg/l	0.010	--	1	11/29/18 12:50	11/29/18 18:46	EPA 3005A	1,6010D	MC
Mercury, Dissolved	ND		mg/l	0.00020	--	1	11/29/18 11:54	11/30/18 00:28	EPA 7470A	1,7470A	EA
Selenium, Dissolved	ND		mg/l	0.010	--	1	11/29/18 12:50	11/29/18 18:46	EPA 3005A	1,6010D	MC
Silver, Dissolved	ND		mg/l	0.007	--	1	11/29/18 12:50	11/29/18 18:46	EPA 3005A	1,6010D	MC

Project Name: NORDIC AQUAFARMS
Lab Number: L1847957
Project Number: 171.05027.003
Report Date: 11/30/18

SAMPLE RESULTS

Lab ID: L1847957-02
Client ID: PSD-102
Sample Location: BELFAST, ME
Date Collected: 11/21/18 07:30
Date Received: 11/21/18
Field Prep: Refer to COC

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Arsenic, Dissolved	0.008		mg/l	0.005	--	1	11/29/18 12:50	11/29/18 20:12	EPA 3005A	1,6010D	MC
Barium, Dissolved	0.010		mg/l	0.010	--	1	11/29/18 12:50	11/29/18 20:12	EPA 3005A	1,6010D	MC
Cadmium, Dissolved	ND		mg/l	0.005	--	1	11/29/18 12:50	11/29/18 20:12	EPA 3005A	1,6010D	MC
Chromium, Dissolved	ND		mg/l	0.010	--	1	11/29/18 12:50	11/29/18 20:12	EPA 3005A	1,6010D	MC
Copper, Dissolved	ND		mg/l	0.010	--	1	11/29/18 12:50	11/29/18 20:12	EPA 3005A	1,6010D	MC
Lead, Dissolved	ND		mg/l	0.010	--	1	11/29/18 12:50	11/29/18 20:12	EPA 3005A	1,6010D	MC
Mercury, Dissolved	ND		mg/l	0.00020	--	1	11/29/18 11:54	11/30/18 00:34	EPA 7470A	1,7470A	EA
Selenium, Dissolved	ND		mg/l	0.010	--	1	11/29/18 12:50	11/29/18 20:12	EPA 3005A	1,6010D	MC
Silver, Dissolved	ND		mg/l	0.007	--	1	11/29/18 12:50	11/29/18 20:12	EPA 3005A	1,6010D	MC

Project Name: NORDIC AQUAFARMS
Lab Number: L1847957
Project Number: 171.05027.003
Report Date: 11/30/18

SAMPLE RESULTS

Lab ID: L1847957-04
Client ID: DRX-102
Sample Location: BELFAST, ME
Date Collected: 11/21/18 08:15
Date Received: 11/21/18
Field Prep: Refer to COC

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab											
Arsenic, Dissolved	0.011		mg/l	0.005	--	1	11/29/18 12:50	11/29/18 20:17	EPA 3005A	1,6010D	MC
Barium, Dissolved	ND		mg/l	0.010	--	1	11/29/18 12:50	11/29/18 20:17	EPA 3005A	1,6010D	MC
Cadmium, Dissolved	ND		mg/l	0.005	--	1	11/29/18 12:50	11/29/18 20:17	EPA 3005A	1,6010D	MC
Chromium, Dissolved	ND		mg/l	0.010	--	1	11/29/18 12:50	11/29/18 20:17	EPA 3005A	1,6010D	MC
Copper, Dissolved	ND		mg/l	0.010	--	1	11/29/18 12:50	11/29/18 20:17	EPA 3005A	1,6010D	MC
Lead, Dissolved	ND		mg/l	0.010	--	1	11/29/18 12:50	11/29/18 20:17	EPA 3005A	1,6010D	MC
Mercury, Dissolved	ND		mg/l	0.00020	--	1	11/29/18 11:54	11/30/18 00:36	EPA 7470A	1,7470A	EA
Selenium, Dissolved	ND		mg/l	0.010	--	1	11/29/18 12:50	11/29/18 20:17	EPA 3005A	1,6010D	MC
Silver, Dissolved	ND		mg/l	0.007	--	1	11/29/18 12:50	11/29/18 20:17	EPA 3005A	1,6010D	MC

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01-02,04 Batch: WG1183816-1										
Arsenic, Dissolved	ND		mg/l	0.005	--	1	11/29/18 12:50	11/29/18 18:11	1,6010D	MC
Barium, Dissolved	ND		mg/l	0.010	--	1	11/29/18 12:50	11/29/18 18:11	1,6010D	MC
Cadmium, Dissolved	ND		mg/l	0.005	--	1	11/29/18 12:50	11/29/18 18:11	1,6010D	MC
Chromium, Dissolved	ND		mg/l	0.010	--	1	11/29/18 12:50	11/29/18 18:11	1,6010D	MC
Copper, Dissolved	ND		mg/l	0.010	--	1	11/29/18 12:50	11/29/18 18:11	1,6010D	MC
Lead, Dissolved	ND		mg/l	0.010	--	1	11/29/18 12:50	11/29/18 18:11	1,6010D	MC
Selenium, Dissolved	ND		mg/l	0.010	--	1	11/29/18 12:50	11/29/18 18:11	1,6010D	MC
Silver, Dissolved	ND		mg/l	0.007	--	1	11/29/18 12:50	11/29/18 18:11	1,6010D	MC

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01-02,04 Batch: WG1183873-1										
Mercury, Dissolved	ND		mg/l	0.00020	--	1	11/29/18 11:54	11/30/18 00:21	1,7470A	EA

Prep Information

Digestion Method: EPA 7470A

Lab Control Sample Analysis

Batch Quality Control

Project Name: NORDIC AQUAFARMS
Lab Number: L1847957
Project Number: 171.05027.003
Report Date: 11/30/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01-02,04 Batch: WG1183816-2								
Arsenic, Dissolved	98		-		80-120	-		
Barium, Dissolved	100		-		80-120	-		
Cadmium, Dissolved	104		-		80-120	-		
Chromium, Dissolved	101		-		80-120	-		
Copper, Dissolved	102		-		80-120	-		
Lead, Dissolved	94		-		80-120	-		
Selenium, Dissolved	103		-		80-120	-		
Silver, Dissolved	97		-		80-120	-		
Dissolved Metals - Mansfield Lab Associated sample(s): 01-02,04 Batch: WG1183873-2								
Mercury, Dissolved	111		-		80-120	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: NORDIC AQUAFARMS
Project Number: 171.05027.003

Lab Number: L1847957
Report Date: 11/30/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01-02,04 QC Batch ID: WG1183816-3 QC Sample: L1847957-01 Client ID: PSD-101												
Arsenic, Dissolved	ND	0.12	0.119	99		-	-		75-125	-		20
Barium, Dissolved	ND	2	2.01	100		-	-		75-125	-		20
Cadmium, Dissolved	ND	0.051	0.053	103		-	-		75-125	-		20
Chromium, Dissolved	ND	0.2	0.202	101		-	-		75-125	-		20
Copper, Dissolved	ND	0.25	0.254	102		-	-		75-125	-		20
Lead, Dissolved	ND	0.51	0.472	92		-	-		75-125	-		20
Selenium, Dissolved	ND	0.12	0.120	100		-	-		75-125	-		20
Silver, Dissolved	ND	0.05	0.048	95		-	-		75-125	-		20
Dissolved Metals - Mansfield Lab Associated sample(s): 01-02,04 QC Batch ID: WG1183873-3 QC Sample: L1847957-01 Client ID: PSD-101												
Mercury, Dissolved	ND	0.005	0.00483	97		-	-		75-125	-		20

Project Name: NORDIC AQUAFARMS
Project Number: 171.05027.003

Lab Duplicate Analysis
Batch Quality Control

Lab Number: L1847957
Report Date: 11/30/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01-02,04 QC Batch ID: WG1183816-4 QC Sample: L1847957-01 Client ID: PSD-101						
Arsenic, Dissolved	ND	ND	mg/l	NC		20
Barium, Dissolved	ND	ND	mg/l	NC		20
Cadmium, Dissolved	ND	ND	mg/l	NC		20
Chromium, Dissolved	ND	ND	mg/l	NC		20
Copper, Dissolved	ND	ND	mg/l	NC		20
Lead, Dissolved	ND	ND	mg/l	NC		20
Selenium, Dissolved	ND	ND	mg/l	NC		20
Silver, Dissolved	ND	ND	mg/l	NC		20
Dissolved Metals - Mansfield Lab Associated sample(s): 01-02,04 QC Batch ID: WG1183873-4 QC Sample: L1847957-01 Client ID: PSD-101						
Mercury, Dissolved	ND	ND	mg/l	NC		20

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	*Custody Seal*
A	Absent

Container Information

Container ID	*Container Type*	*Cooler*	*Initial pH*	*Final pH*	*Temp deg C*	*Pres*	*Seal*	*Frozen Date/Time*	*Analysis(*)*
L1847957-01A	Vial HCl preserved	A	NA		3.6	Y	Absent		ME-8260(14)
L1847957-01B	Vial HCl preserved	A	NA		3.6	Y	Absent		ME-8260(14)
L1847957-01C	Vial HCl preserved	A	NA		3.6	Y	Absent		ME-8260(14)
L1847957-01D	Plastic 250ml HNO3 preserved	A	<2	<2	3.6	Y	Absent		PB-SI(180),BA-SI(180),AG-SI(180),AS-SI(180),CU-SI(180),CD-SI(180),CR-SI(180),HG-S(28),SE-SI(180)
L1847957-01E	Plastic 250ml HNO3 preserved	A	<2	<2	3.6	Y	Absent		HOLD-METAL-TOTAL(180)
L1847957-01F	Amber 1000ml unpreserved	A	7	7	3.6	Y	Absent		8270TCL(7),8270TCL-SIM(7)
L1847957-01G	Amber 1000ml unpreserved	A	7	7	3.6	Y	Absent		8270TCL(7),8270TCL-SIM(7)
L1847957-02A	Vial HCl preserved	A	NA		3.6	Y	Absent		ME-8260(14)
L1847957-02B	Vial HCl preserved	A	NA		3.6	Y	Absent		ME-8260(14)
L1847957-02C	Vial HCl preserved	A	NA		3.6	Y	Absent		ME-8260(14)
L1847957-02D	Plastic 250ml HNO3 preserved	A	<2	<2	3.6	Y	Absent		PB-SI(180),BA-SI(180),AG-SI(180),AS-SI(180),CU-SI(180),CD-SI(180),CR-SI(180),HG-S(28),SE-SI(180)
L1847957-02E	Plastic 250ml HNO3 preserved	A	<2	<2	3.6	Y	Absent		HOLD-METAL-TOTAL(180)
L1847957-02F	Amber 1000ml unpreserved	A	7	7	3.6	Y	Absent		8270TCL(7),8270TCL-SIM(7)
L1847957-02G	Amber 1000ml unpreserved	A	7	7	3.6	Y	Absent		8270TCL(7),8270TCL-SIM(7)
L1847957-03A	Vial HCl preserved	A	NA		3.6	Y	Absent		HOLD-8260(14)
L1847957-03B	Vial HCl preserved	A	NA		3.6	Y	Absent		HOLD-8260(14)
L1847957-03C	Vial HCl preserved	A	NA		3.6	Y	Absent		HOLD-8260(14)
L1847957-03D	Plastic 250ml HNO3 preserved	A	<2	<2	3.6	Y	Absent		HOLD-METAL-DISSOLVED(180)
L1847957-03E	Amber 1000ml unpreserved	A	7	7	3.6	Y	Absent		HOLD-8270(7)
L1847957-03F	Amber 1000ml unpreserved	A	7	7	3.6	Y	Absent		HOLD-8270(7)
L1847957-04A	Vial HCl preserved	A	NA		3.6	Y	Absent		ME-8260(14)

*Values in parentheses indicate holding time in days

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L1847957-04B	Vial HCl preserved	A	NA		3.6	Y	Absent		ME-8260(14)
L1847957-04C	Vial HCl preserved	A	NA		3.6	Y	Absent		ME-8260(14)
L1847957-04D	Plastic 250ml HNO3 preserved	A	<2	<2	3.6	Y	Absent		PB-SI(180),BA-SI(180),AG-SI(180),AS-SI(180),CU-SI(180),CD-SI(180),CR-SI(180),HG-S(28),SE-SI(180)
L1847957-04E	Plastic 250ml HNO3 preserved	A	<2	<2	3.6	Y	Absent		HOLD-METAL-TOTAL(180)
L1847957-04F	Amber 1000ml unpreserved	A	7	7	3.6	Y	Absent		8270TCL(7),8270TCL-SIM(7)
L1847957-04G	Amber 1000ml unpreserved	A	7	7	3.6	Y	Absent		8270TCL(7),8270TCL-SIM(7)
L1847957-05A	Vial HCl preserved	A	NA		3.6	Y	Absent		HOLD-8260(14)
L1847957-05B	Vial HCl preserved	A	NA		3.6	Y	Absent		HOLD-8260(14)

*Values in parentheses indicate holding time in days

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample¿s toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Report Format: Data Usability Report

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).
C	- Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
D	- Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
E	- Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
G	- The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.
H	- The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
I	- The lower value for the two columns has been reported due to obvious interference.
M	- Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
NJ	- Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
P	- The RPD between the results for the two columns exceeds the method-specified criteria.
Q	- The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
R	- Analytical results are from sample re-analysis.
RE	- Analytical results are from sample re-extraction.
S	- Analytical results are from modified screening analysis.
J	- Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
ND	- Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

LIMITATION OF LIABILITIES

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624/624.1: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.

EPA 6860: SCM: Perchlorate

SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N**, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, EPA 1600, EPA 1603.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Fe, Pb, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 11/21/18

ALPHA Job #: L1847957

8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Client Information

Client: Ransom Consulting

Address: 112 Corporate Dr
Portsmouth, NH

Phone: 603-436-1490

Email: elizabeth.ransom@ransomenv.com
cc: drew.fuchs@ransomenv.com

Project Information

Project Name: Nordic Aquafarms

Project Location: Belfast, ME

Project #: 171.05027.003

Project Manager: Elizabeth Ransom

ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due:

Additional Project Information:

Dissolved metals were field filtered,
HOLD Total RCRA8+Li metals

Report Information - Data Deliverables

☑ ADEx ☑ EMAIL

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☐ Yes ☒ No MA MCP Analytical Methods ☐ Yes ☒ No CT RCP Analytical Methods
☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☒ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☒ No NPDES RGP
☐ Other State /Fed Program ____________ Criteria ____________

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC: ☒ 8260 ☐ 624 ☐ 524.2	SVOC: ☒ ABN ☒ PAH	METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15	METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13	EPH: ☐ Ranges & Targets ☐ Ranges Only	VPH: ☐ Ranges & Targets ☐ Ranges Only	☐ PCB ☐ PEST	TPH: ☐ Quant Only ☐ Fingerprint	Dissolved RCRA8 + Li	Total RCRA8 + Li	Sample Comments	TOTAL # BOTTLES
47957-01	PSD-101	11-21-18	8:00	GW	DRF	X	X							X	X	Hold total metals	7
02	PSD-102	"	7:30	"	"	X	X							X	X	Hold total metals	7
03	DRX-101	"	8:30	"	"	X	X							X		HOLD	6
04	DRX-102	"	8:15	"	"	X	X							X	X	Hold total metals	7
05	Trip Blank					X										HOLD	2
	Container Type					V	A							C	C		
	Preservative					B	A							P	P		

SAMPLE INFO
Filtration
☐ Field
☐ Lab to do
Preservation
☐ Lab to do

Container Type	*Preservative*
P= Plastic	A= None
A= Amber glass	B= HCl
V= Vial	C= HNO_3
G= Glass	D= H_2SO_4
B= Bacteria cup	E= NaOH
C= Cube	F= MeOH
O= Other	G= $NaHSO_4$
E= Encore	H = $Na_2S_2O_3$
D= BOD Bottle	I= Ascorbic Acid
	J = NH_4Cl
	K= Zn Acetate
	O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
	11-21-18/1530	AAL	11/21/18 15:30
AAL	11/21/18	AAL	11/21 1550
AAL	11/21 1730	11/21	0.30

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

ANALYTICAL REPORT

Lab Number:	L1834480
Client:	Ransom Consulting, Inc. 400 Commercial Street Suite 404 Portland, ME 04101-4660
ATTN:	Elizabeth Ransom
Phone:	(207) 772-2891
Project Name:	NAF BELFAST
Project Number:	171.05027.003.02
Report Date:	09/07/18

Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0574), IL (200077), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #P330-17-00196).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: NAF BELFAST
Project Number: 171.05027.003.02

Lab Number: L1834480
Report Date: 09/07/18

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1834480-01	PW-1	WATER	BELFAST, ME	08/30/18 09:00	08/30/18
L1834480-02	TRIP BLANK	WATER	BELFAST, ME	08/30/18 00:00	08/30/18

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Case Narrative (continued)

Semivolatile Organics

The WG1153022-2/-3 LCS/LCSD RPD, associated with L1834480-01, are above the acceptance criteria for benzidine (106%).

The WG1153022-3 LCS/LCSD recoveries, associated with L1834480-01, are above the individual acceptance criteria for p-chloro-m-cresol (100%) and 4-nitrophenol (82%), but within the overall method allowances. The results of the associated samples are reported.

Total Metals

The WG1154185-3 MS recovery, performed on L1834480-01, are outside the acceptance criteria for potassium (130%). A post digestion spike was performed and yielded an unacceptable recovery of 153%. The serial dilution recovery was not acceptable; therefore, this element fails the matrix test and the result reported in the native sample should be considered estimated.

The WG1154185-4 Laboratory Duplicate RPD for arsenic (23%), performed on L1834480-01, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

Alkalinity, Total

The WG1152582-3 Laboratory Duplicate RPD (16%), performed on L1834480-01, is outside the acceptance criteria. The elevated RPD has been attributed to the non-homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Cristin Walker Cristin Walker

Title: Technical Director/Representative Date: 09/07/18

ORGANICS

VOLATILES

SAMPLE RESULTS

Lab ID: L1834480-01
Client ID: PW-1
Sample Location: BELFAST, ME

Date Collected: 08/30/18 09:00
Date Received: 08/30/18
Field Prep: Refer to COC

Sample Depth:
Matrix: Water
Analytical Method: 1,8260C
Analytical Date: 09/04/18 10:41
Analyst: PK

Parameter	**Result**	**Qualifier**	**Units**	**RL**	**MDL**	**Dilution Factor**
Volatile Organics by GC/MS - Westborough Lab						
Methylene chloride	ND		ug/l	3.0	--	1
1,1-Dichloroethane	ND		ug/l	0.75	--	1
Chloroform	ND		ug/l	0.75	--	1
Carbon tetrachloride	ND		ug/l	0.50	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	0.50	--	1
1,1,2-Trichloroethane	ND		ug/l	0.75	--	1
Tetrachloroethene	ND		ug/l	0.50	--	1
Chlorobenzene	ND		ug/l	0.50	--	1
Trichlorofluoromethane	ND		ug/l	1.0	--	1
1,2-Dichloroethane	ND		ug/l	0.50	--	1
1,1,1-Trichloroethane	ND		ug/l	0.50	--	1
Bromodichloromethane	ND		ug/l	0.50	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,3-Dichloropropene, Total	ND		ug/l	0.50	--	1
1,1-Dichloropropene	ND		ug/l	1.0	--	1
Bromoform	ND		ug/l	1.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	0.75	--	1
Ethylbenzene	ND		ug/l	0.50	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	1.0	--	1
Vinyl chloride	ND		ug/l	0.20	--	1
Chloroethane	ND		ug/l	1.0	--	1
1,1-Dichloroethene	ND		ug/l	0.50	--	1
trans-1,2-Dichloroethene	ND		ug/l	0.75	--	1

SAMPLE RESULTS

Lab ID: L1834480-01
Client ID: PW-1
Sample Location: BELFAST, ME
Date Collected: 08/30/18 09:00
Date Received: 08/30/18
Field Prep: Refer to COC

Sample Depth:

Parameter	**Result**	**Qualifier**	**Units**	**RL**	**MDL**	**Dilution Factor**
Volatile Organics by GC/MS - Westborough Lab						
1,2-Dichloroethene, Total	ND		ug/l	0.50	--	1
Trichloroethene	ND		ug/l	0.50	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1
Methyl tert butyl ether	ND		ug/l	1.0	--	1
p/m-Xylene	ND		ug/l	1.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
Xylenes, Total	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	0.50	--	1
Dibromomethane	ND		ug/l	1.0	--	1
1,4-Dichlorobutane	ND		ug/l	5.0	--	1
1,2,3-Trichloropropane	ND		ug/l	1.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	1.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
Vinyl acetate	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Ethyl methacrylate	ND		ug/l	5.0	--	1
Acrylonitrile	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	1.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	1.0	--	1
1,2-Dibromoethane	ND		ug/l	1.0	--	1
1,3-Dichloropropane	ND		ug/l	1.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--	1
Bromobenzene	ND		ug/l	1.0	--	1
n-Butylbenzene	ND		ug/l	0.50	--	1
sec-Butylbenzene	ND		ug/l	0.50	--	1
tert-Butylbenzene	ND		ug/l	1.0	--	1
o-Chlorotoluene	ND		ug/l	1.0	--	1
p-Chlorotoluene	ND		ug/l	1.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	1.0	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1

SAMPLE RESULTS

Lab ID: L1834480-01

Client ID: PW-1

Sample Location: BELFAST, ME

Date Collected: 08/30/18 09:00

Date Received: 08/30/18

Field Prep: Refer to COC

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Volatile Organics by GC/MS - Westborough Lab						
Isopropylbenzene	ND		ug/l	0.50	--	1
p-Isopropyltoluene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	1.0	--	1
n-Propylbenzene	ND		ug/l	0.50	--	1
1,2,3-Trichlorobenzene	ND		ug/l	1.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	1.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	1.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	1.0	--	1
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	--	1
Ethyl ether	ND		ug/l	1.0	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	86		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	104		70-130
Dibromofluoromethane	91		70-130

SAMPLE RESULTS

Lab ID: L1834480-01
Client ID: PW-1
Sample Location: BELFAST, ME
Date Collected: 08/30/18 09:00
Date Received: 08/30/18
Field Prep: Refer to COC

Sample Depth:
Matrix: Water
Analytical Method: 117,-
Analytical Date: 09/05/18 16:07
Analyst: EW

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Dissolved Gases by GC - Mansfield Lab						
Carbon Dioxide	17.7		mg/l	3.00	--	1

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 09/04/18 09:50
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1153528-5					
Methylene chloride	ND		ug/l	3.0	--
1,1-Dichloroethane	ND		ug/l	0.75	--
Chloroform	ND		ug/l	0.75	--
Carbon tetrachloride	ND		ug/l	0.50	--
1,2-Dichloropropane	ND		ug/l	1.0	--
Dibromochloromethane	ND		ug/l	0.50	--
1,1,2-Trichloroethane	ND		ug/l	0.75	--
2-Chloroethylvinyl ether	ND		ug/l	10	--
Tetrachloroethene	ND		ug/l	0.50	--
Chlorobenzene	ND		ug/l	0.50	--
Trichlorofluoromethane	ND		ug/l	1.0	--
1,2-Dichloroethane	ND		ug/l	0.50	--
1,1,1-Trichloroethane	ND		ug/l	0.50	--
Bromodichloromethane	ND		ug/l	0.50	--
trans-1,3-Dichloropropene	ND		ug/l	0.50	--
cis-1,3-Dichloropropene	ND		ug/l	0.50	--
1,3-Dichloropropene, Total	ND		ug/l	0.50	--
1,1-Dichloropropene	ND		ug/l	1.0	--
Bromoform	ND		ug/l	1.0	--
1,1,2,2-Tetrachloroethane	ND		ug/l	0.50	--
Benzene	ND		ug/l	0.50	--
Toluene	ND		ug/l	0.75	--
Ethylbenzene	ND		ug/l	0.50	--
Chloromethane	ND		ug/l	2.0	--
Bromomethane	ND		ug/l	1.0	--
Vinyl chloride	ND		ug/l	0.20	--
Chloroethane	ND		ug/l	1.0	--
1,1-Dichloroethene	ND		ug/l	0.50	--
trans-1,2-Dichloroethene	ND		ug/l	0.75	--

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 09/04/18 09:50
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1153528-5					
1,2-Dichloroethene, Total	ND		ug/l	0.50	--
Trichloroethene	ND		ug/l	0.50	--
1,2-Dichlorobenzene	ND		ug/l	1.0	--
1,3-Dichlorobenzene	ND		ug/l	1.0	--
1,4-Dichlorobenzene	ND		ug/l	1.0	--
Methyl tert butyl ether	ND		ug/l	1.0	--
p/m-Xylene	ND		ug/l	1.0	--
o-Xylene	ND		ug/l	1.0	--
Xylenes, Total	ND		ug/l	1.0	--
cis-1,2-Dichloroethene	ND		ug/l	0.50	--
Dibromomethane	ND		ug/l	1.0	--
1,4-Dichlorobutane	ND		ug/l	5.0	--
Iodomethane	ND		ug/l	5.0	--
1,2,3-Trichloropropane	ND		ug/l	1.0	--
Styrene	ND		ug/l	1.0	--
Dichlorodifluoromethane	ND		ug/l	2.0	--
Acetone	ND		ug/l	5.0	--
Carbon disulfide	ND		ug/l	1.0	--
2-Butanone	ND		ug/l	5.0	--
Vinyl acetate	ND		ug/l	5.0	--
4-Methyl-2-pentanone	ND		ug/l	5.0	--
2-Hexanone	ND		ug/l	5.0	--
Ethyl methacrylate	ND		ug/l	5.0	--
Acrolein	ND		ug/l	5.0	--
Acrylonitrile	ND		ug/l	5.0	--
Bromochloromethane	ND		ug/l	1.0	--
Tetrahydrofuran	ND		ug/l	2.0	--
2,2-Dichloropropane	ND		ug/l	1.0	--
1,2-Dibromoethane	ND		ug/l	1.0	--

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 09/04/18 09:50
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1153528-5					
1,3-Dichloropropane	ND		ug/l	1.0	--
1,1,1,2-Tetrachloroethane	ND		ug/l	0.50	--
Bromobenzene	ND		ug/l	1.0	--
n-Butylbenzene	ND		ug/l	0.50	--
sec-Butylbenzene	ND		ug/l	0.50	--
tert-Butylbenzene	ND		ug/l	1.0	--
o-Chlorotoluene	ND		ug/l	1.0	--
p-Chlorotoluene	ND		ug/l	1.0	--
1,2-Dibromo-3-chloropropane	ND		ug/l	1.0	--
Hexachlorobutadiene	ND		ug/l	0.50	--
Isopropylbenzene	ND		ug/l	0.50	--
p-Isopropyltoluene	ND		ug/l	0.50	--
Naphthalene	ND		ug/l	1.0	--
n-Propylbenzene	ND		ug/l	0.50	--
1,2,3-Trichlorobenzene	ND		ug/l	1.0	--
1,2,4-Trichlorobenzene	ND		ug/l	1.0	--
1,3,5-Trimethylbenzene	ND		ug/l	1.0	--
1,3,5-Trichlorobenzene	ND		ug/l	1.0	--
1,2,4-Trimethylbenzene	ND		ug/l	1.0	--
trans-1,4-Dichloro-2-butene	ND		ug/l	2.5	--
Halothane	ND		ug/l	2.5	--
Ethyl ether	ND		ug/l	1.0	--
Methyl Acetate	ND		ug/l	10	--
Ethyl Acetate	ND		ug/l	10	--
Isopropyl Ether	ND		ug/l	1.0	--
Cyclohexane	ND		ug/l	10	--
Tert-Butyl Alcohol	ND		ug/l	10	--
Ethyl-Tert-Butyl-Ether	ND		ug/l	1.0	--
Tertiary-Amyl Methyl Ether	ND		ug/l	1.0	--

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8260C
Analytical Date: 09/04/18 09:50
Analyst: PD

Parameter	Result	Qualifier	Units	RL	MDL
Volatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1153528-5					
1,4-Dioxane	ND		ug/l	250	--
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND		ug/l	10	--
Methyl cyclohexane	ND		ug/l	10	--
p-Diethylbenzene	ND		ug/l	2.0	--
4-Ethyltoluene	ND		ug/l	2.0	--
1,2,4,5-Tetramethylbenzene	ND		ug/l	2.0	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	85		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	105		70-130
Dibromofluoromethane	90		70-130

Method Blank Analysis
Batch Quality Control

Analytical Method: 117,-
Analytical Date: 09/05/18 15:44
Analyst: EW

Parameter	Result	Qualifier	Units	RL	MDL
Dissolved Gases by GC - Mansfield Lab for sample(s): 01 Batch: WG1153835-3					
Carbon Dioxide	ND		mg/l	3.00	--

Lab Control Sample Analysis

Batch Quality Control

Project Name: NAF BELFAST
Project Number: 171.05027.003.02

Lab Number: L1834480
Report Date: 09/07/18

Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1153528-3 WG1153528-4

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Methylene chloride	96		97		70-130	1		20
1,1-Dichloroethane	89		87		70-130	2		20
Chloroform	88		86		70-130	2		20
Carbon tetrachloride	83		81		63-132	2		20
1,2-Dichloropropane	93		93		70-130	0		20
Dibromochloromethane	91		89		63-130	2		20
1,1,2-Trichloroethane	93		91		70-130	2		20
2-Chloroethylvinyl ether	120		120		70-130	0		20
Tetrachloroethene	96		94		70-130	2		20
Chlorobenzene	94		92		75-130	2		25
Trichlorofluoromethane	87		82		62-150	6		20
1,2-Dichloroethane	82		82		70-130	0		20
1,1,1-Trichloroethane	85		83		67-130	2		20
Bromodichloromethane	87		85		67-130	2		20
trans-1,3-Dichloropropene	93		91		70-130	2		20
cis-1,3-Dichloropropene	94		93		70-130	1		20
1,1-Dichloropropene	85		84		70-130	1		20
Bromoform	88		89		54-136	1		20
1,1,2,2-Tetrachloroethane	90		93		67-130	3		20
Benzene	93		92		70-130	1		25
Toluene	96		93		70-130	3		25
Ethylbenzene	94		92		70-130	2		20
Chloromethane	83		79		64-130	5		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: NAF BELFAST

Project Number: 171.05027.003.02

Lab Number: L1834480

Report Date: 09/07/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1153528-3 WG1153528-4								
Bromomethane	82		77		39-139	6		20
Vinyl chloride	88		86		55-140	2		20
Chloroethane	74		83		55-138	11		20
1,1-Dichloroethene	93		92		61-145	1		25
trans-1,2-Dichloroethene	94		93		70-130	1		20
Trichloroethene	87		86		70-130	1		25
1,2-Dichlorobenzene	94		95		70-130	1		20
1,3-Dichlorobenzene	95		95		70-130	0		20
1,4-Dichlorobenzene	93		92		70-130	1		20
Methyl tert butyl ether	93		93		63-130	0		20
p/m-Xylene	95		95		70-130	0		20
o-Xylene	95		90		70-130	5		20
cis-1,2-Dichloroethene	95		95		70-130	0		20
Dibromomethane	88		88		70-130	0		20
1,4-Dichlorobutane	91		92		70-130	1		20
1,2,3-Trichloropropane	86		92		64-130	7		20
Styrene	95		90		70-130	5		20
Dichlorodifluoromethane	80		76		36-147	5		20
Acetone	87		84		58-148	4		20
Carbon disulfide	89		86		51-130	3		20
2-Butanone	85		83		63-138	2		20
Vinyl acetate	86		87		70-130	1		20
4-Methyl-2-pentanone	85		87		59-130	2		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: NAF BELFAST
Project Number: 171.05027.003.02

Lab Number: L1834480
Report Date: 09/07/18

Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1153528-3 WG1153528-4

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
2-Hexanone	91		90		57-130	1		20
Ethyl methacrylate	88		87		70-130	1		20
Acrolein	90		92		70-130	2		20
Acrylonitrile	90		93		70-130	3		20
Bromochloromethane	96		95		70-130	1		20
Tetrahydrofuran	86		87		58-130	1		20
2,2-Dichloropropane	87		86		63-133	1		20
1,2-Dibromoethane	95		94		70-130	1		20
1,3-Dichloropropane	96		96		70-130	0		20
1,1,1,2-Tetrachloroethane	89		89		64-130	0		20
Bromobenzene	93		96		70-130	3		20
n-Butylbenzene	90		89		53-136	1		20
sec-Butylbenzene	90		91		70-130	1		20
tert-Butylbenzene	89		88		70-130	1		20
o-Chlorotoluene	90		91		70-130	1		20
p-Chlorotoluene	94		94		70-130	0		20
1,2-Dibromo-3-chloropropane	71		72		41-144	1		20
Hexachlorobutadiene	73		74		63-130	1		20
Isopropylbenzene	90		90		70-130	0		20
p-Isopropyltoluene	88		88		70-130	0		20
Naphthalene	72		73		70-130	1		20
n-Propylbenzene	97		96		69-130	1		20
1,2,3-Trichlorobenzene	76		77		70-130	1		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: NAF BELFAST
Lab Number: L1834480
Project Number: 171.05027.003.02
Report Date: 09/07/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1153528-3 WG1153528-4								
1,2,4-Trichlorobenzene	79		78		70-130	1		20
1,3,5-Trimethylbenzene	96		96		64-130	0		20
1,3,5-Trichlorobenzene	92		90		70-130	2		20
1,2,4-Trimethylbenzene	91		90		70-130	1		20
trans-1,4-Dichloro-2-butene	88		88		70-130	0		20
Halothane	92		92		70-130	0		20
Ethyl ether	100		100		59-134	0		20
Methyl Acetate	86		88		70-130	2		20
Ethyl Acetate	87		88		70-130	1		20
Isopropyl Ether	94		94		70-130	0		20
Cyclohexane	83		82		70-130	1		20
Tert-Butyl Alcohol	84		78		70-130	7		20
Ethyl-Tert-Butyl-Ether	92		93		70-130	1		20
Tertiary-Amyl Methyl Ether	84		85		66-130	1		20
1,4-Dioxane	96		88		56-162	9		20
1,1,2-Trichloro-1,2,2-Trifluoroethane	86		85		70-130	1		20
Methyl cyclohexane	85		83		70-130	2		20
p-Diethylbenzene	89		89		70-130	0		20
4-Ethyltoluene	97		97		70-130	0		20
1,2,4,5-Tetramethylbenzene	87		86		70-130	1		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: NAF BELFAST

Project Number: 171.05027.003.02

Lab Number: L1834480

Report Date: 09/07/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Volatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1153528-3 WG1153528-4								

Surrogate	*LCS %Recovery*	*Qual*	*LCSD %Recovery*	*Qual*	*Acceptance Criteria*
1,2-Dichloroethane-d4	85		84		70-130
Toluene-d8	101		100		70-130
4-Bromofluorobenzene	99		101		70-130
Dibromofluoromethane	93		93		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: NAF BELFAST

Project Number: 171.05027.003.02

Lab Number: L1834480

Report Date: 09/07/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Dissolved Gases by GC - Mansfield Lab Associated sample(s): 01 Batch: WG1153835-2								
Carbon Dioxide	97		-		80-120	-		

Matrix Spike Analysis

Batch Quality Control

Project Name: NAF BELFAST

Project Number: 171.05027.003.02

Lab Number: L1834480

Report Date: 09/07/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Dissolved Gases by GC - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1153835-5 QC Sample: L1834480-01 Client ID: PW-1												
Carbon Dioxide	17.7	12	31.3	113		-	-		80-120	-		25

Lab Duplicate Analysis

Batch Quality Control

Project Name: NAF BELFAST

Project Number: 171.05027.003.02

Lab Number: L1834480

Report Date: 09/07/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Dissolved Gases by GC - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1153835-4 QC Sample: L1834480-01 Client ID: PW-1						
Carbon Dioxide	17.7	18.0	mg/l	2		25

SEMIVOLATILES

SAMPLE RESULTS

Lab ID:	L1834480-01	Date Collected:	08/30/18 09:00
Client ID:	PW-1	Date Received:	08/30/18
Sample Location:	BELFAST, ME	Field Prep:	Refer to COC
Sample Depth:			
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	1,8270D	Extraction Date:	09/03/18 00:48
Analytical Date:	09/07/18 03:14		
Analyst:	EK		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS - Westborough Lab						
Benzidine	ND		ug/l	20	--	1
1,2,4-Trichlorobenzene	ND		ug/l	5.0	--	1
Bis(2-chloroethyl)ether	ND		ug/l	2.0	--	1
1,2-Dichlorobenzene	ND		ug/l	2.0	--	1
1,3-Dichlorobenzene	ND		ug/l	2.0	--	1
1,4-Dichlorobenzene	ND		ug/l	2.0	--	1
3,3'-Dichlorobenzidine	ND		ug/l	5.0	--	1
2,4-Dinitrotoluene	ND		ug/l	5.0	--	1
2,6-Dinitrotoluene	ND		ug/l	5.0	--	1
Azobenzene	ND		ug/l	2.0	--	1
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	--	1
4-Bromophenyl phenyl ether	ND		ug/l	2.0	--	1
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	--	1
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	--	1
Hexachlorocyclopentadiene	ND		ug/l	20	--	1
Isophorone	ND		ug/l	5.0	--	1
Nitrobenzene	ND		ug/l	2.0	--	1
NDPA/DPA	ND		ug/l	2.0	--	1
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	--	1
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--	1
Butyl benzyl phthalate	ND		ug/l	5.0	--	1
Di-n-butylphthalate	ND		ug/l	5.0	--	1
Di-n-octylphthalate	ND		ug/l	5.0	--	1
Diethyl phthalate	ND		ug/l	5.0	--	1
Dimethyl phthalate	ND		ug/l	5.0	--	1
Biphenyl	ND		ug/l	2.0	--	1
Aniline	ND		ug/l	2.0	--	1
4-Chloroaniline	ND		ug/l	5.0	--	1

SAMPLE RESULTS

Lab ID:	L1834480-01	Date Collected:	08/30/18 09:00
Client ID:	PW-1	Date Received:	08/30/18
Sample Location:	BELFAST, ME	Field Prep:	Refer to COC

Sample Depth:

Parameter	**Result**	**Qualifier**	**Units**	**RL**	**MDL**	**Dilution Factor**
Semivolatile Organics by GC/MS - Westborough Lab						
2-Nitroaniline	ND		ug/l	5.0	--	1
3-Nitroaniline	ND		ug/l	5.0	--	1
4-Nitroaniline	ND		ug/l	5.0	--	1
Dibenzofuran	ND		ug/l	2.0	--	1
n-Nitrosodimethylamine	ND		ug/l	2.0	--	1
2,4,6-Trichlorophenol	ND		ug/l	5.0	--	1
p-Chloro-m-cresol	ND		ug/l	2.0	--	1
2-Chlorophenol	ND		ug/l	2.0	--	1
2,4-Dichlorophenol	ND		ug/l	5.0	--	1
2,4-Dimethylphenol	ND		ug/l	5.0	--	1
2-Nitrophenol	ND		ug/l	10	--	1
4-Nitrophenol	ND		ug/l	10	--	1
2,4-Dinitrophenol	ND		ug/l	20	--	1
4,6-Dinitro-o-cresol	ND		ug/l	10	--	1
Phenol	ND		ug/l	5.0	--	1
2-Methylphenol	ND		ug/l	5.0	--	1
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	--	1
2,4,5-Trichlorophenol	ND		ug/l	5.0	--	1
Benzoic Acid	ND		ug/l	50	--	1
Benzyl Alcohol	ND		ug/l	2.0	--	1
Carbazole	ND		ug/l	2.0	--	1
Pyridine	ND		ug/l	3.5	--	1

Surrogate	**% Recovery**	**Qualifier**	**Acceptance Criteria**
2-Fluorophenol	48		21-120
Phenol-d6	35		10-120
Nitrobenzene-d5	69		23-120
2-Fluorobiphenyl	78		15-120
2,4,6-Tribromophenol	57		10-120
4-Terphenyl-d14	90		41-149

SAMPLE RESULTS

Lab ID: L1834480-01
Client ID: PW-1
Sample Location: BELFAST, ME

Date Collected: 08/30/18 09:00
Date Received: 08/30/18
Field Prep: Refer to COC

Sample Depth:
Matrix: Water
Analytical Method: 1,8270D-SIM
Analytical Date: 09/07/18 10:57
Analyst: DV

Extraction Method: EPA 3510C
Extraction Date: 09/03/18 00:45

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Semivolatile Organics by GC/MS-SIM - Westborough Lab						
Acenaphthene	ND		ug/l	0.10	--	1
2-Chloronaphthalene	ND		ug/l	0.20	--	1
Fluoranthene	ND		ug/l	0.10	--	1
Hexachlorobutadiene	ND		ug/l	0.50	--	1
Naphthalene	ND		ug/l	0.10	--	1
Benzo(a)anthracene	ND		ug/l	0.10	--	1
Benzo(a)pyrene	ND		ug/l	0.10	--	1
Benzo(b)fluoranthene	ND		ug/l	0.10	--	1
Benzo(k)fluoranthene	ND		ug/l	0.10	--	1
Chrysene	ND		ug/l	0.10	--	1
Acenaphthylene	ND		ug/l	0.10	--	1
Anthracene	ND		ug/l	0.10	--	1
Benzo(ghi)perylene	ND		ug/l	0.10	--	1
Fluorene	ND		ug/l	0.10	--	1
Phenanthrene	ND		ug/l	0.10	--	1
Dibenzo(a,h)anthracene	ND		ug/l	0.10	--	1
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	--	1
Pyrene	ND		ug/l	0.10	--	1
1-Methylnaphthalene	ND		ug/l	0.10	--	1
2-Methylnaphthalene	ND		ug/l	0.10	--	1
Pentachlorophenol	ND		ug/l	0.80	--	1
Hexachlorobenzene	ND		ug/l	0.80	--	1
Hexachloroethane	ND		ug/l	0.80	--	1

SAMPLE RESULTS

Lab ID: L1834480-01

Client ID: PW-1

Sample Location: BELFAST, ME

Date Collected: 08/30/18 09:00

Date Received: 08/30/18

Field Prep: Refer to COC

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor

Semivolatile Organics by GC/MS-SIM - Westborough Lab

Surrogate	% Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	47		21-120
Phenol-d6	37		10-120
Nitrobenzene-d5	76		23-120
2-Fluorobiphenyl	63		15-120
2,4,6-Tribromophenol	67		10-120
4-Terphenyl-d14	75		41-149

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 09/02/18 21:59
Analyst: RC

Extraction Method: EPA 3510C
Extraction Date: 09/02/18 00:51

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1153022-1					
Acenaphthene	ND		ug/l	2.0	--
Benzidine	ND		ug/l	20	--
1,2,4-Trichlorobenzene	ND		ug/l	5.0	--
Hexachlorobenzene	ND		ug/l	2.0	--
Bis(2-chloroethyl)ether	ND		ug/l	2.0	--
2-Chloronaphthalene	ND		ug/l	2.0	--
1,2-Dichlorobenzene	ND		ug/l	2.0	--
1,3-Dichlorobenzene	ND		ug/l	2.0	--
1,4-Dichlorobenzene	ND		ug/l	2.0	--
3,3'-Dichlorobenzidine	ND		ug/l	5.0	--
2,4-Dinitrotoluene	ND		ug/l	5.0	--
2,6-Dinitrotoluene	ND		ug/l	5.0	--
Azobenzene	ND		ug/l	2.0	--
Fluoranthene	ND		ug/l	2.0	--
4-Chlorophenyl phenyl ether	ND		ug/l	2.0	--
4-Bromophenyl phenyl ether	ND		ug/l	2.0	--
Bis(2-chloroisopropyl)ether	ND		ug/l	2.0	--
Bis(2-chloroethoxy)methane	ND		ug/l	5.0	--
Hexachlorobutadiene	ND		ug/l	2.0	--
Hexachlorocyclopentadiene	ND		ug/l	20	--
Hexachloroethane	ND		ug/l	2.0	--
Isophorone	ND		ug/l	5.0	--
Naphthalene	ND		ug/l	2.0	--
Nitrobenzene	ND		ug/l	2.0	--
NDPA/DPA	ND		ug/l	2.0	--
n-Nitrosodi-n-propylamine	ND		ug/l	5.0	--
Bis(2-ethylhexyl)phthalate	ND		ug/l	3.0	--
Butyl benzyl phthalate	ND		ug/l	5.0	--
Di-n-butylphthalate	ND		ug/l	5.0	--

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 09/02/18 21:59
Analyst: RC

Extraction Method: EPA 3510C
Extraction Date: 09/02/18 00:51

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1153022-1					
Di-n-octylphthalate	ND		ug/l	5.0	--
Diethyl phthalate	ND		ug/l	5.0	--
Dimethyl phthalate	ND		ug/l	5.0	--
Benzo(a)anthracene	ND		ug/l	2.0	--
Benzo(a)pyrene	ND		ug/l	2.0	--
Benzo(b)fluoranthene	ND		ug/l	2.0	--
Benzo(k)fluoranthene	ND		ug/l	2.0	--
Chrysene	ND		ug/l	2.0	--
Acenaphthylene	ND		ug/l	2.0	--
Anthracene	ND		ug/l	2.0	--
Benzo(ghi)perylene	ND		ug/l	2.0	--
Fluorene	ND		ug/l	2.0	--
Phenanthrene	ND		ug/l	2.0	--
Dibenzo(a,h)anthracene	ND		ug/l	2.0	--
Indeno(1,2,3-cd)pyrene	ND		ug/l	2.0	--
Pyrene	ND		ug/l	2.0	--
Biphenyl	ND		ug/l	2.0	--
Aniline	ND		ug/l	2.0	--
4-Chloroaniline	ND		ug/l	5.0	--
1-Methylnaphthalene	ND		ug/l	2.0	--
2-Nitroaniline	ND		ug/l	5.0	--
3-Nitroaniline	ND		ug/l	5.0	--
4-Nitroaniline	ND		ug/l	5.0	--
Dibenzofuran	ND		ug/l	2.0	--
2-Methylnaphthalene	ND		ug/l	2.0	--
n-Nitrosodimethylamine	ND		ug/l	2.0	--
2,4,6-Trichlorophenol	ND		ug/l	5.0	--
p-Chloro-m-cresol	ND		ug/l	2.0	--
2-Chlorophenol	ND		ug/l	2.0	--

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 09/02/18 21:59
Analyst: RC

Extraction Method: EPA 3510C
Extraction Date: 09/02/18 00:51

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1153022-1					
2,4-Dichlorophenol	ND		ug/l	5.0	--
2,4-Dimethylphenol	ND		ug/l	5.0	--
2-Nitrophenol	ND		ug/l	10	--
4-Nitrophenol	ND		ug/l	10	--
2,4-Dinitrophenol	ND		ug/l	20	--
4,6-Dinitro-o-cresol	ND		ug/l	10	--
Pentachlorophenol	ND		ug/l	10	--
Phenol	ND		ug/l	5.0	--
2-Methylphenol	ND		ug/l	5.0	--
3-Methylphenol/4-Methylphenol	ND		ug/l	5.0	--
2,4,5-Trichlorophenol	ND		ug/l	5.0	--
Benzoic Acid	ND		ug/l	50	--
Benzyl Alcohol	ND		ug/l	2.0	--
Carbazole	ND		ug/l	2.0	--
Pyridine	ND		ug/l	3.5	--

Tentatively Identified Compounds		
No Tentatively Identified Compounds	ND	ug/l

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D
Analytical Date: 09/02/18 21:59
Analyst: RC

Extraction Method: EPA 3510C
Extraction Date: 09/02/18 00:51

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS - Westborough Lab for sample(s): 01 Batch: WG1153022-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	60		21-120
Phenol-d6	47		10-120
Nitrobenzene-d5	90		23-120
2-Fluorobiphenyl	77		15-120
2,4,6-Tribromophenol	85		10-120
4-Terphenyl-d14	83		41-149

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 09/02/18 21:58
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 09/02/18 00:51

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1153023-1					
Acenaphthene	ND		ug/l	0.10	--
2-Chloronaphthalene	ND		ug/l	0.20	--
Fluoranthene	ND		ug/l	0.10	--
Hexachlorobutadiene	ND		ug/l	0.50	--
Naphthalene	ND		ug/l	0.10	--
Benzo(a)anthracene	ND		ug/l	0.10	--
Benzo(a)pyrene	ND		ug/l	0.10	--
Benzo(b)fluoranthene	ND		ug/l	0.10	--
Benzo(k)fluoranthene	ND		ug/l	0.10	--
Chrysene	ND		ug/l	0.10	--
Acenaphthylene	ND		ug/l	0.10	--
Anthracene	ND		ug/l	0.10	--
Benzo(ghi)perylene	ND		ug/l	0.10	--
Fluorene	ND		ug/l	0.10	--
Phenanthrene	ND		ug/l	0.10	--
Dibenzo(a,h)anthracene	ND		ug/l	0.10	--
Indeno(1,2,3-cd)pyrene	ND		ug/l	0.10	--
Pyrene	ND		ug/l	0.10	--
1-Methylnaphthalene	ND		ug/l	0.10	--
2-Methylnaphthalene	ND		ug/l	0.10	--
Pentachlorophenol	ND		ug/l	0.80	--
Hexachlorobenzene	ND		ug/l	0.80	--
Hexachloroethane	ND		ug/l	0.80	--

Project Name: NAF BELFAST
Project Number: 171.05027.003.02

Lab Number: L1834480
Report Date: 09/07/18

Method Blank Analysis
Batch Quality Control

Analytical Method: 1,8270D-SIM
Analytical Date: 09/02/18 21:58
Analyst: CB

Extraction Method: EPA 3510C
Extraction Date: 09/02/18 00:51

Parameter	Result	Qualifier	Units	RL	MDL
Semivolatile Organics by GC/MS-SIM - Westborough Lab for sample(s): 01 Batch: WG1153023-1					

Surrogate	%Recovery	Qualifier	Acceptance Criteria
2-Fluorophenol	51		21-120
Phenol-d6	40		10-120
Nitrobenzene-d5	77		23-120
2-Fluorobiphenyl	60		15-120
2,4,6-Tribromophenol	84		10-120
4-Terphenyl-d14	80		41-149

Lab Control Sample Analysis

Batch Quality Control

Project Name: NAF BELFAST

Project Number: 171.05027.003.02

Lab Number: L1834480

Report Date: 09/07/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1153022-2 WG1153022-3								
Acenaphthene	85		87		37-111	2		30
Benzidine	17		55		10-75	**106**	Q	30
1,2,4-Trichlorobenzene	76		73		39-98	4		30
Hexachlorobenzene	87		88		40-140	1		30
Bis(2-chloroethyl)ether	93		92		40-140	1		30
2-Chloronaphthalene	85		86		40-140	1		30
1,2-Dichlorobenzene	78		76		40-140	3		30
1,3-Dichlorobenzene	76		74		40-140	3		30
1,4-Dichlorobenzene	79		74		36-97	7		30
3,3'-Dichlorobenzidine	80		82		40-140	2		30
2,4-Dinitrotoluene	92		94		48-143	2		30
2,6-Dinitrotoluene	91		91		40-140	0		30
Azobenzene	105		109		40-140	4		30
Fluoranthene	94		93		40-140	1		30
4-Chlorophenyl phenyl ether	81		81		40-140	0		30
4-Bromophenyl phenyl ether	84		87		40-140	4		30
Bis(2-chloroisopropyl)ether	107		105		40-140	2		30
Bis(2-chloroethoxy)methane	96		94		40-140	2		30
Hexachlorobutadiene	77		76		40-140	1		30
Hexachlorocyclopentadiene	51		56		40-140	9		30
Hexachloroethane	77		79		40-140	3		30
Isophorone	101		100		40-140	1		30
Naphthalene	84		83		40-140	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: NAF BELFAST
Lab Number: L1834480
Project Number: 171.05027.003.02
Report Date: 09/07/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1153022-2 WG1153022-3								
Nitrobenzene	99		99		40-140	0		30
NDPA/DPA	89		88		40-140	1		30
n-Nitrosodi-n-propylamine	103		101		29-132	2		30
Bis(2-ethylhexyl)phthalate	105		102		40-140	3		30
Butyl benzyl phthalate	107		103		40-140	4		30
Di-n-butylphthalate	100		97		40-140	3		30
Di-n-octylphthalate	109		107		40-140	2		30
Diethyl phthalate	95		94		40-140	1		30
Dimethyl phthalate	92		92		40-140	0		30
Benzo(a)anthracene	87		91		40-140	4		30
Benzo(a)pyrene	94		98		40-140	4		30
Benzo(b)fluoranthene	93		97		40-140	4		30
Benzo(k)fluoranthene	90		93		40-140	3		30
Chrysene	93		94		40-140	1		30
Acenaphthylene	86		88		45-123	2		30
Anthracene	92		93		40-140	1		30
Benzo(ghi)perylene	90		95		40-140	5		30
Fluorene	88		88		40-140	0		30
Phenanthrene	91		90		40-140	1		30
Dibenzo(a,h)anthracene	89		94		40-140	5		30
Indeno(1,2,3-cd)pyrene	91		96		40-140	5		30
Pyrene	91		90		26-127	1		30
Biphenyl	90		89		40-140	1		30

Lab Control Sample Analysis

Batch Quality Control

Project Name: NAF BELFAST

Project Number: 171.05027.003.02

Lab Number: L1834480

Report Date: 09/07/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1153022-2 WG1153022-3								
Aniline	52		51		40-140	2		30
4-Chloroaniline	94		98		40-140	4		30
1-Methylnaphthalene	95		94		41-103	1		30
2-Nitroaniline	95		96		52-143	1		30
3-Nitroaniline	87		84		25-145	4		30
4-Nitroaniline	88		82		51-143	7		30
Dibenzofuran	86		86		40-140	0		30
2-Methylnaphthalene	82		84		40-140	2		30
n-Nitrosodimethylamine	62		61		22-74	2		30
2,4,6-Trichlorophenol	93		90		30-130	3		30
p-Chloro-m-cresol	97		**100**	Q	23-97	3		30
2-Chlorophenol	90		86		27-123	5		30
2,4-Dichlorophenol	93		90		30-130	3		30
2,4-Dimethylphenol	95		92		30-130	3		30
2-Nitrophenol	91		88		30-130	3		30
4-Nitrophenol	76		**82**	Q	10-80	8		30
2,4-Dinitrophenol	79		70		20-130	12		30
4,6-Dinitro-o-cresol	83		84		20-164	1		30
Pentachlorophenol	79		70		9-103	12		30
Phenol	53		51		12-110	4		30
2-Methylphenol	88		87		30-130	1		30
3-Methylphenol/4-Methylphenol	89		87		30-130	2		30
2,4,5-Trichlorophenol	90		91		30-130	1		30

Lab Control Sample Analysis
Batch Quality Control

Project Name: NAF BELFAST
Project Number: 171.05027.003.02

Lab Number: L1834480
Report Date: 09/07/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS - Westborough Lab Associated sample(s): 01 Batch: WG1153022-2 WG1153022-3								
Benzoic Acid	19		14		10-164	30		30
Benzyl Alcohol	88		89		26-116	1		30
Carbazole	95		95		55-144	0		30
Pyridine	33		41		10-66	22		30

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
2-Fluorophenol	69		68		21-120
Phenol-d6	53		53		10-120
Nitrobenzene-d5	100		98		23-120
2-Fluorobiphenyl	82		87		15-120
2,4,6-Tribromophenol	84		88		10-120
4-Terphenyl-d14	83		85		41-149

Lab Control Sample Analysis
Batch Quality Control

Project Name: NAF BELFAST

Project Number: 171.05027.003.02

Lab Number: L1834480

Report Date: 09/07/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1153023-2 WG1153023-3								
Acenaphthene	76		76		40-140	0		40
2-Chloronaphthalene	79		78		40-140	1		40
Fluoranthene	82		90		40-140	9		40
Hexachlorobutadiene	71		69		40-140	3		40
Naphthalene	72		72		40-140	0		40
Benzo(a)anthracene	74		77		40-140	4		40
Benzo(a)pyrene	80		83		40-140	4		40
Benzo(b)fluoranthene	78		81		40-140	4		40
Benzo(k)fluoranthene	82		83		40-140	1		40
Chrysene	78		81		40-140	4		40
Acenaphthylene	80		80		40-140	0		40
Anthracene	80		84		40-140	5		40
Benzo(ghi)perylene	82		83		40-140	1		40
Fluorene	78		80		40-140	3		40
Phenanthrene	77		81		40-140	5		40
Dibenzo(a,h)anthracene	84		86		40-140	2		40
Indeno(1,2,3-cd)pyrene	82		84		40-140	2		40
Pyrene	83		91		40-140	9		40
1-Methylnaphthalene	77		77		40-140	0		40
2-Methylnaphthalene	78		77		40-140	1		40
Pentachlorophenol	83		87		40-140	5		40
Hexachlorobenzene	76		80		40-140	5		40
Hexachloroethane	67		64		40-140	5		40

Lab Control Sample Analysis

Batch Quality Control

Project Name: NAF BELFAST

Project Number: 171.05027.003.02

Lab Number: L1834480

Report Date: 09/07/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits

Semivolatile Organics by GC/MS-SIM - Westborough Lab Associated sample(s): 01 Batch: WG1153023-2 WG1153023-3

Surrogate	*LCS %Recovery*	*Qual*	*LCSD %Recovery*	*Qual*	*Acceptance Criteria*
2-Fluorophenol	54		54		21-120
Phenol-d6	41		40		10-120
Nitrobenzene-d5	75		75		23-120
2-Fluorobiphenyl	69		70		15-120
2,4,6-Tribromophenol	80		84		10-120
4-Terphenyl-d14	76		85		41-149

METALS

Project Name: NAF BELFAST
Lab Number: L1834480
Project Number: 171.05027.003.02
Report Date: 09/07/18

SAMPLE RESULTS

Lab ID: L1834480-01
Date Collected: 08/30/18 09:00
Client ID: PW-1
Date Received: 08/30/18
Sample Location: BELFAST, ME
Field Prep: Refer to COC

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Aluminum, Total	ND		mg/l	0.100	--	1	09/06/18 11:20	09/07/18 01:38	EPA 3005A	1,6010D	AB
Antimony, Total	ND		mg/l	0.00400	--	1	09/06/18 11:20	09/06/18 16:27	EPA 3005A	1,6020B	AM
Arsenic, Total	0.006		mg/l	0.005	--	1	09/06/18 11:20	09/07/18 01:38	EPA 3005A	1,6010D	AB
Barium, Total	ND		mg/l	0.010	--	1	09/06/18 11:20	09/07/18 01:38	EPA 3005A	1,6010D	AB
Beryllium, Total	ND		mg/l	0.00050	--	1	09/06/18 11:20	09/06/18 16:27	EPA 3005A	1,6020B	AM
Boron, Total	ND		mg/l	0.030	--	1	09/06/18 11:20	09/07/18 01:38	EPA 3005A	1,6010D	AB
Cadmium, Total	ND		mg/l	0.00020	--	1	09/06/18 11:20	09/06/18 16:27	EPA 3005A	1,6020B	AM
Calcium, Total	11.6		mg/l	0.100	--	1	09/06/18 11:20	09/07/18 01:38	EPA 3005A	1,6010D	AB
Chromium, Total	ND		mg/l	0.010	--	1	09/06/18 11:20	09/07/18 01:38	EPA 3005A	1,6010D	AB
Cobalt, Total	ND		mg/l	0.020	--	1	09/06/18 11:20	09/07/18 01:38	EPA 3005A	1,6010D	AB
Copper, Total	ND		mg/l	0.010	--	1	09/06/18 11:20	09/07/18 01:38	EPA 3005A	1,6010D	AB
Iron, Total	3.20		mg/l	0.050	--	1	09/06/18 11:20	09/07/18 01:38	EPA 3005A	1,6010D	AB
Lead, Total	ND		mg/l	0.010	--	1	09/06/18 11:20	09/07/18 01:38	EPA 3005A	1,6010D	AB
Magnesium, Total	5.10		mg/l	0.100	--	1	09/06/18 11:20	09/07/18 01:38	EPA 3005A	1,6010D	AB
Manganese, Total	0.034		mg/l	0.010	--	1	09/06/18 11:20	09/07/18 01:38	EPA 3005A	1,6010D	AB
Mercury, Total	ND		mg/l	0.00020	--	1	08/31/18 12:27	08/31/18 23:14	EPA 7470A	1,7470A	EA
Molybdenum, Total	ND		mg/l	0.050	--	1	09/06/18 11:20	09/07/18 01:38	EPA 3005A	1,6010D	AB
Nickel, Total	ND		mg/l	0.025	--	1	09/06/18 11:20	09/07/18 01:38	EPA 3005A	1,6010D	AB
Potassium, Total	ND		mg/l	2.50	--	1	09/06/18 11:20	09/07/18 01:38	EPA 3005A	1,6010D	AB
Selenium, Total	ND		mg/l	0.010	--	1	09/06/18 11:20	09/07/18 01:38	EPA 3005A	1,6010D	AB
Silver, Total	ND		mg/l	0.007	--	1	09/06/18 11:20	09/07/18 01:38	EPA 3005A	1,6010D	AB
Sodium, Total	13.8		mg/l	2.00	--	1	09/06/18 11:20	09/07/18 01:38	EPA 3005A	1,6010D	AB
Strontium, Total	0.053		mg/l	0.010	--	1	09/06/18 11:20	09/07/18 01:38	EPA 3005A	1,6010D	AB
Sulfur, Total	4.79		mg/l	0.250	--	1	09/07/18 06:50	09/07/18 07:59	EPA 3015A	1,6010D	PE
Thallium, Total	ND		mg/l	0.00050	--	1	09/06/18 11:20	09/06/18 16:27	EPA 3005A	1,6020B	AM
Titanium, Total	ND		mg/l	0.010	--	1	09/06/18 11:20	09/07/18 01:38	EPA 3005A	1,6010D	AB
Vanadium, Total	ND		mg/l	0.010	--	1	09/06/18 11:20	09/07/18 01:38	EPA 3005A	1,6010D	AB
Zinc, Total	ND		mg/l	0.050	--	1	09/06/18 11:20	09/07/18 01:38	EPA 3005A	1,6010D	AB

Project Name:	NAF BELFAST	**Lab Number:**	L1834480
Project Number:	171.05027.003.02	**Report Date:**	09/07/18

SAMPLE RESULTS

Lab ID:	L1834480-01	Date Collected:	08/30/18 09:00
Client ID:	PW-1	Date Received:	08/30/18
Sample Location:	BELFAST, ME	Field Prep:	Refer to COC

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab											
Hardness	49.9		mg/l	0.660	NA	1	09/06/18 11:20	09/07/18 01:38	EPA 3005A	1,6010D	AB
Dissolved Metals - Mansfield Lab											
Aluminum, Dissolved	ND		mg/l	0.100	--	1	09/07/18 07:15	09/07/18 11:32	EPA 3005A	1,6010D	PE
Antimony, Dissolved	ND		mg/l	0.00400	--	1	09/07/18 07:15	09/07/18 11:57	EPA 3005A	1,6020B	AM
Arsenic, Dissolved	0.005		mg/l	0.005	--	1	09/07/18 07:15	09/07/18 11:32	EPA 3005A	1,6010D	PE
Barium, Dissolved	ND		mg/l	0.010	--	1	09/07/18 07:15	09/07/18 11:32	EPA 3005A	1,6010D	PE
Beryllium, Dissolved	ND		mg/l	0.00050	--	1	09/07/18 07:15	09/07/18 11:57	EPA 3005A	1,6020B	AM
Boron, Dissolved	ND		mg/l	0.030	--	1	09/07/18 07:15	09/07/18 11:32	EPA 3005A	1,6010D	PE
Cadmium, Dissolved	ND		mg/l	0.00020	--	1	09/07/18 07:15	09/07/18 11:57	EPA 3005A	1,6020B	AM
Calcium, Dissolved	11.8		mg/l	0.100	--	1	09/07/18 07:15	09/07/18 11:32	EPA 3005A	1,6010D	PE
Chromium, Dissolved	ND		mg/l	0.010	--	1	09/07/18 07:15	09/07/18 11:32	EPA 3005A	1,6010D	PE
Cobalt, Dissolved	ND		mg/l	0.020	--	1	09/07/18 07:15	09/07/18 11:32	EPA 3005A	1,6010D	PE
Copper, Dissolved	ND		mg/l	0.010	--	1	09/07/18 07:15	09/07/18 11:32	EPA 3005A	1,6010D	PE
Iron, Dissolved	3.31		mg/l	0.050	--	1	09/07/18 07:15	09/07/18 11:32	EPA 3005A	1,6010D	PE
Lead, Dissolved	ND		mg/l	0.010	--	1	09/07/18 07:15	09/07/18 11:32	EPA 3005A	1,6010D	PE
Magnesium, Dissolved	5.04		mg/l	0.100	--	1	09/07/18 07:15	09/07/18 11:32	EPA 3005A	1,6010D	PE
Manganese, Dissolved	0.036		mg/l	0.010	--	1	09/07/18 07:15	09/07/18 11:32	EPA 3005A	1,6010D	PE
Mercury, Dissolved	ND		mg/l	0.00020	--	1	08/31/18 14:29	09/04/18 21:24	EPA 7470A	1,7470A	EA
Molybdenum, Dissolved	ND		mg/l	0.050	--	1	09/07/18 07:15	09/07/18 11:32	EPA 3005A	1,6010D	PE
Nickel, Dissolved	ND		mg/l	0.025	--	1	09/07/18 07:15	09/07/18 11:32	EPA 3005A	1,6010D	PE
Potassium, Dissolved	2.51		mg/l	2.50	--	1	09/07/18 07:15	09/07/18 11:32	EPA 3005A	1,6010D	PE
Selenium, Dissolved	ND		mg/l	0.010	--	1	09/07/18 07:15	09/07/18 11:32	EPA 3005A	1,6010D	PE
Silicon, Dissolved	10.8		mg/l	0.500	--	1	09/07/18 07:15	09/07/18 11:32	EPA 3005A	1,6010D	PE
Silver, Dissolved	ND		mg/l	0.007	--	1	09/07/18 07:15	09/07/18 11:32	EPA 3005A	1,6010D	PE
Sodium, Dissolved	14.9		mg/l	2.00	--	1	09/07/18 07:15	09/07/18 11:32	EPA 3005A	1,6010D	PE
Strontium, Dissolved	0.057		mg/l	0.010	--	1	09/07/18 07:15	09/07/18 11:32	EPA 3005A	1,6010D	PE
Thallium, Dissolved	ND		mg/l	0.00050	--	1	09/07/18 07:15	09/07/18 11:57	EPA 3005A	1,6020B	AM

SAMPLE RESULTS

Lab ID: L1834480-01
Client ID: PW-1
Sample Location: BELFAST, ME

Date Collected: 08/30/18 09:00
Date Received: 08/30/18
Field Prep: Refer to COC

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Titanium, Dissolved	ND		mg/l	0.010	--	1	09/07/18 07:15	09/07/18 11:32	EPA 3005A	1,6010D	PE
Vanadium, Dissolved	ND		mg/l	0.010	--	1	09/07/18 07:15	09/07/18 11:32	EPA 3005A	1,6010D	PE
Zinc, Dissolved	ND		mg/l	0.050	--	1	09/07/18 07:15	09/07/18 11:32	EPA 3005A	1,6010D	PE

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1152667-1										
Mercury, Total	ND		mg/l	0.00020	--	1	08/31/18 12:27	08/31/18 22:28	1,7470A	EA

Prep Information

Digestion Method: EPA 7470A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01 Batch: WG1152711-1										
Mercury, Dissolved	ND		mg/l	0.00020	--	1	08/31/18 14:29	09/04/18 21:16	1,7470A	EA

Prep Information

Digestion Method: EPA 7470A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1154185-1										
Aluminum, Total	ND		mg/l	0.100	--	1	09/06/18 11:20	09/07/18 01:30	1,6010D	AB
Arsenic, Total	ND		mg/l	0.005	--	1	09/06/18 11:20	09/07/18 01:30	1,6010D	AB
Barium, Total	ND		mg/l	0.010	--	1	09/06/18 11:20	09/07/18 01:30	1,6010D	AB
Boron, Total	ND		mg/l	0.030	--	1	09/06/18 11:20	09/07/18 01:30	1,6010D	AB
Calcium, Total	ND		mg/l	0.100	--	1	09/06/18 11:20	09/07/18 01:30	1,6010D	AB
Chromium, Total	ND		mg/l	0.010	--	1	09/06/18 11:20	09/07/18 01:30	1,6010D	AB
Cobalt, Total	ND		mg/l	0.020	--	1	09/06/18 11:20	09/07/18 01:30	1,6010D	AB
Copper, Total	ND		mg/l	0.010	--	1	09/06/18 11:20	09/07/18 01:30	1,6010D	AB
Iron, Total	ND		mg/l	0.050	--	1	09/06/18 11:20	09/07/18 01:30	1,6010D	AB
Lead, Total	ND		mg/l	0.010	--	1	09/06/18 11:20	09/07/18 01:30	1,6010D	AB
Magnesium, Total	ND		mg/l	0.100	--	1	09/06/18 11:20	09/07/18 01:30	1,6010D	AB
Manganese, Total	ND		mg/l	0.010	--	1	09/06/18 11:20	09/07/18 01:30	1,6010D	AB
Molybdenum, Total	ND		mg/l	0.050	--	1	09/06/18 11:20	09/07/18 01:30	1,6010D	AB
Nickel, Total	ND		mg/l	0.025	--	1	09/06/18 11:20	09/07/18 01:30	1,6010D	AB
Potassium, Total	ND		mg/l	2.50	--	1	09/06/18 11:20	09/07/18 01:30	1,6010D	AB
Selenium, Total	ND		mg/l	0.010	--	1	09/06/18 11:20	09/07/18 01:30	1,6010D	AB

Method Blank Analysis
Batch Quality Control

Silver, Total	ND		mg/l	0.007	--	1	09/06/18 11:20	09/07/18 01:30	1,6010D	AB
Sodium, Total	ND		mg/l	2.00	--	1	09/06/18 11:20	09/07/18 01:30	1,6010D	AB
Strontium, Total	ND		mg/l	0.010	--	1	09/06/18 11:20	09/07/18 01:30	1,6010D	AB
Titanium, Total	ND		mg/l	0.010	--	1	09/06/18 11:20	09/07/18 01:30	1,6010D	AB
Vanadium, Total	ND		mg/l	0.010	--	1	09/06/18 11:20	09/07/18 01:30	1,6010D	AB
Zinc, Total	ND		mg/l	0.050	--	1	09/06/18 11:20	09/07/18 01:30	1,6010D	AB

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Hardness by SM 2340B - Mansfield Lab for sample(s): 01 Batch: WG1154185-1										
Hardness	ND		mg/l	0.660	NA	1	09/06/18 11:20	09/07/18 01:30	1,6010D	AB

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1154187-1										
Antimony, Total	ND		mg/l	0.00400	--	1	09/06/18 11:20	09/06/18 15:13	1,6020B	AM
Beryllium, Total	ND		mg/l	0.00050	--	1	09/06/18 11:20	09/06/18 15:13	1,6020B	AM
Cadmium, Total	ND		mg/l	0.00020	--	1	09/06/18 11:20	09/06/18 15:13	1,6020B	AM
Thallium, Total	ND		mg/l	0.00050	--	1	09/06/18 11:20	09/06/18 15:13	1,6020B	AM

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01 Batch: WG1154475-1										
Aluminum, Dissolved	ND		mg/l	0.100	--	1	09/07/18 07:15	09/07/18 11:23	1,6010D	PE
Arsenic, Dissolved	ND		mg/l	0.005	--	1	09/07/18 07:15	09/07/18 11:23	1,6010D	PE

Method Blank Analysis
Batch Quality Control

Barium, Dissolved	ND		mg/l	0.010	--	1	09/07/18 07:15	09/07/18 11:23	1,6010D	PE
Boron, Dissolved	ND		mg/l	0.030	--	1	09/07/18 07:15	09/07/18 11:23	1,6010D	PE
Calcium, Dissolved	ND		mg/l	0.100	--	1	09/07/18 07:15	09/07/18 11:23	1,6010D	PE
Chromium, Dissolved	ND		mg/l	0.010	--	1	09/07/18 07:15	09/07/18 11:23	1,6010D	PE
Cobalt, Dissolved	ND		mg/l	0.020	--	1	09/07/18 07:15	09/07/18 11:23	1,6010D	PE
Copper, Dissolved	ND		mg/l	0.010	--	1	09/07/18 07:15	09/07/18 11:23	1,6010D	PE
Iron, Dissolved	ND		mg/l	0.050	--	1	09/07/18 07:15	09/07/18 11:23	1,6010D	PE
Lead, Dissolved	ND		mg/l	0.010	--	1	09/07/18 07:15	09/07/18 11:23	1,6010D	PE
Magnesium, Dissolved	ND		mg/l	0.100	--	1	09/07/18 07:15	09/07/18 11:23	1,6010D	PE
Manganese, Dissolved	ND		mg/l	0.010	--	1	09/07/18 07:15	09/07/18 11:23	1,6010D	PE
Molybdenum, Dissolved	ND		mg/l	0.050	--	1	09/07/18 07:15	09/07/18 11:23	1,6010D	PE
Nickel, Dissolved	ND		mg/l	0.025	--	1	09/07/18 07:15	09/07/18 11:23	1,6010D	PE
Potassium, Dissolved	ND		mg/l	2.50	--	1	09/07/18 07:15	09/07/18 11:23	1,6010D	PE
Selenium, Dissolved	ND		mg/l	0.010	--	1	09/07/18 07:15	09/07/18 11:23	1,6010D	PE
Silicon, Dissolved	ND		mg/l	0.500	--	1	09/07/18 07:15	09/07/18 11:23	1,6010D	PE
Silver, Dissolved	ND		mg/l	0.007	--	1	09/07/18 07:15	09/07/18 11:23	1,6010D	PE
Sodium, Dissolved	ND		mg/l	2.00	--	1	09/07/18 07:15	09/07/18 11:23	1,6010D	PE
Strontium, Dissolved	ND		mg/l	0.010	--	1	09/07/18 07:15	09/07/18 11:23	1,6010D	PE
Titanium, Dissolved	ND		mg/l	0.010	--	1	09/07/18 07:15	09/07/18 11:23	1,6010D	PE
Vanadium, Dissolved	ND		mg/l	0.010	--	1	09/07/18 07:15	09/07/18 11:23	1,6010D	PE
Zinc, Dissolved	ND		mg/l	0.050	--	1	09/07/18 07:15	09/07/18 11:23	1,6010D	PE

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Dissolved Metals - Mansfield Lab for sample(s): 01 Batch: WG1154476-1										
Antimony, Dissolved	ND		mg/l	0.00400	--	1	09/07/18 07:15	09/07/18 12:18	1,6020B	AM
Beryllium, Dissolved	ND		mg/l	0.00050	--	1	09/07/18 07:15	09/07/18 12:18	1,6020B	AM
Cadmium, Dissolved	ND		mg/l	0.00020	--	1	09/07/18 07:15	09/07/18 12:18	1,6020B	AM
Thallium, Dissolved	ND		mg/l	0.00050	--	1	09/07/18 07:15	09/07/18 12:18	1,6020B	AM

Prep Information

Digestion Method: EPA 3005A

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01 Batch: WG1154487-1										
Sulfur, Total	ND		mg/l	0.250	--	1	09/07/18 06:50	09/07/18 07:37	1,6010D	PE

Prep Information

Digestion Method: EPA 3015A

Lab Control Sample Analysis

Batch Quality Control

Project Name: NAF BELFAST

Project Number: 171.05027.003.02

Lab Number: L1834480

Report Date: 09/07/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1152667-2								
Mercury, Total	96		-		80-120	-		
Dissolved Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1152711-2								
Mercury, Dissolved	105		-		80-120	-		

Lab Control Sample Analysis

Batch Quality Control

Project Name: NAF BELFAST

Project Number: 171.05027.003.02

Lab Number: L1834480

Report Date: 09/07/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1154185-2					
Aluminum, Total	102	-	80-120	-	
Arsenic, Total	111	-	80-120	-	
Barium, Total	100	-	80-120	-	
Boron, Total	110	-	80-120	-	
Calcium, Total	103	-	80-120	-	
Chromium, Total	100	-	80-120	-	
Cobalt, Total	98	-	80-120	-	
Copper, Total	96	-	80-120	-	
Iron, Total	103	-	80-120	-	
Lead, Total	102	-	80-120	-	
Magnesium, Total	102	-	80-120	-	
Manganese, Total	99	-	80-120	-	
Molybdenum, Total	93	-	80-120	-	
Nickel, Total	100	-	80-120	-	
Potassium, Total	101	-	80-120	-	
Selenium, Total	116	-	80-120	-	
Silver, Total	102	-	80-120	-	
Sodium, Total	101	-	80-120	-	
Strontium, Total	98	-	80-120	-	
Titanium, Total	101	-	80-120	-	
Vanadium, Total	103	-	80-120	-	

Lab Control Sample Analysis
Batch Quality Control

Project Name: NAF BELFAST
Project Number: 171.05027.003.02

Lab Number: L1834480
Report Date: 09/07/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1154185-2					
Zinc, Total	107	-	80-120	-	
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 Batch: WG1154185-2					
Hardness	103	-	80-120	-	
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1154187-2					
Antimony, Total	104	-	80-120	-	
Beryllium, Total	106	-	80-120	-	
Cadmium, Total	117	-	80-120	-	
Thallium, Total	108	-	80-120	-	

Lab Control Sample Analysis

Batch Quality Control

Project Name: NAF BELFAST

Project Number: 171.05027.003.02

Lab Number: L1834480

Report Date: 09/07/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1154475-2					
Aluminum, Dissolved	107	-	80-120	-	
Arsenic, Dissolved	108	-	80-120	-	
Barium, Dissolved	103	-	80-120	-	
Boron, Dissolved	108	-	80-120	-	
Calcium, Dissolved	103	-	80-120	-	
Chromium, Dissolved	101	-	80-120	-	
Cobalt, Dissolved	101	-	80-120	-	
Copper, Dissolved	99	-	80-120	-	
Iron, Dissolved	105	-	80-120	-	
Lead, Dissolved	102	-	80-120	-	
Magnesium, Dissolved	98	-	80-120	-	
Manganese, Dissolved	101	-	80-120	-	
Molybdenum, Dissolved	98	-	80-120	-	
Nickel, Dissolved	102	-	80-120	-	
Potassium, Dissolved	102	-	80-120	-	
Selenium, Dissolved	114	-	80-120	-	
Silicon, Dissolved	99	-	80-120	-	
Silver, Dissolved	101	-	80-120	-	
Sodium, Dissolved	108	-	80-120	-	
Strontium, Dissolved	102	-	80-120	-	
Titanium, Dissolved	103	-	80-120	-	

Lab Control Sample Analysis
Batch Quality Control

Project Name: NAF BELFAST

Project Number: 171.05027.003.02

Lab Number: L1834480

Report Date: 09/07/18

Parameter	LCS %Recovery	LCSD %Recovery	%Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1154475-2					
Vanadium, Dissolved	106	-	80-120	-	
Zinc, Dissolved	109	-	80-120	-	
Dissolved Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1154476-2					
Antimony, Dissolved	100	-	80-120	-	
Beryllium, Dissolved	118	-	80-120	-	
Cadmium, Dissolved	112	-	80-120	-	
Thallium, Dissolved	103	-	80-120	-	
Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG1154487-2					
Sulfur, Total	112	-	80-120	-	

Matrix Spike Analysis
Batch Quality Control

Project Name: NAF BELFAST
Lab Number: L1834480
Project Number: 171.05027.003.02
Report Date: 09/07/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1152711-3 QC Sample: L1834480-01 Client ID: PW-1												
Mercury, Dissolved	ND	0.005	0.00474	95		-	-		75-125	-		20

Matrix Spike Analysis
Batch Quality Control

Project Name: NAF BELFAST
Project Number: 171.05027.003.02

Lab Number: L1834480
Report Date: 09/07/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery		MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1154185-3 QC Sample: L1834480-01 Client ID: PW-1										
Aluminum, Total	ND	2	2.12	106		-	-	75-125	-	20
Arsenic, Total	0.006	0.12	0.144	114		-	-	75-125	-	20
Barium, Total	ND	2	2.09	104		-	-	75-125	-	20
Boron, Total	ND	1	1.15	115		-	-	75-125	-	20
Calcium, Total	11.6	10	22.9	113		-	-	75-125	-	20
Chromium, Total	ND	0.2	0.206	103		-	-	75-125	-	20
Cobalt, Total	ND	0.5	0.500	100		-	-	75-125	-	20
Copper, Total	ND	0.25	0.249	100		-	-	75-125	-	20
Iron, Total	3.20	1	4.45	125		-	-	75-125	-	20
Lead, Total	ND	0.51	0.531	104		-	-	75-125	-	20
Magnesium, Total	5.10	10	15.8	107		-	-	75-125	-	20
Manganese, Total	0.034	0.5	0.553	104		-	-	75-125	-	20
Molybdenum, Total	ND	1	0.987	99		-	-	75-125	-	20
Nickel, Total	ND	0.5	0.512	102		-	-	75-125	-	20
Potassium, Total	ND	10	13.0	**130**	Q	-	-	75-125	-	20
Selenium, Total	ND	0.12	0.143	119		-	-	75-125	-	20
Silver, Total	ND	0.05	0.052	104		-	-	75-125	-	20
Sodium, Total	13.8	10	25.0	112		-	-	75-125	-	20
Strontium, Total	0.053	1	1.08	103		-	-	75-125	-	20
Titanium, Total	ND	1	1.06	106		-	-	75-125	-	20
Vanadium, Total	ND	0.5	0.534	107		-	-	75-125	-	20

Matrix Spike Analysis
Batch Quality Control

Project Name: NAF BELFAST
Project Number: 171.05027.003.02

Lab Number: L1834480
Report Date: 09/07/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1154185-3 QC Sample: L1834480-01 Client ID: PW-1									
Zinc, Total	ND	0.5	0.564	113	-	-	75-125	-	20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1154185-3 QC Sample: L1834480-01 Client ID: PW-1									
Hardness	49.9	66.2	122	109	-	-	75-125	-	20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1154187-3 QC Sample: L1834480-01 Client ID: PW-1									
Antimony, Total	ND	0.5	0.5947	119	-	-	75-125	-	20
Beryllium, Total	ND	0.05	0.05541	111	-	-	75-125	-	20
Cadmium, Total	ND	0.051	0.06234	122	-	-	75-125	-	20
Thallium, Total	ND	0.12	0.1452	121	-	-	75-125	-	20

Matrix Spike Analysis
Batch Quality Control

Project Name: NAF BELFAST
Project Number: 171.05027.003.02

Lab Number: L1834480
Report Date: 09/07/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1154475-3 QC Sample: L1834480-01 Client ID: PW-1									
Aluminum, Dissolved	ND	2	2.10	105	-	-	75-125	-	20
Arsenic, Dissolved	0.005	0.12	0.137	110	-	-	75-125	-	20
Barium, Dissolved	ND	2	2.09	104	-	-	75-125	-	20
Boron, Dissolved	ND	1	1.12	112	-	-	75-125	-	20
Calcium, Dissolved	11.8	10	22.0	102	-	-	75-125	-	20
Chromium, Dissolved	ND	0.2	0.205	102	-	-	75-125	-	20
Cobalt, Dissolved	ND	0.5	0.511	102	-	-	75-125	-	20
Copper, Dissolved	ND	0.25	0.252	101	-	-	75-125	-	20
Iron, Dissolved	3.31	1	4.29	98	-	-	75-125	-	20
Lead, Dissolved	ND	0.51	0.526	103	-	-	75-125	-	20
Magnesium, Dissolved	5.04	10	14.9	99	-	-	75-125	-	20
Manganese, Dissolved	0.036	0.5	0.542	101	-	-	75-125	-	20
Molybdenum, Dissolved	ND	1	1.00	100	-	-	75-125	-	20
Nickel, Dissolved	ND	0.5	0.514	103	-	-	75-125	-	20
Potassium, Dissolved	2.51	10	12.9	104	-	-	75-125	-	20
Selenium, Dissolved	ND	0.12	0.140	117	-	-	75-125	-	20
Silicon, Dissolved	10.8	1	12.0	120	-	-	75-125	-	20
Silver, Dissolved	ND	0.05	0.051	102	-	-	75-125	-	20
Sodium, Dissolved	14.9	10	25.4	105	-	-	75-125	-	20
Strontium, Dissolved	0.057	1	1.09	103	-	-	75-125	-	20
Titanium, Dissolved	ND	1	1.06	106	-	-	75-125	-	20

Matrix Spike Analysis
Batch Quality Control

Project Name: NAF BELFAST
Lab Number: L1834480
Project Number: 171.05027.003.02
Report Date: 09/07/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1154475-3 QC Sample: L1834480-01 Client ID: PW-1									
Vanadium, Dissolved	ND	0.5	0.541	108	-	-	75-125	-	20
Zinc, Dissolved	ND	0.5	0.566	113	-	-	75-125	-	20
Dissolved Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1154476-3 QC Sample: L1834480-01 Client ID: PW-1									
Antimony, Dissolved	ND	0.5	0.5600	112	-	-	75-125	-	20
Beryllium, Dissolved	ND	0.05	0.05325	106	-	-	75-125	-	20
Cadmium, Dissolved	ND	0.051	0.05212	102	-	-	75-125	-	20
Thallium, Dissolved	ND	0.12	0.1397	116	-	-	75-125	-	20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1154487-3 QC Sample: L1834480-01 Client ID: PW-1									
Sulfur, Total	4.79	0.5	5.31	104	-	-	75-125	-	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: NAF BELFAST

Project Number: 171.05027.003.02

Lab Number: L1834480

Report Date: 09/07/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1152711-4 QC Sample: L1834480-01 Client ID: PW-1						
Mercury, Dissolved	ND	ND	mg/l	NC		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: NAF BELFAST

Project Number: 171.05027.003.02

Lab Number: L1834480

Report Date: 09/07/18

Parameter	Native Sample	Duplicate Sample	Units	RPD		RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1154185-4 QC Sample: L1834480-01 Client ID: PW-1						
Aluminum, Total	ND	ND	mg/l	NC		20
Arsenic, Total	0.006	0.008	mg/l	**23**	Q	20
Barium, Total	ND	ND	mg/l	NC		20
Boron, Total	ND	ND	mg/l	NC		20
Calcium, Total	11.6	11.7	mg/l	1		20
Chromium, Total	ND	ND	mg/l	NC		20
Cobalt, Total	ND	ND	mg/l	NC		20
Copper, Total	ND	ND	mg/l	NC		20
Iron, Total	3.20	3.24	mg/l	1		20
Lead, Total	ND	ND	mg/l	NC		20
Magnesium, Total	5.10	5.13	mg/l	1		20
Manganese, Total	0.034	0.034	mg/l	1		20
Molybdenum, Total	ND	ND	mg/l	NC		20
Nickel, Total	ND	ND	mg/l	NC		20
Potassium, Total	ND	ND	mg/l	NC		20
Selenium, Total	ND	ND	mg/l	NC		20
Silver, Total	ND	ND	mg/l	NC		20
Sodium, Total	13.8	13.9	mg/l	1		20
Strontium, Total	0.053	0.054	mg/l	2		20

Lab Duplicate Analysis

Batch Quality Control

Project Name: NAF BELFAST
Project Number: 171.05027.003.02

Lab Number: L1834480
Report Date: 09/07/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1154185-4 QC Sample: L1834480-01 Client ID: PW-1					
Titanium, Total	ND	ND	mg/l	NC	20
Vanadium, Total	ND	ND	mg/l	NC	20
Zinc, Total	ND	ND	mg/l	NC	20
Total Hardness by SM 2340B - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1154185-4 QC Sample: L1834480-01 Client ID: PW-1					
Hardness	49.9	50.4	mg/l	1	20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1154187-4 QC Sample: L1834480-01 Client ID: PW-1					
Antimony, Total	ND	ND	mg/l	NC	20
Beryllium, Total	ND	ND	mg/l	NC	20
Cadmium, Total	ND	ND	mg/l	NC	20
Thallium, Total	ND	ND	mg/l	NC	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: NAF BELFAST

Project Number: 171.05027.003.02

Lab Number: L1834480

Report Date: 09/07/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1154475-4 QC Sample: L1834480-01 Client ID: PW-1					
Aluminum, Dissolved	ND	ND	mg/l	NC	20
Arsenic, Dissolved	0.005	ND	mg/l	NC	20
Barium, Dissolved	ND	ND	mg/l	NC	20
Boron, Dissolved	ND	ND	mg/l	NC	20
Calcium, Dissolved	11.8	11.6	mg/l	2	20
Chromium, Dissolved	ND	ND	mg/l	NC	20
Cobalt, Dissolved	ND	ND	mg/l	NC	20
Copper, Dissolved	ND	ND	mg/l	NC	20
Iron, Dissolved	3.31	3.23	mg/l	2	20
Lead, Dissolved	ND	ND	mg/l	NC	20
Magnesium, Dissolved	5.04	4.96	mg/l	2	20
Manganese, Dissolved	0.036	0.034	mg/l	5	20
Molybdenum, Dissolved	ND	ND	mg/l	NC	20
Nickel, Dissolved	ND	ND	mg/l	NC	20
Potassium, Dissolved	2.51	ND	mg/l	NC	20
Selenium, Dissolved	ND	ND	mg/l	NC	20
Silicon, Dissolved	10.8	10.4	mg/l	4	20
Silver, Dissolved	ND	ND	mg/l	NC	20
Sodium, Dissolved	14.9	14.6	mg/l	2	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: NAF BELFAST

Project Number: 171.05027.003.02

Lab Number: L1834480

Report Date: 09/07/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	RPD Limits
Dissolved Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1154475-4 QC Sample: L1834480-01 Client ID: PW-1					
Strontium, Dissolved	0.057	0.056	mg/l	3	20
Titanium, Dissolved	ND	ND	mg/l	NC	20
Vanadium, Dissolved	ND	ND	mg/l	NC	20
Zinc, Dissolved	ND	ND	mg/l	NC	20
Dissolved Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1154476-4 QC Sample: L1834480-01 Client ID: PW-1					
Antimony, Dissolved	ND	ND	mg/l	NC	20
Beryllium, Dissolved	ND	ND	mg/l	NC	20
Cadmium, Dissolved	ND	ND	mg/l	NC	20
Thallium, Dissolved	ND	ND	mg/l	NC	20
Total Metals - Mansfield Lab Associated sample(s): 01 QC Batch ID: WG1154487-4 QC Sample: L1834480-01 Client ID: PW-1					
Sulfur, Total	4.79	4.77	mg/l	0	20

INORGANICS
&
MISCELLANEOUS

Project Name: NAF BELFAST
Lab Number: L1834480
Project Number: 171.05027.003.02
Report Date: 09/07/18

SAMPLE RESULTS

Lab ID: L1834480-01
Date Collected: 08/30/18 09:00
Client ID: PW-1
Date Received: 08/30/18
Sample Location: BELFAST, ME
Field Prep: Refer to COC

Sample Depth:
Matrix: Water

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab										
Turbidity	0.87		NTU	0.20	--	1	-	08/31/18 00:46	121,2130B	AS
Color, True	7.0		A.P.C.U.	5.0	--	1	-	08/31/18 02:30	121,2120B	GD
Color, Apparent	13		A.P.C.U.	5.0	--	1	-	08/31/18 02:30	121,2120B	GD
UV Absorbance @ 254nm	0.034		Abs/cm	0.005	NA	1	-	08/31/18 03:18	121,5910B	GD
Alkalinity, Total	71.3		mg CaCO3/L	2.00	NA	1	-	08/31/18 02:49	121,2320B	GD
Carbon Dioxide	980		mg/l	2.0	--	1	-	08/31/18 02:49	121,4500CO2-D	GD
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	08/31/18 15:05	121,2540D	DR
Phosphorus, Total	0.116		mg/l	0.010	--	1	08/31/18 09:15	08/31/18 13:03	121,4500P-E	SD
Phosphorus, Soluble	0.108		mg/l	0.010	--	1	09/05/18 14:25	09/06/18 09:54	121,4500P-E	SD

Method Blank Analysis

Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1152424-1										
Turbidity	ND		NTU	0.20	--	1	-	08/31/18 00:46	121,2130B	AS
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1152523-1										
Phosphorus, Total	ND		mg/l	0.010	--	1	08/31/18 09:15	08/31/18 12:36	121,4500P-E	SD
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1152545-1										
UV Absorbance @ 254nm	ND		Abs/cm	0.005	NA	1	-	08/31/18 03:18	121,5910B	GD
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1152582-1										
Alkalinity, Total	ND		mg CaCO3/L	2.00	NA	1	-	08/31/18 02:49	121,2320B	GD
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1152660-1										
Solids, Total Suspended	ND		mg/l	5.0	NA	1	-	08/31/18 15:05	121,2540D	DR
General Chemistry - Westborough Lab for sample(s): 01 Batch: WG1153798-1										
Phosphorus, Soluble	ND		mg/l	0.010	--	1	09/05/18 14:25	09/06/18 09:43	121,4500P-E	SD

Lab Control Sample Analysis

Batch Quality Control

Project Name: NAF BELFAST
Project Number: 171.05027.003.02

Lab Number: L1834480
Report Date: 09/07/18

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1152424-2								
Turbidity	105		-		90-110	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1152523-2								
Phosphorus, Total	100		-		80-120	-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1152545-2								
UV Absorbance @ 254nm	100		-			-		
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1152582-2								
Alkalinity, Total	101		-		90-110	-		10
General Chemistry - Westborough Lab Associated sample(s): 01 Batch: WG1153798-2								
Phosphorus, Soluble	97		-		80-120	-		

Matrix Spike Analysis
Batch Quality Control

Project Name: NAF BELFAST
Project Number: 171.05027.003.02

Lab Number: L1834480
Report Date: 09/07/18

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	Qual	MSD Found	MSD %Recovery	Qual	Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1152582-4 QC Sample: L1834480-01 Client ID: PW-1												
Alkalinity, Total	71.3	100	160	89		-	-		86-116	-		10

Lab Duplicate Analysis

Batch Quality Control

Project Name: NAF BELFAST

Project Number: 171.05027.003.02

Lab Number: L1834480

Report Date: 09/07/18

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1152545-3 QC Sample: L1834480-01 Client ID: PW-1						
UV Absorbance @ 254nm	0.034	0.033	Abs/cm	3		
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1152581-1 QC Sample: L1834480-01 Client ID: PW-1						
Carbon Dioxide	980	630	mg/l	43		
General Chemistry - Westborough Lab Associated sample(s): 01 QC Batch ID: WG1152582-3 QC Sample: L1834480-01 Client ID: PW-1						
Alkalinity, Total	71.3	60.5	mg CaCO3/L	**16**	Q	10

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	*Custody Seal*
A	Absent

Container Information

Container ID	*Container Type*	*Cooler*	*Initial pH*	*Final pH*	*Temp deg C*	*Pres*	*Seal*	*Frozen Date/Time*	*Analysis(*)*
L1834480-01A	Vial HCl preserved	A	NA		3.6	Y	Absent		ME-8260(14)
L1834480-01B	Vial HCl preserved	A	NA		3.6	Y	Absent		ME-8260(14)
L1834480-01C	Vial HCl preserved	A	NA		3.6	Y	Absent		ME-8260(14)
L1834480-01D	Vial unpreserved 20ml	A	NA		3.6	Y	Absent		DISSGAS-CO2(7)
L1834480-01E	Vial unpreserved 20ml	A	NA		3.6	Y	Absent		DISSGAS-CO2(7)
L1834480-01F	Plastic 250ml unpreserved/No Headspace	A	NA		3.6	Y	Absent		ALK-T-2320(14),CO2(1)
L1834480-01G	Plastic 250ml HNO3 preserved	A	<2	<2	3.6	Y	Absent		B-SI(180),PB-SI(180),FE-SI(180),BA-SI(180),BE-6020S(180),TI-SI(180),AG-SI(180),AS-SI(180),CU-SI(180),MN-SI(180),NA-SI(180),NI-SI(180),AL-SI(180),CO-SI(180),SI-SI(180),SR-SI(180),TL-6020S(180),CR-SI(180),K-SI(180),MG-SI(180),MO-SI(180),SB-6020S(180),CA-SI(180),CD-6020S(180),HG-S(28),SE-SI(180),V-SI(180),ZN-SI(180)
L1834480-01H	Plastic 250ml HNO3 preserved	A	<2	<2	3.6	Y	Absent		TL-6020T(180),AS-TI(180),BA-TI(180),AG-TI(180),AL-TI(180),B-TI(180),CR-TI(180),MO-TI(180),NI-TI(180),S-TI(180),BE-6020T(180),CU-TI(180),PB-TI(180),SE-TI(180),TI-TI(180),ZN-TI(180),CO-TI(180),SB-6020T(180),V-TI(180),CD-6020T(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),SR-TI(180),CA-TI(180),HARDT(180),K-TI(180),NA-TI(180)
L1834480-01I	Plastic 500ml HNO3 preserved	A	<2	<2	3.6	Y	Absent		TL-6020T(180),AS-TI(180),BA-TI(180),AG-TI(180),AL-TI(180),B-TI(180),CR-TI(180),MO-TI(180),NI-TI(180),S-TI(180),BE-6020T(180),CU-TI(180),PB-TI(180),SE-TI(180),TI-TI(180),ZN-TI(180),CO-TI(180),SB-6020T(180),V-TI(180),CD-6020T(180),FE-TI(180),HG-T(28),MG-TI(180),MN-TI(180),SR-TI(180),CA-TI(180),HARDT(180),K-TI(180),NA-TI(180)
L1834480-01J	Plastic 950ml unpreserved	A	7	7	3.6	Y	Absent		TSS-2540(7)
L1834480-01K	Amber 500ml unpreserved	A	7	7	3.6	Y	Absent		UV-254(2),COLOR-T-2120(2),COLOR-A-2120(2)

*Values in parentheses indicate holding time in days

Container Information

Container ID	**Container Type**	**Cooler**	**Initial pH**	**Final pH**	**Temp deg C**	**Pres**	**Seal**	**Frozen Date/Time**	**Analysis(*)**
L1834480-01L	Plastic 250ml H2SO4 preserved	A	<2	<2	3.6	Y	Absent		TPHOS-4500(28)
L1834480-01M	Plastic 250ml H2SO4 preserved	A	<2	<2	3.6	Y	Absent		SPHOS-4500(28)
L1834480-01N	Amber 1000ml unpreserved	A	7	7	3.6	Y	Absent		8270TCL(7),8270TCL-SIM(7)
L1834480-01O	Amber 1000ml unpreserved	A	7	7	3.6	Y	Absent		8270TCL(7),8270TCL-SIM(7)
L1834480-01P	Plastic 250ml unpreserved	A	7	7	3.6	Y	Absent		TURB-2130(2)
L1834480-02A	Vial HCl preserved	A	NA		3.6	Y	Absent		HOLD-8260(14)
L1834480-02B	Vial HCl preserved	A	NA		3.6	Y	Absent		HOLD-8260(14)

*Values in parentheses indicate holding time in days

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample¿s toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Report Format: Data Usability Report

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

117 Technical Guidance for the Natural Attenuation Indicators: Methane, Ethane, and Ethene, EPA-NE, Revision 1, February 21, 2002 and Sample Preparation & Calculations for Dissolved Gas Analysis in Water Samples using a GC Headspace Equilibration Technique, EPA RSKSOP-175, Revision 2, May 2004.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

LIMITATION OF LIABILITIES

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility
EPA 624: m/p-xylene, o-xylene
EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270D: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
EPA 300: DW: Bromide
EPA 6860: SCM: Perchlorate
EPA 9010: NPW and SCM: Amenable Cyanide Distillation
SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility
SM 2540D: TSS
EPA 8082A: NPW: PCB: 1, 5, 31, 87,101, 110, 141, 151, 153, 180, 183, 187.
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
Biological Tissue Matrix: EPA 3050B

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B**
EPA 332: Perchlorate; **EPA 524.2:** THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **EPA 351.1, SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-D, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D.**
EPA 624: Volatile Halocarbons & Aromatics,
EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625: SVOC (Acid/Base/Neutral Extractables), **EPA 600/4-81-045**: PCB-Oil.
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT, SM9221E, SM9222D.**

Mansfield Facility:

Drinking Water
EPA 200.7: Al, Ba, Be, Cd, Cr, Cu, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.
EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

Ransom

Serial_No:09071817:47

CHAIN OF CUSTODY

PAGE 1 OF 1

Date Rec'd in Lab: 8/30/18

ALPHA Job #: L1834480

ALPHA

8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Client Information

Client: Ransom Consulting, Inc.

Address: 112 Corporate Drive
Portsmouth, NH 03801

Phone: 603-436-1490

Email: drew.fuchs@ransomenv.com

Project Information

Project Name: NAF Belfast

Project Location: Belfast, ME

Project #: 171.05027.003.02

Project Manager: Elizabeth Ransom

ALPHA Quote #:

Report Information - Data Deliverables

☒ ADEx ☒ EMAIL

Billing Information

☐ Same as Client info PO #: 11183

Regulatory Requirements & Project Information Requirements

☐ Yes ☒ No MA MCP Analytical Methods ☐ Yes ☒ No CT RCP Analytical Methods

☐ Yes ☒ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)

☐ Yes ☒ No GW1 Standards (Info Required for Metals & EPH with Targets)

☐ Yes ☒ No NPDES RGP

☐ Other State /Fed Program ________ Criteria [illegible]

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)

Date Due:

Additional Project Information:

Dissolved metals & soluble phosphorus were field filtered.

ANALYSIS

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC: ☒ 8260 ☐ 624 ☐ 524.2	SVOC: ☒ ABN ☒ PAH 8270	METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15	METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13	EPH: ☐ Ranges & Targets ☐ Ranges Only	VPH: ☐ Ranges & Targets ☐ Ranges Only	☐ PCB ☐ PEST	TPH: ☐ Quant Only ☐ Fingerprint	Dissolved TAL metals plus Mo, Si, Sr, Ti, B	Total TAL metals plus Mo, Si, Sr, Ti, B	Total + soluble phosphorus	Total Alkalinity, Total Sulfur, Total Hardness	Total Suspended Solids, Turbidity, UV absorbance, True color, Apparent color	Dissolved CO2, Total CO2	Sample Comments	TOTAL # BOTTLES
34480.01	PW-1	8-30-18	9:00	GW	DAF	X	X							X	X	X	X	X	X		14
.02	Trip Blank					X														HOLD	2

SAMPLE INFO

Filtration
☐ Field
☐ Lab to do

Preservation
☐ Lab to do

	VOC	SVOC	METALS	METALS	EPH	VPH	PCB	TPH						
Container Type	V	A							P	P	P	P	A/P	V/P
Preservative	B	A							C	C	D	A/C	A	A

Relinquished By:	Date/Time	Received By:	Date/Time
Drew Fuchs	8-30-18/18:06	Rob Macato AAL	8/30/18 18:50
Rob Macato	8/30/18 2010		8/30/18 2010

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

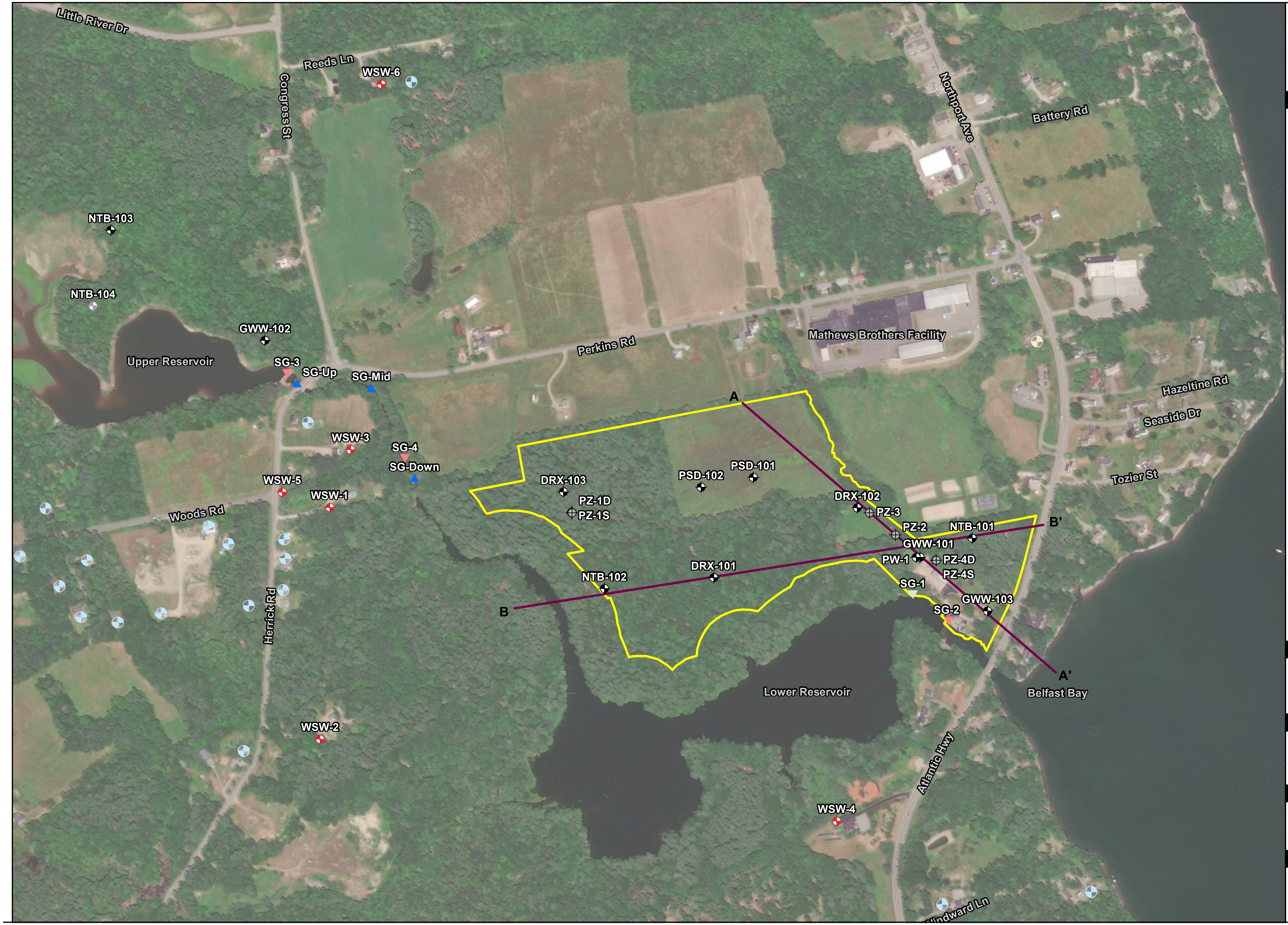
FORM NO: 01-01 (rev. 12-Mar-2012)

APPENDIX H

Conceptual Geologic Cross Sections

Hydrogeologic Investigation Report
Proposed Commercial Land-Based Aquaculture Facility
Belfast Water District, Cassida Back Lot, and Mathews Brothers West Field Properties
285 Northport Avenue
Belfast, Maine

Ransom Consulting, Inc.
Project 171.05027.003



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Engineers
and Scientists

Legend & Notes

- Site Boundary
- ▼ Staff Gage
- ▽ Staff Gage-Abandoned
- ▲ Stream Gage-Manual
- ⊕ Wetland Piezometer
- ◆ Monitoring Well
- ◇ Monitoring Well-Abandoned
- ● Private Well-Monitored
- ○ Private Well-Not Monitored Assumed Location
- ○ Private Well-Out of Service Unable to Locate
- ╲ Cross Section Line

Notes

1. Site Plan based on available orthoimagery
2. Some features are approximate in location and scale.
3. This plan has been prepared for Nordic Aquafarms Inc. All other uses are not authorized unless written permission is obtained from Ransom Consulting, Inc.

Scale & Orientation

0 250 500
1 inch = 500 feet

Prepared For

Nordic Aquafarms, Inc.
159 High Street
Belfast, Maine

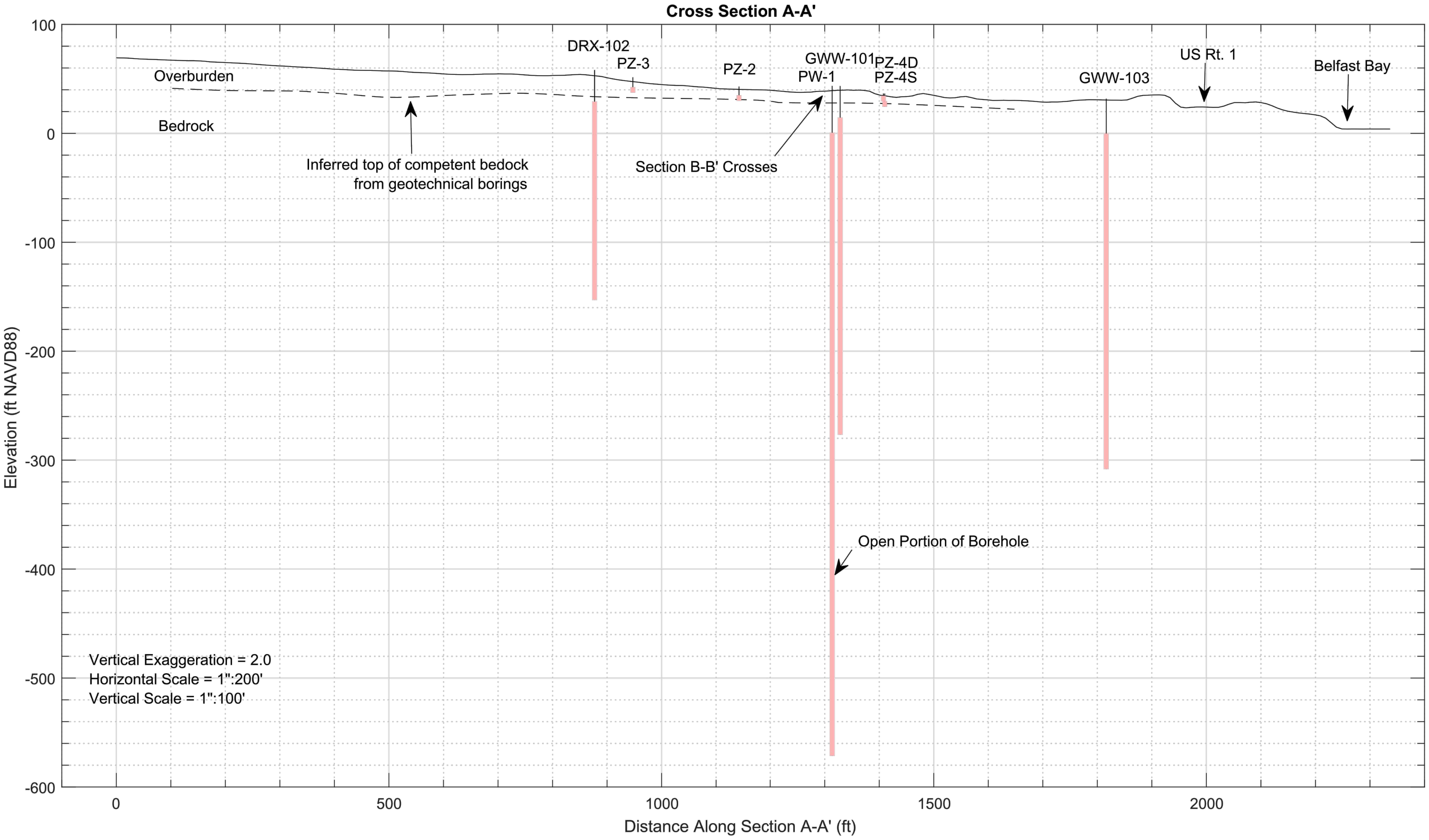
Site Address

Belfast Water District Property
285 Northport Avenue
Belfast, Maine

171.05027 Apr 2019

Figure 1:
Site Area Map

C:\Users\thomas.neilson\Documents\GIS\ME\Maps\NordicA



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Engineers
and Scientists

Legend & Notes

1. Cross section data sources include: ground surface elevation from USGS National Elevation Dataset, competent bedrock surface elevation from geotechnical investigations completed by Ransom Consulting, Inc., and boring logs from wells installed at the Site.
2. Some features are approximate in location and scale.
3. This plan has been prepared for Nordic Aquafarms, Inc. All other uses are not authorized unless written permission is obtained from Ransom Consulting, Inc.

Prepared For

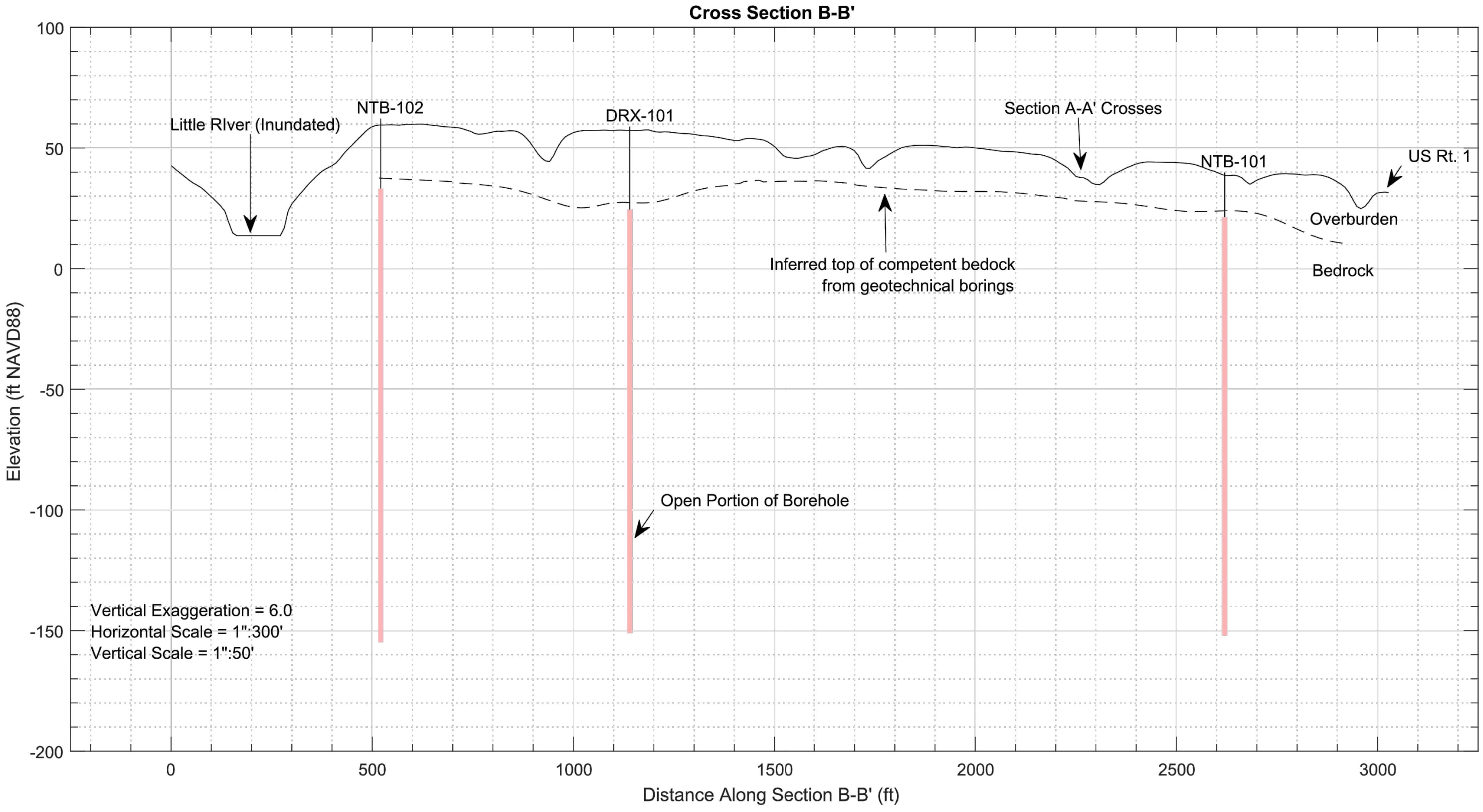
Nordic Aquafarms, Inc.
159 High Street
Belfast, Maine

Site Address

Belfast Water District Property
285 Northport Avenue
Belfast, Maine

171.05027.003 | *Mar 2019*

Figure 2
Geologic Cross Section A-A'



RANSOM
Consulting
Engineers
and Scientists

Legend & Notes

1. Cross section data sources include: ground surface elevation from USGS National Elevation Dataset, competent bedrock surface elevation from geotechnical investigations completed by Ransom Consulting, Inc., and boring logs from wells installed at the Site.
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Prepared For

Nordic Aquafarms, Inc.
159 High Street
Belfast, Maine

Site Address

Belfast Water District Property
285 Northport Avenue
Belfast, Maine

171.05027.003 *Mar 2019*

Figure 3
Geologic Cross Section B-B'