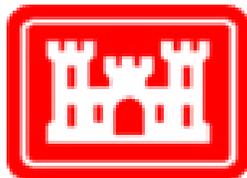


**2022 WATER QUALITY MONITORING  
BLUE MARSH RESERVOIR  
LEESPORT, PENNSYLVANIA**



**U.S. Army Corps of Engineers  
Philadelphia District  
Environmental Resources Branch**

**February 2023**

**2022 Water Quality Monitoring  
Blue Marsh Reservoir  
Leesport, Pennsylvania**

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# Executive Summary

The United States Army Corps of Engineers, Philadelphia District, implemented a water quality monitoring program during the mid-1970s to evaluate how its dam and reservoir civil works projects may be affecting water resources. Data collected during this initial effort and annually thereafter serves as an invaluable tool for evaluating the significance of annual water quality measurements and tracking long-term trends. The District's Water Quality Program's area of responsibility includes 4 flood control reservoirs and is utilized to evaluate changes in operations and their potential effects on water quality, the environment, and public use and safety.

While water quality in the Philadelphia District's reservoirs is generally good overall, several water quality issues exist at each project and need to be closely monitored. The Blue Marsh Reservoir is a relatively shallow lake (50 feet deep at its greatest depths) with a watershed that is predominantly agriculture land use based with elevated nutrient loads that directly affects the water quality of the lake. Recent and future commercial and residential development in the watershed may have long term implications on water quality in the basin and lake. Water quality within the lake and release waters are directly affected by changing operations historically and annually for recreation, water quality, flood risk management, and drought storage operations. The project has a selective withdrawal tower that is used to mitigate water quality concerns (temperature) downstream. As it relates to Blue Marsh Reservoir water quality conditions during the May through September 2022 sampling season, the following observations were made:

- Monthly water quality profile monitoring at nine fixed stations was conducted from May through September 2022. The reservoir developed temperature stratification, that is directly affected by changing operations and meteorological conditions experienced throughout the sampling season. In 2022, tributary and release water temperatures, at times, exceeded the Pennsylvania state water quality criteria for maintenance of cold-water fisheries in late summer and early fall. Annually the Corps performs selective withdrawal releases to maintain temperatures downstream in the Tulpehocken Creek of less than 20°C in support of the trout fishery. The ability to meet this objective is dependent on meteorological conditions and other physical and operational limitations. The downstream temperature objective was exceeded in 2022 from late July through September.
- Dissolved oxygen (DO) levels remained above the minimum Pennsylvania state water quality criteria for the epilimnion (upper water column) of stratified lakes. The Pennsylvania water quality standard for DO is a minimum concentration of 5 mg/L within the epilimnion of stratified lakes. However, the deeper waters of the reservoir pool experienced severe low oxygen conditions throughout the sampling season. There are no state criteria established for deep water dissolved oxygen levels. In 2022, the DO pattern in the deeper water column was slightly more pronounced than the previous four years with anoxic conditions forming earlier and more quickly. Stratification development was apparent in May with bottom water DO levels approaching 0.0 mg/L and persisting through September, with low DO concentrations most severe in the July and August timeframe. The health of aquatic ecosystems can be impaired by low DO concentrations in the water column. Hypoxia, or conditions of DO concentrations less than 2 mg/L, is generally accepted as the threshold at which the most severe effects on biota occur. In all months sampled during 2022, the water column of Blue Marsh Reservoir was affected by hypoxia. Hypoxic water occupied up to 65% of the water column in mid-June through September. Waters forming the Tulpehocken Creek downstream of the dam are re-aerated as they pass through the outlet system of the reservoir during releases. This allowed dissolved oxygen levels to remain well above Pennsylvania state surface water quality criteria downstream throughout the year.
- The pH profile in the water column of Blue Marsh Reservoir was consistent with a stratified lake during 2022. Increased surface water productivity (algae blooms) in Blue Marsh Reservoir result in lake surface waters being slightly higher in pH than deeper waters. Lake surface waters exceeded the PADEP water quality standard maximum pH level of 9.0 during the month of July.

# Executive Summary

- Apart from total phosphorus, nutrient samples collected in 2022 (including samples from reservoir, tailwater, and tributary sites), remained consistent with United States Environmental Protection Agency (EPA) or Pennsylvania state water quality criteria and recommended levels during the May through September sampling season. EPA guidance for nutrient criteria in lakes and reservoirs suggests a maximum concentration for total phosphorus of 0.01-mg/L. Lakes and reservoirs exceeding this concentration are more likely to experience algal bloom and eutrophication challenges. Total phosphorus in the watershed and lake body of Blue Marsh Reservoir was frequently measured at concentrations well above the recommended standard. In 2022, 71 of the 105 samples measured for total phosphorus were greater than the recommended guideline. Tributary surface waters (external loading) and phosphorus bound to bottom sediments released when oxygen levels are depleted in lake bottom waters (internal loading) are the prime contributing factors to eutrophication conditions in Blue Marsh Reservoir. This phosphorus is available for plant growth and facilitates the algal bloom challenges seen in Blue Marsh Reservoir both from an ecological and recreational standpoint.
- As part of the periodic monitoring for arsenic in the Blue Marsh Reservoir sediments and waters, lake bottom water samples collected at tower station BM-6 were analyzed for Total Dissolved Arsenic (3+) once monthly during the sampling season from May through September. All samples analyzed for Total Dissolved Arsenic were either non detect (less than the laboratory minimum limit of detection and quantification of 1.0 ug/L) or less than federal and Pennsylvania human health and aquatic life criteria.
- In 2022, reservoir surface water bacteria (Total and Escherichia coliform) samples were monitored in the tributary and lake surface waters (nine stations) at Blue Marsh Reservoir on five occasions from May through September. The E. coli samples collected at Blue Marsh Reservoir did exceed the 235 organisms/100 ml single water sample threshold on five occasions at upstream tributary stations BM-5S (Tulpehocken Creek) and BM-11S (NorthKill Creek). Elevated counts at stations BM-5S and BM-11S are likely attributed to agricultural land use and other human activities in those upstream watersheds.
- Twice weekly coliform bacteria monitoring was conducted at the public swimming beach at the Dry Brooks Day Use Area of Blue Marsh Reservoir to gauge compliance with Pennsylvania Department of Health and EPA bathing beach water quality standards to ensure public safety for this primary water contact recreation area. During the 2022 recreation season, E. coli samples at the swimming beach area of Blue Marsh Reservoir did not exceed the single sample or 5-day geometric mean criterion. No bacteria related beach closures occurred during 2022.
- Algal blooms have historically been a concern at Blue Marsh Reservoir as the watershed is approximately 55% agriculture land use and reservoir tributary inflows often contain elevated levels of sediments and nutrients. These nutrients along with those released from bottom sediments under low oxygen conditions support the growth of algae and cyanobacteria in Blue Marsh Reservoir. Cooperative monitoring with the State of Pennsylvania was reduced in 2022. However, USACE staff monitored field conditions and cyanobacteria toxin production near the reservoir public use areas (boat launches and swimming beach) utilizing rapid qualitative screening field test kits that provided the ability to rapidly respond to public health and safety concerns. Algae colony densities were variable with some samples elevated in visually identified bloom conditions. Toxin production levels were also variable but did not exceed the Environmental Protection Agency (2019) recommended recreational contact water criteria in any samples. No lake/reservoir recreational closures were initiated because of algal blooms or toxin production. The entire lake remained in a public warning condition for much of the recreational season.

## 1.0 INTRODUCTION

### 1.1 DESCRIPTION OF BLUE MARSH RESERVOIR

Blue Marsh Reservoir was designed to provide flood control, water supply, low flow augmentation, recreation, and enhanced water quality to downstream communities along Tulpehocken Creek. Located about six miles northwest of Reading, Pennsylvania near Route 183, the reservoir impounds a drainage area of 175 square miles. The dam, completed in 1979, can impound up to 40.77 billion gallons of water. The primary surface water inputs into Blue Marsh Reservoir other than Tulpehocken Creek include Wolf, Northkill, and Little Northkill Creek from the northwest; Spring Creek from the west; and Licking Creek from the northeast. The reservoir is approximately 6 miles long and is 52 feet deep immediately above the dam near Lower Heidelberg during normal summer pool.

### 1.2 PURPOSE OF THE MONITORING PROGRAM

The United States Army Corps of Engineers (USACE) commitment to environmental compliance and protection of estuaries, rivers, lakes, and navigable waters arises from the national policy and directives expressed in Federal Statutes, Executive Orders, and internal regulations. These regulations were designed to minimize pollution, maximize recreation, protect aesthetics, preserve natural resources, and promote the comprehensive planning and use of water bodies to enhance the public interest; therefore, USACE, in the design, construction, management, operation, and maintenance of its facilities, exerts leadership within existing authorities and appropriations in the nationwide effort to protect, enhance, and sustain the quality of the nation's resources. It is USACE's policy to comply with requirements of the Clean Water Act and not to degrade existing water quality conditions to the maximum extent that is practicable, consistent with project authorities, Federal legal and regulatory requirements, the public interest, and reservoir water control manuals. The impacts of impounding a free-flowing waterbody can be detrimental, extensive, and enduring. It is the policy of the Corps that the environment be given equal weight, not simply consideration, in all aspects of project management and the operational decision-making process.

The Corps' water quality management authority is founded on the Federal Water Pollution Control Act of 1948 and its amendments. Several Corps policies support operating Corps projects in an environmentally responsible manner. These include Engineer Regulations, Engineer Manuals, and the Environmental Operating Principles. The USACE policy necessitates the development and implementation of a holistic watershed monitoring plan designed to protect resources and execute an environmentally sound water quality management strategy for each project. The activities of the District's Water Quality Program are driven by the guidance and requirements set forth in ER 1110-2-8154, titled "Water Quality and Environmental Management for Corps Civil Works Projects". ER 1110-2-8154 states, "The Corps operates a water quality management program to ensure that all applicable state and federal water quality standards are met, water quality degradation of Corps resources is avoided or minimized, and project responsibilities are attained."

Foremost, Blue Marsh Reservoir provides flood control and a dependable water supply to downstream communities west of Reading, PA. Additionally, the reservoir provides important habitat for fish, waterfowl, and other wildlife, and recreational opportunities through fishing, boating, and swimming. Due to the broad range of uses and demands that Blue Marsh Reservoir serves, the USACE monitors water

quality and other aspects of reservoir ecological health to ensure user safety and protection of environmental resources at the reservoir and downstream along the Tulpehocken Creek and other waterways. Water quality monitoring results are compared to state and federal water quality standards when applicable and used to diagnose problems that commonly effect reservoir health such as low dissolved oxygen, harmful algal blooms, nutrient enrichment, and toxic loadings. This report summarizes the results of water quality monitoring at Blue Marsh Reservoir from May through September 2022.

### **1.3 ELEMENTS OF THE MONITORING**

The USACE, Philadelphia District, has been monitoring the water quality of Blue Marsh Reservoir since 1979. Over this time, the yearly monitoring designs have evolved to address new concerns such as health of public drinking water, contamination of reservoir bottom sediments, and harmful algal blooms. The 2022 monitoring program is similar to those in recent years. The major element of the monitoring includes monthly physical and chemical water quality and bacteria monitoring from May through September to evaluate compliance with the water quality standards and to monitor the overall health of the reservoir. Cyanobacteria and fecal bacteria sampling and monitoring at the Blue Marsh Reservoir swimming beach and other locations in the reservoir is conducted where harmful algal blooms and bacteria concerns are typically observed from summer through fall.

## 2.0 METHODS

### 2.1 PHYSICAL STRATIFICATION MONITORING

Physical stratification monitoring of the reservoir water column was conducted monthly at Blue Marsh Reservoir from 16 May through 12 September 2022 (Table 2-1). Stratification parameters included temperature, dissolved oxygen (DO), pH, Chlorophyll a, turbidity, and conductivity. Monitoring was conducted at nine fixed stations located throughout the reservoir watershed (Fig. 2-1). Six stations were located within the main reservoir body (BM-2, BM-6, BM-7, BM-8, BM-9, and BM-10) for which water quality was measured from surface to bottom at 5-ft depth intervals. Three stations (BM-1S, BM-5S, and BM-11S) were monitored for surface water quality only. All water quality parameters were measured with a calibrated YSI 6600 V2-4 water quality probe. For this report, all the stratification monitoring results, when applicable, were summarized and compared to water quality standards established by the Pennsylvania Department of Environmental Protection (PADEP) – Chapter 93 Water Quality Standards and the United States Environmental Protection Agency (EPA).

Date of Sample Collection	Physical Stratification Monitoring (all stations)	Water Column Chemistry Monitoring (all stations)	Trophic State Assessment (BM-6)	<sup>(1)</sup> Coliform Bacteria Monitoring (all stations)	Algae Grab Samples (Observed Blooms)
16 May	X	X	X	X	(2)
13 June	X	X	X	X	(2)
11 July	X	X	X	X	(2)
15 August	X	X	X	X	(2)
12 September	X	X	X	X	(2)

(1) Surface water bacteria samples only  
(2) Algae samples were collected from observed algal blooms within the lake and swimming beach areas as needed and in coordination with PADEP.

### 2.2 WATER COLUMN CHEMISTRY MONITORING

Water column chemistry monitoring was conducted five times at Blue Marsh Reservoir during the 2022 sampling season (Table 2-1). Water samples were collected at nine fixed stations in the reservoir watershed (Fig. 2-1). Surface water samples were collected at stations downstream of the reservoir (BM-1S), and upstream of the reservoir on Tulpehocken Creek (BM-5S) and Northkill Creek (BM-11S). Surface, middle of the water column, and lake bottom water samples were collected at the six stations within the reservoir (BM-2, BM-6, BM-7, BM-8, BM-9, and BM-10). Surface water samples were collected by opening sample containers approximately one foot below the surface of the water. Middle and bottom water samples were collected with a Van Dorn design horizontal water bottle sampler. Laboratory water sample analysis was conducted by M.J. Reider Associates, Inc Environmental Testing Laboratory located in Reading, Pennsylvania (U.S. EPA/PA DEP #06-00003).



Figure 2-1. Blue Marsh Reservoir and the location of the 9 fixed stations monitored for water quality during 2022

Water samples collected from all depths were analyzed for ammonia, nitrite, nitrate, total Kjeldahl nitrogen, total phosphorus, soluble phosphorus, total dissolved solids, total suspended solids, biochemical oxygen demand, alkalinity, and total organic carbon. Table 2-2 summarizes the laboratory methods detection limits, state water quality standards when applicable, and sample holding times for each water quality parameter monitored.

### **2.2.1 Total Dissolved Arsenic (A3<sup>+</sup>)**

Arsenic from an upstream industrial waste site, since reclaimed by the Environmental Protection Agency, represents a potential environmental risk in Blue Marsh Reservoir. Historic sampling has shown Arsenic being found in the water, suspended sediment, and bed material of Tulpehocken Creek; however, the measured concentrations were less than that known to be harmful to human, fish, or wildlife, according to published water quality criteria at that time (U.S. Geological Survey, 1977)

The USACE has monitored arsenic levels in sediments and bottom waters periodically as part of its annual water quality sampling program since 1979. This sampling has indicated that a small amount of arsenic may be mobilizing from sediments to the water column during periods of anoxia. Although sediment concentrations are predominantly less than the USACE laboratory sample screening levels, and concentrations of total and dissolved arsenic in bottom waters are always less than EPA chronic criteria for arsenic in freshwater. As part of the periodic monitoring for arsenic in the Blue Marsh Reservoir sediments and waters, bottom water samples at sampling station BM-6 were analyzed for Total Dissolved Arsenic (3<sup>+</sup>) once monthly during the sampling season from May through September of 2022. Sample results were compared to Pennsylvania freshwater human health criteria and EPA National Recommended Water Quality Aquatic Life Criteria as shown in Table 2-3.

## **2.3 TROPHIC STATE DETERMINATION**

The trophic state of Blue Marsh Reservoir was determined by methods outlined by Carlson (1977) and EPA (1983). In general, these methods calculate trophic state indices (TSIs) independently for measures of total phosphorus, chlorophyll a, and secchi disk depth. Surface water measures of total phosphorus along with average surface waters chlorophyll a measure from YSI sensor monitoring were used in the calculation of monthly TSIs (Table 2-1). Secchi disk depth was measured at station BM-6.

<b>Table 2-2.</b> Water quality test methods, detection limits, state regulatory criteria, and sample holding times for water quality parameters monitored at Blue Marsh Reservoir in 2022				
<b>Parameter</b>	<b>Method <sup>(2)</sup></b>	<b>Laboratory Limit of Reporting</b>	<b>PADEP Surface Water Quality Criteria</b>	<b>Allowable Hold Times (Days)</b>
Total Alkalinity	SM20 2320 B	2.0 mg/L	Min. 20 mg/L CaCO <sub>3</sub>	14
Biochemical Oxygen Demand (BOD)	SM5210 B	2.0 mg/L	None	2
Total Phosphorus	SM4500-P F	0.01 mg/L	None	28
Diss./Ortho-Phosphate	NA	NA	None	28
Soluble Phosphorus	SM4500-P F	0.01 mg/L	None	28
Total Organic Carbon	SM5310 C	0.5 mg/L	None	28
Total Inorganic Carbon *	NA	NA	None	28
Total Carbon (TOC + TIC) *	NA	NA	None	28
<sup>(1)</sup> Chlorophyll <i>a</i>	YSI Probe	----	None	In Situ
Total Kjeldahl Nitrogen	EPA 351.2 Rev 2.0	0.50 mg/L	None	28
Ammonia	EPA 350.1	0.02 mg/L	Temp. and pH dependent	28
Nitrate	EPA 300.0 Rev 2.1	1.00 mg/L	Maximum 10 mg/L (nitrate + nitrite)	28
Nitrite	EPA 300.0 Rev 2.1	0.10 mg/L		28
Total Dissolved Solids	SM2540 C	5.0 mg/L	Maximum 750 mg/L	7
Total Suspended Solids	SM2540 D	1.0 mg/L	None	7

<sup>(1)</sup> Chlorophyll *a* samples were recorded using a YSI 6600 with a chlorophyll sensor.

<sup>(2)</sup> Laboratory Methods Reference:  
**EPA-** "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.  
**SM-** "Standard Methods for the Examination of Water and Wastewater", 22<sup>nd</sup> Edition, 2012  
 \* Total Inorganic Carbon and Total Carbon were not sampled for in 2022

**Table 2-3.** Water quality test method, detection limit, and state and federal regulatory criteria for Total Dissolved Arsenic (3<sup>+</sup>) in freshwater environments monitored in the bottom waters of Station BM-6 at Blue Marsh Reservoir in 2022.

Parameter	Laboratory Method	Laboratory Reporting Limit	Pennsylvania Human Health Criteria	Pennsylvania Human Health Maximum Criteria	EPA Water Quality Aquatic Life Criteria (Acute)	EPA Water Quality Aquatic Life Criteria (Chronic)
Total Dissolved Arsenic (3 <sup>+</sup> )	EPA 200.8 Rev 5.4 <sup>(1)</sup>	1.0 ug/L	10.0 ug/L	340 ug/L	340 ug/L	150 ug/L

<sup>(1)</sup> “Methods for Chemical Analysis of Water and Wastes”, EPA-600/4-79-020, March 1983 and subsequent revisions.

## 2.4 RESERVOIR COLIFORM BACTERIA MONITORING

Monitoring for coliform bacteria contaminants within the watershed was conducted five times at Blue Marsh Reservoir between 16 May and 12 September. Water samples were analyzed for total and escherichia coliform contamination as indicators of risk. Surface water samples were collected at all stations. The samples were collected in the same manner as the chemistry samples or approximately 1-foot below the surface of the water. Table 2-4 presents the test methods, detection limits, EPA and PADEP standards, and sample holding times for the bacteria parameters monitored at Blue Marsh Reservoir in 2022. The bacteria analytical method was based on a membrane filtration technique. All the samples were analyzed within their maximum allowable hold times. Laboratory analysis was conducted by M.J. Reider Associates, Inc Environmental Testing Laboratory located in Reading, Pennsylvania (U.S. EPA/PA DEP #06-00003).

**Table 2 4.** Water quality test methods, detection limits, PADEP/EPA standards, and sample holding times for bacteria parameters monitored at Blue Marsh Reservoir in 2022.

Parameter	Total Coliform	Escherichia Coliform
Test method	SM 9223 B	SM 9223 B
Limit of Quantification	1 mpn/100-mls	1 mpn/100-mls
EPA/PADEP standard	None	Geometric mean <126 mpn/ 100 ml or a single sample <235 mpn/ 100 ml
Maximum allowable holding time	30 hours	30 hours
Holding time	< 30 hours	< 30 hours

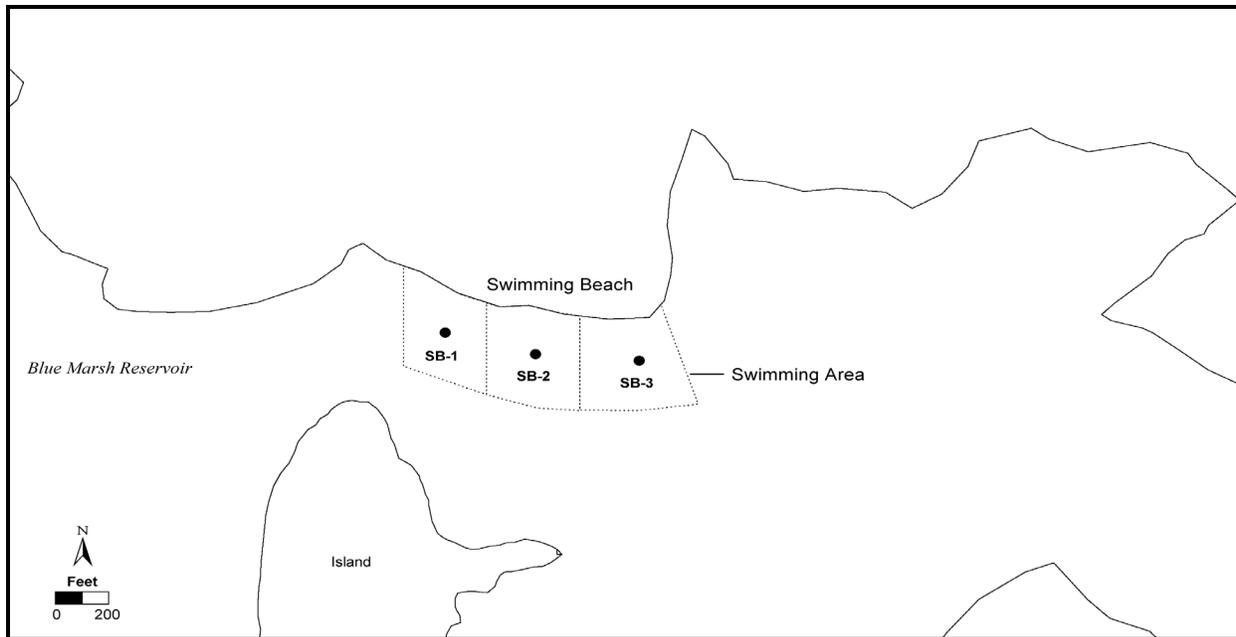
Monthly surface water bacteria counts were compared to the EPA primary recreation water quality single sample standard for escherichia coliform bacteria. Application of this standard applies to Blue Marsh Reservoir because swimming and other primary and secondary human/water contact recreation is permitted in the reservoir. The Philadelphia District maintains a swimming beach at Blue Marsh Reservoir and conducts separate bacteria sampling of that area. Given logistical sampling limitations (all monthly reservoir sampling conducted on one day) and that water contact recreation is permitted within the reservoir, the reservoir coliform data collected by the Corps is compared to the single sample standard as a method of evaluating background coliform data on the main body of the reservoir including tributaries.

Although our sampling design does not fully meet the Environmental Protection Agency and PA Department of Environmental Protection guidelines for swimming beach monitoring, we feel that this interpretation of the coliform data meets the intent of the Environmental Protection Agency and PA Department of Environmental Protection water quality standards for evaluating Blue Marsh Reservoir bacteria levels within the main reservoir body.

**2.5 SWIMMING BEACH MONITORING**

Bacteria monitoring was conducted on a twice weekly routine near the public swimming beach at the Dry Brooks day use area (Table 2-5) of Blue Marsh Reservoir to gauge compliance with Pennsylvania Department of Health and EPA swimming beach water quality standards. These standards are in place to ensure public safety for this type (primary) of water contact recreation. Three stations (SB-1, SB-2, and SB-3) were monitored in the swimming beach area for total coliform and Escherichia coli (Figure 2-2). The coliform bacteria samples were collected and analyzed by the same methods used for monthly reservoir body coliform bacteria sampling. The bacteria monitoring for the Blue Marsh swimming beach follows a multi-step program of conditional monitoring and increased sampling frequency. Each step or “condition” of monitoring responds to incremental increases of coliform contamination and reflects the changing risk to public health at the swimming beach area and the appropriate response for public safety to include beach closure.

<b>Table 2-5.</b> Sampling dates for coliform bacteria monitoring at the Blue Marsh Reservoir public swimming beach during 2022.			
<b>Week 1</b>	23 and 26 May	<b>Week 9</b>	18 and 21 July
<b>Week 2</b>	31 May and 02 June	<b>Week 10</b>	25 and 28 July
<b>Week 3</b>	06 and 09 June	<b>Week 11</b>	01 and 04 August
<b>Week 4</b>	13 and 16 June	<b>Week 12</b>	08 and 11 August
<b>Week 5</b>	20 and 23 June	<b>Week 13</b>	15 and 18 August
<b>Week 6</b>	27 and 30 June	<b>Week 14</b>	22 and 25 August
<b>Week 7</b>	05 and 07 July	<b>Week 15</b>	29 August and 01 September
<b>Week 8</b>	11 and 14 July		



**Figure 2-2.** Swimming beach bacteriological monitoring stations at Blue Marsh Reservoir in 2022

## 2.6 RESERVOIR AND SWIMMING BEACH CYANOBACTERIA MONITORING

Algal blooms have been an historic presence at Blue Marsh Reservoir as the watershed is approximately 55% agriculture-based usage resulting in external nutrient loading to the lake since its construction. This, in conjunction with internal nutrient loading during the summer season creates conditions within Blue Marsh Reservoir that favors the development of algae blooms. High density blooms were observed in many locations throughout the reservoir and throughout the sampling season. In cooperation with the Pennsylvania Department of Environmental Protection, a draft immediate response and monitoring plan was developed in 2021. Stakeholders and the public are notified of the risks of potential harmful toxic algae blooms at the project utilizing on site signage and social media and project website notifications and warnings. These potential health risks are associated with contact and other recreation within the lake as it pertains to Pennsylvania draft harmful algal bloom standards and the EPA's *Recommended Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin EPA 822-F-19-00*.

Sampling methodology and field sampling kits provided by the PADEP are used to collect samples from the swimming beach area of Blue Marsh Reservoir and from high density algal blooms throughout the lake when they are observed. The 2022 sampling was conducted in July through September. USACE and PADEP collected samples, as necessary, following the identification of an algal bloom. Those samples are then provided to the Pennsylvania Department of Environmental Protection for processing and analysis utilizing approved collection and analysis methodologies. Algae sample analysis includes genera identification, colony estimates, and toxin production levels. No federal or Pennsylvania state recreational waters and human contact criteria for cyanobacteria have been established to date. Lab analysis results are compared to the EPA 822-F-19-00 recommended criteria.

In addition to the monitoring conducted in cooperation with the State of Pennsylvania, USACE staff monitor field conditions and cyanobacteria toxin production near the reservoir public use areas (boat

launches and swimming beach) utilizing rapid qualitative screening field test kits produced by Gold Standard Diagnostics Horsham, Inc. (previously Eurofins Abraxis, Inc.) and found at <https://www.goldstandarddiagnostics.us/home/>. The ABRAXIS® Anatoxin-a (recreational and drinking waters) and Microcystins and Nodularins (recreational waters) Strip Tests provide only preliminary qualitative field test results but provides the USACE with the ability to rapidly respond to observed conditions at the time of sample collection and as it relates to recreational usage and protection of the public from exposure to cyanotoxin producing algae. The strip tests qualitative screening thresholds range from 0-10 parts per billion (ppb) for Microcystins/Nodularins and 0-2.5 ppb for Anatoxin-a.

## 3.0 RESULTS AND DISCUSSION

### 3.1 STRATIFICATION MONITORING

The following sections summarize the results of water quality monitoring for physical and chemical parameters: temperature, dissolved oxygen, and pH. Seasonal and spatial patterns of surface water quality measured throughout the reservoir watershed, and seasonal and depth related patterns of the stratified water column based on measures from the deepest portion of the reservoir (station BM-6 or the “Tower”) are described. It is also appropriate to focus discussion on tributary source waters influencing reservoir water quality and lake stratification at station BM-6 as water quality problems related to depth are generally most severe in deep water habitats. USACE personnel collected the physical/chemical water quality data discussed herein over the monitoring period from May through September 2022, the most biologically productive time of the year for the reservoir. All the parameters were measured with a calibrated YSI 6600 V2-4 water quality sonde and are presented in Appendix A.

#### 3.1.1 Temperature

Temperature is the primary influencing factor on water density, affects the solubility of many chemical compounds, and can therefore influence the effect of pollutants on aquatic life. Increased temperatures elevate the metabolic oxygen demand, in conjunction with reduced oxygen solubility, and can impact many species. Vertical stratification patterns naturally occurring in lakes affect the distribution of dissolved and suspended compounds.

Surface water temperature seasonal patterns upstream of the reservoir at stations BM-5S and BM-11S closely resembled each other throughout the sampling season (Fig. 3-1). Maximum upstream surface water temperature was 20.97°C at station BM-5S in July and 21.08°C at station BM-11S in July. The maximum surface water temperature downstream of the reservoir at station BM-1S was 23.18°C in September with a minimum of 15.41°C in May. Downstream temperatures are influenced through selective withdrawals at the Blue Marsh Dam tower. Annually the Corps performs selective withdrawal releases to maintain temperatures downstream in the Tulpehocken Creek of less than 20°C in support of the trout fishery. The ability to meet this objective is dependent on meteorological conditions and other physical and operational limitations. The temperature objective was exceeded in 2022 from late July through September.

Blue Marsh Reservoir was weakly stratified with respect to temperature during 2022. The stratification pattern was most apparent at station BM-6 or the “Tower” station located in the deepest part of the reservoir (Fig. 3-2). The presence of temperature stratification was evident during May sampling with temperatures from surface (20.26°C) to bottom (11.44°C) differing by 8.82°C. The deeper and cooler temperature (<20°C) water was available for selective withdrawal to attempt to meet downstream temperature objectives into mid-July. Varying intensities of temperature stratification was seen throughout the summer and an erosion of the epilimnion was evident in mid- to late August as the lake began the process of de-stratifying. September sampling shown the lake approaching a de-stratified condition with temperatures from surface (25.59°C) to bottom (22.77°C) differing by 2.82°C.

### 3.1.2 Dissolved Oxygen

Dissolved oxygen (DO) is the measure of the amount of DO in water. Typically, DO concentrations in surface waters are less than 10 mg/L. Dissolved Oxygen concentrations are subject to diurnal and seasonal fluctuations that can be influenced, in part, by temperature, river discharge, photosynthetic activity and other factors. Dissolved Oxygen is essential to the respiratory metabolism of most aquatic organisms. It affects the availability and solubility of nutrients and subsequently the productivity of aquatic ecosystems. Low levels of oxygen can facilitate the release of nutrients from bottom sediments.

Upstream tributary surface waters at stations BM-5S and BM-11S shown a maximum DO concentration of 9.88 mg/L recorded in May at station BM-11S with a minimum recorded value of 8.01 mg/L in mid-August at Station BM-11S (Fig. 3-3). The maximum surface water DO concentration downstream of the dam at station BM-1S was 9.98 mg/L recorded in May with a minimum of 6.94 mg/L recorded in September.

Seasonal stratification, chemical and biological processes and reservoir operations at Blue Marsh Reservoir influence the distribution of DO in the water column during 2022 (Fig. 3-4). Stratification development was apparent in May with bottom water DO levels approaching 0.0 mg/l and persisting through September at station BM-6, with low DO concentrations most severe in the July and August timeframe. Historically, the lower oxygen levels deeper in the lake progressively move up the water column to within approximately 10 to 15-feet of the water surface in mid- to late August. In most years the surface waters remain oxygenated because of surface algal productivity and surface water wind mixing. In 2022, the DO pattern in the deeper water column was slightly more pronounced than previous years with anoxic conditions forming more quickly in early summer 2022. The low DO conditions can be detrimental to water quality and aquatic life. Dissolved oxygen concentrations in the upper water column of Blue Marsh Reservoir remained in compliance with PADEP water quality standards during the 2022 sampling season. The Pennsylvania water quality standard for DO is a minimum concentration of 5 mg/L within the epilimnion of stratified lakes.

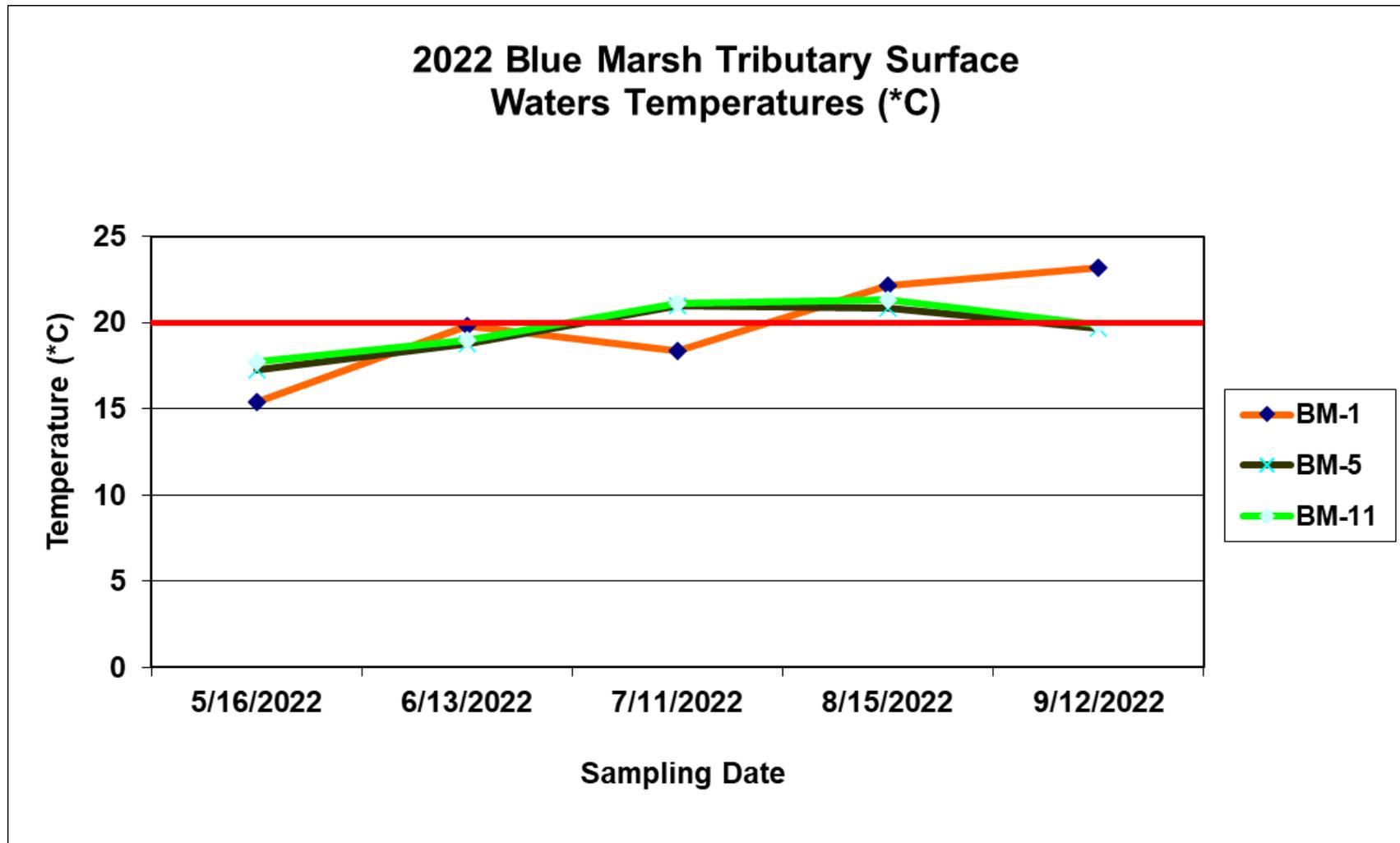
The health of aquatic ecosystems can be impaired by low DO concentrations in the water column. Hypoxia, or conditions of DO concentrations less than 2 mg/L, is generally accepted as the threshold at which the most severe effects on biota occur. In all months sampled during 2022, the water column of Blue Marsh was affected by hypoxia (Fig. 3-4). Hypoxic water occupied most of the water column in mid-June through September. Hypoxia in the lower water column is a symptom of eutrophication. Nutrients in the water column feed explosive algal growth at the surface photic zone. Dead and decaying algae sink to lower levels of the water column and during the process of decay; oxygen is removed from the water.

### 3.1.3 pH

The hydrogen –ion concentration in water is measured as pH. The pH scale is 0-14. A pH below 7 is considered acidic and a pH above 7 is basic. High pH values tend to facilitate solubilization of ammonia, salts, and heavy metals. Low pH levels tend to increase carbonic acid and carbon dioxide concentrations. Lethal effects of pH on aquatic life typically occur below pH 4.5 and above pH 9.5.

Measures of pH in the surface waters at Blue Marsh Reservoirs upstream sampling stations followed a similar pattern during 2022 (Fig. 3-5). Slightly lower pH measures in release waters downstream at station BM-1S are influenced by in lake water quality conditions and depth of water withdrawal in lake and its release downstream. In the months sampled, no pH measures violated the PADEP water quality standard maximum and minimum pH level of 9.0 and 6.0, respectively. For the entire monitoring period and at all surface water stream stations, pH ranged from 7.05 to 8.45.

The pH profile in the water column of Blue Marsh Reservoir was consistent with a stratified lake during 2022 (Fig. 3-6). Throughout the monitoring period the upper 0-10 feet of the water column had consistently higher pH measures than the deeper waters. During the sampling season, pH at the surface to a depth of approximately 10 feet ranged between 7.68 and 9.17. In contrast, measures of pH in the lower water column (>10 feet deep) were consistently lower during the monitoring period and ranged between 7.13 and 8.63. The higher pH in surface waters (euphotic zone) of the reservoir is a result of excessive algal blooms. As a function of increased productivity during photosynthesis, algae remove CO<sub>2</sub> from the water column. Dissolved CO<sub>2</sub> is slightly acidic; its reduction in the water column manifests an increase in pH. In 2022, this increased surface water productivity resulted in surface water samples at Blue Marsh Reservoir station BM-6 being slightly higher in pH than deeper waters. Lake surface waters exceeded the PADEP water quality standard maximum pH level of 9.0 during the month of July.



**Figure 3-1.** Tributary and downstream surface water temperatures ( $^{\circ}\text{C}$ ) measured at Blue Marsh Reservoir in 2022. Station BM-1S is located downstream of the reservoir. See Appendix A for summary of plotted values. The cold-water species preference temperature of  $20^{\circ}\text{C}$  is shown as a red line reference.

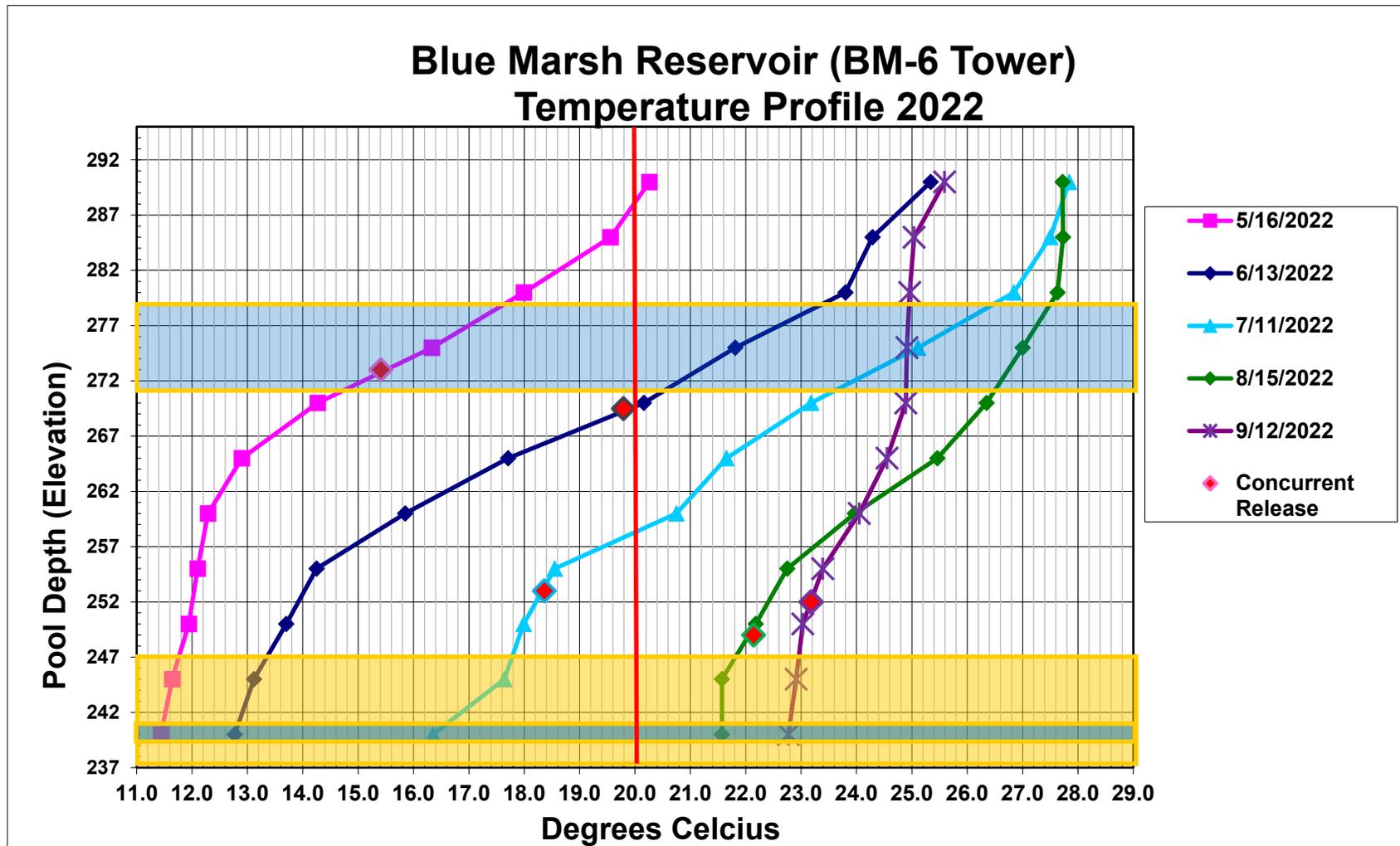
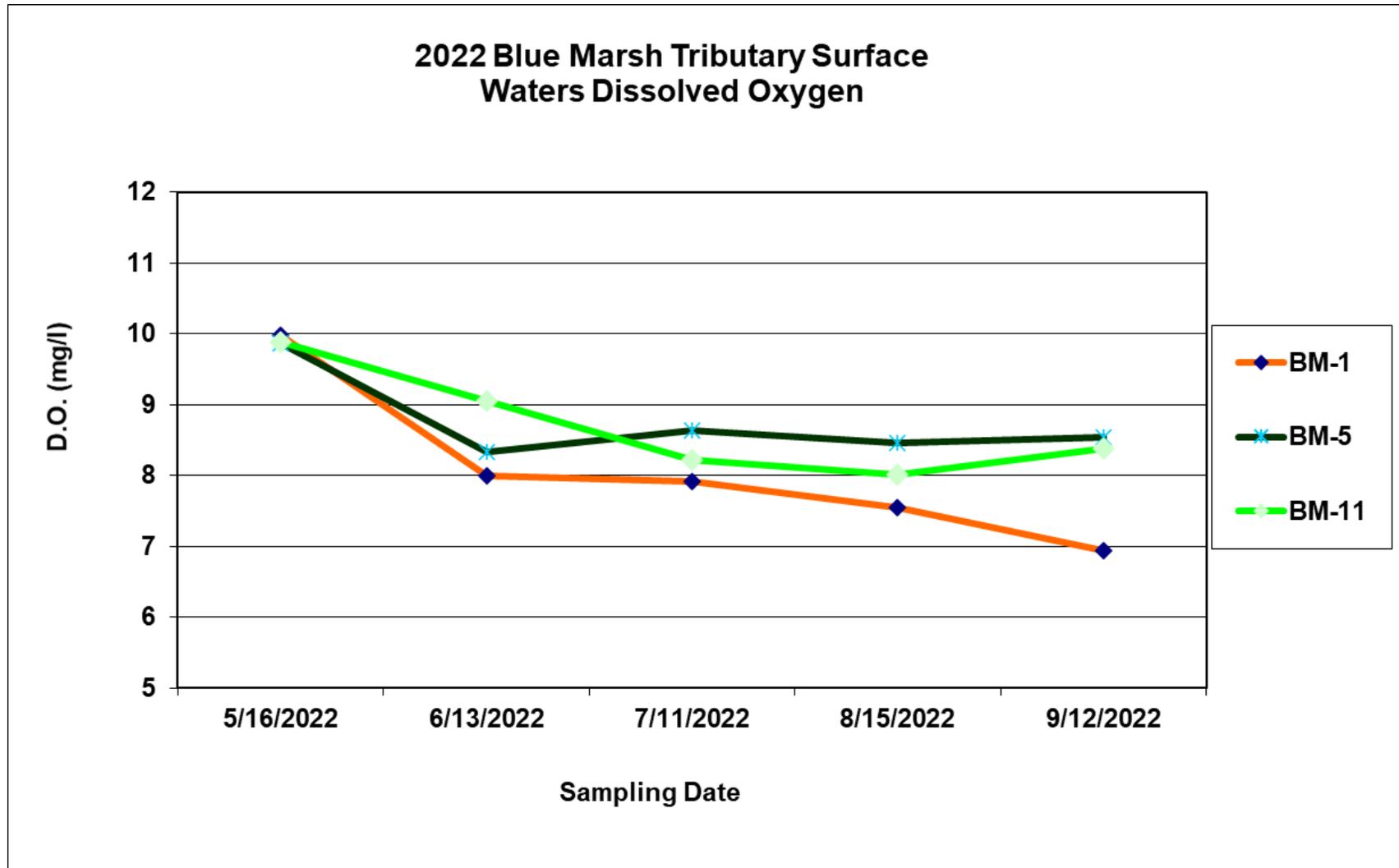


Figure 3-2. Temperature stratification, concurrent downstream temperatures profile location, and release portal elevations at station BM-6 of Blue Marsh Reservoir in 2022. See Appendix A for summary of plotted values



**Figure 3-3.** Tributary and outflow surface water dissolved oxygen concentrations measured at Blue Marsh Reservoir in 2022. (The PADEP water quality standard for DO is a minimum concentration of 5 mg/L.) See Appendix A for summary of plotted values.

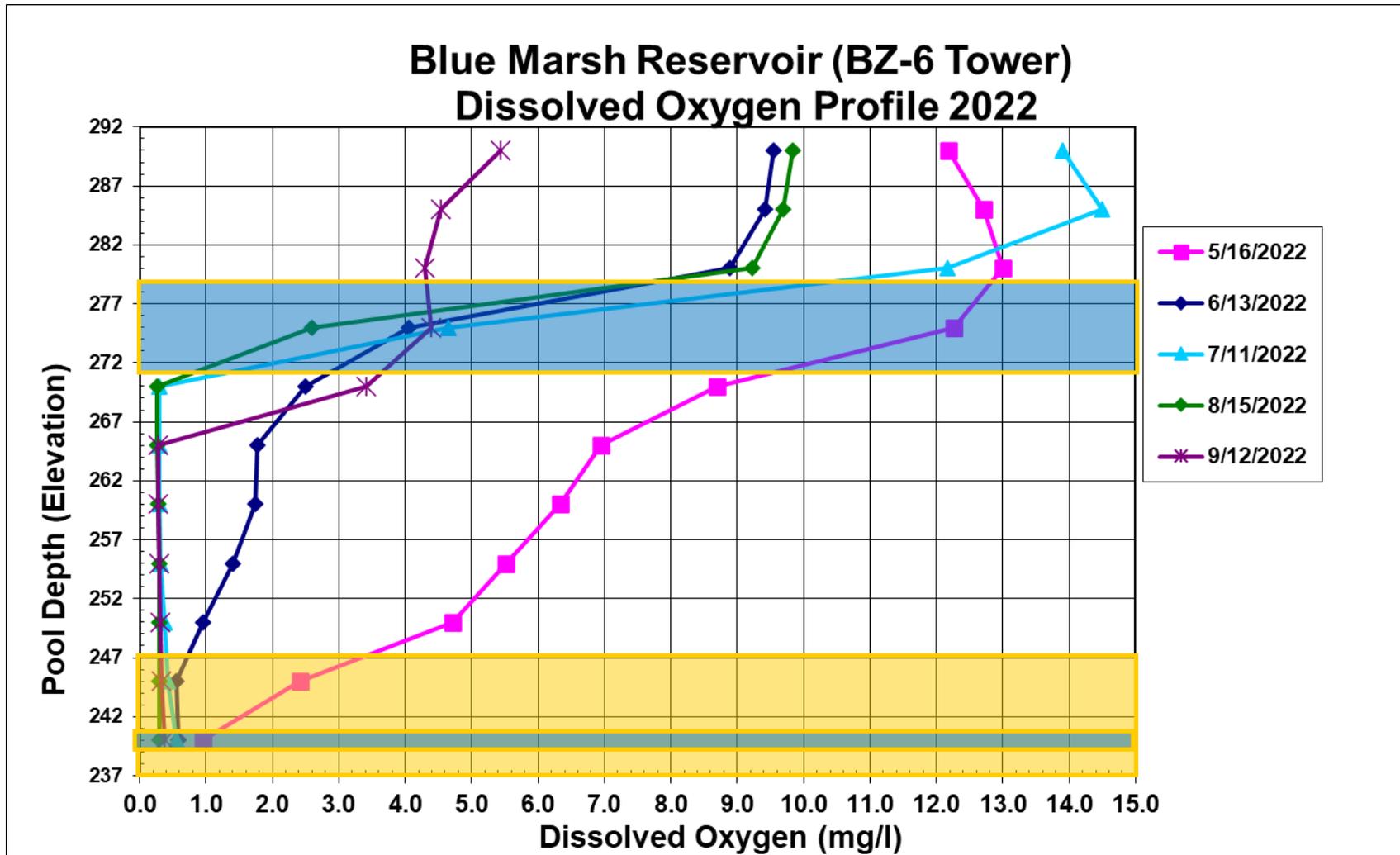
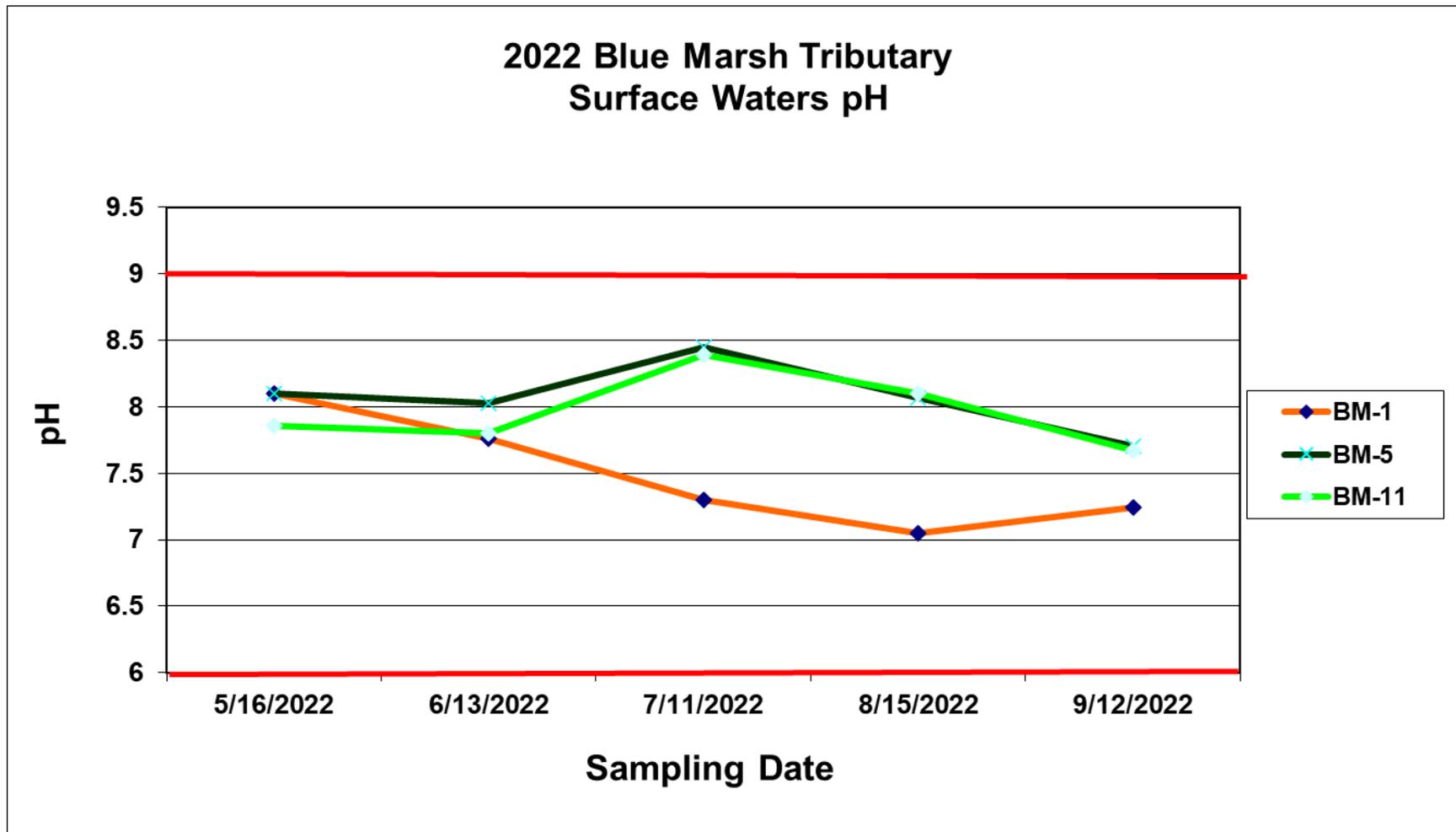


Figure 3-4. Release portal elevations and dissolved oxygen stratification at station BM-6 of Blue Marsh Reservoir in 2022. (PADEP water quality standard for DO is a minimum concentration of 5 mg/L.) See Appendix A for summary of plotted values.



**Figure 3-5.** Tributary and outflow surface water pH measured at Blue Marsh Reservoir in 2022. (The PADEP water quality standard for pH is a range from 6 to 9.) See Appendix A for summary of plotted values.

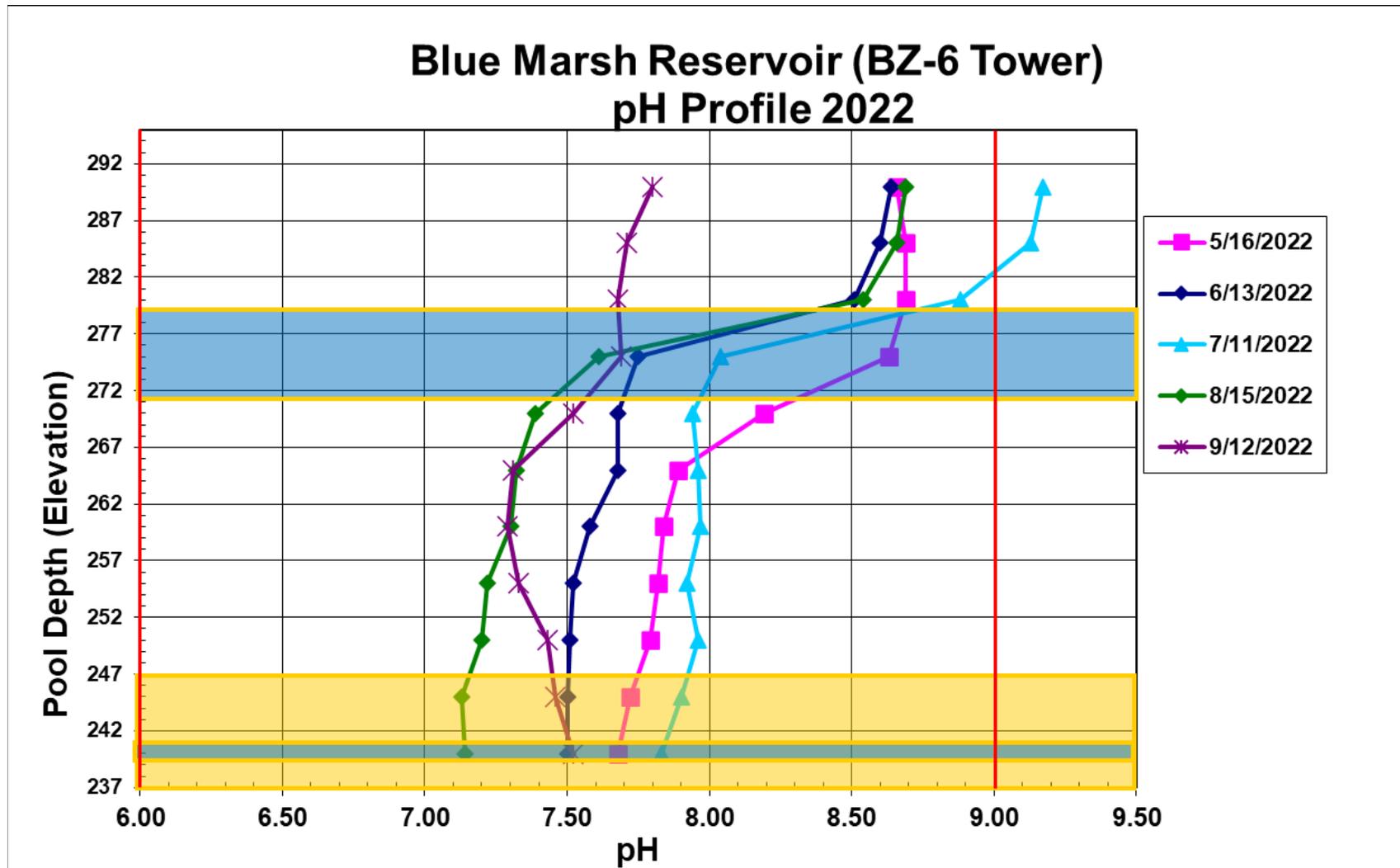


Figure 3-6. Release portal elevations and stratification of pH at station BM-6 of Blue Marsh Reservoir in 2022. (The PADEP water quality standard for pH is a range from 6 to 9.) See Appendix A for summary of plotted values.

## 3.2 WATER COLUMN CHEMISTRY MONITORING

The following sections describe temporal, spatial, and depth patterns for the water quality parameters measured in surface, middle, and bottom waters of Blue Marsh Reservoir during 2022 (Table 3-2).

### 3.2.1 Ammonia

Total Ammonia (NH<sub>3</sub>) is a measure of the most reduced inorganic form of nitrogen in water and includes dissolved ammonia and the ammonium ion. Ammonia is a small component of the nitrogen cycle but as an essential plant nutrient, it contributes to the trophic status of a water body. Excess ammonia contributes to eutrophication of water bodies. This can result in excessive algal growths and impacts on recreation and drinking water supplies. In high concentrations, ammonia is toxic to aquatic life.

EPA guidance for ambient water quality criteria for ammonia in freshwater are dependent on temperature and pH (EPA, 2013). Table 3.1 shows the acute and chronic criteria that are expected to protect freshwater aquatic life. The EPA (2013) also provides tables with the temperature and pH-dependent values of the acute criterion magnitude and the temperature and pH-dependent values of the chronic criterion magnitude. These tables provide an expected ammonia criteria over a wide range of pH and temperature values and can be utilized to evaluate field collected samples.

Ammonia concentrations were low in Blue Marsh Reservoir during 2022 (Table 3-2). Concentrations measured for 49 of the 105 samples collected from all sampling stations and depths throughout the sampling season did exceed the laboratory minimum reporting limit of 0.02 mg/L. These samples were collected primarily at middle and deep bottom water sampling locations within the reservoir body except for surface water sampling station BM-1S located downstream of the reservoir. The maximum single recorded sample of 1.49 mg/L was collected from station BM-1S on 15 August. Concentrations of ammonia measured at Blue Marsh Reservoir remained below the PADEP and EPA ammonia water quality criteria during 2022.

<b>Table 3.1.</b> Environmental Protection Agency Ammonia Freshwater Criteria 2013	
2013 Final Aquatic Life Criteria for Ammonia (Magnitude, Frequency, and Duration) (mg TAN/L) pH 7.0, T=20°C	
Acute (1-hour average)	17
Chronic (30-day rolling average)	1.9*
*Not to exceed 2.5 times the CCC as a 4-day average within the 30-days, i.e. 4.8 mg TAN/L at pH 7 and 20°C, more than once in three years on average. Criteria frequency: Not to be exceeded more than once in three years on average.	

**Table 3-2.** Summary of surface, middle, and bottom water quality monitoring data for Blue Marsh Reservoir in 2022

Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	NO3-NO2	TDS	TKN	TOC	TP	TSS
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
BM-01S	5/16/2022	114	<2.0	<0.01	<0.02	0.02	4.17	4.19	170	0.74	3	<0.01	7
	6/13/2022	116	2.8	0.01	0.05	0.07	3.96	4.03	197	<0.43	3.4	0.01	4
	7/11/2022	145	4.6	<0.01	0.27	0.12	2.82	2.94	231	0.56	3.4	0.03	6
	8/15/2022	166	<2.0	0.06	1.49	0.04	0.87	0.91	221	1.75	2.9	0.10	5
	9/12/2022	129	3.4	0.05	1.02	<0.01	1.21	1.22	210	1.75	3.1	0.12	7
	Mean	134	3.0	0.03	0.57	0.05	2.61	2.66	206	1.05	3.2	0.05	6
	Stdev	22	1.1	0.02	0.65	0.04	1.52	1.54	24	0.65	0.2	0.05	1
	Max	166	4.6	0.06	1.49	0.12	4.17	4.19	231	1.75	3.4	0.12	7
	Min	114	2.0	0.01	0.02	0.01	0.87	0.91	170	0.43	2.9	0.01	4
	No. of Det.	5	3	3	4	4	5	5	5	4	5	4	5
BM-02S	5/16/2022	107	2.2	<0.01	<0.02	0.03	4.22	4.25	161	0.44	2.5	0.02	4
	6/13/2022	103	2	<0.01	<0.02	0.03	3.85	3.88	194	<0.43	2.3	<0.01	2
	7/11/2022	89	4.5	<0.01	<0.02	0.03	3.28	3.31	178	0.74	2.6	0.02	7
	8/15/2022	76	<2.0	<0.01	<0.02	0.05	1.92	1.97	153	<0.43	3.3	0.02	4
	9/12/2022	95	2.1	<0.01	<0.02	0.22	1.08	1.3	182	0.57	3	0.02	5
	Mean	94	2.6	0.01	0.02	0.07	2.87	2.94	174	0.52	2.7	0.02	4
	Stdev	12	1.1	0.00	0.00	0.08	1.33	1.26	17	0.14	0.4	0.00	2
	Max	107	4.5	0.01	0.02	0.22	4.22	4.25	194	0.74	3.3	0.02	7
	Min	76	2.0	0.01	0.02	0.03	1.08	1.30	153	0.43	2.3	0.01	2
	No. of Det.	5	4	0	0	5	5	5	5	3	5	4	5

**Table 3-2 continued.** Summary of surface, middle, and bottom water quality monitoring data for Blue Marsh Reservoir in 2022

Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	NO3-NO2	TDS	TKN	TOC	TP	TSS
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
BM-02M	5/16/2022	104	2	<0.01	<0.02	<0.01	4.43	4.44	165	0.46	2.8	0.11	8
	6/13/2022	129	<2.0	0.01	<0.02	0.04	4.46	4.50	202	<0.43	2	<0.01	2
	7/11/2022	138	<2.0	<0.01	0.07	0.23	3.43	3.66	205	0.45	2.2	0.01	2
	8/15/2022	78	<2.0	<0.01	<0.02	0.05	1.91	1.96	134	<0.43	2.8	<0.01	2
	9/12/2022	116	4.7	<0.01	0.22	0.4	1.42	1.82	204	<0.43	2.6	0.03	4
	Mean	113	2.5	0.01	0.07	0.15	3.13	3.28	182	0.44	2.5	0.03	4
	Stdev	23	1.2	0.00	0.09	0.17	1.41	1.31	32	0.01	0.4	0.04	3
	Max	138	4.7	0.01	0.22	0.40	4.46	4.50	205	0.46	2.8	0.11	8
	Min	78	2.0	0.01	0.02	0.01	1.42	1.82	134	0.43	2.0	0.01	2
	No. of Det.	5	2	1	2	4	5	5	5	2	5	3	5
BM-02D	5/16/2022	101	<2.0	0.02	<0.02	<0.01	3.61	3.62	161	0.54	3.6	0.03	10
	6/13/2022	117	<2.0	<0.01	<0.02	0.21	3.7	3.91	186	<0.43	2.2	<0.01	1
	7/11/2022	152	4.6	<0.01	0.51	0.04	2.18	2.22	217	1.04	2.4	0.03	11
	8/15/2022	75	<2.0	<0.01	<0.02	0.04	1.92	1.96	170	<0.43	2.7	<0.01	2
	9/12/2022	114	3.7	0.01	0.42	0.18	1.65	1.83	204	0.72	3.1	0.03	4
	Mean	112	2.9	0.01	0.20	0.10	2.61	2.71	188	0.63	2.8	0.02	6
	Stdev	28	1.2	0.00	0.25	0.09	0.97	0.98	23	0.26	0.6	0.01	5
	Max	152	4.6	0.02	0.51	0.21	3.70	3.91	217	1.04	3.6	0.03	11
	Min	75	2.0	0.01	0.02	0.01	1.65	1.83	161	0.43	2.2	0.01	1
	No. of Det.	5	2	2	2	4	5	5	5	3	5	3	5

**Table 3-2 continued.** Summary of surface, middle, and bottom water quality monitoring data for Blue Marsh Reservoir in 2022

Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	NO3-NO2	TDS	TKN	TOC	TP	TSS
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
BM-05S	5/16/2022	196	<2.0	0.03	<0.02	<0.01	7.45	7.46	311	<0.43	1.7	0.04	8
	6/13/2022	186	<2.0	0.05	<0.02	0.02	6.84	6.86	298	<0.43	1.9	0.05	7
	7/11/2022	221	<2.0	0.04	0.04	<0.01	7.02	7.03	343	<0.43	1.7	0.04	15
	8/15/2022	193	<2.0	0.04	<0.02	<0.01	5.72	5.73	337	<0.43	2.0	0.06	4
	9/12/2022	185	<2.0	0.12	<0.02	<0.01	5.36	5.37	294	<0.43	2.9	0.09	11
	Mean	196	2.0	0.06	0.02	0.01	6.48	6.49	317	0.43	2.0	0.06	9
	Stdev	15	0.0	0.04	0.01	0.00	0.89	0.89	22	0.00	0.5	0.02	4
	Max	221	2.0	0.12	0.04	0.02	7.45	7.46	343	0.43	2.9	0.09	15
	Min	185	2.0	0.03	0.02	0.01	5.36	5.37	294	0.43	1.7	0.04	4
	No. of Det.	5	0	5	1	1	5	5	5	0	5	5	5
BM-06S	5/16/2022	108	2.5	<0.01	0.03	0.03	4.14	4.17	166	<0.43	2.4	<0.01	7
	6/13/2022	107	3.7	<0.01	<0.02	0.03	3.83	3.86	178	<0.43	2.3	0.03	3
	7/11/2022	93	3.7	<0.01	<0.02	0.03	3.28	3.31	182	<0.43	2.7	<0.01	5
	8/15/2022	77	<2.0	<0.01	<0.02	0.04	1.92	1.96	172	<0.43	2.8	0.01	8
	9/12/2022	100	<2.0	0.05	<0.02	0.24	1.02	1.26	179	<0.43	2.8	0.01	8
	Mean	97	2.8	0.02	0.02	0.07	2.84	2.91	175	0.43	2.6	0.01	6
	Stdev	13	0.9	0.02	0.00	0.09	1.32	1.25	6	0.00	0.2	0.01	2
	Max	108	3.7	0.05	0.03	0.24	4.14	4.17	182	0.43	2.8	0.03	8
	Min	77	2.0	0.01	0.02	0.03	1.02	1.26	166	0.43	2.3	0.01	3
	No. of Det.	5	3	1	1	5	5	5	5	0	5	3	5

**Table 3-2 continued.** Summary of surface, middle, and bottom water quality monitoring data for Blue Marsh Reservoir in 2022

Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	NO3-NO2	TDS	TKN	TOC	TP	TSS
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
BM-06M	5/16/2022	113	<2.0	<0.01	0.02	0.02	4.17	4.19	178	<0.43	2.7	<0.01	4
	6/13/2022	116	<2.0	<0.01	<0.02	0.10	4.19	4.29	207	<0.43	2.2	0.01	<1
	7/11/2022	135	<2.0	<0.01	0.06	0.08	3.7	3.78	228	0.46	2.3	0.01	3
	8/15/2022	80	<2.0	<0.01	<0.02	0.04	1.93	1.97	174	<0.43	2.7	<0.01	4
	9/12/2022	133	5.6	0.06	0.88	0.1	0.61	0.71	210	0.99	2.5	0.03	5
	Mean	115	2.7	0.02	0.20	0.07	2.92	2.99	199	0.55	2.5	0.01	3
	Stdev	22	1.6	0.02	0.38	0.04	1.59	1.58	23	0.25	0.2	0.01	2
	Max	135	5.6	0.06	0.88	0.10	4.19	4.29	228	0.99	2.7	0.03	5
	Min	80	2.0	0.01	0.02	0.02	0.61	0.71	174	0.43	2.2	0.01	1
No. of Det.	5	1	1	3	5	5	5	5	2	5	3	4	
BM-06D	5/16/2022	127	<2.0	<0.01	0.11	<0.01	4	4.01	184	<0.43	2.4	<0.01	5
	6/13/2022	117	<2.0	0.01	<0.02	0.20	2.97	3.17	190	<0.43	2.5	0.01	<1
	7/11/2022	162	8.5	<0.01	1.2	0.04	0.91	0.95	212	1.81	2.8	0.13	19
	8/15/2022	85	<2.0	<0.01	<0.02	0.04	1.96	2.00	185	<0.43	2.7	<0.01	4
	9/12/2022	121	3.5	0.07	0.89	0.09	1.49	1.58	217	1.31	3.3	0.06	12
	Mean	122	3.6	0.02	0.45	0.08	2.27	2.34	198	0.88	2.7	0.04	8
	Stdev	27	2.8	0.03	0.56	0.08	1.23	1.24	16	0.64	0.4	0.05	7
	Max	162	8.5	0.07	1.2	0.2	4	4.01	217	1.81	3.3	0.13	19
	Min	85	2.0	0.01	0.02	0.01	0.91	0.95	184	0.43	2.4	0.01	1
No. of Det.	5	2	2	3	4	5	5	5	2	5	3	4	

**Table 3-2 continued.** Summary of surface, middle, and bottom water quality monitoring data for Blue Marsh Reservoir in 2022

Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	NO3-NO2	TDS	TKN	TOC	TP	TSS
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
BM-07S	5/16/2022	118	2.4	<0.01	0.07	<0.01	4.14	4.15	171	<0.43	2.7	<0.01	5
	6/13/2022	112	<2.0	0.01	<0.02	0.03	3.84	3.87	167	<0.43	2.3	0.02	<1
	7/11/2022	94	4	0.02	<0.02	0.03	3.32	3.35	167	0.49	2.6	0.01	8
	8/15/2022	85	<2.0	<0.01	<0.02	0.05	1.95	2.00	174	<0.43	2.7	<0.01	4
	9/12/2022	88	2.6	0.05	<0.02	0.18	1.14	1.32	172	<0.43	2.9	0.02	4
	Mean	99	2.6	0.02	0.03	0.06	2.88	2.94	170	0.44	2.6	0.01	4
	Stdev	15	0.8	0.02	0.02	0.07	1.28	1.23	3	0.03	0.2	0.01	3
	Max	118	4.0	0.05	0.07	0.18	4.14	4.15	174	0.49	2.9	0.02	8
	Min	85	2.0	0.01	0.02	0.01	1.14	1.32	167	0.43	2.3	0.01	1
	No. of Det.	5	3	3	1	4	5	5	5	5	1	5	3
BM-07M	5/16/2022	110	<2.0	<0.01	<0.02	0.02	4.84	4.86	174	<0.43	2.1	<0.01	4
	6/13/2022	142	<2.0	0.02	0.17	0.08	4.31	4.39	201	<0.43	1.9	0.04	1
	7/11/2022	127	3.2	<0.01	0.07	0.05	3.61	3.66	209	0.55	2.3	0.02	4
	8/15/2022	78	<2.0	<0.01	<0.02	0.06	1.94	2.00	173	0.45	2.7	0.01	4
	9/12/2022	87	2.8	0.05	<0.02	0.16	1.17	1.33	173	<0.43	2.5	0.02	8
	Mean	109	2.4	0.02	0.06	0.07	3.17	3.25	186	0.46	2.3	0.02	4
	Stdev	27	0.6	0.02	0.07	0.05	1.56	1.53	18	0.05	0.3	0.01	2
	Max	142	3.2	0.05	0.17	0.16	4.84	4.86	209	0.55	2.7	0.04	8
	Min	78	2.0	0.01	0.02	0.02	1.17	1.33	173	0.43	1.9	0.01	1
	No. of Det.	5	2	2	2	5	5	5	5	5	2	5	4

**Table 3-2 continued.** Summary of surface, middle, and bottom water quality monitoring data for Blue Marsh Reservoir in 2022

Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	NO3-NO2	TDS	TKN	TOC	TP	TSS
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
BM-07D	5/16/2022	95	<2.0	<0.01	0.06	<0.01	3.99	4.00	175	<0.43	2.9	0.23	6
	6/13/2022	128	2.3	<0.01	0.27	0.15	3.16	3.31	210	<0.43	2.1	0.02	6
	7/11/2022	141	3.9	<0.01	0.18	0.07	3.47	3.54	238	0.61	2.1	0.03	5
	8/15/2022	78	<2.0	<0.01	<0.02	0.05	1.93	1.98	177	0.54	2.6	<0.01	4
	9/12/2022	111	2.5	0.06	0.18	0.09	1.97	2.06	210	0.46	2.9	0.03	18
	Mean	111	2.5	0.02	0.14	0.07	2.90	2.98	202	0.49	2.5	0.06	8
	Stdev	25	0.8	0.02	0.10	0.05	0.92	0.91	26	0.08	0.4	0.09	6
	Max	141	3.9	0.06	0.27	0.15	3.99	4.00	238	0.61	2.9	0.23	18
	Min	78	2.0	0.01	0.02	0.01	1.93	1.98	175	0.43	2.1	0.01	4
No. of Det.	5	3	1	4	4	5	5	5	3	5	4	5	
BM-08S	5/16/2022	109	2.1	<0.01	<0.02	<0.01	4	4.01	173	<0.43	2.7	0.03	4
	6/13/2022	114	<2.0	<0.01	0.04	0.03	3.83	3.86	187	<0.43	2.3	0.02	<1
	7/11/2022	77	5.7	0.02	<0.02	0.03	3.09	3.12	170	0.66	2.6	0.02	6
	8/15/2022	74	<2.0	<0.01	<0.02	0.04	1.79	1.83	185	<0.43	2.8	0.01	6
	9/12/2022	83	2.1	0.07	<0.02	0.13	1.13	1.26	159	<0.43	3.2	0.02	8
	Mean	91	2.8	0.02	0.02	0.05	2.77	2.82	175	0.48	2.7	0.02	5
	Stdev	19	1.6	0.03	0.01	0.05	1.26	1.22	11	0.10	0.3	0.01	3
	Max	114	5.7	0.07	0.04	0.13	4.00	4.01	187	0.66	3.2	0.03	8
	Min	74	2.0	0.01	0.02	0.01	1.13	1.26	159	0.43	2.3	0.01	1
	No. of Det.	5	3	2	1	4	5	5	5	1	5	5	4

**Table 3-2 continued.** Summary of surface, middle, and bottom water quality monitoring data for Blue Marsh Reservoir in 2022

Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	NO3-NO2	TDS	TKN	TOC	TP	TSS
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
BM-08M	5/16/2022	100	<2.0	<0.01	0.05	<0.01	3.61	3.62	172	<0.43	2.2	0.02	3
	6/13/2022	108	4.8	0.01	0.05	0.03	3.84	3.87	193	<0.43	2.2	0.01	<1
	7/11/2022	89	4.6	<0.01	0.05	0.04	3.07	3.11	194	0.55	2.6	0.02	8
	8/15/2022	88	<2.0	<0.01	0.31	0.09	1.78	1.87	189	0.71	2.6	0.02	7
	9/12/2022	90	2.4	0.05	0.09	0.12	1.13	1.25	160	0.65	2.6	0.02	10
	Mean	95	3.2	0.02	0.11	0.06	2.69	2.74	182	0.55	2.4	0.02	6
	Stdev	9	1.4	0.02	0.11	0.05	1.18	1.14	15	0.13	0.2	0.00	4
	Max	108	4.8	0.05	0.31	0.12	3.84	3.87	194	0.71	2.6	0.02	10
	Min	88	2.0	0.01	0.05	0.01	1.13	1.25	160	0.43	2.2	0.01	1
No. of Det.	5	3	2	5	4	5	5	5	3	5	5	4	
BM-08D	5/16/2022	103	<2.0	<0.01	<0.02	<0.01	3.88	3.89	182	<0.43	2.1	<0.01	7
	6/13/2022	115	3.7	<0.01	0.17	0.04	3.52	3.56	219	<0.43	1.9	0.02	10
	7/11/2022	138	<2.0	<0.01	0.42	0.08	2.89	2.97	228	0.81	2.1	0.04	25
	8/15/2022	96	<2.0	<0.01	0.27	0.13	1.86	1.99	203	0.51	2.6	0.02	11
	9/12/2022	99	<2.0	0.06	0.13	0.09	1.38	1.47	178	0.82	2.6	0.03	51
	Mean	110	2.3	0.02	0.20	0.07	2.71	2.78	202	0.60	2.3	0.02	21
	Stdev	17	0.8	0.02	0.15	0.05	1.07	1.03	22	0.20	0.3	0.01	18
	Max	138	3.7	0.06	0.42	0.13	3.88	3.89	228	0.82	2.6	0.04	51
	Min	96	2.0	0.01	0.02	0.01	1.38	1.47	178	0.43	1.9	0.01	7
No. of Det.	5	1	1	4	4	5	5	5	3	5	4	5	

**Table 3-2 continued.** Summary of surface, middle, and bottom water quality monitoring data for Blue Marsh Reservoir in 2022

Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	NO3-NO2	TDS	TKN	TOC	TP	TSS
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
BM-09S	5/16/2022	109	2	<0.01	<0.02	<0.01	4.13	4.14	185	<0.43	2.6	<0.01	6
	6/13/2022	111	2.1	<0.01	0.06	0.03	3.87	3.9	190	<0.43	2.4	0.02	4
	7/11/2022	89	4.1	<0.01	<0.02	0.03	3.24	3.27	171	0.55	2.6	0.01	7
	8/15/2022	80	<2.0	<0.01	<0.02	0.05	1.95	2	169	<0.43	2.8	<0.01	5
	9/12/2022	94	2.6	0.06	<0.02	0.15	1.18	1.33	151	0.78	2.8	0.01	6
	Mean	97	2.6	0.02	0.03	0.05	2.87	2.93	173	0.52	2.6	0.01	6
	Stdev	13	0.9	0.02	0.02	0.06	1.27	1.22	15	0.15	0.2	0.00	1
	Max	111	4.1	0.06	0.06	0.15	4.13	4.14	190	0.78	2.8	0.02	7
	Min	80	2.0	0.01	0.02	0.01	1.18	1.33	151	0.43	2.4	0.01	4
No. of Det.	5	4	1	1	4	5	5	5	2	5	3	5	
BM-09M	5/16/2022	111	<2.0	<0.01	<0.02	<0.01	4.67	4.68	191	<0.43	2	0.16	7
	6/13/2022	126	2.1	0.01	0.12	0.04	4.38	4.42	210	<0.43	2.2	0.04	8
	7/11/2022	116	<2.0	<0.01	0.11	0.04	3.6	3.64	206	0.69	2.4	0.02	5
	8/15/2022	85	<2.0	<0.01	<0.02	0.06	1.90	1.96	158	0.5	2.6	0.01	4
	9/12/2022	90	<2.0	0.05	<0.02	0.15	1.18	1.33	174	0.99	2.6	0.02	8
	Mean	106	2.0	0.02	0.06	0.06	3.15	3.21	188	0.61	2.4	0.05	6
	Stdev	17	0.0	0.02	0.05	0.05	1.54	1.49	22	0.24	0.3	0.06	2
	Max	126	2.1	0.05	0.12	0.15	4.67	4.68	210	0.99	2.6	0.16	8
	Min	85	2.0	0.01	0.02	0.01	1.18	1.33	158	0.43	2.0	0.01	4
No. of Det.	5	1	2	2	4	5	5	5	3	5	5	5	

**Table 3-2 continued.** Summary of surface, middle, and bottom water quality monitoring data for Blue Marsh Reservoir in 2022

Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	NO3-NO2	TDS	TKN	TOC	TP	TSS
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
BM-09D	5/16/2022	101	<2.0	<0.01	0.14	<0.01	3.82	3.83	148	<0.43	2.9	0.03	12
	6/13/2022	129	2.8	0.02	0.3	0.11	3.07	3.18	214	0.46	2.4	0.57	92
	7/11/2022	162	6.4	0.01	0.69	0.02	2.05	2.07	241	1.35	2.5	0.1	31
	8/15/2022	133	2.5	0.02	0.92	0.03	1.57	1.60	231	1.31	2.5	0.07	15
	9/12/2022	129	<2.0	0.05	0.14	<0.01	2.85	2.86	235	0.69	2.5	0.03	21
	Mean	131	3.1	0.02	0.44	0.04	2.67	2.71	214	0.85	2.6	0.16	34
	Stdev	22	1.9	0.02	0.35	0.04	0.88	0.89	38	0.45	0.2	0.23	33
	Max	162	6.4	0.05	0.92	0.11	3.82	3.83	241	1.35	2.9	0.57	92
	Min	101	2.0	0.01	0.14	0.01	1.57	1.60	148	0.43	2.4	0.03	12
	No. of Det.	5	3	4	5	3	5	5	5	4	5	5	5
BM-10S	5/16/2022	98	2.2	<0.01	<0.02	<0.01	4.56	4.57	165	<0.43	2.7	<0.01	10
	6/13/2022	118	2.4	<0.01	<0.02	0.04	3.98	4.02	199	<0.43	2.3	0.05	4
	7/11/2022	81	4.6	<0.01	0.02	0.02	3.12	3.14	168	0.7	3.1	0.02	9
	8/15/2022	95	3.4	<0.01	<0.02	0.03	2.07	2.10	197	0.51	2.8	0.02	9
	9/12/2022	87	3.3	0.05	<0.02	0.11	1.12	1.23	162	0.59	3	0.04	16
	Mean	96	3.2	0.02	0.02	0.04	2.97	3.01	178	0.53	2.8	0.03	10
	Stdev	14	1.0	0.02	0.00	0.04	1.40	1.37	18	0.11	0.3	0.02	4
	Max	118	4.6	0.05	0.02	0.11	4.56	4.57	199	0.70	3.1	0.05	16
	Min	81	2.2	0.01	0.02	0.01	1.12	1.23	162	0.43	2.3	0.01	4
	No. of Det.	5	5	1	1	4	5	5	5	3	5	4	5

**Table 3-2 continued.** Summary of surface, middle, and bottom water quality monitoring data for Blue Marsh Reservoir in 2022

Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	NO3-NO2	TDS	TKN	TOC	TP	TSS
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
BM-10M	5/16/2022	140	<2.0	<0.01	0.04	<0.01	5.74	5.75	216	<0.43	1.9	0.02	9
	6/13/2022	120	2	<0.01	0.03	0.03	4.21	4.24	191	<0.43	2.3	0.02	6
	7/11/2022	76	4.7	0.01	0.03	0.02	3.11	3.13	96	0.96	2.7	0.02	9
	8/15/2022	115	2.2	0.02	<0.02	0.03	2.47	2.50	209	0.75	2.6	0.02	7
	9/12/2022	86	2.4	0.05	<0.02	0.11	1.16	1.27	168	0.56	2.7	0.02	13
	Mean	107	2.7	0.02	0.03	0.04	3.34	3.38	176	0.63	2.4	0.02	9
	Stdev	26	1.2	0.02	0.01	0.04	1.74	1.71	48	0.23	0.3	0.00	3
	Max	140	4.7	0.05	0.04	0.11	5.74	5.75	216	0.96	2.7	0.02	13
	Min	76	2.0	0.01	0.02	0.01	1.16	1.27	96	0.43	1.9	0.02	6
	No. of Det.	5	4	3	3	4	5	5	5	3	5	5	5
BM-10D	5/16/2022	141	<2.0	0.02	0.12	<0.01	5.56	5.57	217	1.56	1.9	0.03	24
	6/13/2022	147	<2.0	0.04	0.06	0.02	5.65	5.67	240	<0.43	1.9	0.17	28
	7/11/2022	131	3.4	<0.01	0.07	0.02	4.3	4.32	225	0.71	2.3	0.02	15
	8/15/2022	145	<2.0	0.03	0.06	0.02	3.68	3.70	255	0.87	2.4	0.05	35
	9/12/2022	130	<2.0	0.04	<0.02	<0.01	2.76	2.77	210	0.62	2.8	0.04	20
	Mean	139	2.3	0.03	0.07	0.02	4.39	4.41	229	0.84	2.3	0.06	24
	Stdev	8	0.6	0.01	0.04	0.01	1.24	1.24	18	0.43	0.4	0.06	8
	Max	147	3.4	0.04	0.12	0.02	5.65	5.67	255	1.56	2.8	0.17	35
	Min	130	2.0	0.01	0.02	0.01	2.76	2.77	210	0.43	1.9	0.02	15
	No. of Det.	5	1	4	4	3	5	5	5	4	5	5	5

**Table 3-2 continued.** Summary of surface, middle, and bottom water quality monitoring data for Blue Marsh Reservoir in 2022

Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	NO3-NO2	TDS	TKN	TOC	TP	TSS
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
BM-11S	5/16/2022	65	<2.0	0.02	<0.02	<0.01	4.03	4.04	119	<0.43	2	0.03	8
	6/13/2022	47	<2.0	0.03	0.04	<0.01	2.67	2.68	103	<0.43	4.4	0.04	10
	7/11/2022	128	<2.0	0.03	<0.02	<0.01	4.32	4.33	177	<0.43	2.1	0.04	13
	8/15/2022	152	<2.0	0.05	<0.02	<0.01	4.07	4.08	260	0.44	2.4	0.04	1
	9/12/2022	89	2.1	0.08	0.17	<0.01	2.51	2.52	180	1.32	4.3	0.07	22
	Mean	96	2.0	0.04	0.05	0.01	3.52	3.53	168	0.61	3.0	0.04	11
	Stdev	44	0.0	0.02	0.07	0.00	0.86	0.86	62	0.40	1.2	0.02	8
	Max	152	2.1	0.08	0.17	0.01	4.32	4.33	260	1.32	4.4	0.07	22
	Min	47	2.0	0.02	0.02	0.01	2.51	2.52	103	0.43	2.0	0.03	1
	No. of Det.	5	1	5	2	0	5	5	5	2	5	5	5

< Laboratory analysis result was less than the minimum limit of quantification or limit of detection

### 3.2.2 Nitrite and Nitrate

Nitrite (NO<sub>2</sub>) is a measure of a form of nitrogen that occurs as an intermediate in the nitrogen cycle. It is unstable and can rapidly be oxidized to nitrate or reduced to nitrogen gas. Nitrite is a source of nutrients for plants and can be toxic to aquatic life in relatively low concentrations. Nitrite concentrations were low at Blue Marsh Reservoir during 2022 (Table 3-2). Concentrations ranged from less than the reporting limit of 0.01 mg/L to 0.24 mg/L for all stations and depths during the sampling season.

Nitrate (NO<sub>3</sub>) is the measure of the most oxidized and stable form of nitrogen. It is the principal form of combined nitrogen in natural waters. Nitrate is the primary form of nitrogen used by plants as a nutrient to stimulate plant growth. Nitrate concentrations maintained similar seasonal patterns across all stations in Blue Marsh Reservoir in 2022. Consistently higher concentrations were measured at upstream tributary station BM-5S (Table 3-2). Elevated nitrate concentrations at this station are likely attributed to agriculture activities in the watershed and subsequent runoff and nutrient loading. Concentrations at all sampling locations and depths ranged from 0.61 to 7.45 mg/L. Seasonal mean concentration at surface tributary station BM-5S (6.48 mg/L) maintained the highest concentration of all stations and dates sampled.

Concentrations of nitrate and nitrite measured at Blue Marsh Reservoir remained below PADEP water quality criteria during 2022. The state water quality standard for nitrogen from nitrite and nitrate sources is a summed concentration of not more than 10 mg/L. Summed concentrations at all stations and sampling dates were less than the State standard. The highest nitrogen summed concentration of 7.46 mg/L occurred in the surface waters at station BM-5S in late June.

### 3.2.3 Total Kjeldahl Nitrogen

Total Kjeldahl nitrogen (TKN) is a measure of organic nitrogen that is inclusive of ammonia. Organic nitrogen is not immediately available for biological activity and is therefore not available for plant growth until decomposition to inorganic form occurs. In general, TKN remained low but variable throughout the water column of Blue Marsh Reservoir in 2022 (Table 3-2). Concentrations measured at all stations and depths in the reservoir and tributaries ranged from less than the laboratory reporting limit of 0.43 mg/L to 1.81 mg/L.

### 3.2.4 Total Phosphorus

Total phosphorus (TP) is a measure of both organic and inorganic forms of phosphorus. It is an essential plant nutrient and is often the most limiting nutrient to plant growth in freshwater systems. Inputs of phosphorus are the prime contributing factors to eutrophication in most freshwater systems. Phosphorus bound to bottom sediments in lakes can be released when oxygen levels are depleted in bottom waters. This phosphorus then becomes available for plant growth.

EPA guidance for nutrient criteria in lakes and reservoirs suggests a maximum concentration for total phosphorus of 0.01-mg/L (EPA 2000). Lakes and reservoirs exceeding this concentration are more likely

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to experience algal bloom problems during the growing season. Total phosphorus in the watershed and lake body of Blue Marsh Reservoir was frequently measured at concentrations well above the recommended standard during 2022 (Table 3-2). Lake surface stations routinely had lower measured concentrations. This may be a direct result algal uptake of available phosphorus. Nutrient enrichment in the upstream watershed and phosphorus release from bottom sediments during anoxic conditions experienced in Blue Marsh Reservoir annually increased phosphorus loading in deep water samples and upstream tributaries. In 2022, 71 of the 105 samples measured for total phosphorus at Blue Marsh Reservoir, including its tributaries, were greater than the EPA recommended guideline. The single sample values for all stations and depths ranged from 0.23 mg/L to <0.01 mg/L. Agriculture and other land use found in the watershed contribute to the historic and currently measured elevated total phosphorus levels in Blue Marsh Reservoir.

### 3.2.5 Total Dissolved Phosphorus

Total dissolved phosphorus (DISS P) in the water column of Blue Marsh Reservoir is readily available for use by aquatic plants and algae. In 2022, single sample values for all stations and depths ranged from 0.12 mg/L to the minimum laboratory reporting limit of <0.01 mg/L (Table 3-2). Sample concentrations greater than the minimum laboratory reporting limit were most often seen at all stations during the September sampling. Seasonal changes and cooler temperatures affecting aquatic plants and algae likely resulted in reduced primary production demand of this nutrient in the water column resulting in increased concentrations and availability.

### 3.2.6 Total Dissolved Solids

Total dissolved solids (TDS) are a measure of the amount of non-filterable dissolved material in the water. Dissolved salts such as sulfate, magnesium, chloride, and sodium contribute to elevated levels. Total dissolved solids (TDS) in the water column of Blue Marsh Reservoir at all stations and depths ranged from 343 mg/L to 96 mg/L in 2022 (Table 3-2). Upstream tributary station BM-5S routinely had the highest monthly measured concentrations and maintained the highest seasonal sampling mean of 317 mg/L. Upstream agricultural practices and other land development in the watershed is likely the cause of increased sedimentation at this tributary sampling station. The state water quality standard for TDS is a maximum monthly average concentration of 500 mg/L or single sample concentration of 750 mg/L. Total dissolved solids measured at Blue Marsh Reservoir in 2022 remained below the PADEP water quality standards at all sampling locations.

### 3.2.7 Total Suspended Solids

Total suspended solids (TSS) are a measure of the amount of filterable particulate matter that is suspended within the water column. High concentrations increase the turbidity of the water and can hinder photosynthetic activity, result in damage to fish gills, and cause impairment to spawning habitat (smothering). As such it is treated as a conventional pollutant and does not have a specific state or federal criterion. Total suspended solids in the waters of Blue Marsh Reservoir were generally low during the 2022 sampling period (Table 3-2). Sample results at all stations and depths ranged from 92 mg/L to <1.0 mg/L. The maximum and consistently higher TSS readings were taken in the deep bottom water samples

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at reservoir lake sampling stations. Uncharacteristically high single TSS readings from these water samples can be attributed to sample collection error. Bottom sediments can be re-suspended during the sample collection process and are sometimes inadvertently included in the sample. Nearly all the elevated sample results occurred at or near bottom water sampling stations and likely were associated with sediment disturbance. The Pennsylvania Department of Environmental Protection has not issued a water quality standard for TSS.

### 3.2.8 Biochemical Oxygen Demand

Five-day biochemical oxygen demand (BOD) is a measure of the oxygen-depleting burden imposed by organic material present in water. It measures the rate of oxygen uptake by organisms in the water sample over a period of time. It is an indicator of the quality of a water body and the degree of pollution by biodegradable organic matter can therefore be inferred. The five-day biochemical oxygen demand and commonly accepted water quality inferences are as follows:

- 1-2 mg/L is associated with very clean water and little biodegradable wastes;
- 3-5 mg/L is associated with moderately clean water with some biodegradable wastes;
- 6-9 mg/L is associated with fairly polluted water, many bacteria, and much biodegradable wastes;
- 10+ mg/L is associated with very polluted water and large amounts of biodegradable wastes.

Biochemical oxygen demand in the waters of Blue Marsh Reservoir ranged from 8.5 mg/L to <2.0 mg/L (Laboratory method minimum reporting limit) during the 2022 sampling season (Table 3-2). In consideration of the rare occurrences of elevated levels, it is inferred that upstream tributaries and the lake body of the reservoir ranged from very clean with little biodegradable wastes to moderately clean waters with some biodegradable wastes at various time during the sampling season. The Pennsylvania Department of Environmental Protection (PADEP) does not issue a water quality standard for BOD.

### 3.2.9 Alkalinity

Alkalinity is a measure of the acid-neutralizing capacity of water. Waters that have high alkalinity values are considered undesirable because of excessive hardness and high concentrations of sodium salts. Water with low alkalinity has little capacity to buffer acidic inputs and is susceptible to acidification (low pH). The PADEP standard is a minimum concentration of 20-mg/L  $\text{CaCO}_3$  except where natural conditions are less.

Throughout the monitoring period in 2022, concentrations at all stations and depths for Blue Marsh Reservoir ranged from 47 mg/L  $\text{CaCO}_3$  to 221 mg/L  $\text{CaCO}_3$  (Table 3-2). Upstream tributary station BM-5S maintained the highest seasonal mean concentration of 196 mg/L  $\text{CaCO}_3$ . Concentrations of alkalinity measured at Blue Marsh Reservoir remained compliment with PADEP water quality standards for all samples collected during 2022.

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### 3.2.10 Total Organic Carbon

Total organic carbon (TOC) is a measurement of the amount of dissolved and particulate carbon that is bound in organic compounds. TOC can be derived from decaying vegetation, bacterial growth, and metabolic activities of living organisms. The bulk of organic carbon in water is composed of humic substances and partly degraded animal and plant materials. Other sources of TOC can include agricultural chemicals such as herbicides and insecticides and wastewater treatment plant discharges. The amount of carbon in a freshwater stream or lake is an indicator of the organic character of a water body. High organic content can increase the growth of microorganisms which contribute to the depletion of oxygen. Total organic carbon concentrations in the water column and tributaries of Blue Marsh Reservoir during 2022 were typical of what might be found in a eutrophic lake (Table 3-2). Concentrations of TOC at all stations and depths ranged from 1.7 mg/L to 4.4 mg/L.

### 3.2.11 Chlorophyll *a*

Chlorophyll *a* is the measure of the plant chlorophyll “*a*” primary pigment which helps plants get energy from light. It is found in most plants, algae, and cyanobacteria. Chlorophyll *a* measures increase in relation to algal densities in a water body. Chlorophyll *a* can be used as a measure of algal biomass. In 2022, the average concentration during the monitoring period for lake surface waters (</=15 feet including the approximate epilimnion depth) at lake station BM-6 was 8.81 ug/L with the highest concentrations seen during mid-July with an average of 11.5 ug/L (Appendix A). Upstream surface water tributary stations maintained lower concentrations throughout the sampling season. Algal productivity in tributary waters would be expected to be less than lake surface waters because of lake water thermal warming, longer in lake water residence time, and increased nutrient concentrations and availability at lake stations. The most elevated chlorophyll *a* measure occurred in the upper arms of the lake (BM-8 and BM-10) where algal blooms were routinely identified.

### 3.2.12 Total Dissolved Arsenic

As part of the periodic monitoring for arsenic in the Blue Marsh Reservoir sediments and waters, lake bottom water samples collected at station BM-6 were analyzed for Total Dissolved Arsenic (3<sup>+</sup>) once monthly during the sampling season from May through September of 2022. Sample results were compared to Pennsylvania freshwater human health criteria and EPA National Recommended Water Quality Aquatic Life Criteria as shown in Table 2-3. All samples analyzed for Total Dissolved Arsenic were either non detect (less than the laboratory minimum limit of detection and quantification of 1.0 ug/L) or less than federal and Pennsylvania human health and aquatic life criteria (Table 3-3).

Sampling Date	5/16/2022	6/13/2022	7/11/2022	8/15/2022	9/12/2022
Sample Result	< 1.0 ug/L	< 1.0 ug/L	2.0 ug/L	1.0 ug/L	2.0 ug/L

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### 3.3 TROPIC STATE DETERMINATION

Carlson’s (1977) trophic state index (TSI) is a method of quantitatively expressing the magnitude of eutrophication for a lake. The trophic state analysis calculates separate indices for eutrophication based on measures of total phosphorus, chlorophyll a, and secchi disk depth. Index values for each parameter range on the same scale from 0 (least enriched) to 100 (most enriched). The resulting indices can also be compared to qualitative threshold values that correspond to levels of eutrophication: oligotrophic (TSI <40), mesotrophic (TSI >40), and eutrophic (TSI >50).

During 2022, TSI’s calculated for measures of secchi disk depth classified Blue Marsh Reservoir as mesotrophic in May (47.69) and eutrophic in June (50.01), July (54.65), August (53.23) and September (58.63) (Fig. 3-7). TSIs calculated for measures of total phosphorus classified Blue Marsh Reservoir as eutrophic in June (53.20) and oligotrophic in May (37.35), July (37.35), August (37.35) and September(37.35). TSI’s calculated for measures of chlorophyll a classified Blue Marsh Reservoir as mesotrophic in May (49.55) and June (47.50) and eutrophic in July (55.30) and August (53.48) and September (50.88).

Carlson (1977) warned against averaging TSI values estimated for different parameters, and instead suggested giving priority to chlorophyll a in the summer and to phosphorus in the spring, fall, and winter. The trophic state of the reservoir was predominantly eutrophic during the 2022 sampling season. The EPA (1983) also provides criteria for defining the trophic conditions of lakes of the North Temperate Zone based on concentrations of total phosphorus, chlorophyll *a*, and secchi depth (Table 3-4). Considering the general agreement between the EPA classifications with that of the Carlson TSI’s, the trophic condition of Blue Marsh Reservoir was mesotrophic/eutrophic in 2022.

Water Quality Variable	Oligo-trophic	Meso-trophic	Eutrophic	16 May	07 June	28 July	19 August	16 September
Total phos. (ppb)	<10	10-20	>20	<10	30	<10	10	10
Chlorophyll (ppb)	<4	4-10	>10	6.9	5.6	12.4	10.3	7.9
Secchi depth (m)	>4	2-4	<2	2.35	2.0	1.45	1.6	1.1

### 3.4 RESERVOIR COLIFORM BACTERIA MONITORING

Total coliform bacteria include Escherichia coliform (E. coli) and related bacteria that are associated with fecal discharges. Fecal coliform bacteria are a subgroup of the total coliform and are normally associated with waste derived from human and other warm-blooded animals and indicate the presence of fecal contamination but not the associated risk. With respect to EPA and PADEP water quality standards, fecal coliform bacteria standards have been replaced with a recommended E. coli criterion. Total coliform and Escherichia coliform bacteria were monitored in the tributary and lake surface waters at Blue Marsh Reservoir on five occasions (May-September) during 2022 (Table 3-5).

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Escherichia coliform is the most reliable indicator of fecal bacterial contamination of surface waters in the United States according to water quality standards set by the EPA (2000). The EPA recommendation for recreational water quality standards for E. coli is based on two criteria: a geometric mean of 126 organisms/100 ml (geometric mean of five samples collected over not more than a 30 consecutive day period) threshold and 235 organisms/100 ml (single water sample) threshold.

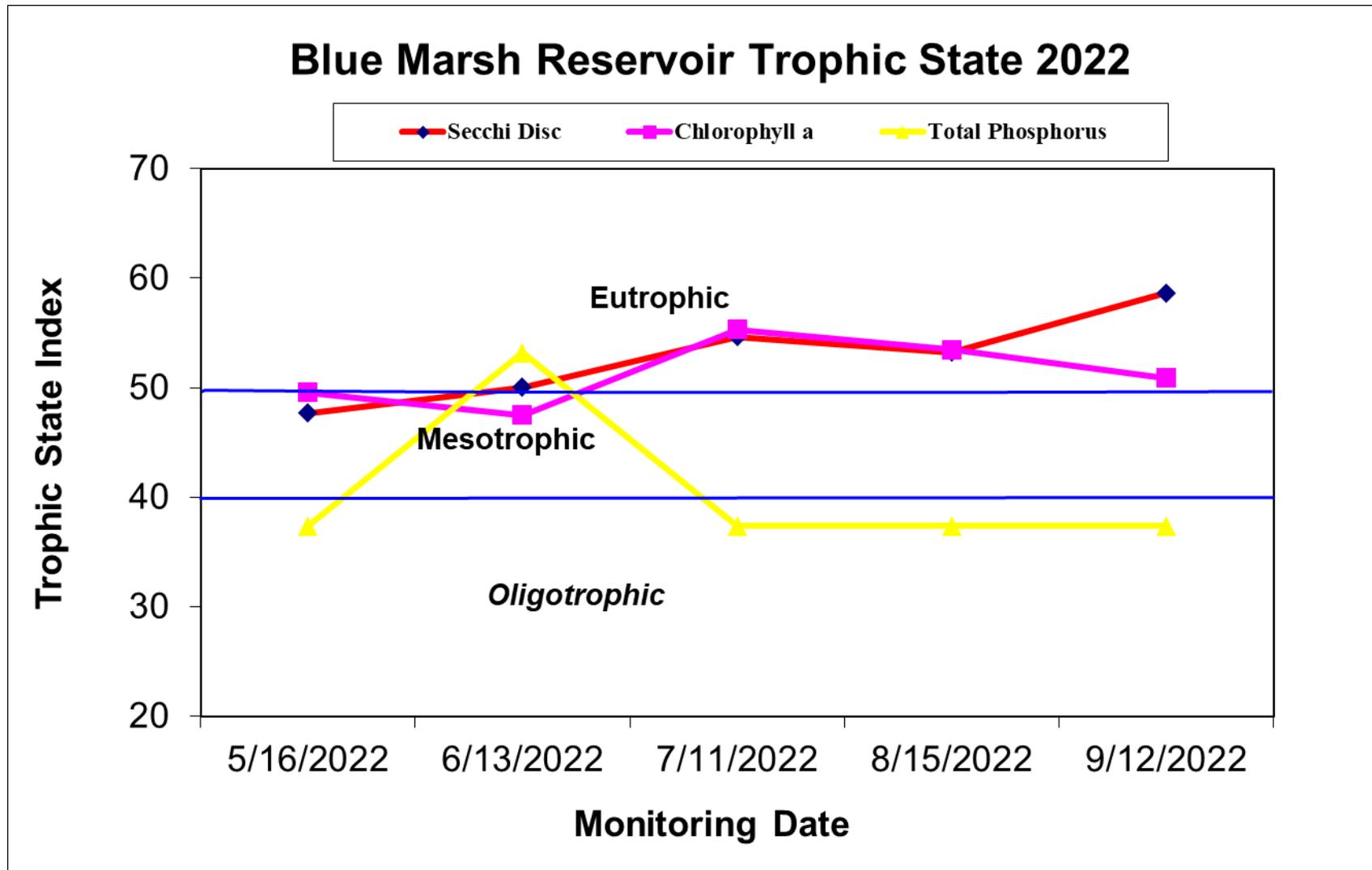
Total coliform values for all stations ranged from 22 colonies/100-ml to greater than the detection limit of >2420 colonies/100-ml. Bacteria in natural waters are common and their presence in the sample is not necessarily a human health concern. No State or federal standards exist for total coliform for water contact recreation.

Given that Corps regular monitoring was completed utilizing single day grab samples, single sample results were compared to the EPA/PADEP Escherichia coli single sample criteria in 2022. The E. coli samples collected at Blue Marsh Reservoir did exceed the 235 organisms/100 ml single water sample threshold on five occasions at upstream tributary stations BM-5S and BM-11S. Escherichia coliform values for these two stations ranged from 86 colonies/100-ml to >2420 colonies/100-ml. Elevated counts at stations BM-5S and BM-11S are likely attributed to agricultural activities in those upstream watersheds. Water contact recreation (secondary), such as water skiing, is permitted at Blue Marsh Reservoir. No long term elevated bacteria counts were recorded in the main reservoir body. The Corps recreational public swimming beach area is also monitored for bacteria and managed separately from the monthly routine lake water quality sampling (see Section 3.5).

### 3.5 WEEKLY SWIMMING BEACH BACTERIA MONITORING

Twice weekly coliform bacteria monitoring was conducted at the public swimming beach of the Dry Brooks Day Use Area of Blue Marsh Reservoir to gauge compliance with Pennsylvania Department of Health and United States Environmental Protection Agency swimming beach water quality standards to ensure public safety for this primary water contact recreation area.

Escherichia coli is the most reliable indicator of fecal bacterial contamination of surface waters in the United States according to water quality standards set by the EPA (2000). The EPA recommendation for recreational water quality standards for E. coli is based on two criteria: a geometric mean of 126 organisms/100 ml (geometric mean of five samples collected over not more than a 30 consecutive day period) threshold and 235 organisms/100 ml (single water sample) threshold. Samples for E. coli analysis were collected twice weekly from 3 fixed beach area stations on each sampling date in the regulated swimming area. During the 2022 recreation season, E. coli samples at the swimming beach area of Blue Marsh Reservoir did not exceed the single sample or 5-day geometric mean criterion (Table 3-6). No bacteria related beach closures occurred during the 2022 recreation season. High bacterial readings often correlate with precipitation and subsequent runoff from the watershed and beach area which is often populated with a resident Canada goose population.



**Figure 3-7.** Trophic state indices calculated from secchi disk depth and concentrations of total phosphorus and chlorophyll *a* at Blue Marsh Reservoir in 2022.

**Table 3-5.** Surface Water Stations Bacteria counts (colonies/100 ml) at Blue Marsh Reservoir during 2022. Shaded values indicate results were not in compliance with EPA and PA Department of Health water quality standards for E-coli levels at swimming beaches: maximum single count greater than 235 colonies/100-ml.

STATION	DATE		Total Coliform		Escherichia coli
BM-1S	5/16/2022		1730		15
	6/13/2022	>	2420		11
	7/11/2022		1550		2
	8/15/2022		1300		6
	9/12/2022	>	2420		12
BM-2S	5/16/2022		62		1
	6/13/2022		22	<	1
	7/11/2022		261	<	1
	8/15/2022		365	<	1
	9/12/2022		248	<	1
BM-5S	5/16/2022	>	2420		214
	6/13/2022	>	2420		816
	7/11/2022	>	2420		86
	8/15/2022	>	2420		105
	9/12/2022	>	2420		1730
BM-6S	5/16/2022		488		1
	6/13/2022		201		2
	7/11/2022		345		8
	8/15/2022		2420		9
	9/12/2022		1410		6
BM-7S	5/16/2022		185		2
	6/13/2022		68		2
	7/11/2022		517		1
	8/15/2022		980		1
	9/12/2022		411		2
BM-8S	5/16/2022		261	<	1
	6/13/2022		119		1
	7/11/2022		249		5
	8/15/2022		411		1
	9/12/2022		816		3
BM-9S	5/16/2022		261		3
	6/13/2022		121	<	1
	7/11/2022		192		6
	8/15/2022		649		1
	9/12/2022		921		2
BM-10S	5/16/2022		172	<	1
	6/13/2022		115		3
	7/11/2022		659	<	1
	8/15/2022		461		1
	9/12/2022		866		5
BM-11S	5/16/2022	>	2420		225
	6/13/2022	>	2420	>	2420
	7/11/2022	>	2420		387
	8/15/2022	>	2420		225
	9/12/2022	>	2420		1730

**Table 3-6.** Maximum counts and 5-day e-coli running geometric means of the three swimming beach stations at Blue Marsh Reservoir in 2022. Shaded values indicate results were not in compliance with EPA and PA Department of Health water quality standards for e-coli levels at one or more beach sampling stations sampled on the same day: maximum single count greater than 235 colonies/100-ml; 5-day geometric mean greater than 126 colonies/100-ml.

Week	Date	Single Maximum Count	Sampling Station 5-Day Geometric Means		
			sb1	sb2	sb3
Week 1	5/23/2022	23	-	-	-
	5/26/2022	16	-	-	-
Week 2	5/31/2022	16	-	-	-
	6/2/2022	73	-	-	-
Week 3	6/6/2022	9	14.88	16.51	15.60
	6/9/2022	16	14.88	9.48	14.51
Week 4	6/13/2022	8	13.50	6.26	12.97
	6/16/2022	5	7.75	4.94	11.08
Week 5	6/20/2022	6	3.78	3.10	7.04
	6/23/2022	41	4.90	4.20	5.21
Week 6	6/27/2022	192	4.70	10.99	8.56
	6/30/2022	16	4.91	13.69	11.30
Week 7	7/5/2022	28	9.57	17.05	13.23
	7/7/2022	187	23.71	34.05	23.72
Week 8	7/11/2022	8	20.25	24.55	28.49
	7/14/2022	20	20.84	17.10	13.13
Week 9	7/18/2022	61	29.91	24.05	14.24
	7/21/2022	26	29.47	24.44	16.51
Week 10	7/25/2022	14	17.55	14.70	10.75
	7/28/2022	172	35.10	27.15	21.28
Week 11	8/1/2022	167	56.84	33.82	29.92
	8/4/2022	32	32.96	33.62	25.60
Week 12	8/8/2022	10	27.23	26.56	21.67
	8/11/2022	27	28.63	30.51	25.08
Week 13	8/15/2022	10	16.44	16.52	14.25
	8/18/2022	3	6.79	9.07	7.68
Week 14	8/22/2022	4	5.91	5.99	4.75
	8/25/2022	2	4.28	4.54	3.00
Week 15	8/29/2022	6	3.44	2.49	1.55
	9/1/2022	1	2.17	1.64	1.00

### 3.6 ALGAE AND CYANOBACTERIA MONITORING

Cyanobacteria and algae are photosynthetic organisms found in aquatic environments. Cyanobacteria, formerly known as blue-green algae, are a group of bacteria. These bacteria were originally called blue-green algae because dense growths often turn the water pea green, brownish-green or blue-green. Dense growths of these organisms are often referred to as a “bloom”. They are found in all lakes and are a natural part of a lake ecosystem.

The development and proliferation (intensity) of algal blooms result from a combination of environmental factors including available nutrients (quantity and quality), sunlight, air and water temperature, ecosystem disturbance (stable or wind mixing conditions, turbidity), hydrology (precipitation, river flow

and water storage levels) and water chemistry. As photosynthetic organisms, high nutrient and light concentrations can promote a population explosion and result in blooms, especially during warm weather. In high densities, those species of these organisms that can produce potent natural toxins can be a health hazard. Not all blue-green algae or algal blooms produce toxins. Blooms with the potential to harm human health or aquatic ecosystems are referred to as harmful algal blooms or HABs. In freshwater systems, cyanobacteria can produce HABs and toxins that can harm people, animals, aquatic ecosystems, drinking water supplies, and recreational activities including swimming and recreational fishing.

Algal blooms have historically been a concern at Blue Marsh Reservoir as the watershed is approximately 55% agriculture land use and reservoir tributary inflows often contain elevated levels of sediments and nutrients. In the watershed, runoff and soil erosion from fertilized agricultural areas and lawns, runoff from animal husbandry agricultural areas, erosion from river banks, river beds, and sewage effluent are major sources of nutrients entering water ways and tributaries of Blue Marsh Reservoir. All these pathways are considered external sources and promote and support the growth of algae and cyanobacteria within the lake (Fig. 3-8 and 3-9). In addition to these external sources, internal origins of nutrients comes from the reservoir sediments. Phosphate attaches to sediments. When dissolved oxygen concentrations are low in the water (anoxic conditions), sediments release phosphate into the water column. Anoxic conditions are experienced annually within Blue Marsh Reservoir causing the release of nutrients from bottom sediments. These nutrients are then recycled back into the water column and support the growth of algae and cyanobacteria.

In the interest of public health and safety, the USACE Philadelphia District has worked closely with the Pennsylvania Department of Environmental Protection in its approach to managing and responding to HAB conditions at Blue Marsh Reservoir. A Blue Marsh draft immediate response and monitoring plan was developed in 2021. Stakeholders and the public are notified of the risks of potential harmful toxic algae blooms at the project utilizing on site signage and social media and project website notifications and warnings. Potential health risks are considered regarding water contact and other recreation within the lake and as it relates to Pennsylvania draft harmful algal bloom standards and other guidelines including the EPA's Recommended Human Health Recreational Ambient Water Quality Criteria or Swimming Advisories for Microcystins and Cylindrospermopsin EPA 822-F-19-00 (Table 3-7).

In partnership with the Pennsylvania Department of Environmental Protection, the Philadelphia District conducted sampling and testing of algal blooms throughout the reservoir to include the recreational swimming beach area in 2021. Samples were collected by USACE staff and provided to Pennsylvania Department of Environmental Protection for analysis and reporting per the Pennsylvania draft HAB sampling and response guidelines currently still in development. Samples were analyzed for colony counts and genera. Based on cyanobacteria screening, if there were elevated cyanobacteria counts, then a toxin analysis was completed. Due to logistical and analysis delays experienced in 2021 utilizing this approach (+ 1 week until toxin results were reported), the USACE considered alternative solutions that might enhance our ability to respond to potential public health hazards associated with HAB's.

In addition to the limited monitoring conducted in cooperation with the State of Pennsylvania in 2022, USACE staff monitored field conditions and cyanobacteria toxin production near the reservoir public use areas (boat launches and swimming beach) utilizing rapid qualitative screening field test kits produced by Gold Standard Diagnostics Horsham, Inc. (previously Eurofins Abraxis, Inc.) referenced at <https://www.goldstandarddiagnostics.us/home/>. The ABRAXIS® Anatoxin-a (recreational and drinking waters) and Microcystins and Nodularin (recreational waters) Strip Tests provide only preliminary qualitative field test results but provides the USACE with the ability to rapidly respond to observed

conditions at the time of sample collection and as it relates to recreational usage and protection of the public from exposure to cyanotoxin producing algae. The strip tests qualitative screening thresholds range from 0-10 parts per billion (ppb) for Microcystins/Nodularins and 0-2.5 ppb for Anatoxin-a.



**Figure 3-8.** Photograph of typical algal bloom conditions at the Philadelphia District USACE Blue Marsh Reservoir during the summer and fall recreational season.



**Figure 3-9.** Photograph of typical algal bloom conditions at the Philadelphia District USACE Blue Marsh Reservoir during the summer and fall recreational season.

**Table 3-7.** Cyanobacteria toxin recreational and drinking water criteria utilized as public safety risk guidance for algae samples and analysis in 2022 at the USACE Blue Marsh Dam and Reservoir in Leesport, Pennsylvania. Pennsylvania criteria are currently in draft format and are unavailable.

Federal and State Drinking Water and Recreational Contact Criteria	Hepatotoxins – Liver Damage		Neurotoxins – Nerve Damage	
	Microcystins / Nodularins	Cylindrospermopsin	Anatoxin-a	Saxitoxin
Pennsylvania Drinking Water Standard	0.3 ppb	0.7 ppb	NA	NA
Ohio Drinking Water Standard-Child	0.3 ppb	0.7 ppb	20.0 ppb	0.3 ppb
EPA Drinking Water Health Advisories	0.3 - 1.6 ppb (Child) – (Adult)	0.7 - 3.0 ppb (Child) – (Adult)	NA	NA
Ohio Contact Recreational Standard	6.0 ppb	5.0 ppb	80.0 ppb	0.8 ppb
EPA Recommended Recreational Criteria	8.0 ppb	15.0 ppb	NA	NA
World Health Organization (2020a and 2020b) Recreational Recommended Criteria	24 ppb	NA	59 ppb	NA

µg/L (micrograms per liter) = ppb (part per billion) = ng/ml (Nanogram per milliliter)

During the 2022 summer recreational sampling season, USACE staff observed varying densities of algal blooms throughout the reservoir. In response to these observations, the Philadelphia District took the following steps:

1. The Philadelphia District USACE initiated coordination with the Pennsylvania Department of Environmental Protection and water supply interests regarding response and monitoring plans.
2. Philadelphia District USACE maintained posted public notices at lake recreational access locations (in addition to social media postings with links to Centers for Disease Control and Prevention cyanobacteria website) highlighting the presence and risks of potential harmful toxic algae and to pursue lake recreation at your own risk.
3. Philadelphia District USACE initiated and conducted increased sampling and monitoring efforts throughout the recreation season independently and at times in cooperation with the Pennsylvania Department of Environmental Protection.

Algae colony densities were variable with some samples elevated in visually identified bloom conditions. Toxin production levels were also variable but did not exceed the Environmental Protection Agency (2019) recommended recreational contact water criteria in any samples (Table 3-8). The Western Berks Water Authority maintains a raw water intake downstream of the reservoir in the Tulpehocken Creek and has a direct lake water withdrawal pipeline connected to the existing reservoir water control tower. Monitoring and treatment of drinking water is the responsibility of the water authority and the USACE does not guarantee the quality of raw water withdrawn from the lake for drinking water purposes. No lake/reservoir recreational closures were initiated because of algal blooms or toxin production. However, the entire lake remained in a public warning condition for much of the recreational season.

**Table 3-8.** Field collected toxin sample results analyzed by the U.S. Army Corps of Engineers utilizing ABRAXIS® rapid qualitative screening field test kits during the 2022 recreational season at Blue Marsh Reservoir.

<b>Date</b>	<b>Test Location</b>	<b>Sample Type</b>	<b>Test Performed</b>	<b>Test Results</b>
1-Aug-22	Swim Beach	Transect	Anatoxin A	Below Limit Detection
1-Aug-22	Church Rd Paddle Launch	Transect	Anatoxin A	Below Limit Detection
1-Aug-22	Mt. Pleasant Access	Transect	Anatoxin A	Below Limit Detection
1-Aug-22	Swim Beach	Transect	Microcystin	Below Limit Detection
1-Aug-22	Church Rd Paddle Launch	Transect	Microcystin	Below Limit Detection
1-Aug-22	Mt. Pleasant Access	Transect	Microcystin	Low to Moderate Positive, 2.5-5 ppb
11-Aug-22	Swim Beach	Transect	Anatoxin A	Below Limit Detection
11-Aug-22	Swim Beach	Transect	Microcystin	Below Limit Detection
18-Aug-22	Swim Beach	Transect	Anatoxin A	Below Limit Detection
18-Aug-22	Swim Beach	Transect	Microcystin	Below Limit Detection
25-Aug-22	Swim Beach	Transect	Anatoxin A	Below Limit Detection
25-Aug-22	Swim Beach	Transect	Microcystin	Below Limit Detection
1-Sep-22	Swim Beach	Transect	Anatoxin A	Below Limit Detection
1-Sep-22	Swim Beach	Transect	Microcystin	Below Limit Detection

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# **APPENDIX A**

## **BLUE MARSH RESERVOIR 2022 STRATIFICATION DATA TABLES**

## 2022 Blue Marsh Stratification/Profile

Station	Date	Time	Depth	Temp	DO	DO	pH	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	C	%	mg/L		mV	mV	NTU	ug/L	mS/cm
BM-1	5/16/2022	08:05:21	1.0	15.41	99.9	9.98	8.10	-96.2	56.4	1.5	5.6	0.304
	6/13/2022	7:48:11	1.0	19.79	87.7	8	7.76	-78.7	64.5	2.7	5	0.348
	7/11/2022	7:51:45	1.0	18.36	84.3	7.91	7.3	-53.9	60.3	3.5	1.9	0.377
	8/15/2022	7:52:12	1.6	22.14	86.7	7.55	7.05	-40.8	68.5	5.6	2	0.436
	9/12/2022	7:56:58	0.5	23.18	81.3	6.94	7.24	-51.2	113.5	5.8	3.9	0.404
BM-2	5/16/2022	11:44:07	0.5	20.31	138.7	12.52	8.68	-127.9	34	0.5	5.5	0.332
		11:43:08	5	20.05	139.6	12.67	8.71	-129.6	33.8	1.0	8.2	0.329
		11:42:02	10	18.05	140.4	13.27	8.66	-126.4	33.6	1.6	14.1	0.321
		11:40:03	15	15.39	113.8	11.37	8.42	-113	33.4	2.0	18.9	0.301
		11:37:41	20	13.68	78.1	8.1	7.95	-87.7	33.8	1.1	7.2	0.286
		11:35:35	25	12.8	66.6	7.04	7.83	-81.2	33.9	1.2	6.3	0.272
		11:34:34	30	12.22	62.6	6.7	7.78	-78.5	34.2	1.8	5.1	0.252
		11:33:02	35	11.91	55.4	5.98	7.75	-77.3	34.6	2.6	4.3	0.249
11:31:06	40	11.76	40	4.33	7.72	-75.5	35.1	3.6	3.8	0.272		
BM-2	6/13/2022	11:25:57	0.5	25.5	118.9	9.73	8.59	-124.9	61.3	1.4	2.4	0.370
		11:24:54	5	24.04	116.4	9.78	8.56	-122.9	61.1	2.0	4	0.359
		11:23:38	10	23.79	101.8	8.59	8.42	-114.9	61.2	2.7	11	0.361
		11:21:30	15	21.46	43.6	3.85	7.67	-73.9	62.4	5.6	8.8	0.413
		11:19:54	20	19.68	25.6	2.34	7.55	-67.4	62.2	3.4	4.7	0.388
		11:18:59	25	17.64	20.5	1.95	7.52	-65.6	62.1	2.7	4.1	0.349
		11:17:17	30	15.93	12	1.18	7.48	-63.5	62	2.4	2.9	0.323
		11:16:14	35	14.5	6.5	0.66	7.46	-62.5	62.2	2.8	3	0.300
11:14:47	40	13.5	4.6	0.48	7.46	-62	60.9	5.4	2.5	0.288		
11:35:58	45	12.76	5.8	0.62	7.5	-64.4	62.6	5.7	2.3	0.278		
BM-2	7/11/2022	12:02:20	0.5	27.6	168.6	13.28	9.13	-155	61.1	5.0	9	0.349
		12:01:05	5	27.51	168.6	13.3	9.12	-154.1	58.4	4.8	13.8	0.349
		12:00:14	10	27.11	161.4	12.82	9.03	-149.2	59.5	4.4	17.7	0.348
		11:58:00	15	24.68	41.6	3.46	8.03	-93.9	58.9	5.7	9.4	0.415
		11:56:32	20	22.88	3.3	0.29	7.95	-89.4	55.9	2.7	5.6	0.414
		11:54:32	25	21.46	3.4	0.3	7.9	-86.7	34.7	2.9	2.4	0.410
		11:53:55	30	20.34	3.4	0.3	7.91	-86.7	24.8	2.1	1.5	0.410
		11:53:10	35	19.27	3.4	0.31	7.96	-89.1	18.7	2.5	1.6	0.402
		11:52:23	40	18.52	3.4	0.32	7.93	-87.6	16.4	3.3	1.2	0.395
11:50:57	45	16.78	3.6	0.35	7.88	-84.4	40.8	10.6	1.9	0.377		
BM-2	8/15/2022	9:57:12	0.5	27.76	117.3	9.22	8.46	-118	85.6	3.5	6.3	0.325
		9:56:04	5	27.61	114.3	9	8.39	-114.2	87.2	3.3	12.3	0.325
		9:55:04	10	27.51	110.5	8.72	8.3	-109.3	90.3	3.7	11.9	0.324
		9:54:05	15	27.45	107.5	8.49	8.24	-106	89.1	3.3	10.8	0.324
		9:51:51	20	26.24	3.6	0.29	7.39	-59.2	99.5	2.2	3.2	0.417
		9:50:14	25	25.02	3.5	0.29	7.38	-58.7	97.9	2.1	2.4	0.434
		9:49:15	30	24.36	3.5	0.29	7.37	-58.2	98	1.4	2	0.436
		9:47:33	35	23.21	3.6	0.31	7.35	-57	103.3	4	1.6	0.437
9:43:35	40	22.52	5	0.44	7.35	-57.2	98.6	9.1	1.8	0.440		

## 2022 Blue Marsh Stratification/Profile

Station	Date	Time	Depth	Temp	DO	DO	pH	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	C	%	mg/L		mV	mV	NTU	ug/L	mS/cm
BM-2	9/12/2022	12:01:46	0.5	25.39	102.7	8.42	8.18	-102.4	113.7	11.6	9.9	0.346
		12:00:33	5	25.03	92.7	7.65	8.07	-96.4	115.6	12.1	13.9	0.345
		11:59:14	10	24.94	80.7	6.67	7.93	-88.8	117.7	10.5	8.5	0.346
		11:57:56	15	24.91	82.1	6.79	7.92	-87.9	117.2	10.9	8.9	0.344
		11:55:11	20	24.77	42.2	3.5	7.47	-63.6	120.7	8.8	6.3	0.356
		11:53:34	25	24.48	4	0.34	7.32	-55.6	123.6	6.6	3.3	0.398
		11:51:20	30	23.74	4.1	0.35	7.34	-56.3	121.3	7.8	3.3	0.382
		11:50:07	35	23.36	4.4	0.38	7.33	-56.1	119.8	9.5	5.5	0.388
		11:49:01	40	23.01	4.7	0.4	7.35	-57.1	116.6	11.0	6.8	0.387
BM-5	5/16/2022	13:02:06	1.0	17.27	102.9	9.87	8.1	-96.6	48	5	1	0.507
	6/13/2022	12:41:44	1.0	18.75	89.5	8.33	8.03	-92.8	71.3	12.7	0.7	0.523
	7/11/2022	13:09:16	1.0	20.97	97.1	8.64	8.45	-115.8	75	4	0.6	0.597
	8/15/2022	13:36:03	1.0	20.84	94.7	8.45	8.07	-95.6	136.1	3.1	0.1	0.587
	9/12/2022	13:34:15	1.0	19.67	93.3	8.53	7.7	-75.7	128.4	4.7	2	0.513
BM-6 Secchi 2.35 M	5/16/2022	12:15:56	0.5	20.26	134.7	12.18	8.66	-126.8	38	1.1	4.8	0.328
		12:15:04	5	19.56	138.6	12.71	8.69	-128.3	37.7	1.1	7.5	0.322
		12:13:46	10	17.99	137.4	13	8.69	-127.8	37.4	1.3	8.4	0.312
		12:12:42	15	16.33	125.2	12.26	8.63	-124	37.1	1.8	14.6	0.305
		12:10:47	20	14.27	85	8.7	8.19	-100.3	37.5	1.6	9.5	0.298
		12:09:15	25	12.9	65.8	6.94	7.89	-84.5	37.5	1.1	5.8	0.284
		12:07:54	30	12.29	59.2	6.33	7.84	-82	37.5	1	5	0.282
		12:06:23	35	12.1	51.4	5.52	7.82	-80.6	37.4	1.5	4.4	0.292
		12:05:07	40	11.94	43.7	4.71	7.79	-79.2	37.4	1.9	3.8	0.295
		12:02:47	45	11.64	22.3	2.42	7.72	-75.7	37.5	3.6	3.7	0.301
12:01:00	50	11.44	8.8	0.95	7.68	-73.3	37.5	528.5	7.6	0.303		
BM-6 Secchi 2.0 M	6/13/2022	11:51:59	0.5	25.34	116.4	9.55	8.64	-127.3	60.5	2.4	3.5	0.367
		11:51:07	5	24.29	112.6	9.42	8.6	-124.8	60.8	2.2	3.6	0.359
		11:50:22	10	23.8	105.3	8.89	8.51	-120	60.9	2.6	9.7	0.357
		11:47:37	15	21.81	46.3	4.06	7.75	-78.6	63	3.8	9	0.401
		11:45:46	20	20.16	27.5	2.49	7.68	-74.7	62.8	3.9	4.3	0.372
		11:44:47	25	17.71	18.6	1.77	7.68	-74	62.5	3.4	4.1	0.342
		11:43:19	30	15.85	17.6	1.74	7.58	-68.8	62.5	2.3	3.3	0.314
		11:40:36	35	14.25	13.7	1.4	7.52	-65.2	62.8	1.9	2.2	0.293
		11:39:36	40	13.7	9.3	0.96	7.51	-64.6	63	2.5	3.1	0.285
		11:37:31	45	13.12	5.2	0.55	7.5	-64.4	62.8	4.6	2.6	0.280
11:36:07	50	12.77	5.6	0.59	7.5	-64.4	62.4	5.2	2.4	0.278		
BM-6 Secchi 1.45 M	7/11/2022	12:28:00	0.5	27.84	177.2	13.9	9.17	-157.2	59	2.8	8.5	0.349
		12:27:03	5	27.5	183.6	14.49	9.13	-154.8	59.2	3.5	11.4	0.346
		12:25:13	10	26.84	152.4	12.17	8.88	-141	58.9	5.4	17.2	0.358
		12:23:09	15	25.11	56.4	4.65	8.04	-94.5	61.4	9	8.9	0.398
		12:21:00	20	23.18	3.4	0.29	7.94	-89	54.5	2.8	5.1	0.410
		12:19:48	25	21.65	3.3	0.29	7.96	-89.6	47.7	2.5	2.9	0.407
		12:18:41	30	20.75	3.4	0.3	7.97	-90.1	29	2.2	2	0.408
		12:17:23	35	18.55	3.4	0.32	7.92	-86.8	25.8	2.2	1.9	0.391
		12:15:26	40	17.99	3.9	0.37	7.96	-89.1	27.5	2.4	0.8	0.381
		12:14:12	45	17.64	4.4	0.42	7.9	-86	27	4.2	1.8	0.378
12:12:44	50	16.35	5.7	0.56	7.83	-81.8	25.4	10	2.1	0.364		

## 2022 Blue Marsh Stratification/Profile

Station	Date	Time	Depth	Temp	DO	DO	pH	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	C	%	mg/L		mV	mV	NTU	ug/L	mS/cm
<b>BM-6</b> <b>Secchi</b> <b>1.60 M</b>	8/15/2022	9:29:02	0.5	27.72	125.1	9.83	8.69	-130.7	59.2	3.6	7.7	0.325
		9:27:45	5	27.73	123.3	9.69	8.66	-129.3	56.7	4.0	11.4	0.325
		9:26:24	10	27.63	117.2	9.23	8.54	-122.5	56.3	2.8	11.9	0.324
		9:23:41	15	27	32.5	2.59	7.61	-71.3	54.2	4.1	6.5	0.378
		9:21:29	20	26.35	3.4	0.27	7.39	-59.2	41.6	2.7	5.4	0.413
		9:20:08	25	25.46	3.3	0.27	7.32	-55.6	39.7	1.7	2.7	0.428
		9:18:47	30	23.97	3.4	0.28	7.3	-54.1	37.6	1.3	2.6	0.431
		9:16:34	35	22.75	3.4	0.29	7.22	-50.1	31	2.5	1.5	0.431
		9:15:36	40	22.18	3.5	0.3	7.2	-48.7	25.9	2.7	1.5	0.432
		9:12:51	45	21.57	3.4	0.3	7.13	-45.3	0.9	7.9	2.4	0.437
9:13:39	50	21.57	3.4	0.3	7.14	-45.6	9.3	7.6	1.6	0.437		
<b>BM-6</b> <b>Secchi</b> <b>1.10 M</b>	9/12/2022	12:43:37	0.5	25.59	66.5	5.43	7.8	-81.5	109.6	5.5	6.2	0.362
		12:41:52	5	25.04	54.9	4.53	7.71	-76.5	109.6	6.8	9.4	0.360
		12:38:13	10	24.96	51.9	4.29	7.68	-75.2	105.2	15.8	8.1	0.359
		12:36:53	15	24.91	53.1	4.39	7.69	-75.4	103.3	27.5	7.9	0.356
		12:31:00	20	24.89	41.3	3.42	7.52	-66.3	92.6	6.8	6.9	0.358
		12:28:58	25	24.55	3.4	0.28	7.31	-55.2	84.8	5.4	2	0.416
		12:27:52	30	24.05	3.4	0.28	7.29	-53.9	82.7	6.7	2.6	0.424
		12:25:40	35	23.39	3.5	0.29	7.33	-56.2	72.5	9.0	4.8	0.392
		12:23:23	40	23.03	3.6	0.31	7.43	-61.3	52.3	10.1	4.6	0.386
		12:21:49	45	22.91	3.8	0.33	7.46	-62.8	33.3	11.9	5.9	0.391
12:19:17	50	22.77	4.4	0.38	7.52	-66.2	-91.2	68.5	16	0.405		
<b>BM-7</b>	5/16/2022	11:15:12	0.5	20.81	147.3	13.17	8.71	-129.9	30.7	1.3	8	0.337
		11:14:33	5.0	20.07	144.9	13.15	8.7	-128.9	30.5	1.6	14.4	0.334
		11:13:06	10.0	17.44	110.4	10.56	8.24	-104	30.8	3.2	17.8	0.336
		11:12:13	15.0	15.99	104	10.26	8.14	-98	30.8	2.7	12.8	0.311
		11:10:27	20.0	13.96	84.7	8.72	7.92	-86.2	32.3	1.3	7.5	0.276
		11:08:43	25.0	13.02	69.1	7.27	7.79	-79.5	33	2.3	5.6	0.258
		11:07:20	30.0	12.34	53.3	5.7	7.71	-75.1	33.3	4.7	4.4	0.248
		11:06:02	32.0	12.19	51.3	5.5	7.71	-74.9	33.8	4.9	5.3	0.246
<b>BM-7</b>	6/13/2022	11:05:00	0.5	25.23	109	8.96	8.47	-118	61.7	2.7	2.3	0.374
		11:04:13	5	24.03	105.3	8.85	8.43	-115.5	61.7	3.5	5.2	0.366
		11:03:10	10	23.7	101.2	8.56	8.39	-113.2	61.4	3	5.9	0.363
		11:00:56	15	21.71	65.7	5.77	7.77	-79.3	62.7	5.8	8.8	0.389
		10:57:20	20	19.59	22.9	2.09	7.56	-68	61.8	6	3.2	0.405
		10:55:27	25	17.9	11.3	1.07	7.49	-64.1	61.5	5	1.9	0.373
		10:53:54	30	15.73	3.5	0.34	7.44	-61.2	61.6	5.9	2.4	0.331
10:52:34	35	14.58	3.1	0.32	7.44	-61.4	61.1	9.9	2.4	0.314		
<b>BM-7</b>	7/11/2022	11:35:57	0.5	27.57	161.9	12.76	8.99	-147.3	67	4.6	9.9	0.366
		11:34:44	5	27.31	163.1	12.91	9	-147.7	65	4.4	19.2	0.363
		11:33:26	10	26.8	143.7	11.48	8.8	-136.5	66.6	4.2	18	0.364
		11:30:54	15	24.57	53.3	4.43	7.95	-89.5	66.9	3.0	11.6	0.427
		11:28:31	20	23.23	5.5	0.47	7.87	-85.2	59.2	2.9	7.1	0.441
		11:27:14	25	21.58	4.3	0.38	7.89	-85.8	43.8	2.4	3.5	0.422
		11:26:21	30	20.54	4.5	0.41	7.86	-84	14.3	7.3	3.4	0.413
		11:25:29	32	20.15	5.1	0.46	7.83	-82.7	18.5	13.3	3.3	0.412

## 2022 Blue Marsh Stratification/Profile

Station	Date	Time	Depth	Temp	DO	DO	pH	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	C	%	mg/L		mV	mV	NTU	ug/L	mS/cm
BM-7	8/15/2022	10:23:47	0.5	27.75	120.2	9.44	8.57	-124.1	91.7	4.4	8.1	0.333
		10:22:11	5	27.54	117.2	9.24	8.51	-121.2	91.8	5.2	10.9	0.331
		10:20:46	10	27.49	112.6	8.88	8.44	-116.9	93	5.6	10.2	0.330
		10:19:03	15	27.47	110	8.69	8.36	-112.9	90.2	4.5	9.8	0.329
		10:16:59	20	25.8	3.6	0.29	7.32	-55.6	93.5	7.5	5	0.442
		10:15:55	25	24.96	3.8	0.31	7.33	-56.2	86.9	3.1	2.2	0.422
		10:14:29	30	24.37	4	0.33	7.35	-57.2	73.5	6.0	2.5	0.429
		10:13:06	31	24.06	4.5	0.38	7.38	-58.6	47.3	57.9	4.5	0.430
BM-7	9/12/2022	11:31:08	0.5	25.19	108.9	8.96	8.3	-109	113.5	10.2	15.2	0.339
		11:29:09	5	24.95	96.3	7.96	8.18	-102.4	115.2	12.3	11.7	0.338
		11:27:36	10	24.9	92.4	7.64	8.15	-100.7	114.7	12.9	9.4	0.338
		11:24:54	15	24.88	92.7	7.67	8.1	-97.9	114.5	19.1	9.7	0.337
		11:23:16	20	24.81	82.5	6.84	7.99	-91.7	113.5	12.1	7.9	0.339
		11:22:15	25	24.25	59.9	5.01	7.69	-75.4	120.8	5.0	6	0.355
		11:20:27	30	23.66	75.7	6.41	7.72	-77	116.8	9.5	7	0.381
		11:19:37	32	23.35	77.1	6.57	7.74	-78	112.7	14.6	7.5	0.402
BM-8	5/16/2022	10:42:55	0.5	21.03	153	13.62	8.74	-131.4	27.7	1.4	6.9	0.335
		10:42:04	5.0	20.44	152.2	13.71	8.74	-131.4	27.4	2.4	13.4	0.332
		10:40:17	10.0	17.52	104.4	9.97	8.08	-95.6	27.9	4.4	17.3	0.325
		10:38:48	15.0	15.33	104.4	10.44	8.16	-99.4	27.2	1.5	16.3	0.295
		10:36:52	20.0	13.63	75	7.78	7.81	-80.7	27.9	3.0	9.2	0.272
BM-8	6/13/2022	10:38:06	0.5	25	115	9.49	8.45	-117	63.8	2.4	3	0.375
		10:36:59	5	23.7	108	9.13	8.4	-114.2	63.2	3.5	6.8	0.365
		10:35:26	10	23.42	93.4	7.94	8.21	-103.8	63.3	3.9	6.4	0.368
		10:34:00	15	21.4	82.8	7.32	7.86	-84.3	64.5	5.7	9	0.374
		10:31:39	20	19.8	21.4	1.95	7.54	-67	65.1	10.6	5.2	0.387
BM-8	7/11/2022	11:12:25	0.5	27.79	209.5	16.45	8.75	-134	77.3	4.2	12.2	0.335
		11:10:18	5	27.42	209	16.52	8.71	-131.9	75.2	5.2	24.2	0.334
		11:08:29	10	27.04	180.9	14.39	8.42	-116	78.2	5.1	20.5	0.336
		11:05:27	15	24.71	101.6	8.44	7.65	-73.6	80.2	7.9	15.5	0.374
		11:02:17	20	22.73	4	0.35	7.34	-56.6	79.1	3.9	5.2	0.427
BM-8	8/15/2022	12:40:19	0.5	28.33	165.5	12.87	8.81	-137.6	102.3	7.1	8.3	0.324
		12:39:34	5	27.6	149.8	11.8	8.72	-132.5	102.4	7.5	13.7	0.324
		12:38:21	10	27.47	132.1	10.43	8.55	-123.2	106.1	5.9	10.3	0.326
		12:36:05	15	26.66	50.8	4.07	7.69	-75.9	121.3	4.8	5.4	0.373
		12:33:07	20	25.97	33.2	2.69	7.57	-69.4	120	10.1	6.2	0.377
BM-8	9/12/2022	10:53:00	0.5	25.03	123.9	10.22	8.43	-115.8	111.9	7.1	12.7	0.328
		10:51:33	5	24.89	114.1	9.44	8.38	-113.1	111.8	7.7	13.7	0.330
		10:47:49	10	24.87	109	9.02	8.35	-111.5	107	7	12.8	0.330
		10:46:13	15	24.86	107.2	8.87	8.29	-108	107	7.1	11.1	0.330
		10:44:34	20	24.76	115.2	9.56	8.25	-106.1	106.5	8.1	11.5	0.328
BM-9	5/16/2022	10:23:28	0.5	20.97	149.7	13.34	8.66	-127.3	30.4	1.1	7.9	0.338
		10:22:05	5	19.59	157.4	14.42	8.61	-124.1	32.3	2.4	20.6	0.334
		10:20:09	10	17.54	87.4	8.34	7.91	-86.6	35.7	4.1	7.2	0.360
		10:17:59	15	15.74	100.1	9.92	8.05	-93.6	37.8	2	13.4	0.309
		10:16:09	20	14.27	84.3	8.63	7.84	-82	39.8	1.3	7.4	0.282
		10:14:41	25	13.29	75.6	7.91	7.75	-77.2	41.6	3	5.3	0.264
		10:12:08	30	12.57	54.4	5.78	7.65	-72	44.3	7.7	3.8	0.257
		10:09:55	32	12.19	42.7	4.58	7.61	-69.9	47.2	7.4	5.8	0.252

## 2022 Blue Marsh Stratification/Profile

Station	Date	Time	Depth	Temp	DO	DO	pH	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	C	%	mg/L		mV	mV	NTU	ug/L	mS/cm
BM-9	6/13/2022	10:18:37	0.5	24.55	110.6	9.21	8.44	-116.4	62.4	3.3	4.7	0.373
		10:17:10	5	23.79	107.8	9.1	8.41	-114.7	61.9	3.4	6.9	0.367
		10:15:10	10	23.37	83.6	7.11	8.06	-95.5	63	4.0	8.4	0.387
		10:10:14	15	21.35	48.5	4.29	7.67	-74.2	62.7	7.9	4.7	0.388
		10:08:18	20	20.05	48.7	4.42	7.71	-76	62.3	16.9	5.5	0.423
		10:04:35	25	17.82	9	0.86	7.48	-63.8	62.1	6.7	2.4	0.372
		10:01:57	30	15.72	3.4	0.34	7.44	-61.4	62.1	10.3	3	0.337
		10:00:41	32	15.53	3.8	0.38	7.44	-61.2	60.3	12.1	2.8	0.334
BM-9	7/11/2022	10:42:39	0.5	27.68	182.3	14.34	8.72	-132.7	74.8	3.6	12.6	0.352
		10:39:32	5	27.3	182.9	14.49	8.62	-126.9	76.1	4.9	23.8	0.350
		10:36:44	10	26.77	140.1	11.2	8.23	-105.6	74.3	5.1	18.9	0.372
		10:31:56	15	24.87	66.4	5.5	7.61	-71.5	76.1	4	14.5	0.450
		10:26:42	20	23.19	8.7	0.74	7.42	-60.7	67.5	3.7	9.2	0.456
		10:24:20	25	21.84	4.6	0.4	7.41	-60.3	37.4	4.8	4.4	0.433
		10:21:51	30	20.16	6.6	0.6	7.42	-60.8	27.4	11.5	3.2	0.424
		BM-9	8/15/2022	12:16:46	0.5	28.12	133.4	10.41	8.57	-124.5	95	5.5
12:15:35	5			27.65	125.8	9.9	8.41	-115.8	94.7	5.2	11.9	0.339
12:14:37	10			27.43	112.3	8.87	8.27	-108	94.3	6.2	9.9	0.340
12:12:29	15			27.21	95.7	7.59	8.03	-94.6	88.9	7	8.1	0.340
12:11:24	20			25.71	52.3	4.26	7.47	-63.7	89.5	9.4	7.1	0.459
12:10:05	25			25.09	4.4	0.36	7.34	-56.4	70.8	12.9	3.9	0.445
12:08:46	30			23.86	4.5	0.38	7.31	-54.6	44.9	46.7	5.3	0.439
12:05:38	32			23.58	6.7	0.57	7.38	-58.8	88.1	33.5	4.2	0.443
BM-9	9/12/2022	10:17:56	0.5	25.02	111.2	9.17	8.35	-111.7	113.2	6.4	14.8	0.335
		10:16:29	5	24.91	104.7	8.66	8.31	-109.6	112.9	6.1	13	0.335
		10:13:59	10	24.89	99.4	8.22	8.27	-107.3	111.3	5.7	11.1	0.336
		10:12:10	15	24.87	100.5	8.32	8.26	-106.6	110.2	5.7	12.6	0.335
		10:10:35	20	24.79	98.1	8.13	8.24	-105.3	108.3	6.1	10.4	0.334
		10:06:57	25	24.08	87.2	7.32	7.97	-90.5	107.1	15.9	10.4	0.344
		10:04:47	30	22.86	78.2	6.72	7.72	-77.1	116.4	28.7	7.6	0.441
BM-10	5/16/2022	9:37:13	0.5	21.49	193.4	17.06	8.72	-130.8	54.7	2.3	13.6	0.322
		9:34:56	5	19.64	116	10.61	8.22	-103.5	55.3	5.9	22.8	0.376
		9:32:50	10	17.79	89.5	8.5	7.96	-89	55.2	6.6	6.3	0.390
		9:30:40	15	17.29	78.7	7.55	7.85	-83.3	55.3	16.6	2.9	0.390
		9:27:28	20	14.11	37.2	3.82	7.55	-67	55.8	12.7	3.6	0.307
BM-10	6/13/2022	9:31:10	0.5	24.11	121.9	10.23	8.48	-118.6	63.6	4.4	7.4	0.376
		9:29:15	5	23.64	114.1	9.66	8.42	-114.9	62.5	4.9	7.8	0.377
		9:28:17	10	23.25	112.9	9.63	8.36	-111.8	63.2	7.5	8.7	0.390
		9:25:51	15	22.3	113.5	9.85	8.31	-108.9	63.4	8.1	10.7	0.397
		9:21:56	20	19.45	88.9	8.17	7.93	-87.9	64.6	24.9	7.4	0.424
BM-10	7/11/2022	9:51:00	0.5	27.55	219	17.27	8.82	-138.2	76.9	5	22.4	0.328
		9:49:33	5	27.32	209.3	16.57	8.7	-131.6	77.7	5.4	25.8	0.328
		9:46:07	10	26.77	181.6	14.52	8.37	-113.2	78.3	9.0	27.5	0.367
		9:44:07	15	24.45	104.2	8.68	7.95	-89.4	80.8	22.5	15.2	0.487
		9:41:07	20	23.75	95	8.03	7.89	-86.4	80.3	40.1	11.9	0.514

## 2022 Blue Marsh Stratification/Profile

Station	Date	Time	Depth	Temp	DO	DO	pH	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	C	%	mg/L		mV	mV	NTU	ug/L	mS/cm
BM-10	8/15/2022	11:23:01	0.5	27.82	166.5	13.07	8.6	-126	104.8	11.5	12.1	0.357
		11:21:59	5	27.42	160.4	12.67	8.54	-122.7	105.7	10.3	11.5	0.354
		11:20:09	10	27.11	131.7	10.46	8.29	-108.9	110.3	8.8	9	0.370
		11:19:13	15	26.16	120.9	9.77	8.13	-99.9	114	11.8	9	0.399
		11:17:44	20	24.84	107.1	8.86	7.95	-90	116.8	26.4	9.8	0.475
BM-10	9/12/2022	9:26:58	0.5	24.8	141.3	11.71	8.48	-118.7	111.2	10.5	21.3	0.323
		9:24:59	5	24.7	136.3	11.32	8.44	-116.1	110.5	10.6	15.4	0.324
		9:23:26	10	24.53	134.1	11.17	8.38	-112.9	111	10.2	13.4	0.324
		9:21:37	15	23.09	117.1	10.02	8.06	-95.5	121.1	9.9	8.2	0.365
		9:18:23	20	22.15	99.7	8.68	7.83	-83.1	127.1	20.9	6.2	0.421
BM-11	5/16/2022	12:58:59	1.0	17.73	103.9	9.88	7.86	-83.8	49.4	4.7	1.3	0.151
	6/13/2022	12:44:21	1.0	18.98	97.6	9.05	7.8	-80.6	72	15.7	3.5	0.168
	7/11/2022	13:06:10	1.0	21.08	92.3	8.21	8.39	-113	78.4	9	0.8	0.522
	8/15/2022	13:38:36	1.0	21.3	90.6	8.01	8.1	-97	133	5.7	1	0.586
	9/12/2022	13:30:30	1.0	19.89	91.9	8.37	7.67	-73.8	128.3	9.50	3.2	0.256

# **APPENDIX B**

## **BLUE MARSH RESERVOIR 2022 BACTERIA SAMPLING DATA TABLES**

**BLUE MARSH RESERVOIR SWIMMING BEACH MONITORING PROGRAM RESULTS  
E-coli Coliform 2022**

<u>DAY</u>	<u>DATE</u>	<u>FECAL COLIFORM</u>			<u>Arith. AVG.&amp;LOG</u>	<u>E-COLI</u>			<u>Ave./LOG</u>
		<u>SB1</u>	<u>SB2</u>	<u>SB3</u>		<u>SB1</u>	<u>SB2</u>	<u>SB3</u>	
Mon.	23-May				#DIV/0!	16.00	16.00	23.00	18.33
Thur.	26-May				#DIV/0!	13.00	16.00	7.00	12.00
Tues.	31-May				#DIV/0!	16.00	13.00	11.00	13.33
Thur.	2-Jun				#DIV/0!	73.00	41.00	58.00	57.33
Mon.	6-Jun				#DIV/0!	3.00	9.00	9.00	7.00
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	1.17	1.22	1.19	1.21
5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	14.88	16.51	15.60	16.37
Thur.	9-Jun				#DIV/0!	16.00	1.00	16.00	11.00
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	1.17	0.98	1.16	1.17
5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	14.88	9.48	14.51	14.78
Mon.	13-Jun				#DIV/0!	8.00	2.00	4.00	4.67
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	1.13	0.80	1.11	1.09
5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	13.50	6.26	12.97	12.24
Thur.	16-Jun				#DIV/0!	1.00	4.00	5.00	3.33
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	0.89	0.69	1.04	0.97
5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	7.75	4.94	11.08	9.28
Mon.	20-Jun				#DIV/0!	2.00	4.00	6.00	4.00
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	0.58	0.49	0.85	0.74
5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	3.78	3.10	7.04	5.45
Thur.	23-Jun				#DIV/0!	11.00	41.00	2.00	18.00
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	0.69	0.62	0.72	0.82
5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	4.90	4.20	5.21	6.58
Mon.	27-Jun				#DIV/0!	13.00	122.00	192.00	109.00
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	0.67	1.04	0.93	1.02
5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	4.70	10.99	8.56	10.41
Thur.	30-Jun				#DIV/0!	10.00	6.00	16.00	10.67
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	0.69	1.14	1.05	1.09

5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	4.91	13.69	11.30	12.28
Tues.	5-Jul				#DIV/0!	28.00	12.00	11.00	17.00
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	0.98	1.23	1.12	1.23
5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	9.57	17.05	13.23	17.01
Thur.	7-Jul				#DIV/0!	187.00	127.00	111.00	141.67
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	1.37	1.53	1.38	1.54
5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	23.71	34.05	23.72	34.71
Mon.	11-Jul				#DIV/0!	5.00	8.00	5.00	6.00
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	1.31	1.39	1.45	1.45
5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	20.25	24.55	28.49	27.87
Thur.	14-Jul				#DIV/0!	15.00	20.00	4.00	13.00
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	1.32	1.23	1.12	1.26
5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	20.84	17.10	13.13	18.21
Mon.	18-Jul				#DIV/0!	61.00	33.00	24.00	39.33
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	1.48	1.38	1.15	1.37
5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	29.91	24.05	14.24	23.64
Thur.	21-Jul				#DIV/0!	26.00	13.00	23.00	20.67
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	1.47	1.39	1.22	1.39
5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	29.47	24.44	16.51	24.59
Mon.	25-Jul				#DIV/0!	14.00	10.00	13.00	12.33
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	1.24	1.17	1.03	1.18
5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	17.55	14.70	10.75	15.09
Thur.	28-Jul				#DIV/0!	160.00	172.00	152.00	161.33
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	1.55	1.43	1.33	1.46
5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	35.10	27.15	21.28	29.14
Mon.	1-Aug				#DIV/0!	167.00	60.00	22.00	83.00
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	1.75	1.53	1.48	1.63
5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	56.84	33.82	29.92	42.23
Thur.	4-Aug				#DIV/0!	4.00	32.00	11.00	15.67
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	1.52	1.53	1.41	1.55
5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	32.96	33.62	25.60	35.13
Mon.	8-Aug				#DIV/0!	10.00	4.00	10.00	8.00
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	1.44	1.42	1.34	1.46

BLUE MARSH BEACH BACTERIA DATA

5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	27.23	26.56	21.67	29.05
Thur.	11-Aug				#DIV/0!	18.00	20.00	27.00	21.67
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	1.46	1.48	1.40	1.51
5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	28.63	30.51	25.08	32.52
Mon.	15-Aug				#DIV/0!	10.00	8.00	9.00	9.00
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	1.22	1.22	1.15	1.26
5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	16.44	16.52	14.25	18.26
Thur.	18-Aug				#DIV/0!	2.00	3.00	1.00	2.00
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	0.83	0.96	0.89	0.94
5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	6.79	9.07	7.68	8.67
Mon.	22-Aug				#DIV/0!	2.00	4.00	1.00	2.33
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	0.77	0.78	0.68	0.77
5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	5.91	5.99	4.75	5.92
Thur.	25-Aug				#DIV/0!	2.00	1.00	1.00	1.33
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	0.63	0.66	0.48	0.62
5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	4.28	4.54	3.00	4.14
Mon.	29-Aug				#DIV/0!	6.00	1.00	1.00	2.67
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	0.54	0.40	0.19	0.43
5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	3.44	2.49	1.55	2.72
Thur.	1-Sep				#DIV/0!	1.00	1.00	1.00	1.00
5 smpl. Log Value		#NUM!	#NUM!	#NUM!	#DIV/0!	0.34	0.22	0.00	0.24
5 smpl. Geo. Mean		#NUM!	#NUM!	#NUM!	#DIV/0!	2.17	1.64	1.00	1.75

BLUE MARSH BEACH BACTERIA DATA

# **APPENDIX C**

**BLUE MARSH RESERVOIR 2022  
LABORATORY CUSTODY SHEETS**



# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2216595

**Report:** 05/24/22

**Lab Contact:** Richard A Wheeler

**Attention:** David Wertz

**Project:** 2022 - Blue Marsh Reservoir

**Reported To:** Tetra Tech

USACE, Phila Dist. Env.Resources Branch 100 Penn Square E.  
Arlington, VA 22201

**Lab ID:** 2216595-01

**Collected By:** Client

**Sampled:** 05/16/22 08:00

**Received:** 05/16/22 14:20

**Sample Desc:** BM-1S

**Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	05/19/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	114	mg CaCO <sub>3</sub> /L		2	SM 2320 B	05/18/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	05/17/22	U	AXM
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	05/17/22 10:24		KMS
Nitrate as N	4.17	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	05/16/22 21:14		JAF
Nitrite as N	0.02	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/16/22 21:14	J	JAF
Nitrate+Nitrite as N	4.19	mg/l	0.122	1.10	CALCULATED	05/16/22 21:14		JAF
Nitrogen, Total Kjeldahl (TKN)	0.74	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	05/20/22		SNF
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	05/17/22		AXM
Solids, Total Dissolved	170	mg/l	4	5	SM 2540 C	05/17/22		TMH
Total Organic Carbon	3.0	mg/l	0.3	0.5	SM 5310 C	05/17/22		ALD
Solids, Total Suspended	7	mg/l	1	1	SM 2540 D	05/17/22		ALD
<b>Microbiology</b>								
Escherichia coli	15	mpn/100ml	1		SM 9223 B/Quantitray	5/16/22 15:11	5/17/22 10:11	JMW
Total Coliform	1730	mpn/100ml	1		SM 9223 B/Quantitray	5/16/22 15:11	5/17/22 10:11	JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216595-02      **Collected By:** Client      **Sampled:** 05/16/22 11:25      **Received:** 05/16/22 14:20  
**Sample Desc:** BM-2S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	05/19/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	107	mg CaCO <sub>3</sub> /L		2	SM 2320 B	05/18/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	05/17/22	U	AXM
Biochemical Oxygen Demand	2.2	mg/l	2.0	2.0	SM 5210 B	05/17/22 10:24		KMS
Nitrate as N	4.22	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	05/16/22 21:31		JAF
Nitrite as N	0.03	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/16/22 21:31	J	JAF
Nitrate+Nitrite as N	4.25	mg/l	0.122	1.10	CALCULATED	05/16/22 21:31		JAF
Nitrogen, Total Kjeldahl (TKN)	0.44	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	05/20/22	J	SNF
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	05/17/22		AXM
Solids, Total Dissolved	161	mg/l	4	5	SM 2540 C	05/17/22		TMH
Total Organic Carbon	2.5	mg/l	0.3	0.5	SM 5310 C	05/17/22		ALD
Solids, Total Suspended	4	mg/l	1	1	SM 2540 D	05/17/22		ALD
	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>								
Escherichia coli	1	mpn/100ml	1	SM 9223 B/Quantitray	5/16/22 15:11	5/17/22 10:11		JMW
Total Coliform	62	mpn/100ml	1	SM 9223 B/Quantitray	5/16/22 15:11	5/17/22 10:11		JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216595-03      **Collected By:** Client      **Sampled:** 05/16/22 11:25      **Received:** 05/16/22 14:20  
**Sample Desc:** BM-2M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	05/19/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	104	mg CaCO <sub>3</sub> /L		2	SM 2320 B	05/18/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	05/17/22	U	AXM
Biochemical Oxygen Demand	2.0	mg/l	2.0	2.0	SM 5210 B	05/17/22 10:24		KMS
Nitrate as N	4.43	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	05/16/22 21:48		JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/16/22 21:48	U	JAF
Nitrate+Nitrite as N	<4.44	mg/l	0.122	1.10	CALCULATED	05/16/22 21:48		JAF
Nitrogen, Total Kjeldahl (TKN)	0.46	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	05/20/22	J	SNF
Phosphorus as P, Total	0.11	mg/l	0.01	0.01	SM 4500-P F	05/17/22		AXM
Solids, Total Dissolved	165	mg/l	4	5	SM 2540 C	05/17/22		TMH
Total Organic Carbon	2.8	mg/l	0.3	0.5	SM 5310 C	05/17/22		ALD
Solids, Total Suspended	8	mg/l	1	1	SM 2540 D	05/17/22		ALD

**Lab ID:** 2216595-04      **Collected By:** Client      **Sampled:** 05/16/22 11:25      **Received:** 05/16/22 14:20  
**Sample Desc:** BM-2D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.02	mg/l		0.01	SM 4500-P F	05/19/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	101	mg CaCO <sub>3</sub> /L		2	SM 2320 B	05/18/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	05/17/22	U	AXM
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	05/17/22 10:24		KMS
Nitrate as N	3.61	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	05/16/22 19:55		JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/16/22 19:55	U	JAF
Nitrate+Nitrite as N	<3.62	mg/l	0.122	1.10	CALCULATED	05/16/22 19:55		JAF
Nitrogen, Total Kjeldahl (TKN)	0.54	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	05/20/22		SNF
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P F	05/17/22		AXM
Solids, Total Dissolved	161	mg/l	4	5	SM 2540 C	05/17/22		TMH
Total Organic Carbon	3.6	mg/l	0.3	0.5	SM 5310 C	05/17/22		ALD
Solids, Total Suspended	10	mg/l	1	1	SM 2540 D	05/17/22		ALD



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216595-05      **Collected By:** Client      **Sampled:** 05/16/22 13:00      **Received:** 05/16/22 14:20  
**Sample Desc:** BM-5S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.03	mg/l		0.01	SM 4500-P F	05/19/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	196	mg CaCO <sub>3</sub> /L		2	SM 2320 B	05/18/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	05/17/22	U	AXM
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	05/17/22 10:24		KMS
Nitrate as N	7.45	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	05/16/22 16:12		JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/16/22 16:12	U	JAF
Nitrate+Nitrite as N	<7.46	mg/l	0.122	1.10	CALCULATED	05/16/22 16:12		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	05/20/22	U	SNF
Phosphorus as P, Total	0.04	mg/l	0.01	0.01	SM 4500-P F	05/17/22		AXM
Solids, Total Dissolved	311	mg/l	4	5	SM 2540 C	05/17/22		TMH
Total Organic Carbon	1.7	mg/l	0.3	0.5	SM 5310 C	05/17/22		ALD
Solids, Total Suspended	8	mg/l	1	1	SM 2540 D	05/17/22		ALD
<b>Microbiology</b>								
Escherichia coli	214	mpn/100ml	1		SM 9223 B/Quantitray	5/16/22 15:11	5/17/22 10:11	JMW
Total Coliform	>2420	mpn/100ml	1		SM 9223 B/Quantitray	5/16/22 15:11	5/17/22 10:11	JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216595-06      **Collected By:** Client      **Sampled:** 05/16/22 12:00      **Received:** 05/16/22 14:20  
**Sample Desc:** BM-6S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	05/19/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	108	mg CaCO <sub>3</sub> /L		2	SM 2320 B	05/18/22		APR
Ammonia as N	0.03	mg/l	0.02	0.02	EPA 350.1	05/17/22		AXM
Biochemical Oxygen Demand	2.5	mg/l	2.0	2.0	SM 5210 B	05/17/22 10:24		KMS
Nitrate as N	4.14	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	05/16/22 22:22		JAF
Nitrite as N	0.03	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/16/22 22:22	J	JAF
Nitrate+Nitrite as N	4.17	mg/l	0.122	1.10	CALCULATED	05/16/22 22:22		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	05/20/22	U	SNF
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	05/17/22		AXM
Solids, Total Dissolved	166	mg/l	4	5	SM 2540 C	05/17/22		TMH
Total Organic Carbon	2.4	mg/l	0.3	0.5	SM 5310 C	05/17/22		ALD
Solids, Total Suspended	7	mg/l	1	1	SM 2540 D	05/17/22		ALD
	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>								
Escherichia coli	1	mpn/100ml	1	SM 9223 B/Quantitray	5/16/22 15:11	5/17/22 10:11		JMW
Total Coliform	488	mpn/100ml	1	SM 9223 B/Quantitray	5/16/22 15:11	5/17/22 10:11		JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216595-07      **Collected By:** Client      **Sampled:** 05/16/22 12:00      **Received:** 05/16/22 14:20  
**Sample Desc:** BM-6M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	05/19/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	113	mg CaCO3/L		2	SM 2320 B	05/18/22		APR
Ammonia as N	0.02	mg/l	0.02	0.02	EPA 350.1	05/17/22		AXM
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	05/17/22 10:24		KMS
Nitrate as N	4.17	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	05/16/22 22:05		JAF
Nitrite as N	0.02	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/16/22 22:05	J	JAF
Nitrate+Nitrite as N	4.19	mg/l	0.122	1.10	CALCULATED	05/16/22 22:05		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	05/20/22	U	SNF
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	05/17/22		AXM
Solids, Total Dissolved	178	mg/l	4	5	SM 2540 C	05/17/22		TMH
Total Organic Carbon	2.7	mg/l	0.3	0.5	SM 5310 C	05/17/22		ALD
Solids, Total Suspended	4	mg/l	1	1	SM 2540 D	05/17/22		ALD

**Lab ID:** 2216595-08      **Collected By:** Client      **Sampled:** 05/16/22 12:00      **Received:** 05/16/22 14:20  
**Sample Desc:** BM-6D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	05/19/22	G-23, G-24	SNF
<b>Dissolved Metals</b>								
Arsenic	<0.001	mg/l		0.001	EPA 200.8 Rev 5.4	05/17/22	G-23, G-24	MPB
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	127	mg CaCO3/L		2	SM 2320 B	05/18/22		APR
Ammonia as N	0.11	mg/l	0.02	0.02	EPA 350.1	05/17/22		AXM
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	05/17/22 10:24		KMS
Nitrate as N	4.00	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	05/16/22 19:21		JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/16/22 19:21	U	JAF
Nitrate+Nitrite as N	<4.01	mg/l	0.122	1.10	CALCULATED	05/16/22 19:21		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	05/20/22	U	SNF
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	05/17/22		AXM
Solids, Total Dissolved	184	mg/l	4	5	SM 2540 C	05/17/22		TMH
Total Organic Carbon	2.4	mg/l	0.3	0.5	SM 5310 C	05/17/22		ALD
Solids, Total Suspended	5	mg/l	1	1	SM 2540 D	05/17/22		ALD



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216595-09      **Collected By:** Client      **Sampled:** 05/16/22 11:00      **Received:** 05/16/22 14:20  
**Sample Desc:** BM-7S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	05/19/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	118	mg CaCO <sub>3</sub> /L		2	SM 2320 B	05/18/22		APR
Ammonia as N	0.07	mg/l	0.02	0.02	EPA 350.1	05/17/22		AXM
Biochemical Oxygen Demand	2.4	mg/l	2.0	2.0	SM 5210 B	05/17/22 10:24		KMS
Nitrate as N	4.14	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	05/16/22 20:11		JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/16/22 20:11	U	JAF
Nitrate+Nitrite as N	<4.15	mg/l	0.122	1.10	CALCULATED	05/16/22 20:11		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	05/20/22	Q-10, U	SNF
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	05/17/22		AXM
Solids, Total Dissolved	171	mg/l	4	5	SM 2540 C	05/17/22		TMH
Total Organic Carbon	2.7	mg/l	0.3	0.5	SM 5310 C	05/17/22		ALD
Solids, Total Suspended	5	mg/l	1	1	SM 2540 D	05/17/22		ALD
<b>Microbiology</b>								
Escherichia coli	2	mpn/100ml	1		SM 9223 B/Quantitray	5/16/22 15:11	5/17/22 10:11	JMW
Total Coliform	185	mpn/100ml	1		SM 9223 B/Quantitray	5/16/22 15:11	5/17/22 10:11	JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216595-10      **Collected By:** Client      **Sampled:** 05/16/22 11:00      **Received:** 05/16/22 14:20  
**Sample Desc:** BM-7M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	05/19/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	110	mg CaCO <sub>3</sub> /L		2	SM 2320 B	05/18/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	05/17/22	U	AXM
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	05/17/22 10:24		KMS
Nitrate as N	4.84	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	05/17/22 15:00		JAF
Nitrite as N	0.02	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/17/22 15:00	J	JAF
Nitrate+Nitrite as N	4.86	mg/l	0.122	1.10	CALCULATED	05/17/22 15:00		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	05/20/22	U	SNF
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	05/17/22		AXM
Solids, Total Dissolved	174	mg/l	4	5	SM 2540 C	05/17/22		TMH
Total Organic Carbon	2.1	mg/l	0.3	0.5	SM 5310 C	05/17/22		ALD
Solids, Total Suspended	4	mg/l	1	1	SM 2540 D	05/17/22		ALD

**Lab ID:** 2216595-11      **Collected By:** Client      **Sampled:** 05/16/22 11:00      **Received:** 05/16/22 14:20  
**Sample Desc:** BM-7D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	05/19/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	95	mg CaCO <sub>3</sub> /L		2	SM 2320 B	05/18/22		APR
Ammonia as N	0.06	mg/l	0.02	0.02	EPA 350.1	05/17/22		AXM
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	05/17/22 10:24		KMS
Nitrate as N	3.99	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	05/16/22 17:06		JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/16/22 17:06	U	JAF
Nitrate+Nitrite as N	<4.00	mg/l	0.122	1.10	CALCULATED	05/16/22 17:06		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	05/20/22	U	SNF
Phosphorus as P, Total	0.23	mg/l	0.01	0.01	SM 4500-P F	05/17/22		AXM
Solids, Total Dissolved	175	mg/l	4	5	SM 2540 C	05/17/22		TMH
Total Organic Carbon	2.9	mg/l	0.3	0.5	SM 5310 C	05/17/22		ALD
Solids, Total Suspended	6	mg/l	1	1	SM 2540 D	05/17/22		ALD



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216595-12      **Collected By:** Client      **Sampled:** 05/16/22 10:45      **Received:** 05/16/22 14:20  
**Sample Desc:** BM-8S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	05/19/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	109	mg CaCO <sub>3</sub> /L		2	SM 2320 B	05/18/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	05/17/22	U	AXM
Biochemical Oxygen Demand	2.1	mg/l	2.0	2.0	SM 5210 B	05/17/22 11:20		ASD
Nitrate as N	4.00	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	05/16/22 18:14		JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/16/22 18:14	U	JAF
Nitrate+Nitrite as N	<4.01	mg/l	0.122	1.10	CALCULATED	05/16/22 18:14		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	05/20/22	U	SNF
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P F	05/17/22		AXM
Solids, Total Dissolved	173	mg/l	4	5	SM 2540 C	05/17/22		TMH
Total Organic Carbon	2.7	mg/l	0.3	0.5	SM 5310 C	05/17/22		ALD
Solids, Total Suspended	4	mg/l	1	1	SM 2540 D	05/17/22		ALD
	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>								
Escherichia coli	<1	mpn/100ml	1	SM 9223 B/Quantitray	5/16/22 15:11	5/17/22 10:11		JMW
Total Coliform	261	mpn/100ml	1	SM 9223 B/Quantitray	5/16/22 15:11	5/17/22 10:11		JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216595-13      **Collected By:** Client      **Sampled:** 05/16/22 10:45      **Received:** 05/16/22 14:20  
**Sample Desc:** BM-8M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	05/19/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	100	mg CaCO <sub>3</sub> /L		2	SM 2320 B	05/18/22		APR
Ammonia as N	0.05	mg/l	0.02	0.02	EPA 350.1	05/17/22		AXM
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	05/17/22 11:20		ASD
Nitrate as N	3.61	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	05/16/22 19:38		JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/16/22 19:38	U	JAF
Nitrate+Nitrite as N	<3.62	mg/l	0.122	1.10	CALCULATED	05/16/22 19:38		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	05/20/22	U	SNF
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	05/17/22		AXM
Solids, Total Dissolved	172	mg/l	4	5	SM 2540 C	05/17/22		TMH
Total Organic Carbon	2.2	mg/l	0.3	0.5	SM 5310 C	05/17/22		ALD
Solids, Total Suspended	3	mg/l	1	1	SM 2540 D	05/17/22		ALD

**Lab ID:** 2216595-14      **Collected By:** Client      **Sampled:** 05/16/22 10:45      **Received:** 05/16/22 14:20  
**Sample Desc:** BM-8D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	05/19/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	103	mg CaCO <sub>3</sub> /L		2	SM 2320 B	05/18/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	05/17/22	U	AXM
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	05/17/22 10:24		KMS
Nitrate as N	3.88	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	05/16/22 15:37		JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/16/22 15:37	U	JAF
Nitrate+Nitrite as N	<3.89	mg/l	0.122	1.10	CALCULATED	05/16/22 15:37		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	05/20/22	U	SNF
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	05/17/22		AXM
Solids, Total Dissolved	182	mg/l	4	5	SM 2540 C	05/17/22		TMH
Total Organic Carbon	2.1	mg/l	0.3	0.5	SM 5310 C	05/17/22		ALD
Solids, Total Suspended	7	mg/l	1	1	SM 2540 D	05/17/22		ALD



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216595-15      **Collected By:** Client      **Sampled:** 05/16/22 10:00      **Received:** 05/16/22 14:20  
**Sample Desc:** BM-9S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	05/19/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	109	mg CaCO <sub>3</sub> /L		2	SM 2320 B	05/18/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	05/17/22	U	AXM
Biochemical Oxygen Demand	2.0	mg/l	2.0	2.0	SM 5210 B	05/17/22 10:24		KMS
Nitrate as N	4.13	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	05/16/22 15:03		JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/16/22 15:03	U	JAF
Nitrate+Nitrite as N	<4.14	mg/l	0.122	1.10	CALCULATED	05/16/22 15:03		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	05/20/22	U	SNF
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	05/17/22		AXM
Solids, Total Dissolved	185	mg/l	4	5	SM 2540 C	05/17/22		TMH
Total Organic Carbon	2.6	mg/l	0.3	0.5	SM 5310 C	05/17/22		ALD
Solids, Total Suspended	6	mg/l	1	1	SM 2540 D	05/17/22		ALD
<b>Microbiology</b>								
Escherichia coli	<1	mpn/100ml	1		SM 9223 B/Quantitray	5/16/22 15:11	5/17/22 10:11	JMW
Total Coliform	261	mpn/100ml	1		SM 9223 B/Quantitray	5/16/22 15:11	5/17/22 10:11	JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216595-16      **Collected By:** Client      **Sampled:** 05/16/22 10:00      **Received:** 05/16/22 14:20  
**Sample Desc:** BM-9M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	05/19/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	111	mg CaCO <sub>3</sub> /L		2	SM 2320 B	05/18/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	05/17/22	U	AXM
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	05/17/22 10:24		KMS
Nitrate as N	4.67	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	05/16/22 17:56		JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/16/22 17:56	U	JAF
Nitrate+Nitrite as N	<4.68	mg/l	0.122	1.10	CALCULATED	05/16/22 17:56		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	05/20/22	U	SNF
Phosphorus as P, Total	0.16	mg/l	0.01	0.01	SM 4500-P F	05/17/22		AXM
Solids, Total Dissolved	191	mg/l	4	5	SM 2540 C	05/17/22		TMH
Total Organic Carbon	2.0	mg/l	0.3	0.5	SM 5310 C	05/17/22		ALD
Solids, Total Suspended	7	mg/l	1	1	SM 2540 D	05/17/22		ALD

**Lab ID:** 2216595-17      **Collected By:** Client      **Sampled:** 05/16/22 10:00      **Received:** 05/16/22 14:20  
**Sample Desc:** BM-9D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	05/19/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	101	mg CaCO <sub>3</sub> /L		2	SM 2320 B	05/18/22		APR
Ammonia as N	0.14	mg/l	0.02	0.02	EPA 350.1	05/17/22		AXM
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	05/17/22 10:24		KMS
Nitrate as N	3.82	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	05/16/22 18:31		JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/16/22 18:31	U	JAF
Nitrate+Nitrite as N	<3.83	mg/l	0.122	1.10	CALCULATED	05/16/22 18:31		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	05/20/22	U	SNF
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P F	05/17/22		AXM
Solids, Total Dissolved	148	mg/l	4	5	SM 2540 C	05/17/22		TMH
Total Organic Carbon	2.9	mg/l	0.3	0.5	SM 5310 C	05/17/22		ALD
Solids, Total Suspended	12	mg/l	1	1	SM 2540 D	05/17/22		ALD



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216595-18      **Collected By:** Client      **Sampled:** 05/16/22 09:15      **Received:** 05/16/22 14:20  
**Sample Desc:** BM-10S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	05/19/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	98	mg CaCO <sub>3</sub> /L		2	SM 2320 B	05/18/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	05/17/22	U	AXM
Biochemical Oxygen Demand	2.2	mg/l	2.0	2.0	SM 5210 B	05/17/22 10:24		KMS
Nitrate as N	4.56	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	05/16/22 18:47		JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/16/22 18:47	U	JAF
Nitrate+Nitrite as N	<4.57	mg/l	0.122	1.10	CALCULATED	05/16/22 18:47		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	05/20/22	U	SNF
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	05/17/22		AXM
Solids, Total Dissolved	165	mg/l	4	5	SM 2540 C	05/17/22		TMH
Total Organic Carbon	2.7	mg/l	0.3	0.5	SM 5310 C	05/17/22		ALD
Solids, Total Suspended	10	mg/l	1	1	SM 2540 D	05/17/22		ALD
<b>Microbiology</b>								
Escherichia coli	<1	mpn/100ml	1		SM 9223 B/Quantitray	5/16/22 15:11	5/17/22 10:11	JMW
Total Coliform	172	mpn/100ml	1		SM 9223 B/Quantitray	5/16/22 15:11	5/17/22 10:11	JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216595-19      **Collected By:** Client      **Sampled:** 05/16/22 09:15      **Received:** 05/16/22 14:20  
**Sample Desc:** BM-10M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	05/19/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	140	mg CaCO <sub>3</sub> /L		2	SM 2320 B	05/18/22		APR
Ammonia as N	0.04	mg/l	0.02	0.02	EPA 350.1	05/17/22		AXM
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	05/17/22 10:24		KMS
Nitrate as N	5.74	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	05/16/22 15:54		JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/16/22 15:54	U	JAF
Nitrate+Nitrite as N	<5.75	mg/l	0.122	1.10	CALCULATED	05/16/22 15:54		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	05/20/22	Q-10, U	SNF
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	05/17/22		AXM
Solids, Total Dissolved	216	mg/l	4	5	SM 2540 C	05/17/22		TMH
Total Organic Carbon	1.9	mg/l	0.3	0.5	SM 5310 C	05/17/22		ALD
Solids, Total Suspended	9	mg/l	1	1	SM 2540 D	05/17/22		ALD

**Lab ID:** 2216595-20      **Collected By:** Client      **Sampled:** 05/16/22 09:15      **Received:** 05/16/22 14:20  
**Sample Desc:** BM-10D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.02	mg/l		0.01	SM 4500-P F	05/19/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	141	mg CaCO <sub>3</sub> /L		2	SM 2320 B	05/18/22		APR
Ammonia as N	0.12	mg/l	0.02	0.02	EPA 350.1	05/17/22		AXM
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	05/17/22 10:24		KMS
Nitrate as N	5.56	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	05/16/22 15:20		JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/16/22 15:20	U	JAF
Nitrate+Nitrite as N	<5.57	mg/l	0.122	1.10	CALCULATED	05/16/22 15:20		JAF
Nitrogen, Total Kjeldahl (TKN)	1.56	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	05/20/22		SNF
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P F	05/18/22		AXM
Solids, Total Dissolved	217	mg/l	4	5	SM 2540 C	05/17/22		TMH
Total Organic Carbon	1.9	mg/l	0.3	0.5	SM 5310 C	05/17/22		ALD
Solids, Total Suspended	24	mg/l	1	1	SM 2540 D	05/17/22		ALD



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216595-21      **Collected By:** Client      **Sampled:** 05/16/22 13:00      **Received:** 05/16/22 14:20  
**Sample Desc:** BM-11S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.02	mg/l		0.01	SM 4500-P F	05/19/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	65	mg CaCO <sub>3</sub> /L		2	SM 2320 B	05/18/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	05/17/22	U	AXM
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	05/17/22 10:24		KMS
Nitrate as N	4.03	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	05/16/22 19:04		JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/16/22 19:04	U	JAF
Nitrate+Nitrite as N	<4.04	mg/l	0.122	1.10	CALCULATED	05/16/22 19:04		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	05/20/22	U	SNF
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P F	05/18/22		AXM
Solids, Total Dissolved	119	mg/l	4	5	SM 2540 C	05/17/22		TMH
Total Organic Carbon	2.0	mg/l	0.3	0.5	SM 5310 C	05/17/22		ALD
Solids, Total Suspended	8	mg/l	1	1	SM 2540 D	05/17/22		ALD
<b>Microbiology</b>								
Escherichia coli	225	mpn/100ml	1		SM 9223 B/Quantitray	5/16/22 15:11	5/17/22 10:11	JMW
Total Coliform	>2420	mpn/100ml	1		SM 9223 B/Quantitray	5/16/22 15:11	5/17/22 10:11	JMW



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 Additional accreditations by MD (261), NY(12094)

M.J. Reider Associates, Inc.

Preparation Methods

Specific Method	Preparation Method	Prep Batch	Prepared Date	Prepared By
<b>2216595-01</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2E1020	05/18/2022	SNF
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2E0932	05/17/2022	AXM
<b>2216595-02</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2E1020	05/18/2022	SNF
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2E0932	05/17/2022	AXM
<b>2216595-03</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2E1020	05/18/2022	SNF
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2E0932	05/17/2022	AXM
<b>2216595-04</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2E1020	05/18/2022	SNF
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2E0932	05/17/2022	AXM
<b>2216595-05</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2E1020	05/18/2022	SNF
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2E0932	05/17/2022	AXM
<b>2216595-06</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2E1020	05/18/2022	SNF
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2E0932	05/17/2022	AXM
<b>2216595-07</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2E1020	05/18/2022	SNF
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2E0932	05/17/2022	AXM
<b>2216595-08</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2E1020	05/18/2022	SNF
<b>Dissolved Metals</b>				
EPA 200.8 Rev 5.4	EPA 200.2 Rev 2.8	B2E0898	05/17/2022	HRG
<b>General Chemistry</b>				



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M.J. Reider Associates, Inc.



SM 4500-P F	SM 4500-P B	B2E0932	05/17/2022	AXM
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**2216595-09**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2E1020	05/18/2022	SNF
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2E0932	05/17/2022	AXM
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**2216595-10**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2E1020	05/18/2022	SNF
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2E0932	05/17/2022	AXM
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**2216595-11**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2E1020	05/18/2022	SNF
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2E0932	05/17/2022	AXM
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**2216595-12**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2E1020	05/18/2022	SNF
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2E0932	05/17/2022	AXM
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**2216595-13**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2E1020	05/18/2022	SNF
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2E0932	05/17/2022	AXM
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**2216595-14**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2E1020	05/18/2022	SNF
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2E0932	05/17/2022	AXM
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**2216595-15**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2E1020	05/18/2022	SNF
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2E0932	05/17/2022	AXM
-------------	-------------	---------	------------	-----

**2216595-16**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2E1020	05/18/2022	SNF
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2E0932	05/17/2022	AXM
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**2216595-17**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2E1020	05/18/2022	SNF
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**General Chemistry**



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**M.J. Reider Associates, Inc.**

SM 4500-P F	SM 4500-P B	B2E0932	05/17/2022	AXM
<b>2216595-18</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2E1020	05/18/2022	SNF
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2E0932	05/17/2022	AXM
<b>2216595-19</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2E1020	05/18/2022	SNF
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2E0932	05/17/2022	AXM
<b>2216595-20</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2E1020	05/18/2022	SNF
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2E0932	05/17/2022	AXM
<b>2216595-21</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2E1020	05/18/2022	SNF
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2E0932	05/17/2022	AXM

**Notes and Definitions**

- G-23 The sample was filtered after it was received at the laboratory and outside of the 15-minute hold time.
- G-24 The sample was preserved in the laboratory and outside of the 15-minute hold time.
- J Estimated value
- Q-10 The matrix spike(s) were outside acceptable limits of 90-110% recovery at 112% and 112%.
- U Analyte was not detected above the indicated value.



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**M.J. Reider Associates, Inc.**

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**WORK ORDER  
Chain of Custody**

2216595



Client Code: 3157

Project Manager: Richard A Wheeler

Report To: Tetra Tech - David Wertz - USACE, Phila Dist. Env.Resources Branch 100 Penn Square E., Arlington, VA 22201

Invoice To: Tetra Tech - David Wertz - USACE, Phila Dist. Env.Resources Branch 100 Penn Square E., Arlington, VA 22201

Client: Tetra Tech

Project: 2022 - Blue Marsh Reservoir

Collected By: Gregory Wack  
(Full Name)

Comments: \_\_\_\_\_

**2216595-01 BM-1S**

**BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B**  
Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water

Type: Grab

Date: 5/16/22

Time: 0800

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - Sterile PI 125ml NaThio
- D - PI 500ml H2SO4
- E - PI 250ml NP
- F - PI 500ml Lab Filtered
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc
- I - Vial Amber 40ml H3PO4, minimal hdspc

**2216595-02 BM-2S**

**PO4-D SM 4500P-F, TC (#) SM 9223B, BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2**  
TSS SM 2540D, TOC SM 5310C, TDS SM 2540C, Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TKN EPA 351.2

Matrix: Non-Potable Water

Type: Grab

Date: 5/16/22

Time: 1125

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - Sterile PI 125ml NaThio
- D - PI 500ml H2SO4
- E - PI 250ml NP
- F - PI 500ml Lab Filtered
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc
- I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] Date/Time: 5/16/22 1:30 Received By: [Signature] Date/Time: MAY 16 2022 1345

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Received at Laboratory By: [Signature] Date/Time: MAY 16 2022 1420

Sample Kit Prepared By: <u>JBS</u>	Date/Time
Sample Temp (°C): Samples on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	Approved By: <u>[Signature]</u>
Entered By:	Date/Time

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.



Client Code: 3157
Project Manager: Richard A Wheeler

Client: Tetra Tech
Project: 2022 - Blue Marsh Reservoir

Comments:

Collected By: Gregory Wasik

2216595-03 BM-2M

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F
TDS SM 2540C, TOC SM 5310C, TSS SM 2540D, NH3-N EPA 350.1, TKN EPA 351.2, Alk SM 2320B, PO4 SM 4500P-F

Matrix: Non-Potable Water
Type: Grab

Date: 5/16/22
Time: 11:25

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2216595-04 BM-2D

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F
Alk SM 2320B, TSS SM 2540D, TKN EPA 351.2, TOC SM 5310C, PO4 SM 4500P-F, TDS SM 2540C, NH3-N EPA 350.1

Matrix: Non-Potable Water
Type: Grab

Date: 5/16/22
Time: 11:25

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2216595-05 BM-5S

NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, TC (#) SM 9223B, EC (#) SM 9223B Confirmation,
NO2-N EPA 300.0, BOD SM 5210B, PO4-D SM 4500P-F
Alk SM 2320B, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, NH3-N EPA 350.1, TSS SM 2540D, TOC SM 5310C

Matrix: Non-Potable Water
Type: Grab

Date: 5/16/22
Time: 1:00

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] Date/Time: 5/16/22 1:30
Received By: [Signature] Date/Time: MAY 16 2022 13:45
Relinquished By: [Signature] Date/Time:
Received By: [Signature] Date/Time: MAY 16 2022 14:00
Relinquished By: [Signature] Date/Time:
Received at Laboratory By: [Signature] Date/Time: MAY 16 2022

Sample Kit Prepared By:
Date/Time:
Sample Temp (°C):
Samples on Ice? Yes No NA
Approved By: [Signature]
Entered By: [Signature]



Client Code: 3157

Client: Tetra Tech

Project Manager: Richard A Wheeler

Project: 2022 - Blue Marsh Reservoir

Comments: \_\_\_\_\_

Collected By : Gregory Wacik  
(Full Name)

2216595-06 BM-6S

**NO2-N EPA 300.0, NO3-N EPA 300.0, BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B NH3-N EPA 350.1, Alk SM 2320B, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D**

Matrix: Non-Potable Water  
Type: Grab

Date: 5/16/22  
Time: 1200

- A - Pl 500ml NP, minimal hdspc
- B - Pl Liter NP
- C - Sterile Pl 125ml NaThio
- D - Pl 500ml H2SO4
- E - Pl 250ml NP
- F - Pl 500ml Lab Filtered
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc
- I - Vial Amber 40ml H3PO4, minimal hdspc

2216595-07 BM-6M

**BOD SM 5210B, NO2-N EPA 300.0, PO4-D SM 4500P-F, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2 NH3-N EPA 350.1, TDS SM 2540C, TKN EPA 351.2, Alk SM 2320B, PO4 SM 4500P-F, TOC SM 5310C, TSS SM 2540D**

Matrix: Non-Potable Water  
Type: Grab

Date: 5/16/22  
Time: 1200

- A - Pl 500ml NP, minimal hdspc
- B - Pl Liter NP
- C - Pl 500ml H2SO4
- D - Pl 250ml NP
- E - Pl 500ml Lab Filtered
- F - Vial Amber 40ml H3PO4, minimal hdspc
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc

2216595-08 BM-6D

**BOD SM 5210B, NO2-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, NO3-N EPA 300.0, PO4-D SM 4500P-F TSS SM 2540D, TDS SM 2540C, As-D EPA 200.8, TKN EPA 351.2, PO4 SM 4500P-F, NH3-N EPA 350.1, Alk SM 2320B, TOC SM 5310C**

Matrix: Non-Potable Water  
Type: Grab

Date: 5/16/22  
Time: 1200

- A - Pl 500ml NP, minimal hdspc
- B - Pl 500ml Lab Filtered
- C - Pl Liter NP
- D - Pl 500ml H2SO4
- E - Pl 250ml NP
- F - Pl 500ml Lab Filtered
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc
- I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] Date/Time: 5/16/22 1:30 Received By: [Signature] Date/Time: MAY 16 2022 345

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Received at Laboratory By: [Signature] Date/Time: MAY 16 2022 1420

Sample Kit Prepared By:	Date/Time
Sample Temp (°C):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
Samples on Ice?	
Approved By:	<u>[Signature]</u>
Entered By:	_____



Client Code: 3157
Project Manager: Richard A Wheeler

Client: Tetra Tech
Project: 2022 - Blue Marsh Reservoir

Collected By: Gregory Wasik

Comments:

2216595-09 BM-7S

PO4-D SM 4500P-F, NO2-N EPA 300.0, BOD SM 5210B, NO2-N, NO3-N, Combined NO3+NO2, EC (#) SM 9223B Confirmation, NO3-N EPA 300.0, TC (#) SM 9223B Alk SM 2320B, TKN EPA 351.2, NH3-N EPA 350.1, PO4 SM 4500P-F, TSS SM 2540D, TDS SM 2540C, TOC SM 5310C

Matrix: Non-Potable Water
Type: Grab

Date: 5/16/22
Time: 1100

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

2216595-10 BM-7M

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water
Type: Grab

Date: 5/16/22
Time: 1100

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2216595-11 BM-7D

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water
Type: Grab

Date: 5/16/22
Time: 1100

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] Date/Time: 5/16/22 1:30 Received By: [Signature] Date/Time: MAY 16 2022 1345
Relinquished By: Date/Time: Received By: Date/Time:
Relinquished By: Date/Time: Received at Laboratory By: [Signature] Date/Time: MAY 16 2022 1420

Sample Kit Prepared By: Date/Time:
Sample Temp (°C): Samples on Ice? Yes No NA
Approved By: [Signature]
Entered By: [Signature]



Client Code: 3157
Project Manager: Richard A Wheeler

Client: Tetra Tech
Project: 2022 - Blue Marsh Reservoir

Comments:

Collected By: Gregory Wacik

2216595-12 BM-8S

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, PO4-D SM 4500P-F, TC (#) SM 9223B, NO2-N, NO3-N, Combined NO3+NO2 NH3-N EPA 350.1, Alk SM 2320B, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D, PO4 SM 4500P-F

Matrix: Non-Potable Water
Type: Grab

Date: 5/16/22
Time: 1045

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

2216595-13 BM-8M

NO2-N EPA 300.0, NO3-N EPA 300.0, BOD SM 5210B, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F NH3-N EPA 350.1, TDS SM 2540C, TOC SM 5310C, TSS SM 2540D, Alk SM 2320B, PO4 SM 4500P-F, TKN EPA 351.2

Matrix: Non-Potable Water
Type: Grab

Date: 5/16/22
Time: 1045

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2216595-14 BM-8D

BOD SM 5210B, NO2-N EPA 300.0, PO4-D SM 4500P-F, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2 Alk SM 2320B, NH3-N EPA 350.1, TDS SM 2540C, TKN EPA 351.2, PO4 SM 4500P-F, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water
Type: Grab

Date: 5/16/22
Time: 1045

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] Date/Time: 5/16/22 1:30 Received By: [Signature] Date/Time: MAY 16 2022 1345
Relinquished By: [Signature] Date/Time: Received By: [Signature] Date/Time: MAY 16 2022 1420
Relinquished By: [Signature] Date/Time: Received at Laboratory By: [Signature] Date/Time:

Sample Kit Prepared By: Date/Time
Sample Temp (°C):
Samples on Ice? Yes No NA
Approved By: [Signature]
Entered By: [Signature]



Client Code: 3157  
Project Manager: Richard A Wheeler

Client: Tetra Tech  
Project: 2022 - Blue Marsh Reservoir

Comments: \_\_\_\_\_

Collected By: Gregory Wack  
(Full Name)

2216595-15 BM-9S

*JAF*  
*JAF*  
*MSD*  
PO4-D SM 4500P-F, TC (#) SM 9223B, NO2-N EPA 300.0, NO3-N EPA 300.0, BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N, NO3-N, Combined NO3+NO2  
TOC SM 5310C, TSS SM 2540D, TDS SM 2540C, NH3-N EPA 350.1, Alk SM 2320B, PO4 SM 4500P-F, TKN EPA 351.2

Matrix: Non-Potable Water  
Type: Grab

Date: 5/16/22  
Time: 1000

- A - Pl 500ml NP, minimal hdspc
- B - Pl Liter NP
- C - Sterile Pl 125ml NaThio
- D - Pl 500ml H2SO4
- E - Pl 250ml NP
- F - Pl 500ml Lab Filtered
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc
- I - Vial Amber 40ml H3PO4, minimal hdspc

2216595-16 BM-9M

*JAF*  
*JAF*  
*MSD*  
NO2-N EPA 300.0, NO3-N EPA 300.0, BOD SM 5210B, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F  
TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TSS SM 2540D

Matrix: Non-Potable Water  
Type: Grab

Date: 5/16/22  
Time: 1000

- A - Pl 500ml NP, minimal hdspc
- B - Pl Liter NP
- C - Pl 500ml H2SO4
- D - Pl 250ml NP
- E - Pl 500ml Lab Filtered
- F - Vial Amber 40ml H3PO4, minimal hdspc
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc

2216595-17 BM-9D

*JAF*  
*JAF*  
*MSD*  
BOD SM 5210B, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, NO2-N EPA 300.0, PO4-D SM 4500P-F  
Alk SM 2320B, PO4 SM 4500P-F, TOC SM 5310C, TSS SM 2540D, NH3-N EPA 350.1, TDS SM 2540C, TKN EPA 351.2

Matrix: Non-Potable Water  
Type: Grab

Date: 5/16/22  
Time: 1000

- A - Pl 500ml NP, minimal hdspc
- B - Pl Liter NP
- C - Pl 500ml H2SO4
- D - Pl 250ml NP
- E - Pl 500ml Lab Filtered
- F - Vial Amber 40ml H3PO4, minimal hdspc
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: *Gregory Wack* Date/Time: 5/16/22 1:30 Received By: *[Signature]* Date/Time: MAY 16 2022 1345

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Received By: *[Signature]* Date/Time: MAY 16 2022 1420

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Received at Laboratory By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Sample Kit Prepared By:	Date/Time
Sample Temp (°C):	<u>19</u>
Samples on Ice?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA
Approved By:	<u><i>[Signature]</i></u>
Entered By:	<u><i>[Signature]</i></u>



Client Code: 3157
Project Manager: Richard A Wheeler

Client: Tetra Tech
Project: 2022 - Blue Marsh Reservoir

Comments:

Collected By: Gregory Wack
(Full Name)

2216595-18 BM-10S

PO4-D SM 4500P-F, TC (#) SM 9223B, BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2
TDS SM 2540C, Alk SM 2320B, TOC SM 5310C, NH3-N EPA 350.1, PO4 SM 4500P-F, TSS SM 2540D, TKN EPA 351.2

Matrix: Non-Potable Water
Type: Grab

Date: 5/16/22
Time: 0915

- A - PI 500ml NP, minimal hdspc
B - PI Liter NP
C - Sterile PI 125ml NaThio
D - PI 500ml H2SO4
E - PI 250ml NP
F - PI 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

2216595-19 BM-10M

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F
Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water
Type: Grab

Date: 5/16/22
Time: 0915

- A - PI 500ml NP, minimal hdspc
B - PI Liter NP
C - PI 500ml H2SO4
D - PI 250ml NP
E - PI 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2216595-20 BM-10D

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F
Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water
Type: Grab

Date: 5/16/22
Time: 0915

- A - PI 500ml NP, minimal hdspc
B - PI Liter NP
C - PI 500ml H2SO4
D - PI 250ml NP
E - PI 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] Date/Time: 5/16/22 11:30
Received By: [Signature] Date/Time: MAY 16 2022 1345
Relinquished By: [Signature] Date/Time:
Received By: [Signature] Date/Time: MAY 16 2022 1420
Relinquished By: [Signature] Date/Time:
Received By: [Signature] Date/Time: MAY 16 2022

Sample Kit Prepared By:
Date/Time:
Sample Temp (°C):
Samples on Ice? Yes No NA
Approved By: [Signature]
Entered By: [Signature]



Client Code: 3157  
Project Manager: Richard A Wheeler

Client: Tetra Tech  
Project: 2022 - Blue Marsh Reservoir

Comments: \_\_\_\_\_

Collected By : Gregory Wack  
(Full Name)

2216595-21 BM-11S

**PO4-D SM 4500P-F, TC (#) SM 9223B, BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2**  
TSS SM 2540D, TOC SM 5310C, TDS SM 2540C, Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TKN EPA 351.2

Matrix: Non-Potable Water  
Type: Grab

Date: 5/16/22  
Time: 1100

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - Sterile PI 125ml NaThio
- D - PI 500ml H2SO4
- E - PI 250ml NP
- F - PI 500ml Lab Filtered
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc
- I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] Date/Time: 5/16/22 1130 Received By: [Signature] Date/Time: MAY 16 2022 1345

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Received at Laboratory By: [Signature] Date/Time: MAY 16 2022 1420

Sample Kit Prepared By:	Date/Time
Sample Temp (°C):	<u>1.9</u>
Samples on Ice?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA
Approved By:	<u>[Signature]</u>
Entered By:	<u>[Signature]</u>

**M.J. Reider Associates, Inc.**

**MJRA Terms & Conditions**

All samples submitted must be accompanied by signed documentation representing a Chain of Custody (COC). The COC Record acts as a contract between the client and MJRA. Signing the COC form gives approval for MJRA to perform the requested analyses and is an agreement to pay for the cost of such analyses. COC Records must be completed in black or blue indelible ink (must not run when wet). COC documentation begins at the time of sample collection. Client is required to document all sample details prior to releasing samples to MJRA. All samples must be placed on ice immediately after sampling and shipped or delivered to the laboratory in a manner that will maintain the sample temperature above freezing and below 6C (loose ice is preferred).

**Sample Submission, Sample Acceptance & Sampling Containers**

Included on the COC must be the sample description, date and time of collection (including start and stop for composites), container size and type, preservative information, sample matrix, indication of whether the sample is a grab or composite, number of containers & a list of the tests to be performed. Poor sample collection technique, inappropriate sampling containers and/or improper sample preservation may lead to sample rejection. Suitable sample containers, labels, and preservatives (as applicable), along with blank COCs are provided at no additional cost.

**Turnaround Times (TAT)**

Average TAT for test results range from 5 to 15 working days depending on the specific analyses and time of year submitted. Faster turnaround times (\*RUSH TAT) may be available depending on the current workload in a particular department and the nature of the analyses requested. We encourage you to verify requests for expedited sample results with one of our Technical Directors prior to sample submittal. Without confirmation from a Technical Director, your results may not be completed by your deadline. \*RUSH TAT Surcharges are applied for expedited turnaround times.

**Analytical Results, Sample Collection Integrity & Subcontracting**

Analytical values are for the sample as submitted and relate only to the item tested. The value indicates a snapshot of the constituent content of the sample at the time of sample collection. Analytical results can be impacted by poor sample collection technique and/or improper preservation. All sample collection completed by MJRA was performed in accordance with applicable regulatory protocols or as specified in customer specific sampling plans. Constituent content will vary over time based on the matrix of the sample and the physical and chemical changes to its environment. All sample results and laboratory reports are strictly confidential. Results will not be available to anyone except the primary client or authorized party representing the client unless MJRA receives additional permissions from the client. When necessary, MJRA will subcontract certain analyses to a third party accredited laboratory. If client prohibits subcontracting, it must be provided in writing and include instruction on how to proceed with client samples that require third party analyses.

**Payment Terms**

Payment Terms are Net 30 days. Prices are subject to change without notice. A standing monthly charge of 1.5% of the clients over-30-day-unpaid balance may be added to the balance after 30 days and each month thereafter (day 31, 61, 91 etc.). The laboratory accepts all major credit cards, ACH transactions, checks and cash. New clients must pay for all services rendered prior to sample collection and/or in some cases report processing. Clients must contact the MJRA accounting department to pursue a credit-based account. MJRA reserves the right to terminate the client's credit account and to refuse to perform additional services on a credit basis if any balance is outstanding for more than 60 days.

**Warranty & Litigation**

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the day of its discovery and within one year of the date of invoice.

Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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Additional accreditations by MD (261), NY(12094)



# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2216901

**Report:** 06/29/22

**Lab Contact:** Richard A Wheeler

**Attention:** David Wertz

**Project:** 2022 - Blue Marsh Reservoir

**Reported To:** Tetra Tech

USACE, Phila Dist. Env.Resources Branch 100 Penn Square E.  
Arlington, VA 22201

**Lab ID:** 2216901-01

**Collected By:** Client

**Sampled:** 06/13/22 07:40

**Received:** 06/13/22 14:10

**Sample Desc:** BM-1S

**Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.01	mg/l		0.01	SM 4500-P F	06/22/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	116	mg CaCO <sub>3</sub> /L		2	SM 2320 B	06/14/22		APR
Ammonia as N	0.05	mg/l	0.02	0.02	EPA 350.1	06/15/22		MRW
Biochemical Oxygen Demand	2.8	mg/l	2.0	2.0	SM 5210 B	06/14/22 10:56		KMS
Nitrate as N	3.96	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	06/14/22 10:39		JAF
Nitrite as N	0.07	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/14/22 10:39	J	JAF
Nitrate+Nitrite as N	4.03	mg/l	0.122	1.10	CALCULATED	06/14/22 10:39		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	06/16/22	U	SNF
Phosphorus as P, Total	0.01	mg/l	0.01	0.01	SM 4500-P F	06/15/22		MRW
Solids, Total Dissolved	197	mg/l	4	5	SM 2540 C	06/14/22		TMH
Total Organic Carbon	3.4	mg/l	0.3	0.5	SM 5310 C	06/14/22		ALD
Solids, Total Suspended	4	mg/l	1	1	SM 2540 D	06/14/22		ALD
<b>Microbiology</b>								
Escherichia coli	11	mpn/100ml	1		SM 9223 B/Quantitray	6/13/22 15:40	6/14/22 11:35	JMW
Total Coliform	>2420	mpn/100ml	1		SM 9223 B/Quantitray	6/13/22 15:40	6/14/22 11:35	JMW



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Additional accreditations by MD (261), NY(12094)

**M.J. Reider Associates, Inc.**

**Lab ID:** 2216901-02      **Collected By:** Client      **Sampled:** 06/13/22 11:10      **Received:** 06/13/22 14:10  
**Sample Desc:** BM-2S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	06/22/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	103	mg CaCO <sub>3</sub> /L		2	SM 2320 B	06/14/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	06/15/22	U	MRW
Biochemical Oxygen Demand	2.0	mg/l	2.0	2.0	SM 5210 B	06/14/22 10:56		KMS
Nitrate as N	3.85	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	06/13/22 20:42		JAF
Nitrite as N	0.03	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/13/22 20:42	J	JAF
Nitrate+Nitrite as N	3.88	mg/l	0.122	1.10	CALCULATED	06/13/22 20:42		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	06/16/22	U	SNF
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	06/15/22		MRW
Solids, Total Dissolved	194	mg/l	4	5	SM 2540 C	06/14/22		TMH
Total Organic Carbon	2.3	mg/l	0.3	0.5	SM 5310 C	06/14/22		ALD
Solids, Total Suspended	2	mg/l	1	1	SM 2540 D	06/14/22		ALD
	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>								
Escherichia coli	<1	mpn/100ml	1	SM 9223 B/Quantitray	6/13/22 15:40	6/14/22 11:35		JMW
Total Coliform	22	mpn/100ml	1	SM 9223 B/Quantitray	6/13/22 15:40	6/14/22 11:35		JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216901-03      **Collected By:** Client      **Sampled:** 06/13/22 11:10      **Received:** 06/13/22 14:10  
**Sample Desc:** BM-2M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.01	mg/l		0.01	SM 4500-P F	06/22/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	129	mg CaCO <sub>3</sub> /L		2	SM 2320 B	06/14/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	06/15/22	U	MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	06/14/22 10:56		KMS
Nitrate as N	4.46	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	06/13/22 18:44		JAF
Nitrite as N	0.04	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/13/22 18:44	J	JAF
Nitrate+Nitrite as N	4.50	mg/l	0.122	1.10	CALCULATED	06/13/22 18:44		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	06/16/22	U	SNF
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	06/15/22		MRW
Solids, Total Dissolved	202	mg/l	4	5	SM 2540 C	06/14/22		TMH
Total Organic Carbon	2.0	mg/l	0.3	0.5	SM 5310 C	06/14/22		ALD
Solids, Total Suspended	2	mg/l	1	1	SM 2540 D	06/14/22		ALD

**Lab ID:** 2216901-04      **Collected By:** Client      **Sampled:** 06/13/22 11:10      **Received:** 06/13/22 14:10  
**Sample Desc:** BM-2D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	06/22/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	117	mg CaCO <sub>3</sub> /L		2	SM 2320 B	06/14/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	06/15/22	U	MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	06/14/22 10:56		KMS
Nitrate as N	3.70	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	06/13/22 22:40		JAF
Nitrite as N	0.21	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/13/22 22:40		JAF
Nitrate+Nitrite as N	3.91	mg/l	0.122	1.10	CALCULATED	06/13/22 22:40		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	06/16/22	U	SNF
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	06/15/22		MRW
Solids, Total Dissolved	186	mg/l	4	5	SM 2540 C	06/14/22		TMH
Total Organic Carbon	2.2	mg/l	0.3	0.5	SM 5310 C	06/14/22		ALD
Solids, Total Suspended	1	mg/l	1	1	SM 2540 D	06/14/22		ALD



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216901-05      **Collected By:** Client      **Sampled:** 06/13/22 12:35      **Received:** 06/13/22 14:10  
**Sample Desc:** BM-5S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.05	mg/l		0.01	SM 4500-P F	06/22/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	186	mg CaCO <sub>3</sub> /L		2	SM 2320 B	06/14/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	06/15/22	U	MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	06/14/22 10:56		KMS
Nitrate as N	6.84	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	06/14/22 8:41		JAF
Nitrite as N	0.02	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/14/22 8:41	J	JAF
Nitrate+Nitrite as N	6.86	mg/l	0.122	1.10	CALCULATED	06/14/22 8:41		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	06/16/22	U	SNF
Phosphorus as P, Total	0.05	mg/l	0.01	0.01	SM 4500-P F	06/15/22		MRW
Solids, Total Dissolved	298	mg/l	4	5	SM 2540 C	06/14/22		TMH
Total Organic Carbon	1.9	mg/l	0.3	0.5	SM 5310 C	06/14/22		ALD
Solids, Total Suspended	7	mg/l	1	1	SM 2540 D	06/14/22	Q-19	ALD
	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>								
Escherichia coli	816	mpn/100ml	1	SM 9223 B/Quantitray	6/13/22 15:40	6/14/22 11:35		JMW
Total Coliform	>2420	mpn/100ml	1	SM 9223 B/Quantitray	6/13/22 15:40	6/14/22 11:35		JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216901-06      **Collected By:** Client      **Sampled:** 06/13/22 11:30      **Received:** 06/13/22 14:10  
**Sample Desc:** BM-6S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	06/22/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	107	mg CaCO <sub>3</sub> /L		2	SM 2320 B	06/14/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	06/15/22	U	MRW
Biochemical Oxygen Demand	3.7	mg/l	2.0	2.0	SM 5210 B	06/14/22 10:56		KMS
Nitrate as N	3.83	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	06/13/22 20:58		JAF
Nitrite as N	0.03	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/13/22 20:58	J	JAF
Nitrate+Nitrite as N	3.86	mg/l	0.122	1.10	CALCULATED	06/13/22 20:58		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	06/16/22	U	SNF
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P F	06/15/22		MRW
Solids, Total Dissolved	178	mg/l	4	5	SM 2540 C	06/14/22		TMH
Total Organic Carbon	2.3	mg/l	0.3	0.5	SM 5310 C	06/16/22		ALD
Solids, Total Suspended	3	mg/l	1	1	SM 2540 D	06/14/22		ALD
<b>Microbiology</b>								
Escherichia coli	2	mpn/100ml	1		SM 9223 B/Quantitray	6/13/22 15:40	6/14/22 11:35	JMW
Total Coliform	201	mpn/100ml	1		SM 9223 B/Quantitray	6/13/22 15:40	6/14/22 11:35	JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216901-07      **Collected By:** Client      **Sampled:** 06/13/22 11:30      **Received:** 06/13/22 14:10  
**Sample Desc:** BM-6M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	06/22/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	116	mg CaCO <sub>3</sub> /L		2	SM 2320 B	06/14/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	06/15/22	U	MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	06/14/22 10:56		KMS
Nitrate as N	4.19	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	06/13/22 19:34		JAF
Nitrite as N	0.10	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/13/22 19:34		JAF
Nitrate+Nitrite as N	4.29	mg/l	0.122	1.10	CALCULATED	06/13/22 19:34		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	06/16/22	U	SNF
Phosphorus as P, Total	0.01	mg/l	0.01	0.01	SM 4500-P F	06/15/22		MRW
Solids, Total Dissolved	207	mg/l	4	5	SM 2540 C	06/14/22		TMH
Total Organic Carbon	2.2	mg/l	0.3	0.5	SM 5310 C	06/16/22		ALD
Solids, Total Suspended	<1	mg/l	1	1	SM 2540 D	06/14/22		ALD

**Lab ID:** 2216901-08      **Collected By:** Client      **Sampled:** 06/13/22 11:30      **Received:** 06/13/22 14:10  
**Sample Desc:** BM-6D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.01	mg/l		0.01	SM 4500-P F	06/22/22	G-23, G-24	MRW
<b>Dissolved Metals</b>								
Arsenic	<0.001	mg/l		0.001	EPA 200.8 Rev 5.4	06/20/22	G-23, G-24	MPB
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	117	mg CaCO <sub>3</sub> /L		2	SM 2320 B	06/14/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	06/15/22	U	MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	06/14/22 10:56		KMS
Nitrate as N	2.97	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	06/13/22 22:58		JAF
Nitrite as N	0.20	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/13/22 22:58		JAF
Nitrate+Nitrite as N	3.17	mg/l	0.122	1.10	CALCULATED	06/13/22 22:58		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	06/16/22	U	SNF
Phosphorus as P, Total	0.01	mg/l	0.01	0.01	SM 4500-P F	06/15/22		MRW
Solids, Total Dissolved	190	mg/l	4	5	SM 2540 C	06/14/22		TMH
Total Organic Carbon	2.5	mg/l	0.3	0.5	SM 5310 C	06/16/22		ALD
Solids, Total Suspended	<1	mg/l	1	1	SM 2540 D	06/14/22		ALD



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216901-09      **Collected By:** Client      **Sampled:** 06/13/22 10:40      **Received:** 06/13/22 14:10  
**Sample Desc:** BM-7S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.01	mg/l		0.01	SM 4500-P F	06/22/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	112	mg CaCO <sub>3</sub> /L		2	SM 2320 B	06/14/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	06/15/22	U	MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	06/14/22 10:56		KMS
Nitrate as N	3.84	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	06/14/22 10:05		JAF
Nitrite as N	0.03	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/14/22 10:05	J	JAF
Nitrate+Nitrite as N	3.87	mg/l	0.122	1.10	CALCULATED	06/14/22 10:05		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	06/16/22	U	SNF
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	06/15/22		MRW
Solids, Total Dissolved	167	mg/l	4	5	SM 2540 C	06/14/22		TMH
Total Organic Carbon	2.3	mg/l	0.3	0.5	SM 5310 C	06/16/22		ALD
Solids, Total Suspended	<1	mg/l	1	1	SM 2540 D	06/14/22		ALD
	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>								
Escherichia coli	2	mpn/100ml	1	SM 9223 B/Quantitray	6/13/22 15:40	6/14/22 11:35		JMW
Total Coliform	68	mpn/100ml	1	SM 9223 B/Quantitray	6/13/22 15:40	6/14/22 11:35		JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216901-10      **Collected By:** Client      **Sampled:** 06/13/22 10:40      **Received:** 06/13/22 14:10  
**Sample Desc:** BM-7M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.02	mg/l		0.01	SM 4500-P F	06/22/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	142	mg CaCO <sub>3</sub> /L		2	SM 2320 B	06/14/22		APR
Ammonia as N	0.17	mg/l	0.02	0.02	EPA 350.1	06/17/22		MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	06/14/22 10:56		KMS
Nitrate as N	4.31	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	06/14/22 9:32		JAF
Nitrite as N	0.08	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/14/22 9:32	J	JAF
Nitrate+Nitrite as N	4.39	mg/l	0.122	1.10	CALCULATED	06/14/22 9:32		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	06/17/22	U	SNF
Phosphorus as P, Total	0.04	mg/l	0.01	0.01	SM 4500-P F	06/17/22		MRW
Solids, Total Dissolved	201	mg/l	4	5	SM 2540 C	06/14/22		TMH
Total Organic Carbon	1.9	mg/l	0.3	0.5	SM 5310 C	06/16/22		ALD
Solids, Total Suspended	1	mg/l	1	1	SM 2540 D	06/14/22		ALD

**Lab ID:** 2216901-11      **Collected By:** Client      **Sampled:** 06/13/22 10:40      **Received:** 06/13/22 14:10  
**Sample Desc:** BM-7D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	06/22/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	128	mg CaCO <sub>3</sub> /L		2	SM 2320 B	06/14/22		APR
Ammonia as N	0.27	mg/l	0.02	0.02	EPA 350.1	06/17/22		MRW
Biochemical Oxygen Demand	2.3	mg/l	2.0	2.0	SM 5210 B	06/14/22 10:56		KMS
Nitrate as N	3.16	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	06/14/22 9:48		JAF
Nitrite as N	0.15	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/14/22 9:48		JAF
Nitrate+Nitrite as N	3.31	mg/l	0.122	1.10	CALCULATED	06/14/22 9:48		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	06/17/22	U	SNF
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	06/17/22		MRW
Solids, Total Dissolved	210	mg/l	4	5	SM 2540 C	06/14/22		TMH
Total Organic Carbon	2.1	mg/l	0.3	0.5	SM 5310 C	06/16/22		ALD
Solids, Total Suspended	6	mg/l	1	1	SM 2540 D	06/14/22		ALD



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216901-12      **Collected By:** Client      **Sampled:** 06/13/22 10:25      **Received:** 06/13/22 14:10  
**Sample Desc:** BM-8S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	06/22/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	114	mg CaCO <sub>3</sub> /L		2	SM 2320 B	06/14/22		APR
Ammonia as N	0.04	mg/l	0.02	0.02	EPA 350.1	06/17/22		MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	06/14/22 10:56		KMS
Nitrate as N	3.83	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	06/13/22 20:25		JAF
Nitrite as N	0.03	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/13/22 20:25	J	JAF
Nitrate+Nitrite as N	3.86	mg/l	0.122	1.10	CALCULATED	06/13/22 20:25		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	06/17/22	U	SNF
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	06/17/22		MRW
Solids, Total Dissolved	187	mg/l	4	5	SM 2540 C	06/14/22		TMH
Total Organic Carbon	2.3	mg/l	0.3	0.5	SM 5310 C	06/16/22		ALD
Solids, Total Suspended	<1	mg/l	1	1	SM 2540 D	06/14/22		ALD
	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>								
Escherichia coli	1	mpn/100ml	1	SM 9223 B/Quantitray	6/13/22 15:40	6/14/22 11:35		JMW
Total Coliform	119	mpn/100ml	1	SM 9223 B/Quantitray	6/13/22 15:40	6/14/22 11:35		JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216901-13      **Collected By:** Client      **Sampled:** 06/13/22 10:25      **Received:** 06/13/22 14:10  
**Sample Desc:** BM-8M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.01	mg/l		0.01	SM 4500-P F	06/22/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	108	mg CaCO <sub>3</sub> /L		2	SM 2320 B	06/14/22		APR
Ammonia as N	0.05	mg/l	0.02	0.02	EPA 350.1	06/17/22		MRW
Biochemical Oxygen Demand	4.8	mg/l	2.0	2.0	SM 5210 B	06/14/22 12:50		KMS
Nitrate as N	3.84	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	06/14/22 9:14		JAF
Nitrite as N	0.03	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/14/22 9:14	J	JAF
Nitrate+Nitrite as N	3.87	mg/l	0.122	1.10	CALCULATED	06/14/22 9:14		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	06/17/22	U	SNF
Phosphorus as P, Total	0.01	mg/l	0.01	0.01	SM 4500-P F	06/17/22		MRW
Solids, Total Dissolved	193	mg/l	4	5	SM 2540 C	06/14/22		TMH
Total Organic Carbon	2.2	mg/l	0.3	0.5	SM 5310 C	06/16/22		ALD
Solids, Total Suspended	<1	mg/l	1	1	SM 2540 D	06/14/22		ALD

**Lab ID:** 2216901-14      **Collected By:** Client      **Sampled:** 06/13/22 10:25      **Received:** 06/13/22 14:10  
**Sample Desc:** BM-8D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	06/22/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	115	mg CaCO <sub>3</sub> /L		2	SM 2320 B	06/14/22		APR
Ammonia as N	0.17	mg/l	0.02	0.02	EPA 350.1	06/17/22		MRW
Biochemical Oxygen Demand	3.7	mg/l	2.0	2.0	SM 5210 B	06/14/22 12:50		KMS
Nitrate as N	3.52	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	06/13/22 18:27		JAF
Nitrite as N	0.04	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/13/22 18:27	J	JAF
Nitrate+Nitrite as N	3.56	mg/l	0.122	1.10	CALCULATED	06/13/22 18:27		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	06/17/22	U	SNF
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	06/17/22		MRW
Solids, Total Dissolved	219	mg/l	4	5	SM 2540 C	06/14/22		TMH
Total Organic Carbon	1.9	mg/l	0.3	0.5	SM 5310 C	06/16/22		ALD
Solids, Total Suspended	10	mg/l	1	1	SM 2540 D	06/14/22		ALD



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216901-15      **Collected By:** Client      **Sampled:** 06/13/22 09:45      **Received:** 06/13/22 14:10  
**Sample Desc:** BM-9S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	06/22/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	111	mg CaCO <sub>3</sub> /L		2	SM 2320 B	06/14/22		APR
Ammonia as N	0.06	mg/l	0.02	0.02	EPA 350.1	06/17/22		MRW
Biochemical Oxygen Demand	2.1	mg/l	2.0	2.0	SM 5210 B	06/14/22 10:56		KMS
Nitrate as N	3.87	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	06/13/22 21:15		JAF
Nitrite as N	0.03	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/13/22 21:15	J	JAF
Nitrate+Nitrite as N	3.90	mg/l	0.122	1.10	CALCULATED	06/13/22 21:15		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	06/17/22	U	SNF
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	06/17/22		MRW
Solids, Total Dissolved	190	mg/l	4	5	SM 2540 C	06/14/22		TMH
Total Organic Carbon	2.4	mg/l	0.3	0.5	SM 5310 C	06/16/22		ALD
Solids, Total Suspended	4	mg/l	1	1	SM 2540 D	06/14/22		ALD
<b>Microbiology</b>								
Escherichia coli	6	mpn/100ml	1		SM 9223 B/Quantitray	6/13/22 15:40	6/14/22 11:35	JMW
Total Coliform	121	mpn/100ml	1		SM 9223 B/Quantitray	6/13/22 15:40	6/14/22 11:35	JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216901-16      **Collected By:** Client      **Sampled:** 06/13/22 09:45      **Received:** 06/13/22 14:10  
**Sample Desc:** BM-9M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.01	mg/l		0.01	SM 4500-P F	06/22/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	126	mg CaCO <sub>3</sub> /L		2	SM 2320 B	06/14/22		APR
Ammonia as N	0.12	mg/l	0.02	0.02	EPA 350.1	06/17/22		MRW
Biochemical Oxygen Demand	2.1	mg/l	2.0	2.0	SM 5210 B	06/14/22 10:56		KMS
Nitrate as N	4.38	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	06/13/22 22:22		JAF
Nitrite as N	0.04	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/13/22 22:22	J	JAF
Nitrate+Nitrite as N	4.42	mg/l	0.122	1.10	CALCULATED	06/13/22 22:22		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	06/17/22	U	SNF
Phosphorus as P, Total	0.04	mg/l	0.01	0.01	SM 4500-P F	06/17/22		MRW
Solids, Total Dissolved	210	mg/l	4	5	SM 2540 C	06/14/22		TMH
Total Organic Carbon	2.2	mg/l	0.3	0.5	SM 5310 C	06/16/22		ALD
Solids, Total Suspended	8	mg/l	1	1	SM 2540 D	06/14/22		ALD

**Lab ID:** 2216901-17      **Collected By:** Client      **Sampled:** 06/13/22 09:45      **Received:** 06/13/22 14:10  
**Sample Desc:** BM-9D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.02	mg/l		0.01	SM 4500-P F	06/22/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	129	mg CaCO <sub>3</sub> /L		2	SM 2320 B	06/14/22		APR
Ammonia as N	0.30	mg/l	0.02	0.02	EPA 350.1	06/17/22		MRW
Biochemical Oxygen Demand	2.8	mg/l	2.0	2.0	SM 5210 B	06/14/22 10:56		KMS
Nitrate as N	3.07	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	06/13/22 17:03		JAF
Nitrite as N	0.11	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/13/22 17:03		JAF
Nitrate+Nitrite as N	3.18	mg/l	0.122	1.10	CALCULATED	06/13/22 17:03		JAF
Nitrogen, Total Kjeldahl (TKN)	0.46	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	06/17/22	J	SNF
Phosphorus as P, Total	0.57	mg/l	0.01	0.01	SM 4500-P F	06/17/22		MRW
Solids, Total Dissolved	214	mg/l	4	5	SM 2540 C	06/14/22		TMH
Total Organic Carbon	2.4	mg/l	0.3	0.5	SM 5310 C	06/16/22		ALD
Solids, Total Suspended	92	mg/l	1	1	SM 2540 D	06/14/22		ALD



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216901-18      **Collected By:** Client      **Sampled:** 06/13/22 09:15      **Received:** 06/13/22 14:10  
**Sample Desc:** BM-10S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	06/22/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	118	mg CaCO <sub>3</sub> /L		2	SM 2320 B	06/14/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	06/17/22	U	MRW
Biochemical Oxygen Demand	2.4	mg/l	2.0	2.0	SM 5210 B	06/14/22 10:56		KMS
Nitrate as N	3.98	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	06/13/22 20:08		JAF
Nitrite as N	0.04	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/13/22 20:08	J	JAF
Nitrate+Nitrite as N	4.02	mg/l	0.122	1.10	CALCULATED	06/13/22 20:08		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	06/17/22	U	SNF
Phosphorus as P, Total	0.05	mg/l	0.01	0.01	SM 4500-P F	06/17/22		MRW
Solids, Total Dissolved	199	mg/l	4	5	SM 2540 C	06/14/22		TMH
Total Organic Carbon	2.3	mg/l	0.3	0.5	SM 5310 C	06/16/22		ALD
Solids, Total Suspended	4	mg/l	1	1	SM 2540 D	06/14/22		ALD
	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>								
Escherichia coli	3	mpn/100ml	1	SM 9223 B/Quantitray	6/13/22 15:40	6/14/22 11:35		JMW
Total Coliform	115	mpn/100ml	1	SM 9223 B/Quantitray	6/13/22 15:40	6/14/22 11:35		JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216901-19      **Collected By:** Client      **Sampled:** 06/13/22 09:15      **Received:** 06/13/22 14:10  
**Sample Desc:** BM-10M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	06/22/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	120	mg CaCO <sub>3</sub> /L		2	SM 2320 B	06/14/22		APR
Ammonia as N	0.03	mg/l	0.02	0.02	EPA 350.1	06/17/22		MRW
Biochemical Oxygen Demand	2.0	mg/l	2.0	2.0	SM 5210 B	06/14/22 10:56		KMS
Nitrate as N	4.21	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	06/13/22 19:51		JAF
Nitrite as N	0.03	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/13/22 19:51	J	JAF
Nitrate+Nitrite as N	4.24	mg/l	0.122	1.10	CALCULATED	06/13/22 19:51		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	06/17/22	U	SNF
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	06/17/22		MRW
Solids, Total Dissolved	191	mg/l	4	5	SM 2540 C	06/14/22		TMH
Total Organic Carbon	2.3	mg/l	0.3	0.5	SM 5310 C	06/16/22		ALD
Solids, Total Suspended	6	mg/l	1	1	SM 2540 D	06/14/22		ALD

**Lab ID:** 2216901-20      **Collected By:** Client      **Sampled:** 06/13/22 09:15      **Received:** 06/13/22 14:10  
**Sample Desc:** BM-10D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.04	mg/l		0.01	SM 4500-P F	06/22/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	147	mg CaCO <sub>3</sub> /L		2	SM 2320 B	06/14/22		APR
Ammonia as N	0.06	mg/l	0.02	0.02	EPA 350.1	06/17/22		MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	06/14/22 10:56		KMS
Nitrate as N	5.65	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	06/13/22 21:32		JAF
Nitrite as N	0.02	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/13/22 21:32	J	JAF
Nitrate+Nitrite as N	5.67	mg/l	0.122	1.10	CALCULATED	06/13/22 21:32		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	06/17/22	U	SNF
Phosphorus as P, Total	0.17	mg/l	0.01	0.01	SM 4500-P F	06/17/22		MRW
Solids, Total Dissolved	240	mg/l	4	5	SM 2540 C	06/14/22		TMH
Total Organic Carbon	1.9	mg/l	0.3	0.5	SM 5310 C	06/16/22		ALD
Solids, Total Suspended	28	mg/l	1	1	SM 2540 D	06/14/22		ALD



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2216901-21      **Collected By:** Client      **Sampled:** 06/13/22 12:35      **Received:** 06/13/22 14:10  
**Sample Desc:** BM-11S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst	
<b>Dissolved General Chemistry</b>									
Phosphorus as P, Dissolved	0.03	mg/l		0.01	SM 4500-P F	06/22/22	G-23, G-24	MRW	
<b>General Chemistry</b>									
Alkalinity, Total to pH 4.5	47	mg CaCO <sub>3</sub> /L		2	SM 2320 B	06/14/22		APR	
Ammonia as N	0.04	mg/l	0.02	0.02	EPA 350.1	06/17/22		MRW	
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	06/14/22 10:56		KMS	
Nitrate as N	2.67	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	06/13/22 17:20		JAF	
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/13/22 17:20	U	JAF	
Nitrate+Nitrite as N	<2.68	mg/l	0.122	1.10	CALCULATED	06/13/22 17:20		JAF	
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	06/17/22	U	SNF	
Phosphorus as P, Total	0.04	mg/l	0.01	0.01	SM 4500-P F	06/17/22		MRW	
Solids, Total Dissolved	103	mg/l	4	5	SM 2540 C	06/14/22		TMH	
Total Organic Carbon	4.4	mg/l	0.3	0.5	SM 5310 C	06/16/22		ALD	
Solids, Total Suspended	10	mg/l	1	1	SM 2540 D	06/14/22		ALD	
	Result	Unit	Rep. Limit		Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>									
Escherichia coli	>2420	mpn/100ml	1		SM 9223 B/Quantitray	6/13/22 15:40	6/14/22 11:35		JMW
Total Coliform	>2420	mpn/100ml	1		SM 9223 B/Quantitray	6/13/22 15:40	6/14/22 11:35		JMW



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Preparation Methods

Specific Method	Preparation Method	Prep Batch	Prepared Date	Prepared By
<b>2216901-01</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2F1186	06/21/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2F0870	06/15/2022	SNF
<b>2216901-02</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2F1186	06/21/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2F0870	06/15/2022	SNF
<b>2216901-03</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2F1186	06/21/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2F0870	06/15/2022	SNF
<b>2216901-04</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2F1186	06/21/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2F0870	06/15/2022	SNF
<b>2216901-05</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2F1186	06/21/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2F0870	06/15/2022	SNF
<b>2216901-06</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2F1186	06/21/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2F0870	06/15/2022	SNF
<b>2216901-07</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2F1186	06/21/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2F0870	06/15/2022	SNF
<b>2216901-08</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2F1186	06/21/2022	MRW
<b>Dissolved Metals</b>				
EPA 200.8 Rev 5.4	EPA 200.2 Rev 2.8	B2F0760	06/14/2022	HRG
<b>General Chemistry</b>				



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SM 4500-P F	SM 4500-P B	B2F0870	06/15/2022	SNF
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**2216901-09**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2F1186	06/21/2022	MRW
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2F0870	06/15/2022	SNF
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**2216901-10**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2F1186	06/21/2022	MRW
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2F0970	06/16/2022	MRW
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**2216901-11**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2F1186	06/21/2022	MRW
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2F0970	06/16/2022	MRW
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**2216901-12**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2F1186	06/21/2022	MRW
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2F0970	06/16/2022	MRW
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**2216901-13**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2F1186	06/21/2022	MRW
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2F0970	06/16/2022	MRW
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**2216901-14**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2F1186	06/21/2022	MRW
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2F0970	06/16/2022	MRW
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**2216901-15**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2F1186	06/21/2022	MRW
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2F0970	06/16/2022	MRW
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**2216901-16**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2F1186	06/21/2022	MRW
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2F0970	06/16/2022	MRW
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**2216901-17**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2F1186	06/21/2022	MRW
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**General Chemistry**



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SM 4500-P F	SM 4500-P B	B2F0970	06/16/2022	MRW
<b>2216901-18</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2F1186	06/21/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2F1031	06/17/2022	MRW
<b>2216901-19</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2F1186	06/21/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2F0970	06/16/2022	MRW
<b>2216901-20</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2F1186	06/21/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2F0970	06/16/2022	MRW
<b>2216901-21</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2F1186	06/21/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2F0970	06/16/2022	MRW

**Notes and Definitions**

- G-23 The sample was filtered after it was received at the laboratory and outside of the 15-minute hold time.
- G-24 The sample was preserved in the laboratory and outside of the 15-minute hold time.
- J Estimated value
- Q-19 The duplicate RPD was greater than 10% at 15.4%.
- U Analyte was not detected above the indicated value.



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## WORK ORDER Chain of Custody

2216901



Client Code: 3157

Project Manager: Richard A Wheeler

Report To: Tetra Tech - David Wertz - USACE, Phila Dist. Env.Resources Branch 100 Penn Square E., Arlington, VA 22201

Invoice To: Tetra Tech - David Wertz - USACE, Phila Dist. Env.Resources Branch 100 Penn Square E., Arlington, VA 22201

Client: Tetra Tech

Project: 2022 - Blue Marsh Reservoir

Collected By :  
(Full Name)

Gregory Wacik

Comments: \_\_\_\_\_

### 2216901-01 BM-1S

**BOD SM 5210B, EC (#) SM 9223B Confirmation, PO4-D SM 4500P-F, NO3-N EPA 300.0, NO2-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, TC (#) SM 9223B**  
Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water

Type: Grab

Date: 6/13/22  
Time: 0740

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - Sterile PI 125ml NaThio
- D - PI 500ml H2SO4
- E - PI 250ml NP
- F - PI 500ml Lab Filtered
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc
- I - Vial Amber 40ml H3PO4, minimal hdspc

### 2216901-02 BM-2S

**TC (#) SM 9223B, BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F**  
TDS SM 2540C, Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water

Type: Grab

Date: 6/13/22  
Time: 1110

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - Sterile PI 125ml NaThio
- D - PI 500ml H2SO4
- E - PI 250ml NP
- F - PI 500ml Lab Filtered
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc
- I - Vial Amber 40ml H3PO4, minimal hdspc

*[Signature]*

Relinquished By \_\_\_\_\_ Date/Time 6/13/22 1:35

Received By By N/A Date/Time 6-13-22 1350

Relinquished By \_\_\_\_\_ Date/Time \_\_\_\_\_

Received By \_\_\_\_\_ Date/Time \_\_\_\_\_

Relinquished By \_\_\_\_\_ Date/Time \_\_\_\_\_

Received at Laboratory By By N/A Date/Time 6-13-22 1410

Sample Kit Prepared By: <u>[Signature]</u>	Date/Time
Sample Temp (°C): <u>6.0</u>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>
Samples on Ice?	
Approved By: <u>[Signature]</u>	
Entered By:	

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.



Client Code: 3157

Client: Tetra Tech

Project Manager: Richard A Wheeler

Project: 2022 - Blue Marsh Reservoir

Collected By: (Full Name)

Gregory Wacik

Comments: \_\_\_\_\_

2216901-03 BM-2M

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TSS SM 2540D, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C

Matrix: Non-Potable Water Type: Grab

Date: 6/13/22 Time: 1100

- A - Pl 500ml NP, minimal hdspc B - Pl Liter NP C - Pl 500ml H2SO4 D - Pl 250ml NP E - Pl 500ml Lab Filtered F - Vial Amber 40ml H3PO4, minimal hdspc G - Vial Amber 40ml H3PO4, minimal hdspc H - Vial Amber 40ml H3PO4, minimal hdspc

2216901-04 BM-2D

BOD SM 5210B, PO4-D SM 4500P-F, NO2-N, NO3-N, Combined NO3+NO2, NO2-N EPA 300.0, NO3-N EPA 300.0 Alk SM 2320B, TDS SM 2540C, TKN EPA 351.2, NH3-N EPA 350.1, TOC SM 5310C, TSS SM 2540D, PO4 SM 4500P-F

Matrix: Non-Potable Water Type: Grab

Date: 6/13/22 Time: 1110

- A - Pl 500ml NP, minimal hdspc B - Pl Liter NP C - Pl 500ml H2SO4 D - Pl 250ml NP E - Pl 500ml Lab Filtered F - Vial Amber 40ml H3PO4, minimal hdspc G - Vial Amber 40ml H3PO4, minimal hdspc H - Vial Amber 40ml H3PO4, minimal hdspc

2216901-05 BM-5S

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B, NO2-N EPA 300.0, NO3-N EPA 300.0 NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, Alk SM 2320B, TSS SM 2540D

Matrix: Non-Potable Water Type: Grab

Date: 6/13/22 Time: 1235

- A - Pl 500ml NP, minimal hdspc B - Pl Liter NP C - Sterile Pl 125ml NaThio D - Pl 500ml H2SO4 E - Pl 250ml NP F - Pl 500ml Lab Filtered G - Vial Amber 40ml H3PO4, minimal hdspc H - Vial Amber 40ml H3PO4, minimal hdspc I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] Date/Time: 6/13/22 1:45

Received By: [Signature] Date/Time: 6-13-22 1350

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received at Laboratory By: [Signature] Date/Time: 6-13-22 1410

Sample Kit Prepared By: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Sample Temp (°C): 6.0 Samples on Ice? Yes No NA Approved By: [Signature] Entered By: [Signature]



M.J. Reider Associates, Inc.

2216901

Client Code: 3157
Project Manager: Richard A Wheeler

Client: Tetra Tech
Project: 2022 - Blue Marsh Reservoir

Collected By: Gregory Wacik

Comments:

2216901-06 BM-6S

EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, BOD SM 5210B, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B NH3-N EPA 350.1, Alk SM 2320B, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water
Type: Grab

Date: 6/13/22
Time: 1130

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

2216901-07 BM-6M

NO3-N EPA 300.0, PO4-D SM 4500P-F, NO2-N EPA 300.0, BOD SM 5210B, NO2-N, NO3-N, Combined NO3+NO2 TOC SM 5310C, TSS SM 2540D, TDS SM 2540C, Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TKN EPA 351.2

Matrix: Non-Potable Water
Type: Grab

Date: 6/13/22
Time: 1130

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2216901-08 BM-6D

BOD SM 5210B, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, NO2-N EPA 300.0, NO3-N EPA 300.0 Alk SM 2320B, As-D EPA 200.8, PO4 SM 4500P-F, TSS SM 2540D, NH3-N EPA 350.1, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C

Matrix: Non-Potable Water
Type: Grab

Date: 6/13/22
Time: 1130

- A - Pl 500ml NP, minimal hdspc
B - Pl 500ml Lab Filtered
C - Pl Liter NP
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] Date/Time: 6/13/22 1:45
Received By: [Signature] Date/Time: 6-13-22 1350
Relinquished By: Date/Time: Received By: Date/Time:
Relinquished By: Date/Time: Received at Laboratory By: [Signature] Date/Time: 6/13/22 1410

Sample Kit Prepared By: Date/Time:
Sample Temp (°C): 6.0
Samples on Ice? Yes No NA
Approved By: [Signature]
Entered By: [Signature]



Client Code: 3157

Project Manager: Richard A Wheeler

Client: Tetra Tech

Project: 2022 - Blue Marsh Reservoir

Collected By: Gregory Wack

Comments: \_\_\_\_\_

2216901-09 BM-7S

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water Type: Grab

Date: 6/13/22 Time: 1040

- A - PI 500ml NP, minimal hdspc B - PI Liter NP C - Sterile PI 125ml NaThio D - PI 500ml H2SO4 E - PI 250ml NP F - PI 500ml Lab Filtered G - Vial Amber 40ml H3PO4, minimal hdspc H - Vial Amber 40ml H3PO4, minimal hdspc I - Vial Amber 40ml H3PO4, minimal hdspc

2216901-10 BM-7M

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F Alk SM 2320B, NH3-N EPA 350.1, TOC SM 5310C, TSS SM 2540D, TDS SM 2540C, TKN EPA 351.2, PO4 SM 4500P-F

Matrix: Non-Potable Water Type: Grab

Date: 6/13/22 Time: 1040

- A - PI 500ml NP, minimal hdspc B - PI Liter NP C - PI 500ml H2SO4 D - PI 250ml NP E - PI 500ml Lab Filtered F - Vial Amber 40ml H3PO4, minimal hdspc G - Vial Amber 40ml H3PO4, minimal hdspc H - Vial Amber 40ml H3PO4, minimal hdspc

2216901-11 BM-7D

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F Alk SM 2320B, TDS SM 2540C, TOC SM 5310C, TSS SM 2540D, TKN EPA 351.2, NH3-N EPA 350.1, PO4 SM 4500P-F

Matrix: Non-Potable Water Type: Grab

Date: 6/13/22 Time: 1040

- A - PI 500ml NP, minimal hdspc B - PI Liter NP C - PI 500ml H2SO4 D - PI 250ml NP E - PI 500ml Lab Filtered F - Vial Amber 40ml H3PO4, minimal hdspc G - Vial Amber 40ml H3PO4, minimal hdspc H - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] Date/Time: 6/13/22 1:35 Received By: [Signature] Date/Time: 6-13-22 1350

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Received By: [Signature] Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Received at Laboratory By: [Signature] Date/Time: 6-13-22 1410

Sample Kit Prepared By: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Sample Temp (°C): 6.0 Samples on Ice? Yes No NA Approved By: [Signature] Entered By: [Signature]



M.J. Reider Associates, Inc.

2216901

Client Code: 3157

Client: Tetra Tech

Project Manager: Richard A Wheeler

Project: 2022 - Blue Marsh Reservoir

Collected By: Gregory Wack

Comments: \_\_\_\_\_

2216901-12 BM-8S

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, PO4-D SM 4500P-F, TC (#) SM 9223B, NO2-N, NO3-N, Combined NO3+NO2 Alk SM 2320B, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D, PO4 SM 4500P-F, NH3-N EPA 350.1

Matrix: Non-Potable Water Type: Grab

Date: 6/13/22 Time: 1025

- A - PI 500ml NP, minimal hdspc B - PI Liter NP C - Sterile PI 125ml NaThio D - PI 500ml H2SO4 E - PI 250ml NP F - PI 500ml Lab Filtered G - Vial Amber 40ml H3PO4, minimal hdspc H - Vial Amber 40ml H3PO4, minimal hdspc I - Vial Amber 40ml H3PO4, minimal hdspc

2216901-13 BM-8M

PO4-D SM 4500P-F, BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2 TDS SM 2540C, TKN EPA 351.2, Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water Type: Grab

Date: 6/13/22 Time: 1025

- A - PI 500ml NP, minimal hdspc B - PI Liter NP C - PI 500ml H2SO4 D - PI 250ml NP E - PI 500ml Lab Filtered F - Vial Amber 40ml H3PO4, minimal hdspc G - Vial Amber 40ml H3PO4, minimal hdspc H - Vial Amber 40ml H3PO4, minimal hdspc

2216901-14 BM-8D

BOD SM 5210B, NO2-N EPA 300.0, PO4-D SM 4500P-F, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2 NH3-N EPA 350.1, TDS SM 2540C, TOC SM 5310C, TSS SM 2540D, Alk SM 2320B, PO4 SM 4500P-F, TKN EPA 351.2

Matrix: Non-Potable Water Type: Grab

Date: 6/13/22 Time: 1025

- A - PI 500ml NP, minimal hdspc B - PI Liter NP C - PI 500ml H2SO4 D - PI 250ml NP E - PI 500ml Lab Filtered F - Vial Amber 40ml H3PO4, minimal hdspc G - Vial Amber 40ml H3PO4, minimal hdspc H - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] Date/Time: 6/13/22 1:35

Received By: [Signature] Date/Time: 6-13-22 1350

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received at Laboratory By: [Signature] Date/Time: 6-13-22 1410

Sample Kit Prepared By: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Sample Temp (°C): 6.6 Samples on Ice? Yes No NA Approved By: [Signature] Entered By: [Signature]

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.



M.J. Reider Associates, Inc.

2216901

Client Code: 3157
Project Manager: Richard A Wheeler

Client: Tetra Tech
Project: 2022 - Blue Marsh Reservoir

Collected By: Gregory Wacik

Comments:

2216901-15 BM-9S

EC (#) SM 9223B Confirmation, BOD SM 5210B, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B, NO2-N EPA 300.0, NO3-N EPA 300.0, Alk SM 2320B, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D, NH3-N EPA 350.1

Matrix: Non-Potable Water
Type: Grab

Date: 6/13/22
Time: 945

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

2216901-16 BM-9M

PO4-D SM 4500P-F, BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2 TDS SM 2540C, Alk SM 2320B, NH3-N EPA 350.1, TOC SM 5310C, TSS SM 2540D, PO4 SM 4500P-F, TKN EPA 351.2

Matrix: Non-Potable Water
Type: Grab

Date: 6/13/22
Time: 945

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2216901-17 BM-9D

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, PO4-D SM 4500P-F, NO2-N, NO3-N, Combined NO3+NO2 Alk SM 2320B, TDS SM 2540C, TOC SM 5310C, TSS SM 2540D, NH3-N EPA 350.1, PO4 SM 4500P-F, TKN EPA 351.2

Matrix: Non-Potable Water
Type: Grab

Date: 6/13/22
Time: 945

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] Date/Time: 6/13/22 1:35

Received By: [Signature] Date/Time: 6-13-22 1350

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received at Laboratory By: [Signature] Date/Time: 6-13-22 1410

Sample Kit Prepared By: \_\_\_\_\_ Date/Time: \_\_\_\_\_
Sample Temp (°C): 61.8
Samples on Ice? Yes No N/A
Approved By: [Signature]
Entered By: [Signature]

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.



Client Code: 3157

Client: Tetra Tech

Project Manager: Richard A Wheeler

Project: 2022 - Blue Marsh Reservoir

Collected By :  
(Full Name)

*Gregory Wacik*

Comments:

2216901-18 BM-10S

**BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B, EC (#) SM 9223B Confirmation**  
TDS SM 2540C, TOC SM 5310C, TSS SM 2540D, PO4 SM 4500P-F, Alk SM 2320B, TKN EPA 351.2, NH3-N EPA 350.1

Matrix: Non-Potable Water  
Type: Grab

Date: 6/13/22  
Time: 915

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - Sterile PI 125ml NaThio
- D - PI 500ml H2SO4
- E - PI 250ml NP
- F - PI 500ml Lab Filtered
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc
- I - Vial Amber 40ml H3PO4, minimal hdspc

2216901-19 BM-10M

**BOD SM 5210B, NO2-N EPA 300.0, PO4-D SM 4500P-F, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2**  
Alk SM 2320B, TDS SM 2540C, NH3-N EPA 350.1, TOC SM 5310C, TSS SM 2540D, PO4 SM 4500P-F, TKN EPA 351.2

Matrix: Non-Potable Water  
Type: Grab

Date: 6/13/22  
Time: 915

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - PI 500ml H2SO4
- D - PI 250ml NP
- E - PI 500ml Lab Filtered
- F - Vial Amber 40ml H3PO4, minimal hdspc
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc

2216901-20 BM-10D

**NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, BOD SM 5210B, PO4-D SM 4500P-F**  
Alk SM 2320B, PO4 SM 4500P-F, NH3-N EPA 350.1, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water  
Type: Grab

Date: 6/13/22  
Time: 915

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - PI 500ml H2SO4
- D - PI 250ml NP
- E - PI 500ml Lab Filtered
- F - Vial Amber 40ml H3PO4, minimal hdspc
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc

*[Signature]*

Relinquished By \_\_\_\_\_ Date/Time 6/13/22 1:35

Received By By MTD Date/Time 6-13-22 1350

Relinquished By \_\_\_\_\_ Date/Time \_\_\_\_\_

Received By \_\_\_\_\_ Date/Time \_\_\_\_\_

Relinquished By \_\_\_\_\_ Date/Time \_\_\_\_\_

Received at Laboratory By By MTD Date/Time 6-13-22 1410

Sample Kit Prepared By:	Date/Time
Sample Temp (°C):	<u>6.0</u>
Samples on Ice?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
Approved By:	<u>BSA</u>
Entered By:	<u>[Signature]</u>



Client Code: 3157

Client: Tetra Tech

Project Manager: Richard A Wheeler

Project: 2022 - Blue Marsh Reservoir

Collected By: Gregory Wack  
(Full Name)

Comments: \_\_\_\_\_

2216901-21 BM-11S

NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, PO4-D SM 4500P-F, TC (#) SM 9223B  
PO4 SM 4500P-F, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D, Alk SM 2320B, NH3-N EPA 350.1, TDS SM 2540C

Matrix: Non-Potable Water

Type: Grab

Date: 6/13/22  
Time: 1235

- A - Pl 500ml NP, minimal hdspc
- B - Pl Liter NP
- C - Sterile Pl 125ml NaThio
- D - Pl 500ml H2SO4
- E - Pl 250ml NP
- F - Pl 500ml Lab Filtered
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc
- I - Vial Amber 40ml H3PO4, minimal hdspc

[Signature] 6/13/22 1:35  
Relinquished By Date/Time

[Signature] 6-13-22 1350  
Received By Date/Time

Relinquished By \_\_\_\_\_ Date/Time \_\_\_\_\_

[Signature] 6-13-22 1410  
Received By Date/Time

Relinquished By \_\_\_\_\_ Date/Time \_\_\_\_\_

[Signature] 6-13-22 1410  
Received at Laboratory By Date/Time

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

Sample Kit Prepared By:	Date/Time
Sample Temp (°C):	<u>6.0</u>
Samples on Ice?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA
Approved By:	<u>[Signature]</u>
Entered By:	<u>[Signature]</u>

**M.J. Reider Associates, Inc.**

**MJRA Terms & Conditions**

All samples submitted must be accompanied by signed documentation representing a Chain of Custody (COC). The COC Record acts as a contract between the client and MJRA. Signing the COC form gives approval for MJRA to perform the requested analyses and is an agreement to pay for the cost of such analyses. COC Records must be completed in black or blue indelible ink (must not run when wet). COC documentation begins at the time of sample collection. Client is required to document all sample details prior to releasing samples to MJRA. All samples must be placed on ice immediately after sampling and shipped or delivered to the laboratory in a manner that will maintain the sample temperature above freezing and below 6C (loose ice is preferred).

**Sample Submission, Sample Acceptance & Sampling Containers**

Included on the COC must be the sample description, date and time of collection (including start and stop for composites), container size and type, preservative information, sample matrix, indication of whether the sample is a grab or composite, number of containers & a list of the tests to be performed. Poor sample collection technique, inappropriate sampling containers and/or improper sample preservation may lead to sample rejection. Suitable sample containers, labels, and preservatives (as applicable), along with blank COCs are provided at no additional cost.

**Turnaround Times (TAT)**

Average TAT for test results range from 5 to 15 working days depending on the specific analyses and time of year submitted. Faster turnaround times (\*RUSH TAT) may be available depending on the current workload in a particular department and the nature of the analyses requested. We encourage you to verify requests for expedited sample results with one of our Technical Directors prior to sample submittal. Without confirmation from a Technical Director, your results may not be completed by your deadline. \*RUSH TAT Surcharges are applied for expedited turnaround times.

**Analytical Results, Sample Collection Integrity & Subcontracting**

Analytical values are for the sample as submitted and relate only to the item tested. The value indicates a snapshot of the constituent content of the sample at the time of sample collection. Analytical results can be impacted by poor sample collection technique and/or improper preservation. All sample collection completed by MJRA was performed in accordance with applicable regulatory protocols or as specified in customer specific sampling plans. Constituent content will vary over time based on the matrix of the sample and the physical and chemical changes to its environment. All sample results and laboratory reports are strictly confidential. Results will not be available to anyone except the primary client or authorized party representing the client unless MJRA receives additional permissions from the client. When necessary, MJRA will subcontract certain analyses to a third party accredited laboratory. If client prohibits subcontracting, it must be provided in writing and include instruction on how to proceed with client samples that require third party analyses.

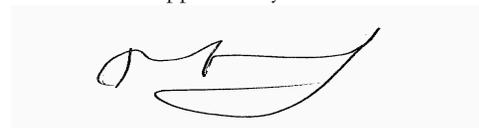
**Payment Terms**

Payment Terms are Net 30 days. Prices are subject to change without notice. A standing monthly charge of 1.5% of the clients over-30-day-unpaid balance may be added to the balance after 30 days and each month thereafter (day 31, 61, 91 etc.). The laboratory accepts all major credit cards, ACH transactions, checks and cash. New clients must pay for all services rendered prior to sample collection and/or in some cases report processing. Clients must contact the MJRA accounting department to pursue a credit-based account. MJRA reserves the right to terminate the client's credit account and to refuse to perform additional services on a credit basis if any balance is outstanding for more than 60 days.

**Warranty & Litigation**

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the day of its discovery and within one year of the date of invoice.

Reviewed and Approved by:



Rafael A Quijada For Richard A Wheeler  
Director of Field Services



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# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2220747

**Report:** 07/21/22

**Lab Contact:** Richard A Wheeler

**Attention:** David Wertz

**Project:** 2022 - Blue Marsh Reservoir

**Reported To:** Tetra Tech

USACE, Phila Dist. Env.Resources Branch 100 Penn Square E.  
Arlington, VA 22201

**Lab ID:** 2220747-01

**Collected By:** Client

**Sampled:** 07/11/22 07:45

**Received:** 07/11/22 14:20

**Sample Desc:** BM-1S

**Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	07/16/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	145	mg CaCO <sub>3</sub> /L		2	SM 2320 B	07/12/22		APR
Ammonia as N	0.27	mg/l	0.02	0.02	EPA 350.1	07/12/22		MRW
Biochemical Oxygen Demand	4.6	mg/l	2.0	2.0	SM 5210 B	07/12/22 11:00		KMS
Nitrate as N	2.82	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	07/11/22 17:39		JAF
Nitrite as N	0.12	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/11/22 17:39		JAF
Nitrate+Nitrite as N	2.94	mg/l	0.122	1.10	CALCULATED	07/11/22 17:39		JAF
Nitrogen, Total Kjeldahl (TKN)	0.56	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	07/15/22		SNF
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P F	07/12/22		MRW
Solids, Total Dissolved	231	mg/l	4	5	SM 2540 C	07/12/22		TMH
Total Organic Carbon	3.4	mg/l	0.3	0.5	SM 5310 C	07/12/22		ALD
Solids, Total Suspended	6	mg/l	1	1	SM 2540 D	07/12/22		TMH
	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>								
Escherichia coli	2	mpn/100ml	1	SM 9223 B/Quantitray	7/11/22 15:30	7/12/22 9:34		JMW
Total Coliform	1550	mpn/100ml	1	SM 9223 B/Quantitray	7/11/22 15:30	7/12/22 9:34		JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2220747-02      **Collected By:** Client      **Sampled:** 07/11/22 11:40      **Received:** 07/11/22 14:20  
**Sample Desc:** BM-2S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst	
<b>Dissolved General Chemistry</b>									
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	07/16/22	G-23, G-24	MRW	
<b>General Chemistry</b>									
Alkalinity, Total to pH 4.5	89	mg CaCO <sub>3</sub> /L		2	SM 2320 B	07/12/22		APR	
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	07/12/22	U	MRW	
Biochemical Oxygen Demand	4.5	mg/l	2.0	2.0	SM 5210 B	07/12/22 11:00		KMS	
Nitrate as N	3.28	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	07/11/22 20:28		JAF	
Nitrite as N	0.03	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/11/22 20:28	J	JAF	
Nitrate+Nitrite as N	3.31	mg/l	0.122	1.10	CALCULATED	07/11/22 20:28		JAF	
Nitrogen, Total Kjeldahl (TKN)	0.74	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	07/15/22		SNF	
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	07/12/22		MRW	
Solids, Total Dissolved	178	mg/l	4	5	SM 2540 C	07/12/22		TMH	
Total Organic Carbon	2.6	mg/l	0.3	0.5	SM 5310 C	07/12/22		ALD	
Solids, Total Suspended	7	mg/l	1	1	SM 2540 D	07/12/22		TMH	
	Result	Unit	Rep. Limit		Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>									
Escherichia coli	<1	mpn/100ml	1		SM 9223 B/Quantitray	7/11/22 15:30	7/12/22 9:34		JMW
Total Coliform	261	mpn/100ml	1		SM 9223 B/Quantitray	7/11/22 15:30	7/12/22 9:34		JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2220747-03      **Collected By:** Client      **Sampled:** 07/11/22 11:40      **Received:** 07/11/22 14:20  
**Sample Desc:** BM-2M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	07/16/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	138	mg CaCO <sub>3</sub> /L		2	SM 2320 B	07/12/22		APR
Ammonia as N	0.07	mg/l	0.02	0.02	EPA 350.1	07/12/22		MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	07/12/22 11:00		KMS
Nitrate as N	3.43	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	07/12/22 1:21		JAF
Nitrite as N	0.23	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/12/22 1:21		JAF
Nitrate+Nitrite as N	3.66	mg/l	0.122	1.10	CALCULATED	07/12/22 1:21		JAF
Nitrogen, Total Kjeldahl (TKN)	0.45	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	07/15/22	J	SNF
Phosphorus as P, Total	0.01	mg/l	0.01	0.01	SM 4500-P F	07/12/22		MRW
Solids, Total Dissolved	205	mg/l	4	5	SM 2540 C	07/12/22		TMH
Total Organic Carbon	2.2	mg/l	0.3	0.5	SM 5310 C	07/12/22		ALD
Solids, Total Suspended	2	mg/l	1	1	SM 2540 D	07/12/22		TMH

**Lab ID:** 2220747-04      **Collected By:** Client      **Sampled:** 07/11/22 11:40      **Received:** 07/11/22 14:20  
**Sample Desc:** BM-2D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	07/16/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	152	mg CaCO <sub>3</sub> /L		2	SM 2320 B	07/12/22		APR
Ammonia as N	0.51	mg/l	0.02	0.02	EPA 350.1	07/12/22		MRW
Biochemical Oxygen Demand	4.6	mg/l	2.0	2.0	SM 5210 B	07/12/22 11:00		KMS
Nitrate as N	2.18	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	07/12/22 1:04		JAF
Nitrite as N	0.04	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/12/22 1:04	J	JAF
Nitrate+Nitrite as N	2.22	mg/l	0.122	1.10	CALCULATED	07/12/22 1:04		JAF
Nitrogen, Total Kjeldahl (TKN)	1.04	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	07/15/22		SNF
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P F	07/12/22		MRW
Solids, Total Dissolved	217	mg/l	4	5	SM 2540 C	07/12/22		TMH
Total Organic Carbon	2.4	mg/l	0.3	0.5	SM 5310 C	07/12/22		ALD
Solids, Total Suspended	11	mg/l	1	1	SM 2540 D	07/12/22		TMH



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2220747-05      **Collected By:** Client      **Sampled:** 07/11/22 13:00      **Received:** 07/11/22 14:20  
**Sample Desc:** BM-5S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst	
<b>Dissolved General Chemistry</b>									
Phosphorus as P, Dissolved	0.04	mg/l		0.01	SM 4500-P F	07/16/22	G-23, G-24	MRW	
<b>General Chemistry</b>									
Alkalinity, Total to pH 4.5	221	mg CaCO <sub>3</sub> /L		2	SM 2320 B	07/12/22		APR	
Ammonia as N	0.04	mg/l	0.02	0.02	EPA 350.1	07/12/22		MRW	
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	07/12/22 11:00		KMS	
Nitrate as N	7.02	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	07/11/22 20:11		JAF	
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/11/22 20:11	U	JAF	
Nitrate+Nitrite as N	<7.03	mg/l	0.122	1.10	CALCULATED	07/11/22 20:11		JAF	
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	07/15/22	U	SNF	
Phosphorus as P, Total	0.04	mg/l	0.01	0.01	SM 4500-P F	07/12/22		MRW	
Solids, Total Dissolved	343	mg/l	4	5	SM 2540 C	07/12/22		TMH	
Total Organic Carbon	1.7	mg/l	0.3	0.5	SM 5310 C	07/12/22		ALD	
Solids, Total Suspended	15	mg/l	1	1	SM 2540 D	07/12/22		TMH	
	Result	Unit	Rep. Limit		Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>									
Escherichia coli	86	mpn/100ml	1		SM 9223 B/Quantitray	7/11/22 15:30	7/12/22 9:34		JMW
Total Coliform	>2420	mpn/100ml	1		SM 9223 B/Quantitray	7/11/22 15:30	7/12/22 9:34		JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2220747-06      **Collected By:** Client      **Sampled:** 07/11/22 12:10      **Received:** 07/11/22 14:20  
**Sample Desc:** BM-6S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	07/16/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	93	mg CaCO <sub>3</sub> /L		2	SM 2320 B	07/12/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	07/12/22	U	MRW
Biochemical Oxygen Demand	3.7	mg/l	2.0	2.0	SM 5210 B	07/12/22 11:00		KMS
Nitrate as N	3.28	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	07/11/22 16:32		JAF
Nitrite as N	0.03	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/11/22 16:32	J	JAF
Nitrate+Nitrite as N	3.31	mg/l	0.122	1.10	CALCULATED	07/11/22 16:32		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	07/15/22	U	SNF
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	07/12/22		MRW
Solids, Total Dissolved	182	mg/l	4	5	SM 2540 C	07/12/22		TMH
Total Organic Carbon	2.7	mg/l	0.3	0.5	SM 5310 C	07/12/22		ALD
Solids, Total Suspended	5	mg/l	1	1	SM 2540 D	07/12/22		TMH
	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>								
Escherichia coli	8	mpn/100ml	1	SM 9223 B/Quantitray	7/11/22 15:30	7/12/22 9:34		JMW
Total Coliform	345	mpn/100ml	1	SM 9223 B/Quantitray	7/11/22 15:30	7/12/22 9:34		JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2220747-07      **Collected By:** Client      **Sampled:** 07/11/22 12:10      **Received:** 07/11/22 14:20  
**Sample Desc:** BM-6M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	07/16/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	135	mg CaCO <sub>3</sub> /L		2	SM 2320 B	07/12/22		APR
Ammonia as N	0.06	mg/l	0.02	0.02	EPA 350.1	07/12/22		MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	07/12/22 11:00		KMS
Nitrate as N	3.70	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	07/11/22 18:30		JAF
Nitrite as N	0.08	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/11/22 18:30	J	JAF
Nitrate+Nitrite as N	3.78	mg/l	0.122	1.10	CALCULATED	07/11/22 18:30		JAF
Nitrogen, Total Kjeldahl (TKN)	0.46	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	07/15/22	J	SNF
Phosphorus as P, Total	0.01	mg/l	0.01	0.01	SM 4500-P F	07/12/22		MRW
Solids, Total Dissolved	228	mg/l	4	5	SM 2540 C	07/12/22		TMH
Total Organic Carbon	2.3	mg/l	0.3	0.5	SM 5310 C	07/12/22		ALD
Solids, Total Suspended	3	mg/l	1	1	SM 2540 D	07/12/22		TMH

**Lab ID:** 2220747-08      **Collected By:** Client      **Sampled:** 07/11/22 12:10      **Received:** 07/11/22 14:20  
**Sample Desc:** BM-6D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	07/16/22	G-23, G-24	MRW
<b>Dissolved Metals</b>								
Arsenic	0.002	mg/l		0.001	EPA 200.8 Rev 5.4	07/14/22	G-23, G-24	MPB
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	162	mg CaCO <sub>3</sub> /L		2	SM 2320 B	07/12/22		APR
Ammonia as N	1.20	mg/l	0.02	0.02	EPA 350.1	07/12/22		MRW
Biochemical Oxygen Demand	8.5	mg/l	2.0	2.0	SM 5210 B	07/12/22 11:00		KMS
Nitrate as N	0.91	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	07/11/22 18:47	J	JAF
Nitrite as N	0.04	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/11/22 18:47	J	JAF
Nitrate+Nitrite as N	0.95	mg/l	0.122	1.10	CALCULATED	07/11/22 18:47		JAF
Nitrogen, Total Kjeldahl (TKN)	1.81	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	07/15/22		SNF
Phosphorus as P, Total	0.13	mg/l	0.01	0.01	SM 4500-P F	07/12/22		MRW
Solids, Total Dissolved	212	mg/l	4	5	SM 2540 C	07/12/22		TMH
Total Organic Carbon	2.8	mg/l	0.3	0.5	SM 5310 C	07/12/22		ALD
Solids, Total Suspended	19	mg/l	1	1	SM 2540 D	07/12/22		TMH



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2220747-09      **Collected By:** Client      **Sampled:** 07/11/22 11:20      **Received:** 07/11/22 14:20  
**Sample Desc:** BM-7S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.02	mg/l		0.01	SM 4500-P F	07/15/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	94	mg CaCO <sub>3</sub> /L		2	SM 2320 B	07/12/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	07/12/22	U	MRW
Biochemical Oxygen Demand	4.0	mg/l	2.0	2.0	SM 5210 B	07/12/22 11:00		KMS
Nitrate as N	3.32	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	07/11/22 16:15		JAF
Nitrite as N	0.03	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/11/22 16:15	J	JAF
Nitrate+Nitrite as N	3.35	mg/l	0.122	1.10	CALCULATED	07/11/22 16:15		JAF
Nitrogen, Total Kjeldahl (TKN)	0.49	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	07/15/22	J	SNF
Phosphorus as P, Total	0.01	mg/l	0.01	0.01	SM 4500-P F	07/12/22		MRW
Solids, Total Dissolved	167	mg/l	4	5	SM 2540 C	07/12/22		TMH
Total Organic Carbon	2.6	mg/l	0.3	0.5	SM 5310 C	07/12/22		ALD
Solids, Total Suspended	8	mg/l	1	1	SM 2540 D	07/12/22		TMH
	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>								
Escherichia coli	1	mpn/100ml	1	SM 9223 B/Quantitray	7/11/22 15:30	7/12/22 9:34		JMW
Total Coliform	517	mpn/100ml	1	SM 9223 B/Quantitray	7/11/22 15:30	7/12/22 9:34		JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2220747-10      **Collected By:** Client      **Sampled:** 07/11/22 11:20      **Received:** 07/11/22 14:20  
**Sample Desc:** BM-7M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	07/15/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	127	mg CaCO <sub>3</sub> /L		2	SM 2320 B	07/12/22		APR
Ammonia as N	0.07	mg/l	0.02	0.02	EPA 350.1	07/12/22		MRW
Biochemical Oxygen Demand	3.2	mg/l	2.0	2.0	SM 5210 B	07/12/22 11:00		KMS
Nitrate as N	3.61	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	07/12/22 2:13		JAF
Nitrite as N	0.05	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/12/22 2:13	J	JAF
Nitrate+Nitrite as N	3.66	mg/l	0.122	1.10	CALCULATED	07/12/22 2:13		JAF
Nitrogen, Total Kjeldahl (TKN)	0.55	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	07/15/22		SNF
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	07/12/22		MRW
Solids, Total Dissolved	209	mg/l	4	5	SM 2540 C	07/12/22		TMH
Total Organic Carbon	2.3	mg/l	0.3	0.5	SM 5310 C	07/12/22		ALD
Solids, Total Suspended	4	mg/l	1	1	SM 2540 D	07/12/22		TMH

**Lab ID:** 2220747-11      **Collected By:** Client      **Sampled:** 07/11/22 11:20      **Received:** 07/11/22 14:20  
**Sample Desc:** BM-7D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	07/15/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	141	mg CaCO <sub>3</sub> /L		2	SM 2320 B	07/12/22		APR
Ammonia as N	0.18	mg/l	0.02	0.02	EPA 350.1	07/13/22		MRW
Biochemical Oxygen Demand	3.9	mg/l	2.0	2.0	SM 5210 B	07/12/22 11:00		KMS
Nitrate as N	3.47	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	07/12/22 1:56		JAF
Nitrite as N	0.07	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/12/22 1:56	J	JAF
Nitrate+Nitrite as N	3.54	mg/l	0.122	1.10	CALCULATED	07/12/22 1:56		JAF
Nitrogen, Total Kjeldahl (TKN)	0.61	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	07/19/22		MRW
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P F	07/13/22		MRW
Solids, Total Dissolved	238	mg/l	4	5	SM 2540 C	07/12/22		TMH
Total Organic Carbon	2.1	mg/l	0.3	0.5	SM 5310 C	07/12/22		ALD
Solids, Total Suspended	5	mg/l	1	1	SM 2540 D	07/12/22		TMH



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2220747-12      **Collected By:** Client      **Sampled:** 07/11/22 10:55      **Received:** 07/11/22 14:20  
**Sample Desc:** BM-8S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst	
<b>Dissolved General Chemistry</b>									
Phosphorus as P, Dissolved	0.02	mg/l		0.01	SM 4500-P F	07/15/22	G-23, G-24	MRW	
<b>General Chemistry</b>									
Alkalinity, Total to pH 4.5	77	mg CaCO <sub>3</sub> /L		2	SM 2320 B	07/12/22		APR	
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	07/13/22	U	MRW	
Biochemical Oxygen Demand	5.7	mg/l	2.0	2.0	SM 5210 B	07/12/22 11:00		KMS	
Nitrate as N	3.09	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	07/12/22 1:38		JAF	
Nitrite as N	0.03	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/12/22 1:38	J	JAF	
Nitrate+Nitrite as N	3.12	mg/l	0.122	1.10	CALCULATED	07/12/22 1:38		JAF	
Nitrogen, Total Kjeldahl (TKN)	0.66	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	07/19/22		MRW	
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	07/13/22		MRW	
Solids, Total Dissolved	170	mg/l	4	5	SM 2540 C	07/12/22		TMH	
Total Organic Carbon	2.6	mg/l	0.3	0.5	SM 5310 C	07/12/22		ALD	
Solids, Total Suspended	6	mg/l	1	1	SM 2540 D	07/12/22		TMH	
	Result	Unit	Rep. Limit		Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>									
Escherichia coli	5	mpn/100ml	1		SM 9223 B/Quantitray	7/11/22 15:30	7/12/22 9:34		JMW
Total Coliform	249	mpn/100ml	1		SM 9223 B/Quantitray	7/11/22 15:30	7/12/22 9:34		JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2220747-13      **Collected By:** Client      **Sampled:** 07/11/22 10:55      **Received:** 07/11/22 14:20  
**Sample Desc:** BM-8M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	07/15/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	89	mg CaCO <sub>3</sub> /L		2	SM 2320 B	07/12/22		APR
Ammonia as N	0.05	mg/l	0.02	0.02	EPA 350.1	07/13/22		MRW
Biochemical Oxygen Demand	4.6	mg/l	2.0	2.0	SM 5210 B	07/12/22 11:00		KMS
Nitrate as N	3.07	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	07/12/22 0:47		JAF
Nitrite as N	0.04	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/12/22 0:47	J	JAF
Nitrate+Nitrite as N	3.11	mg/l	0.122	1.10	CALCULATED	07/12/22 0:47		JAF
Nitrogen, Total Kjeldahl (TKN)	0.55	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	07/19/22		MRW
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	07/13/22		MRW
Solids, Total Dissolved	194	mg/l	4	5	SM 2540 C	07/12/22		TMH
Total Organic Carbon	2.6	mg/l	0.3	0.5	SM 5310 C	07/12/22		ALD
Solids, Total Suspended	8	mg/l	1	1	SM 2540 D	07/12/22		TMH

**Lab ID:** 2220747-14      **Collected By:** Client      **Sampled:** 07/11/22 10:55      **Received:** 07/11/22 14:20  
**Sample Desc:** BM-8D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	07/15/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	138	mg CaCO <sub>3</sub> /L		2	SM 2320 B	07/12/22		APR
Ammonia as N	0.42	mg/l	0.02	0.02	EPA 350.1	07/13/22		MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	07/12/22 11:00		KMS
Nitrate as N	2.89	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	07/11/22 23:23		JAF
Nitrite as N	0.08	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/11/22 23:23	J	JAF
Nitrate+Nitrite as N	2.97	mg/l	0.122	1.10	CALCULATED	07/11/22 23:23		JAF
Nitrogen, Total Kjeldahl (TKN)	0.81	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	07/19/22		MRW
Phosphorus as P, Total	0.04	mg/l	0.01	0.01	SM 4500-P F	07/13/22		MRW
Solids, Total Dissolved	228	mg/l	4	5	SM 2540 C	07/12/22		TMH
Total Organic Carbon	2.1	mg/l	0.3	0.5	SM 5310 C	07/12/22		ALD
Solids, Total Suspended	25	mg/l	1	1	SM 2540 D	07/12/22		TMH



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2220747-15      **Collected By:** Client      **Sampled:** 07/11/22 10:10      **Received:** 07/11/22 14:20  
**Sample Desc:** BM-9S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst	
<b>Dissolved General Chemistry</b>									
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	07/16/22	G-23, G-24	MRW	
<b>General Chemistry</b>									
Alkalinity, Total to pH 4.5	89	mg CaCO <sub>3</sub> /L		2	SM 2320 B	07/12/22		APR	
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	07/13/22	U	MRW	
Biochemical Oxygen Demand	4.1	mg/l	2.0	2.0	SM 5210 B	07/12/22 11:00		KMS	
Nitrate as N	3.24	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	07/11/22 19:37		JAF	
Nitrite as N	0.03	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/11/22 19:37	J	JAF	
Nitrate+Nitrite as N	3.27	mg/l	0.122	1.10	CALCULATED	07/11/22 19:37		JAF	
Nitrogen, Total Kjeldahl (TKN)	0.55	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	07/19/22		MRW	
Phosphorus as P, Total	0.01	mg/l	0.01	0.01	SM 4500-P F	07/13/22		MRW	
Solids, Total Dissolved	171	mg/l	4	5	SM 2540 C	07/12/22		TMH	
Total Organic Carbon	2.6	mg/l	0.3	0.5	SM 5310 C	07/12/22		ALD	
Solids, Total Suspended	7	mg/l	1	1	SM 2540 D	07/12/22		TMH	
	Result	Unit	Rep. Limit		Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>									
Escherichia coli	1	mpn/100ml	1		SM 9223 B/Quantitray	7/11/22 15:30	7/12/22 9:34		JMW
Total Coliform	192	mpn/100ml	1		SM 9223 B/Quantitray	7/11/22 15:30	7/12/22 9:34		JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2220747-16      **Collected By:** Client      **Sampled:** 07/11/22 10:10      **Received:** 07/11/22 14:20  
**Sample Desc:** BM-9M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	07/15/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	116	mg CaCO <sub>3</sub> /L		2	SM 2320 B	07/12/22		APR
Ammonia as N	0.11	mg/l	0.02	0.02	EPA 350.1	07/13/22		MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	07/12/22 13:00		LES
Nitrate as N	3.60	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	07/11/22 23:57		JAF
Nitrite as N	0.04	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/11/22 23:57	J	JAF
Nitrate+Nitrite as N	3.64	mg/l	0.122	1.10	CALCULATED	07/11/22 23:57		JAF
Nitrogen, Total Kjeldahl (TKN)	0.69	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	07/19/22		MRW
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	07/13/22		MRW
Solids, Total Dissolved	206	mg/l	4	5	SM 2540 C	07/12/22		TMH
Total Organic Carbon	2.4	mg/l	0.3	0.5	SM 5310 C	07/12/22		ALD
Solids, Total Suspended	5	mg/l	1	1	SM 2540 D	07/12/22		TMH

**Lab ID:** 2220747-17      **Collected By:** Client      **Sampled:** 07/11/22 10:10      **Received:** 07/11/22 14:20  
**Sample Desc:** BM-9D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.01	mg/l		0.01	SM 4500-P F	07/16/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	162	mg CaCO <sub>3</sub> /L		2	SM 2320 B	07/12/22		APR
Ammonia as N	0.69	mg/l	0.02	0.02	EPA 350.1	07/13/22		MRW
Biochemical Oxygen Demand	6.4	mg/l	2.0	2.0	SM 5210 B	07/12/22 13:00		LES
Nitrate as N	2.05	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	07/11/22 23:40		JAF
Nitrite as N	0.02	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/11/22 23:40	J	JAF
Nitrate+Nitrite as N	2.07	mg/l	0.122	1.10	CALCULATED	07/11/22 23:40		JAF
Nitrogen, Total Kjeldahl (TKN)	1.35	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	07/19/22		MRW
Phosphorus as P, Total	0.10	mg/l	0.01	0.01	SM 4500-P F	07/13/22		MRW
Solids, Total Dissolved	241	mg/l	4	5	SM 2540 C	07/12/22		TMH
Total Organic Carbon	2.5	mg/l	0.3	0.5	SM 5310 C	07/12/22		ALD
Solids, Total Suspended	31	mg/l	1	1	SM 2540 D	07/12/22		TMH



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2220747-18      **Collected By:** Client      **Sampled:** 07/11/22 09:45      **Received:** 07/11/22 14:20  
**Sample Desc:** BM-10S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	07/15/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	81	mg CaCO <sub>3</sub> /L		2	SM 2320 B	07/12/22		APR
Ammonia as N	0.02	mg/l	0.02	0.02	EPA 350.1	07/13/22		MRW
Biochemical Oxygen Demand	4.6	mg/l	2.0	2.0	SM 5210 B	07/12/22 13:00		LES
Nitrate as N	3.12	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	07/11/22 16:49		JAF
Nitrite as N	0.02	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/11/22 16:49	J	JAF
Nitrate+Nitrite as N	3.14	mg/l	0.122	1.10	CALCULATED	07/11/22 16:49		JAF
Nitrogen, Total Kjeldahl (TKN)	0.70	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	07/19/22		MRW
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	07/13/22		MRW
Solids, Total Dissolved	168	mg/l	4	5	SM 2540 C	07/12/22		TMH
Total Organic Carbon	3.1	mg/l	0.3	0.5	SM 5310 C	07/12/22		ALD
Solids, Total Suspended	9	mg/l	1	1	SM 2540 D	07/12/22		TMH
<b>Microbiology</b>								
Escherichia coli	<1	mpn/100ml	1		SM 9223 B/Quantitray	7/11/22 15:30	7/12/22 9:34	JMW
Total Coliform	659	mpn/100ml	1		SM 9223 B/Quantitray	7/11/22 15:30	7/12/22 9:34	JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2220747-19      **Collected By:** Client      **Sampled:** 07/11/22 09:45      **Received:** 07/11/22 14:20  
**Sample Desc:** BM-10M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.01	mg/l		0.01	SM 4500-P F	07/15/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	76	mg CaCO <sub>3</sub> /L		2	SM 2320 B	07/12/22		APR
Ammonia as N	0.03	mg/l	0.02	0.02	EPA 350.1	07/13/22		MRW
Biochemical Oxygen Demand	4.7	mg/l	2.0	2.0	SM 5210 B	07/12/22 11:00		KMS
Nitrate as N	3.11	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	07/11/22 19:20		JAF
Nitrite as N	0.02	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/11/22 19:20	J	JAF
Nitrate+Nitrite as N	3.13	mg/l	0.122	1.10	CALCULATED	07/11/22 19:20		JAF
Nitrogen, Total Kjeldahl (TKN)	0.96	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	07/19/22		MRW
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	07/13/22		MRW
Solids, Total Dissolved	96	mg/l	4	5	SM 2540 C	07/12/22		TMH
Total Organic Carbon	2.7	mg/l	0.3	0.5	SM 5310 C	07/12/22		ALD
Solids, Total Suspended	9	mg/l	1	1	SM 2540 D	07/12/22		TMH

**Lab ID:** 2220747-20      **Collected By:** Client      **Sampled:** 07/11/22 09:45      **Received:** 07/11/22 14:20  
**Sample Desc:** BM-10D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	07/15/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	131	mg CaCO <sub>3</sub> /L		2	SM 2320 B	07/12/22		APR
Ammonia as N	0.07	mg/l	0.02	0.02	EPA 350.1	07/13/22		MRW
Biochemical Oxygen Demand	3.4	mg/l	2.0	2.0	SM 5210 B	07/12/22 11:00		KMS
Nitrate as N	4.30	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	07/11/22 19:04		JAF
Nitrite as N	0.02	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/11/22 19:04	J	JAF
Nitrate+Nitrite as N	4.32	mg/l	0.122	1.10	CALCULATED	07/11/22 19:04		JAF
Nitrogen, Total Kjeldahl (TKN)	0.71	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	07/19/22		MRW
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	07/13/22		MRW
Solids, Total Dissolved	225	mg/l	4	5	SM 2540 C	07/12/22		TMH
Total Organic Carbon	2.3	mg/l	0.3	0.5	SM 5310 C	07/12/22		ALD
Solids, Total Suspended	15	mg/l	1	1	SM 2540 D	07/12/22		TMH



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2220747-21      **Collected By:** Client      **Sampled:** 07/11/22 13:00      **Received:** 07/11/22 14:20  
**Sample Desc:** BM-11S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst	
<b>Dissolved General Chemistry</b>									
Phosphorus as P, Dissolved	0.03	mg/l		0.01	SM 4500-P F	07/16/22	G-23, G-24	MRW	
<b>General Chemistry</b>									
Alkalinity, Total to pH 4.5	128	mg CaCO <sub>3</sub> /L		2	SM 2320 B	07/12/22		APR	
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1	07/13/22	U	MRW	
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	07/12/22 11:00		KMS	
Nitrate as N	4.32	mg/l	0.11	1.00	EPA 300.0 Rev 2.1	07/11/22 19:54		JAF	
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/11/22 19:54	U	JAF	
Nitrate+Nitrite as N	<4.33	mg/l	0.122	1.10	CALCULATED	07/11/22 19:54		JAF	
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	07/19/22	U	MRW	
Phosphorus as P, Total	0.04	mg/l	0.01	0.01	SM 4500-P F	07/13/22		MRW	
Solids, Total Dissolved	177	mg/l	4	5	SM 2540 C	07/12/22		TMH	
Total Organic Carbon	2.1	mg/l	0.3	0.5	SM 5310 C	07/14/22		ALD	
Solids, Total Suspended	13	mg/l	1	1	SM 2540 D	07/12/22		TMH	
	Result	Unit	Rep. Limit		Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>									
Escherichia coli	387	mpn/100ml	1		SM 9223 B/Quantitray	7/11/22 15:30	7/12/22 9:34		JMW
Total Coliform	>2420	mpn/100ml	1		SM 9223 B/Quantitray	7/11/22 15:30	7/12/22 9:34		JMW



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M.J. Reider Associates, Inc.

Preparation Methods

Specific Method	Preparation Method	Prep Batch	Prepared Date	Prepared By
<b>2220747-01</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2G0809	07/15/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2G0561	07/12/2022	MRW
<b>2220747-02</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2G0809	07/15/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2G0561	07/12/2022	MRW
<b>2220747-03</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2G0809	07/15/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2G0561	07/12/2022	MRW
<b>2220747-04</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2G0809	07/15/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2G0561	07/12/2022	MRW
<b>2220747-05</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2G0809	07/15/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2G0561	07/12/2022	MRW
<b>2220747-06</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2G0809	07/15/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2G0561	07/12/2022	MRW
<b>2220747-07</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2G0809	07/15/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2G0561	07/12/2022	MRW
<b>2220747-08</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2G0809	07/15/2022	MRW
<b>Dissolved Metals</b>				
EPA 200.8 Rev 5.4	EPA 200.2 Rev 2.8	B2G0523	07/12/2022	HRG
<b>General Chemistry</b>				



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SM 4500-P F	SM 4500-P B	B2G0561	07/12/2022	MRW
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**2220747-09**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2G0809	07/15/2022	MRW
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2G0561	07/12/2022	MRW
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**2220747-10**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2G0809	07/15/2022	MRW
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2G0561	07/12/2022	MRW
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**2220747-11**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2G0809	07/15/2022	MRW
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2G0562	07/12/2022	SNF
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**2220747-12**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2G0809	07/15/2022	MRW
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2G0562	07/12/2022	SNF
-------------	-------------	---------	------------	-----

**2220747-13**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2G0809	07/15/2022	MRW
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2G0562	07/12/2022	SNF
-------------	-------------	---------	------------	-----

**2220747-14**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2G0809	07/15/2022	MRW
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2G0562	07/12/2022	SNF
-------------	-------------	---------	------------	-----

**2220747-15**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2G0809	07/15/2022	MRW
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2G0562	07/12/2022	SNF
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**2220747-16**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2G0809	07/15/2022	MRW
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2G0562	07/12/2022	SNF
-------------	-------------	---------	------------	-----

**2220747-17**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2G0809	07/15/2022	MRW
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**General Chemistry**



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SM 4500-P F	SM 4500-P B	B2G0562	07/12/2022	SNF
<b>2220747-18</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2G0809	07/15/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2G0562	07/12/2022	SNF
<b>2220747-19</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2G0809	07/15/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2G0562	07/12/2022	SNF
<b>2220747-20</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2G0809	07/15/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2G0562	07/12/2022	SNF
<b>2220747-21</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2G0809	07/15/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2G0562	07/12/2022	SNF

**Notes and Definitions**

- G-23 The sample was filtered after it was received at the laboratory and outside of the 15-minute hold time.
- G-24 The sample was preserved in the laboratory and outside of the 15-minute hold time.
- J Estimated value
- U Analyte was not detected above the indicated value.



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# M.J. Reider Associates, Inc.

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Client Code: 3157

Project Manager: Richard A Wheeler

Report To: Tetra Tech - David Wertz - USACE, Phila Dist. Env.Resources Branch 100 Penn Square E., Arlington, VA 22201

Invoice To: Tetra Tech - David Wertz - USACE, Phila Dist. Env.Resources Branch 100 Penn Square E., Arlington, VA 22201

## WORK ORDER Chain of Custody

2220747



Collected By: \_\_\_\_\_  
(Full Name)

*Gregory Wacik*

Comments: \_\_\_\_\_

### 2220747-01 BM-1S

*KMS*  
BOD SM 5210B, EC (#) SM 9223B Confirmation, NO<sub>2</sub>-N EPA 300.0, NO<sub>3</sub>-N EPA 300.0, NO<sub>2</sub>-N, NO<sub>3</sub>-N, Combined NO<sub>3</sub>+NO<sub>2</sub>, PO<sub>4</sub>-D SM 4500P-F, TC (#) SM 9223B  
Alk SM 2320B, NH<sub>3</sub>-N EPA 350.1, PO<sub>4</sub> SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

*JAF* *JAF*

Matrix: Non-Potable Water

Type: Grab

Date: *7/11/22*

Time: *0745*

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - Sterile PI 125ml NaThio
- D - PI 500ml H2SO4
- E - PI 250ml NP
- F - PI 500ml Lab Filtered
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc
- I - Vial Amber 40ml H3PO4, minimal hdspc

### 2220747-02 BM-2S

*KMS*  
BOD SM 5210B, EC (#) SM 9223B Confirmation, NO<sub>2</sub>-N EPA 300.0, NO<sub>3</sub>-N EPA 300.0, NO<sub>2</sub>-N, NO<sub>3</sub>-N, Combined NO<sub>3</sub>+NO<sub>2</sub>, PO<sub>4</sub>-D SM 4500P-F, TC (#) SM 9223B  
Alk SM 2320B, NH<sub>3</sub>-N EPA 350.1, PO<sub>4</sub> SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

*JAF* *JAF*

Matrix: Non-Potable Water

Type: Grab

Date: *7/11/22*

Time: *1140*

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - Sterile PI 125ml NaThio
- D - PI 500ml H2SO4
- E - PI 250ml NP
- F - PI 500ml Lab Filtered
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc
- I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: \_\_\_\_\_ Date/Time: *7/11/22 1:00*

Received By: *Benny Wertz* Date/Time: *7-11-22 1355*

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received By: *Benny Wertz* Date/Time: *7-11-22 1420*

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received at Laboratory By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

Sample Kit Prepared By: <i>JBS</i>	Date/Time
Sample Temp (°C): Samples on Ice? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA	<i>5.0</i>
Approved By: <i>BSW</i>	
Entered By: <i>J</i>	



Client Code: 3157  
Project Manager: Richard A Wheeler

Client: Tetra Tech  
Project: 2022 - Blue Marsh Reservoir

Collected By: Gregory Wacik  
(Full Name)

Comments: \_\_\_\_\_

2220747-03 BM-2M

*JAF* *JAF*  
**BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F**  
Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TOC SM 5310C, TSS SM 2540D, TDS SM 2540C, TKN EPA 351.2

Matrix: Non-Potable Water  
Type: Grab

Date: 7/11/22  
Time: 1140

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - PI 500ml H2SO4
- D - PI 250ml NP
- E - PI 500ml Lab Filtered
- F - Vial Amber 40ml H3PO4, minimal hdspc
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc

2220747-04 BM-2D

*JAF* *JAF* *kms*  
**NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, BOD SM 5210B, NO2-N EPA 300.0, PO4-D SM 4500P-F**  
Alk SM 2320B, PO4 SM 4500P-F, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D, NH3-N EPA 350.1, TDS SM 2540C

Matrix: Non-Potable Water  
Type: Grab

Date: 7/11/22  
Time: 1140

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - PI 500ml H2SO4
- D - PI 250ml NP
- E - PI 500ml Lab Filtered
- F - Vial Amber 40ml H3PO4, minimal hdspc
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc

2220747-05 BM-5S

*JAF* *JAF* *kms*  
**NO2-N EPA 300.0, NO3-N EPA 300.0, BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B**  
NH3-N EPA 350.1, TDS SM 2540C, TKN EPA 351.2, PO4 SM 4500P-F, TOC SM 5310C, Alk SM 2320B, TSS SM 2540D

Matrix: Non-Potable Water  
Type: Grab

Date: 7/11/22  
Time: 1300

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - Sterile PI 125ml NaThio
- D - PI 500ml H2SO4
- E - PI 250ml NP
- F - PI 500ml Lab Filtered
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc
- I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] Date/Time: 7/11/22 1:50

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received By: Benny Nant Date/Time: 7-11-22 1355

Received By: Benny Nant Date/Time: \_\_\_\_\_

Received at Laboratory: Benny Nant Date/Time: 7-11-22 1420

Sample Kit Prepared By: <u>BSW</u>	Date/Time
Sample Temp (°C): <u>5.2</u>	
Samples on Ice? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>	
Approved By: <u>BSW</u>	
Entered By: <u>[Signature]</u>	

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.



Client Code: 3157  
Project Manager: Richard A Wheeler

Client: Tetra Tech  
Project: 2022 - Blue Marsh Reservoir

Collected By: Gregory Wack  
(Full Name)

Comments: \_\_\_\_\_

2220747-06 BM-6S

*JAC*  
EC (#) SM 9223B Confirmation, NO<sub>2</sub>-N EPA 300.0, PO<sub>4</sub>-D SM 4500P-F, TC (#) SM 9223B, BOD SM 5210B, NO<sub>3</sub>-N EPA 300.0, NO<sub>2</sub>-N, NO<sub>3</sub>-N, Combined NO<sub>3</sub>+NO<sub>2</sub> *KMS*  
NH<sub>3</sub>-N EPA 350.1, TDS SM 2540C, Alk SM 2320B, PO<sub>4</sub> SM 4500P-F, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D *JAC*

Matrix: Non-Potable Water  
Type: Grab

Date: 7/11/22  
Time: 1210

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - Sterile PI 125ml NaThio
- D - PI 500ml H<sub>2</sub>SO<sub>4</sub>
- E - PI 250ml NP
- F - PI 500ml Lab Filtered
- G - Vial Amber 40ml H<sub>3</sub>PO<sub>4</sub>, minimal hdspc
- H - Vial Amber 40ml H<sub>3</sub>PO<sub>4</sub>, minimal hdspc
- I - Vial Amber 40ml H<sub>3</sub>PO<sub>4</sub>, minimal hdspc

2220747-07 BM-6M

*KMS*  
BOD SM 5210B, NO<sub>2</sub>-N, NO<sub>3</sub>-N, Combined NO<sub>3</sub>+NO<sub>2</sub>, PO<sub>4</sub>-D SM 4500P-F, NO<sub>2</sub>-N EPA 300.0, NO<sub>3</sub>-N EPA 300.0 *JAC*  
Alk SM 2320B, NH<sub>3</sub>-N EPA 350.1, PO<sub>4</sub> SM 4500P-F, TSS SM 2540D, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C

Matrix: Non-Potable Water  
Type: Grab

Date: 7/11/22  
Time: 1210

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - PI 500ml H<sub>2</sub>SO<sub>4</sub>
- D - PI 250ml NP
- E - PI 500ml Lab Filtered
- F - Vial Amber 40ml H<sub>3</sub>PO<sub>4</sub>, minimal hdspc
- G - Vial Amber 40ml H<sub>3</sub>PO<sub>4</sub>, minimal hdspc
- H - Vial Amber 40ml H<sub>3</sub>PO<sub>4</sub>, minimal hdspc

2220747-08 BM-6D

*JAC*  
NO<sub>3</sub>-N EPA 300.0, NO<sub>2</sub>-N, NO<sub>3</sub>-N, Combined NO<sub>3</sub>+NO<sub>2</sub>, PO<sub>4</sub>-D SM 4500P-F, BOD SM 5210B, NO<sub>2</sub>-N EPA 300.0 *KMS*  
Alk SM 2320B, As-D EPA 200.8, TKN EPA 351.2, PO<sub>4</sub> SM 4500P-F, NH<sub>3</sub>-N EPA 350.1, TDS SM 2540C, TOC SM 5310C, TSS SM 2540D *JAC*

Matrix: Non-Potable Water  
Type: Grab

Date: 7/11/22  
Time: 1210

- A - PI 500ml NP, minimal hdspc
- B - PI 500ml Lab Filtered
- C - PI Liter NP
- D - PI 500ml H<sub>2</sub>SO<sub>4</sub>
- E - PI 250ml NP
- F - PI 500ml Lab Filtered
- G - Vial Amber 40ml H<sub>3</sub>PO<sub>4</sub>, minimal hdspc
- H - Vial Amber 40ml H<sub>3</sub>PO<sub>4</sub>, minimal hdspc
- I - Vial Amber 40ml H<sub>3</sub>PO<sub>4</sub>, minimal hdspc

Relinquished By: [Signature] Date/Time: 7/11/22 1:50  
Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received By: Benny Nant Date/Time: 7-11-22 1355  
Received By: Benny Nant Date/Time: 7-11-22 1420  
Received at Laboratory: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Sample Kit Prepared By: <u>BSW</u>	Date/Time
Sample Temp (°C): <u>5.0</u>	
Samples on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
Approved By: <u>[Signature]</u>	
Entered By: <u>[Signature]</u>	

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.



Client Code: 3157

Client: Tetra Tech

Project Manager: Richard A Wheeler

Project: 2022 - Blue Marsh Reservoir

Collected By: (Full Name)

Gregory Wacik

Comments:

2220747-09 BM-7S

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water Type: Grab

Date: 7/11/22 Time: 1120

- A - Pl 500ml NP, minimal hdspc B - Pl Liter NP C - Sterile Pl 125ml NaThio D - Pl 500ml H2SO4 E - Pl 250ml NP F - Pl 500ml Lab Filtered G - Vial Amber 40ml H3PO4, minimal hdspc H - Vial Amber 40ml H3PO4, minimal hdspc I - Vial Amber 40ml H3PO4, minimal hdspc

2220747-10 BM-7M

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water Type: Grab

Date: 7/11/22 Time: 1120

- A - Pl 500ml NP, minimal hdspc B - Pl Liter NP C - Pl 500ml H2SO4 D - Pl 250ml NP E - Pl 500ml Lab Filtered F - Vial Amber 40ml H3PO4, minimal hdspc G - Vial Amber 40ml H3PO4, minimal hdspc H - Vial Amber 40ml H3PO4, minimal hdspc

2220747-11 BM-7D

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TOC SM 5310C, TSS SM 2540D, TKN EPA 351.2

Matrix: Non-Potable Water Type: Grab

Date: 7/11/22 Time: 1120

- A - Pl 500ml NP, minimal hdspc B - Pl Liter NP C - Pl 500ml H2SO4 D - Pl 250ml NP E - Pl 500ml Lab Filtered F - Vial Amber 40ml H3PO4, minimal hdspc G - Vial Amber 40ml H3PO4, minimal hdspc H - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] Date/Time: 7/11/22 1:50

Received By: Benny Nhat Date/Time: 7-11-22 1355

Relinquished By: Date/Time:

Received By: Benny Nhat Date/Time: 7-11-22 1420

Relinquished By: Date/Time:

Received at Laboratory By: Date/Time:

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

Table with 2 columns: Field Name, Value. Fields include Sample Kit Prepared By (BSW), Date/Time, Sample Temp (5.0), Samples on Ice?, Approved By (BSW), Entered By.



Client Code: 3157

Client: Tetra Tech

Project Manager: Richard A Wheeler

Project: 2022 - Blue Marsh Reservoir

Comments: \_\_\_\_\_

Collected By : Gregory Wacik  
(Full Name)

2220747-12 BM-8S

JAC JAC

**BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B**  
Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water  
Type: Grab

Date: 7/1/22  
Time: 1055

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - Sterile PI 125ml NaThio
- D - PI 500ml H2SO4
- E - PI 250ml NP
- F - PI 500ml Lab Filtered
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc
- I - Vial Amber 40ml H3PO4, minimal hdspc

2220747-13 BM-8M

JAC JAC

**BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F**  
TOC SM 5310C, TSS SM 2540D, Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2

Matrix: Non-Potable Water  
Type: Grab

Date: 7/1/22  
Time: 1055

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - PI 500ml H2SO4
- D - PI 250ml NP
- E - PI 500ml Lab Filtered
- F - Vial Amber 40ml H3PO4, minimal hdspc
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc

2220747-14 BM-8D

JAC

**NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, BOD SM 5210B, NO2-N EPA 300.0, PO4-D SM 4500P-F**  
Alk SM 2320B, PO4 SM 4500P-F, TOC SM 5310C, TSS SM 2540D, NH3-N EPA 350.1, TDS SM 2540C, TKN EPA 351.2

Matrix: Non-Potable Water  
Type: Grab

Date: 7/1/22  
Time: 1055

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - PI 500ml H2SO4
- D - PI 250ml NP
- E - PI 500ml Lab Filtered
- F - Vial Amber 40ml H3PO4, minimal hdspc
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] Date/Time: 7/1/22 1:50

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received By: Benny Nant Date/Time: 7/1/22 1355

Received By: Benny Nant Date/Time: 7/1/22 1420

Received at Laboratory By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Sample Kit Prepared By: <u>BSW</u>	Date/Time
Sample Temp (°C): Samples on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
Approved By: <u>[Signature]</u>	
Entered By: <u>[Signature]</u>	



Client Code: 3157

Client: Tetra Tech

Project Manager: Richard A Wheeler

Project: 2022 - Blue Marsh Reservoir

Collected By: (Full Name)

Gregory Wacik

Comments:

2220747-15 BM-9S

NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B, BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0 TOC SM 5310C, NH3-N EPA 350.1, PO4 SM 4500P-F, TSS SM 2540D, TDS SM 2540C, Alk SM 2320B, TKN EPA 351.2

Matrix: Non-Potable Water Type: Grab

Date: 7/11/22 Time: 1010

- A - PI 500ml NP, minimal hdspc B - PI Liter NP C - Sterile PI 125ml NaThio D - PI 500ml H2SO4 E - PI 250ml NP F - PI 500ml Lab Filtered G - Vial Amber 40ml H3PO4, minimal hdspc H - Vial Amber 40ml H3PO4, minimal hdspc I - Vial Amber 40ml H3PO4, minimal hdspc

2220747-16 BM-9M

BOD SM 5210B, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, NO2-N EPA 300.0, NO3-N EPA 300.0 Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TSS SM 2540D, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C

Matrix: Non-Potable Water Type: Grab

Date: 7/11/22 Time: 1010

- A - PI 500ml NP, minimal hdspc B - PI Liter NP C - PI 500ml H2SO4 D - PI 250ml NP E - PI 500ml Lab Filtered F - Vial Amber 40ml H3PO4, minimal hdspc G - Vial Amber 40ml H3PO4, minimal hdspc H - Vial Amber 40ml H3PO4, minimal hdspc

2220747-17 BM-9D

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water Type: Grab

Date: 7/11/22 Time: 1010

- A - PI 500ml NP, minimal hdspc B - PI Liter NP C - PI 500ml H2SO4 D - PI 250ml NP E - PI 500ml Lab Filtered F - Vial Amber 40ml H3PO4, minimal hdspc G - Vial Amber 40ml H3PO4, minimal hdspc H - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] Date/Time: 7/11/22 1:50

Received By: Benny Wacik Date/Time: 7-11-22 1355

Relinquished By: Date/Time:

Received By: Benny Wacik Date/Time: 7-11-22 1420

Relinquished By: Date/Time:

Received at Laboratory By: Date/Time:

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

Table with 2 columns: Field Name, Value. Fields include Sample Kit Prepared By (BSW), Date/Time, Sample Temp (5.0), Samples on Ice?, Approved By (BSW), Entered By.



Client Code: 3157

Client: Tetra Tech

Project Manager: Richard A Wheeler

Project: 2022 - Blue Marsh Reservoir

Collected By: (Full Name)

Gregory Wacik

Comments:

2220747-18 BM-10S

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B TOC SM 5310C, Alk SM 2320B, NH3-N EPA 350.1, TDS SM 2540C, TKN EPA 351.2, PO4 SM 4500P-F, TSS SM 2540D

Matrix: Non-Potable Water Type: Grab

Date: 7/11/22 Time: 0945

- A - PI 500ml NP, minimal hdspc B - PI Liter NP C - Sterile PI 125ml NaThio D - PI 500ml H2SO4 E - PI 250ml NP F - PI 500ml Lab Filtered G - Vial Amber 40ml H3PO4, minimal hdspc H - Vial Amber 40ml H3PO4, minimal hdspc I - Vial Amber 40ml H3PO4, minimal hdspc

2220747-19 BM-10M

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water Type: Grab

Date: 7/11/22 Time: 0945

- A - PI 500ml NP, minimal hdspc B - PI Liter NP C - PI 500ml H2SO4 D - PI 250ml NP E - PI 500ml Lab Filtered F - Vial Amber 40ml H3PO4, minimal hdspc G - Vial Amber 40ml H3PO4, minimal hdspc H - Vial Amber 40ml H3PO4, minimal hdspc

2220747-20 BM-10D

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water Type: Grab

Date: 7/11/22 Time: 0945

- A - PI 500ml NP, minimal hdspc B - PI Liter NP C - PI 500ml H2SO4 D - PI 250ml NP E - PI 500ml Lab Filtered F - Vial Amber 40ml H3PO4, minimal hdspc G - Vial Amber 40ml H3PO4, minimal hdspc H - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] Date/Time: 7/11/22 1:50 Received By: Benny Nant Date/Time: 7-11-22 1355

Relinquished By: [Signature] Date/Time: Received By: Benny Nant Date/Time: 7-11-22 1420

Relinquished By: Date/Time: Received at Laboratory By: Date/Time:

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

Sample Kit Prepared By: BSW Date/Time: Sample Temp (°C): 5.0 Samples on Ice? Yes No NA Approved By: BSW Entered By: W



Client Code: 3157

Project Manager: Richard A Wheeler

Client: Tetra Tech

Project: 2022 - Blue Marsh Reservoir

Collected By :  
(Full Name)

*Gregory Wacik*

Comments: \_\_\_\_\_

2220747-21 BM-11S

*KME*  
BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined  
NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B  
TSS SM 2540D, Alk SM 2320B, NH3-N EPA 350.1, TOC SM 5310C, TDS SM 2540C, TKN EPA 351.2, PO4 SM 4500P-F

*JAC* *JAC*

Matrix: Non-Potable Water

Type: Grab

Date: *7/11/22*  
Time: *1300*

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - Sterile PI 125ml NaThio
- D - PI 500ml H2SO4
- E - PI 250ml NP
- F - PI 500ml Lab Filtered
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc
- I - Vial Amber 40ml H3PO4, minimal hdspc

*[Signature]*

*7/11/22 1:50*

*Benny Wacht*

*7-11-22*

*1355*

Relinquished By

Date/Time

Received By

Date/Time

Relinquished By

Date/Time

Received By

Date/Time

Relinquished By

Date/Time

Received at Laboratory By

Date/Time

*Benny Wacht*

*7-11-22*

*1420*

Sample Kit Prepared By: <i>BSW</i>	Date/Time
Sample Temp (°C): <i>5.0</i>	
Samples on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA	
Approved By: <i>BSW</i>	
Entered By: <i>[Signature]</i>	

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

**M.J. Reider Associates, Inc.**

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**MJRA Terms & Conditions**

All samples submitted must be accompanied by signed documentation representing a Chain of Custody (COC). The COC Record acts as a contract between the client and MJRA. Signing the COC form gives approval for MJRA to perform the requested analyses and is an agreement to pay for the cost of such analyses. COC Records must be completed in black or blue indelible ink (must not run when wet). COC documentation begins at the time of sample collection. Client is required to document all sample details prior to releasing samples to MJRA. All samples must be placed on ice immediately after sampling and shipped or delivered to the laboratory in a manner that will maintain the sample temperature above freezing and below 6C (loose ice is preferred).

**Sample Submission, Sample Acceptance & Sampling Containers**

Included on the COC must be the sample description, date and time of collection (including start and stop for composites), container size and type, preservative information, sample matrix, indication of whether the sample is a grab or composite, number of containers & a list of the tests to be performed. Poor sample collection technique, inappropriate sampling containers and/or improper sample preservation may lead to sample rejection. Suitable sample containers, labels, and preservatives (as applicable), along with blank COCs are provided at no additional cost.

**Turnaround Times (TAT)**

Average TAT for test results range from 5 to 15 working days depending on the specific analyses and time of year submitted. Faster turnaround times (\*RUSH TAT) may be available depending on the current workload in a particular department and the nature of the analyses requested. We encourage you to verify requests for expedited sample results with one of our Technical Directors prior to sample submittal. Without confirmation from a Technical Director, your results may not be completed by your deadline. \*RUSH TAT Surcharges are applied for expedited turnaround times.

**Analytical Results, Sample Collection Integrity & Subcontracting**

Analytical values are for the sample as submitted and relate only to the item tested. The value indicates a snapshot of the constituent content of the sample at the time of sample collection. Analytical results can be impacted by poor sample collection technique and/or improper preservation. All sample collection completed by MJRA was performed in accordance with applicable regulatory protocols or as specified in customer specific sampling plans. Constituent content will vary over time based on the matrix of the sample and the physical and chemical changes to its environment. All sample results and laboratory reports are strictly confidential. Results will not be available to anyone except the primary client or authorized party representing the client unless MJRA receives additional permissions from the client. When necessary, MJRA will subcontract certain analyses to a third party accredited laboratory. If client prohibits subcontracting, it must be provided in writing and include instruction on how to proceed with client samples that require third party analyses.

**Payment Terms**

Payment Terms are Net 30 days. Prices are subject to change without notice. A standing monthly charge of 1.5% of the clients over-30-day-unpaid balance may be added to the balance after 30 days and each month thereafter (day 31, 61, 91 etc.). The laboratory accepts all major credit cards, ACH transactions, checks and cash. New clients must pay for all services rendered prior to sample collection and/or in some cases report processing. Clients must contact the MJRA accounting department to pursue a credit-based account. MJRA reserves the right to terminate the client's credit account and to refuse to perform additional services on a credit basis if any balance is outstanding for more than 60 days.

**Warranty & Litigation**

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the day of its discovery and within one year of the date of invoice.

Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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NELAC accreditations for various drinking water, wastewater and solid & chemical materials analytes.  
Additional accreditations by MD (261), NY(12094)



# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2226696

**Report:** 09/15/22

**Lab Contact:** Richard A Wheeler

**Attention:** David Wertz

**Project:** 2022 - Blue Marsh Reservoir

**Reported To:** Tetra Tech

USACE, Phila Dist. Env.Resources Branch 100 Penn Square E.  
Arlington, VA 22201

**Narrative:** Amended  
09/15/2022

2226696 received on 08/18/2022 14:00 was originally reported on 08/25/2022.

This certificate is a supplement to the original and has been amended to document the MDL change for NO3-N EPA 300.0.

**Lab ID:** 2226696-01      **Collected By:** Client      **Sampled:** 08/15/22 07:45      **Received:** 08/15/22 14:30  
**Sample Desc:** BM-1S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.06	mg/l		0.01	SM 4500-P F	08/17/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	166	mg CaCO3/L		2	SM 2320 B	08/16/22		APR
Ammonia as N	1.49	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	08/17/22		MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	08/15/22 18:20		LES
Nitrate as N	0.87	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	08/15/22 22:25	J	JAF
Nitrite as N	0.04	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/15/22 22:25	J	JAF
Nitrate+Nitrite as N	0.91	mg/l	0.198	1.10	CALCULATED	08/15/22 22:25		JAF
Nitrogen, Total Kjeldahl (TKN)	1.75	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	08/22/22		SNF
Phosphorus as P, Total	0.10	mg/l	0.01	0.01	SM 4500-P F	08/17/22		MRW
Solids, Total Dissolved	221	mg/l	4	5	SM 2540 C	08/16/22		TMH
Total Organic Carbon	2.9	mg/l	0.3	0.5	SM 5310 C	08/16/22		ALD
Solids, Total Suspended	5	mg/l	1	1	SM 2540 D	08/16/22	Q-19a	ALD
	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>								
Escherichia coli	6	mpn/100ml	1	SM 9223 B/Quantitray	8/15/22 15:18	8/16/22 9:19		JMW
Total Coliform	1300	mpn/100ml	1	SM 9223 B/Quantitray	8/15/22 15:18	8/16/22 9:19		JMW



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Additional accreditations by MD (261), NY(12094)

**M.J. Reider Associates, Inc.**

**Lab ID:** 2226696-02      **Collected By:** Client      **Sampled:** 08/15/22 09:45      **Received:** 08/15/22 14:30  
**Sample Desc:** BM-2S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	08/17/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	76	mg CaCO <sub>3</sub> /L		2	SM 2320 B	08/16/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	08/17/22	U	MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	08/15/22 18:20		LES
Nitrate as N	1.92	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	08/15/22 21:01		JAF
Nitrite as N	0.05	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/15/22 21:01	J	JAF
Nitrate+Nitrite as N	1.97	mg/l	0.198	1.10	CALCULATED	08/15/22 21:01		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	08/22/22	U	SNF
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	08/17/22		MRW
Solids, Total Dissolved	153	mg/l	4	5	SM 2540 C	08/16/22		TMH
Total Organic Carbon	3.3	mg/l	0.3	0.5	SM 5310 C	08/16/22		ALD
Solids, Total Suspended	4	mg/l	1	1	SM 2540 D	08/16/22		ALD
	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>								
Escherichia coli	<1	mpn/100ml	1	SM 9223 B/Quantitray	8/15/22 15:18	8/16/22 9:19		JMW
Total Coliform	365	mpn/100ml	1	SM 9223 B/Quantitray	8/15/22 15:18	8/16/22 9:19		JMW



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 Additional accreditations by MD (261), NY(12094)

**M.J. Reider Associates, Inc.**

**Lab ID:** 2226696-03      **Collected By:** Client      **Sampled:** 08/15/22 09:45      **Received:** 08/15/22 14:30  
**Sample Desc:** BM-2M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	08/17/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	78	mg CaCO <sub>3</sub> /L		2	SM 2320 B	08/16/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	08/17/22	U	MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	08/15/22 17:52		LES
Nitrate as N	1.91	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	08/15/22 19:03		JAF
Nitrite as N	0.05	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/15/22 19:03	J	JAF
Nitrate+Nitrite as N	1.96	mg/l	0.198	1.10	CALCULATED	08/15/22 19:03		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	08/22/22	U	SNF
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	08/17/22		MRW
Solids, Total Dissolved	134	mg/l	4	5	SM 2540 C	08/16/22		TMH
Total Organic Carbon	2.8	mg/l	0.3	0.5	SM 5310 C	08/16/22		ALD
Solids, Total Suspended	2	mg/l	1	1	SM 2540 D	08/16/22		ALD

**Lab ID:** 2226696-04      **Collected By:** Client      **Sampled:** 08/15/22 09:45      **Received:** 08/15/22 14:30  
**Sample Desc:** BM-2D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	08/17/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	75	mg CaCO <sub>3</sub> /L		2	SM 2320 B	08/16/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	08/17/22	U	MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	08/15/22 17:52		LES
Nitrate as N	1.92	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	08/15/22 23:49		JAF
Nitrite as N	0.04	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/15/22 23:49	J	JAF
Nitrate+Nitrite as N	1.96	mg/l	0.198	1.10	CALCULATED	08/15/22 23:49		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	08/22/22	U	SNF
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	08/17/22		MRW
Solids, Total Dissolved	170	mg/l	4	5	SM 2540 C	08/16/22		TMH
Total Organic Carbon	2.7	mg/l	0.3	0.5	SM 5310 C	08/16/22		ALD
Solids, Total Suspended	2	mg/l	1	1	SM 2540 D	08/16/22		ALD



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2226696-05      **Collected By:** Client      **Sampled:** 08/15/22 13:45      **Received:** 08/15/22 14:30  
**Sample Desc:** BM-5S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.04	mg/l		0.01	SM 4500-P F	08/17/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	193	mg CaCO <sub>3</sub> /L		2	SM 2320 B	08/16/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	08/17/22	U	MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	08/15/22 18:20		LES
Nitrate as N	5.72	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	08/15/22 20:10		JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/15/22 20:10	U	JAF
Nitrate+Nitrite as N	<5.73	mg/l	0.198	1.10	CALCULATED	08/15/22 20:10		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	08/22/22	U	SNF
Phosphorus as P, Total	0.06	mg/l	0.01	0.01	SM 4500-P F	08/17/22		MRW
Solids, Total Dissolved	337	mg/l	4	5	SM 2540 C	08/16/22		TMH
Total Organic Carbon	2.0	mg/l	0.3	0.5	SM 5310 C	08/16/22		ALD
Solids, Total Suspended	4	mg/l	1	1	SM 2540 D	08/16/22		ALD
	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>								
Escherichia coli	105	mpn/100ml	1	SM 9223 B/Quantitray	8/15/22 15:18	8/16/22 9:19		JMW
Total Coliform	>2420	mpn/100ml	1	SM 9223 B/Quantitray	8/15/22 15:18	8/16/22 9:19		JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2226696-06      **Collected By:** Client      **Sampled:** 08/15/22 09:30      **Received:** 08/15/22 14:30  
**Sample Desc:** BM-6S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	08/17/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	77	mg CaCO <sub>3</sub> /L		2	SM 2320 B	08/16/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	08/17/22	U	MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	08/15/22 17:52		LES
Nitrate as N	1.92	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	08/15/22 19:20		JAF
Nitrite as N	0.04	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/15/22 19:20	J	JAF
Nitrate+Nitrite as N	1.96	mg/l	0.198	1.10	CALCULATED	08/15/22 19:20		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	08/22/22	U	SNF
Phosphorus as P, Total	0.01	mg/l	0.01	0.01	SM 4500-P F	08/17/22		MRW
Solids, Total Dissolved	172	mg/l	4	5	SM 2540 C	08/16/22		TMH
Total Organic Carbon	2.8	mg/l	0.3	0.5	SM 5310 C	08/16/22		ALD
Solids, Total Suspended	8	mg/l	1	1	SM 2540 D	08/16/22		ALD
	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>								
Escherichia coli	9	mpn/100ml	1	SM 9223 B/Quantitray	8/15/22 15:18	8/16/22 9:19		JMW
Total Coliform	2420	mpn/100ml	1	SM 9223 B/Quantitray	8/15/22 15:18	8/16/22 9:19		JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2226696-07      **Collected By:** Client      **Sampled:** 08/15/22 09:30      **Received:** 08/15/22 14:30  
**Sample Desc:** BM-6M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	08/17/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	80	mg CaCO <sub>3</sub> /L		2	SM 2320 B	08/16/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	08/17/22	U	MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	08/15/22 18:20		LES
Nitrate as N	1.93	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	08/15/22 18:29		JAF
Nitrite as N	0.04	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/15/22 18:29	J	JAF
Nitrate+Nitrite as N	1.97	mg/l	0.198	1.10	CALCULATED	08/15/22 18:29		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	08/22/22	U	SNF
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	08/17/22		MRW
Solids, Total Dissolved	174	mg/l	4	5	SM 2540 C	08/16/22		TMH
Total Organic Carbon	2.7	mg/l	0.3	0.5	SM 5310 C	08/16/22		ALD
Solids, Total Suspended	4	mg/l	1	1	SM 2540 D	08/16/22		ALD

**Lab ID:** 2226696-08      **Collected By:** Client      **Sampled:** 08/15/22 09:30      **Received:** 08/15/22 14:30  
**Sample Desc:** BM-6D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	08/17/22	G-23, G-24	MRW
<b>Dissolved Metals</b>								
Arsenic	0.001	mg/l		0.001	EPA 200.8 Rev 5.4	08/18/22	G-23, G-24	MPB
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	85	mg CaCO <sub>3</sub> /L		2	SM 2320 B	08/16/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	08/17/22	U	MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	08/15/22 18:20		LES
Nitrate as N	1.96	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	08/15/22 18:12		JAF
Nitrite as N	0.04	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/15/22 18:12	J	JAF
Nitrate+Nitrite as N	2.00	mg/l	0.198	1.10	CALCULATED	08/15/22 18:12		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	08/22/22	U	SNF
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	08/17/22		MRW
Solids, Total Dissolved	185	mg/l	4	5	SM 2540 C	08/16/22		TMH
Total Organic Carbon	2.7	mg/l	0.3	0.5	SM 5310 C	08/16/22		ALD
Solids, Total Suspended	4	mg/l	1	1	SM 2540 D	08/16/22		ALD



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2226696-09      **Collected By:** Client      **Sampled:** 08/15/22 10:15      **Received:** 08/15/22 14:30  
**Sample Desc:** BM-7S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	08/17/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	85	mg CaCO <sub>3</sub> /L		2	SM 2320 B	08/16/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	08/17/22	U	MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	08/15/22 18:20		LES
Nitrate as N	1.95	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	08/16/22 1:13		JAF
Nitrite as N	0.05	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/16/22 1:13	J	JAF
Nitrate+Nitrite as N	2.00	mg/l	0.198	1.10	CALCULATED	08/16/22 1:13		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	08/22/22	U	SNF
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	08/17/22		MRW
Solids, Total Dissolved	174	mg/l	4	5	SM 2540 C	08/16/22		TMH
Total Organic Carbon	2.7	mg/l	0.3	0.5	SM 5310 C	08/16/22		ALD
Solids, Total Suspended	4	mg/l	1	1	SM 2540 D	08/16/22		ALD
	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>								
Escherichia coli	1	mpn/100ml	1	SM 9223 B/Quantitray	8/15/22 15:18	8/16/22 9:19		JMW
Total Coliform	980	mpn/100ml	1	SM 9223 B/Quantitray	8/15/22 15:18	8/16/22 9:19		JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2226696-10      **Collected By:** Client      **Sampled:** 08/15/22 10:15      **Received:** 08/15/22 14:30  
**Sample Desc:** BM-7M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	08/17/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	78	mg CaCO <sub>3</sub> /L		2	SM 2320 B	08/16/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	08/17/22	U	MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	08/15/22 17:52		LES
Nitrate as N	1.94	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	08/16/22 0:39		JAF
Nitrite as N	0.06	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/16/22 0:39	J	JAF
Nitrate+Nitrite as N	2.00	mg/l	0.198	1.10	CALCULATED	08/16/22 0:39		JAF
Nitrogen, Total Kjeldahl (TKN)	0.45	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	08/22/22	J	SNF
Phosphorus as P, Total	0.01	mg/l	0.01	0.01	SM 4500-P F	08/17/22		MRW
Solids, Total Dissolved	173	mg/l	4	5	SM 2540 C	08/16/22		TMH
Total Organic Carbon	2.7	mg/l	0.3	0.5	SM 5310 C	08/16/22		ALD
Solids, Total Suspended	4	mg/l	1	1	SM 2540 D	08/16/22		ALD

**Lab ID:** 2226696-11      **Collected By:** Client      **Sampled:** 08/15/22 10:15      **Received:** 08/15/22 14:30  
**Sample Desc:** BM-7D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	08/17/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	78	mg CaCO <sub>3</sub> /L		2	SM 2320 B	08/16/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	08/17/22	U	MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	08/15/22 18:20		LES
Nitrate as N	1.93	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	08/16/22 0:56		JAF
Nitrite as N	0.05	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/16/22 0:56	J	JAF
Nitrate+Nitrite as N	1.98	mg/l	0.198	1.10	CALCULATED	08/16/22 0:56		JAF
Nitrogen, Total Kjeldahl (TKN)	0.54	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	08/22/22		SNF
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	08/17/22		MRW
Solids, Total Dissolved	177	mg/l	4	5	SM 2540 C	08/16/22		TMH
Total Organic Carbon	2.6	mg/l	0.3	0.5	SM 5310 C	08/16/22		ALD
Solids, Total Suspended	4	mg/l	1	1	SM 2540 D	08/16/22	Q-19	ALD



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2226696-12      **Collected By:** Client      **Sampled:** 08/15/22 12:30      **Received:** 08/15/22 14:30  
**Sample Desc:** BM-8S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	08/17/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	74	mg CaCO <sub>3</sub> /L		2	SM 2320 B	08/16/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	08/17/22	U	MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	08/15/22 17:52		LES
Nitrate as N	1.79	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	08/16/22 1:30		JAF
Nitrite as N	0.04	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/16/22 1:30	J	JAF
Nitrate+Nitrite as N	1.83	mg/l	0.198	1.10	CALCULATED	08/16/22 1:30		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	08/22/22	U	SNF
Phosphorus as P, Total	0.01	mg/l	0.01	0.01	SM 4500-P F	08/17/22		MRW
Solids, Total Dissolved	185	mg/l	4	5	SM 2540 C	08/16/22		TMH
Total Organic Carbon	2.8	mg/l	0.3	0.5	SM 5310 C	08/16/22		ALD
Solids, Total Suspended	6	mg/l	1	1	SM 2540 D	08/16/22		ALD
	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>								
Escherichia coli	1	mpn/100ml	1	SM 9223 B/Quantitray	8/15/22 15:18	8/16/22 9:19		JMW
Total Coliform	411	mpn/100ml	1	SM 9223 B/Quantitray	8/15/22 15:18	8/16/22 9:19		JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2226696-13      **Collected By:** Client      **Sampled:** 08/15/22 12:30      **Received:** 08/15/22 14:30  
**Sample Desc:** BM-8M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	08/17/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	88	mg CaCO <sub>3</sub> /L		2	SM 2320 B	08/16/22		APR
Ammonia as N	0.31	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	08/17/22		MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	08/15/22 17:52		LES
Nitrate as N	1.78	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	08/15/22 21:17		JAF
Nitrite as N	0.09	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/15/22 21:17	J	JAF
Nitrate+Nitrite as N	1.87	mg/l	0.198	1.10	CALCULATED	08/15/22 21:17		JAF
Nitrogen, Total Kjeldahl (TKN)	0.71	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	08/22/22		SNF
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	08/17/22		MRW
Solids, Total Dissolved	189	mg/l	4	5	SM 2540 C	08/16/22		TMH
Total Organic Carbon	2.6	mg/l	0.3	0.5	SM 5310 C	08/16/22		ALD
Solids, Total Suspended	7	mg/l	1	1	SM 2540 D	08/16/22		ALD

**Lab ID:** 2226696-14      **Collected By:** Client      **Sampled:** 08/15/22 12:30      **Received:** 08/15/22 14:30  
**Sample Desc:** BM-8D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	08/17/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	96	mg CaCO <sub>3</sub> /L		2	SM 2320 B	08/16/22		APR
Ammonia as N	0.27	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	08/17/22		MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	08/15/22 18:20		LES
Nitrate as N	1.86	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	08/15/22 23:15		JAF
Nitrite as N	0.13	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/15/22 23:15		JAF
Nitrate+Nitrite as N	1.99	mg/l	0.198	1.10	CALCULATED	08/15/22 23:15		JAF
Nitrogen, Total Kjeldahl (TKN)	0.51	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	08/22/22		SNF
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	08/17/22		MRW
Solids, Total Dissolved	203	mg/l	4	5	SM 2540 C	08/16/22		TMH
Total Organic Carbon	2.6	mg/l	0.3	0.5	SM 5310 C	08/16/22		ALD
Solids, Total Suspended	11	mg/l	1	1	SM 2540 D	08/16/22		ALD



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2226696-15      **Collected By:** Client      **Sampled:** 08/15/22 12:00      **Received:** 08/15/22 14:30  
**Sample Desc:** BM-9S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	08/17/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	80	mg CaCO <sub>3</sub> /L		2	SM 2320 B	08/16/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	08/17/22	U	MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	08/15/22 17:52		LES
Nitrate as N	1.95	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	08/16/22 0:23		JAF
Nitrite as N	0.05	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/16/22 0:23	J	JAF
Nitrate+Nitrite as N	2.00	mg/l	0.198	1.10	CALCULATED	08/16/22 0:23		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	08/22/22	U	SNF
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	08/17/22		MRW
Solids, Total Dissolved	169	mg/l	4	5	SM 2540 C	08/16/22		TMH
Total Organic Carbon	2.8	mg/l	0.3	0.5	SM 5310 C	08/16/22		ALD
Solids, Total Suspended	5	mg/l	1	1	SM 2540 D	08/16/22		ALD
	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>								
Escherichia coli	1	mpn/100ml	1	SM 9223 B/Quantitray	8/15/22 15:18	8/16/22 9:19		JMW
Total Coliform	649	mpn/100ml	1	SM 9223 B/Quantitray	8/15/22 15:18	8/16/22 9:19		JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2226696-16      **Collected By:** Client      **Sampled:** 08/15/22 12:00      **Received:** 08/15/22 14:30  
**Sample Desc:** BM-9M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	08/17/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	85	mg CaCO <sub>3</sub> /L		2	SM 2320 B	08/16/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	08/17/22	U	MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	08/15/22 18:20		LES
Nitrate as N	1.90	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	08/16/22 0:06		JAF
Nitrite as N	0.06	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/16/22 0:06	J	JAF
Nitrate+Nitrite as N	1.96	mg/l	0.198	1.10	CALCULATED	08/16/22 0:06		JAF
Nitrogen, Total Kjeldahl (TKN)	0.50	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	08/22/22	J	SNF
Phosphorus as P, Total	0.01	mg/l	0.01	0.01	SM 4500-P F	08/17/22		MRW
Solids, Total Dissolved	158	mg/l	4	5	SM 2540 C	08/16/22		TMH
Total Organic Carbon	2.6	mg/l	0.3	0.5	SM 5310 C	08/16/22		ALD
Solids, Total Suspended	4	mg/l	1	1	SM 2540 D	08/16/22		ALD

**Lab ID:** 2226696-17      **Collected By:** Client      **Sampled:** 08/15/22 12:00      **Received:** 08/15/22 14:30  
**Sample Desc:** BM-9D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.02	mg/l		0.01	SM 4500-P F	08/17/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	133	mg CaCO <sub>3</sub> /L		2	SM 2320 B	08/16/22		APR
Ammonia as N	0.92	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	08/17/22		MRW
Biochemical Oxygen Demand	2.5	mg/l	2.0	2.0	SM 5210 B	08/15/22 17:52		LES
Nitrate as N	1.57	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	08/15/22 18:46		JAF
Nitrite as N	0.03	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/15/22 18:46	J	JAF
Nitrate+Nitrite as N	1.60	mg/l	0.198	1.10	CALCULATED	08/15/22 18:46		JAF
Nitrogen, Total Kjeldahl (TKN)	1.31	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	08/22/22		SNF
Phosphorus as P, Total	0.07	mg/l	0.01	0.01	SM 4500-P F	08/17/22		MRW
Solids, Total Dissolved	231	mg/l	4	5	SM 2540 C	08/16/22		TMH
Total Organic Carbon	2.5	mg/l	0.3	0.5	SM 5310 C	08/16/22		ALD
Solids, Total Suspended	15	mg/l	1	1	SM 2540 D	08/16/22		ALD



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2226696-18      **Collected By:** Client      **Sampled:** 08/15/22 11:15      **Received:** 08/15/22 14:30  
**Sample Desc:** BM-10S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	08/17/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	95	mg CaCO <sub>3</sub> /L		2	SM 2320 B	08/16/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	08/17/22	U	MRW
Biochemical Oxygen Demand	3.4	mg/l	2.0	2.0	SM 5210 B	08/15/22 17:52		LES
Nitrate as N	2.07	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	08/15/22 20:44		JAF
Nitrite as N	0.03	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/15/22 20:44	J	JAF
Nitrate+Nitrite as N	2.10	mg/l	0.198	1.10	CALCULATED	08/15/22 20:44		JAF
Nitrogen, Total Kjeldahl (TKN)	0.51	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	08/22/22		SNF
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	08/17/22		MRW
Solids, Total Dissolved	197	mg/l	4	5	SM 2540 C	08/16/22		TMH
Total Organic Carbon	2.8	mg/l	0.3	0.5	SM 5310 C	08/16/22		ALD
Solids, Total Suspended	9	mg/l	1	1	SM 2540 D	08/16/22		ALD
	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>								
Escherichia coli	1	mpn/100ml	1	SM 9223 B/Quantitray	8/15/22 15:18	8/16/22 9:19		JMW
Total Coliform	461	mpn/100ml	1	SM 9223 B/Quantitray	8/15/22 15:18	8/16/22 9:19		JMW



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2226696-19      **Collected By:** Client      **Sampled:** 08/15/22 11:15      **Received:** 08/15/22 14:30  
**Sample Desc:** BM-10M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.02	mg/l		0.01	SM 4500-P F	08/17/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	115	mg CaCO <sub>3</sub> /L		2	SM 2320 B	08/16/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	08/17/22	U	MRW
Biochemical Oxygen Demand	2.2	mg/l	2.0	2.0	SM 5210 B	08/15/22 17:52		LES
Nitrate as N	2.47	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	08/15/22 23:32		JAF
Nitrite as N	0.03	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/15/22 23:32	J	JAF
Nitrate+Nitrite as N	2.50	mg/l	0.198	1.10	CALCULATED	08/15/22 23:32		JAF
Nitrogen, Total Kjeldahl (TKN)	0.75	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	08/22/22		SNF
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	08/17/22		MRW
Solids, Total Dissolved	209	mg/l	4	5	SM 2540 C	08/16/22		TMH
Total Organic Carbon	2.6	mg/l	0.3	0.5	SM 5310 C	08/16/22		ALD
Solids, Total Suspended	7	mg/l	1	1	SM 2540 D	08/16/22		ALD

**Lab ID:** 2226696-20      **Collected By:** Client      **Sampled:** 08/15/22 11:15      **Received:** 08/15/22 14:30  
**Sample Desc:** BM-10D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.03	mg/l		0.01	SM 4500-P F	08/17/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	145	mg CaCO <sub>3</sub> /L		2	SM 2320 B	08/16/22		APR
Ammonia as N	0.06	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	08/17/22		MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	08/15/22 18:20		LES
Nitrate as N	3.68	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	08/15/22 17:22		JAF
Nitrite as N	0.02	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/15/22 17:22	J	JAF
Nitrate+Nitrite as N	3.70	mg/l	0.198	1.10	CALCULATED	08/15/22 17:22		JAF
Nitrogen, Total Kjeldahl (TKN)	0.87	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	08/22/22		SNF
Phosphorus as P, Total	0.05	mg/l	0.01	0.01	SM 4500-P F	08/17/22		MRW
Solids, Total Dissolved	255	mg/l	4	5	SM 2540 C	08/16/22		TMH
Total Organic Carbon	2.4	mg/l	0.3	0.5	SM 5310 C	08/16/22		ALD
Solids, Total Suspended	35	mg/l	1	1	SM 2540 D	08/16/22		ALD



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2226696-21      **Collected By:** Client      **Sampled:** 08/15/22 13:45      **Received:** 08/15/22 14:30  
**Sample Desc:** BM-11S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.05	mg/l		0.01	SM 4500-P F	08/18/22	G-23, G-24	MRW
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	152	mg CaCO <sub>3</sub> /L		2	SM 2320 B	08/16/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	08/17/22	U	MRW
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	08/15/22 18:20		LES
Nitrate as N	4.07	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	08/15/22 20:27		JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/15/22 20:27	U	JAF
Nitrate+Nitrite as N	<4.08	mg/l	0.198	1.10	CALCULATED	08/15/22 20:27		JAF
Nitrogen, Total Kjeldahl (TKN)	0.44	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	08/22/22	J	SNF
Phosphorus as P, Total	0.04	mg/l	0.01	0.01	SM 4500-P F	08/17/22		MRW
Solids, Total Dissolved	260	mg/l	4	5	SM 2540 C	08/16/22		TMH
Total Organic Carbon	2.4	mg/l	0.3	0.5	SM 5310 C	08/16/22		ALD
Solids, Total Suspended	1	mg/l	1	1	SM 2540 D	08/16/22		ALD
<b>Microbiology</b>								
Escherichia coli	225	mpn/100ml	1		SM 9223 B/Quantitray	8/15/22 15:18	8/16/22 9:19	JMW
Total Coliform	>2420	mpn/100ml	1		SM 9223 B/Quantitray	8/15/22 15:18	8/16/22 9:19	JMW



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Preparation Methods

Specific Method	Preparation Method	Prep Batch	Prepared Date	Prepared By
<b>2226696-01</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0963	08/16/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0997	08/17/2022	SNF
<b>2226696-02</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0963	08/16/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0997	08/17/2022	SNF
<b>2226696-03</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0963	08/16/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0997	08/17/2022	SNF
<b>2226696-04</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0963	08/16/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0997	08/17/2022	SNF
<b>2226696-05</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0963	08/16/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0997	08/17/2022	SNF
<b>2226696-06</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0963	08/16/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0997	08/17/2022	SNF
<b>2226696-07</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0963	08/16/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0997	08/17/2022	SNF
<b>2226696-08</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0963	08/16/2022	MRW
<b>Dissolved Metals</b>				
EPA 200.8 Rev 5.4	EPA 200.2 Rev 2.8	B2H0966	08/17/2022	HRG
<b>General Chemistry</b>				



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SM 4500-P F	SM 4500-P B	B2H0997	08/17/2022	SNF
<b>2226696-09</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0963	08/16/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0997	08/17/2022	SNF
<b>2226696-10</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0963	08/16/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0997	08/17/2022	SNF
<b>2226696-11</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0963	08/16/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0997	08/17/2022	SNF
<b>2226696-12</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0963	08/16/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0997	08/17/2022	SNF
<b>2226696-13</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0963	08/16/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0997	08/17/2022	SNF
<b>2226696-14</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0963	08/16/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0997	08/17/2022	SNF
<b>2226696-15</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0963	08/16/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0997	08/17/2022	SNF
<b>2226696-16</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0963	08/16/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0997	08/17/2022	SNF
<b>2226696-17</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0963	08/16/2022	MRW
<b>General Chemistry</b>				



107 Angelica Street ○ Reading, PA 19611 ○ [www.mjreider.com](http://www.mjreider.com) ○ (610) 374-5129 ○ fax (610) 374-7234

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NELAC accreditations for various drinking water, wastewater and solid & chemical materials analytes.

Additional accreditations by MD (261), NY(12094)

**M.J. Reider Associates, Inc.**

SM 4500-P F	SM 4500-P B	B2H0997	08/17/2022	SNF
<b>2226696-18</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0963	08/16/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0997	08/17/2022	SNF
<b>2226696-19</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0963	08/16/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0997	08/17/2022	SNF
<b>2226696-20</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0963	08/16/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H0997	08/17/2022	SNF
<b>2226696-21</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H1053	08/17/2022	MRW
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2H1003	08/17/2022	SNF

**Notes and Definitions**

- G-23 The sample was filtered after it was received at the laboratory and outside of the 15-minute hold time.
- G-24 The sample was preserved in the laboratory and outside of the 15-minute hold time.
- J Estimated value
- Q-19 The duplicate RPD was greater than 10% at 22.2%.
- Q-19a The duplicate RPD was greater than 10% at 50.0%.
- U Analyte was not detected above the indicated value.



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Additional accreditations by MD (261), NY(12094)



**M.J. Reider Associates, Inc.**

107 Angelica St, Reading PA, 19611  
610-374-5129 www.mjreider.com

**WORK ORDER  
Chain of Custody**

2226696



Client Code: 3157

Project Manager: Richard A Wheeler

Report To: Tetra Tech - David Wertz - USACE, Phila Dist. Env.Resources Branch 100 Penn Square E., Arlington, VA 22201

Invoice To: Tetra Tech - David Wertz - USACE, Phila Dist. Env.Resources Branch 100 Penn Square E., Arlington, VA 22201

Client: Tetra Tech

Project: 2022 - Blue Marsh Reservoir

Collected By :  
(Full Name)

*Gregory Wacik*

Comments: \_\_\_\_\_

**2226696-01 BM-1S**

*JAF JAF*  
BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B  
Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water

Type: Grab

Date: 8/15/22  
Time: 0745

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - Sterile PI 125ml NaThio
- D - PI 500ml H2SO4
- E - PI 250ml NP
- F - PI 500ml Lab Filtered
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc
- I - Vial Amber 40ml H3PO4, minimal hdspc

**2226696-02 BM-2S**

*AKD JAF JAF*  
PO4-D SM 4500P-F, TC (#) SM 9223B, BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2  
TSS SM 2540D, TOC SM 5310C, TDS SM 2540C, Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TKN EPA 351.2

Matrix: Non-Potable Water

Type: Grab

Date: 8/15/22  
Time: 0945

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - Sterile PI 125ml NaThio
- D - PI 500ml H2SO4
- E - PI 250ml NP
- F - PI 500ml Lab Filtered
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc
- I - Vial Amber 40ml H3PO4, minimal hdspc

*[Signature]*

8/15/22 1400

Relinquished By

Date/Time

*[Signature]*

8-15-22 1400

Received By

Date/Time

Relinquished By

Date/Time

Received By

Date/Time

Relinquished By

Date/Time

*[Signature]*

8-15-22 1430

Received at Laboratory By

Date/Time

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

Sample Kit Prepared By: <i>JBS</i>	Date/Time
Sample Temp (°C): 4.9	
Samples on Ice? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>	
Approved By: <i>[Signature]</i>	
Entered By:	



Client Code: 3157
Project Manager: Richard A Wheeler

Client: Tetra Tech
Project: 2022 - Blue Marsh Reservoir

Collected By: Gregory Wacik
(Full Name)

Comments:

2226696-03 BM-2M

PO4-D SM 4500P-F, NO3-N EPA 300.0, BOD SM 5210B, NO2-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2
TDS SM 2540C, Alk SM 2320B, NH3-N EPA 350.1, TSS SM 2540D, PO4 SM 4500P-F, TKN EPA 351.2, TOC SM 5310C

Matrix: Non-Potable Water
Type: Grab

Date: 8/15/22
Time: 0945

- A - PI 500ml NP, minimal hdspc
B - PI Liter NP
C - PI 500ml H2SO4
D - PI 250ml NP
E - PI 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2226696-04 BM-2D

BOD SM 5210B, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, NO2-N EPA 300.0, NO3-N EPA 300.0
Alk SM 2320B, PO4 SM 4500P-F, TSS SM 2540D, NH3-N EPA 350.1, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C

Matrix: Non-Potable Water
Type: Grab

Date: 8/15/22
Time: 0945

- A - PI 500ml NP, minimal hdspc
B - PI Liter NP
C - PI 500ml H2SO4
D - PI 250ml NP
E - PI 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2226696-05 BM-5S

BOD SM 5210B, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, EC (#) SM 9223B Confirmation,
NO2-N EPA 300.0, PO4-D SM 4500P-F, TC (#) SM 9223B
Alk SM 2320B, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, NH3-N EPA 350.1, TSS SM 2540D

Matrix: Non-Potable Water
Type: Grab

Date: 8/15/22
Time: 1345

- A - PI 500ml NP, minimal hdspc
B - PI Liter NP
C - Sterile PI 125ml NaThio
D - PI 500ml H2SO4
E - PI 250ml NP
F - PI 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] Date/Time: 8/15/22 1400

Received By: Benny Wacik Date/Time: 8-15-22 1400

Relinquished By: Date/Time:

Received By: Benny Wacik Date/Time:

Relinquished By: Date/Time:

Received at Laboratory By: Date/Time: 8-15-22 1430

Table with 2 columns: Sample Kit Prepared By, Date/Time; Sample Temp (°C), Samples on Ice?, Approved By, Entered By.



Client Code: 3157

Project Manager: Richard A Wheeler

Client: Tetra Tech

Project: 2022 - Blue Marsh Reservoir

Collected By :  
(Full Name)

*Gregory Wacik*

Comments: \_\_\_\_\_

2226696-06 BM-6S

EC (#) SM 9223B Confirmation, PO4-D SM 4500P-F, TC (#) SM 9223B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2 NH3-N EPA 350.1, TDS SM 2540C, Alk SM 2320B, PO4 SM 4500P-F, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water

Type: Grab

Date: *8/15/22*  
Time: *09:30*

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - Sterile PI 125ml NaThio
- D - PI 500ml H2SO4
- E - PI 250ml NP
- F - PI 500ml Lab Filtered
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc
- I - Vial Amber 40ml H3PO4, minimal hdspc

2226696-07 BM-6M

BOD SM 5210B, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, NO2-N EPA 300.0, NO3-N EPA 300.0 Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TSS SM 2540D, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C

Matrix: Non-Potable Water

Type: Grab

Date: *8/15/22*  
Time: *09:30*

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - PI 500ml H2SO4
- D - PI 250ml NP
- E - PI 500ml Lab Filtered
- F - Vial Amber 40ml H3PO4, minimal hdspc
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc

2226696-08 BM-6D

NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, BOD SM 5210B, NO2-N EPA 300.0, PO4-D SM 4500P-F Alk SM 2320B, As-D EPA 200.8, PO4 SM 4500P-F, TOC SM 5310C, TSS SM 2540D, NH3-N EPA 350.1, TDS SM 2540C, TKN EPA 351.2

Matrix: Non-Potable Water

Type: Grab

Date: *8/15/22*  
Time: *09:30*

- A - PI 500ml NP, minimal hdspc
- B - PI 500ml Lab Filtered
- C - PI Liter NP
- D - PI 500ml H2SO4
- E - PI 250ml NP
- F - PI 500ml Lab Filtered
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc
- I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: *[Signature]* Date/Time: *8/15/22 1400*

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received By: *Benny Nhat* Date/Time: *8-15-22 1400*

Received By: *Benny Nhat* Date/Time: *8-15-22 1430*

Received at Laboratory By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Sample Kit Prepared By:	Date/Time
Sample Temp (°C):	<i>4.9</i>
Samples on Ice?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA
Approved By:	<i>BSW</i>
Entered By:	<i>[Signature]</i>



Client Code: 3157

Client: Tetra Tech

Project Manager: Richard A Wheeler

Project: 2022 - Blue Marsh Reservoir

Collected By :  
(Full Name)

*Gregory Wack*

Comments: \_\_\_\_\_

2226696-09 BM-7S

*JAF* *JAF*  
PO4-D SM 4500P-F, BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, TC (#) SM 9223B  
Alk SM 2320B, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D, NH3-N EPA 350.1

Matrix: Non-Potable Water  
Type: Grab

Date: 8/15/22  
Time: 1015

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - Sterile PI 125ml NaThio
- D - PI 500ml H2SO4
- E - PI 250ml NP
- F - PI 500ml Lab Filtered
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc
- I - Vial Amber 40ml H3PO4, minimal hdspc

2226696-10 BM-7M

*JAF* *JAF*  
BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F  
Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water  
Type: Grab

Date: 8/15/22  
Time: 1015

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - PI 500ml H2SO4
- D - PI 250ml NP
- E - PI 500ml Lab Filtered
- F - Vial Amber 40ml H3PO4, minimal hdspc
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc

2226696-11 BM-7D

*JAF* *JAF*  
BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F  
Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water  
Type: Grab

Date: 8/15/22  
Time: 1015

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - PI 500ml H2SO4
- D - PI 250ml NP
- E - PI 500ml Lab Filtered
- F - Vial Amber 40ml H3PO4, minimal hdspc
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By \_\_\_\_\_ Date/Time 8/15/22 1900

Received by *Benny Nant* Date/Time 8-15-22 1920

Relinquished By \_\_\_\_\_ Date/Time \_\_\_\_\_

Received by *Benny Nant* Date/Time \_\_\_\_\_

Relinquished By \_\_\_\_\_ Date/Time \_\_\_\_\_

Received at Laboratory By \_\_\_\_\_ Date/Time 8-15-22 1930

Sample Kit Prepared By:	Date/Time
Sample Temp (°C):	<u>4.9</u>
Samples on Ice?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>
Approved By:	<i>BEN</i>
Entered By:	



Client Code: 3157
Project Manager: Richard A Wheeler

Client: Tetra Tech
Project: 2022 - Blue Marsh Reservoir

Collected By: Gregory Wacik
(Full Name)

Comments:

2226696-12 BM-8S

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, PO4-D SM 4500P-F, TC (#) SM 9223B, NO2-N, NO3-N, Combined NO3+NO2
Alk SM 2320B, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D, PO4 SM 4500P-F, NH3-N EPA 350.1

Matrix: Non-Potable Water
Type: Grab

Date: 8/15/22
Time: 1230

- A - PI 500ml NP, minimal hdspc
B - PI Liter NP
C - Sterile PI 125ml NaThio
D - PI 500ml H2SO4
E - PI 250ml NP
F - PI 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

2226696-13 BM-8M

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F
Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water
Type: Grab

Date: 8/15/22
Time: 1230

- A - PI 500ml NP, minimal hdspc
B - PI Liter NP
C - PI 500ml H2SO4
D - PI 250ml NP
E - PI 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2226696-14 BM-8D

NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0
PO4 SM 4500P-F, TSS SM 2540D, Alk SM 2320B, NH3-N EPA 350.1, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C

Matrix: Non-Potable Water
Type: Grab

Date: 8/15/22
Time: 1230

- A - PI 500ml NP, minimal hdspc
B - PI Liter NP
C - PI 500ml H2SO4
D - PI 250ml NP
E - PI 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] Date/Time: 8/15/22 1400

Received By: Benny Wacik Date/Time: 8-15-22 1400

Relinquished By: Date/Time:

Received By: Benny Wacik Date/Time:

Relinquished By: Date/Time:

Received at Laboratory By: Benny Wacik Date/Time: 8-15-22 1430

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

Sample Kit Prepared By: Date/Time
Sample Temp (°C): 4.9
Samples on Ice? Yes No NA
Approved By: [Signature]
Entered By: [Signature]



Client Code: 3157
Project Manager: Richard A Wheeler

Client: Tetra Tech
Project: 2022 - Blue Marsh Reservoir

Collected By: Gregory Wacik

Comments:

2226696-15 BM-9S

BOD SM 5210B, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, Alk SM 2320B, PO4 SM 4500P-F, TOC SM 5310C, TDS SM 2540C, NH3-N EPA 350.1, TKN EPA 351.2, TSS SM 2540D

Matrix: Non-Potable Water
Type: Grab

Date: 8/15/22
Time: 1200

- A - PI 500ml NP, minimal hdspc
B - PI Liter NP
C - Sterile PI 125ml NaThio
D - PI 500ml H2SO4
E - PI 250ml NP
F - PI 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

2226696-16 BM-9M

BOD SM 5210B, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, NO2-N EPA 300.0, NO3-N EPA 300.0, Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TSS SM 2540D, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C

Matrix: Non-Potable Water
Type: Grab

Date: 8/15/22
Time: 1250

- A - PI 500ml NP, minimal hdspc
B - PI Liter NP
C - PI 500ml H2SO4
D - PI 250ml NP
E - PI 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2226696-17 BM-9D

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water
Type: Grab

Date: 8/15/22
Time: 1200

- A - PI 500ml NP, minimal hdspc
B - PI Liter NP
C - PI 500ml H2SO4
D - PI 250ml NP
E - PI 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] Date/Time: 8/15/22 1400

Received By: Benny Wacik Date/Time: 8-15-22 1400
Received By: Benny Wacik Date/Time: 8-15-22 1430
Received at Laboratory By: [Signature] Date/Time: [Blank]

Sample Kit Prepared By: Date/Time:
Sample Temp (°C): 4.9
Samples on Ice? Yes No NA
Approved By: [Signature]
Entered By: [Signature]



Client Code: 3157
Project Manager: Richard A Wheeler

Client: Tetra Tech
Project: 2022 - Blue Marsh Reservoir

Collected By: Gregory Wacik
(Full Name)

Comments:

2226696-18 BM-10S

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B
TSS SM 2540D, Alk SM 2320B, NH3-N EPA 350.1, TOC SM 5310C, TDS SM 2540C, TKN EPA 351.2, PO4 SM 4500P-F

Matrix: Non-Potable Water
Type: Grab

Date: 8/15/22
Time: 1115

- A - PI 500ml NP, minimal hdspc
B - PI Liter NP
C - Sterile PI 125ml NaThio
D - PI 500ml H2SO4
E - PI 250ml NP
F - PI 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

2226696-19 BM-10M

PO4-D SM 4500P-F, NO3-N EPA 300.0, NO2-N EPA 300.0, BOD SM 5210B, NO2-N, NO3-N, Combined NO3+NO2
TDS SM 2540C, TOC SM 5310C, TSS SM 2540D, Alk SM 2320B, PO4 SM 4500P-F, NH3-N EPA 350.1, TKN EPA 351.2

Matrix: Non-Potable Water
Type: Grab

Date: 8/15/22
Time: 1115

- A - PI 500ml NP, minimal hdspc
B - PI Liter NP
C - PI 500ml H2SO4
D - PI 250ml NP
E - PI 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2226696-20 BM-10D

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F
Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water
Type: Grab

Date: 8/15/22
Time: 1115

- A - PI 500ml NP, minimal hdspc
B - PI Liter NP
C - PI 500ml H2SO4
D - PI 250ml NP
E - PI 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] 8/15/22 1400

Received By: Benny Wacik 8-15-22 1400

Relinquished By: \_\_\_\_\_ Date/Time \_\_\_\_\_

Received By: Benny Wacik 8-15-22 1430

Relinquished By: \_\_\_\_\_ Date/Time \_\_\_\_\_

Received at Laboratory By: \_\_\_\_\_ Date/Time \_\_\_\_\_

Sample Kit Prepared By: \_\_\_\_\_ Date/Time \_\_\_\_\_
Sample Temp (°C): 4.9
Samples on Ice? Yes No NA
Approved By: [Signature]
Entered By: \_\_\_\_\_



Client Code: 3157

Client: Tetra Tech

Project Manager: Richard A Wheeler

Project: 2022 - Blue Marsh Reservoir

Collected By :  
(Full Name)

Gregory Waack

Comments: \_\_\_\_\_

2226696-21, BM-11S

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B  
TOC SM 5310C, TSS SM 2540D, Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2

Matrix: Non-Potable Water

Type: Grab

Date: 8/15/22  
Time: 145

- A - PI 500ml NP, minimal hdspc
- B - PI Liter NP
- C - Sterile PI 125ml NaThio
- D - PI 500ml H2SO4
- E - PI 250ml NP
- F - PI 500ml Lab Filtered
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc
- I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: Gregory Waack Date/Time: 8/15/22 1400 Received By: Benny Math Date/Time: 8-15-22 1402

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Received By: Benny Math Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Received at Laboratory By: Benny Math Date/Time: 8-15-22 1430

Sample Kit Prepared By:	Date/Time
Sample Temp (°C):	4.9
Samples on Ice?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
Approved By:	<u>BSW</u>
Entered By:	<u>BSW</u>

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

**M.J. Reider Associates, Inc.**

**MJRA Terms & Conditions**

All samples submitted must be accompanied by signed documentation representing a Chain of Custody (COC). The COC Record acts as a contract between the client and MJRA. Signing the COC form gives approval for MJRA to perform the requested analyses and is an agreement to pay for the cost of such analyses. COC Records must be completed in black or blue indelible ink (must not run when wet). COC documentation begins at the time of sample collection. Client is required to document all sample details prior to releasing samples to MJRA. All samples must be placed on ice immediately after sampling and shipped or delivered to the laboratory in a manner that will maintain the sample temperature above freezing and below 6C (loose ice is preferred).

**Sample Submission, Sample Acceptance & Sampling Containers**

Included on the COC must be the sample description, date and time of collection (including start and stop for composites), container size and type, preservative information, sample matrix, indication of whether the sample is a grab or composite, number of containers & a list of the tests to be performed. Poor sample collection technique, inappropriate sampling containers and/or improper sample preservation may lead to sample rejection. Suitable sample containers, labels, and preservatives (as applicable), along with blank COCs are provided at no additional cost.

**Turnaround Times (TAT)**

Average TAT for test results range from 5 to 15 working days depending on the specific analyses and time of year submitted. Faster turnaround times (\*RUSH TAT) may be available depending on the current workload in a particular department and the nature of the analyses requested. We encourage you to verify requests for expedited sample results with one of our Technical Directors prior to sample submittal. Without confirmation from a Technical Director, your results may not be completed by your deadline. \*RUSH TAT Surcharges are applied for expedited turnaround times.

**Analytical Results, Sample Collection Integrity & Subcontracting**

Analytical values are for the sample as submitted and relate only to the item tested. The value indicates a snapshot of the constituent content of the sample at the time of sample collection. Analytical results can be impacted by poor sample collection technique and/or improper preservation. All sample collection completed by MJRA was performed in accordance with applicable regulatory protocols or as specified in customer specific sampling plans. Constituent content will vary over time based on the matrix of the sample and the physical and chemical changes to its environment. All sample results and laboratory reports are strictly confidential. Results will not be available to anyone except the primary client or authorized party representing the client unless MJRA receives additional permissions from the client. When necessary, MJRA will subcontract certain analyses to a third party accredited laboratory. If client prohibits subcontracting, it must be provided in writing and include instruction on how to proceed with client samples that require third party analyses.

**Payment Terms**

Payment Terms are Net 30 days. Prices are subject to change without notice. A standing monthly charge of 1.5% of the clients over-30-day-unpaid balance may be added to the balance after 30 days and each month thereafter (day 31, 61, 91 etc.). The laboratory accepts all major credit cards, ACH transactions, checks and cash. New clients must pay for all services rendered prior to sample collection and/or in some cases report processing. Clients must contact the MJRA accounting department to pursue a credit-based account. MJRA reserves the right to terminate the client's credit account and to refuse to perform additional services on a credit basis if any balance is outstanding for more than 60 days.

**Warranty & Litigation**

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the day of its discovery and within one year of the date of invoice.

Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2229486

**Report:** 09/22/22

**Lab Contact:** Richard A Wheeler

**Attention:** David Wertz

**Project:** 2022 - Blue Marsh Reservoir

**Reported To:** Tetra Tech

USACE, Phila Dist. Env.Resources Branch 100 Penn Square E.  
Arlington, VA 22201

**Lab ID:** 2229486-01

**Collected By:** Client

**Sampled:** 09/12/22 07:45

**Received:** 09/12/22 14:40

**Sample Desc:** BM-1S

**Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.05	mg/l		0.01	SM 4500-P F	09/20/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	129	mg CaCO <sub>3</sub> /L		2	SM 2320 B	09/13/22		APR
Ammonia as N	1.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	09/19/22		SNF
Biochemical Oxygen Demand	3.4	mg/l	2.0	2.0	SM 5210 B	09/12/22 18:52		LES
Nitrate as N	1.21	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	09/13/22 1:21		JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	09/13/22 1:21	U	JAF
Nitrate+Nitrite as N	<1.22	mg/l	0.198	1.10	CALCULATED	09/13/22 1:21		JAF
Nitrogen, Total Kjeldahl (TKN)	1.75	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	09/15/22	Q-10	SNF
Phosphorus as P, Total	0.12	mg/l	0.01	0.01	SM 4500-P F	09/19/22		SNF
Solids, Total Dissolved	210	mg/l	4	5	SM 2540 C	09/13/22		TMH
Total Organic Carbon	3.1	mg/l	0.3	0.5	SM 5310 C	09/13/22		ALD
Solids, Total Suspended	7	mg/l	1	1	SM 2540 D	09/13/22		TMH
<b>Microbiology</b>								
Escherichia coli	12	mpn/100ml	1		SM 9223 B/Quantitray	9/12/22 15:24	9/13/22 10:59	RMB
Total Coliform	>2420	mpn/100ml	1		SM 9223 B/Quantitray	9/12/22 15:24	9/13/22 10:59	RMB



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2229486-02      **Collected By:** Client      **Sampled:** 09/12/22 11:45      **Received:** 09/12/22 14:40  
**Sample Desc:** BM-2S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	09/20/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	95	mg CaCO <sub>3</sub> /L		2	SM 2320 B	09/13/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	09/19/22	U	SNF
Biochemical Oxygen Demand	2.1	mg/l	2.0	2.0	SM 5210 B	09/12/22 18:53		LES
Nitrate as N	1.08	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	09/12/22 23:06		JAF
Nitrite as N	0.22	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	09/12/22 23:06		JAF
Nitrate+Nitrite as N	1.30	mg/l	0.198	1.10	CALCULATED	09/12/22 23:06		JAF
Nitrogen, Total Kjeldahl (TKN)	0.57	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	09/15/22		SNF
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	09/19/22		SNF
Solids, Total Dissolved	182	mg/l	4	5	SM 2540 C	09/13/22		TMH
Total Organic Carbon	3.0	mg/l	0.3	0.5	SM 5310 C	09/13/22		ALD
Solids, Total Suspended	5	mg/l	1	1	SM 2540 D	09/13/22		TMH
	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>								
Escherichia coli	<1	mpn/100ml	1	SM 9223 B/Quantitray	9/12/22 15:24	9/13/22 10:59		RMB
Total Coliform	248	mpn/100ml	1	SM 9223 B/Quantitray	9/12/22 15:24	9/13/22 10:59		RMB



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2229486-03      **Collected By:** Client      **Sampled:** 09/12/22 11:45      **Received:** 09/12/22 14:40  
**Sample Desc:** BM-2M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	09/20/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	116	mg CaCO <sub>3</sub> /L		2	SM 2320 B	09/13/22		APR
Ammonia as N	0.22	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	09/19/22		SNF
Biochemical Oxygen Demand	4.7	mg/l	2.0	2.0	SM 5210 B	09/12/22 18:52		LES
Nitrate as N	1.42	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	09/13/22 1:38		JAF
Nitrite as N	0.40	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	09/13/22 1:38		JAF
Nitrate+Nitrite as N	1.82	mg/l	0.198	1.10	CALCULATED	09/13/22 1:38		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	09/15/22	U	SNF
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P F	09/19/22		SNF
Solids, Total Dissolved	204	mg/l	4	5	SM 2540 C	09/13/22		TMH
Total Organic Carbon	2.6	mg/l	0.3	0.5	SM 5310 C	09/13/22		ALD
Solids, Total Suspended	4	mg/l	1	1	SM 2540 D	09/13/22		TMH

**Lab ID:** 2229486-04      **Collected By:** Client      **Sampled:** 09/12/22 11:45      **Received:** 09/12/22 14:40  
**Sample Desc:** BM-2D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.01	mg/l		0.01	SM 4500-P F	09/20/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	114	mg CaCO <sub>3</sub> /L		2	SM 2320 B	09/13/22		APR
Ammonia as N	0.42	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	09/19/22		SNF
Biochemical Oxygen Demand	3.7	mg/l	2.0	2.0	SM 5210 B	09/12/22 18:52		LES
Nitrate as N	1.65	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	09/13/22 0:47		JAF
Nitrite as N	0.18	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	09/13/22 0:47		JAF
Nitrate+Nitrite as N	1.83	mg/l	0.198	1.10	CALCULATED	09/13/22 0:47		JAF
Nitrogen, Total Kjeldahl (TKN)	0.72	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	09/15/22		SNF
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P F	09/19/22		SNF
Solids, Total Dissolved	204	mg/l	4	5	SM 2540 C	09/13/22		TMH
Total Organic Carbon	3.1	mg/l	0.3	0.5	SM 5310 C	09/13/22		ALD
Solids, Total Suspended	4	mg/l	1	1	SM 2540 D	09/13/22		TMH



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2229486-05      **Collected By:** Client      **Sampled:** 09/12/22 13:30      **Received:** 09/12/22 14:40  
**Sample Desc:** BM-5S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.12	mg/l		0.01	SM 4500-P F	09/20/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	185	mg CaCO <sub>3</sub> /L		2	SM 2320 B	09/13/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	09/19/22	U	SNF
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	09/12/22 18:52		LES
Nitrate as N	5.36	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	09/12/22 22:49		JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	09/12/22 22:49	U	JAF
Nitrate+Nitrite as N	<5.37	mg/l	0.198	1.10	CALCULATED	09/12/22 22:49		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	09/15/22	U	SNF
Phosphorus as P, Total	0.09	mg/l	0.01	0.01	SM 4500-P F	09/19/22		SNF
Solids, Total Dissolved	294	mg/l	4	5	SM 2540 C	09/13/22		TMH
Total Organic Carbon	2.9	mg/l	0.3	0.5	SM 5310 C	09/13/22		ALD
Solids, Total Suspended	11	mg/l	1	1	SM 2540 D	09/13/22		TMH
	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>								
Escherichia coli	1730	mpn/100ml	1	SM 9223 B/Quantitray	9/12/22 15:24	9/13/22 10:59		RMB
Total Coliform	>2420	mpn/100ml	1	SM 9223 B/Quantitray	9/12/22 15:24	9/13/22 10:59		RMB



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2229486-06      **Collected By:** Client      **Sampled:** 09/12/22 12:15      **Received:** 09/12/22 14:40  
**Sample Desc:** BM-6S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.05	mg/l		0.01	SM 4500-P F	09/20/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	100	mg CaCO <sub>3</sub> /L		2	SM 2320 B	09/13/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	09/19/22	U	SNF
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	09/12/22 18:52		LES
Nitrate as N	1.02	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	09/12/22 20:35		JAF
Nitrite as N	0.24	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	09/12/22 20:35		JAF
Nitrate+Nitrite as N	1.26	mg/l	0.198	1.10	CALCULATED	09/12/22 20:35		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	09/15/22	U	SNF
Phosphorus as P, Total	0.01	mg/l	0.01	0.01	SM 4500-P F	09/19/22		SNF
Solids, Total Dissolved	179	mg/l	4	5	SM 2540 C	09/13/22		TMH
Total Organic Carbon	2.8	mg/l	0.3	0.5	SM 5310 C	09/13/22		ALD
Solids, Total Suspended	8	mg/l	1	1	SM 2540 D	09/13/22		TMH
	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>								
Escherichia coli	6	mpn/100ml	1	SM 9223 B/Quantitray	9/12/22 15:24	9/13/22 10:59		RMB
Total Coliform	1410	mpn/100ml	1	SM 9223 B/Quantitray	9/12/22 15:24	9/13/22 10:59		RMB



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2229486-07      **Collected By:** Client      **Sampled:** 09/12/22 12:15      **Received:** 09/12/22 14:40  
**Sample Desc:** BM-6M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.06	mg/l		0.01	SM 4500-P F	09/20/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	133	mg CaCO <sub>3</sub> /L		2	SM 2320 B	09/13/22		APR
Ammonia as N	0.88	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	09/19/22		SNF
Biochemical Oxygen Demand	5.6	mg/l	2.0	2.0	SM 5210 B	09/12/22 18:52		LES
Nitrate as N	0.61	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	09/12/22 23:23	J	JAF
Nitrite as N	0.10	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	09/12/22 23:23	J	JAF
Nitrate+Nitrite as N	0.71	mg/l	0.198	1.10	CALCULATED	09/12/22 23:23		JAF
Nitrogen, Total Kjeldahl (TKN)	0.99	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	09/15/22		SNF
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P F	09/19/22		SNF
Solids, Total Dissolved	210	mg/l	4	5	SM 2540 C	09/13/22		TMH
Total Organic Carbon	2.5	mg/l	0.3	0.5	SM 5310 C	09/13/22		ALD
Solids, Total Suspended	5	mg/l	1	1	SM 2540 D	09/13/22		TMH

**Lab ID:** 2229486-08      **Collected By:** Client      **Sampled:** 09/12/22 12:15      **Received:** 09/12/22 14:40  
**Sample Desc:** BM-6D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.07	mg/l		0.01	SM 4500-P F	09/20/22	G-23, G-24	SNF
<b>Dissolved Metals</b>								
Arsenic	0.002	mg/l		0.001	EPA 200.8 Rev 5.4	09/13/22	G-23, G-24	MPB
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	121	mg CaCO <sub>3</sub> /L		2	SM 2320 B	09/13/22		APR
Ammonia as N	0.89	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	09/19/22		SNF
Biochemical Oxygen Demand	3.5	mg/l	2.0	2.0	SM 5210 B	09/12/22 18:52		LES
Nitrate as N	1.49	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	09/13/22 2:45		JAF
Nitrite as N	0.09	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	09/13/22 2:45	J	JAF
Nitrate+Nitrite as N	1.58	mg/l	0.198	1.10	CALCULATED	09/13/22 2:45		JAF
Nitrogen, Total Kjeldahl (TKN)	1.31	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	09/15/22		SNF
Phosphorus as P, Total	0.06	mg/l	0.01	0.01	SM 4500-P F	09/19/22		SNF
Solids, Total Dissolved	217	mg/l	4	5	SM 2540 C	09/13/22		TMH
Total Organic Carbon	3.3	mg/l	0.3	0.5	SM 5310 C	09/13/22		ALD
Solids, Total Suspended	12	mg/l	1	1	SM 2540 D	09/13/22		TMH



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2229486-09      **Collected By:** Client      **Sampled:** 09/12/22 11:10      **Received:** 09/12/22 14:40  
**Sample Desc:** BM-7S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.05	mg/l		0.01	SM 4500-P F	09/20/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	88	mg CaCO <sub>3</sub> /L		2	SM 2320 B	09/13/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	09/19/22	U	SNF
Biochemical Oxygen Demand	2.6	mg/l	2.0	2.0	SM 5210 B	09/12/22 18:52		LES
Nitrate as N	1.14	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	09/12/22 20:52		JAF
Nitrite as N	0.18	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	09/12/22 20:52		JAF
Nitrate+Nitrite as N	1.32	mg/l	0.198	1.10	CALCULATED	09/12/22 20:52		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	09/15/22	U	SNF
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	09/19/22		SNF
Solids, Total Dissolved	172	mg/l	4	5	SM 2540 C	09/13/22		TMH
Total Organic Carbon	2.9	mg/l	0.3	0.5	SM 5310 C	09/13/22		ALD
Solids, Total Suspended	4	mg/l	1	1	SM 2540 D	09/13/22		TMH
	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>								
Escherichia coli	2	mpn/100ml	1	SM 9223 B/Quantitray	9/12/22 15:24	9/13/22 10:59		RMB
Total Coliform	411	mpn/100ml	1	SM 9223 B/Quantitray	9/12/22 15:24	9/13/22 10:59		RMB



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2229486-10      **Collected By:** Client      **Sampled:** 09/12/22 11:10      **Received:** 09/12/22 14:40  
**Sample Desc:** BM-7M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.05	mg/l		0.01	SM 4500-P F	09/20/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	87	mg CaCO <sub>3</sub> /L		2	SM 2320 B	09/13/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	09/19/22	U	SNF
Biochemical Oxygen Demand	2.8	mg/l	2.0	2.0	SM 5210 B	09/12/22 18:52		LES
Nitrate as N	1.17	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	09/13/22 0:30		JAF
Nitrite as N	0.16	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	09/13/22 0:30		JAF
Nitrate+Nitrite as N	1.33	mg/l	0.198	1.10	CALCULATED	09/13/22 0:30		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	09/15/22	U	SNF
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	09/19/22		SNF
Solids, Total Dissolved	173	mg/l	4	5	SM 2540 C	09/13/22		TMH
Total Organic Carbon	2.5	mg/l	0.3	0.5	SM 5310 C	09/13/22		ALD
Solids, Total Suspended	8	mg/l	1	1	SM 2540 D	09/13/22		TMH

**Lab ID:** 2229486-11      **Collected By:** Client      **Sampled:** 09/12/22 11:10      **Received:** 09/12/22 14:40  
**Sample Desc:** BM-7D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.06	mg/l		0.01	SM 4500-P F	09/20/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	111	mg CaCO <sub>3</sub> /L		2	SM 2320 B	09/13/22		APR
Ammonia as N	0.18	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	09/19/22		SNF
Biochemical Oxygen Demand	2.5	mg/l	2.0	2.0	SM 5210 B	09/12/22 18:52		LES
Nitrate as N	1.97	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	09/12/22 21:25		JAF
Nitrite as N	0.09	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	09/12/22 21:25	J	JAF
Nitrate+Nitrite as N	2.06	mg/l	0.198	1.10	CALCULATED	09/12/22 21:25		JAF
Nitrogen, Total Kjeldahl (TKN)	0.46	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	09/15/22	J	SNF
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P F	09/19/22		SNF
Solids, Total Dissolved	210	mg/l	4	5	SM 2540 C	09/13/22		TMH
Total Organic Carbon	2.9	mg/l	0.3	0.5	SM 5310 C	09/13/22		ALD
Solids, Total Suspended	18	mg/l	1	1	SM 2540 D	09/13/22		TMH



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2229486-12      **Collected By:** Client      **Sampled:** 09/12/22 10:30      **Received:** 09/12/22 14:40  
**Sample Desc:** BM-8S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst	
<b>Dissolved General Chemistry</b>									
Phosphorus as P, Dissolved	0.07	mg/l		0.01	SM 4500-P F	09/20/22	G-23, G-24	SNF	
<b>General Chemistry</b>									
Alkalinity, Total to pH 4.5	83	mg CaCO <sub>3</sub> /L		2	SM 2320 B	09/13/22		APR	
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	09/19/22	U	SNF	
Biochemical Oxygen Demand	2.1	mg/l	2.0	2.0	SM 5210 B	09/12/22 18:53		LES	
Nitrate as N	1.13	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	09/12/22 21:08		JAF	
Nitrite as N	0.13	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	09/12/22 21:08		JAF	
Nitrate+Nitrite as N	1.26	mg/l	0.198	1.10	CALCULATED	09/12/22 21:08		JAF	
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	09/15/22	U	SNF	
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	09/19/22		SNF	
Solids, Total Dissolved	159	mg/l	4	5	SM 2540 C	09/13/22		TMH	
Total Organic Carbon	3.2	mg/l	0.3	0.5	SM 5310 C	09/13/22		ALD	
Solids, Total Suspended	8	mg/l	1	1	SM 2540 D	09/13/22		TMH	
	Result	Unit	Rep. Limit		Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>									
Escherichia coli	3	mpn/100ml	1		SM 9223 B/Quantitray	9/12/22 15:24	9/13/22 10:59		RMB
Total Coliform	816	mpn/100ml	1		SM 9223 B/Quantitray	9/12/22 15:24	9/13/22 10:59		RMB



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2229486-13      **Collected By:** Client      **Sampled:** 09/12/22 10:30      **Received:** 09/12/22 14:40  
**Sample Desc:** BM-8M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.05	mg/l		0.01	SM 4500-P F	09/20/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	90	mg CaCO <sub>3</sub> /L		2	SM 2320 B	09/13/22		APR
Ammonia as N	0.09	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	09/19/22		SNF
Biochemical Oxygen Demand	2.4	mg/l	2.0	2.0	SM 5210 B	09/12/22 18:52		LES
Nitrate as N	1.13	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	09/13/22 3:02		JAF
Nitrite as N	0.12	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	09/13/22 3:02		JAF
Nitrate+Nitrite as N	1.25	mg/l	0.198	1.10	CALCULATED	09/13/22 3:02		JAF
Nitrogen, Total Kjeldahl (TKN)	0.65	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	09/16/22		SNF
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	09/19/22		SNF
Solids, Total Dissolved	160	mg/l	4	5	SM 2540 C	09/13/22		TMH
Total Organic Carbon	2.6	mg/l	0.3	0.5	SM 5310 C	09/13/22		ALD
Solids, Total Suspended	10	mg/l	1	1	SM 2540 D	09/13/22		TMH

**Lab ID:** 2229486-14      **Collected By:** Client      **Sampled:** 09/12/22 10:30      **Received:** 09/12/22 14:40  
**Sample Desc:** BM-8D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.06	mg/l		0.01	SM 4500-P F	09/21/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	99	mg CaCO <sub>3</sub> /L		2	SM 2320 B	09/13/22		APR
Ammonia as N	0.13	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	09/19/22		SNF
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	09/12/22 18:52		LES
Nitrate as N	1.38	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	09/12/22 23:40		JAF
Nitrite as N	0.09	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	09/12/22 23:40	J	JAF
Nitrate+Nitrite as N	1.47	mg/l	0.198	1.10	CALCULATED	09/12/22 23:40		JAF
Nitrogen, Total Kjeldahl (TKN)	0.82	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	09/16/22		SNF
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P F	09/19/22		SNF
Solids, Total Dissolved	178	mg/l	4	5	SM 2540 C	09/13/22		TMH
Total Organic Carbon	2.6	mg/l	0.3	0.5	SM 5310 C	09/13/22		ALD
Solids, Total Suspended	51	mg/l	1	1	SM 2540 D	09/13/22		TMH



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2229486-15      **Collected By:** Client      **Sampled:** 09/12/22 09:50      **Received:** 09/12/22 14:40  
**Sample Desc:** BM-9S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.06	mg/l		0.01	SM 4500-P F	09/21/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	94	mg CaCO3/L		2	SM 2320 B	09/13/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	09/19/22	U	SNF
Biochemical Oxygen Demand	2.6	mg/l	2.0	2.0	SM 5210 B	09/12/22 18:52		LES
Nitrate as N	1.18	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	09/13/22 4:43		JAF
Nitrite as N	0.15	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	09/13/22 4:43		JAF
Nitrate+Nitrite as N	1.33	mg/l	0.198	1.10	CALCULATED	09/13/22 4:43		JAF
Nitrogen, Total Kjeldahl (TKN)	0.78	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	09/16/22		SNF
Phosphorus as P, Total	0.01	mg/l	0.01	0.01	SM 4500-P F	09/19/22		SNF
Solids, Total Dissolved	151	mg/l	4	5	SM 2540 C	09/13/22		TMH
Total Organic Carbon	2.8	mg/l	0.3	0.5	SM 5310 C	09/13/22		ALD
Solids, Total Suspended	6	mg/l	1	1	SM 2540 D	09/13/22		TMH
<b>Microbiology</b>								
Escherichia coli	2	mpn/100ml	1		SM 9223 B/Quantitray	9/12/22 15:24	9/13/22 10:59	RMB
Total Coliform	921	mpn/100ml	1		SM 9223 B/Quantitray	9/12/22 15:24	9/13/22 10:59	RMB



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2229486-16      **Collected By:** Client      **Sampled:** 09/12/22 09:50      **Received:** 09/12/22 14:40  
**Sample Desc:** BM-9M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.05	mg/l		0.01	SM 4500-P F	09/21/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	90	mg CaCO <sub>3</sub> /L		2	SM 2320 B	09/13/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	09/19/22	U	SNF
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	09/12/22 18:52		LES
Nitrate as N	1.18	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	09/13/22 3:52		JAF
Nitrite as N	0.15	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	09/13/22 3:52		JAF
Nitrate+Nitrite as N	1.33	mg/l	0.198	1.10	CALCULATED	09/13/22 3:52		JAF
Nitrogen, Total Kjeldahl (TKN)	0.99	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	09/16/22		SNF
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	09/19/22		SNF
Solids, Total Dissolved	174	mg/l	4	5	SM 2540 C	09/13/22		TMH
Total Organic Carbon	2.6	mg/l	0.3	0.5	SM 5310 C	09/13/22		ALD
Solids, Total Suspended	8	mg/l	1	1	SM 2540 D	09/13/22		TMH

**Lab ID:** 2229486-17      **Collected By:** Client      **Sampled:** 09/12/22 09:50      **Received:** 09/12/22 14:40  
**Sample Desc:** BM-9D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.05	mg/l		0.01	SM 4500-P F	09/21/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	129	mg CaCO <sub>3</sub> /L		2	SM 2320 B	09/13/22		APR
Ammonia as N	0.14	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	09/19/22		SNF
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	09/12/22 18:52		LES
Nitrate as N	2.85	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	09/13/22 4:26		JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	09/13/22 4:26	U	JAF
Nitrate+Nitrite as N	<2.86	mg/l	0.198	1.10	CALCULATED	09/13/22 4:26		JAF
Nitrogen, Total Kjeldahl (TKN)	0.69	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	09/16/22		SNF
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P F	09/19/22		SNF
Solids, Total Dissolved	235	mg/l	4	5	SM 2540 C	09/13/22		TMH
Total Organic Carbon	2.5	mg/l	0.3	0.5	SM 5310 C	09/13/22		ALD
Solids, Total Suspended	21	mg/l	1	1	SM 2540 D	09/13/22		TMH



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2229486-18      **Collected By:** Client      **Sampled:** 09/12/22 09:10      **Received:** 09/12/22 14:40  
**Sample Desc:** BM-10S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.05	mg/l		0.01	SM 4500-P F	09/21/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	87	mg CaCO <sub>3</sub> /L		2	SM 2320 B	09/13/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	09/19/22	U	SNF
Biochemical Oxygen Demand	3.3	mg/l	2.0	2.0	SM 5210 B	09/12/22 18:52		LES
Nitrate as N	1.12	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	09/13/22 4:09		JAF
Nitrite as N	0.11	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	09/13/22 4:09		JAF
Nitrate+Nitrite as N	1.23	mg/l	0.198	1.10	CALCULATED	09/13/22 4:09		JAF
Nitrogen, Total Kjeldahl (TKN)	0.59	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	09/16/22		SNF
Phosphorus as P, Total	0.04	mg/l	0.01	0.01	SM 4500-P F	09/19/22		SNF
Solids, Total Dissolved	162	mg/l	4	5	SM 2540 C	09/13/22		TMH
Total Organic Carbon	3.0	mg/l	0.3	0.5	SM 5310 C	09/13/22		ALD
Solids, Total Suspended	16	mg/l	1	1	SM 2540 D	09/13/22		TMH
<b>Microbiology</b>								
Escherichia coli	5	mpn/100ml	1		SM 9223 B/Quantitray	9/12/22 15:24	9/13/22 10:59	RMB
Total Coliform	866	mpn/100ml	1		SM 9223 B/Quantitray	9/12/22 15:24	9/13/22 10:59	RMB



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**M.J. Reider Associates, Inc.**

**Lab ID:** 2229486-19      **Collected By:** Client      **Sampled:** 09/12/22 09:10      **Received:** 09/12/22 14:40  
**Sample Desc:** BM-10M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.05	mg/l		0.01	SM 4500-P F	09/21/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	86	mg CaCO <sub>3</sub> /L		2	SM 2320 B	09/13/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	09/19/22	U	SNF
Biochemical Oxygen Demand	2.4	mg/l	2.0	2.0	SM 5210 B	09/12/22 18:52		LES
Nitrate as N	1.16	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	09/12/22 21:42		JAF
Nitrite as N	0.11	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	09/12/22 21:42		JAF
Nitrate+Nitrite as N	1.27	mg/l	0.198	1.10	CALCULATED	09/12/22 21:42		JAF
Nitrogen, Total Kjeldahl (TKN)	0.56	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	09/16/22		SNF
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	09/19/22		SNF
Solids, Total Dissolved	168	mg/l	4	5	SM 2540 C	09/13/22		TMH
Total Organic Carbon	2.7	mg/l	0.3	0.5	SM 5310 C	09/13/22		ALD
Solids, Total Suspended	13	mg/l	1	1	SM 2540 D	09/13/22		TMH

**Lab ID:** 2229486-20      **Collected By:** Client      **Sampled:** 09/12/22 09:10      **Received:** 09/12/22 14:40  
**Sample Desc:** BM-10D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.04	mg/l		0.01	SM 4500-P F	09/21/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	130	mg CaCO <sub>3</sub> /L		2	SM 2320 B	09/13/22		APR
Ammonia as N	<0.02	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	09/19/22	U	SNF
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	09/12/22 18:52		LES
Nitrate as N	2.76	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	09/12/22 22:32		JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	09/12/22 22:32	U	JAF
Nitrate+Nitrite as N	<2.77	mg/l	0.198	1.10	CALCULATED	09/12/22 22:32		JAF
Nitrogen, Total Kjeldahl (TKN)	0.62	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	09/16/22		SNF
Phosphorus as P, Total	0.04	mg/l	0.01	0.01	SM 4500-P F	09/19/22		SNF
Solids, Total Dissolved	210	mg/l	4	5	SM 2540 C	09/13/22		TMH
Total Organic Carbon	2.8	mg/l	0.3	0.5	SM 5310 C	09/13/22		ALD
Solids, Total Suspended	20	mg/l	1	1	SM 2540 D	09/13/22		TMH



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 Additional accreditations by MD (261), NY(12094)

**M.J. Reider Associates, Inc.**

**Lab ID:** 2229486-21      **Collected By:** Client      **Sampled:** 09/12/22 13:30      **Received:** 09/12/22 14:40  
**Sample Desc:** BM-11S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
<b>Dissolved General Chemistry</b>								
Phosphorus as P, Dissolved	0.08	mg/l		0.01	SM 4500-P F	09/21/22	G-23, G-24	SNF
<b>General Chemistry</b>								
Alkalinity, Total to pH 4.5	89	mg CaCO <sub>3</sub> /L		2	SM 2320 B	09/13/22		APR
Ammonia as N	0.17	mg/l	0.02	0.02	EPA 350.1 Rev 2.0	09/19/22		SNF
Biochemical Oxygen Demand	2.1	mg/l	2.0	2.0	SM 5210 B	09/12/22 18:52		LES
Nitrate as N	2.51	mg/l	0.18	1.00	EPA 300.0 Rev 2.1	09/13/22 1:04		JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	09/13/22 1:04	U	JAF
Nitrate+Nitrite as N	<2.52	mg/l	0.198	1.10	CALCULATED	09/13/22 1:04		JAF
Nitrogen, Total Kjeldahl (TKN)	1.32	mg/l	0.43	0.50	EPA 351.2 Rev 2.0	09/16/22		SNF
Phosphorus as P, Total	0.07	mg/l	0.01	0.01	SM 4500-P F	09/19/22		SNF
Solids, Total Dissolved	180	mg/l	4	5	SM 2540 C	09/13/22		TMH
Total Organic Carbon	4.3	mg/l	0.3	0.5	SM 5310 C	09/13/22		ALD
Solids, Total Suspended	22	mg/l	1	1	SM 2540 D	09/13/22		TMH
	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
<b>Microbiology</b>								
Escherichia coli	1730	mpn/100ml	1	SM 9223 B/Quantitray	9/12/22 15:24	9/13/22 10:59		RMB
Total Coliform	>2420	mpn/100ml	1	SM 9223 B/Quantitray	9/12/22 15:24	9/13/22 10:59		RMB



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M.J. Reider Associates, Inc.

Preparation Methods

Specific Method	Preparation Method	Prep Batch	Prepared Date	Prepared By
<b>2229486-01</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2I1045	09/19/2022	SNF
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2I1019	09/19/2022	JMW
<b>2229486-02</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2I1045	09/19/2022	SNF
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2I1019	09/19/2022	JMW
<b>2229486-03</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2I1045	09/19/2022	SNF
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2I1019	09/19/2022	JMW
<b>2229486-04</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2I1045	09/19/2022	SNF
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2I1019	09/19/2022	JMW
<b>2229486-05</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2I1045	09/19/2022	SNF
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2I1019	09/19/2022	JMW
<b>2229486-06</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2I1045	09/19/2022	SNF
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2I1019	09/19/2022	JMW
<b>2229486-07</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2I1045	09/19/2022	SNF
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2I1019	09/19/2022	JMW
<b>2229486-08</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2I1045	09/19/2022	SNF
<b>Dissolved Metals</b>				
EPA 200.8 Rev 5.4	EPA 200.2 Rev 2.8	B2I0654	09/13/2022	HRG
<b>General Chemistry</b>				



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SM 4500-P F	SM 4500-P B	B2I1019	09/19/2022	JMW
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**2229486-09**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2I1045	09/19/2022	SNF
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2I1019	09/19/2022	JMW
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**2229486-10**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2I1045	09/19/2022	SNF
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2I1019	09/19/2022	JMW
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**2229486-11**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2I1045	09/19/2022	SNF
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2I1019	09/19/2022	JMW
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**2229486-12**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2I1045	09/19/2022	SNF
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2I1019	09/19/2022	JMW
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**2229486-13**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2I1045	09/19/2022	SNF
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2I1019	09/19/2022	JMW
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**2229486-14**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2I1154	09/20/2022	SNF
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2I1019	09/19/2022	JMW
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**2229486-15**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2I1154	09/20/2022	SNF
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2I1019	09/19/2022	JMW
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**2229486-16**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2I1154	09/20/2022	SNF
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**General Chemistry**

SM 4500-P F	SM 4500-P B	B2I1019	09/19/2022	JMW
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**2229486-17**

**Dissolved General Chemistry**

SM 4500-P F	SM 4500-P B	B2I1154	09/20/2022	SNF
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**General Chemistry**



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**M.J. Reider Associates, Inc.**

SM 4500-P F	SM 4500-P B	B2I1019	09/19/2022	JMW
<b>2229486-18</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2I1154	09/20/2022	SNF
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2I1019	09/19/2022	JMW
<b>2229486-19</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2I1154	09/20/2022	SNF
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2I1019	09/19/2022	JMW
<b>2229486-20</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2I1154	09/20/2022	SNF
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2I1019	09/19/2022	JMW
<b>2229486-21</b>				
<b>Dissolved General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2I1154	09/20/2022	SNF
<b>General Chemistry</b>				
SM 4500-P F	SM 4500-P B	B2I1019	09/19/2022	JMW

**Notes and Definitions**

- G-23 The sample was filtered after it was received at the laboratory and outside of the 15-minute hold time.
- G-24 The sample was preserved in the laboratory and outside of the 15-minute hold time.
- J Estimated value
- Q-10 The matrix spike(s) were outside acceptable limits of 90-110% recovery at 111% and 111%.
- U Analyte was not detected above the indicated value.



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**WORK ORDER  
Chain of Custody**

2229486



Client Code: 3157

Project Manager: Richard A Wheeler

Report To: Tetra Tech - David Wertz - USACE, Phila Dist. Env.Resources Branch 100 Penn Square E., Arlington, VA 22201

Invoice To: Tetra Tech - David Wertz - USACE, Phila Dist. Env.Resources Branch 100 Penn Square E., Arlington, VA 22201

Client: Tetra Tech

Project: 2022 - Blue Marsh Reservoir

Collected By : \_\_\_\_\_  
(Full Name)

*Gregory Wacik*

Comments: \_\_\_\_\_

**2229486-01 BM-1S**

*NKH*  
BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B  
Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water

Type: Grab

Date: 9/12/22  
Time: 0745

- A - Pl 500ml NP, minimal hdspc
- B - Pl Liter NP
- C - Sterile Pl 125ml NaThio
- D - Pl 500ml H2SO4
- E - Pl 250ml NP
- F - Pl 500ml Lab Filtered
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc
- I - Vial Amber 40ml H3PO4, minimal hdspc

**2229486-02 BM-2S**

*NKH*  
BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B  
Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water

Type: Grab

Date: 9/12/22  
Time: 1145

- A - Pl 500ml NP, minimal hdspc
- B - Pl Liter NP
- C - Sterile Pl 125ml NaThio
- D - Pl 500ml H2SO4
- E - Pl 250ml NP
- F - Pl 500ml Lab Filtered
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc
- I - Vial Amber 40ml H3PO4, minimal hdspc

*[Signature]* 9/12/22 2:15

Relinquished By \_\_\_\_\_ Date/Time \_\_\_\_\_

*Benny Nant* 9-12-22 1420

Received By \_\_\_\_\_ Date/Time \_\_\_\_\_

Relinquished By \_\_\_\_\_ Date/Time \_\_\_\_\_

*Benny Nant* 9-12-22 1440

Received By \_\_\_\_\_ Date/Time \_\_\_\_\_

Relinquished By \_\_\_\_\_ Date/Time \_\_\_\_\_

Received at Laboratory by \_\_\_\_\_ Date/Time \_\_\_\_\_

Sample Kit Prepared By:	Date/Time <u>AUG 01 2022</u>
Sample Temp (°C):	<u>4.5</u>
Samples on Ice?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>
Approved By:	<i>[Signature]</i>
Entered By:	<i>[Signature]</i>

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.



Client Code: 3157
Project Manager: Richard A Wheeler

Client: Tetra Tech
Project: 2022 - Blue Marsh Reservoir

Collected By: Gregory Wacik

Comments:

2229486-03 BM-2M

NO2-N EPA 300.0, NO3-N EPA 300.0, BOD SM 5210B, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F
Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TOC SM 5310C, TSS SM 2540D, TDS SM 2540C, TKN EPA 351.2

Matrix: Non-Potable Water
Type: Grab

Date: 9/12/22
Time: 1145

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2229486-04 BM-2D

NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, BOD SM 5210B, NO2-N EPA 300.0, PO4-D SM 4500P-F
Alk SM 2320B, PO4 SM 4500P-F, TOC SM 5310C, TSS SM 2540D, NH3-N EPA 350.1, TDS SM 2540C, TKN EPA 351.2

Matrix: Non-Potable Water
Type: Grab

Date: 9/12/22
Time: 1145

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2229486-05 BM-5S

NO2-N EPA 300.0, NO3-N EPA 300.0, TC (#) SM 9223B, BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F
Alk SM 2320B, TDS SM 2540C, TKN EPA 351.2, NH3-N EPA 350.1, PO4 SM 4500P-F, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water
Type: Grab

Date: 9/12/22
Time: 1330

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] 9/12/22 2:15
Received By: Benny Wacik 9-12-22 1420
Relinquished By: [Signature]
Received By: Benny Wacik 9-12-22 1420
Relinquished By: [Signature]
Received at Laboratory By: [Signature] 9-12-22 1420

Table with 2 columns: Sample Kit Prepared By, Date/Time; Sample Temp (°C), Samples on Ice?, Approved By, Entered By.



Client Code: 3157
Project Manager: Richard A Wheeler

Client: Tetra Tech
Project: 2022 - Blue Marsh Reservoir

Collected By: Gregory Wacik

Comments:

2229486-06 BM-6S

PO4-D SM 4500P-F, TC (#) SM 9223B, BOD SM 5210B, EC (#) SM 9223B Confirmation, NO3-N EPA 300.0, NO2-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2
NH3-N EPA 350.1, Alk SM 2320B, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water
Type: Grab

Date: 9/12/22
Time: 1215

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

2229486-07 BM-6M

NO2-N EPA 300.0, NO3-N EPA 300.0, BOD SM 5210B, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F
TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TSS SM 2540D

Matrix: Non-Potable Water
Type: Grab

Date: 9/12/22
Time: 1215

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2229486-08 BM-6D

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F
As-D EPA 200.8, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TSS SM 2540D

Matrix: Non-Potable Water
Type: Grab

Date: 9/12/22
Time: 1215

- A - Pl 500ml NP, minimal hdspc
B - Pl 500ml Lab Filtered
C - Pl Liter NP
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] Date/Time: 9/12/22 2:15
Received By: Benny Nant Date/Time: 9-12-22 1420
Relinquished By: Date/Time:
Received By: Benny Nant Date/Time: 9-12-22 1440
Relinquished By: Date/Time:
Received at Laboratory By: Date/Time:

Sample Kit Prepared By: Date/Time: AUG 01 2022
Sample Temp (°C): 41.5
Samples on Ice? Yes No NA
Approved By: [Signature]
Entered By: [Signature]



M.J. Reider Associates, Inc.

2229486

Client Code: 3157
Project Manager: Richard A Wheeler

Client: Tetra Tech
Project: 2022 - Blue Marsh Reservoir

Collected By: Gregory Dacic

Comments:

2229486-09 BM-7S

EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, BOD SM 5210B, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B NH3-N EPA 350.1, Alk SM 2320B, TDS SM 2540C, TOC SM 5310C, TSS SM 2540D, TKN EPA 351.2, PO4 SM 4500P-F

Matrix: Non-Potable Water
Type: Grab

Date: 9/12/22
Time: 1110

- A - PI 500ml NP, minimal hdspc
B - PI Liter NP
C - Sterile PI 125ml NaThio
D - PI 500ml H2SO4
E - PI 250ml NP
F - PI 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

2229486-10 BM-7M

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water
Type: Grab

Date: 9/12/22
Time: 1110

- A - PI 500ml NP, minimal hdspc
B - PI Liter NP
C - PI 500ml H2SO4
D - PI 250ml NP
E - PI 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2229486-11 BM-7D

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water
Type: Grab

Date: 9/12/22
Time: 1110

- A - PI 500ml NP, minimal hdspc
B - PI Liter NP
C - PI 500ml H2SO4
D - PI 250ml NP
E - PI 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] Date/Time: 9/12/22 2:15 Received By: Benny Nant Date/Time: 9-12-22 1420
Relinquished By: Date/Time: Received By: Benny Nant Date/Time: 9-12-22 1440
Relinquished By: Date/Time: Received at Laboratory by: Date/Time:

Sample Kit Prepared By: Date/Time: AUG 01 2022
Sample Temp (°C): 4.5
Samples on Ice? Yes No NA
Approved By: BSW
Entered By:



Client Code: 3157
Project Manager: Richard A Wheeler

Client: Tetra Tech
Project: 2022 - Blue Marsh Reservoir

Collected By: Gregory Wocik

Comments:

2229486-12 BM-8S

PO4-D SM 4500P-F, TC (#) SM 9223B, BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2 TKN EPA 351.2, TSS SM 2540D, TDS SM 2540C, TOC SM 5310C, Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F

Matrix: Non-Potable Water
Type: Grab

Date: 9/12/22
Time: 1030

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

2229486-13 BM-8M

NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, NO2-N EPA 300.0, BOD SM 5210B, PO4-D SM 4500P-F PO4 SM 4500P-F, TOC SM 5310C, TSS SM 2540D, Alk SM 2320B, TDS SM 2540C, TKN EPA 351.2, NH3-N EPA 350.1

Matrix: Non-Potable Water
Type: Grab

Date: 9/12/22
Time: 1030

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2229486-14 BM-8D

NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, BOD SM 5210B, NO2-N EPA 300.0, PO4-D SM 4500P-F Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TSS SM 2540D, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C

Matrix: Non-Potable Water
Type: Grab

Date: 9/12/22
Time: 1030

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] Date/Time: 9/12/22 2:15
Received By: Benny Wocik Date/Time: 9-12-22 1420
Relinquished By: [Signature] Date/Time:
Received By: Benny Wocik Date/Time: 9-12-22 1440
Relinquished By: [Signature] Date/Time:
Received at Laboratory By: Benny Wocik Date/Time: 9-12-22 1440

Sample Kit Prepared By: Date/Time: AUG 01 2022
Sample Temp (°C): 4.5
Samples on Ice? Yes No NA
Approved By: BSW
Entered By: [Signature]



Client Code: 3157
Project Manager: Richard A Wheeler

Client: Tetra Tech
Project: 2022 - Blue Marsh Reservoir

Collected By: Gregory Wacik

Comments:

2229486-15 BM-9S

BOD SM 5210B, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, PO4-D SM 4500P-F, TC (#) SM 9223B
Alk SM 2320B, PO4 SM 4500P-F, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D, NH3-N EPA 350.1, TDS SM 2540C

Matrix: Non-Potable Water
Type: Grab

Date: 9/12/22
Time: 0950

- A - PI 500ml NP, minimal hdspc
B - PI Liter NP
C - Sterile PI 125ml NaThio
D - PI 500ml H2SO4
E - PI 250ml NP
F - PI 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

2229486-16 BM-9M

BOD SM 5210B, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, NO2-N EPA 300.0, PO4-D SM 4500P-F
PO4 SM 4500P-F, Alk SM 2320B, NH3-N EPA 350.1, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water
Type: Grab

Date: 9/12/22
Time: 0950

- A - PI 500ml NP, minimal hdspc
B - PI Liter NP
C - PI 500ml H2SO4
D - PI 250ml NP
E - PI 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2229486-17 BM-9D

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F
NH3-N EPA 350.1, PO4 SM 4500P-F, Alk SM 2320B, TDS SM 2540C, TOC SM 5310C, TSS SM 2540D, TKN EPA 351.2

Matrix: Non-Potable Water
Type: Grab

Date: 9/12/22
Time: 0950

- A - PI 500ml NP, minimal hdspc
B - PI Liter NP
C - PI 500ml H2SO4
D - PI 250ml NP
E - PI 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

Handwritten signatures and dates for Relinquished By and Received By fields.

Sample Kit Prepared By: Date/Time: 9/12/2022
Sample Temp (°C): 4.5
Samples on Ice? Yes No NA
Approved By: BSW
Entered By:



M.J. Reider Associates, Inc.

2229486

Client Code: 3157
Project Manager: Richard A Wheeler

Client: Tetra Tech
Project: 2022 - Blue Marsh Reservoir

Collected By: Gregory Wacik

Comments:

2229486-18 BM-10S

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B
Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water
Type: Grab

Date: 9/12/22
Time: 0930

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

2229486-19 BM-10M

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F
Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water
Type: Grab

Date: 9/12/22
Time: 0930

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2229486-20 BM-10D

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F
Alk SM 2320B, NH3-N EPA 350.1, PO4 SM 4500P-F, TSS SM 2540D, TDS SM 2540C, TOC SM 5310C, TKN EPA 351.2

Matrix: Non-Potable Water
Type: Grab

Date: 9/12/22
Time: 0930

- A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By: [Signature] Date/Time: 9/12/22 2:15
Received By: Benny Nant Date/Time: 9-12-22 1420
Relinquished By: [Signature] Date/Time:
Received By: Benny Nant Date/Time: 9-12-22 1440
Relinquished By: Date/Time:
Received at Laboratory By: Date/Time:

Sample Kit Prepared By: Date/Time: AUG 01 2022
Sample Temp (°C): 4.5
Samples on Ice? Yes No NA
Approved By: BSW
Entered By:



Client Code: 3157

Client: Tetra Tech

Project Manager: Richard A Wheeler

Project: 2022 - Blue Marsh Reservoir

Collected By :  
(Full Name)

*Gregory Wacik*

Comments: \_\_\_\_\_

2229486-21 BM-11S *JAC*

*NKH*  
NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, NO2-N EPA 300.0, EC (#) SM 9223B Confirmation,  
BOD SM 5210B, PO4-D SM 4500P-F, TC (#) SM 9223B  
PO4 SM 4500P-F, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D, Alk SM 2320B, NH3-N EPA 350.1, TDS SM 2540C

Matrix: Non-Potable Water

Type: Grab

Date: *9/12/22*  
Time: *1:330*

- A - Pl 500ml NP, minimal hdspc
- B - Pl Liter NP
- C - Sterile Pl 125ml NaThio
- D - Pl 500ml H2SO4
- E - Pl 250ml NP
- F - Pl 500ml Lab Filtered
- G - Vial Amber 40ml H3PO4, minimal hdspc
- H - Vial Amber 40ml H3PO4, minimal hdspc
- I - Vial Amber 40ml H3PO4, minimal hdspc

<i>[Signature]</i>	<i>9/12/22 2:15</i>	<i>Benny Wacik</i>	<i>9-12-22</i>	<i>1420</i>
Relinquished By	Date/Time	Received By	Date/Time	
_____	_____	<i>Benny Wacik</i>	<i>9-12-22</i>	<i>1440</i>
Relinquished By	Date/Time	Received By	Date/Time	
_____	_____	Received at Laboratory By	Date/Time	

Sample Kit Prepared By:	Date/Time <i>Aug 01 2022</i>
Sample Temp (°C):	<i>4.5</i>
Samples on Ice?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA
Approved By:	<i>[Signature]</i>
Entered By:	<i>[Signature]</i>

**M.J. Reider Associates, Inc.**

**MJRA Terms & Conditions**

All samples submitted must be accompanied by signed documentation representing a Chain of Custody (COC). The COC Record acts as a contract between the client and MJRA. Signing the COC form gives approval for MJRA to perform the requested analyses and is an agreement to pay for the cost of such analyses. COC Records must be completed in black or blue indelible ink (must not run when wet). COC documentation begins at the time of sample collection. Client is required to document all sample details prior to releasing samples to MJRA. All samples must be placed on ice immediately after sampling and shipped or delivered to the laboratory in a manner that will maintain the sample temperature above freezing and below 6C (loose ice is preferred).

**Sample Submission, Sample Acceptance & Sampling Containers**

Included on the COC must be the sample description, date and time of collection (including start and stop for composites), container size and type, preservative information, sample matrix, indication of whether the sample is a grab or composite, number of containers & a list of the tests to be performed. Poor sample collection technique, inappropriate sampling containers and/or improper sample preservation may lead to sample rejection. Suitable sample containers, labels, and preservatives (as applicable), along with blank COCs are provided at no additional cost.

**Turnaround Times (TAT)**

Average TAT for test results range from 5 to 15 working days depending on the specific analyses and time of year submitted. Faster turnaround times (\*RUSH TAT) may be available depending on the current workload in a particular department and the nature of the analyses requested. We encourage you to verify requests for expedited sample results with one of our Technical Directors prior to sample submittal. Without confirmation from a Technical Director, your results may not be completed by your deadline. \*RUSH TAT Surcharges are applied for expedited turnaround times.

**Analytical Results, Sample Collection Integrity & Subcontracting**

Analytical values are for the sample as submitted and relate only to the item tested. The value indicates a snapshot of the constituent content of the sample at the time of sample collection. Analytical results can be impacted by poor sample collection technique and/or improper preservation. All sample collection completed by MJRA was performed in accordance with applicable regulatory protocols or as specified in customer specific sampling plans. Constituent content will vary over time based on the matrix of the sample and the physical and chemical changes to its environment. All sample results and laboratory reports are strictly confidential. Results will not be available to anyone except the primary client or authorized party representing the client unless MJRA receives additional permissions from the client. When necessary, MJRA will subcontract certain analyses to a third party accredited laboratory. If client prohibits subcontracting, it must be provided in writing and include instruction on how to proceed with client samples that require third party analyses.

**Payment Terms**

Payment Terms are Net 30 days. Prices are subject to change without notice. A standing monthly charge of 1.5% of the clients over-30-day-unpaid balance may be added to the balance after 30 days and each month thereafter (day 31, 61, 91 etc.). The laboratory accepts all major credit cards, ACH transactions, checks and cash. New clients must pay for all services rendered prior to sample collection and/or in some cases report processing. Clients must contact the MJRA accounting department to pursue a credit-based account. MJRA reserves the right to terminate the client's credit account and to refuse to perform additional services on a credit basis if any balance is outstanding for more than 60 days.

**Warranty & Litigation**

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the day of its discovery and within one year of the date of invoice.

Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



107 Angelica Street ○ Reading, PA 19611 ○ [www.mjreider.com](http://www.mjreider.com) ○ (610) 374-5129 ○ fax (610) 374-7234

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NELAP accredited by PA. (PADEP #06-00003) Visit our website to view our current  
NELAC accreditations for various drinking water, wastewater and solid & chemical materials analytes.  
Additional accreditations by MD (261), NY(12094)



# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2219524

**Report:** 05/24/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland  
**Reported To:** US Army Corp of Engineers  
1268 Palisades Dr.  
Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2219524-01      **Collected By:** Client      **Sampled:** 05/23/22 08:10      **Received:** 05/23/22 08:45  
**Sample Desc:** SB-1 L      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	16	mpn/100ml	1	SM 9223	5/23/22	5/24/22		JMW
				B/Quantitray	14:15	10:03		
Total Coliform	1410	mpn/100ml	1	SM 9223	5/23/22	5/24/22		JMW
				B/Quantitray	14:15	10:03		

**Lab ID:** 2219524-02      **Collected By:** Client      **Sampled:** 05/23/22 08:13      **Received:** 05/23/22 08:45  
**Sample Desc:** SB-2 C      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	16	mpn/100ml	1	SM 9223	5/23/22	5/24/22		JMW
				B/Quantitray	14:15	10:03		
Total Coliform	1410	mpn/100ml	1	SM 9223	5/23/22	5/24/22		JMW
				B/Quantitray	14:15	10:03		

**Lab ID:** 2219524-03      **Collected By:** Client      **Sampled:** 05/23/22 08:15      **Received:** 05/23/22 08:45  
**Sample Desc:** SB-3 R      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	23	mpn/100ml	1	SM 9223	5/23/22	5/24/22		JMW
				B/Quantitray	14:15	10:03		
Total Coliform	921	mpn/100ml	1	SM 9223	5/23/22	5/24/22		JMW
				B/Quantitray	14:15	10:03		



107 Angelica Street ○ Reading, PA 19611 ○ [www.mjreider.com](http://www.mjreider.com) ○ (610) 374-5129 ○ fax (610) 374-7234

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NELAP accredited by PA. (PADEP #06-00003) Visit our website to view our current  
NELAC accreditations for various drinking water, wastewater and solid & chemical materials analytes.  
Additional accreditations by MD (261), NY(12094)



**M.J. Reider Associates, Inc.**

107 Angelica St, Reading PA, 19611  
610-374-5129 www.mjreider.com

Client Code: 4092  
Project Manager: Richard Wheeler

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533  
Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533

**BOTTLE ORDER  
Chain of Custody**

Client: US Army Corp of Engineers  
Project: 2018 Blue Marsh Beach 1,2,3  
2022 JSV5-23-22

**2219524**

PM: RAW

US Army Corp of Engineers  
2022 Blue Marsh Beach 1,2,3



Collected By:  
(Full Name)

Brianna Treichler

Comments: \_\_\_\_\_

-01	SB-1	EC#s, TC#s	L	Matrix: Other	Type: Grab	Date: 5/23/22	Time: 0810	A - Sterile PI 125ml NaThio
-02	SB-2	EC#s, TC#s	C	Matrix: Other	Type: Grab	Date: 5/23/22	Time: 0813	A - Sterile PI 125ml NaThio
-03	SB-3	EC#s, TC#s	R	Matrix: Other	Type: Grab	Date: 5/23/22	Time: 0815	A - Sterile PI 125ml NaThio

Relinquished By: Unlon Brazzle Date/Time: 5/23/22 0845

Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received at Laboratory By: Dean Vandzura Date/Time: 5/23/22 8:45

Sample Kit Prepared By:	Date/Time
Sample Temp (°C):	<u>18.1</u>
Samples on Ice?	Yes <input checked="" type="radio"/> No <input type="radio"/> NA <input type="radio"/>
Approved By:	<u>JSV</u>
Entered By:	<u>JB</u>

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

**M.J. Reider Associates, Inc.**

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**MJRA Terms & Conditions**

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Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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Additional accreditations by MD (261), NY(12094)



# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2220069

**Report:** 05/31/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland

**Reported To:** US Army Corp of Engineers

1268 Palisades Dr.

Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2220069-01

**Collected By:** Client

**Sampled:** 05/26/22 08:00

**Received:** 05/26/22 09:02

**Sample Desc:** SB-1 L

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	13	mpn/100ml	1	SM 9223	5/26/22	5/27/22		JMW
				B/Quantitray	15:37	9:38		
Total Coliform	326	mpn/100ml	1	SM 9223	5/26/22	5/27/22		JMW
				B/Quantitray	15:37	9:38		

**Lab ID:** 2220069-02

**Collected By:** Client

**Sampled:** 05/26/22 08:02

**Received:** 05/26/22 09:02

**Sample Desc:** SB-2 C

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	16	mpn/100ml	1	SM 9223	5/26/22	5/27/22		JMW
				B/Quantitray	15:37	9:38		
Total Coliform	488	mpn/100ml	1	SM 9223	5/26/22	5/27/22		JMW
				B/Quantitray	15:37	9:38		

**Lab ID:** 2220069-03

**Collected By:** Client

**Sampled:** 05/26/22 08:05

**Received:** 05/26/22 09:02

**Sample Desc:** SB-3 R

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	7	mpn/100ml	1	SM 9223	5/26/22	5/27/22		JMW
				B/Quantitray	15:37	9:38		
Total Coliform	270	mpn/100ml	1	SM 9223	5/26/22	5/27/22		JMW
				B/Quantitray	15:37	9:38		



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Additional accreditations by MD (261), NY(12094)



**M.J. Reider Associates, Inc.**

107 Angelica St, Reading PA, 19611  
610-374-5129 www.mjreider.com

Client Code: 4092  
Project Manager: Richard A Wheeler

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533

Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533

**BOTTLE ORDER**  
**Chain of Custody**

Client: US Army Corp of Engineer  
Project: 2021 Blue Marsh Beach 1,2

**2220069**

PM: RAW

US Army Corp of Engineers  
2022 Blue Marsh Beach 1,2,3



Collected By: Union Brazzle  
(Full Name)

Comments: \_\_\_\_\_

**-01** SB-1 L  
EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Other  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 5/26/22  
Time: 0800

**-02** SB-2 C  
EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Other  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 5/26/22  
Time: 0802

**-03** SB-3 R  
EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Other  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 5/26/22  
Time: 0805

Union Brazzle 5/26/22  
Relinquished By Date/Time

Relinquished By Date/Time

Relinquished By Date/Time

Received By Date/Time

Received By Date/Time

Received at Laboratory By Date/Time

ASL

**MAY 26 2022**

9:02

Sample Kit Prepared By:	Date/Time
Sample Temp (°C):	<u>10.8</u>
Samples on Ice?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA
Approved By:	<u>[Signature]</u>
Entered By:	<u>[Signature]</u>

**M.J. Reider Associates, Inc.**

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Reviewed and Approved by:



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Director of Field Services



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Additional accreditations by MD (261), NY(12094)



# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2219917

**Report:** 06/01/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland  
**Reported To:** US Army Corp of Engineers  
1268 Palisades Dr.  
Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2219917-01      **Collected By:** Client      **Sampled:** 05/31/22 08:00      **Received:** 05/31/22 08:56  
**Sample Desc:** SB-1 L      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	16	mpn/100ml	1	SM 9223	5/31/22	6/1/22		JMW
				B/Quantitray	9:50	10:33		
Total Coliform	1300	mpn/100ml	1	SM 9223	5/31/22	6/1/22		JMW
				B/Quantitray	9:50	10:33		

**Lab ID:** 2219917-02      **Collected By:** Client      **Sampled:** 05/31/22 08:03      **Received:** 05/31/22 08:56  
**Sample Desc:** SB-2 C      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	13	mpn/100ml	1	SM 9223	5/31/22	6/1/22		JMW
				B/Quantitray	9:50	10:33		
Total Coliform	649	mpn/100ml	1	SM 9223	5/31/22	6/1/22		JMW
				B/Quantitray	9:50	10:33		

**Lab ID:** 2219917-03      **Collected By:** Client      **Sampled:** 05/31/22 08:06      **Received:** 05/31/22 08:56  
**Sample Desc:** SB-3 R      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	11	mpn/100ml	1	SM 9223	5/31/22	6/1/22		JMW
				B/Quantitray	9:50	10:33		
Total Coliform	687	mpn/100ml	1	SM 9223	5/31/22	6/1/22		JMW
				B/Quantitray	9:50	10:33		



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610-374-5129 www.mjreider.com

**WORK ORDER  
Chain of Custody**

2219917



Client Code: 4092

Project Manager: Richard A Wheeler

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Client: US Army Corp of Engineers  
Project: 2022 Blue Marsh Beach 1,2,3

Comments: \_\_\_\_\_

Collected By: Tavin Krick  
(Full Name)

**2219917-01 SB-1 L**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water

Type: Grab

A - Sterile PI 125ml NaThio

Date: 05/31/22

Time: 8:00 am

**2219917-02 SB-2 C**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water

Type: Grab

A - Sterile PI 125ml NaThio

Date: 05/31/22

Time: 8:03 am

**2219917-03 SB-3 R**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water

Type: Grab

A - Sterile PI 125ml NaThio

Date: 05/31/22

Time: 8:06 am

<u>Colin McAllister</u>	<u>05/31/22 8:56</u>	_____	_____
Relinquished By	Date/Time	Received By	Date/Time
_____	_____	<u>Jim Vandzura</u>	_____
Relinquished By	Date/Time	Received By	Date/Time
_____	_____	<u>MAY 31 2022 8:56</u>	_____
Relinquished By	Date/Time	Received at Laboratory By	Date/Time

Sample Kit Prepared By: <u>JB</u>	Date/Time <b>MAY 25 2022</b>
Sample Temp (°C): <u>18.5</u>	
Samples on Ice? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA	
Approved By: <u>JJV</u>	
Entered By: <u>JJV</u>	

**M.J. Reider Associates, Inc.**

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Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2219918

**Report:** 06/07/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland

**Reported To:** US Army Corp of Engineers

1268 Palisades Dr.

Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2219918-01

**Collected By:** Client

**Sampled:** 06/02/22 08:02

**Received:** 06/02/22 08:39

**Sample Desc:** SB-1 L

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	73	mpn/100ml	1	SM 9223	6/2/22	6/3/22		JMW
				B/Quantitray	15:28	9:57		
Total Coliform	687	mpn/100ml	1	SM 9223	6/2/22	6/3/22		JMW
				B/Quantitray	15:28	9:57		

**Lab ID:** 2219918-02

**Collected By:** Client

**Sampled:** 06/02/22 08:04

**Received:** 06/02/22 08:39

**Sample Desc:** SB-2 C

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	41	mpn/100ml	1	SM 9223	6/2/22	6/3/22		JMW
				B/Quantitray	15:28	9:57		
Total Coliform	548	mpn/100ml	1	SM 9223	6/2/22	6/3/22		JMW
				B/Quantitray	15:28	9:57		

**Lab ID:** 2219918-03

**Collected By:** Client

**Sampled:** 06/02/22 08:06

**Received:** 06/02/22 08:39

**Sample Desc:** SB-3 R

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	58	mpn/100ml	1	SM 9223	6/2/22	6/3/22		JMW
				B/Quantitray	15:28	9:57		
Total Coliform	770	mpn/100ml	1	SM 9223	6/2/22	6/3/22		JMW
				B/Quantitray	15:28	9:57		



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**WORK ORDER  
Chain of Custody**

2219918



Client Code: 4092  
Project Manager: Richard A Wheeler

Client: US Army Corp of Engineers  
Project: 2022 Blue Marsh Beach 1,2,3

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Collected By : Alexis Albu  
(Full Name)

Comments: \_\_\_\_\_

**2219918-01 SB-1 L**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water

Type: Grab

A - Sterile PI 125ml NaThio

Date: 6/2/2022

Time: 08:02

**2219918-02 SB-2 C**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water

Type: Grab

A - Sterile PI 125ml NaThio

Date: 6/2/2022

Time: 08:04

**2219918-03 SB-3 R**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water

Type: Grab

A - Sterile PI 125ml NaThio

Date: 6/2/2022

Time: 08:06

[Signature] 6/2/2022 08:39  
Relinquished By Date/Time

\_\_\_\_\_  
Received By Date/Time

\_\_\_\_\_  
Relinquished By Date/Time

Sean Vanduzee 6/2/22 8:39  
Received By Date/Time

\_\_\_\_\_  
Relinquished By Date/Time

\_\_\_\_\_  
Received at Laboratory By Date/Time

Sample Kit Prepared By: <u>VB</u>	Date/Time <b>MAY 25 2022</b>
Sample Temp (°C): <u>20.1</u>	Samples on Ice? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA
Approved By: <u>[Signature]</u>	Entered By: <u>[Signature]</u>

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

**M.J. Reider Associates, Inc.**

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**MJRA Terms & Conditions**

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**Warranty & Litigation**

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Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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Additional accreditations by MD (261), NY(12094)



# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2221377

**Report:** 06/07/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland

**Reported To:** US Army Corp of Engineers

1268 Palisades Dr.

Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2221377-01

**Collected By:** Client

**Sampled:** 06/06/22 08:12

**Received:** 06/06/22 08:52

**Sample Desc:** SB-1 L

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	3	mpn/100ml	1	SM 9223	6/6/22	6/7/22		DRW
				B/Quantitray	14:45	9:28		
Total Coliform	238	mpn/100ml	1	SM 9223	6/6/22	6/7/22		DRW
				B/Quantitray	14:45	9:28		

**Lab ID:** 2221377-02

**Collected By:** Client

**Sampled:** 06/06/22 08:15

**Received:** 06/06/22 08:52

**Sample Desc:** SB-2 C

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	9	mpn/100ml	1	SM 9223	6/6/22	6/7/22		DRW
				B/Quantitray	14:45	9:28		
Total Coliform	276	mpn/100ml	1	SM 9223	6/6/22	6/7/22		DRW
				B/Quantitray	14:45	9:28		

**Lab ID:** 2221377-03

**Collected By:** Client

**Sampled:** 06/06/22 08:18

**Received:** 06/06/22 08:52

**Sample Desc:** SB-3 R

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	9	mpn/100ml	1	SM 9223	6/6/22	6/7/22		DRW
				B/Quantitray	14:45	9:28		
Total Coliform	172	mpn/100ml	1	SM 9223	6/6/22	6/7/22		DRW
				B/Quantitray	14:45	9:28		



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**M.J. Reider Associates, Inc.**

107 Angelica St, Reading PA, 19611  
610-374-5129 www.mjreider.com

Client Code: **4092**  
Project Manager: **Richard A Wheeler**

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533

Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533

**BOTTLE ORDER**  
**Chain of Custody**

Client: **US Army Corp of Engineers**  
Project: **2021 Blue Marsh Beach 1,2,3**

*2022 jsv 5-23-22*

**2221377**

PM: RAW

US Army Corp of Engineers  
2022 Blue Marsh Beach 1,2,3



Collected By:  
(Full Name)

*Sarah Kern*

Comments: \_\_\_\_\_

**-01 SB-1 L**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Other  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 6/6/22  
Time: 0812

**-02 SB-2 C**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Other  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 6/6/22  
Time: 0815

**-03 SB-3 R**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Other  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 6/6/22  
Time: 0818

*[Signature]* 6/6/22 8:52  
Relinquished By Date/Time

Relinquished By Date/Time

Relinquished By Date/Time

Received By *Tien Vandzura* JUN 06 2022 8:52  
Received at Laboratory By Date/Time

Sample Kit Prepared By: <i>JSV</i>	Date/Time <u>5/23/22</u>
Sample Temp (°C): <u>21.1</u>	
Samples on Ice? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA	
Approved By: <i>JSV</i>	
Entered By: <i>JSV</i>	

**M.J. Reider Associates, Inc.**

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Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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Additional accreditations by MD (261), NY(12094)



# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2221976

**Report:** 06/13/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland

**Reported To:** US Army Corp of Engineers

1268 Palisades Dr.

Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2221976-01

**Collected By:** Client

**Sampled:** 06/09/22 08:00

**Received:** 06/09/22 08:26

**Sample Desc:** SB-1 L

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	16	mpn/100ml	1	SM 9223	6/9/22	6/10/22		DRW
				B/Quantitray	15:17	10:54		
Total Coliform	687	mpn/100ml	1	SM 9223	6/9/22	6/10/22		DRW
				B/Quantitray	15:17	10:54		

**Lab ID:** 2221976-02

**Collected By:** Client

**Sampled:** 06/09/22 08:02

**Received:** 06/09/22 08:26

**Sample Desc:** SB-2 C

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	1	mpn/100ml	1	SM 9223	6/9/22	6/10/22		DRW
				B/Quantitray	15:17	10:54		
Total Coliform	488	mpn/100ml	1	SM 9223	6/9/22	6/10/22		DRW
				B/Quantitray	15:17	10:54		

**Lab ID:** 2221976-03

**Collected By:** Client

**Sampled:** 06/09/22 08:05

**Received:** 06/09/22 08:26

**Sample Desc:** SB-3 R

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	16	mpn/100ml	1	SM 9223	6/9/22	6/10/22		DRW
				B/Quantitray	15:17	10:54		
Total Coliform	461	mpn/100ml	1	SM 9223	6/9/22	6/10/22		DRW
				B/Quantitray	15:17	10:54		



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**M.J. Reider Associates, Inc.**

107 Angelica St, Reading PA, 19611  
610-374-5129 www.mjreider.com

Client Code: 4092  
Project Manager: Richard A Wheeler

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533

Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533

**BOTTLE ORDER  
Chain of Custody**

Client: US Army Corp of Engineers  
Project: 2022 Blue Marsh Beach 1,2,3

**2221976**

PM: RAW

US Army Corp of Engineers  
2022 Blue Marsh Beach 1,2,3



Collected By: Ethan Moyer  
(Full Name)

Comments: \_\_\_\_\_

**-01** SB-1 L

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Other  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 6/9/22  
Time: 08:00

**-02** SB-2 C

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Other  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 6/9/22  
Time: 08:02

**-03** SB-3 R

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Other  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 6/9/22  
Time: 08:05

Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
<u>Ethan Moyer</u>	<u>6/9 08:26</u>	<u>Juan Vanzura</u>	<u>JUN 09 2022</u>
Relinquished By	Date/Time	Received at Laboratory By	Date/Time
			<u>F126</u>

Sample Kit Prepared By:	Date/Time
<u>TSV</u>	<u>6/2/22</u>
Sample Temp (°C):	<u>20.4</u>
Samples on Ice?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA
Approved By:	<u>TSV</u>
Entered By:	<u>TSV</u>

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Reviewed and Approved by:



Rafael A Quijada For Richard A Wheeler  
Director of Field Services



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# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2221805

**Report:** 06/15/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland  
**Reported To:** US Army Corp of Engineers  
1268 Palisades Dr.  
Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2221805-01      **Collected By:** Client      **Sampled:** 06/13/22 08:05      **Received:** 06/13/22 08:32  
**Sample Desc:** SB-1 L      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	8	mpn/100ml	1	SM 9223	6/13/22	6/14/22		JMW
				B/Quantitray	14:29	9:03		
Total Coliform	236	mpn/100ml	1	SM 9223	6/13/22	6/14/22		JMW
				B/Quantitray	14:29	9:03		

**Lab ID:** 2221805-02      **Collected By:** Client      **Sampled:** 06/13/22 08:09      **Received:** 06/13/22 08:32  
**Sample Desc:** SB-2 C      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	2	mpn/100ml	1	SM 9223	6/13/22	6/14/22		JMW
				B/Quantitray	14:29	9:03		
Total Coliform	222	mpn/100ml	1	SM 9223	6/13/22	6/14/22		JMW
				B/Quantitray	14:29	9:03		

**Lab ID:** 2221805-03      **Collected By:** Client      **Sampled:** 06/13/22 08:13      **Received:** 06/13/22 08:32  
**Sample Desc:** SB-3 R      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	4	mpn/100ml	1	SM 9223	6/13/22	6/14/22		JMW
				B/Quantitray	14:29	9:03		
Total Coliform	387	mpn/100ml	1	SM 9223	6/13/22	6/14/22		JMW
				B/Quantitray	14:29	9:03		



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107 Angelica St, Reading PA, 19611  
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Client Code: 4092

Project Manager: Richard A Wheeler

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

**WORK ORDER  
Chain of Custody**

2221805



Client: US Army Corp of Engineers  
Project: 2022 Blue Marsh Beach 1,2,3

Collected By : Collin McLoughlin  
(Full Name)

Comments: \_\_\_\_\_

**2221805-01 SB-1 L**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water

Type: Grab

A - Sterile PI 125ml NaThio

Date: 06/13/22

Time: 0805

**2221805-02 SB-2 C**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water

Type: Grab

A - Sterile PI 125ml NaThio

Date: 06/13/22

Time: 0809

**2221805-03 SB-3 R**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water

Type: Grab

A - Sterile PI 125ml NaThio

Date: 06/13/22

Time: 0813

*Collin McLoughlin*

Collin McLoughlin 06/13/22 0837  
Relinquished By Date/Time

\_\_\_\_\_  
Received By Date/Time

\_\_\_\_\_  
Relinquished By Date/Time

\_\_\_\_\_  
Received By Date/Time

\_\_\_\_\_  
Relinquished By Date/Time

Gean Wandzura JUN 13 2022 8:37  
Received at Laboratory By Date/Time

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

Sample Kit Prepared By: <u>JSV</u>	Date/Time <u>6/13/22</u>
Sample Temp (°C): <u>21.3</u>	
Samples on Ice? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA	
Approved By: <u>JSV</u>	
Entered By: <u>JSV</u>	

**M.J. Reider Associates, Inc.**

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**Warranty & Litigation**

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the day of its discovery and within one year of the date of invoice.

Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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Additional accreditations by MD (261), NY(12094)



# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2221806

**Report:** 06/20/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland

**Reported To:** US Army Corp of Engineers

1268 Palisades Dr.

Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2221806-01

**Collected By:** Client

**Sampled:** 06/16/22 08:03

**Received:** 06/16/22 08:39

**Sample Desc:** SB-1 L

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	1	mpn/100ml	1	SM 9223	6/16/22	6/17/22		JMW
				B/Quantitray	15:46	13:18		
Total Coliform	313	mpn/100ml	1	SM 9223	6/16/22	6/17/22		JMW
				B/Quantitray	15:46	13:18		

**Lab ID:** 2221806-02

**Collected By:** Client

**Sampled:** 06/16/22 08:05

**Received:** 06/16/22 08:39

**Sample Desc:** SB-2 C

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	4	mpn/100ml	1	SM 9223	6/16/22	6/17/22		JMW
				B/Quantitray	15:46	13:18		
Total Coliform	461	mpn/100ml	1	SM 9223	6/16/22	6/17/22		JMW
				B/Quantitray	15:46	13:18		

**Lab ID:** 2221806-03

**Collected By:** Client

**Sampled:** 06/16/22 08:07

**Received:** 06/16/22 08:39

**Sample Desc:** SB-3 R

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	5	mpn/100ml	1	SM 9223	6/16/22	6/17/22		JMW
				B/Quantitray	15:46	13:18		
Total Coliform	249	mpn/100ml	1	SM 9223	6/16/22	6/17/22		JMW
				B/Quantitray	15:46	13:18		



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**M.J. Reider Associates, Inc.**

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610-374-5129 www.mjreider.com

**WORK ORDER  
Chain of Custody**

2221806



Client Code: 4092  
Project Manager: Richard A Wheeler

Client: US Army Corp of Engineers  
Project: 2022 Blue Marsh Beach 1,2,3

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Collected By: Tristan Current  
(Full Name)

Comments: \_\_\_\_\_

**2221806-01 SB-1 L**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water

Type: Grab

A - Sterile PI 125ml NaThio

Date: 6/16/2022

Time: 0803

**2221806-02 SB-2 C**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water

Type: Grab

A - Sterile PI 125ml NaThio

Date: 6/16/2022

Time: 0805

**2221806-03 SB-3 R**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water

Type: Grab

A - Sterile PI 125ml NaThio

Date: 6/16/2022

Time: 0807

<u>Tristan Current</u>	<u>6/16/22</u> <sup>0830</sup>	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	<u>Joan Vandzura</u>	<u>6/16/22 8:39</u>
Relinquished By	Date/Time	Received at Laboratory By	Date/Time

Sample Kit Prepared By: <u>JBW</u>	Date/Time <b>JUN 08 2022</b>
Sample Temp (°C): Samples on Ice?	<u>20.1</u> Yes No NA
Approved By: Entered By:	<u>[Signature]</u> <u>[Signature]</u>

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

**M.J. Reider Associates, Inc.**

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Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2220778

**Report:** 06/22/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland  
**Reported To:** US Army Corp of Engineers  
1268 Palisades Dr.  
Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2220778-01      **Collected By:** Client      **Sampled:** 06/20/22 08:12      **Received:** 06/20/22 08:45  
**Sample Desc:** SB-1 L      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	2	mpn/100ml	1	SM 9223	6/20/22	6/21/22		JMW
				B/Quantitray	14:35	9:06		
Total Coliform	139	mpn/100ml	1	SM 9223	6/20/22	6/21/22		JMW
				B/Quantitray	14:35	9:06		

**Lab ID:** 2220778-02      **Collected By:** Client      **Sampled:** 06/20/22 08:15      **Received:** 06/20/22 08:45  
**Sample Desc:** SB-2 C      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	4	mpn/100ml	1	SM 9223	6/20/22	6/21/22		JMW
				B/Quantitray	14:35	9:06		
Total Coliform	816	mpn/100ml	1	SM 9223	6/20/22	6/21/22		JMW
				B/Quantitray	14:35	9:06		

**Lab ID:** 2220778-03      **Collected By:** Client      **Sampled:** 06/20/22 08:18      **Received:** 06/20/22 08:45  
**Sample Desc:** SB-3 R      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	6	mpn/100ml	1	SM 9223	6/20/22	6/21/22		JMW
				B/Quantitray	14:35	9:06		
Total Coliform	292	mpn/100ml	1	SM 9223	6/20/22	6/21/22		JMW
				B/Quantitray	14:35	9:06		



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**WORK ORDER  
Chain of Custody**

2220778



Client Code: 4092

Project Manager: Richard A Wheeler

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Client: US Army Corp of Engineers  
Project: 2022 Blue Marsh Beach 1,2,3

Collected By :  
(Full Name)

*Tarin Krick*

Comments: \_\_\_\_\_

**2220778-01 SB-1 L**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 6/20/2022  
Time: 0812

**2220778-02 SB-2 C**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 6/20/2022  
Time: 0813

**2220778-03 SB-3 R**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 6/20/2022  
Time: 0818

*Tarin Krick* 6/20/2022 0845

Relinquished By \_\_\_\_\_ Date/Time \_\_\_\_\_ Received By \_\_\_\_\_ Date/Time \_\_\_\_\_

Relinquished By \_\_\_\_\_ Date/Time \_\_\_\_\_ Received By \_\_\_\_\_ Date/Time \_\_\_\_\_

Relinquished By \_\_\_\_\_ Date/Time \_\_\_\_\_ Received at Laboratory By *Jean VanBuren* 6/20/22 8:45 Date/Time \_\_\_\_\_

Sample Kit Prepared By: <i>VBW</i>	Date/Time <b>JUN 02 2022</b>
Sample Temp (°C): <u>20.4</u>	Samples on Ice? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA
Approved By: <i>VBW</i>	Entered By:

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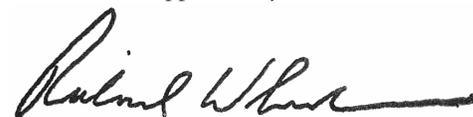
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Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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Additional accreditations by MD (261), NY(12094)



# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2223998

**Report:** 06/29/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland  
**Reported To:** US Army Corp of Engineers  
1268 Palisades Dr.  
Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2223998-01      **Collected By:** Client      **Sampled:** 06/23/22 08:00      **Received:** 06/23/22 09:24  
**Sample Desc:** SB-1 L      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	11	mpn/100ml	1	SM 9223	6/23/22	6/24/22		DRW
				B/Quantitray	15:55	9:57		
Total Coliform	345	mpn/100ml	1	SM 9223	6/23/22	6/24/22		DRW
				B/Quantitray	15:55	9:57		

**Lab ID:** 2223998-02      **Collected By:** Client      **Sampled:** 06/23/22 08:02      **Received:** 06/23/22 09:24  
**Sample Desc:** SB-2 C      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	41	mpn/100ml	1	SM 9223	6/23/22	6/24/22		DRW
				B/Quantitray	15:55	9:57		
Total Coliform	1200	mpn/100ml	1	SM 9223	6/23/22	6/24/22		DRW
				B/Quantitray	15:55	9:57		

**Lab ID:** 2223998-03      **Collected By:** Client      **Sampled:** 06/23/22 08:05      **Received:** 06/23/22 09:24  
**Sample Desc:** SB-3 R      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	2	mpn/100ml	1	SM 9223	6/23/22	6/24/22		DRW
				B/Quantitray	15:55	9:57		
Total Coliform	345	mpn/100ml	1	SM 9223	6/23/22	6/24/22		DRW
				B/Quantitray	15:55	9:57		



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Additional accreditations by MD (261), NY(12094)



**M.J. Reider Associates, Inc.**

107 Angelica St, Reading PA, 19611  
610-374-5129 www.mjreider.com

**Client Code:** 4092  
**Project Manager:** Richard A Wheeler

**Report To:** US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533

**Invoice To:** US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533

**BOTTLE ORDER**  
**Chain of Custody**

**Client:** US Army Corp of Engineers  
**Project:** 2022 Blue Marsh Beach 1,2,3  
2022 JSV 5-23-22

**2223998**

PM: RAW

US Army Corp of Engineers  
2022 Blue Marsh Beach 1,2,3



**Collected By:** Alexis Albu  
(Full Name)

**Comments:** \_\_\_\_\_

**-01** SB-1 L  
EC (#) SM 9223B, TC (#) SM 9223B

**Matrix:** Other  
**Type:** Grab  
A - Sterile PI 125ml NaThio

**Date:** 6/23/22  
**Time:** 08:00

**-02** SB-2 C  
EC (#) SM 9223B, TC (#) SM 9223B

**Matrix:** Other  
**Type:** Grab  
A - Sterile PI 125ml NaThio

**Date:** 6/23/22  
**Time:** 08:02

**-03** SB-3 R  
EC (#) SM 9223B, TC (#) SM 9223B

**Matrix:** Other  
**Type:** Grab  
A - Sterile PI 125ml NaThio

**Date:** 6/23/22  
**Time:** 08:05

[Signature] 6/23/22 924 \_\_\_\_\_  
Relinquished By Date/Time Received By Date/Time

\_\_\_\_\_  
Relinquished By Date/Time Received By Date/Time

[Signature] JUN 23 2022 924 \_\_\_\_\_  
Relinquished By Date/Time Received by Laboratory By Date/Time

Sample Kit Prepared By: <u>JJV</u>	Date/Time <u>5/23/22</u>
Sample Temp (°C): <u>14C</u>	
Samples on Ice? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA	
Approved By: <u>[Signature]</u>	
Entered By:	

**M.J. Reider Associates, Inc.**

**MJRA Terms & Conditions**

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Reviewed and Approved by:



Rafael A Quijada For Richard A Wheeler  
Director of Field Services



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Additional accreditations by MD (261), NY(12094)



# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2222913

**Report:** 07/06/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland

**Reported To:** US Army Corp of Engineers

1268 Palisades Dr.

Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2222913-01

**Collected By:** Client

**Sampled:** 06/27/22 08:30

**Received:** 06/27/22 09:03

**Sample Desc:** SB-1 L

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	13	mpn/100ml	1	SM 9223	6/27/22	6/28/22		JMW
				B/Quantitray	14:34	10:20		
Total Coliform	187	mpn/100ml	1	SM 9223	6/27/22	6/28/22		JMW
				B/Quantitray	14:34	10:20		

**Lab ID:** 2222913-02

**Collected By:** Client

**Sampled:** 06/27/22 08:32

**Received:** 06/27/22 09:03

**Sample Desc:** SB-2 C

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	122	mpn/100ml	1	SM 9223	6/27/22	6/28/22		JMW
				B/Quantitray	14:34	10:20		
Total Coliform	1410	mpn/100ml	1	SM 9223	6/27/22	6/28/22		JMW
				B/Quantitray	14:34	10:20		

**Lab ID:** 2222913-03

**Collected By:** Client

**Sampled:** 06/27/22 08:36

**Received:** 06/27/22 09:03

**Sample Desc:** SB-3 R

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	192	mpn/100ml	1	SM 9223	6/27/22	6/28/22		JMW
				B/Quantitray	14:34	10:20		
Total Coliform	>2420	mpn/100ml	1	SM 9223	6/27/22	6/28/22		JMW
				B/Quantitray	14:34	10:20		



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**M.J. Reider Associates, Inc.**

107 Angelica St, Reading PA, 19611  
610-374-5129 www.mjreider.com

**WORK ORDER  
Chain of Custody**

2222913



Client Code: 4092

Project Manager: Richard A Wheeler

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Client: US Army Corp of Engineers

Project: 2022 Blue Marsh Beach 1,2,3

Collected By : Union Brazzle  
(Full Name)

Comments: \_\_\_\_\_

**2222913-01 SB-1 L**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water

Type: Grab

A - Sterile Pl 125ml NaThio

Date: 6/28/22

Time: 0830

**2222913-02 SB-2 C**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water

Type: Grab

A - Sterile Pl 125ml NaThio

Date: 6/28/22

Time: 0832

**2222913-03 SB-3 R**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water

Type: Grab

A - Sterile Pl 125ml NaThio

Date: 6/28/22

Time: 0836

Union Brazzle

JUN 27 2022 9:03

Relinquished By _____	Date/Time _____	Received By _____	Date/Time _____
Relinquished By _____	Date/Time _____	Received By <u>Stymell</u>	Date/Time <u>JUN 27 2022 903</u>
Relinquished By _____	Date/Time _____	Received at Laboratory By _____	Date/Time _____

Sample Kit Prepared By: <u>B</u>	Date/Time <b>JUN 16 2022</b>
Sample Temp (°C): <u>20.3</u>	Samples on Ice? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA
Approved By: <u>BA</u>	Entered By: _____

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

**M.J. Reider Associates, Inc.**

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Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2223850

**Report:** 07/06/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland  
**Reported To:** US Army Corp of Engineers  
1268 Palisades Dr.  
Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2223850-01      **Collected By:** Client      **Sampled:** 06/30/22 08:00      **Received:** 06/30/22 08:39  
**Sample Desc:** SB-1 L      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	10	mpn/100ml	1	SM 9223	6/30/22	7/1/22		JMW
				B/Quantitray	15:13	9:31		
Total Coliform	980	mpn/100ml	1	SM 9223	6/30/22	7/1/22		JMW
				B/Quantitray	15:13	9:31		

**Lab ID:** 2223850-02      **Collected By:** Client      **Sampled:** 06/30/22 08:03      **Received:** 06/30/22 08:39  
**Sample Desc:** SB-2 C      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	6	mpn/100ml	1	SM 9223	6/30/22	7/1/22		JMW
				B/Quantitray	15:13	9:31		
Total Coliform	488	mpn/100ml	1	SM 9223	6/30/22	7/1/22		JMW
				B/Quantitray	15:13	9:31		

**Lab ID:** 2223850-03      **Collected By:** Client      **Sampled:** 06/30/22 08:05      **Received:** 06/30/22 08:39  
**Sample Desc:** SB-3 R      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	16	mpn/100ml	1	SM 9223	6/30/22	7/1/22		JMW
				B/Quantitray	15:13	9:31		
Total Coliform	770	mpn/100ml	1	SM 9223	6/30/22	7/1/22		JMW
				B/Quantitray	15:13	9:31		



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610-374-5129 www.mjreider.com

**WORK ORDER  
Chain of Custody**

2223850



Client Code: 4092  
Project Manager: Richard A Wheeler

Client: US Army Corp of Engineers  
Project: 2022 Blue Marsh Beach 1,2,3

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Comments: \_\_\_\_\_

Collected By : Raphael Parisi  
(Full Name)

**2223850-01 SB-1 L**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 08:00  
Time: 6/30/22

**2223850-02 SB-2 C**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 08:03  
Time: 6/30/22

**2223850-03 SB-3 R**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 08:05  
Time: 6/30/22

Relinquished By: Raphael Parisi Date/Time: 06/30/22 8:39 Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_ Received at Laboratory By: Jocan Vandzura Date/Time: 6/30/22 8:39

Sample Kit Prepared By: <u>[Signature]</u>	Date/Time: <b>JUN 22 2022</b>
Sample Temp (°C): <u>20.2</u>	Samples on Ice? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA
Approved By: <u>[Signature]</u>	Entered By: <u>[Signature]</u>

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Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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Additional accreditations by MD (261), NY(12094)



# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2224965

**Report:** 07/06/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland

**Reported To:** US Army Corp of Engineers

1268 Palisades Dr.

Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2224965-01

**Collected By:** Client

**Sampled:** 07/05/22 08:12

**Received:** 07/05/22 08:55

**Sample Desc:** SB-1 L

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	28	mpn/100ml	1	SM 9223	7/5/22	7/6/22		JMW
				B/Quantitray	15:04	9:45		
Total Coliform	1550	mpn/100ml	1	SM 9223	7/5/22	7/6/22		JMW
				B/Quantitray	15:04	9:45		

**Lab ID:** 2224965-02

**Collected By:** Client

**Sampled:** 07/05/22 08:15

**Received:** 07/05/22 08:55

**Sample Desc:** SB-2 C

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	12	mpn/100ml	1	SM 9223	7/5/22	7/6/22		JMW
				B/Quantitray	15:04	9:45		
Total Coliform	921	mpn/100ml	1	SM 9223	7/5/22	7/6/22		JMW
				B/Quantitray	15:04	9:45		

**Lab ID:** 2224965-03

**Collected By:** Client

**Sampled:** 07/05/22 08:18

**Received:** 07/05/22 08:55

**Sample Desc:** SB-3 R

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	11	mpn/100ml	1	SM 9223	7/5/22	7/6/22		JMW
				B/Quantitray	15:04	9:45		
Total Coliform	816	mpn/100ml	1	SM 9223	7/5/22	7/6/22		JMW
				B/Quantitray	15:04	9:45		



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Additional accreditations by MD (261), NY(12094)



**M.J. Reider Associates, Inc.**

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610-374-5129 www.mjreider.com

**WORK ORDER  
Chain of Custody**

2224965



Client Code: 4092

Project Manager: Richard A Wheeler

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Client: US Army Corp of Engineers  
Project: 2022 Blue Marsh Beach 1,2,3

Collected By : Union Brazzle  
(Full Name)

Comments: \_\_\_\_\_

**2224965-01 SB-1 L**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile Pl 125ml NaThio

Date: 7/5/22  
Time: 0812

**2224965-02 SB-2 C**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile Pl 125ml NaThio

Date: 7/5/22  
Time: 0815

**2224965-03 SB-3 R**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile Pl 125ml NaThio

Date: 7/5/22  
Time: 0818

Union Brazzle 7/5/22 8:55  
Relinquished By Date/Time

\_\_\_\_\_  
Received By Date/Time

\_\_\_\_\_  
Relinquished By Date/Time

Joan Vandzura 7-5-22 8:55  
Received By Date/Time

\_\_\_\_\_  
Relinquished By Date/Time

\_\_\_\_\_  
Received at Laboratory By Date/Time

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

Sample Kit Prepared By: <u>JB</u>	Date/Time <b>JUN 29 2022</b>
Sample Temp (°C): Samples on Ice?	<u>16.4</u> Yes <input checked="" type="radio"/> No <input type="radio"/> NA
Approved By: Entered By:	<u>JSV</u> <u>JSV</u>

**M.J. Reider Associates, Inc.**

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**MJRA Terms & Conditions**

All samples submitted must be accompanied by signed documentation representing a Chain of Custody (COC). The COC Record acts as a contract between the client and MJRA. Signing the COC form gives approval for MJRA to perform the requested analyses and is an agreement to pay for the cost of such analyses. COC Records must be completed in black or blue indelible ink (must not run when wet). COC documentation begins at the time of sample collection. Client is required to document all sample details prior to releasing samples to MJRA. All samples must be placed on ice immediately after sampling and shipped or delivered to the laboratory in a manner that will maintain the sample temperature above freezing and below 6C (loose ice is preferred).

**Sample Submission, Sample Acceptance & Sampling Containers**

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MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the day of its discovery and within one year of the date of invoice.

Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2222914

**Report:** 07/12/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland  
**Reported To:** US Army Corp of Engineers  
1268 Palisades Dr.  
Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2222914-01      **Collected By:** Client      **Sampled:** 07/07/22 08:00      **Received:** 07/07/22 08:44  
**Sample Desc:** SB-1 L      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	187	mpn/100ml	1	SM 9223	7/7/22	7/8/22		JMW
				B/Quantitray	15:23	9:59		
Total Coliform	1990	mpn/100ml	1	SM 9223	7/7/22	7/8/22		JMW
				B/Quantitray	15:23	9:59		

**Lab ID:** 2222914-02      **Collected By:** Client      **Sampled:** 07/07/22 08:04      **Received:** 07/07/22 08:44  
**Sample Desc:** SB-2 C      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	127	mpn/100ml	1	SM 9223	7/7/22	7/8/22		JMW
				B/Quantitray	15:23	9:59		
Total Coliform	2420	mpn/100ml	1	SM 9223	7/7/22	7/8/22		JMW
				B/Quantitray	15:23	9:59		

**Lab ID:** 2222914-03      **Collected By:** Client      **Sampled:** 07/07/22 08:06      **Received:** 07/07/22 08:44  
**Sample Desc:** SB-3 R      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	111	mpn/100ml	1	SM 9223	7/7/22	7/8/22		JMW
				B/Quantitray	15:23	9:59		
Total Coliform	914	mpn/100ml	1	SM 9223	7/7/22	7/8/22		JMW
				B/Quantitray	15:23	9:59		



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**WORK ORDER  
Chain of Custody**

2222914



**Client Code:** 4092  
**Project Manager:** Richard A Wheeler  
**Report To:** US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533  
**Invoice To:** US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

**Client:** US Army Corp of Engineers  
**Project:** 2022 Blue Marsh Beach 1,2,3

**Collected By:** Raphael Pansi  
(Full Name)

**Comments:** \_\_\_\_\_

**2222914-01 SB-1 L**

EC (#) SM 9223B, TC (#) SM 9223B

**Matrix:** Non-Potable Water  
**Type:** Grab  
A - Sterile Pl 125ml NaThio

**Date:** 07/07/2022  
**Time:** 08:00

**2222914-02 SB-2 C**

EC (#) SM 9223B, TC (#) SM 9223B

**Matrix:** Non-Potable Water  
**Type:** Grab  
A - Sterile Pl 125ml NaThio

**Date:** 07/07/2022  
**Time:** 08:04

**2222914-03 SB-3 R**

EC (#) SM 9223B, TC (#) SM 9223B

**Matrix:** Non-Potable Water  
**Type:** Grab  
A - Sterile Pl 125ml NaThio

**Date:** 07/07/2022  
**Time:** 08:06

<u>Alexis Albu</u>	<u>07/07/2022 08:44</u>	_____	_____
Relinquished By	Date/Time	Received By	Date/Time
_____	_____	_____	_____
Relinquished By	Date/Time	Received By	Date/Time
_____	_____	<u>Joan VanBuren</u>	<u>7-7-22 8:44</u>
Relinquished By	Date/Time	Received at Laboratory By	Date/Time

Sample Kit Prepared By: <u>VB</u>	Date/Time <b>JUN 16 2022</b>
Sample Temp (°C): <u>20.1</u>	Samples on Ice? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA
Approved By: <u>JFV</u>	Entered By: _____

**M.J. Reider Associates, Inc.**

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Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2223851

**Report:** 07/13/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland  
**Reported To:** US Army Corp of Engineers  
1268 Palisades Dr.  
Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2223851-01      **Collected By:** Client      **Sampled:** 07/11/22 08:20      **Received:** 07/11/22 08:57  
**Sample Desc:** SB-1 L      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	5	mpn/100ml	1	SM 9223	7/11/22	7/12/22		JMW
				B/Quantitray	15:30	9:34		
Total Coliform	770	mpn/100ml	1	SM 9223	7/11/22	7/12/22		JMW
				B/Quantitray	15:30	9:34		

**Lab ID:** 2223851-02      **Collected By:** Client      **Sampled:** 07/11/22 08:24      **Received:** 07/11/22 08:57  
**Sample Desc:** SB-2 C      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	8	mpn/100ml	1	SM 9223	7/11/22	7/12/22		JMW
				B/Quantitray	15:30	9:34		
Total Coliform	727	mpn/100ml	1	SM 9223	7/11/22	7/12/22		JMW
				B/Quantitray	15:30	9:34		

**Lab ID:** 2223851-03      **Collected By:** Client      **Sampled:** 07/11/22 08:28      **Received:** 07/11/22 08:57  
**Sample Desc:** SB-3 R      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	5	mpn/100ml	1	SM 9223	7/11/22	7/12/22		JMW
				B/Quantitray	15:30	9:34		
Total Coliform	461	mpn/100ml	1	SM 9223	7/11/22	7/12/22		JMW
				B/Quantitray	15:30	9:34		



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**M.J. Reider Associates, Inc.**

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610-374-5129 www.mjreider.com

**WORK ORDER  
Chain of Custody**

2223851



Client Code: 4092

Project Manager: Richard A Wheeler

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Client: US Army Corp of Engineers  
Project: 2022 Blue Marsh Beach 1,2,3

Collected By: Erin Unangst  
(Full Name)

Comments: \_\_\_\_\_

**2223851-01 SB-1 L**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 7/11/22  
Time: 0820

**2223851-02 SB-2 C**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 7/11/22  
Time: 0824

**2223851-03 SB-3 R**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 7/11/22  
Time: 0828

Relinquished By: Collin McCulloch Date/Time: 7/11/22 0857

Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received at Laboratory By: Jean VanBuren Date/Time: 7-11-22 8:57

Sample Kit Prepared By: <u>US</u>	Date/Time: <b>JUN 22 2022</b>
Sample Temp (°C): <u>22.1</u>	Samples on Ice? <u>Yes</u> No NA
Approved By: <u>JAV</u>	Entered By: _____

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

**M.J. Reider Associates, Inc.**

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Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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Additional accreditations by MD (261), NY(12094)



# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2226102

**Report:** 07/21/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland

**Reported To:** US Army Corp of Engineers

1268 Palisades Dr.

Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2226102-01

**Collected By:** Client

**Sampled:** 07/14/22 08:00

**Received:** 07/14/22 08:44

**Sample Desc:** SB-1 L

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	15	mpn/100ml	1	SM 9223	7/14/22	7/15/22		JMW
				B/Quantitray	14:19	8:56		
Total Coliform	1990	mpn/100ml	1	SM 9223	7/14/22	7/15/22		JMW
				B/Quantitray	14:19	8:56		

**Lab ID:** 2226102-02

**Collected By:** Client

**Sampled:** 07/14/22 08:04

**Received:** 07/14/22 08:44

**Sample Desc:** SB-2 C

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	20	mpn/100ml	1	SM 9223	7/14/22	7/15/22		JMW
				B/Quantitray	14:19	8:56		
Total Coliform	1120	mpn/100ml	1	SM 9223	7/14/22	7/15/22		JMW
				B/Quantitray	14:19	8:56		

**Lab ID:** 2226102-03

**Collected By:** Client

**Sampled:** 07/14/22 08:08

**Received:** 07/14/22 08:44

**Sample Desc:** SB-3 R

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	4	mpn/100ml	1	SM 9223	7/14/22	7/15/22		JMW
				B/Quantitray	14:19	8:56		
Total Coliform	629	mpn/100ml	1	SM 9223	7/14/22	7/15/22		JMW
				B/Quantitray	14:19	8:56		



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Additional accreditations by MD (261), NY(12094)



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**WORK ORDER  
Chain of Custody**

2226102



**Client Code:** 4092  
**Project Manager:** Richard A Wheeler  
**Report To:** US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533  
**Invoice To:** US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

**Client:** US Army Corp of Engineers  
**Project:** 2022 Blue Marsh Beach 1,2,3

**Comments:** \_\_\_\_\_

**Collected By:** Raphael Brisi  
(Full Name)

<b>2226102-01 SB-1 L</b>	<b>Matrix:</b> Non-Potable Water	<b>Date:</b> <u>7/14/2022</u>
EC (#) SM 9223B, TC (#) SM 9223B	<b>Type:</b> Grab	<b>Time:</b> <u>8:00</u>
	A - Sterile Pl 125ml NaThio	

<b>2226102-02 SB-2 C</b>	<b>Matrix:</b> Non-Potable Water	<b>Date:</b> <u>7/14/2022</u>
EC (#) SM 9223B, TC (#) SM 9223B	<b>Type:</b> Grab	<b>Time:</b> <u>8:04</u>
	A - Sterile Pl 125ml NaThio	

<b>2226102-03 SB-3 R</b>	<b>Matrix:</b> Non-Potable Water	<b>Date:</b> <u>7/14/2022</u>
EC (#) SM 9223B, TC (#) SM 9223B	<b>Type:</b> Grab	<b>Time:</b> <u>8:08</u>
	A - Sterile Pl 125ml NaThio	

<u>Raphael Brisi</u>	<u>7/14/2022 8:44</u>		
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
		<u>Jean Vandzura</u>	<u>7-14-22 8:44</u>
Relinquished By	Date/Time	Received at Laboratory By	Date/Time

Sample Kit Prepared By: <u>JSV</u>	Date/Time <u>7-7-22</u>
Sample Temp (°C): <u>22.0</u>	Samples on Ice? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA
Approved By: <u>JSV</u>	Entered By: <u>JSV</u>

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

**M.J. Reider Associates, Inc.**

**MJRA Terms & Conditions**

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**Sample Submission, Sample Acceptance & Sampling Containers**

Included on the COC must be the sample description, date and time of collection (including start and stop for composites), container size and type, preservative information, sample matrix, indication of whether the sample is a grab or composite, number of containers & a list of the tests to be performed. Poor sample collection technique, inappropriate sampling containers and/or improper sample preservation may lead to sample rejection. Suitable sample containers, labels, and preservatives (as applicable), along with blank COCs are provided at no additional cost.

**Turnaround Times (TAT)**

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**Analytical Results, Sample Collection Integrity & Subcontracting**

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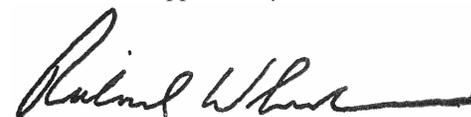
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**Warranty & Litigation**

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the day of its discovery and within one year of the date of invoice.

Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2226956

**Report:** 07/21/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland  
**Reported To:** US Army Corp of Engineers  
1268 Palisades Dr.  
Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2226956-01      **Collected By:** Client      **Sampled:** 07/18/22 08:20      **Received:** 07/18/22 09:00  
**Sample Desc:** SB-1 L      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	61	mpn/100ml	1	SM 9223	7/18/22	7/19/22		JMW
				B/Quantitray	15:14	11:55		
Total Coliform	>2420	mpn/100ml	1	SM 9223	7/18/22	7/19/22		JMW
				B/Quantitray	15:14	11:55		

**Lab ID:** 2226956-02      **Collected By:** Client      **Sampled:** 07/18/22 08:22      **Received:** 07/18/22 09:00  
**Sample Desc:** SB-2 C      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	33	mpn/100ml	1	SM 9223	7/18/22	7/19/22		JMW
				B/Quantitray	15:14	11:55		
Total Coliform	>2420	mpn/100ml	1	SM 9223	7/18/22	7/19/22		JMW
				B/Quantitray	15:14	11:55		

**Lab ID:** 2226956-03      **Collected By:** Client      **Sampled:** 07/18/22 08:25      **Received:** 07/18/22 09:00  
**Sample Desc:** SB-3 R      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	24	mpn/100ml	1	SM 9223	7/18/22	7/19/22		JMW
				B/Quantitray	15:14	11:55		
Total Coliform	>2420	mpn/100ml	1	SM 9223	7/18/22	7/19/22		JMW
				B/Quantitray	15:14	11:55		



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**M.J. Reider Associates, Inc.**

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**WORK ORDER  
Chain of Custody**

2226956



Client Code: 4092

Project Manager: Richard A Wheeler

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Client: US Army Corp of Engineers

Project: 2022 Blue Marsh Beach 1,2,3

Comments: \_\_\_\_\_

Collected By: Tawn Krick  
(Full Name)

**2226956-01 SB-1 L**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 7/18/22  
Time: 0810

**2226956-02 SB-2 C**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 7/18/22  
Time: 0822

**2226956-03 SB-3 R**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 7/18/22  
Time: 0825

[Signature] 7/18/22 9:00  
Relinquished By Date/Time Received By Date/Time

Relinquished By Date/Time Received By Date/Time

Relinquished By Date/Time Received at Laboratory By [Signature] 7/18/22 9:00 Date/Time

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

Sample Kit Prepared By: <u>[Signature]</u>	Date/Time: <b>JUL 13 2022</b>
Sample Temp (°C): <u>22.6</u>	Samples on Ice? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA
Approved By: <u>[Signature]</u>	Entered By: <u>[Signature]</u>

**M.J. Reider Associates, Inc.**

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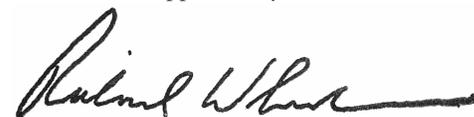
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**Warranty & Litigation**

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Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2226957

**Report:** 07/26/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland  
**Reported To:** US Army Corp of Engineers  
1268 Palisades Dr.  
Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2226957-01      **Collected By:** Client      **Sampled:** 07/21/22 08:00      **Received:** 07/21/22 08:48  
**Sample Desc:** SB-1 L      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	26	mpn/100ml	1	SM 9223	7/21/22	7/22/22		JMW
				B/Quantitray	14:46	8:46		
Total Coliform	>2420	mpn/100ml	1	SM 9223	7/21/22	7/22/22		JMW
				B/Quantitray	14:46	8:46		

**Lab ID:** 2226957-02      **Collected By:** Client      **Sampled:** 07/21/22 08:02      **Received:** 07/21/22 08:48  
**Sample Desc:** SB-2 C      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	13	mpn/100ml	1	SM 9223	7/21/22	7/22/22		JMW
				B/Quantitray	14:46	8:46		
Total Coliform	>2420	mpn/100ml	1	SM 9223	7/21/22	7/22/22		JMW
				B/Quantitray	14:46	8:46		

**Lab ID:** 2226957-03      **Collected By:** Client      **Sampled:** 07/21/22 08:05      **Received:** 07/21/22 08:48  
**Sample Desc:** SB-3 R      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	23	mpn/100ml	1	SM 9223	7/21/22	7/22/22		JMW
				B/Quantitray	14:46	8:46		
Total Coliform	>2420	mpn/100ml	1	SM 9223	7/21/22	7/22/22		JMW
				B/Quantitray	14:46	8:46		



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Additional accreditations by MD (261), NY(12094)



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**WORK ORDER  
Chain of Custody**

2226957



Client Code: 4092  
Project Manager: Richard A Wheeler

Client: US Army Corp of Engineers  
Project: 2022 Blue Marsh Beach 1,2,3

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Collected By : Alexis Aibu  
(Full Name)

Comments: \_\_\_\_\_

**2226957-01 SB-1 L**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 07/21/2022  
Time: 08:00

**2226957-02 SB-2 C**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 07/21/2022  
Time: 08:02

**2226957-03 SB-3 R**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 07/21/2022  
Time: 08:05

<u>[Signature]</u> Relinquished By	<u>07/21/2022 (08:48)</u> Date/Time	_____ Received By	_____ Date/Time
_____ Relinquished By	_____ Date/Time	<u>Jean Vandzura</u> Received By	<u>7/21/22 8:48</u> Date/Time
_____ Relinquished By	_____ Date/Time	_____ Received at Laboratory By	_____ Date/Time

Sample Kit Prepared By: <u>VB</u>	Date/Time <b>JUL 13 2022</b>
Sample Temp (°C): <u>20.4</u>	Samples on Ice? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA
Approved By: <u>[Signature]</u>	Entered By: <u>[Signature]</u>

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**Warranty & Litigation**

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Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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Additional accreditations by MD (261), NY(12094)



# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2226103

**Report:** 07/27/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland  
**Reported To:** US Army Corp of Engineers  
1268 Palisades Dr.  
Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2226103-01    **Collected By:** Client    **Sampled:** 07/25/22 07:50    **Received:** 07/25/22 08:22  
**Sample Desc:** SB-1 L    **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	14	mpn/100ml	1	SM 9223	7/25/22	7/26/22		JMW
				B/Quantitray	15:27	11:50		
Total Coliform	>2420	mpn/100ml	1	SM 9223	7/25/22	7/26/22		JMW
				B/Quantitray	15:27	11:50		

**Lab ID:** 2226103-02    **Collected By:** Client    **Sampled:** 07/25/22 07:52    **Received:** 07/25/22 08:22  
**Sample Desc:** SB-2 C    **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	10	mpn/100ml	1	SM 9223	7/25/22	7/26/22		JMW
				B/Quantitray	15:27	11:50		
Total Coliform	>2420	mpn/100ml	1	SM 9223	7/25/22	7/26/22		JMW
				B/Quantitray	15:27	11:50		

**Lab ID:** 2226103-03    **Collected By:** Client    **Sampled:** 07/25/22 07:54    **Received:** 07/25/22 08:22  
**Sample Desc:** SB-3 R    **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	13	mpn/100ml	1	SM 9223	7/25/22	7/26/22		JMW
				B/Quantitray	15:27	11:50		
Total Coliform	>2420	mpn/100ml	1	SM 9223	7/25/22	7/26/22		JMW
				B/Quantitray	15:27	11:50		



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**M.J. Reider Associates, Inc.**

107 Angelica St, Reading PA, 19611  
610-374-5129 www.mjreider.com

**WORK ORDER  
Chain of Custody**

2226103



Client Code: 4092  
Project Manager: Richard A Wheeler

Client: US Army Corp of Engineers  
Project: 2022 Blue Marsh Beach 1,2,3

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Collected By : Sarah Kern  
(Full Name)

Comments: \_\_\_\_\_

**2226103-01 SB-1 L**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile Pl 125ml NaThio

Date: 7/25/22  
Time: 07:50

**2226103-02 SB-2 C**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile Pl 125ml NaThio

Date: 7/25/22  
Time: 07:52

**2226103-03 SB-3 R**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile Pl 125ml NaThio

Date: 7/25/22  
Time: 07:54

Relinquished By _____	Date/Time _____	Received By _____	Date/Time _____
Relinquished By <u>[Signature]</u>	Date/Time <u>7/25/22 08:22</u>	Received By <u>Tyler Kondzura</u>	Date/Time <u>7/25/22 08:22</u>
Relinquished By _____	Date/Time _____	Received at Laboratory By _____	Date/Time _____

Sample Kit Prepared By: <u>[Signature]</u>	Date/Time: <u>7-25-22</u>
Sample Temp (°C): <u>22.4</u>	Samples on Ice? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA
Approved By: <u>[Signature]</u>	Entered By: <u>[Signature]</u>

**M.J. Reider Associates, Inc.**

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**MJRA Terms & Conditions**

All samples submitted must be accompanied by signed documentation representing a Chain of Custody (COC). The COC Record acts as a contract between the client and MJRA. Signing the COC form gives approval for MJRA to perform the requested analyses and is an agreement to pay for the cost of such analyses. COC Records must be completed in black or blue indelible ink (must not run when wet). COC documentation begins at the time of sample collection. Client is required to document all sample details prior to releasing samples to MJRA. All samples must be placed on ice immediately after sampling and shipped or delivered to the laboratory in a manner that will maintain the sample temperature above freezing and below 6C (loose ice is preferred).

**Sample Submission, Sample Acceptance & Sampling Containers**

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**Turnaround Times (TAT)**

Average TAT for test results range from 5 to 15 working days depending on the specific analyses and time of year submitted. Faster turnaround times (\*RUSH TAT) may be available depending on the current workload in a particular department and the nature of the analyses requested. We encourage you to verify requests for expedited sample results with one of our Technical Directors prior to sample submittal. Without confirmation from a Technical Director, your results may not be completed by your deadline. \*RUSH TAT Surcharges are applied for expedited turnaround times.

**Analytical Results, Sample Collection Integrity & Subcontracting**

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Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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Additional accreditations by MD (261), NY(12094)



# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2224964

**Report:** 08/04/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland  
**Reported To:** US Army Corp of Engineers  
1268 Palisades Dr.  
Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2224964-01    **Collected By:** Client    **Sampled:** 07/28/22 08:30    **Received:** 07/28/22 09:20  
**Sample Desc:** SB-1 L    **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	160	mpn/100ml	1	SM 9223	7/28/22	7/29/22		DRW
				B/Quantitray	14:51	11:25		
Total Coliform	>2420	mpn/100ml	1	SM 9223	7/28/22	7/29/22		DRW
				B/Quantitray	14:51	11:25		

**Lab ID:** 2224964-02    **Collected By:** Client    **Sampled:** 07/28/22 08:32    **Received:** 07/28/22 09:20  
**Sample Desc:** SB-2 C    **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	172	mpn/100ml	1	SM 9223	7/28/22	7/29/22		DRW
				B/Quantitray	14:51	11:25		
Total Coliform	>2420	mpn/100ml	1	SM 9223	7/28/22	7/29/22		DRW
				B/Quantitray	14:51	11:25		

**Lab ID:** 2224964-03    **Collected By:** Client    **Sampled:** 07/28/22 08:35    **Received:** 07/28/22 09:20  
**Sample Desc:** SB-3 R    **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	152	mpn/100ml	1	SM 9223	7/28/22	7/29/22		DRW
				B/Quantitray	14:51	11:25		
Total Coliform	>2420	mpn/100ml	1	SM 9223	7/28/22	7/29/22		DRW
				B/Quantitray	14:51	11:25		



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**WORK ORDER  
Chain of Custody**

2224964



Client Code: 4092

Project Manager: Richard A Wheeler

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Client: US Army Corp of Engineers

Project: 2022 Blue Marsh Beach 1,2,3

Comments: \_\_\_\_\_

Collected By : Erm Unangst  
(Full Name)

<b>2224964-01 SB-1 L</b> EC (#) SM 9223B, TC (#) SM 9223B		<b>Matrix:</b> Non-Potable Water <b>Type:</b> Grab A - Sterile Pl 125ml NaThio	Date: <u>7/28/22</u> Time: <u>8:30</u>
<b>2224964-02 SB-2 C</b> EC (#) SM 9223B, TC (#) SM 9223B		<b>Matrix:</b> Non-Potable Water <b>Type:</b> Grab A - Sterile Pl 125ml NaThio	Date: <u>7/28/22</u> Time: <u>8:32</u>
<b>2224964-03 SB-3 R</b> EC (#) SM 9223B, TC (#) SM 9223B		<b>Matrix:</b> Non-Potable Water <b>Type:</b> Grab A - Sterile Pl 125ml NaThio	Date: <u>7/28/22</u> Time: <u>8:35</u>

Relinquished By: \_\_\_\_\_ Date/Time: 7/28/22 09:20

Received By: Jean Vandzura Date/Time: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received By: \_\_\_\_\_ Date/Time: JUL 28 2022 9:20

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received at Laboratory By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Sample Kit Prepared By: <u>JBV</u>	Date/Time: <u>JUN 29 2022</u>
Sample Temp (°C): <u>20.8</u>	Samples on Ice? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA
Approved By: _____	Entered By: <u>JBV</u>

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

**M.J. Reider Associates, Inc.**

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Reviewed and Approved by:



Rafael A Quijada For Richard A Wheeler  
Director of Field Services



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Additional accreditations by MD (261), NY(12094)



# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2229738

**Report:** 08/08/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland

**Reported To:** US Army Corp of Engineers

1268 Palisades Dr.

Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2229738-01

**Collected By:** Client

**Sampled:** 08/01/22 07:50

**Received:** 08/01/22 08:24

**Sample Desc:** SB-1 L

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	167	mpn/100ml	1	SM 9223	8/1/22	8/2/22		NAK
				B/Quantitray	10:20	10:34		
Total Coliform	>2420	mpn/100ml	1	SM 9223	8/1/22	8/2/22		NAK
				B/Quantitray	10:20	10:34		

**Lab ID:** 2229738-02

**Collected By:** Client

**Sampled:** 08/01/22 07:53

**Received:** 08/01/22 08:24

**Sample Desc:** SB-2 C

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	60	mpn/100ml	1	SM 9223	8/1/22	8/2/22		NAK
				B/Quantitray	10:20	10:34		
Total Coliform	>2420	mpn/100ml	1	SM 9223	8/1/22	8/2/22		NAK
				B/Quantitray	10:20	10:34		

**Lab ID:** 2229738-03

**Collected By:** Client

**Sampled:** 08/01/22 07:56

**Received:** 08/01/22 08:24

**Sample Desc:** SB-3 R

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	22	mpn/100ml	1	SM 9223	8/1/22	8/2/22		NAK
				B/Quantitray	10:20	10:34		
Total Coliform	>2420	mpn/100ml	1	SM 9223	8/1/22	8/2/22		NAK
				B/Quantitray	10:20	10:34		



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**M.J. Reider Associates, Inc.**

107 Angelica St, Reading PA, 19611  
610-374-5129 www.mjreider.com

**Client Code:** 4092  
**Project Manager:** Richard A Wheeler

**Report To:** US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533

**Invoice To:** US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr. - Leesport, PA 19533

**BOTTLE ORDER**  
**Chain of Custody**

**Client:** US Army Corp of Engineers  
**Project:** 2022 Blue Marsh Beach 1,2,3

**2229738**

PM: RAW

US Army Corp of Engineers  
2022 Blue Marsh Beach 1,2,3



**Collected By:**  
(Full Name)

*Brianna Treichler*

**Comments:** \_\_\_\_\_

**-01** SB-1 L

EC (#) SM 9223B, TC (#) SM 9223B

**Matrix:** Other  
**Type:** Grab

A - Sterile Pl 125ml NaThio

**Date:** 1 Aug 2022  
**Time:** 0750

**-02** SB-2 C

EC (#) SM 9223B, TC (#) SM 9223B

**Matrix:** Other  
**Type:** Grab

A - Sterile Pl 125ml NaThio

**Date:** 1 Aug 2022  
**Time:** 0753

**-03** SB-3 R

EC (#) SM 9223B, TC (#) SM 9223B

**Matrix:** Other  
**Type:** Grab

A - Sterile Pl 125ml NaThio

**Date:** 1 Aug 2022  
**Time:** 0756

*[Signature]*

Relinquished By

1 Aug 2022

Date/Time

Received By

Date/Time

*[Signature]*

Relinquished By

1/8/22 8:24

Date/Time

Received By

Date/Time

*[Signature]*

Relinquished By

Date/Time

Received at Laboratory By

Date/Time

*Jean Vanetzyan 8/1/22 8:24*

Sample Kit Prepared By: <i>JJV</i>	Date/Time <u>6/2/22</u>
Sample Temp (°C): <u>18.3</u>	
Samples on Ice? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA	
Approved By: <i>JJV</i>	
Entered By: <i>JJV</i>	

**M.J. Reider Associates, Inc.**

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Reviewed and Approved by:



Twila E Dixon For Richard A Wheeler  
Director of Field Services



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Additional accreditations by MD (261), NY(12094)



# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2228779

**Report:** 08/08/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland

**Reported To:** US Army Corp of Engineers

1268 Palisades Dr.

Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2228779-01

**Collected By:** Client

**Sampled:** 08/04/22 08:06

**Received:** 08/04/22 08:37

**Sample Desc:** SB-1 L

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	4	mpn/100ml	1	SM 9223	8/4/22	8/5/22		NAK
				B/Quantitray	14:51	9:24		
Total Coliform	1990	mpn/100ml	1	SM 9223	8/4/22	8/5/22		NAK
				B/Quantitray	14:51	9:24		

**Lab ID:** 2228779-02

**Collected By:** Client

**Sampled:** 08/04/22 08:08

**Received:** 08/04/22 08:37

**Sample Desc:** SB-2 C

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	32	mpn/100ml	1	SM 9223	8/4/22	8/5/22		NAK
				B/Quantitray	14:51	9:24		
Total Coliform	961	mpn/100ml	1	SM 9223	8/4/22	8/5/22		NAK
				B/Quantitray	14:51	9:24		

**Lab ID:** 2228779-03

**Collected By:** Client

**Sampled:** 08/04/22 08:10

**Received:** 08/04/22 08:37

**Sample Desc:** SB-3 R

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	11	mpn/100ml	1	SM 9223	8/4/22	8/5/22		NAK
				B/Quantitray	14:51	9:24		
Total Coliform	727	mpn/100ml	1	SM 9223	8/4/22	8/5/22		NAK
				B/Quantitray	14:51	9:24		



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Additional accreditations by MD (261), NY(12094)



**M.J. Reider Associates, Inc.**

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610-374-5129 www.mjreider.com

**WORK ORDER  
Chain of Custody**

2228779



**Client Code:** 4092  
**Project Manager:** Richard A Wheeler

**Client:** US Army Corp of Engineers  
**Project:** 2022 Blue Marsh Beach 1,2,3

**Report To:** US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

**Invoice To:** US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

**Collected By :**  
(Full Name)

*Raphael Parisi*

**Comments:** \_\_\_\_\_

**2228779-01 SB-1 L**

EC (#) SM 9223B, TC (#) SM 9223B

**Matrix:** Non-Potable Water  
**Type:** Grab  
A - Sterile PI 125ml NaThio

Date: 8/4/22  
Time: 8:06

**2228779-02 SB-2 C**

EC (#) SM 9223B, TC (#) SM 9223B

**Matrix:** Non-Potable Water  
**Type:** Grab  
A - Sterile PI 125ml NaThio

Date: 8/4/22  
Time: 8:08

**2228779-03 SB-3 R**

EC (#) SM 9223B, TC (#) SM 9223B

**Matrix:** Non-Potable Water  
**Type:** Grab  
A - Sterile PI 125ml NaThio

Date: 8/4/22  
Time: 8:10

<u>Raphael Parisi</u>	<u>8/4/22</u>	<u>8:57</u>	_____	_____
Relinquished By	Date/Time	Received By	Date/Time	
_____	_____	_____	_____	_____
Relinquished By	Date/Time	Received By	Date/Time	
_____	_____	<u>Tomas Vandzum</u>	<u>8/4/22</u>	<u>8:37</u>
Relinquished By	Date/Time	Received at Laboratory By	Date/Time	

Sample Kit Prepared By: <i>WV</i>	Date/Time <b>JUL 29 2022</b>
Sample Temp (°C): Samples on Ice? Approved By: Entered By:	<u>21.6</u> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/> <i>[Signature]</i>

**M.J. Reider Associates, Inc.**

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**MJRA Terms & Conditions**

All samples submitted must be accompanied by signed documentation representing a Chain of Custody (COC). The COC Record acts as a contract between the client and MJRA. Signing the COC form gives approval for MJRA to perform the requested analyses and is an agreement to pay for the cost of such analyses. COC Records must be completed in black or blue indelible ink (must not run when wet). COC documentation begins at the time of sample collection. Client is required to document all sample details prior to releasing samples to MJRA. All samples must be placed on ice immediately after sampling and shipped or delivered to the laboratory in a manner that will maintain the sample temperature above freezing and below 6C (loose ice is preferred).

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Reviewed and Approved by:



Twila E Dixon For Richard A Wheeler  
Director of Field Services



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Additional accreditations by MD (261), NY(12094)



# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2220777

**Report:** 08/10/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland

**Reported To:** US Army Corp of Engineers

1268 Palisades Dr.

Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2220777-01

**Collected By:** Client

**Sampled:** 08/08/22 08:10

**Received:** 08/08/22 08:42

**Sample Desc:** SB-1 L

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	10	mpn/100ml	1	SM 9223	8/8/22	8/9/22		JMW
				B/Quantitray	15:00	9:10		
Total Coliform	2420	mpn/100ml	1	SM 9223	8/8/22	8/9/22		JMW
				B/Quantitray	15:00	9:10		

**Lab ID:** 2220777-02

**Collected By:** Client

**Sampled:** 08/08/22 08:12

**Received:** 08/08/22 08:42

**Sample Desc:** SB-2 C

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	4	mpn/100ml	1	SM 9223	8/8/22	8/9/22		JMW
				B/Quantitray	15:00	9:10		
Total Coliform	>2420	mpn/100ml	1	SM 9223	8/8/22	8/9/22		JMW
				B/Quantitray	15:00	9:10		

**Lab ID:** 2220777-03

**Collected By:** Client

**Sampled:** 08/08/22 08:14

**Received:** 08/08/22 08:42

**Sample Desc:** SB-3 R

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	10	mpn/100ml	1	SM 9223	8/8/22	8/9/22		JMW
				B/Quantitray	15:00	9:10		
Total Coliform	1410	mpn/100ml	1	SM 9223	8/8/22	8/9/22		JMW
				B/Quantitray	15:00	9:10		



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610-374-5129 www.mjreider.com

**WORK ORDER  
Chain of Custody**

2220777



Client Code: 4092

Project Manager: Richard A Wheeler

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Client: US Army Corp of Engineers

Project: 2022 Blue Marsh Beach 1,2,3

Comments: \_\_\_\_\_

Collected By : Erin Unangst  
(Full Name)

**2220777-01 SB-1 L**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 8/8/22  
Time: 8:10

**2220777-02 SB-2 C**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 8/8/22  
Time: 8:12

**2220777-03 SB-3 R**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 8/8/22  
Time: 8:14

[Signature] 8/8/22 0842  
Relinquished By Date/Time Received By Date/Time

Relinquished By Date/Time Received By Date/Time

Relinquished By Date/Time Received By Date/Time

[Signature] AUG 08 2022 842  
Received at Laboratory By Date/Time

Sample Kit Prepared By: <u>JA</u>	Date/Time <b>JUN 02 2022</b>
Sample Temp (°C): Samples on Ice?	<u>27.2</u> Yes No NA
Approved By:	<u>[Signature]</u>
Entered By:	<u>[Signature]</u>

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

**M.J. Reider Associates, Inc.**

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Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2230127

**Report:** 08/16/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland

**Reported To:** US Army Corp of Engineers

1268 Palisades Dr.

Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2230127-01

**Collected By:** Client

**Sampled:** 08/11/22 08:20

**Received:** 08/11/22 09:07

**Sample Desc:** SB-1 L

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	18	mpn/100ml	1	SM 9223	8/11/22	8/12/22		DRW
				B/Quantitray	15:24	10:37		
Total Coliform	1010	mpn/100ml	1	SM 9223	8/11/22	8/12/22		DRW
				B/Quantitray	15:24	10:37		

**Lab ID:** 2230127-02

**Collected By:** Client

**Sampled:** 08/11/22 08:22

**Received:** 08/11/22 09:07

**Sample Desc:** SB-2 C

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	20	mpn/100ml	1	SM 9223	8/11/22	8/12/22		DRW
				B/Quantitray	15:24	10:37		
Total Coliform	961	mpn/100ml	1	SM 9223	8/11/22	8/12/22		DRW
				B/Quantitray	15:24	10:37		

**Lab ID:** 2230127-03

**Collected By:** Client

**Sampled:** 08/11/22 08:24

**Received:** 08/11/22 09:07

**Sample Desc:** SB-3 R

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	27	mpn/100ml	1	SM 9223	8/11/22	8/12/22		DRW
				B/Quantitray	15:24	10:37		
Total Coliform	1730	mpn/100ml	1	SM 9223	8/11/22	8/12/22		DRW
				B/Quantitray	15:24	10:37		



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107 Angelica St, Reading PA, 19611

610-374-5129 www.mjreider.com

Client Code: 4092

Project Manager: Richard A Wheeler

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

**WORK ORDER  
Chain of Custody**

2230127



Client: US Army Corp of Engineers

Project: 2022 Blue Marsh Beach 1,2,3

Comments: \_\_\_\_\_

Collected By : \_\_\_\_\_  
(Full Name)

**2230127-01 SB-1 L**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 8/11/2022  
Time: 8:20

**2230127-02 SB-2 C**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 8/11/2022  
Time: 8:22

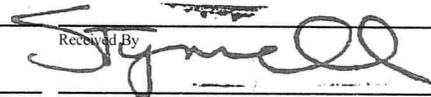
**2230127-03 SB-3 R**

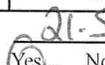
EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 8/11/2022  
Time: 8:24

\* per sample labels.  
8/11/22 @

	8/11/2022 9:07		
Relinquished By	Date/Time	Received By	Date/Time
			
Relinquished By	Date/Time	Received By	Date/Time
			AUG 11 2022 9:07
Relinquished By	Date/Time	Received at Laboratory	Date/Time

Sample Kit Prepared By: 	Date/Time AUG 03 2022
Sample Temp (°C): Samples on Ice? Approved By: Entered By:	21.5 Yes No NA 

**M.J. Reider Associates, Inc.**

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**MJRA Terms & Conditions**

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Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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Additional accreditations by MD (261), NY(12094)



# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2230128

**Report:** 08/16/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland

**Reported To:** US Army Corp of Engineers

1268 Palisades Dr.

Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2230128-01

**Collected By:** Client

**Sampled:** 08/15/22 07:57

**Received:** 08/15/22 08:50

**Sample Desc:** SB-1 L

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	10	mpn/100ml	1	SM 9223	8/15/22	8/16/22		JMW
				B/Quantitray	15:18	9:19		
Total Coliform	1200	mpn/100ml	1	SM 9223	8/15/22	8/16/22		JMW
				B/Quantitray	15:18	9:19		

**Lab ID:** 2230128-02

**Collected By:** Client

**Sampled:** 08/15/22 07:59

**Received:** 08/15/22 08:50

**Sample Desc:** SB-2 C

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	8	mpn/100ml	1	SM 9223	8/15/22	8/16/22		JMW
				B/Quantitray	15:18	9:19		
Total Coliform	727	mpn/100ml	1	SM 9223	8/15/22	8/16/22		JMW
				B/Quantitray	15:18	9:19		

**Lab ID:** 2230128-03

**Collected By:** Client

**Sampled:** 08/15/22 08:01

**Received:** 08/15/22 08:50

**Sample Desc:** SB-3 R

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	9	mpn/100ml	1	SM 9223	8/15/22	8/16/22		JMW
				B/Quantitray	15:18	9:19		
Total Coliform	1120	mpn/100ml	1	SM 9223	8/15/22	8/16/22		JMW
				B/Quantitray	15:18	9:19		



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Additional accreditations by MD (261), NY(12094)



**M.J. Reider Associates, Inc.**

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610-374-5129 www.mjreider.com

**WORK ORDER  
Chain of Custody**

**2230128**



Client Code: **4092**  
Project Manager: **Richard A Wheeler**

Client: **US Army Corp of Engineers**  
Project: **2022 Blue Marsh Beach 1,2,3**

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Collected By :  
(Full Name)

*Jean Vandzura* JSV 8-15-22  
*Sarah Kern*

Comments: \_\_\_\_\_

**2230128-01 SB-1 L**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile Pl 125ml NaThio

Date: 8/15/2022  
Time: 7:57

**2230128-02 SB-2 C**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile Pl 125ml NaThio

Date: 8/15/2022  
Time: 7:59

**2230128-03 SB-3 R**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile Pl 125ml NaThio

Date: 8/15/2022  
Time: 8:01

	<u>8:50</u> <u>8/15/22</u>		
Relinquished By	Date/Time	Received By	Date/Time
		<i>Jean Vandzura</i>	
Relinquished By	Date/Time	Received By	Date/Time
		<i>Jean Vandzura</i>	<u>8/15/22 2:50</u>
Relinquished By	Date/Time	Received at Laboratory By	Date/Time

Sample Kit Prepared By: <i>JSV</i>	Date/Time <b>AUG 03 2022</b>
Sample Temp (°C): Samples on Ice?	<u>67.2</u> Yes No NA
Approved By:	<i>JSV</i>
Entered By:	<i>JSV</i>

**M.J. Reider Associates, Inc.**

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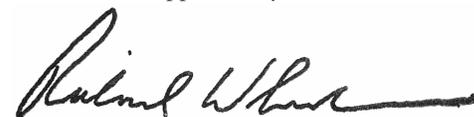
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Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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Additional accreditations by MD (261), NY(12094)



# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2231020

**Report:** 08/23/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland

**Reported To:** US Army Corp of Engineers

1268 Palisades Dr.

Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2231020-01

**Collected By:** Client

**Sampled:** 08/18/22 08:00

**Received:** 08/18/22 08:54

**Sample Desc:** SB-1 L

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	2	mpn/100ml	1	SM 9223	8/18/22	8/19/22		JMW
				B/Quantitray	14:28	8:58		
Total Coliform	1410	mpn/100ml	1	SM 9223	8/18/22	8/19/22		JMW
				B/Quantitray	14:28	8:58		

**Lab ID:** 2231020-02

**Collected By:** Client

**Sampled:** 08/18/22 08:02

**Received:** 08/18/22 08:54

**Sample Desc:** SB-2 C

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	3	mpn/100ml	1	SM 9223	8/18/22	8/19/22		JMW
				B/Quantitray	14:28	8:58		
Total Coliform	1120	mpn/100ml	1	SM 9223	8/18/22	8/19/22		JMW
				B/Quantitray	14:28	8:58		

**Lab ID:** 2231020-03

**Collected By:** Client

**Sampled:** 08/18/22 08:05

**Received:** 08/18/22 08:54

**Sample Desc:** SB-3 R

**Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	1	mpn/100ml	1	SM 9223	8/18/22	8/19/22		JMW
				B/Quantitray	14:28	8:58		
Total Coliform	1200	mpn/100ml	1	SM 9223	8/18/22	8/19/22		JMW
				B/Quantitray	14:28	8:58		



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**M.J. Reider Associates, Inc.**

107 Angelica St, Reading PA, 19611  
610-374-5129 www.mjreider.com

Client Code: 4092

Project Manager: Richard A Wheeler

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

**WORK ORDER  
Chain of Custody**

Client: US Army Corp of Engineers  
Project: 2022 Blue Marsh Beach 1,2,3

2231020



Collected By : Elizabeth Stief  
(Full Name)

Comments: \_\_\_\_\_

**2231020-01 SB-1 L**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water

Type: Grab

A - Sterile Pl 125ml NaThio

Date: 08/18/2022

Time: 08:00

**2231020-02 SB-2 C**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water

Type: Grab

A - Sterile Pl 125ml NaThio

Date: 08/18/2022

Time: 08:02

**2231020-03 SB-3 R**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water

Type: Grab

A - Sterile Pl 125ml NaThio

Date: 08/18/2022

Time: 08:05

<u>[Signature]</u> Relinquished By	<u>08/18/2022 8:54</u> Date/Time	_____ Received By	_____ Date/Time
_____ Relinquished By	_____ Date/Time	<u>[Signature]</u> Received By	<u>8/18/22 8:54</u> Date/Time
_____ Relinquished By	_____ Date/Time	_____ Received at Laboratory By	_____ Date/Time

Sample Kit Prepared By:	Date/Time
Sample Temp (°C):	<u>16.6</u>
Samples on Ice?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA
Approved By:	<u>[Signature]</u>
Entered By:	_____ Date/Time

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

**M.J. Reider Associates, Inc.**

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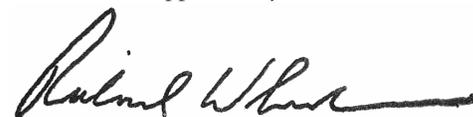
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Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2228120

**Report:** 08/23/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland  
**Reported To:** US Army Corp of Engineers  
1268 Palisades Dr.  
Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2228120-01      **Collected By:** Client      **Sampled:** 08/22/22 08:18      **Received:** 08/22/22 08:56  
**Sample Desc:** SB-1 L      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	2	mpn/100ml	1	SM 9223	8/22/22	8/23/22		RMB
				B/Quantitray	15:01	9:16		
Total Coliform	>2420	mpn/100ml	1	SM 9223	8/22/22	8/23/22		RMB
				B/Quantitray	15:01	9:16		

**Lab ID:** 2228120-02      **Collected By:** Client      **Sampled:** 08/22/22 08:20      **Received:** 08/22/22 08:56  
**Sample Desc:** SB-2 C      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	4	mpn/100ml	1	SM 9223	8/22/22	8/23/22		RMB
				B/Quantitray	15:01	9:16		
Total Coliform	1990	mpn/100ml	1	SM 9223	8/22/22	8/23/22		RMB
				B/Quantitray	15:01	9:16		

**Lab ID:** 2228120-03      **Collected By:** Client      **Sampled:** 08/22/22 08:22      **Received:** 08/22/22 08:56  
**Sample Desc:** SB-3 R      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	1	mpn/100ml	1	SM 9223	8/22/22	8/23/22		RMB
				B/Quantitray	15:01	9:16		
Total Coliform	1550	mpn/100ml	1	SM 9223	8/22/22	8/23/22		RMB
				B/Quantitray	15:01	9:16		



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**WORK ORDER  
Chain of Custody**

2228120



Client Code: 4092  
Project Manager: Richard A Wheeler

Client: US Army Corp of Engineers  
Project: 2022 Blue Marsh Beach 1,2,3

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Collected By : Grant Kellenberger  
(Full Name)

Comments: \_\_\_\_\_

**2228120-01 SB-1 L**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 8/22/2022  
Time: 8:18

**2228120-02 SB-2 C**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 8/22/2022  
Time: 8:20

**2228120-03 SB-3 R**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water  
Type: Grab  
A - Sterile PI 125ml NaThio

Date: 8/22/2022  
Time: 8:22

<u>[Signature]</u>	<u>8/22/2022 8:56</u>	_____	_____
Relinquished By	Date/Time	Received By	Date/Time
_____	_____	_____	_____
Relinquished By	Date/Time	Received By	Date/Time
_____	_____	<u>[Signature]</u>	<u>8/22/22 8:56</u>
Relinquished By	Date/Time	Received at Laboratory By	Date/Time

Sample Kit Prepared By:	Date/Time
Sample Temp (°C):	<u>20.8</u>
Samples on Ice?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>
Approved By:	<u>[Signature]</u>
Entered By:	<u>[Signature]</u>

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

**M.J. Reider Associates, Inc.**

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Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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Additional accreditations by MD (261), NY(12094)



# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2232063

**Report:** 08/29/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland  
**Reported To:** US Army Corp of Engineers  
1268 Palisades Dr.  
Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2232063-01      **Collected By:** Client      **Sampled:** 08/25/22 08:24      **Received:** 08/25/22 09:09  
**Sample Desc:** SB-1 L      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	2	mpn/100ml	1	SM 9223	8/25/22	8/26/22		JMW
				B/Quantitray	15:01	9:42		
Total Coliform	770	mpn/100ml	1	SM 9223	8/25/22	8/26/22		JMW
				B/Quantitray	15:01	9:42		

**Lab ID:** 2232063-02      **Collected By:** Client      **Sampled:** 08/25/22 08:26      **Received:** 08/25/22 09:09  
**Sample Desc:** SB-2 C      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	1	mpn/100ml	1	SM 9223	8/25/22	8/26/22		JMW
				B/Quantitray	15:01	9:42		
Total Coliform	866	mpn/100ml	1	SM 9223	8/25/22	8/26/22		JMW
				B/Quantitray	15:01	9:42		

**Lab ID:** 2232063-03      **Collected By:** Client      **Sampled:** 08/25/22 08:28      **Received:** 08/25/22 09:09  
**Sample Desc:** SB-3 R      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	1	mpn/100ml	1	SM 9223	8/25/22	8/26/22		JMW
				B/Quantitray	15:01	9:42		
Total Coliform	1120	mpn/100ml	1	SM 9223	8/25/22	8/26/22		JMW
				B/Quantitray	15:01	9:42		



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**M.J. Reider Associates, Inc.**

107 Angelica St, Reading PA, 19611  
610-374-5129 www.mjreider.com

**WORK ORDER  
Chain of Custody**

2232063



Client Code: 4092  
Project Manager: Richard A Wheeler

Client: US Army Corp of Engineers  
Project: 2022 Blue Marsh Beach 1,2,3

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Collected By: Tavin Rick  
(Full Name)

Comments: \_\_\_\_\_

<b>2232063-01 SB-1 L</b> EC (#) SM 9223B, TC (#) SM 9223B	Matrix: Non-Potable Water	Type: Grab	Date/Time: <u>8/25/22 0824</u>
			A - Sterile PI 125ml NaThio
<b>2232063-02 SB-2 C</b> EC (#) SM 9223B, TC (#) SM 9223B	Matrix: Non-Potable Water	Type: Grab	Date/Time: <u>8/25/22 0826</u>
			A - Sterile PI 125ml NaThio
<b>2232063-03 SB-3 R</b> EC (#) SM 9223B, TC (#) SM 9223B	Matrix: Non-Potable Water	Type: Grab	Date/Time: <u>8/25/22 0828</u>
			A - Sterile PI 125ml NaThio

Tavin Rick 8/25/22 0909 \_\_\_\_\_  
 Relinquished By Date/Time Received By Date/Time  
 \_\_\_\_\_  
 Relinquished By Date/Time Received By Date/Time  
 \_\_\_\_\_  
 Relinquished By Date/Time Received at Laboratory By James B. Y... 8/25/22 0909 Date/Time

Sample Kit Prepared By: <u>VB</u>	Date/Time <b>AUG 17 2022</b>
Sample Temp (°C): <u>21.9</u>	
Samples on Ice? <input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> NA	
Approved By: <u>[Signature]</u>	
Entered By:	

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

**M.J. Reider Associates, Inc.**

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# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2233209

**Report:** 08/31/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland  
**Reported To:** US Army Corp of Engineers  
1268 Palisades Dr.  
Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2233209-01      **Collected By:** Client      **Sampled:** 08/29/22 08:15      **Received:** 08/29/22 09:01  
**Sample Desc:** SB-1 L      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	6	mpn/100ml	1	SM 9223	8/29/22	8/30/22		JMW
				B/Quantitray	15:32	10:08		
Total Coliform	2420	mpn/100ml	1	SM 9223	8/29/22	8/30/22		JMW
				B/Quantitray	15:32	10:08		

**Lab ID:** 2233209-02      **Collected By:** Client      **Sampled:** 08/29/22 08:17      **Received:** 08/29/22 09:01  
**Sample Desc:** SB-2 C      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	1	mpn/100ml	1	SM 9223	8/29/22	8/30/22		JMW
				B/Quantitray	15:32	10:08		
Total Coliform	1990	mpn/100ml	1	SM 9223	8/29/22	8/30/22		JMW
				B/Quantitray	15:32	10:08		

**Lab ID:** 2233209-03      **Collected By:** Client      **Sampled:** 08/29/22 08:19      **Received:** 08/29/22 09:01  
**Sample Desc:** SB-3 R      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	<1	mpn/100ml	1	SM 9223	8/29/22	8/30/22		JMW
				B/Quantitray	15:32	10:08		
Total Coliform	1550	mpn/100ml	1	SM 9223	8/29/22	8/30/22		JMW
				B/Quantitray	15:32	10:08		



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Client Code: 4092  
Project Manager: Richard A Wheeler

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

**WORK ORDER  
Chain of Custody**

Client: US Army Corp of Engineers  
Project: 2022 Blue Marsh Beach 1,2,3

2233209



Comments: \_\_\_\_\_

Collected By : Grant Kellenberger  
(Full Name)

**2233209-01 SB-1 L**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water Type: Grab

Date/Time: 8/29/2022 8:15

A - Sterile Pl 125ml NaThio

**2233209-02 SB-2 C**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water Type: Grab

Date/Time: 8/29/2022 8:17

A - Sterile Pl 125ml NaThio

**2233209-03 SB-3 R**

EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water Type: Grab

Date/Time: 8/29/2022 8:19

A - Sterile Pl 125ml NaThio

[Signature] 8/29/2022 9:01  
Relinquished By Date/Time

Received By Date/Time

Relinquished By Date/Time

Received By Date/Time

Relinquished By Date/Time

Received at Laboratory By Jean Vandzura 8/29/22 9:01 Date/Time

Sample Kit Prepared By: <u>[Signature]</u>	Date/Time <b>AUG 24 2022</b>
Sample Temp (°C): <u>20.8</u>	Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> NA <input type="checkbox"/>
Approved By: <u>[Signature]</u>	
Entered By: <u>[Signature]</u>	

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Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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# Certificate of Analysis

**M.J. Reider Associates, Inc.**

ENVIRONMENTAL TESTING LABORATORY  
U.S. EPA/PA DEP #06-00003

**Laboratory No.:** 2233208

**Report:** 09/08/22

**Lab Contact:** Richard A Wheeler

**Attention:** Scott Sunderland  
**Reported To:** US Army Corp of Engineers  
1268 Palisades Dr.  
Leesport, PA 19533

**Project Info:** 2022 Blue Marsh Beach 1,2,3

**Lab ID:** 2233208-01      **Collected By:** Client      **Sampled:** 09/01/22 08:53      **Received:** 09/01/22 09:46  
**Sample Desc:** SB-1 L      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	<1	mpn/100ml	1	SM 9223	9/1/22	9/2/22		RMB
				B/Quantitray	15:40	9:40		
Total Coliform	>2420	mpn/100ml	1	SM 9223	9/1/22	9/2/22		RMB
				B/Quantitray	15:40	9:40		

**Lab ID:** 2233208-02      **Collected By:** Client      **Sampled:** 09/01/22 08:55      **Received:** 09/01/22 09:46  
**Sample Desc:** SB-2 C      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	1	mpn/100ml	1	SM 9223	9/1/22	9/2/22		RMB
				B/Quantitray	15:40	9:40		
Total Coliform	>2420	mpn/100ml	1	SM 9223	9/1/22	9/2/22		RMB
				B/Quantitray	15:40	9:40		

**Lab ID:** 2233208-03      **Collected By:** Client      **Sampled:** 09/01/22 08:57      **Received:** 09/01/22 09:46  
**Sample Desc:** SB-3 R      **Sample Type:** Grab

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	<1	mpn/100ml	1	SM 9223	9/1/22	9/2/22		RMB
				B/Quantitray	15:40	9:40		
Total Coliform	>2420	mpn/100ml	1	SM 9223	9/1/22	9/2/22		RMB
				B/Quantitray	15:40	9:40		



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NELAC accreditations for various drinking water, wastewater and solid & chemical materials analytes.

Additional accreditations by MD (261), NY(12094)



**M.J. Reider Associates, Inc.**

107 Angelica St, Reading PA, 19611  
610-374-5129 www.mjreider.com

**WORK ORDER  
Chain of Custody**

2233208



Client Code: 4092  
Project Manager: Richard A Wheeler

Client: US Army Corp of Engineers  
Project: 2022 Blue Marsh Beach 1,2,3

Report To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Invoice To: US Army Corp of Engineers - Scott Sunderland - 1268 Palisades Dr., Leesport, PA 19533

Collected By : Tavin Krick  
(Full Name)

Comments: \_\_\_\_\_

**2233208-01 SB-1 L**  
EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water    Type: Grab    Date/Time: 0853 9/1/22

A - Sterile PI 125ml NaThio

**2233208-02 SB-2 C**  
EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water    Type: Grab    Date/Time: 0855 9/1/22

A - Sterile PI 125ml NaThio

**2233208-03 SB-3 R**  
EC (#) SM 9223B, TC (#) SM 9223B

Matrix: Non-Potable Water    Type: Grab    Date/Time: 0857 9/1/22

A - Sterile PI 125ml NaThio

Tavin Krick 9/1/22  
Relinquished By    Date/Time 9:46

Received By    Date/Time

Relinquished By    Date/Time

Received By    Date/Time

Relinquished By    Date/Time

Received at Laboratory By Janece B. [Signature] 9/1/22 0946    Date/Time

Sample Kit Prepared By: <u>UBV</u>	Date/Time <b>AUG 24 2022</b>
Sample Temp (°C): <u>22.0</u>	Yes <input checked="" type="radio"/> No <input type="radio"/> NA <input type="radio"/>
Approved By: <u>[Signature]</u>	Entered By: <u>[Signature]</u>

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

**M.J. Reider Associates, Inc.**

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**MJRA Terms & Conditions**

All samples submitted must be accompanied by signed documentation representing a Chain of Custody (COC). The COC Record acts as a contract between the client and MJRA. Signing the COC form gives approval for MJRA to perform the requested analyses and is an agreement to pay for the cost of such analyses. COC Records must be completed in black or blue indelible ink (must not run when wet). COC documentation begins at the time of sample collection. Client is required to document all sample details prior to releasing samples to MJRA. All samples must be placed on ice immediately after sampling and shipped or delivered to the laboratory in a manner that will maintain the sample temperature above freezing and below 6C (loose ice is preferred).

**Sample Submission, Sample Acceptance & Sampling Containers**

Included on the COC must be the sample description, date and time of collection (including start and stop for composites), container size and type, preservative information, sample matrix, indication of whether the sample is a grab or composite, number of containers & a list of the tests to be performed. Poor sample collection technique, inappropriate sampling containers and/or improper sample preservation may lead to sample rejection. Suitable sample containers, labels, and preservatives (as applicable), along with blank COCs are provided at no additional cost.

**Turnaround Times (TAT)**

Average TAT for test results range from 5 to 15 working days depending on the specific analyses and time of year submitted. Faster turnaround times (\*RUSH TAT) may be available depending on the current workload in a particular department and the nature of the analyses requested. We encourage you to verify requests for expedited sample results with one of our Technical Directors prior to sample submittal. Without confirmation from a Technical Director, your results may not be completed by your deadline. \*RUSH TAT Surcharges are applied for expedited turnaround times.

**Analytical Results, Sample Collection Integrity & Subcontracting**

Analytical values are for the sample as submitted and relate only to the item tested. The value indicates a snapshot of the constituent content of the sample at the time of sample collection. Analytical results can be impacted by poor sample collection technique and/or improper preservation. All sample collection completed by MJRA was performed in accordance with applicable regulatory protocols or as specified in customer specific sampling plans. Constituent content will vary over time based on the matrix of the sample and the physical and chemical changes to its environment. All sample results and laboratory reports are strictly confidential. Results will not be available to anyone except the primary client or authorized party representing the client unless MJRA receives additional permissions from the client. When necessary, MJRA will subcontract certain analyses to a third party accredited laboratory. If client prohibits subcontracting, it must be provided in writing and include instruction on how to proceed with client samples that require third party analyses.

**Payment Terms**

Payment Terms are Net 30 days. Prices are subject to change without notice. A standing monthly charge of 1.5% of the clients over-30-day-unpaid balance may be added to the balance after 30 days and each month thereafter (day 31, 61, 91 etc.). The laboratory accepts all major credit cards, ACH transactions, checks and cash. New clients must pay for all services rendered prior to sample collection and/or in some cases report processing. Clients must contact the MJRA accounting department to pursue a credit-based account. MJRA reserves the right to terminate the client's credit account and to refuse to perform additional services on a credit basis if any balance is outstanding for more than 60 days.

**Warranty & Litigation**

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the day of its discovery and within one year of the date of invoice.

Reviewed and Approved by:



Richard A Wheeler  
Director of Field Services



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