

**2019 WATER QUALITY MONITORING  
BELTZVILLE RESERVOIR  
LEHIGHTON, PENNSYLVANIA**



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

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**2019 Water Quality Monitoring  
Beltzville Reservoir  
Lehighton, Pennsylvania**

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## **1.0 INTRODUCTION**

### **1.1 PURPOSE OF THE MONITORING PROGRAM**

The U.S. Army Corps of Engineers (USACE) operates Beltzville Reservoir located in east-central Pennsylvania within the Delaware River Basin. Beltzville Reservoir provides flood control and a dependable water supply to downstream communities along the Pohopoco Creek and Lehigh River. 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 Beltzville Reservoir serves, the USACE monitors water quality to compare with state water quality standards and to diagnose other problems that commonly effect reservoir health such as nutrient enrichment and toxic loadings. This report summarizes the results of water quality monitoring at Beltzville Reservoir from 27 June to 12 September 2019.

### **1.2 DESCRIPTION OF BELTZVILLE RESERVOIR**

Beltzville Reservoir was designed to provide flood control, water supply, and enhanced water quality to downstream communities along the Lehigh River. The damming of Pohopoco Creek approximately three miles upstream of its confluence with the Lehigh River formed the reservoir. The reservoir is located in Carbon County, 3 miles northeast of Lehighton and about 20 miles northwest of Allentown, Pennsylvania. The reservoir dams a drainage area of 96.3 square miles and can impound up to 13 billion gallons of water. The primary water source feeding into the lake is Pohopoco Creek as it flows southwest to the Lehigh River. Secondary water sources include Pine Run and Wild Creek, both entering the reservoir from the north. The reservoir is approximately 7 miles long and, when full, covers an area of 947 acres. The maximum depth of the lake is 140 feet near the face of the dam.

### **1.3 ELEMENTS OF THE STUDY**

The USACE, Philadelphia District, has been monitoring the water quality of Beltzville Reservoir since 1975. Over this time, the yearly monitoring designs have evolved to address new concerns such as the health of public drinking water and contamination of reservoir bottom sediments. The 2019 monitoring program included the following major elements:

- Monthly water quality and bacteria surface water monitoring of reservoir and upstream sources to evaluate compliance with Pennsylvania state water quality standards and to evaluate the health of the reservoir ecosystem starting on 27 June and ending on 12 September 2019; and
- Monthly profile samples for temperature, dissolved oxygen, chlorophyll a, pH, turbidity, and conductivity at all stations in the reservoir and watershed starting on 27 June and ending on 12 September 2019.

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## 2.0 METHODS

### 2.1 STRATIFICATION MONITORING

Physical stratification monitoring of the water column was conducted five times at Beltzville Reservoir between 27 June and 12 September 2019 (Table 2-1). Physical stratification parameters included depth, temperature, dissolved oxygen (DO), pH, turbidity, chlorophyll a, and conductivity. Physical stratification was monitored at seven fixed stations throughout the reservoir watershed (Fig. 2-1). Three stations were located within the reservoir body (BZ-3, BZ-6, and BZ-7) for which water quality was measured from the surface to the bottom in 5-foot increments. Surface water quality was measured at four stations, located in upstream source waters (BZ-2S on Pine Run, BZ-4S on Wild Creek, and BZ-5S on Pohopoco Creek) and BZ-1S downstream of the reservoir on Pohopoco Creek. The physical water quality parameters were measured with a calibrated YSI 6600 V2-4 water quality probe. For this report, all of the stratification monitoring results were summarized and compared to water quality standards enacted by the Pennsylvania Department of Environmental Protection (PADEP), when applicable.

### 2.2 WATER COLUMN CHEMISTRY MONITORING

Water column chemistry monitoring was conducted five times (once a month) at Beltzville Reservoir between 27 June and 12 September 2019 (Table 2-1). Water samples were collected at the seven fixed stations in the reservoir watershed (Fig. 2-1). Surface water samples were collected in release waters downstream of the reservoir (BZ-1S) and on upstream tributary sources Pine Run (BZ-2S), Wild Creek (BZ-4S), and Pohopoco Creek (BZ-5S). Surface, middle, and bottom water samples were collected at three reservoir stations (BZ-3, BZ-6, and BZ-7). Surface water samples were collected by opening sample containers approximately 1 foot below the water's surface. Middle and bottom water samples were collected with a Van Dorn design horizontal water bottle. 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) and SGS North America Inc. laboratory located in Dayton, New Jersey (DoD ELAP (ANAB L2248)).

Water samples 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 method detection limits, laboratory/Corps required reporting limits, state regulatory criteria, and allowable maximum hold times for each water quality parameter monitored.

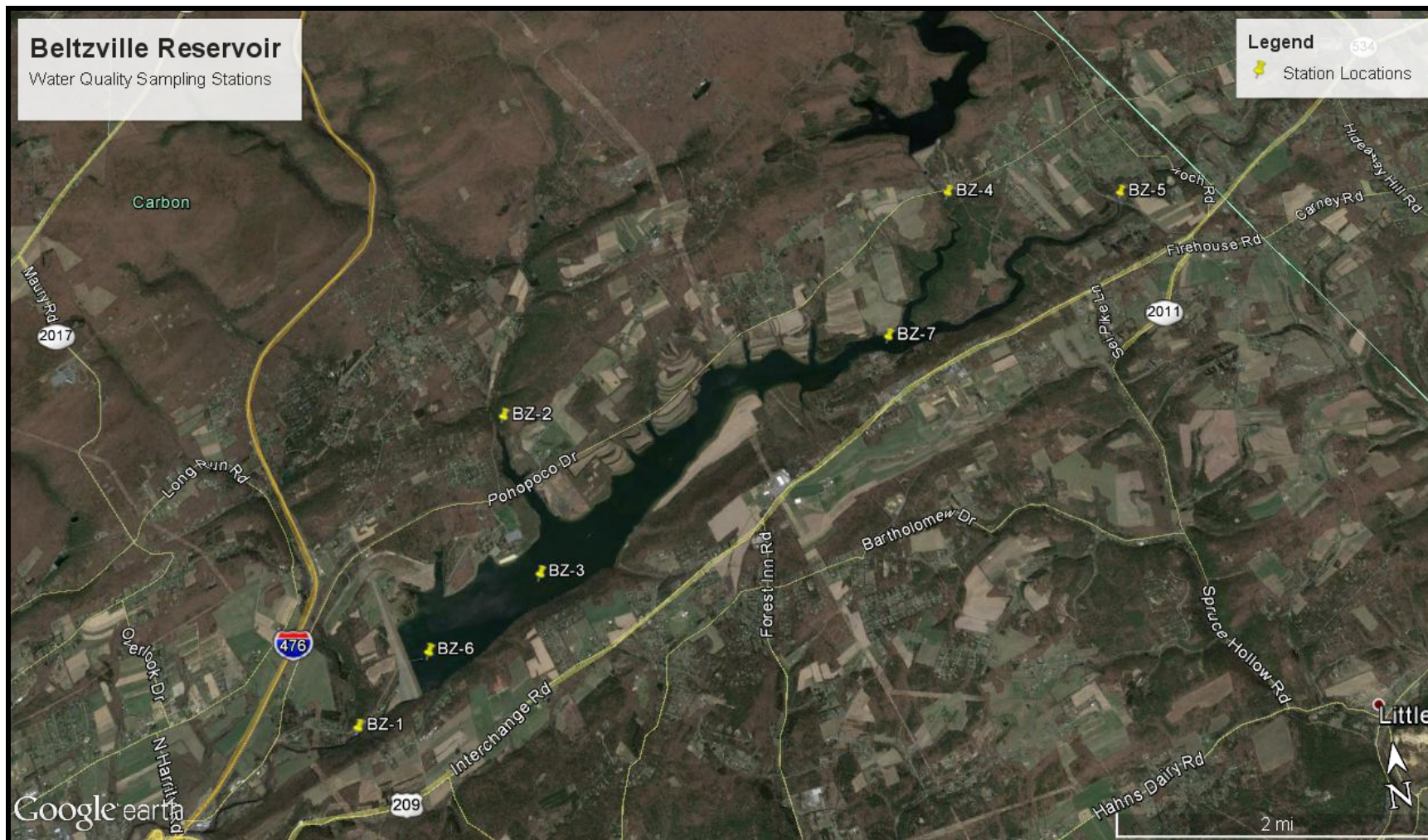
**Table 2-1.** Beltzville Reservoir water quality monitoring schedule for 2019

<b>Date of Sample Collection</b>	<b>Physical Stratification Monitoring (All Stations)</b>	<b>Water Column Chemistry Monitoring (All Stations)</b>	<b>BTEX Monitoring<sup>(1)</sup> (BZ-3 and -6)</b>	<b>Trophic State Assessment (BZ-6)</b>	<b>Coliform Bacteria Monitoring (All Surface Stations)</b>	<b>Drinking Water Monitoring<sup>(2)</sup></b>
27 June	X	X	-	X	X	-
18 July	X	X	-	X	X	-
01 August	X	X	-	X	X	-
21 August	X	X	-	X	X	-
12 September	X	X	-	X	X	-

**(1) BTEX sampling was not conducted in 2019 based on historically low and non-detectable levels of these parameters.**

**(2) Drinking water samples are sampled quarterly by personnel at each reservoir. This data has not been included within the reservoir water quality sampling report.**





**Figure 2-1.** Water quality monitoring stations in 2019 at the U.S. Army Corps of Engineers Beltzville Reservoir located in Lehigh, Pennsylvania.

**Table 2-2.** Water quality test methods, detection limits, state regulatory criteria, and sample holding times for water quality parameters monitored at Beltzville Reservoir in 2019

Parameter	(2) Method	Laboratory Limit of Reporting	PADEP Surface Water Quality Criteria	Allowable Hold Times (Days)
Total Alkalinity	SM20 2320 B-11	10.0 mg/L	Min. 20 mg/L CaCO <sub>3</sub>	14
Biochemical Oxygen Demand (BOD)	SM5210 B-11	5.0 mg/L	None	2
Total Phosphorus	SM4500-P E	0.01 mg/L	None	28
Diss./Ortho-Phosphate	NA	NA	None	28
Soluble Phosphorus	SM4500-P E	0.007 mg/L	None	28
Total Organic Carbon (TOC)	SM5310 B-11	1.0 mg/L	None	28
Total Inorganic Carbon (TIC) *	NA	NA	None	28
Total Carbon (TOC + TIC) *	NA	NA	None	28
(1) Chlorophyll a	YSI Probe	----	None	In Situ
Total Kjeldahl Nitrogen	EPA 351.2/ LACHAT	0.20 mg/L	None	28
Ammonia	SM4500 H-11LACHAT	0.20 mg/L	Temp. and pH dependent	28
Nitrate	EPA 353.2/ SM4500NO2B	0.11 mg/L	Maximum 10 mg/L (nitrate + nitrite)	28
Nitrite	SM4500NO2 B-11	0.01 mg/L		28
Total Dissolved Solids	SM2540 C-11	10.0 mg/L	Maximum 750 mg/L	7
Total Suspended Solids	SM2540 D-11	4.0 mg/L	None	7

(1) Chlorophyll a samples were recorded using a YSI 6600 with a chlorophyll sensor.

(2) 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.

**SW846-** "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods", 3<sup>rd</sup>. Edition, November 1986 and updates.

\* Total Inorganic Carbon and Total Carbon were not sampled for in 2019

### 2.3 TROPHIC STATE DETERMINATION

The trophic state of Beltzville Reservoir was determined by methods outlined by Carlson (1977). In general, this method calculated trophic state indices (TSIs) independently for measures of total phosphorus, chlorophyll *a*, and secchi disk depth. Surface water measures of total phosphorus and chlorophyll *a* from chemistry monitoring were used independently in the determination of monthly trophic state (Table 2-1). Secchi disk depth was measured monthly at reservoir-body station BZ-6. Trophic state determinations were made using criteria defined by Carlson and EPA (1983) and calculated for the deepest portion of the reservoir (Station BZ-6).

### 2.4 RESERVOIR BACTERIA MONITORING

Monitoring for coliform bacteria contaminants was conducted five times at Beltzville Reservoir between 27 June and 12 September 2019 (Table 2-1). Surface water samples were collected at all seven stations and analyzed for total coliform and fecal coliform each month. The samples were collected in the same manner as the chemistry samples or approximately 1-foot below the surface of the water. Table 2-3 presents the test methods, detection limits, PADEP standards, and sample holding times for the bacteria parameters monitored at Beltzville Reservoir in 2019. The bacteria analytical method was based on a membrane filtration technique. All of the samples were analyzed within their maximum allowable hold times. Laboratory analysis was conducted by Eurofins QC, LLC located in Horsham, Pennsylvania (NELAP/PA 46-05499).

<b>Table 2-3.</b> Water quality test methods, detection limits, PADEP standards, and sample holding times for bacteria parameters monitored at Beltzville Reservoir in 2019.		
<b>Parameter</b>	<b>Total Coliform</b>	<b>Fecal Coliform</b>
Test method	SM 9223 B	SM 9222 D
Limit of Quantification	10 clns/100-mls	1 clns/100-mls
PADEP standard	None	Geometric mean < 200 clns/100-mls or a single sample reading of < 1000 clns/100-mls
Max. allowable holding time	30 hours	30 hours
Achieved holding time	< 30 hours	< 30 hours

The PADEP monthly coliform bacteria standard is defined as a maximum geometric mean of 200 colonies/100-ml based on 5 consecutive samples collected on different days. In addition, a single sample standard of 1000 colonies/100-ml can also be used. These standards are most applicable at bathing beaches. Beltzville State Park maintains a bathing beach at Beltzville Reservoir and conducts bacteria sampling of that area. Given our logistical limitations (all monthly sampling conducted on one day) and the fact that water contact recreation is permitted within the reservoir, the coliform data collected by the Corps is compared to the single sample standard as a method of collecting and evaluating background coliform data on the main body of the reservoir. Although our sampling design does not fully meet PADEP guidelines for bathing beach monitoring, we feel that this interpretation of the coliform data meets the intent of the PADEP water quality standard for evaluating Beltzville Reservoir bacteria levels within the main reservoir body.

### 3.0 RESULTS AND DISCUSSION

#### 3.1 STRATIFICATION MONITORING

The following sections summarize the water quality monitoring results of the 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 lake water column based on measures from the deepest portion of the reservoir (station BZ-6 or the “Tower”) are described. The discussion of stratification is focused on this station as water quality problems related to depth are generally most severe in deeper water habitats. Corps personnel collected the physical and chemical water quality data discussed herein over the monitoring period from June to September 2019. All of the parameters were measured with a calibrated YSI 6600 V2-4 water quality probe and are presented in Appendix A.

##### 3.1.1 Temperature

Temperature is the primary influencing factor on water density, affects the solubility of many chemicals 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.

Temperatures of the tributary and downstream release surface waters generally followed a similar seasonal pattern throughout the watershed of Beltzville Reservoir during 2019 with maximum surface water temperatures seen in late August (Fig. 3-1). The maximum upstream tributary temperature of 26.50 °C was seen at station BZ-4S on 21 August. The maximum downstream release (BZ-1S) surface water temperature was 16.4 °C on 18 July. Upstream and downstream waters have a variety of environmental and anthropogenic factors potentially influencing surface water temperature. Station BZ-1S is directly influenced by Beltzville Reservoir releases that are pulled from various locations in the water column and is dictated by reservoir release operations. Downstream release temperatures are managed to meet Pennsylvania State High Quality Cold Water Fishery standards. Station BZ-2S is a small well vegetated cold water tributary. Station BZ-4S is influenced by Wild Creek Reservoir releases upstream of Beltzville Reservoir and consistently maintained the highest average tributary surface water temperatures throughout the sampling season. Station BZ-5S is located in an open water area where Pohopoco Creek enters Beltzville Reservoir. These factors, amongst others, result in the temperature variations in surface water temperatures at each tributary station shown in Figure 3.1.

Beltzville Reservoir was stratified with respect to temperature in 2019 (Fig. 3-2). The reservoir surface waters are warmed by the sun and account for warmer surface water temperatures recorded at lake stations (BZ-3, BZ-7, and BZ-6). In June, the onset of stratification was apparent at Station BZ-6 with lake surface temperatures (23.50°C) approximately 15.94°C warmer than the lower water column (7.56°C). A strong stratification pattern was evident from June into August. In September, cooling surface temperatures and erosion of the epilimnion marked the onset of fall turnover and destratification within the reservoir.

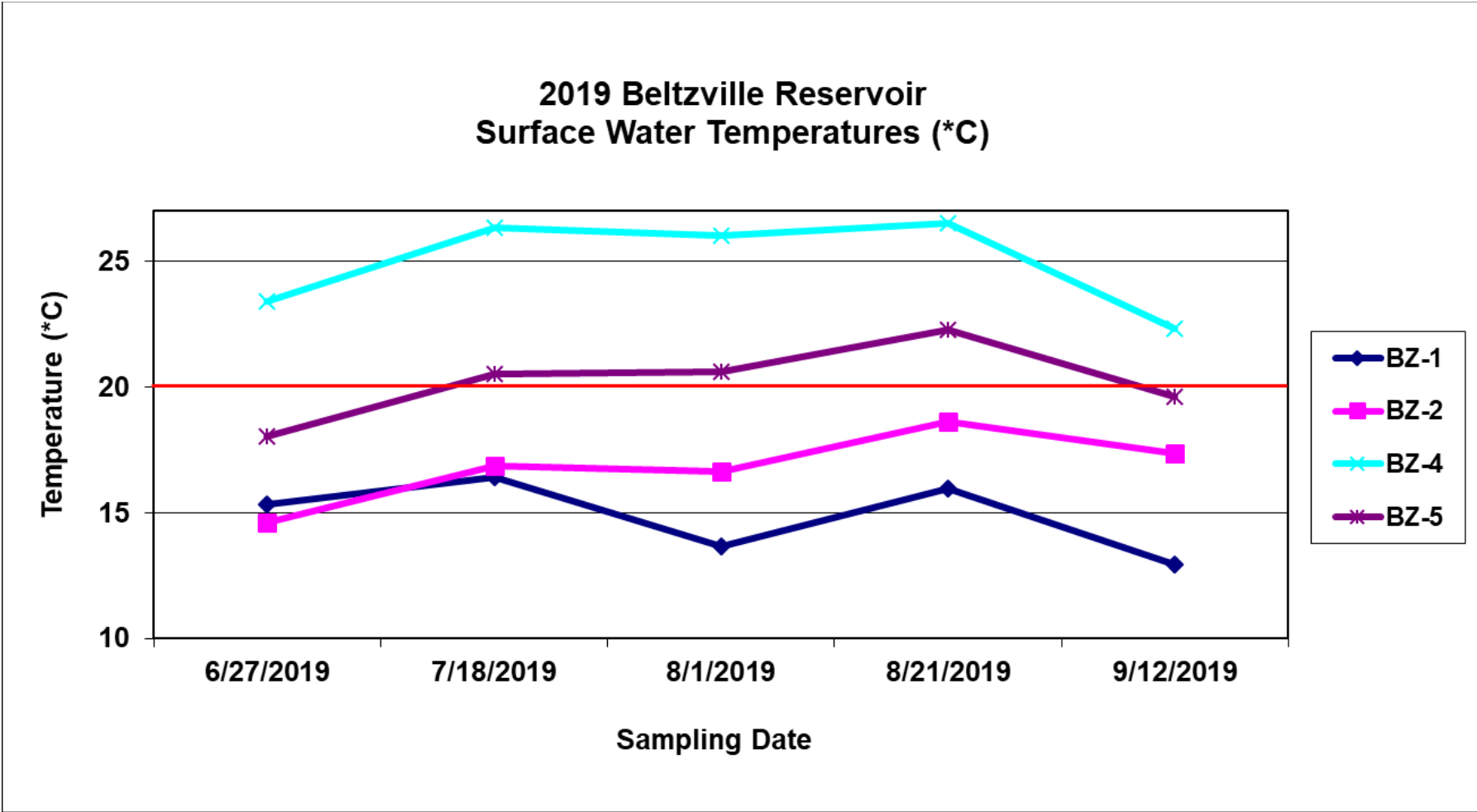
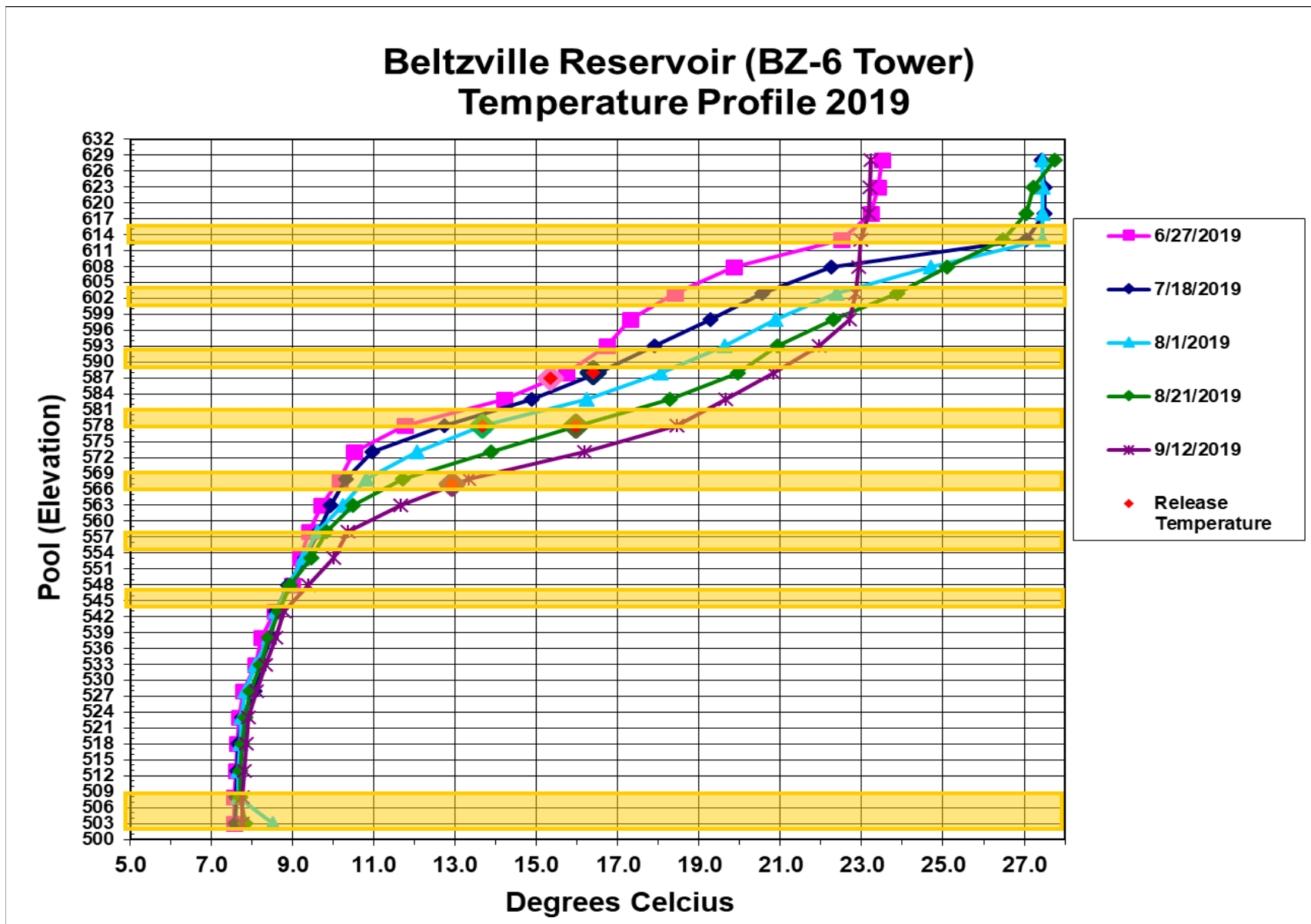


Figure 3-1. Tributary and downstream surface water temperature (°C) measured at Beltzville Reservoir in 2019. See Appendix A for Summary of plotted values. Station BZ-1 reflects releases surface water temperatures downstream of Beltzville Reservoir. The coldwater species preference temperature of 20°C is shown as a red line reference.



**Figure 3-2.** Lake temperature profile at station BZ-6 of Beltville Reservoir in 2019. See Appendix A for summary of plotted values. The yellow bars represent the locations of water control gates in the Beltville Reservoir control tower. Corresponding downstream release water temperatures at Station BZ-1S on each sampling date is also presented.

### 3.1.2 Dissolved Oxygen

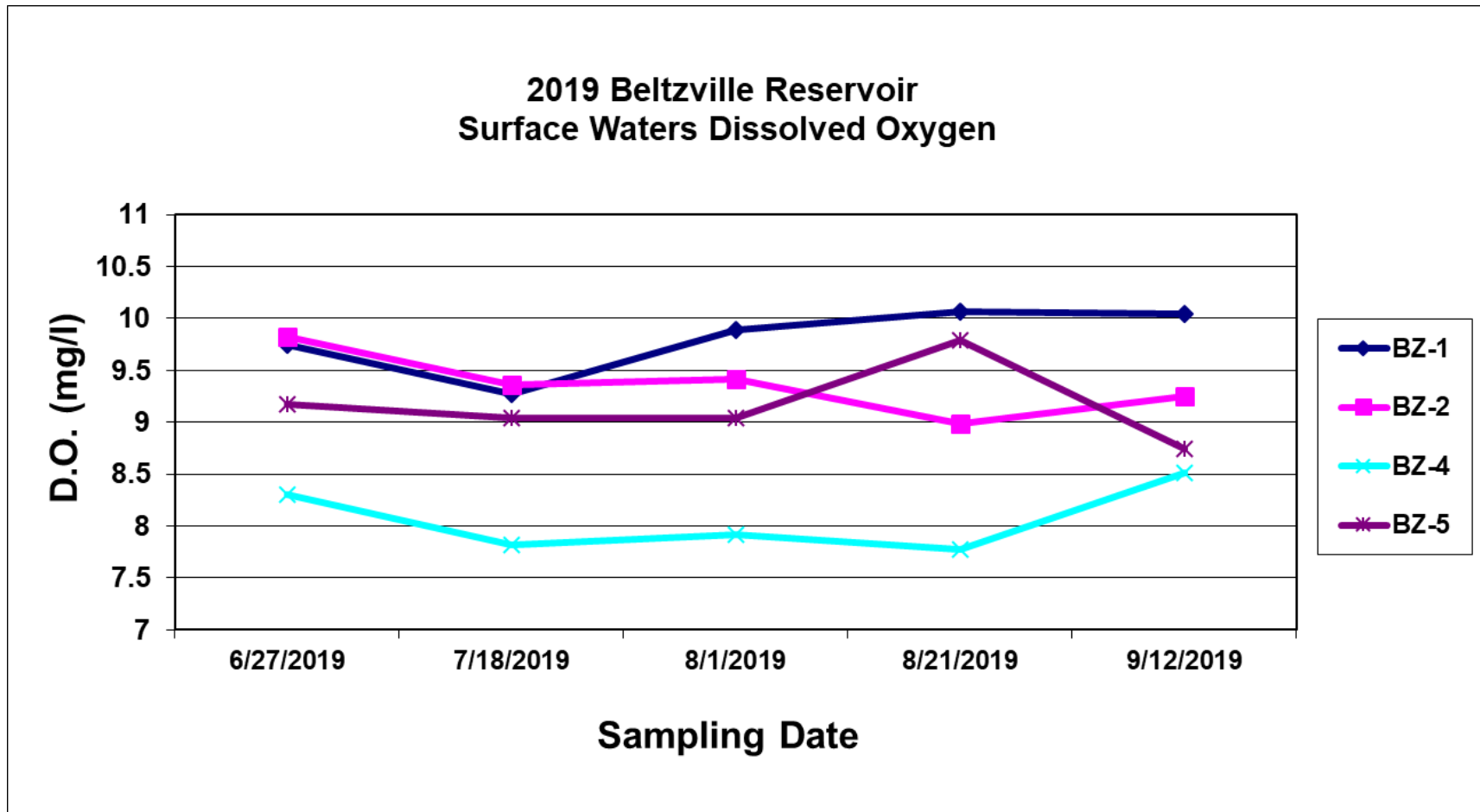
Dissolved oxygen (DO) is the measure of the amount of DO in water. Typically, DO concentrations in surface waters are less than 10 mg/L. Dissolved Oxygen concentrations are subject to diurnal and seasonal fluctuations that can be influenced, in part, by air and water temperature, river discharge, and photosynthetic activity. 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 dissolved oxygen can facilitate the release of nutrients from bottom sediments.

Dissolved oxygen (DO) in the tributary and release surface waters remained primarily within an 8-10 mg/L range of values and followed a similar seasonal pattern throughout the watershed of Beltzville Reservoir during 2019 (Fig. 3-3). Dissolved oxygen concentrations downstream of the reservoir (BZ-1S) averaged 9.82 mg/L for the sampling season. The upstream tributary stations (BZ-2S, -4S, -5S) ranged in values from 7.77 mg/L to 9.82 mg/L for the sampling season. The maximum DO reading of 10.06 mg/L occurred at BZ-1S on 21 August and a minimum reading of 7.77 mg/L occurred at BZ-4S on 21 August.

Dissolved Oxygen in the water column at station BZ-6 of Beltzville Reservoir from June through September, exhibited a metalimnetic oxygen minimum (negative heterograde curve) with concentrations decreasing, increasing and decreasing rapidly as measurements were taken from the surface to the lake bottom (Fig. 3-4). The most severe occurrence of these conditions was seen in August and September. This general pattern has been observed at station BZ-6 in previous years and may be due to a lens of low oxygenated water passing through the reservoir from upstream sources, a result of portal operations at the reservoir tower, respiratory oxygen consumption, lake topography or some other factor or combination of factors.

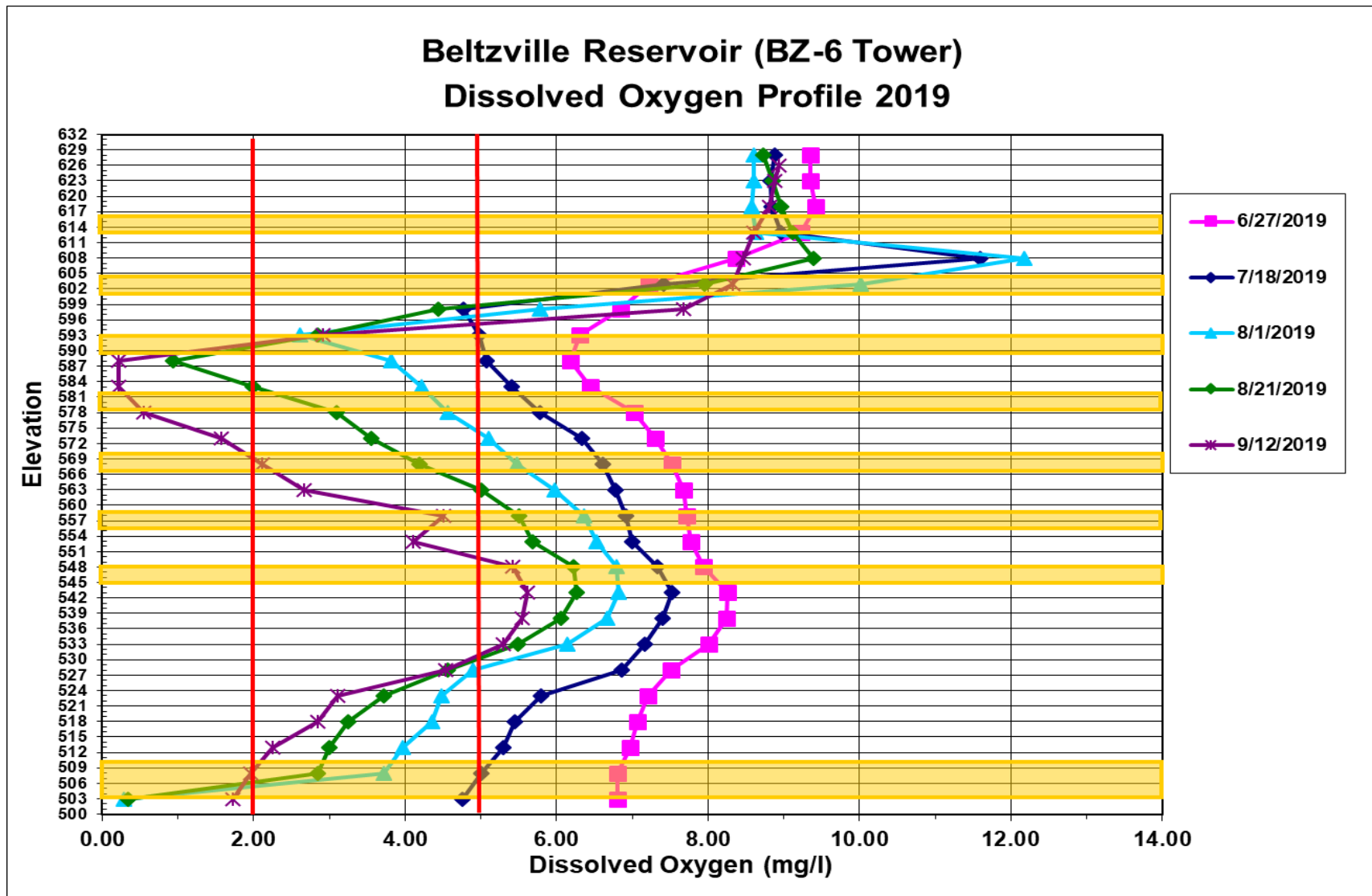
DO concentrations in the water column of Beltzville Reservoir were in compliance with PADEP water quality standards during 2019. The state water quality standard for DO is a minimum concentration of 5-mg/L in the epilimnion of stratified lakes. As shown in Figure 3-4, concentrations falling below the standard were not encountered in 2019, but did occur at greater depths below the epilimnion. DO concentrations measured in all surface waters of the reservoir were in compliance with the standard.

The health of aquatic ecosystems is impaired by low DO concentrations in the water column. Hypoxia, or conditions of DO less than 2 mg/L, is generally accepted as the threshold at which the most severe effects on biota occur. Bottom waters that are not mixed during stratification are depleted of oxygen primarily through biological respiration. In 2019, these conditions were seen in the water column at station BZ-6 in August and September (Appendix A).



**Figure 3-3.** Dissolved oxygen concentrations measured in tributary and downstream surface waters at Beltzville Reservoir in 2019. (The PADEP water quality standard for dissolved oxygen is a minimum concentration of 5 mg/L.) See Appendix A for summary of plotted values. Station BZ-1S reflects reservoir release surface waters downstream of Beltzville Reservoir.





**Figure 3-4.** Dissolved oxygen profile at station BZ-6 of Beltzville Reservoir in 2019. The PADEP water quality standard for DO is a minimum concentration of 5 mg/L in epilimnion. Start of hypoxia is shown as 2 mg/L. See Appendix A for summary of plotted values.

### 3.1.3 pH

PH is the measure of the hydrogen –ion concentration in the water. 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 at upstream tributary (BZ-2S, BZ-4S and BZ-5S) and release (BZ-1S) surface water stations throughout the sampling season stayed within an acceptable range of values (6.78-8.53) and followed a similar seasonal pattern across all surface water stations at Beltzville Reservoir during 2019 (Fig. 3-5).

In all months sampled in 2019, pH values in the lake water column were slightly higher near the water surface, declined rapidly, and remained relatively constant throughout most of the remaining water column (Fig. 3-6). The higher pH readings near the surface can be attributed to algal productivity in the trophic zone of the lake. In July and early August a spike in pH readings was witnessed near the surface waters of the lake. This spike may be attributed to an algal bloom occurring at that time and depth. A slight variation in pH in bottom waters occurred in the portions of the water column experiencing anoxic or low oxygen conditions. This localized change in pH may be attributed to anaerobic oxidation processes in the bottom waters of the lake. The pH measures at all lake and tributary stations at Beltzville Reservoir during 2019 were not in compliance with PADEP pH criteria. The standard for pH is a range of acceptable measures between 6 and 9. Lake surface waters exceeded standards in July (9.59) and early August (9.60) at an approximate depth of 20 feet below the lake surface waters.

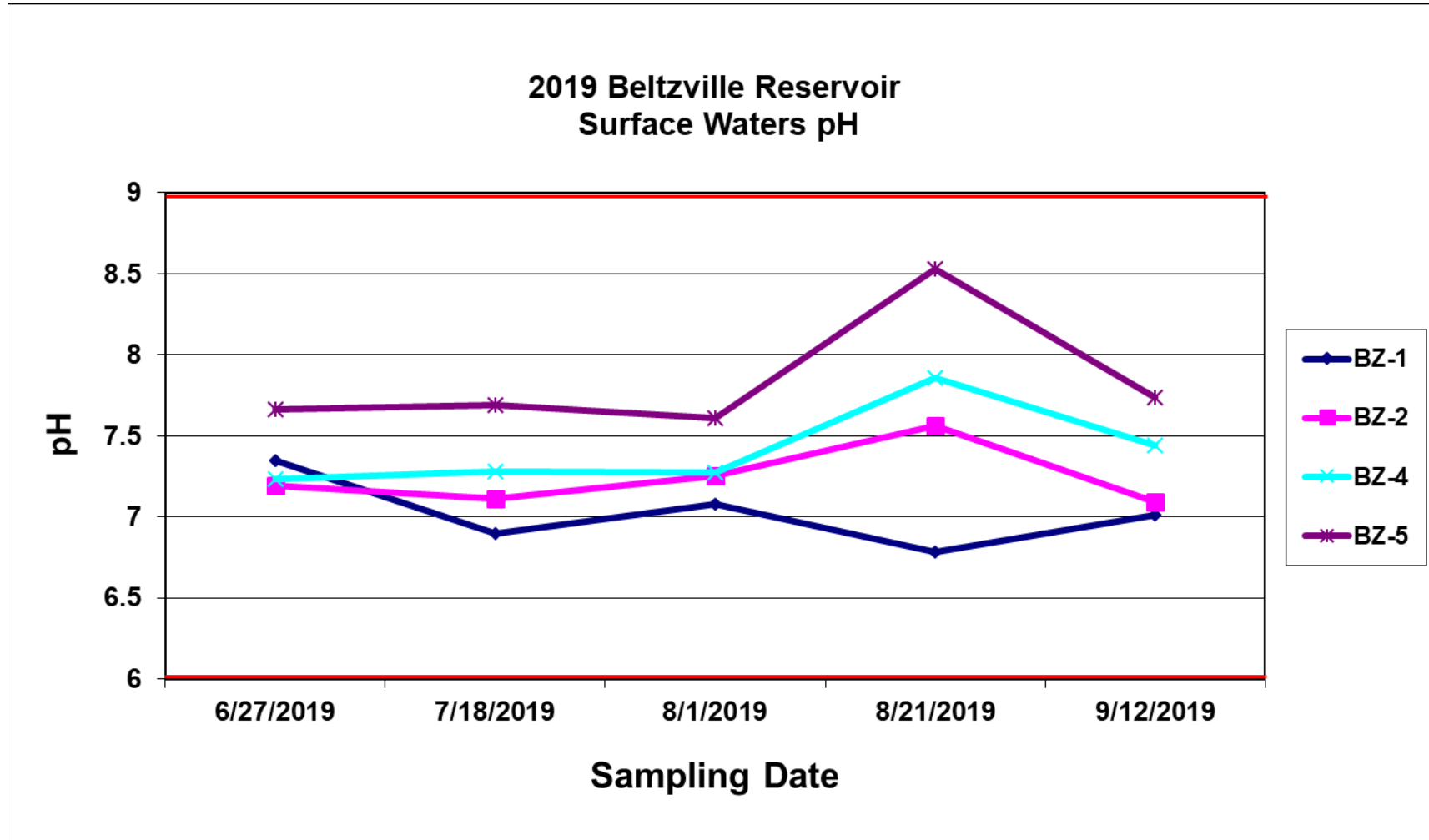


Figure 3-5. pH concentrations measured in tributary and downstream surface waters at Beltzville Reservoir in 2019. (The PADEP water quality standard for pH is between 6 and 9). See Appendix A for summary of plotted values.

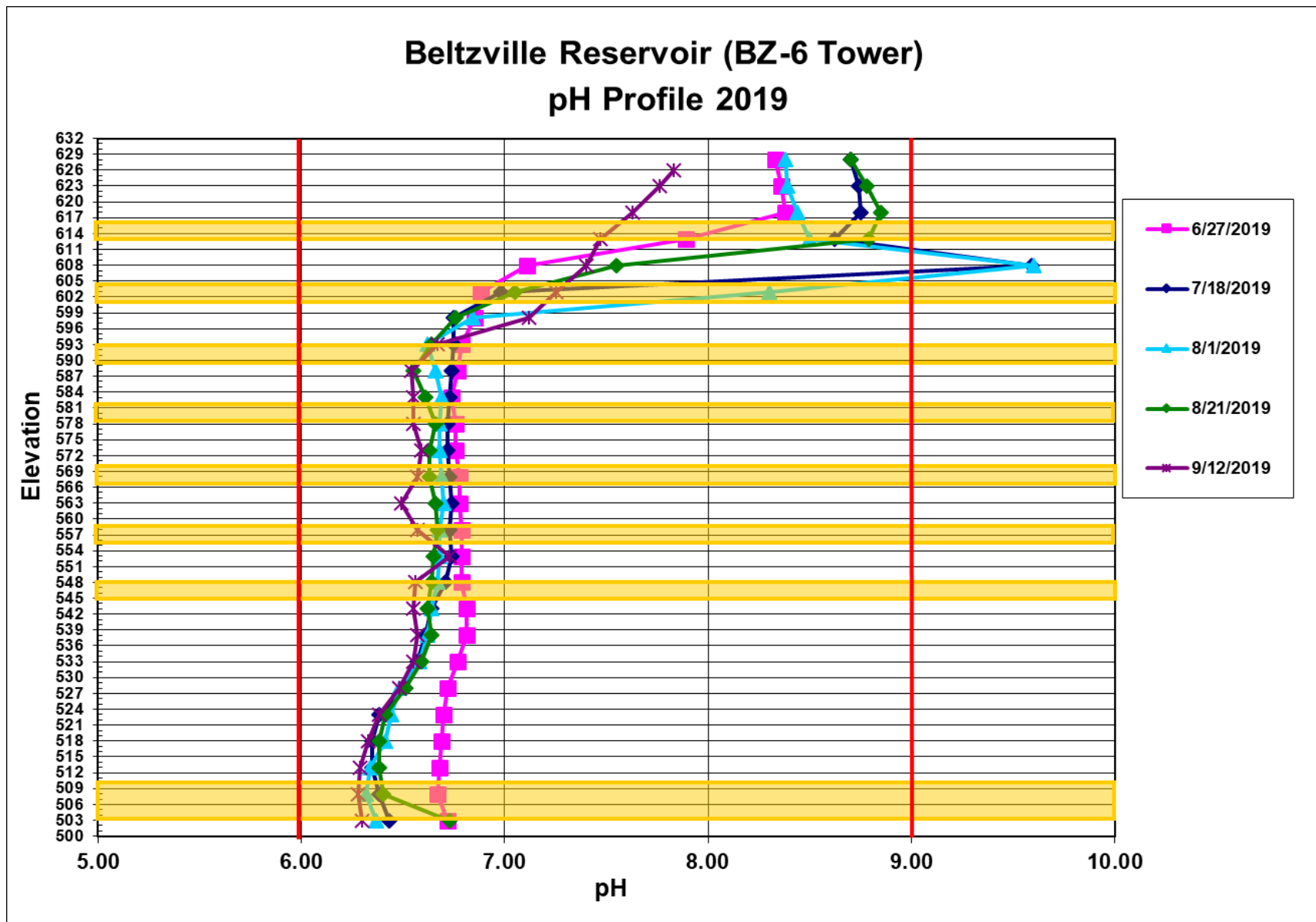


Figure 3-6. pH profile at station BZ-6 of Beltzville Reservoir in 2019. (The PADEP water quality standard for pH is between 6 and 9) See Appendix A for summary of plotted value

## Results and Discussion

### 3.2 WATER COLUMN CHEMISTRY MONITORING

The following sections describe temporal, spatial, and patterns relating to depth for the water quality parameters measured in surface, middle, and bottom waters of Beltzville Reservoir during 2019 (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. Elevated ammonia in the lower water column of deep, stratified lakes and reservoirs usually results in those that are affected by eutrophication and 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.

<b>Table 3.1 Environmental Protection Agency Ammonia Freshwater Criteria (2013)</b>	
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.	

Ammonia concentrations were low in Beltzville Reservoir during 2019. Concentrations measured at all stations and depths were less than the laboratory reporting limit of 0.20 mg/L during the entire sampling season. Concentrations of ammonia measured at Beltzville Reservoir were in compliance with the PADEP water quality standards during 2019. The state water quality standard for ammonia is dependent on temperature and pH (Table 3-1).

**Table 3.2. Summary of surface, middle, and bottom water quality monitoring data for Beltzville Reservoir in 2019**

Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	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
BZ-1S	6/27/2019	<10.0	<5.0	0.03	<0.20	<0.01	0.77	NS	50	<0.20	1.3	<0.01	<4.0
	7/18/2019	5.5	<3.4	<0.007	<0.20	0.02	0.72	NS	46	0.26	1.7	<0.01	17.6
	8/1/2019	25.0	<5.0	<0.007	<0.20	<0.01	0.84	NS	61	<0.20	1.7	<0.01	<4.0
	8/21/2019	<10.0	1.9	0.01	<0.20	<0.01	0.86	NS	54	1.5	1.6	<0.01	<4.0
	9/12/2019	<5.0	1.1	<0.007	<0.20	<0.01	0.80	NS	54	<0.20	1.3	<0.01	4.0
BZ-2S	6/27/2019	16.0	<5.0	<0.007	<0.20	<0.01	0.22	NS	31	<0.20	<1.0	<0.01	<4.0
	7/18/2019	10.5	<3.4	<0.007	<0.20	<0.01	0.25	NS	34	<0.20	1.5	<0.01	<4.0
	8/1/2019	20.0	<5.0	0.009	<0.20	<0.01	0.31	NS	61	<0.20	1.4	<0.01	<4.0
	8/21/2019	<10.0	1.2	<0.007	<0.20	<0.01	0.34	NS	56	<0.20	1.5	<0.01	<4.0
	9/12/2019	7.5	<1.0	<0.007	<0.20	<0.01	0.27	NS	56	<0.20	<1.0	<0.01	<4.0

**Table 3.2 Continued. Summary of surface, middle, and bottom water quality monitoring data for Beltzville Reservoir in 2019**

Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	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	
BZ-3S	6/27/2019	38.0	<5.0	<0.007	<0.20	<0.01	0.44	NS	44	0.31	1.9	<0.01	<4.0	
	7/18/2019	11.0	<3.4	<0.007	<0.20	<0.01	0.31	NS	22	0.40	1.9	<0.01	<4.0	
	8/1/2019	23.0	<5.0	<0.007	<0.20	<0.01	0.26	NS	53	<0.20	1.9	<0.01	<4.0	
	8/21/2019	<10.0	1.2	<0.007	<0.20	<0.01	0.32	NS	52	<0.20	2.0	<0.01	<4.0	
	9/12/2019	9.0	<1.0	<0.007	<0.20	<0.01	0.31	NS	41	<0.20	1.3	<0.01	<4.0	
BZ-3M	6/27/2019	<10.0	<5.0	0.01	<0.20	<0.01	0.75	NS	49	<0.20	<1.0	0.02	<4.0	
	7/18/2019	12.0	<3.4	<0.007	<0.20	<0.01	0.60	NS	38	0.29	1.7	<0.01	<4.0	
	8/1/2019	27.0	<5.0	<0.007	<0.20	0.09	0.73	NS	61	<0.20	1.5	<0.01	<4.0	
	8/21/2019	<10.0	1.5	<0.007	<0.20	<0.01	0.84	NS	55	0.20	1.1	<0.01	<4.0	
	9/12/2019	10.5	1.0	<0.007	<0.20	<0.01	0.78	NS	39	<0.20	1.1	<0.01	<4.0	

**Table 3.2 Continued. Summary of surface, middle, and bottom water quality monitoring data for Beltzville Reservoir in 2019**

Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	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
BZ-3B	6/27/2019	10.0	<5.0	0.02	<0.20	<0.01	0.51	NS	60	0.28	<1.0	0.05	<4.0
	7/18/2019	10.5	<3.4	<0.007	<0.20	0.04	0.71	NS	48	<0.20	1.2	<0.01	<4.0
	8/1/2019	<10.0	<5.0	0.009	<0.20	<0.01	0.79	NS	58	<0.20	1.3	<0.01	<4.0
	8/21/2019	<10.0	<1.0	<0.007	<0.20	<0.01	0.85	NS	59	0.82	1.5	0.07	19.5
	9/12/2019	11.0	<1.0	<0.007	<0.20	<0.01	0.70	NS	56	<0.20	1.2	<0.01	<4.0
BZ-4S	6/27/2019	<10.0	38.1	<0.007	<0.20	<0.01	1.2	NS	41	<0.20	<1.0	<0.01	<4.0
	7/18/2019	8.0	<3.4	0.009	<0.20	<0.01	1.2	NS	64	<0.20	<1.0	0.02	7.9
	8/1/2019	<10.0	<5.0	<0.007	<0.20	<0.01	0.17	NS	39	<0.20	1.7	0.02	4.8
	8/21/2019	<10.0	<1.0	<0.007	<0.20	<0.01	0.12	NS	32	0.31	1.5	<0.01	<4.0
	9/12/2019	<5.0	<1.0	<0.007	<0.20	<0.01	0.42	NS	39	<0.20	1.3	0.02	<4.0



**Table 3.2 Continued. Summary of surface, middle, and bottom water quality monitoring data for Beltzville Reservoir in 2019**

Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	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
BZ-5S	6/27/2019	14.0	<5.0	0.02	<0.20	<0.01	1.2	NS	65	<0.20	<1.0	0.03	5.6
	7/18/2019	13.0	<3.4	0.01	0.24	<0.01	1.1	NS	60	0.22	1.7	0.02	6.0
	8/1/2019	15.0	<5.0	0.02	<0.20	<0.01	1.1	NS	66	0.24	1.5	0.04	<4.0
	8/21/2019	<10.0	1.7	0.01	<0.20	<0.01	1.2	NS	52	<0.20	2.1	0.02	20.9
	9/12/2019	14.0	1.6	<0.007	<0.20	<0.01	1.4	NS	67	<0.20	1.2	0.02	13.4
BZ-6S	6/27/2019	25.0	<5.0	0.01	<0.20	<0.01	0.44	NS	49	<0.20	1.0	0.02	<4.0
	7/18/2019	10.5	<3.4	<0.007	<0.20	<0.01	0.28	NS	29	0.21	1.6	<0.01	<4.0
	8/1/2019	14.0	<5.0	0.01	<0.20	<0.01	0.28	NS	63	0.20	1.9	<0.01	<4.0
	8/21/2019	<5.0	<1.0	<0.007	<0.20	<0.01	0.26	NS	47	<0.20	1.9	<0.01	<4.0
	9/12/2019	10.0	<1.0	<0.007	<0.20	<0.01	0.36	NS	49	0.26	1.4	0.32	<4.0

**Table 3.2 Continued. Summary of surface, middle, and bottom water quality monitoring data for Beltzville Reservoir in 2019**

Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	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	
BZ-6M	6/27/2019	37.0	<5.0	0.01	<0.20	<0.01	0.81	NS	48	<0.20	<1.0	0.02	<4.0	
	7/18/2019	12.0	<3.4	<0.007	<0.20	0.05	0.74	NS	44	<0.20	1.4	<0.01	<4.0	
	8/1/2019	14.0	<5.0	<0.007	<0.20	<0.01	0.85	NS	58	<0.20	1.4	<0.01	<4.0	
	8/21/2019	<10.0	<1.0	<0.007	<0.20	0.03	0.89	NS	47	0.30	1.3	<0.01	<4.0	
	9/12/2019	<5.0	<1.0	<0.007	<0.20	<0.01	0.94	NS	170	<0.20	1.1	<0.01	<4.0	
BZ-6B	6/27/2019	<10.0	<5.0	0.01	<0.20	<0.01	0.77	NS	42	<0.20	<1.0	0.03	<4.0	
	7/18/2019	10.0	<4.5	<0.007	<0.20	0.03	0.75	NS	41	<0.20	1.1	<0.01	<4.0	
	8/1/2019	15.0	<5.0	0.009	<0.20	<0.01	0.79	NS	59	<0.20	1.3	<0.01	<4.0	
	8/21/2019	<5.0	1.4	<0.007	<0.20	<0.01	0.81	NS	49	0.24	1.0	0.31	6.6	
	9/12/2019	12.0	2.3	<0.007	<0.20	<0.01	0.57	NS	63	<0.20	1.3	0.11	4.6	

**Table 3.2 Continued. Summary of surface, middle, and bottom water quality monitoring data for Beltzville Reservoir in 2019**

Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	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	
BZ-7S	6/27/2019	10.0	<5.0	0.01	<0.20	<0.01	0.46	NS	21	<0.20	1.5	0.02	<4.0	
	7/18/2019	10.5	<3.40	<0.007	<0.20	<0.01	0.27	NS	31	0.25	1.4	0.01	<4.0	
	8/1/2019	12.0	<5.0	<0.007	<0.20	<0.01	0.22	NS	53	<0.20	1.9	<0.01	<4.0	
	8/21/2019	<5.0	1.5	<0.007	<0.20	<0.01	0.23	NS	43	0.90	1.9	<0.01	<4.0	
	9/12/2019	10.5	<1.0	0.009	<0.20	<0.01	0.29	NS	52	0.30	1.4	<0.01	<4.0	
BZ-7M	6/27/2019	35.0	<5.0	0.01	<0.20	<0.01	0.90	NS	48	0.34	1.2	0.02	<4.0	
	7/18/2019	11.5	<3.4	<0.007	<0.20	<0.01	0.85	NS	45	0.31	1.6	<0.01	<4.0	
	8/1/2019	15.0	<5.0	<0.007	<0.20	<0.01	0.69	NS	69	<0.20	1.6	0.02	<4.0	
	8/21/2019	<10.0	<1.0	<0.007	<0.20	<0.01	0.84	NS	47	0.39	1.6	<0.01	<4.0	
	9/12/2019	11.0	<1.0	0.008	<0.20	<0.01	0.73	NS	60	<0.20	1.2	<0.01	<4.0	

**Table 3.2 Continued. Summary of surface, middle, and bottom water quality monitoring data for Beltzville Reservoir in 2019**

Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	PO4	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	
BZ-7B	6/27/2019	14.0	<5.0	0.008	<0.20	<0.01	0.91	NS	48	<0.20	1.5	<0.01	<4.0	
	7/18/2019	14.0	<4.5	0.01	<0.20	0.07	0.77	NS	43	0.29	1.3	0.11	53.2	
	8/1/2019	14.0	<5.0	<0.007	<0.20	<0.01	0.87	NS	70	<0.20	1.5	<0.01	<4.0	
	8/21/2019	9.5	<1.0	<0.007	<0.20	<0.01	0.76	NS	47	0.30	1.3	<0.01	<4.0	
	9/12/2019	12.5	<1.0	<0.007	<0.20	<0.01	0.74	NS	62	<0.20	1.3	<0.01	<4.0	

< Laboratory analysis result was less than the limit of quantification or limit of detection.  
 NS- Not Sampled

### 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. With the exception of six samples, concentrations measured at all other stations and depths were less than the laboratory reporting limit of 0.01 mg/L during the entire 2019 sampling season. The maximum recorded single sample of 0.09 mg/L was collected from station BZ-3M on 01 August.

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 was distributed uniformly in the water column of Beltzville Reservoir during 2019 with sample results ranging from 0.22 mg/L to 1.40 mg/L (Table 3-2). The highest recorded single nitrate measure of 1.40 mg/L was measured on 12 September at station BZ-5S. Station BZ-5S maintained the highest seasonal mean concentration (1.20 mg/L) of all stations.

Beltzville Reservoir was in compliance with the PADEP water quality standard for nitrite and nitrate during 2019. The standard is a summed concentration of nitrite and nitrate of less than 10 mg/L. Throughout the monitoring period, a maximum summed concentration across all stations and depths of 1.41 mg/L was measured at station BZ-5S on 12 September.

### 3.2.3 Total Kjeldahl Nitrogen

Total Kjeldahl nitrogen (TKN) is a measure of organic nitrogen that includes ammonia. Organic nitrogen is not immediately available for biological activity and is therefore not available for plant growth until decomposition to inorganic form occurs. Total kjeldahl nitrogen (TKN) was low in the water column of Beltzville Reservoir during 2019 with single sample concentrations ranging from less than the 0.20 mg/L laboratory reporting limit to 1.5 mg/L (Table 3-2). The highest concentration of 1.5 mg/L was recorded at station BZ-1S on 21 August.

### 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 to experience algal bloom problems during the growing

season. In 2019, 56 of the 65 samples measured for total phosphorus were less than or slightly exceeding (0.02 mg/L) the EPA suggested maximum concentration and laboratory reporting limit of 0.01 mg/L (Table 3-2). The remaining 9 elevated samples were collected at deep water bottom stations and BZ-5S. Elevated TP readings in deep reservoir waters are typically associated with phosphorus release from bottom sediments during low oxygen conditions. Beltzville Reservoir experienced these conditions in 2019. Upstream tributary station BZ-5S (Pohopoco Creek) exceeded the EPA 0.01 mg/L suggested concentration throughout the sampling season. Land use or some other watershed factors contribute to nutrient loading in this tributary

### 3.2.5 Dissolved Phosphorus

During the 2019 sampling season, twenty two samples measured at all stations and depths were greater than the laboratory reporting limit of 0.007 mg/L (Table 3-2). Upstream tributary station BZ-5S (Pohopoco Creek) exceeded the laboratory reporting limit on 4 of 5 sampling events and averaged 0.01 mg/L for all samples collected. Land use or some other watershed factors contribute to nutrient loading in this tributary

### 3.2.6 Total Dissolved Solids

Total dissolved solids (TDS) is 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. Concentrations of TDS in the water column of Beltzville Reservoir were consistently low during 2019 (Table 3-2). Concentrations among all stations and depths ranged from 21 to 170 mg/L. Total dissolved solids measured at Beltzville Reservoir in 2019 were in compliance with PADEP water quality standards. The state water quality standard for TDS is a maximum concentration of 500 mg/L.

### 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). Total suspended solids concentrations in the waters of Beltzville Reservoir were low during 2019 (Table 3-2). Many concentrations measured at all stations and depths were less than or near the laboratory reporting limit of <4.0 mg/L. The maximum concentration of 53.2 mg/L was measured in lake bottom waters at station BZ-7B on 18 July. High measures of TSS can be the result of sample collection error associated with capturing disturbed fine sediments in the lake bottom sample during field sampling. This sampling error may apply to elevated or unexplained high TSS water samples collected at lake bottom water sampling stations such as BZ-6B, BZ-3B, and BZ-7B. Upstream tributary station BZ-5S (Pohopoco Creek) exceeded the laboratory reporting limit on 4 of 5 sampling events and averaged 9.98 mg/L for all samples collected. Land use or some other watershed factors contribute to nutrient and sediment loading in this tributary

### 3.2.8 Biochemical Oxygen Demand

Five-day biochemical oxygen demand (BOD<sub>5</sub>) 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 concentrations in the water column of Beltzville Reservoir were consistently low in all months and stations sampled (Table 3-2). With the exception of one upstream tributary sample all sample results were below laboratory reporting limits of <1.0 and <5.0 mg/L for the entire sampling season. Based on the seasonal sampling results, it is inferred that in 2019, Beltzville Reservoir and its associated tributaries fluctuated between very clean water with little biodegradable organic wastes and moderately clean water with some biodegradable wastes.

### 3.2.9 Alkalinity

Alkalinity (ALK) 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 CaCO<sub>3</sub> except where natural conditions are less.

For all sampling stations and depths, alkalinity measures during 2019 ranged from 38.0 mg/L to <5.0 mg/L (Table 3-2). All but 8 reservoir and tributary samples measured were below the state minimum criteria (20 mg/L) during the sampling season. The natural alkalinity of water is largely dependent on the underlying geology and soils within the surrounding watershed. The typically low alkalinity measured at Beltzville Reservoir results from the regional geology, which is primarily sandstone and shale. Based on this, the reservoir waters and surrounding tributaries are in compliance with the PADEP alkalinity criteria, due to the regional natural conditions.

### 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 also wastewater treatment plant discharges. The amount of carbon in a freshwater stream is an indicator of the organic character of the stream or 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 Beltzville Reservoir were low during 2019 (Table 3-2). Concentrations of TOC at all stations and depths ranged from <1.0 mg/L to 2.1 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* concentrations in the surface waters (0-10 feet) of Beltzville Reservoir were low during 2019 (Appendix A). Concentrations measured in surface waters at all lake body stations ranged between 1.1 and 6.3 ug/L with an average seasonal concentration across all lake stations of 2.72 ug/L.

### 3.3 TROPHIC 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. 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. Classification of Beltzville Reservoir was based on a single sample each month during the 2019 sampling season collected at station BZ-6 (Figure 3-7).

TSIs calculated for measures of total phosphorus classified Beltzville Reservoir as eutrophic in September (87.33), mesotrophic in June (47.35), and oligotrophic in July (37.35), early August (37.35) and late August (37.35). TSIs calculated for measures of secchi disk depth classified Beltzville Reservoir as mesotrophic in June (41.15) and oligotrophic in July (38.67), early August (35.57), late August (38.00), and September (38.33). TSIs calculated for measures of chlorophyll *a* classified Beltzville Reservoir as oligotrophic in early August (35.81) and late August (36.20), and mesotrophic in June (40.23), July (40.81), and September (42.31).

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. With this in mind and considering historic sampling results, the trophic state of the reservoir, based on TSI's, was oligotrophic/mesotrophic throughout the 2019 sampling season.



## Results and Discussion

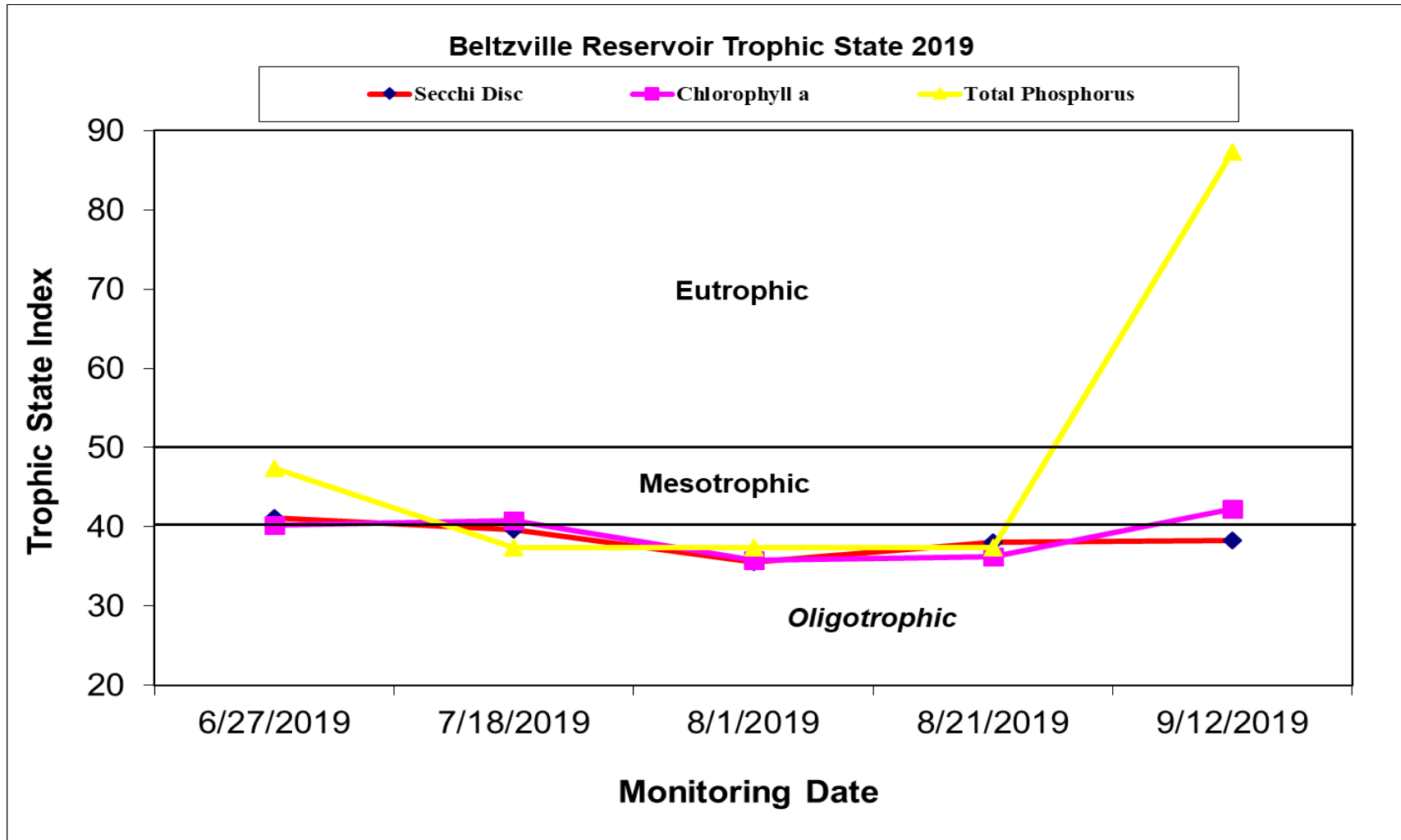
The EPA (1983) also provides criteria for defining the trophic conditions of lakes of the north-temperate zone based on concentrations of total phosphorus, chlorophyll *a*, and secchi depth (Table 3-3). Taking into account the general agreement between the EPA classifications with that of the Carlson TSI's, the trophic condition of Beltzville Reservoir was oligotrophic/mesotrophic in 2019.

Water Quality Variable	Oligo-trophic	Meso-trophic	Eutrophic	27 June	18 July	01 August	21 August	12 September
Total phosphorus (ppb)	<10	10-20	>20	<20	<10	<10	<10	320
Chlorophyll <i>a</i> (ppb)	<4	4-10	>10	2.67	2.83	1.70	1.77	3.30
Secchi disk depth (meters)	>4	2-4	<2	3.70	4.10	5.45	4.60	4.50

### 3.4 RESERVOIR BACTERIA MONITORING

Two forms of coliform bacteria contamination were monitored in the tributary and lake surface waters at Beltzville Reservoir during 2019 including total and fecal coliform (Table 3-4). Total coliform includes *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.

Total coliform values for all stations ranged from 22 colonies/100-ml to greater than the detection limit of 20000 colonies/100-ml. Bacteria in natural waters are common and their presence in the sample is not necessarily a human health concern. With respect to PADEP water quality and recreational contact standards, fecal coliform bacteria has been replaced with an e-coli criteria. For purposes of the 2019 main reservoir and tributary bacteria sampling, previous fecal coliform criteria was used. Fecal contamination was low in Beltzville Reservoir and its tributaries during 2019. The previous standard for fecal coliform bacteria during the swimming season (from 1 May to 30 September) is a geometric mean not greater than 200 colonies/100-ml. Given that our regular monitoring was completed on one day grab samples, single sample results were then compared to the Pennsylvania Department of Health single sample standard of <1000 colonies/100-ml. The fecal coliform samples collected at Beltzville Reservoir did not exceed this standard during the 2019 sampling season. Upstream tributary Station BZ-5S consistently maintained the highest readings and may be a result of upstream watershed activities or land use. Water contact recreation is permitted at Beltzville Reservoir. However, the recreational swimming beach is monitored and managed by the Commonwealth of Pennsylvania. No long term elevated bacteria counts were recorded in the main reservoir body where public water recreation is also permitted.



**Figure 3-7.** Trophic state indices calculated from secchi disk depth and concentrations of total phosphorus and chlorophyll *a* at reservoir Station BZ-6 for Beltzville Reservoir in 2019.

## Results and Discussion

**Table 3-4** Bacteria counts (colonies/100ml) at Beltzville Reservoir and tributaries during 2019.

STATION	DATE	Total Coliform (TC)		Fecal Coliform (FC)		Escherichia coli	
		>		<			
BZ-1S	6/27/2019	>	2000		11		NS
	7/18/2019	>	20000		41		NS
	8/1/2019	>	2000		8		NS
	8/21/2019		1410		47		NS
	9/12/2019		3600		13		NS
BZ-2S	6/27/2019	>	2000		28		NS
	7/18/2019		14400		47		NS
	8/1/2019	>	2000		21		NS
	8/21/2019	>	2000		21		NS
	9/12/2019		7900		18		NS
BZ-3S	6/27/2019		160		4		NS
	7/18/2019		17900	<	1		NS
	8/1/2019	>	2000	<	1		NS
	8/21/2019		22	<	1		NS
	9/12/2019	>	2000		1		NS
BZ-4S	6/27/2019	>	2000		7		NS
	7/18/2019	>	20000		42		NS
	8/1/2019		<b>Lab Error</b>		210		NS
	8/21/2019	>	2000		42		NS
	9/12/2019	>	20000		1		NS
BZ-5S	6/27/2019	>	2000		29		NS
	7/18/2019		19100		310		NS
	8/1/2019	>	2000		300		NS
	8/21/2019	>	2000		370		NS
	9/12/2019	>	2000		27		NS
BZ-6S	6/27/2019		210		3		NS
	7/18/2019		11200		1		NS
	8/1/2019	>	2000		4		NS
	8/21/2019		580	<	1		NS
	9/12/2019		1240	<	1		NS
BZ-7S	6/27/2019		220		2		NS
	7/18/2019		2500		3		NS
	8/1/2019	>	2000	<	1		NS
	8/21/2019		610	<	1		NS
	9/12/2019	>	2000		1		NS

-Highlighted counts exceed single sample State (1000 fecal colonies/100ml) bathing beach criteria.

-NS = Not Sampled in 2019

-Lab Error = Excessive biological growth did not allow enumeration

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# **APPENDIX A**

## **STRATIFICATION DATA TABLES**

## 2019 Beltzville Reservoir Water Column 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>BZ-1S Outfall Pohopoco</b>	6/27/2019	7:06:07	0.5	15.35	97.5	9.75	7.35	-27.3	120.4	0.2	3.4	0.076
	7/18/2019	6:48:05	0.5	16.4	94.7	9.27	6.9	-1.1	189.7	0.3	3	0.077
	8/1/2019	6:41:49	0.5	13.67	95.3	9.89	7.08	-11.8	162.6	0.0	1.6	0.074
	8/21/2019	11:09:57	0.5	15.98	102	10.06	6.78	5.7	157	0.0	1.1	0.078
	9/12/2019	6:34:37	0.5	12.92	95.2	10.04	7.01	-7.4	209.3	0.0	2.1	0.074
<b>BZ-2S Pine Run Trib.</b>												
	6/27/2019	11:25:40	0.5	14.59	96.5	9.82	7.19	-18.1	221.1	0.5	10.9	0.056
	7/18/2019	11:17:08	0.5	16.88	96.6	9.36	7.11	-13.6	197.6	0.3	1.1	0.066
	8/1/2019	11:49:56	0.5	16.64	96.6	9.41	7.25	-21.7	201.4	4.2	1.4	0.068
	8/21/2019	14:35:33	0.5	18.62	96.1	8.99	7.56	-40	208.6	0.0	0.7	0.07
9/12/2019	11:20:46	0.5	17.38	96.5	9.25	7.09	-12.4	210.4	0.0	0.8	0.065	
<b>BZ-3 Bouy/Beach</b>	6/27/2019	9:11:45	0.5	24.09	111	9.29	8.31	-84.8	167.4	0.6	1.7	0.078
		9:10:48	5	23.99	111	9.32	8.32	-85.4	168.8	0.0	2.5	0.078
		9:09:57	10	23.37	111	9.41	8.26	-81.7	169.3	0.3	2.5	0.077
		9:09:17	15	21.77	105	9.25	7.67	-46.8	175.7	0.2	4	0.074
		9:08:36	20	19.91	87.9	8.01	7.01	-7.5	190.1	1.2	5.6	0.074
		9:07:49	25	18.58	79	7.39	6.9	-1.2	192.8	0.3	4.1	0.075
		9:06:46	30	17.58	72.4	6.91	6.84	2	193.7	0.4	2.5	0.079
		9:05:51	35	16.72	69.5	6.76	6.83	2.8	194.3	0.7	2.3	0.081
		9:04:23	40	15.82	64.3	6.37	6.75	7.2	194.4	0.0	1.6	0.080
		9:03:52	45	14	62.6	6.45	6.74	7.9	194.7	0.0	2	0.074
		9:02:53	50	11.56	62.5	6.8	6.72	8.8	194.7	0.6	2.1	0.069
		9:02:04	55	10.63	62.6	6.96	6.73	8.4	193.7	0.0	1.1	0.068
		9:01:14	60	10.06	62.7	7.07	6.73	8.4	193.3	0.1	1.9	0.067
		9:00:18	65	9.67	65.3	7.43	6.74	7.7	191.7	0.0	1.2	0.066
		8:59:02	70	9.36	67.6	7.75	6.75	7	188.7	0.0	1.7	0.065
		8:58:15	75	9.04	69.2	7.99	6.75	6.9	187.2	0.0	1.7	0.065
		8:57:34	80	8.74	70.6	8.21	6.75	6.9	186.2	0.0	1	0.064
		8:56:52	85	8.51	71	8.3	6.74	7.3	185.2	0.0	1.2	0.064
8:56:16	90	8.21	69.6	8.2	6.74	7.6	184.2	0.0	0.8	0.063		
8:55:28	95	8.02	65	7.69	6.72	8.4	181.9	0.0	0.8	0.063		
8:54:44	100	7.85	60.8	7.22	6.73	8	178.2	0.0	1.2	0.063		
8:53:50	105	7.8	59.4	7.06	6.81	3.7	171.5	0.0	0.4	0.063		

## 2019 Beltzville Reservoir Water Column 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>BZ-3 Bouy/Beach</b>	7/18/2019	8:57:46	0.5	27.61	111	8.77	8.63	-104.8	156.7	0.0	2.8	0.082
		8:56:56	5.0	27.63	111	8.76	8.64	-105.5	156.8	0.0	3.3	0.082
		8:55:29	10.0	27.6	112	8.8	8.69	-108.8	153.8	0.0	3	0.082
		8:53:46	15.0	25.66	140	11.41	9.49	-155.9	143.1	0.4	4.6	0.086
		8:52:48	20.0	22.25	123	10.7	9.19	-136.4	154.8	1.6	16.7	0.081
		8:51:49	25.0	20.63	79.5	7.14	6.93	-2.8	189.5	0.4	6.1	0.086
		8:50:57	30.0	19.61	58.8	5.38	6.78	5.9	190.9	0.3	5.3	0.082
		8:50:21	35.0	18.29	54.7	5.15	6.74	8	191.6	0.0	3.2	0.080
		8:49:35	40.0	17.01	52.8	5.11	6.72	8.9	191	0.0	1.8	0.081
		8:48:43	45.0	15.07	51.8	5.22	6.71	9.8	191	0.0	1.7	0.078
		8:47:49	50.0	12.01	54.2	5.83	6.69	10.7	191.7	0.0	1.3	0.072
		8:47:11	55.0	10.94	55.8	6.16	6.7	10.1	191.2	0.0	0.9	0.070
		8:46:36	60.0	10.39	57.6	6.44	6.7	9.6	190.5	0.0	0.7	0.067
		8:44:41	65.0	9.86	59.7	6.76	6.71	9.4	186.1	0.0	0.5	0.066
		8:43:41	70.0	9.5	61.8	7.06	6.73	7.9	182.5	0.0	0.4	0.065
		8:42:45	75.0	9.16	62.2	7.16	6.72	8.5	180.9	0.0	0.5	0.065
		8:42:04	80.0	8.91	61.4	7.11	6.73	8.4	178.4	0.0	0.3	0.065
		8:40:39	85.0	8.68	60.2	7.01	6.65	12.4	178.3	0.0	1	0.064
		8:39:57	90.0	8.46	60.3	7.06	6.61	15.1	178.9	0.0	1	0.064
		8:39:03	95.0	8.11	59.6	7.04	6.57	17.1	177.7	0.0	0.3	0.063
8:37:52	100.0	7.87	48.2	5.72	6.52	19.8	172.5	0.6	1.1	0.064		
8:37:09	105.0	7.79	45.6	5.42	6.56	17.8	165.8	0.4	0.3	0.064		
8:35:58	107.0	7.76	42.9	5.11	6.65	12.5	148.5	1.5	1.7	0.064		
<b>BZ-3 Bouy/Beach</b>	8/1/2019	09:28:21	0.5	27.67	109	8.6	8.45	-94.3	176.4	0.0	1.5	0.082
		9:27:44	5	27.65	109	8.59	8.47	-95.4	174.9	0.0	2.2	0.082
		9:26:49	10	27.5	109	8.59	8.39	-90.4	176.8	0.0	2.5	0.082
		9:25:44	15	27.42	109	8.6	8.34	-87.6	179	0.0	1.8	0.082
		9:24:12	20	24.8	144	11.92	9.56	-159.4	164.3	0.6	6.1	0.091
		9:22:56	25	22.52	109	9.45	7.41	-31.1	203.5	0.1	5.4	0.089
		9:21:11	30	20.92	63.8	5.69	6.8	4.5	215	0.0	4.5	0.088
		9:19:51	35	19.39	34.6	3.19	6.62	15.2	218.7	0.0	1.9	0.084
		9:17:57	40	18.21	41.5	3.92	6.66	12.8	219.6	0.0	1.7	0.081
		9:16:55	45	16.57	45.3	4.42	6.68	11.4	220.6	0.0	1.6	0.081
		9:15:53	50	14.29	44.1	4.51	6.63	14.1	223	0.0	0.6	0.076
		9:15:04	55	12.23	44.4	4.76	6.59	16.3	226.3	0.0	0.8	0.073
		9:14:13	60	10.89	47.3	5.23	6.62	14.2	225.4	0.0	1.2	0.070
		9:12:41	65	10.14	54.8	6.17	6.66	12.4	224.9	0.0	0.9	0.067
		9:11:47	70	9.69	55.5	6.31	6.65	12.8	225.9	0.0	1.1	0.066
		9:10:34	75	9.36	57.1	6.54	6.63	13.6	226.5	0.0	0.9	0.065
		9:09:38	80	8.99	56.6	6.54	6.59	16	228.8	0.0	0.8	0.065
		9:08:58	85	8.72	56.3	6.55	6.56	17.6	230.5	0.0	0.8	0.065
		9:07:49	90	8.4	54.9	6.44	6.46	23.3	236.1	0.0	0.4	0.064
		9:06:57	95	8.25	50.5	5.94	6.43	24.8	237.7	0.0	0.7	0.064
9:06:19	100	8.02	45.7	5.41	6.44	24.5	238	0.3	0.6	0.064		
9:05:04	105	7.86	41.4	4.92	6.49	21.6	236.9	0.9	0.8	0.065		
9:03:53	110	7.87	42.7	5.07	6.6	15.2	234.4	1.1	1.3	0.065		

## 2019 Beltzville Reservoir Water Column 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>BZ-3 Bouy/Beach</b>	8/21/2019	12:56:52	0.5	27.66	112	8.79	8.71	-109.9	176.6	0.0	1.1	0.085
		12:56:19	5	27.51	112	8.85	8.75	-112	177.4	0.0	2.0	0.085
		12:55:30	10	27.14	113	8.94	8.78	-113.6	178.1	0.0	2.4	0.085
		12:54:48	15	26.61	113	9.03	8.64	-105.3	181.1	0.0	2.8	0.084
		12:54:02	20	25.5	113	9.23	7.82	-56.2	192.1	0.0	4.1	0.086
		12:52:53	25	23.58	84.3	7.15	6.95	-4	213	0.4	6.0	0.091
		12:51:47	30	22.4	62.4	5.41	6.81	4.2	217.1	0.0	4.6	0.094
		12:49:22	35	21.14	37.5	3.33	6.67	12.3	221.5	0.0	1.0	0.088
		12:47:45	40	19.88	15.8	1.44	6.57	18.3	225.6	0.0	1.6	0.083
		12:46:27	45	17.87	27.4	2.6	6.59	16.5	229	0.0	1.4	0.083
		12:45:10	50	16.96	38.5	3.73	6.66	12.6	229.2	0.0	2.5	0.082
		12:44:02	55	15.43	31.8	3.18	6.56	18	233.4	0.0	1.9	0.079
		12:43:31	60	12.56	32.6	3.47	6.62	14.4	232.5	0.0	1.5	0.075
		12:42:31	65	10.38	41.9	4.68	6.66	12.3	233.7	0.0	0.7	0.069
		12:41:14	70	10.03	49.2	5.55	6.66	12.2	235.8	0.0	1.2	0.067
		12:40:17	75	9.39	51.6	5.9	6.68	11.2	236.7	0.0	0.6	0.066
		12:39:17	80	9.2	51.1	5.88	6.72	8.6	235.5	0.0	0.9	0.065
		12:38:11	85	8.84	46.8	5.43	6.73	8.2	237	0.0	1.4	0.065
		12:37:14	90	8.59	45.4	5.3	6.78	5.5	236.3	0.0	1.1	0.065
		12:36:05	95	8.32	40.8	4.79	6.81	3.6	237.4	0.0	1.3	0.065
12:34:43	100	8.1	36.9	4.36	6.93	-3.2	236.5	0.3	0.3	0.065		
12:33:43	105	8	33.8	4	7.04	-9.3	235.4	0.8	0.4	0.065		
12:33:06	110	7.97	32.1	3.8	7.11	-13.5	234.9	1.4	0.7	0.065		
<b>BZ-3 Bouy/Beach</b>	9/12/2019	9:11:26	0.5	23.45	106	9.01	7.99	-65.5	195.5	0.0	4.0	0.082
		9:10:18	5	23.46	106	9	7.92	-61.5	194.5	0.0	3.8	0.082
		9:09:13	10	23.45	105	8.93	7.76	-52.4	195.6	0.0	4.1	0.082
		9:08:05	15	23.19	101	8.66	7.48	-35.7	200.2	0.0	3.9	0.081
		9:06:32	20	22.95	94.3	8.1	7.3	-24.6	203.9	0.0	3.3	0.081
		9:05:10	25	22.8	90.9	7.83	7.2	-18.9	205.1	0.1	3.0	0.081
		9:03:11	30	22.59	79.9	6.91	7.01	-7.7	207.8	0.0	2.4	0.082
		9:01:01	35	21.76	34.3	3.01	6.67	12.3	215.2	0.0	1.9	0.09
		9:00:01	40	20.87	19.9	1.78	6.61	16	217.9	0.0	1.0	0.092
		8:58:43	45	19.96	18.2	1.65	6.6	16.2	219.7	0.0	1.6	0.092
		8:57:19	50	18.14	8.7	0.82	6.55	18.9	221.9	0.0	1.0	0.085
		8:56:14	55	16.13	14	1.38	6.57	18	223.7	0.0	1.3	0.081
		8:55:12	60	13.64	15.5	1.61	6.57	17.3	225.3	0.1	1.1	0.077
		8:52:58	65	11.43	20.7	2.26	6.52	20.4	230.8	0.0	1.1	0.072
		8:50:53	70	10.49	33.2	3.7	6.56	18.1	230.1	0.0	1.1	0.069
		8:48:55	75	9.82	41.9	4.75	6.56	17.7	231	0.0	1.2	0.067
		8:48:02	80	9.37	42.6	4.88	6.55	18.2	232.1	0.0	1.0	0.066
		8:47:01	85	9.01	38.4	4.43	6.55	18.4	232.5	0.0	0.8	0.066
		8:45:31	90	8.62	33	3.85	6.47	22.8	237.7	0.0	0.9	0.066
		8:44:44	95	8.44	31.7	3.72	6.47	22.6	238.3	0.0	0.7	0.066
8:43:12	100	8.2	27.7	3.26	6.52	19.7	237.5	0.7	0.8	0.067		



## 2019 Beltzville Reservoir Water Column 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>BZ-4S Wild Creek Upstream</b>	6/27/2019	11:08:00	0.5	23.39	97.4	8.3	7.23	-20.5	188.2	0.0	0.8	0.037
	7/18/2019	11:02:12	0.5	26.32	96.9	7.82	7.28	-24	188.5	0.0	0.8	0.038
	8/1/2019	11:32:15	0.5	26.01	97.6	7.92	7.27	-23.1	176.1	0.0	0.9	0.034
	8/21/2019	14:22:41	0.5	26.5	96.6	7.77	7.86	-58.5	178.2	0.0	0.9	0.04
	9/12/2019	11:05:24	0.5	22.32	98	8.51	7.44	-32.8	194	0.0	1.2	0.037
<b>BZ-5S Pohopoco Upstream</b>	6/27/2019	10:52:51	0.5	18.05	97	9.17	7.66	-45.5	132.6	3.6	1.1	0.103
	7/18/2019	10:48:21	0.5	20.53	101	9.04	7.69	-47.4	162.9	3.6	1.5	0.113
	8/1/2019	11:15:47	0.5	20.59	101	9.04	7.61	-42.9	143.9	3.1	0.9	0.116
	8/21/2019	14:11:48	0.5	22.26	113	9.79	8.53	-97.4	148.8	4.8	0.8	0.12
	9/12/2019	10:51:33	0.5	19.62	95.4	8.74	7.74	-50.2	175.1	1.1	0.1	0.119
<b>BZ-6 In-Lake Tower  Secchi 3.70 M</b>	6/27/2019	8:29:58	0.5	23.5	110	9.35	8.33	-86	162.5	0.3	1.5	0.077
		8:29:02	5	23.4	110	9.35	8.36	-87.6	162.5	0.5	3.1	0.077
		8:28:06	10	23.22	110	9.42	8.38	-88.6	162.2	0.6	3.4	0.077
		8:26:52	15	22.49	107	9.23	7.89	-59.4	166.1	1.0	5.2	0.075
		8:26:08	20	19.86	91.8	8.37	7.11	-13.4	183.1	0.6	5.9	0.074
		8:24:15	25	18.41	76.9	7.22	6.88	0.1	187.2	0.7	6.1	0.075
		8:22:51	30	17.31	71.4	6.85	6.85	1.7	187.5	0.6	2.4	0.081
		8:21:37	35	16.72	64.8	6.3	6.79	5.3	187.8	0.0	2.8	0.081
		8:20:42	40	15.74	62.3	6.18	6.77	6	187.7	0.0	2.1	0.079
		8:19:26	45	14.21	62.8	6.44	6.74	7.8	188	0.0	2.7	0.074
		8:18:35	50	11.75	64.9	7.03	6.76	6.6	188.1	0.0	3.2	0.068
		8:17:24	55	10.51	65.6	7.31	6.76	6.4	188	0.0	2.4	0.067
		8:16:18	60	10.15	67	7.53	6.78	5.5	186.9	0.0	1.7	0.066
		8:15:33	65	9.7	67.4	7.67	6.78	5.1	186.4	0.0	1.8	0.065
		8:14:56	70	9.42	67.5	7.72	6.79	5	185.9	0.0	1.6	0.065
		8:14:06	75	9.18	67.6	7.77	6.79	4.9	185.3	0.3	1.5	0.065
		8:13:14	80	8.98	68.7	7.94	6.79	4.8	184.6	0.4	1.4	0.064
		8:12:23	85	8.55	70.7	8.26	6.81	3.4	183.2	0.0	0.7	0.063
		8:11:00	90	8.23	70	8.24	6.81	3.7	182	0.0	1	0.063
		8:09:52	95	8.09	67.8	8.01	6.77	5.8	182.1	0.0	1	0.063
8:08:52	100	7.79	63.1	7.51	6.72	8.4	182.5	0.1	1.5	0.063		
8:07:52	105	7.68	60.4	7.21	6.7	9.7	181.6	0.0	1	0.063		
8:07:03	110	7.63	59.2	7.07	6.69	10.5	180.6	0.0	0.5	0.063		
8:06:14	115	7.61	58.3	6.97	6.68	11	179.5	0.0	0.9	0.063		
8:04:07	120	7.56	56.8	6.8	6.67	11.4	175.6	0.0	0.6	0.063		
8:03:23	125	7.56	56.9	6.81	6.72	8.8	172.8	0.0	0.8	0.063		

## 2019 Beltzville Reservoir Water Column 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>BZ-6 In-Lake Tower</b>	7/18/2019	8:17:54	0.5	27.42	112	8.88	8.7	-108.9	161.1	0.0	2.6	0.001
		8:16:39	5	27.49	112	8.83	8.74	-111.9	159.2	0.0	2.8	0.082
		8:15:40	10	27.49	112	8.84	8.75	-112	158.9	0.0	3.1	0.082
		8:14:41	15	27.06	113	8.97	8.62	-104.6	162.4	0.4	3.5	0.081
		8:13:29	20	22.25	133	11.59	9.59	-159.8	150.4	1.6	18.1	0.079
		8:11:18	25	20.55	82.5	7.42	6.98	-5.8	196.3	0.5	9.1	0.076
		8:10:14	30	19.28	51.7	4.77	6.75	7.4	201.2	0.4	6.8	0.077
		8:09:33	35	17.9	52.5	4.98	6.75	7.2	202.1	0.0	2	0.079
		8:08:37	40	16.51	52	5.08	6.74	7.9	201.4	0.1	1.4	0.081
		8:07:38	45	14.88	53.5	5.41	6.73	8.6	201.6	0.0	1.3	0.077
		8:06:41	50	12.74	54.6	5.78	6.72	9.2	202	0.0	1.2	0.071
		8:05:46	55	10.95	57.3	6.33	6.72	8.5	202.3	0.0	0.8	0.068
		8:04:53	60	10.3	58.9	6.61	6.73	8.4	202.2	0.0	0.5	0.067
		8:03:56	65	9.94	60	6.78	6.74	7.4	200.7	0.0	1	0.066
		8:01:46	70	9.63	60.7	6.91	6.73	7.9	199.1	0.3	1.4	0.065
		7:59:27	75	9.31	61	7	6.74	7.8	196.1	0.0	1.2	0.065
		7:58:09	80	8.89	63.2	7.33	6.71	9.2	196.3	0.0	1.3	0.064
		7:56:51	85	8.59	64.4	7.52	6.64	13	198.3	0.0	0.4	0.064
		7:56:05	90	8.45	63.2	7.4	6.61	14.8	198.7	0.0	0.9	0.063
		7:55:11	95	8.2	60.8	7.17	6.57	17	198.9	0.0	0.8	0.063
7:54:07	100	8.07	58	6.86	6.51	20.3	200	0.0	0.7	0.063		
7:52:19	105	7.76	48.6	5.79	6.38	27.5	202.6	0.0	0.5	0.063		
7:51:01	110	7.65	45.7	5.45	6.35	29.3	201.6	0.1	0.5	0.064		
7:50:11	115	7.64	44.4	5.3	6.35	29.3	199.7	0.5	1.3	0.064		
7:48:57	120	7.6	41.9	5.01	6.38	27.9	195.7	0.2	0.4	0.064		
7:47:55	125	7.59	39.8	4.76	6.43	24.9	192.2	1.0	1.2	0.064		
<b>BZ-6 In-Lake Tower</b>	8/1/2019	8:30:28	0.5	27.46	109	8.6	8.38	-90	163.7	0.0	1.3	0.082
		8:29:29	5.0	27.46	109	8.61	8.39	-90.7	163.2	0.0	1.7	0.082
		8:28:23	10	27.46	109	8.58	8.44	-93.6	161.8	0.0	2.1	0.082
		8:27:26	15	27.45	109	8.63	8.5	-97.4	160.8	0.0	2.2	0.082
		8:25:39	20	24.69	146	12.17	9.6	-161.9	146.1	1.2	5.4	0.090
		8:24:14	25	22.38	116	10.02	8.3	-84	168.5	0.0	4.7	0.081
		8:20:43	30	20.87	64.7	5.78	6.84	2.5	192.1	0.0	3.6	0.080
		8:18:58	35	19.63	28.5	2.61	6.62	15.1	195.6	0.0	2.8	0.079
		8:17:25	40	18.05	40.3	3.81	6.66	12.7	196.2	0.0	0.9	0.080
		8:16:19	45	16.23	43	4.22	6.69	10.7	196.1	0.0	1.1	0.080
		8:14:39	50	13.67	43.9	4.56	6.68	11.4	196.8	0.0	0.8	0.075
		8:13:02	55	12.07	47.4	5.1	6.68	11.1	196.7	0.0	1.7	0.072
		8:11:42	60	10.8	49.4	5.48	6.69	10.5	196.2	0.0	0.8	0.069
		8:10:19	65	10.24	53.2	5.98	6.7	9.7	194.7	0.0	1.1	0.067
		8:08:53	70	9.6	55.9	6.36	6.68	10.8	195.3	0.0	0.6	0.066
		8:07:33	75	9.26	56.9	6.53	6.68	10.8	193.5	0.0	0.8	0.065
		8:06:23	80	8.92	58.7	6.79	6.67	11.5	192.5	0.0	0.3	0.064
		8:05:22	85	8.58	58.4	6.82	6.64	13.1	192.3	0.0	0.7	0.064
		8:04:37	90	8.41	56.8	6.66	6.62	14.6	191.9	0.0	1.3	0.064
		8:03:22	95	8.08	51.9	6.14	6.58	16.6	190.7	0.0	1.0	0.063
8:00:28	100	7.84	41.2	4.9	6.48	21.9	188.6	0.3	0.5	0.064		
7:59:13	105	7.73	37.6	4.48	6.44	24.4	187.1	0.4	1.1	0.064		
7:58:05	110	7.7	36.5	4.36	6.41	26.2	185.2	0.4	0.5	0.064		
7:55:44	115	7.66	33.2	3.97	6.34	29.8	179.3	0.7	0.7	0.064		
7:54:22	120	7.66	31.1	3.72	6.32	30.8	172.5	4.4	1.9	0.064		
7:51:13	125	8.5	2.4	0.29	6.37	28.3	155.7	0.8	0.7	0.072		

## 2019 Beltzville Reservoir Water Column 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>BZ-6 In-Lake Tower</b>	8/21/2019	12:18:41	0.5	27.74	111	8.73	8.7	-109.2	145.8	0.0	1.2	0.086
		12:18:06	5	27.23	112	8.85	8.78	-113.9	145.4	0.0	2.1	0.085
		12:17:17	10	27.06	113	8.97	8.85	-117.9	144.9	0.0	2.0	0.085
		12:16:24	15	26.47	113	9.11	8.79	-114.2	145.9	0.0	2.9	0.084
		12:15:31	20	25.11	114	9.39	7.55	-40.1	161.9	0.0	5.1	0.09
		12:13:58	25	23.87	94.3	7.96	7.05	-9.9	173.1	0.0	6.9	0.093
		12:12:05	30	22.31	51.1	4.44	6.76	7.2	177.8	0.0	3.9	0.093
		12:10:19	35	20.93	31.8	2.84	6.64	13.8	177.9	0.0	1.8	0.083
		12:08:53	40	19.95	10.4	0.94	6.55	19.1	178.8	0.0	2.0	0.081
		12:06:57	45	18.27	21.2	1.99	6.61	15.5	176.8	0.0	1.2	0.081
		12:05:31	50	16.02	31.4	3.1	6.66	12.7	175.5	0.0	1.5	0.08
		12:03:53	55	13.88	34.4	3.55	6.63	14.2	176	0.1	1.2	0.076
		12:01:53	60	11.71	38.6	4.19	6.63	14.1	174.6	0.0	1.8	0.072
		12:00:56	65	10.48	44.8	5	6.66	12.1	172.5	0.0	0.6	0.068
		11:59:46	70	9.84	48.6	5.5	6.67	11.8	170.9	0.0	0.9	0.066
		11:58:19	75	9.45	49.7	5.69	6.65	12.5	169.3	0.0	0.6	0.066
		11:56:45	80	8.94	53.7	6.22	6.64	13.3	167.5	0.0	1.2	0.065
		11:55:37	85	8.66	53.8	6.27	6.62	14.3	165.7	0.0	0.9	0.064
		11:54:33	90	8.41	51.7	6.06	6.64	13	161.4	0.0	0.7	0.064
		11:52:37	95	8.21	46.6	5.49	6.59	16.1	158.3	0.0	0.7	0.064
11:51:03	100	7.95	38.5	4.56	6.51	20.5	157.2	0.1	1.0	0.064		
11:49:24	105	7.84	31.3	3.72	6.41	25.8	156.2	0.4	1.3	0.064		
11:48:24	110	7.75	27.3	3.25	6.38	27.8	153.9	0.8	0.6	0.065		
11:47:26	115	7.72	25.2	3	6.38	27.9	149.6	1.2	0.4	0.065		
11:46:21	120	7.7	23.9	2.85	6.4	26.4	142.7	1.4	0.6	0.065		
11:42:37	125	7.84	2.8	0.34	6.73	8.1	107.9	38.6	1.3	0.065		
<b>BZ-6 In-Lake Tower</b>	9/12/2019	8:26:30	0.5	23.22	105	8.93	7.83	-56.3	169.9	0.0	3.3	0.081
		8:25:50	5	23.21	104	8.88	7.76	-52.3	167.7	0.0	3.1	0.081
		8:24:59	10	23.18	103	8.81	7.63	-44.7	165.5	0.0	3.4	0.081
		8:24:13	15	22.98	100	8.61	7.47	-34.9	166.9	0.0	3.5	0.081
		8:23:28	20	22.93	98.6	8.47	7.4	-30.5	165.2	0.0	3.8	0.081
		8:22:22	25	22.85	96.9	8.33	7.25	-22	163.4	0.0	4.2	0.081
		8:21:38	30	22.71	89	7.67	7.12	-14.2	164.1	0.0	3.5	0.081
		8:19:43	35	21.95	33.3	2.91	6.67	12.4	162.7	0.0	1.9	0.091
		8:16:53	40	20.83	2.4	0.22	6.54	19.7	133.1	0.0	2.1	0.088
		8:15:35	45	19.65	2.5	0.22	6.55	19.4	104.7	0.0	1.4	0.084
		8:13:48	50	18.46	5.9	0.55	6.55	19	196.3	0.0	0.5	0.082
		8:11:13	55	16.18	16	1.57	6.59	16.5	196.8	0.0	1.5	0.08
		8:09:10	60	13.33	20.2	2.11	6.57	17.7	197.5	0.0	0.9	0.076
		8:07:12	65	11.66	24.5	2.66	6.49	21.9	197.9	0.0	0.8	0.072
		8:02:40	70	10.35	40.3	4.51	6.57	17	175.7	0.0	0.9	0.068
		8:01:46	75	10.01	36.4	4.11	6.73	8	159.5	0.0	1.4	0.067
		7:55:19	80	9.38	47.3	5.42	6.56	18	221.1	31.5	2.4	0.066
		7:54:39	85	8.78	48.3	5.61	6.55	18.3	221.3	1.3	0.1	0.065
		7:53:06	90	8.58	47.5	5.55	6.57	17.3	219	1.3	0.4	0.064
		7:51:35	95	8.33	45	5.29	6.55	18.4	218.5	0.0	0.7	0.064
7:48:09	100	8.12	38.3	4.53	6.48	22.4	218.5	0.0	0.5	0.064		
7:42:41	105	7.9	26.2	3.11	6.38	27.9	214.8	0.5	0.5	0.065		
7:40:56	110	7.87	23.9	2.84	6.33	30.8	215	0.4	0.5	0.065		
7:39:30	115	7.8	18.9	2.25	6.29	32.6	214.2	45.1	0.6	0.066		
7:37:17	120	7.76	16.5	1.96	6.28	33.5	209.7	16.1	2.3	0.066		
7:35:41	125	7.75	14.4	1.72	6.3	31.9	210.7	25.4	1.7	0.066		

## 2019 Beltzville Reservoir Water Column 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
BZ-7 Upper Lake No-Wake	6/27/2019	9:55:00	0.5	25.4	114	9.35	8.55	-99.8	178.6	0.2	2.5	0.076
		9:53:52	5	25.16	113	9.31	8.51	-96.9	182.1	0.7	3.2	0.075
		9:53:06	10	23.74	107	9.07	7.46	-34.6	197.9	0.9	4.5	0.059
		9:52:04	15	20.86	99.8	8.92	7.21	-19.4	207	1.3	3.4	0.08
		9:51:20	20	19.51	93.4	8.58	7.11	-13.6	210.5	1.6	2.8	0.088
		9:50:38	25	18.4	87.8	8.25	7.04	-9.4	212.7	1.5	1.7	0.09
		9:49:54	30	17.47	83.1	7.96	6.98	-6.2	214.2	1.3	1.1	0.088
		9:48:58	35	16.91	77.4	7.5	6.92	-2.5	215.3	1.1	1.2	0.086
		9:47:55	40	15.94	67.6	6.68	6.81	3.7	216.8	1.2	1.4	0.082
		9:47:00	45	13.43	55.7	5.81	6.68	11.2	220.2	0.5	1.4	0.076
		9:46:09	50	11.81	54.2	5.86	6.63	13.8	222.5	0.3	0.9	0.072
		9:45:23	55	11.04	54.5	6.01	6.65	13.1	222.1	0.2	0.9	0.07
9:43:52	60	11.17	56.3	6.18	6.75	7.2	218.8	0.2	0.9	0.071		
BZ-7 Upper Lake No-Wake	7/18/2019	9:43:01	0.5	28.35	110	8.56	8.51	-98.3	171.1	0.0	2.1	0.08
		9:41:49	5	28.36	109	8.51	8.38	-90.1	173.5	0.0	2	0.08
		9:39:44	10	26.44	109	8.74	7.41	-31.5	191.5	0.9	3.3	0.079
		9:38:18	15	23.85	107	8.99	7.33	-26.6	194.5	0.5	5.4	0.101
		9:33:28	20	21.98	75.2	6.58	6.91	-1.7	191.5	1.9	3.5	0.105
		9:32:45	25	20.8	63.2	5.65	6.82	3.4	191.7	1.3	3	0.099
		9:31:59	30	19.71	56.8	5.19	6.76	6.7	190.9	0.8	1.9	0.094
		9:30:50	35	18.35	50.4	4.73	6.7	10.2	189.2	0.2	0.7	0.089
		9:29:53	40	17.29	47.7	4.59	6.65	13.5	188	0.2	1.5	0.086
		9:29:06	45	16.36	43.6	4.27	6.61	15.4	185.1	0.6	1.1	0.084
		9:28:07	50	15.01	37.7	3.8	6.46	24.2	187.5	0.2	1.2	0.081
9:27:10	53	13.61	37.3	3.88	6.53	20.1	177.2	0.6	0.3	0.077		
BZ-7 Upper Lake No-Wake	8/1/2019	10:01:10	0.5	28.31	112	8.74	8.83	-117.4	139.1	0.0	2.1	0.081
		10:00:16	5	28.19	112	8.75	8.81	-116.1	138.3	0.0	2.8	0.082
		9:59:32	10	28.05	112	8.75	8.4	-91.4	140.4	0.0	3.4	0.080
		9:58:48	15	26.07	117	9.48	7.63	-44.7	153.7	0.4	4.1	0.089
		9:57:35	20	24.52	87.9	7.33	7.04	-9.7	162.5	0.7	2.9	0.102
		9:56:37	25	22.95	72	6.18	6.92	-2.3	162	2.1	1.5	0.108
		9:54:57	30	20.94	41.3	3.69	6.68	11.5	158.3	0.9	1.4	0.098
		9:53:50	35	19.32	31.5	2.9	6.61	15.6	152.7	0.2	1.1	0.092
		9:53:01	40	17.56	29	2.77	6.61	15.8	147.6	0.2	1.1	0.088
		9:51:43	45	16.25	26.9	2.64	6.59	16.7	135.9	0.1	1.5	0.084
		9:50:51	50	13.54	26.6	2.77	6.59	16.3	126.4	0.3	1.4	0.077
9:49:15	55	11.72	29.5	3.2	6.7	9.7	101.6	4.5	1.1	0.073		

## 2019 Beltzville Reservoir Water Column 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>BZ-7 Upper Lake No-Wake</b>	8/21/2019											
		13:26:07	0.5	28.18	124	9.67	9.32	-146.5	145.2	0.0	1.8	0.087
		13:24:52	5	28.08	126	9.81	9.35	-148.6	145.7	0.0	4.8	0.086
		13:23:56	10	26.88	121	9.67	8.94	-123.6	152.8	0.0	6.3	0.076
		13:23:15	15	26.19	114	9.23	8.27	-83.3	159.1	0.0	5.3	0.083
		13:22:05	20	25.49	92.8	7.6	7.06	-10.9	177.7	0.0	4.8	0.074
		13:21:00	25	24.05	70.5	5.92	6.9	-1.2	180.4	0.3	1.5	0.093
		13:19:44	30	22.68	62.4	5.39	6.87	0.8	177.9	0.9	1.8	0.104
		13:17:38	35	21.06	30.5	2.72	6.68	11.5	174.1	0.9	1.4	0.097
		13:16:18	40	19.84	12.7	1.15	6.62	15.3	169.7	0.5	1.8	0.093
		13:15:13	45	18.69	7	0.65	6.66	13	162.6	0.5	1.5	0.092
13:14:12	50	17.41	5.6	0.54	6.74	7.7	152.1	0.6	1.1	0.089		
13:13:00	55	14.5	3.7	0.38	6.96	-4.6	126.8	0.5	1.3	0.084		
<b>BZ-7 Upper Lake No-Wake</b>	9/12/2019	9:52:17	0.5	24.1	110	9.21	8.41	-91.1	164.2	0.0	2.1	0.083
		9:51:33	5	24.1	109	9.16	8.31	-85	162.6	0.0	2.7	0.083
		9:50:44	10	24.09	108	9.04	7.98	-65.5	164.8	0.0	2.6	0.082
		9:50:02	15	23.58	106	9.01	7.75	-51.8	165.3	0.0	3.1	0.080
		9:49:15	20	23.33	103	8.8	7.56	-40.4	167.5	0.0	3.9	0.078
		9:45:56	25	22.86	91	7.82	7.19	-18.5	167.1	0.0	2.7	0.072
		9:41:48	30	21.87	86.7	7.6	7.08	-12.1	157.7	0.4	2.3	0.084
		9:39:33	35	20.81	75.7	6.77	6.94	-3.6	153.4	0.7	1.5	0.093
		9:38:28	40	20.57	64.9	5.83	6.84	2	149.8	0.1	1.2	0.092
		9:37:20	45	20.11	53.5	4.85	6.79	5	141.8	0.0	1.8	0.092
		9:35:39	50	19.26	32.5	2.99	6.76	7	121	1.2	1.5	0.092

# **APPENDIX B**

## **LABORATORY CUSTODY SHEETS**

The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

**USACE-Philadelphia District**

**Philadelphia District, Reservoir Sampling**

**CONTRACT#W912BU18D0003/TO#W912BU19F0065**

**SGS Job Number: JC90749**

**Sampling Date: 06/27/19**



### Report to:

**Army Corps of Engineers**

**joseph.m.loeper@usace.army.mil**

**ATTN: Joseph Loeper**

**Total number of pages in report: 28**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

**Mike Earp**  
**General Manager**

**Client Service contact: Tammy McCloskey 732-329-0200**

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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Test results relate only to samples analyzed.

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## Sample Summary

USACE-Philadelphia District

Job No: JC90749

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC90749-1	06/27/19	07:00 GW	06/27/19	AQ	Surface Water	BZ-1S
JC90749-2	06/27/19	11:20 GW	06/27/19	AQ	Surface Water	BZ-2S
JC90749-3	06/27/19	09:00 GW	06/27/19	AQ	Surface Water	BZ-3S
JC90749-4	06/27/19	09:00 GW	06/27/19	AQ	Surface Water	BZ-3M
JC90749-5	06/27/19	09:00 GW	06/27/19	AQ	Surface Water	BZ-3D
JC90749-6	06/27/19	11:15 GW	06/27/19	AQ	Surface Water	BZ-4S
JC90749-7	06/27/19	10:50 GW	06/27/19	AQ	Surface Water	BZ-5S
JC90749-8	06/27/19	08:00 GW	06/27/19	AQ	Surface Water	BZ-6S
JC90749-9	06/27/19	08:00 GW	06/27/19	AQ	Surface Water	BZ-6M
JC90749-10	06/27/19	08:00 GW	06/27/19	AQ	Surface Water	BZ-6D
JC90749-11	06/27/19	09:45 GW	06/27/19	AQ	Surface Water	BZ-7S
JC90749-12	06/27/19	09:45 GW	06/27/19	AQ	Surface Water	BZ-7M
JC90749-13	06/27/19	09:45 GW	06/27/19	AQ	Surface Water	BZ-7D

## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** USACE-Philadelphia District

**Job No** JC90749

**Site:** Philadelphia District, Reservoir Sampling

**Report Date** 7/17/2019 4:39:45 PM

On 06/27/2019, 13 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. at a maximum corrected temperature of 3.3 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. Job Number of JC90749 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Compounds qualified as out of range in the continuing calibration summary report are acceptable as per method requirements when there is a high bias but the sample result is non-detect.

### General Chemistry By Method EPA 351.2/LACHAT

**Matrix:** AQ

**Batch ID:** GP22392

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC90749-1DUP, JC90749-1MS were used as the QC samples for Nitrogen, Total Kjeldahl.

### General Chemistry By Method EPA 353.2/LACHAT

**Matrix:** AQ

**Batch ID:** GP22340

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC90743-3DUP, JC90749-2MS were used as the QC samples for Nitrogen, Nitrate + Nitrite.

## General Chemistry By Method EPA353.2/SM4500NO2B

**Matrix:** AQ **Batch ID:** R179714

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90749-1 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179715

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90749-2 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179716

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90749-3 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179717

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90749-4 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179718

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90749-5 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179719

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90749-6 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179720

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90749-7 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179721

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90749-8 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179722

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90749-9 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179723

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90749-10 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179724

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90749-12 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179725

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90749-13 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179727

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC90749-11 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

## General Chemistry By Method SM2320 B-11

**Matrix:** AQ

**Batch ID:** GN97318

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC90749-1DUP were used as the QC samples for Alkalinity, Total as CaCO<sub>3</sub>.
- JC90749-11 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC90749-7 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC90749-4 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC90749-5 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC90749-6 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC90749-10 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC90749-3 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC90749-1 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC90749-12 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC90749-8 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC90749-9 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC90749-13 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC90749-2 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.

## General Chemistry By Method SM2540 C-11

**Matrix:** AQ

**Batch ID:** GN97112

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC90749-1DUP, JC90749-2DUP were used as the QC samples for Solids, Total Dissolved.

## General Chemistry By Method SM2540 D-11

**Matrix:** AQ

**Batch ID:** GN97110

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC90749-1DUP were used as the QC samples for Solids, Total Suspended.
- JC90749-1 for Solids, Total Suspended: Reported sample aliquot obtained from filtration of 500 mL of sample. Volume was reduced from 1 liter due to limited volume.
- JC90749-7 for Solids, Total Suspended: Reported sample aliquot obtained from filtration of 980 mL of sample. Volume was reduced from 1 liter due to limited volume.

## General Chemistry By Method SM4500NH3 H-11LACHAT

**Matrix:** AQ

**Batch ID:** GP22357

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC90722-2DUP, JC90722-2MS, JC90722-2MSD were used as the QC samples for Nitrogen, Ammonia.

**Matrix:** AQ

**Batch ID:** GP22358

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC90793-1DUP, JC90793-1MS, JC90793-1MSD were used as the QC samples for Nitrogen, Ammonia.

Wednesday, July 17, 2019

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### General Chemistry By Method SM4500NO2 B-11

**Matrix:** AQ                      **Batch ID:** GN96967

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC90728-1DUP, JC90728-1MS were used as the QC samples for Nitrogen, Nitrite.

### General Chemistry By Method SM5210 B-11

**Matrix:** AQ                      **Batch ID:** GP22078

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC90722-2DUP were used as the QC samples for BOD, 5 Day.

### General Chemistry By Method SM5310 B-11

**Matrix:** AQ                      **Batch ID:** GP22257

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC90743-4MS, JC90743-4MSD were used as the QC samples for Total Organic Carbon.

**Matrix:** AQ                      **Batch ID:** GP22258

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC90749-1MS, JC90749-1MSD were used as the QC samples for Total Organic Carbon.

SGS North America Inc. certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS North America Inc. is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by SGS North America Inc indicated via signature on the report cover

## Summary of Hits

**Job Number:** JC90749  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 06/27/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
<b>JC90749-1</b>		<b>BZ-1S</b>				
Nitrogen, Nitrate <sup>a</sup>		0.77	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.77	0.10		mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved		50.0	10		mg/l	SM2540 C-11
Total Organic Carbon		1.3	1.0		mg/l	SM5310 B-11
<b>JC90749-2</b>		<b>BZ-2S</b>				
Alkalinity, Total as CaCO <sub>3</sub> <sup>b</sup>		16.0	10		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>a</sup>		0.22	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.22	0.10		mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved		31.0	10		mg/l	SM2540 C-11
<b>JC90749-3</b>		<b>BZ-3S</b>				
Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>		38.0	10		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>a</sup>		0.44	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.44	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl		0.31	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		44.0	10		mg/l	SM2540 C-11
Total Organic Carbon		1.9	1.0		mg/l	SM5310 B-11
<b>JC90749-4</b>		<b>BZ-3M</b>				
Nitrogen, Nitrate <sup>a</sup>		0.75	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.75	0.10		mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved		49.0	10		mg/l	SM2540 C-11
<b>JC90749-5</b>		<b>BZ-3D</b>				
Alkalinity, Total as CaCO <sub>3</sub> <sup>b</sup>		10.0	10		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>a</sup>		0.51	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.51	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl		0.28	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		60.0	10		mg/l	SM2540 C-11
<b>JC90749-6</b>		<b>BZ-4S</b>				
BOD, 5 Day		38.1	5.0		mg/l	SM5210 B-11
Nitrogen, Nitrate <sup>a</sup>		1.2	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		1.2	0.10		mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved		41.0	10		mg/l	SM2540 C-11

## Summary of Hits

**Job Number:** JC90749  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 06/27/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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**JC90749-7      BZ-5S**

Alkalinity, Total as CaCO <sub>3</sub> <sup>b</sup>	14.0	10			mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>a</sup>	1.2	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	1.2	0.10			mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved	65.0	10			mg/l	SM2540 C-11
Solids, Total Suspended <sup>d</sup>	5.6	4.0			mg/l	SM2540 D-11

**JC90749-8      BZ-6S**

Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>	25.0	10			mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>a</sup>	0.44	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.44	0.10			mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved	49.0	10			mg/l	SM2540 C-11
Total Organic Carbon	1.0	1.0			mg/l	SM5310 B-11

**JC90749-9      BZ-6M**

Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>	37.0	10			mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>a</sup>	0.81	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.81	0.10			mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved	48.0	10			mg/l	SM2540 C-11

**JC90749-10      BZ-6D**

Nitrogen, Nitrate <sup>a</sup>	0.77	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.77	0.10			mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved	42.0	10			mg/l	SM2540 C-11

**JC90749-11      BZ-7S**

Alkalinity, Total as CaCO <sub>3</sub> <sup>b</sup>	10.0	10			mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>a</sup>	0.46	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.46	0.10			mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved	21.0	10			mg/l	SM2540 C-11
Total Organic Carbon	1.5	1.0			mg/l	SM5310 B-11

**JC90749-12      BZ-7M**

Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>	35.0	10			mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>a</sup>	0.90	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.90	0.10			mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl	0.34	0.20			mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	48.0	10			mg/l	SM2540 C-11
Total Organic Carbon	1.2	1.0			mg/l	SM5310 B-11

## Summary of Hits

**Job Number:** JC90749  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 06/27/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

**JC90749-13      BZ-7D**

Alkalinity, Total as CaCO <sub>3</sub> <sup>b</sup>	14.0	10			mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>a</sup>	0.91	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.91	0.10			mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved	48.0	10			mg/l	SM2540 C-11
Total Organic Carbon	1.5	1.0			mg/l	SM5310 B-11

(a) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

(b) Sample was titrated to a final pH of 4.2.

(c) Sample was titrated to a final pH of 4.5.

(d) Reported sample aliquot obtained from filtration of 980 mL of sample. Volume was reduced from 1 liter due to limited volume.



Sample Results

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Report of Analysis

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## Report of Analysis

<b>Client Sample ID:</b> BZ-1S	<b>Date Sampled:</b> 06/27/19
<b>Lab Sample ID:</b> JC90749-1	<b>Date Received:</b> 06/27/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	07/09/19 16:04	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	06/28/19 17:21	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/12/19 17:01	BM	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.77	0.11	mg/l	1	07/12/19 13:22	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.77	0.10	mg/l	1	07/12/19 13:22	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/28/19 12:20	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	07/17/19 12:07	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	50.0	10	mg/l	1	07/02/19 16:00	RC	SM2540 C-11
Solids, Total Suspended <sup>c</sup>	< 4.0	4.0	mg/l	1	07/02/19 14:28	RC	SM2540 D-11
Total Organic Carbon	1.3	1.0	mg/l	1	07/09/19 16:16	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

(c) Reported sample aliquot obtained from filtration of 500 mL of sample. Volume was reduced from 1 liter due to limited volume.

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-2S		<b>Date Sampled:</b> 06/27/19
<b>Lab Sample ID:</b> JC90749-2		<b>Date Received:</b> 06/27/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	16.0	10	mg/l	1	07/09/19 16:04	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	06/28/19 17:24	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/12/19 17:05	BM	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.22	0.11	mg/l	1	07/12/19 13:23	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.22	0.10	mg/l	1	07/12/19 13:23	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/28/19 12:20	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	07/17/19 12:31	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	31.0	10	mg/l	1	07/02/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/02/19 14:28	RC	SM2540 D-11
Total Organic Carbon	< 1.0	1.0	mg/l	1	07/09/19 17:23	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

4.2  
4

## Report of Analysis

<b>Client Sample ID:</b> BZ-3S	<b>Date Sampled:</b> 06/27/19
<b>Lab Sample ID:</b> JC90749-3	<b>Date Received:</b> 06/27/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	38.0	10	mg/l	1	07/09/19 16:04	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	06/28/19 17:27	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/12/19 17:07	BM	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.44	0.11	mg/l	1	07/12/19 13:24	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.44	0.10	mg/l	1	07/12/19 13:24	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/28/19 12:20	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.31	0.20	mg/l	1	07/17/19 12:09	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	44.0	10	mg/l	1	07/02/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/02/19 14:28	RC	SM2540 D-11
Total Organic Carbon	1.9	1.0	mg/l	1	07/09/19 17:35	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-3M	<b>Date Sampled:</b> 06/27/19
<b>Lab Sample ID:</b> JC90749-4	<b>Date Received:</b> 06/27/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	07/09/19 16:04	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	06/28/19 17:30	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/12/19 17:08	BM	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.75	0.11	mg/l	1	07/12/19 13:25	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.75	0.10	mg/l	1	07/12/19 13:25	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/28/19 12:20	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	07/17/19 12:10	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	49.0	10	mg/l	1	07/02/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/02/19 14:28	RC	SM2540 D-11
Total Organic Carbon	< 1.0	1.0	mg/l	1	07/09/19 17:49	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-3D	<b>Date Sampled:</b> 06/27/19
<b>Lab Sample ID:</b> JC90749-5	<b>Date Received:</b> 06/27/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	10.0	10	mg/l	1	07/09/19 16:04	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	06/28/19 17:33	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/12/19 17:09	BM	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.51	0.11	mg/l	1	07/12/19 13:26	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.51	0.10	mg/l	1	07/12/19 13:26	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/28/19 12:20	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.28	0.20	mg/l	1	07/17/19 12:11	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	60.0	10	mg/l	1	07/02/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/02/19 14:28	RC	SM2540 D-11
Total Organic Carbon	< 1.0	1.0	mg/l	1	07/09/19 18:01	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-4S	<b>Date Sampled:</b> 06/27/19
<b>Lab Sample ID:</b> JC90749-6	<b>Date Received:</b> 06/27/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	07/09/19 16:04	MS	SM2320 B-11
BOD, 5 Day	38.1	5.0	mg/l	1	06/28/19 17:36	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/12/19 17:11	BM	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	1.2	0.11	mg/l	1	07/12/19 13:27	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	1.2	0.10	mg/l	1	07/12/19 13:27	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/28/19 12:20	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	07/17/19 12:12	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	41.0	10	mg/l	1	07/02/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/02/19 14:28	RC	SM2540 D-11
Total Organic Carbon	< 1.0	1.0	mg/l	1	07/09/19 18:09	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-5S	<b>Date Sampled:</b> 06/27/19
<b>Lab Sample ID:</b> JC90749-7	<b>Date Received:</b> 06/27/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	14.0	10	mg/l	1	07/09/19 16:32	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	06/28/19 17:38	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/12/19 17:12	BM	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	1.2	0.11	mg/l	1	07/12/19 13:28	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	1.2	0.10	mg/l	1	07/12/19 13:28	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/28/19 12:20	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	07/17/19 12:12	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	65.0	10	mg/l	1	07/02/19 16:00	RC	SM2540 C-11
Solids, Total Suspended <sup>c</sup>	5.6	4.0	mg/l	1	07/02/19 14:28	RC	SM2540 D-11
Total Organic Carbon	< 1.0	1.0	mg/l	1	07/09/19 18:23	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

(c) Reported sample aliquot obtained from filtration of 980 mL of sample. Volume was reduced from 1 liter due to limited volume.

RL = Reporting Limit



## Report of Analysis

<b>Client Sample ID:</b> BZ-6S	<b>Date Sampled:</b> 06/27/19
<b>Lab Sample ID:</b> JC90749-8	<b>Date Received:</b> 06/27/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	25.0	10	mg/l	1	07/09/19 16:32	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	06/28/19 17:41	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/12/19 17:14	BM	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.44	0.11	mg/l	1	07/12/19 13:29	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.44	0.10	mg/l	1	07/12/19 13:29	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/28/19 12:20	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	07/17/19 12:13	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	49.0	10	mg/l	1	07/02/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/02/19 14:28	RC	SM2540 D-11
Total Organic Carbon	1.0	1.0	mg/l	1	07/09/19 18:31	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-6M	<b>Date Sampled:</b> 06/27/19
<b>Lab Sample ID:</b> JC90749-9	<b>Date Received:</b> 06/27/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	37.0	10	mg/l	1	07/09/19 16:32	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	06/28/19 17:44	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/12/19 17:15	BM	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.81	0.11	mg/l	1	07/12/19 13:30	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.81	0.10	mg/l	1	07/12/19 13:30	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/28/19 12:20	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	07/17/19 12:31	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	48.0	10	mg/l	1	07/02/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/02/19 14:28	RC	SM2540 D-11
Total Organic Carbon	< 1.0	1.0	mg/l	1	07/09/19 18:46	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-6D	<b>Date Sampled:</b> 06/27/19
<b>Lab Sample ID:</b> JC90749-10	<b>Date Received:</b> 06/27/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	07/09/19 16:32	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	06/28/19 17:47	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/12/19 17:17	BM	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.77	0.11	mg/l	1	07/12/19 13:34	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.77	0.10	mg/l	1	07/12/19 13:34	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/28/19 12:20	JO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	07/17/19 12:32	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	42.0	10	mg/l	1	07/02/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/02/19 14:28	RC	SM2540 D-11
Total Organic Carbon	< 1.0	1.0	mg/l	1	07/09/19 18:54	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-7S		<b>Date Sampled:</b> 06/27/19
<b>Lab Sample ID:</b> JC90749-11		<b>Date Received:</b> 06/27/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

4.11  
4

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	10.0	10	mg/l	1	07/09/19 16:32	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	06/28/19 17:50	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/12/19 17:18	BM	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.46	0.11	mg/l	1	07/12/19 13:35	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.46	0.10	mg/l	1	07/12/19 13:35	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/28/19 12:20	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	07/17/19 12:33	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	21.0	10	mg/l	1	07/02/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/02/19 14:28	RC	SM2540 D-11
Total Organic Carbon	1.5	1.0	mg/l	1	07/09/19 15:02	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-7M	<b>Date Sampled:</b> 06/27/19
<b>Lab Sample ID:</b> JC90749-12	<b>Date Received:</b> 06/27/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	35.0	10	mg/l	1	07/09/19 16:32	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	06/28/19 17:53	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/12/19 17:22	BM	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.90	0.11	mg/l	1	07/12/19 13:36	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.90	0.10	mg/l	1	07/12/19 13:36	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/28/19 12:20	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.34	0.20	mg/l	1	07/17/19 12:34	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	48.0	10	mg/l	1	07/02/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/02/19 14:28	RC	SM2540 D-11
Total Organic Carbon	1.2	1.0	mg/l	1	07/09/19 15:14	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-7D		<b>Date Sampled:</b> 06/27/19
<b>Lab Sample ID:</b> JC90749-13		<b>Date Received:</b> 06/27/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

4.13  
4

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	14.0	10	mg/l	1	07/09/19 16:32	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	06/28/19 17:55	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/12/19 17:31	BM	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.91	0.11	mg/l	1	07/12/19 13:37	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.91	0.10	mg/l	1	07/12/19 13:37	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	06/28/19 12:20	JOO	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	07/17/19 12:35	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	48.0	10	mg/l	1	07/02/19 16:00	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/02/19 14:28	RC	SM2540 D-11
Total Organic Carbon	1.5	1.0	mg/l	1	07/09/19 15:26	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

---

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

---

Includes the following where applicable:

- Chain of Custody



SW

### CHAIN OF CUSTODY

SGS North America Inc. - Dayton  
2235 Route 130, Dayton, NJ 08810  
TEL: 732-329-0200 FAX: 732-329-3498/3480  
www.sgs.com/ehsusa

E

Client / Reporting Information		Project Information										Requested Analysis										Matrix Codes												
Company Name: <b>USACE-Phila District</b>		Project Name: <b>USACE Reservoirs - Beltzville</b>										TP04 (Sub to MS Reider) Alkalinity, Ammonia BOD, TKN, TDS, TSS TOC, XN030										DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank												
Street Address: <b>100 Penn Sq. East</b>		Street: <b>Lehighton PA</b>																																
City, State, Zip: <b>Phila. PA 19107</b>		Billing Information (if different from Report to): Company Name: <b>Lehighton PA</b>																																
Project Contact: <b>Joe Loeper</b>		Street Address: <b>Lehighton PA</b>																																
Phone #: <b>215-656-6545</b>		Client Purchase Order #: <b>TM-061819-31</b>										Requested Analysis:										Matrix Codes:												
E-mail: <b>Greg.Wacik@usace.army.mil</b>		Project #: <b>610</b>										Requested Analysis:										Matrix Codes:												
Samplers' Name(s): <b>Greg Wacik 597-9780</b>		Project Manager: <b>Tammy McClosky</b>										Requested Analysis:										Matrix Codes:												
City, State, Zip:		City, State, Zip:										Requested Analysis:										Matrix Codes:												
Attention:		Attention:										Requested Analysis:										Matrix Codes:												
SGS Sample #		Field ID / Point of Collection		MED/DI Val #		Date		Time		Sampled by		Grab (G) / Comp. (C)		Matrix		# of bottles		PC		MEOH		ANOS		HSDO		N/RE		DI Water		MEOH		ENCORE		LAB USE ONLY
1P		BZ-1S				6/27/19		0700		G		SW		2		X		X		X		X		X		X		X		X		BIS		
2F		BZ-2S						1120		G		SW		2		X		X		X		X		X		X		X		X		SUB		
3F		BZ-3S						0900		G		SW		2		X		X		X		X		X		X		X		X		64675		
4F		BZ-3M						0900		G		SW		2		X		X		X		X		X		X		X		X		19E1		
5F		BZ-3D						0900		G		SW		2		X		X		X		X		X		X		X		X				
6F		BZ-4S						1115		G		SW		2		X		X		X		X		X		X		X		X				
7F		BZ-5S						1050		G		SW		2		X		X		X		X		X		X		X		X				
8F		BZ-6S						0900		G		SW		2		X		X		X		X		X		X		X		X				
9F		BZ-6M						0900		G		SW		2		X		X		X		X		X		X		X		X				
10F		BZ-6D						0900		G		SW		2		X		X		X		X		X		X		X		X				
Turn Around Time (Business Days)		Approved By (SGS PM) / Date:										Deliverable										Comments / Special Instructions												
<input type="checkbox"/> 10 Business Days <input type="checkbox"/> 5 Business Days <input type="checkbox"/> 3 Business Days* <input type="checkbox"/> 2 Business Days* <input type="checkbox"/> 1 Business Day* <input type="checkbox"/> Other		<input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> NJ Reduced (Level 3) <input type="checkbox"/> Full Tier I (Level 4) <input type="checkbox"/> Commercial "C" <input type="checkbox"/> NJ DKQP										<input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input type="checkbox"/> MA MCP Criteria <input type="checkbox"/> CT RCP Criteria <input type="checkbox"/> State Forms <input type="checkbox"/> EDD Format										<input type="checkbox"/> DOD-QSMS TP04 samples to MS Reider TOC/FCF samples to Eurofins Lab												
All data available via Lablink		* Approval needed for 1-3 Business Day TAT										Commercial "A" = Results only, Commercial "B" = Results + QC Summary Commercial "C" = Results + QC Summary + Partial Raw data										<a href="http://www.sgs.com/en/terms-and-conditions">http://www.sgs.com/en/terms-and-conditions</a>												
Relinquished By: [Signature]		Date / Time: 6/27/19 11:45		Received By: [Signature]		Date / Time: 6/27/19 11:45		Relinquished By: [Signature]		Date / Time: 6/27/19 11:45		Received By: [Signature]		Date / Time: 6/27/19 11:45		Relinquished By: [Signature]		Date / Time: 6/27/19 11:45		Received By: [Signature]		Date / Time: 6/27/19 11:45		Relinquished By: [Signature]		Date / Time: 6/27/19 11:45		Received By: [Signature]		Date / Time: 6/27/19 11:45		CIP		
Relinquished By: [Signature]		Date / Time: 6/27/19 16:45		Received By: [Signature]		Date / Time: 6/27/19 16:45		Relinquished By: [Signature]		Date / Time: 6/27/19 16:45		Received By: [Signature]		Date / Time: 6/27/19 16:45		Relinquished By: [Signature]		Date / Time: 6/27/19 16:45		Received By: [Signature]		Date / Time: 6/27/19 16:45		Relinquished By: [Signature]		Date / Time: 6/27/19 16:45		Received By: [Signature]		Date / Time: 6/27/19 16:45		36 35 37 37		
Relinquished By: [Signature]		Date / Time:		Received By: [Signature]		Date / Time:		Relinquished By: [Signature]		Date / Time:		Received By: [Signature]		Date / Time:		Relinquished By: [Signature]		Date / Time:		Received By: [Signature]		Date / Time:		Relinquished By: [Signature]		Date / Time:		Received By: [Signature]		Date / Time:				
Custody Seal #		<input type="checkbox"/> Intact		<input type="checkbox"/> Not intact		Preserved where applicable		<input type="checkbox"/> Absent		<input type="checkbox"/> Therm. ID:		On Ice		<input type="checkbox"/>		Cooler Temp. °C																		

INITIAL ASSESSMENT [Signature]  
LAB VERIFICATION [Signature]

CIP  
36 35 37 37

JC90749: Chain of Custody

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5





CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FED-EX Tracking #
SGS Quote #
SGS Job # JC90749

Client / Reporting Information, Project Information, Billing Information, Requested Analysis, Matrix Codes, Lab Use Only. Includes handwritten project name 'USACE-Reservoirs - Beltzville' and analysis requests like 'TP04 (sub to Mrs Reider)'.

Table with columns: Turn Around Time (Business Days), Deliverable, Comments / Special Instructions. Includes checkboxes for business days and deliverable types.

Signature and Date section for Chain of Custody. Includes fields for 'Relinquished By', 'Received By', 'Date / Time' and checkboxes for 'Intact', 'Preserved where applicable'.

Handwritten notes: 36 35 CIP 37 37

5.1 5



## SGS Sample Receipt Summary

**Job Number:** JC90749

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 6/27/2019 4:40:00 PM

**Delivery Method:** \_\_\_\_\_

**Airbill #s:** \_\_\_\_\_

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.6); Cooler 2: (3.5); Cooler 3: (3.7); Cooler 4: (3.7);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.2); Cooler 2: (3.1); Cooler 3: (3.3); Cooler 4: (3.3);

<b>Cooler Security</b>	<u>Y</u>	<u>or</u>	<u>N</u>		<u>Y</u>	<u>or</u>	<u>N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

<b>Cooler Temperature</b>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	4		

<b>Quality Control Preservation</b>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

<b>Sample Integrity - Documentation</b>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

<b>Sample Integrity - Condition</b>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:	Intact		

<b>Sample Integrity - Instructions</b>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Test Strip Lot #s:      pH 1-12: 229517      pH 12+: 208717      Other: (Specify) \_\_\_\_\_

Comments

SM089-03  
Rev. Date 12/7/17

**JC90749: Chain of Custody**

Page 3 of 3

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The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC90749X

Sampling Date: 06/27/19

Report to:

USACE-Philadelphia District  
100 Penn Square East  
Philadelphia, PA 19107  
Joseph.M.Loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: **14**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read "Mike Earp".

Mike Earp  
General Manager

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

This report shall not be reproduced, except in its entirety, without the written approval of SGS.  
Test results relate only to samples analyzed.

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<b>3.1: Chain of Custody</b> .....	<b>12</b>



## Sample Summary

USACE-Philadelphia District

**Job No:** JC90749X

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC90749-1X	06/27/19	07:00 GW	06/27/19	AQ	Surface Water	BZ-1S
JC90749-2X	06/27/19	11:20 GW	06/27/19	AQ	Surface Water	BZ-2S
JC90749-3X	06/27/19	09:00 GW	06/27/19	AQ	Surface Water	BZ-3S
JC90749-6X	06/27/19	11:15 GW	06/27/19	AQ	Surface Water	BZ-4S
JC90749-7X	06/27/19	10:50 GW	06/27/19	AQ	Surface Water	BZ-5S
JC90749-8X	06/27/19	08:00 GW	06/27/19	AQ	Surface Water	BZ-6S
JC90749-11X	06/27/19	09:45 GW	06/27/19	AQ	Surface Water	BZ-7S

Subcontract Lab Data

---

Report of Analysis

---

Serialized: 07/25/2019 09:32am QC36

KRISTIN DEGRAW  
SGS NORTH AMERICA, INC.  
2235 ROUTE 130  
DAYTON, NJ 08810

Regarding:  
SGS NORTH AMERICA, INC.  
2235 ROUTE 130  
DAYTON, NJ 08810

**PROJECT ID:**  
W09769

**LABORATORY REPORT NUMBER:**  
L7139178



Authorized by: Douglas J. Gump  
Client Services Manager

KRISTIN DEGRAW  
 SGS NORTH AMERICA, INC.  
 2235 ROUTE 130  
 DAYTON, NJ 08810

Regarding:  
 KRISTIN DEGRAW  
 SGS NORTH AMERICA, INC.  
 2235 ROUTE 130  
 DAYTON, NJ 08810

Account No: W09769, SGS NORTH AMERICA, INC.  
 Project No: W09769, SGS NORTH AMERICA, INC.

P.O. No:

Inv. No: PI  
 PWSID No:

Sample ID	Sample Description	Received Date/Time/Temp	Iced (Y/N)	Samp. Date/Time/Temp	Sampled by	
L7139178-1	BZ-1S	06/27/19 01:30pm 9.4 C	Y	06/27/19 07:00am NA C	Customer	
Parameter	Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- BZ-1S</b>						
Total Coliform, MF	>2000	cfu/100ml	SM 9222B	10	10	06/27/19 02:58PM ARD
Fecal Coliform, MF	11 Q	cfu/100ml	SM 9222D	100	1	06/27/19 03:04PM ZS

Sample ID	Sample Description	Received Date/Time/Temp	Iced (Y/N)	Samp. Date/Time/Temp	Sampled by	
L7139178-2	BZ-2S	06/27/19 01:30pm 9.4 C	Y	06/27/19 11:20am NA C	Customer	
Parameter	Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- BZ-2S</b>						
Total Coliform, MF	>2000	cfu/100ml	SM 9222B	10	10	06/27/19 05:21PM LK
Fecal Coliform, MF	28 Q	cfu/100ml	SM 9222D	100	1	06/27/19 10:03PM ZS

PIN: 28748

Serial Number: 6530284



Account No: W09769, SGS NORTH AMERICA, INC.  
 Project No: W09769, SGS NORTH AMERICA, INC.

P.O. No:

Inv. No: PI  
 PWSID No:

Sample ID L7139178-3 Sample Description BZ-3S  
 Received Date/Time/Temp 06/27/19 01:30pm 9.4 C Iced (Y/N): Y  
 Samp. Date/Time/Temp 06/27/19 09:00am NA C Sampled by Customer

Parameter	Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY – BZ-3S**

Total Coliform, MF	160	cfu/100ml	SM 9222B	10	10	06/27/19 02:58PM ARD
Fecal Coliform, MF	4 Q	cfu/100ml	SM 9222D	100	1	06/27/19 10:03PM ZS

Sample ID L7139178-4 Sample Description BZ-4S  
 Received Date/Time/Temp 06/27/19 01:30pm 9.4 C Iced (Y/N): Y  
 Samp. Date/Time/Temp 06/27/19 11:15am NA C Sampled by Customer

Parameter	Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY – BZ-4S**

Total Coliform, MF	>2000	cfu/100ml	SM 9222B	10	10	06/27/19 05:21PM LK
Fecal Coliform, MF	7 Q	cfu/100ml	SM 9222D	100	1	06/27/19 10:03PM ZS

Sample ID L7139178-5 Sample Description BZ-5S  
 Received Date/Time/Temp 06/27/19 01:30pm 9.4 C Iced (Y/N): Y  
 Samp. Date/Time/Temp 06/27/19 10:50am NA C Sampled by Customer

Parameter	Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY – BZ-5S**

Total Coliform, MF	>2000	cfu/100ml	SM 9222B	10	10	06/27/19 05:21PM LK
Fecal Coliform, MF	29 Q	cfu/100ml	SM 9222D	100	1	06/27/19 10:03PM ZS

Sample ID L7139178-6 Sample Description BZ-6S  
 Received Date/Time/Temp 06/27/19 01:30pm 9.4 C Iced (Y/N): Y  
 Samp. Date/Time/Temp 06/27/19 08:00am NA C Sampled by Customer

Parameter	Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
-----------	--------	------------	--------	----	----	--------------------------

PIN: 28748

Serial Number: 6530284

Account No: W09769, SGS NORTH AMERICA, INC.  
 Project No: W09769, SGS NORTH AMERICA, INC.

P.O. No:

Inv. No: PI  
 PWSID No:

Sample ID	Sample Description	Received Date/Time/Temp		Iced (Y/N):	Samp. Date/Time/Temp	Sampled by	
L7139178-6	BZ-6S	06/27/19	01:30pm 9.4 C	Y	06/27/19 08:00am NA C	Customer	
Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY – BZ-6S</b>							
Total Coliform, MF	210		cfu/100ml	SM 9222B	10	10	06/27/19 02:58PM ARD
Fecal Coliform, MF	3 Q		cfu/100ml	SM 9222D	100	1	06/27/19 10:03PM ZS

Sample ID	Sample Description	Received Date/Time/Temp		Iced (Y/N):	Samp. Date/Time/Temp	Sampled by	
L7139178-7	BZ-7S	06/27/19	01:30pm 9.4 C	Y	06/27/19 09:45am NA C	Customer	
Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY – BZ-7S</b>							
Total Coliform, MF	220		cfu/100ml	SM 9222B	10	10	06/27/19 02:58PM ARD
Fecal Coliform, MF	2 Q		cfu/100ml	SM 9222D	100	1	06/27/19 10:03PM ZS

**Sample Comments | Result Qualifiers:**

L7139178-1 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

L7139178-2 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

L7139178-3 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

L7139178-4 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

L7139178-5 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

PIN: 28748

Serial Number: 6530284

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769, SGS NORTH AMERICA, INC.

**P.O. No:**

**Inv. No:** PI  
**PWSID No:**

L7139178-6 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

L7139178-7 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.



PIN: 28748

Serial Number: 6530284

**DEFINITIONS**

The following terms or abbreviations are used in this report:

Eurofins QC, LLC (EQC)

<	Less than: In conjunction with a numerical value, indicates a concentration less than RL / MDL	NEG	Negative / Absent
>	Greater than: In conjunction with a numerical value, indicates a concentration greater than RL / MDL	NTU	Nephelometric Turbidity Units
CFU	Colony Forming Unit	POS	Positive / Present
DF	Dilution Factor (For Microbiology, DF = volume of sample tested)	PPB (µg/L)	Parts per billion: equivalent to 1 microgram per kilogram (µg/Kg) for solids or one microgram per liter (µg/L) for aqueous samples
DRY	Result was reported on a dry weight basis	PPM (mg/L)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples
MCL	EPA recommended "Maximum Contaminant Level"	PRES	Presumptive
MDL	Method Detection Limit	QUAL	Qualifier (Q)
MF	Membrane Filtration	RL	Laboratory Reporting Limit or Limit of Quantitation (LOQ)
MPN	Most Probable Number	TNTC	Too Numerous To Count
ND	For odor test: No Odor Observed	TON	Threshold Odor Number
ND	For all other tests: Analyte concentration Not Detected greater than the RL / MDL		

**Data Qualifiers**

J	Estimated value ≥ MDL, but < RL
T	Temperature exceedance at receipt, refer to Sample Comments / Results Qualifiers section
E	Estimated CFU count (Microbiology)
Q	Qualifier defined in Sample Comment section on report

**Warranties, Terms, and Conditions**

- Unless otherwise indicated in the Parameter field, analyses for environmental microbiology, odor, and pharmaceutical microbiology are performed at the EQC Horsham Facility (702 Electronic Dr. Horsham, PA 19044).
- Analyses for Field Parameters are performed by EQC Field staff. Locations and certifications are identified on the Chain of Custody as follows:
  - "ERF" = field staff performs tests under NJ State certification # 02015.
  - "VL" = field staff performs tests under NJ State certification # 06005.
  - "WG" = field staff performs tests under NJ State certification # PA001.
- Test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.
- The report shall not be reproduced, except in full, without the written consent of the laboratory.
- All samples are collected as "grab" samples unless otherwise identified.
- Reported results relate only to the sample as tested. EQC is not responsible for sample integrity unless sampling has been performed by a member of our staff.
- EQC is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. EQC's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Client Services for further information.
- The following personnel or their deputies have approved the results of the tests performed by EQC: Nicki Smith (Environmental Chemistry), Amanda Berd (Pharmaceutical Microbiology), and Jordan Thorngren (Water Microbiology).

**EQC Accreditations**

Horsham Facility	<u>NELAP/State IDs-</u> PA: 46-05499	NJ: PA093	NY: 12080	MD: 357
East Rutherford Facility	<u>State ID-</u>	NJ: 02015		
Vineland Facility	<u>State ID-</u>	NJ: 06005		
Wind Gap Facility	<u>State ID-</u>	NJ: PA001		

## Misc. Forms

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### Custody Documents and Other Forms

---

Includes the following where applicable:

- Chain of Custody





CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FED-EX Tracking #
SGS Quote #
SGS Order Cover #
SGS Job # JC90749

Client / Reporting Information, Project Information, Billing Information, Client Purchase Order #, Attention:, Requested Analysis, Matrix Codes, Lab Use Only

Table with columns: Turn Around Time (Business Days), Approved By (SGS PM) / Date, Deliverable, Comments / Special Instructions

Relinquished By, Date / Time, Received By, Date / Time, Relinquished By, Date / Time, Received By, Date / Time

Handwritten notes: 36 35 37 37, CIP

JC90749X: Chain of Custody

Page 2 of 3



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3

## SGS Sample Receipt Summary

**Job Number:** JC90749

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 6/27/2019 4:40:00 PM

**Delivery Method:** \_\_\_\_\_

**Airbill #s:** \_\_\_\_\_

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.6); Cooler 2: (3.5); Cooler 3: (3.7); Cooler 4: (3.7);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.2); Cooler 2: (3.1); Cooler 3: (3.3); Cooler 4: (3.3);

<u>Cooler Security</u>	<u>Y or N</u>		<u>Y or N</u>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/> <input type="checkbox"/>

<u>Cooler Temperature</u>	<u>Y or N</u>	
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Cooler temp verification:	IR Gun	
3. Cooler media:	Ice (Bag)	
4. No. Coolers:	4	

<u>Quality Control Preservation</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

<u>Sample Integrity - Documentation</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

<u>Sample Integrity - Condition</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:	Intact		

<u>Sample Integrity - Instructions</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Test Strip Lot #s:      pH 1-12: 229517      pH 12+: 208717      Other: (Specify) \_\_\_\_\_

Comments

SM089-03  
Rev. Date 12/7/17

**JC90749X: Chain of Custody**

Page 3 of 3



The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC90749XA

Sampling Date: 06/27/19

Report to:

USACE-Philadelphia District  
100 Penn Square East  
Philadelphia, PA 19107  
Joseph.M.Loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: **21**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read "Mike Earp".

Mike Earp  
General Manager

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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Test results relate only to samples analyzed.

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<b>3.1: Chain of Custody</b> .....	<b>19</b>



## Sample Summary

USACE-Philadelphia District

**Job No:** JC90749XA

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Matrix Received	Code	Type	Client Sample ID
	Date	Time By				
JC90749-1F	06/27/19	07:00 GW	06/27/19	AQ	Surface H2O Filtered	BZ-1S
JC90749-1XA	06/27/19	07:00 GW	06/27/19	AQ	Surface Water	BZ-1S
JC90749-2F	06/27/19	11:20 GW	06/27/19	AQ	Surface H2O Filtered	BZ-2S
JC90749-2XA	06/27/19	11:20 GW	06/27/19	AQ	Surface Water	BZ-2S
JC90749-3F	06/27/19	09:00 GW	06/27/19	AQ	Surface H2O Filtered	BZ-3S
JC90749-3XA	06/27/19	09:00 GW	06/27/19	AQ	Surface Water	BZ-3S
JC90749-4F	06/27/19	09:00 GW	06/27/19	AQ	Surface H2O Filtered	BZ-3M
JC90749-4XA	06/27/19	09:00 GW	06/27/19	AQ	Surface Water	BZ-3M
JC90749-5F	06/27/19	09:00 GW	06/27/19	AQ	Surface H2O Filtered	BZ-3D
JC90749-5XA	06/27/19	09:00 GW	06/27/19	AQ	Surface Water	BZ-3D
JC90749-6F	06/27/19	11:15 GW	06/27/19	AQ	Surface H2O Filtered	BZ-4S
JC90749-6XA	06/27/19	11:15 GW	06/27/19	AQ	Surface Water	BZ-4S
JC90749-7F	06/27/19	10:50 GW	06/27/19	AQ	Surface H2O Filtered	BZ-5S



## Sample Summary

(continued)

USACE-Philadelphia District

**Job No:** JC90749XA

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC90749-7XA	06/27/19	10:50 GW	06/27/19	AQ	Surface Water	BZ-5S
JC90749-8F	06/27/19	08:00 GW	06/27/19	AQ	Surface H2O Filtered	BZ-6S
JC90749-8XA	06/27/19	08:00 GW	06/27/19	AQ	Surface Water	BZ-6S
JC90749-9F	06/27/19	08:00 GW	06/27/19	AQ	Surface H2O Filtered	BZ-6M
JC90749-9XA	06/27/19	08:00 GW	06/27/19	AQ	Surface Water	BZ-6M
JC90749-10F	06/27/19	08:00 GW	06/27/19	AQ	Surface H2O Filtered	BZ-6D
JC90749-10XA	06/27/19	08:00 GW	06/27/19	AQ	Surface Water	BZ-6D
JC90749-11F	06/27/19	09:45 GW	06/27/19	AQ	Surface H2O Filtered	BZ-7S
JC90749-11XA	06/27/19	09:45 GW	06/27/19	AQ	Surface Water	BZ-7S
JC90749-12F	06/27/19	09:45 GW	06/27/19	AQ	Surface H2O Filtered	BZ-7M
JC90749-12XA	06/27/19	09:45 GW	06/27/19	AQ	Surface Water	BZ-7M
JC90749-13F	06/27/19	09:45 GW	06/27/19	AQ	Surface H2O Filtered	BZ-7D
JC90749-13XA	06/27/19	09:45 GW	06/27/19	AQ	Surface Water	BZ-7D

Subcontract Lab Data

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Report of Analysis

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

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

# Certificate of Analysis

2

**Laboratory No.:** 9023002  
**Report:** 07/09/19  
**Lab Contact:** Richard A Wheeler

**Attention:** Tammy McCloskey  
**Reported To:** SGS North America  
2235 US Highway 130  
Dayton, NJ 08810

**Project:** Army Corp Reservoirs

**Lab ID:** 9023002-01    **Collected By:** Client    **Sampled:** 06/27/19 07:00    **Received:** 07/03/19 10:40  
**Sample Desc:** BZ-1S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.03	mg/l	0.007	0.05	SM 4500-P E	07/05/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P E	07/05/19		JCL

**Lab ID:** 9023002-02    **Collected By:** Client    **Sampled:** 06/27/19 11:20    **Received:** 07/03/19 10:40  
**Sample Desc:** BZ-2S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	07/05/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P E	07/05/19	U	JCL

**Lab ID:** 9023002-03    **Collected By:** Client    **Sampled:** 06/27/19 09:00    **Received:** 07/03/19 10:40  
**Sample Desc:** BZ-3S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	07/05/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P E	07/05/19		JCL



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

**2**

**Lab ID:** 9023002-04    **Collected By:** Client    **Sampled:** 06/27/19 09:00    **Received:** 07/03/19 10:40  
**Sample Desc:** BZ-3M    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	07/05/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P E	07/05/19		JCL

**Lab ID:** 9023002-05    **Collected By:** Client    **Sampled:** 06/27/19 09:00    **Received:** 07/03/19 10:40  
**Sample Desc:** BZ-3D    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.02	mg/l	0.007	0.05	SM 4500-P E	07/05/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.05	mg/l	0.01	0.01	SM 4500-P E	07/05/19		JCL

**Lab ID:** 9023002-06    **Collected By:** Client    **Sampled:** 06/27/19 11:15    **Received:** 07/03/19 10:40  
**Sample Desc:** BZ-4S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	07/05/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P E	07/05/19		JCL

**Lab ID:** 9023002-07    **Collected By:** Client    **Sampled:** 06/27/19 10:50    **Received:** 07/03/19 10:40  
**Sample Desc:** BZ-5S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.02	mg/l	0.007	0.05	SM 4500-P E	07/05/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P E	07/05/19		JCL



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

**2**

**Lab ID:** 9023002-08      **Collected By:** Client      **Sampled:** 06/27/19 08:00      **Received:** 07/03/19 10:40  
**Sample Desc:** BZ-6S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	07/05/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P E	07/05/19		JCL

**Lab ID:** 9023002-09      **Collected By:** Client      **Sampled:** 06/27/19 08:00      **Received:** 07/03/19 10:40  
**Sample Desc:** BZ-6M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	07/05/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P E	07/05/19		JCL

**Lab ID:** 9023002-10      **Collected By:** Client      **Sampled:** 06/27/19 08:00      **Received:** 07/03/19 10:40  
**Sample Desc:** BZ-6D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	07/05/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P E	07/05/19		JCL

**Lab ID:** 9023002-11      **Collected By:** Client      **Sampled:** 06/27/19 08:00      **Received:** 07/03/19 10:40  
**Sample Desc:** BZ-7S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	07/05/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P E	07/05/19		JCL



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

**2**

**Lab ID:** 9023002-12      **Collected By:** Client      **Sampled:** 06/27/19 08:00      **Received:** 07/03/19 10:40  
**Sample Desc:** BZ-7M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	07/05/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P E	07/05/19		JCL

**Lab ID:** 9023002-13      **Collected By:** Client      **Sampled:** 06/27/19 08:00      **Received:** 07/03/19 10:40  
**Sample Desc:** BZ-7D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.008	mg/l	0.007	0.05	SM 4500-P E	07/05/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P E	07/05/19		JCL



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**Quality Control**

**General Chemistry**

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
<b>Batch B9G0288</b>								
<b>MB (B9G0288-BLK1)</b> Prepared & Analyzed: 07/05/2019								
Phosphorus as P, Total	<0.01	0.01	mg/l					U
<b>LFB (B9G0288-BS1)</b> Prepared & Analyzed: 07/05/2019								
Phosphorus as P, Total	1.00	0.01	mg/l	100	80-120			
<b>LFM (B9G0288-MS1)</b> Source: 9023002-13 Prepared & Analyzed: 07/05/2019								
Phosphorus as P, Total	0.98	0.01	mg/l	98.3	80-120			
<b>LFMD (B9G0288-MSD1)</b> Source: 9023002-13 Prepared & Analyzed: 07/05/2019								
Phosphorus as P, Total	0.99	0.01	mg/l	99.1	80-120	0.811	20	

**Dissolved General Chemistry**

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
<b>Batch B9G0289</b>								
<b>MB (B9G0289-BLK1)</b> Prepared & Analyzed: 07/05/2019								
Phosphorus as P, Dissolved	<0.05	0.05	mg/l					G-11, U
<b>MB (B9G0289-BLK2)</b> Prepared & Analyzed: 07/05/2019								
Phosphorus as P, Dissolved	<0.05	0.05	mg/l					U
<b>LFB (B9G0289-BS1)</b> Prepared & Analyzed: 07/05/2019								
Phosphorus as P, Dissolved	1.00	0.05	mg/l		80-120			G-11
<b>LFM (B9G0289-MS1)</b> Source: 9023002-01 Prepared & Analyzed: 07/05/2019								
Phosphorus as P, Dissolved	1.00	0.05	mg/l	96.3	80-120			
<b>LFMD (B9G0289-MSD1)</b> Source: 9023002-01 Prepared & Analyzed: 07/05/2019								
Phosphorus as P, Dissolved	0.98	0.05	mg/l	95.0	80-120	1.31	20	



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**Preparation Methods**

Specific Method	Preparation Method	Prepared Date	Prepared By
<b>9023002-01</b>			
SM 4500-P E	SM 4500-P B	07/05/2019	JCL
<b>9023002-02</b>			
SM 4500-P E	SM 4500-P B	07/05/2019	JCL
<b>9023002-03</b>			
SM 4500-P E	SM 4500-P B	07/05/2019	JCL
<b>9023002-04</b>			
SM 4500-P E	SM 4500-P B	07/05/2019	JCL
<b>9023002-05</b>			
SM 4500-P E	SM 4500-P B	07/05/2019	JCL
<b>9023002-06</b>			
SM 4500-P E	SM 4500-P B	07/05/2019	JCL
<b>9023002-07</b>			
SM 4500-P E	SM 4500-P B	07/05/2019	JCL
<b>9023002-08</b>			
SM 4500-P E	SM 4500-P B	07/05/2019	JCL
<b>9023002-09</b>			
SM 4500-P E	SM 4500-P B	07/05/2019	JCL
<b>9023002-10</b>			
SM 4500-P E	SM 4500-P B	07/05/2019	JCL
<b>9023002-11</b>			
SM 4500-P E	SM 4500-P B	07/05/2019	JCL
<b>9023002-12</b>			
SM 4500-P E	SM 4500-P B	07/05/2019	JCL
<b>9023002-13</b>			
SM 4500-P E	SM 4500-P B	07/05/2019	JCL



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M.J. Reider Associates, Inc.

**Notes and Definitions**

- G-11 The sample was filtered after it was received at the laboratory.
- J Estimated value
- U Analyte was not detected above the indicated value.



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**CHAIN OF CUSTODY**  
 SGS North America Inc. - Dayton  
 2235 Route 130, Dayton, NJ 08810  
 TEL: 732-328-0200 FAX: 732-328-5489/3480  
 www.sgs.com/usa

**9023002**  
 SGS North America  
 Army Corp Reservoirs

PM: RAW

pg 1/3

Page 2 of 3



Client / Reporting Information		Project Information		Billing Information (if different from Request)		Matrix Codes	
Company Name:	Project Name:	City:	State:	Company Name:	City:	State:	Matrix Codes:
Street Address:	Philadelphia District, Reservoir Sampling	Street Address:	City:	Street Address:	City:	State:	DW - Drinking Water GW - Ground Water SW - Surface Water SL - Sludge SOL - Other Liquid SOL - Other Solid SOL - Other Blank TB - Trip Blank
City:	State:	City:	State:	City:	State:	Zip:	LAB USE ONLY
Project Contact:	Project #:	Project Contact:	Project #:	Project Contact:	Project #:	Project Contact:	
Phone #:	Client Purchase Order #:	Phone #:	Client Purchase Order #:	Phone #:	Client Purchase Order #:	Phone #:	
Sampling Name(s):	Project Manager:	Sampling Name(s):	Project Manager:	Sampling Name(s):	Project Manager:	Sampling Name(s):	
Site Name(s):	Field ID / Point of Collection:	Site Name(s):	Field ID / Point of Collection:	Site Name(s):	Field ID / Point of Collection:	Site Name(s):	
1YA BZ-1S	6/27/19 7:00:00 AM GW AQ	1YA BZ-1S	6/27/19 7:00:00 AM GW AQ	1YA BZ-1S	6/27/19 7:00:00 AM GW AQ	1YA BZ-1S	
2XA BZ-2S	6/27/19 11:20:00 AM GW AQ	2XA BZ-2S	6/27/19 11:20:00 AM GW AQ	2XA BZ-2S	6/27/19 11:20:00 AM GW AQ	2XA BZ-2S	
3XA BZ-3S	6/27/19 9:00:00 AM GW AQ	3XA BZ-3S	6/27/19 9:00:00 AM GW AQ	3XA BZ-3S	6/27/19 9:00:00 AM GW AQ	3XA BZ-3S	
4XA BZ-3M	6/27/19 9:00:00 AM GW AQ	4XA BZ-3M	6/27/19 9:00:00 AM GW AQ	4XA BZ-3M	6/27/19 9:00:00 AM GW AQ	4XA BZ-3M	
5XA BZ-3D	6/27/19 9:00:00 AM GW AQ	5XA BZ-3D	6/27/19 9:00:00 AM GW AQ	5XA BZ-3D	6/27/19 9:00:00 AM GW AQ	5XA BZ-3D	
6XA BZ-4S	6/27/19 11:15:00 AM GW AQ	6XA BZ-4S	6/27/19 11:15:00 AM GW AQ	6XA BZ-4S	6/27/19 11:15:00 AM GW AQ	6XA BZ-4S	
7XA BZ-4S	6/27/19 11:15:00 AM GW AQ	7XA BZ-4S	6/27/19 11:15:00 AM GW AQ	7XA BZ-4S	6/27/19 11:15:00 AM GW AQ	7XA BZ-4S	

Approved by: *[Signature]* Date: 7/1/2019

Revised by: *[Signature]* Date: 7/1/2019

Comments / Special Instructions: FILTEREEN = MU Reader to filter prior to TPO4 analysis on samples noted (per client instructions. Each sample should be TPO4 total and TPO4 lab filtered).

Matrix Codes: DW - Drinking Water, GW - Ground Water, SW - Surface Water, SL - Sludge, SOL - Other Liquid, SOL - Other Solid, SOL - Other Blank, TB - Trip Blank

LAB USE ONLY

Comments / Special Instructions: FILTEREEN = MU Reader to filter prior to TPO4 analysis on samples noted (per client instructions. Each sample should be TPO4 total and TPO4 lab filtered).

Matrix Codes: DW - Drinking Water, GW - Ground Water, SW - Surface Water, SL - Sludge, SOL - Other Liquid, SOL - Other Solid, SOL - Other Blank, TB - Trip Blank

LAB USE ONLY

Comments / Special Instructions: FILTEREEN = MU Reader to filter prior to TPO4 analysis on samples noted (per client instructions. Each sample should be TPO4 total and TPO4 lab filtered).

Matrix Codes: DW - Drinking Water, GW - Ground Water, SW - Surface Water, SL - Sludge, SOL - Other Liquid, SOL - Other Solid, SOL - Other Blank, TB - Trip Blank

LAB USE ONLY

-01  
-02  
-03  
-04  
-05  
-06

Recd temp  
3.8 on ice

Recd temp  
3.8 on ice

Emily Cooper 7:319 1040

Emily Cooper 7:319 1040

6cc



9023002

Date / Time: 7/1/2019 2:27:51 PM  
 CSR: TAMMY  
 Job #: JC90749XA  
 Client Project: Philadelphia District, Reservoir Sampling  
 Deliverable: REDT2  
 TAT: Due 7/11/2019

Sub Lab: MJ Reider Associates Inc, Env. Testing Laboratories  
 Address: 107 Angelica Street  
 City: Reading  
 State: PA  
 Zip: 19611  
 Contact: Sample Receiving / Rich Wheeler  
 Phone: 610-374-5129

SGS Sample #	Client Sample Description	Analysis	Location	Sampled By	Date Sampled	Time Sampled	Aliquot
JC90749-1XA	BZ-1S	TPO4..		GW	6/27/2019	7:00:00 AM	
JC90749-1F	BZ-1S	FILTERGN_TPO4..		GW	6/27/2019	7:00:00 AM	
JC90749-2XA	BZ-2S	TPO4..		GW	6/27/2019	11:20:00 AM	
JC90749-2F	BZ-2S	FILTERGN_TPO4..		GW	6/27/2019	11:20:00 AM	
JC90749-3XA	BZ-3S	TPO4..		GW	6/27/2019	9:00:00 AM	
JC90749-3F	BZ-3S	FILTERGN_TPO4..		GW	6/27/2019	9:00:00 AM	
JC90749-4XA	BZ-3M	TPO4..		GW	6/27/2019	9:00:00 AM	
JC90749-4F	BZ-3M	FILTERGN_TPO4..		GW	6/27/2019	9:00:00 AM	
JC90749-5XA	BZ-3D	TPO4..		GW	6/27/2019	9:00:00 AM	
JC90749-5F	BZ-3D	FILTERGN_TPO4..		GW	6/27/2019	9:00:00 AM	
JC90749-6XA	BZ-4S	TPO4..		GW	6/27/2019	11:15:00 AM	
JC90749-6F	BZ-4S	FILTERGN_TPO4..		GW	6/27/2019	11:15:00 AM	
JC90749-7XA	BZ-5S	TPO4..		GW	6/27/2019	10:50:00 AM	
JC90749-7F	BZ-5S	FILTERGN_TPO4..		GW	6/27/2019	10:50:00 AM	
JC90749-8XA	BZ-6S	TPO4..		GW	6/27/2019	8:00:00 AM	
JC90749-8F	BZ-6S	FILTERGN_TPO4..		GW	6/27/2019	8:00:00 AM	
JC90749-9XA	BZ-6M	TPO4..		GW	6/27/2019	8:00:00 AM	

9023602

JC90749-9F	BZ-6M	FILTERGN_TPO4_	6/27/2019	8:00:00 AM
JC90749-10XA	BZ-6D	TPO4_	6/27/2019	8:00:00 AM
JC90749-10F	BZ-6D	FILTERGN_TPO4_	6/27/2019	8:00:00 AM
JC90749-11XA	BZ-7S	TPO4_	6/27/2019	8:00:00 AM
JC90749-11F	BZ-7S	FILTERGN_TPO4_	6/27/2019	8:00:00 AM
JC90749-12XA	BZ-7M	TPO4_	6/27/2019	8:00:00 AM
JC90749-12F	BZ-7M	FILTERGN_TPO4_	6/27/2019	8:00:00 AM
JC90749-13XA	BZ-7D	TPO4_	6/27/2019	8:00:00 AM
JC90749-13F	BZ-7D	FILTERGN_TPO4_	6/27/2019	8:00:00 AM

Comments: FILTERGEN = MJ Reider to filter prior to TPO4 analysis on samples noted per client instructions. (Each sample should be TPO4 total and TPO4 lab filtered).

*Emily Coyne*

Sample Management Receipt:

Date: 7.3.19 1040



**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

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 CT (PH-0210), MD (261), NY(12094)

## Misc. Forms

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### Custody Documents and Other Forms

---

Includes the following where applicable:

- Chain of Custody





CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FED-EX Tracking #
SGS Quote #
SGS Job # JC90749

Client / Reporting Information, Project Information, Billing Information, Requested Analysis, Matrix Codes, Lab Use Only. Includes handwritten project name 'USACE-Reservoirs - Beltzville' and contact 'Joe Loeper'.

Table with columns: Turn Around Time (Business Days), Approved By (SGS PM) / Date, Deliverable, Comments / Special Instructions. Includes checkboxes for various standards and handwritten notes.

Chain of custody signature section with columns for Relinquished By, Date / Time, Received By, Date / Time. Includes handwritten signatures and dates.

Handwritten notes: 36 35 CIP 37 37

JC90749XA: Chain of Custody

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3

## SGS Sample Receipt Summary

**Job Number:** JC90749

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 6/27/2019 4:40:00 PM

**Delivery Method:** \_\_\_\_\_

**Airbill #s:** \_\_\_\_\_

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.6); Cooler 2: (3.5); Cooler 3: (3.7); Cooler 4: (3.7);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.2); Cooler 2: (3.1); Cooler 3: (3.3); Cooler 4: (3.3);

**Cooler Security**

	<u>Y</u>	<u>or</u>	<u>N</u>		<u>Y</u>	<u>or</u>	<u>N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

**Cooler Temperature**

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	4		

**Quality Control Preservation**

	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Sample Integrity - Documentation**

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

**Sample Integrity - Condition**

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:	Intact		

**Sample Integrity - Instructions**

	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Test Strip Lot #s:      pH 1-12: 229517      pH 12+: 208717      Other: (Specify) \_\_\_\_\_

Comments

SM089-03  
Rev. Date 12/7/17

**JC90749XA: Chain of Custody**

Page 3 of 3

The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC91885

Sampling Date: 07/18/19

Report to:

Army Corps of Engineers

joseph.m.loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: **29**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read 'Mike Earp'.

Mike Earp  
General Manager

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

This report shall not be reproduced, except in its entirety, without the written approval of SGS.  
Test results relate only to samples analyzed.

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## Sample Summary

USACE-Philadelphia District

**Job No:** JC91885

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC91885-1	07/18/19	06:40 GW	07/18/19	AQ	Surface Water	BZ-1S
JC91885-2	07/18/19	11:25 GW	07/18/19	AQ	Surface Water	BZ-2S
JC91885-3	07/18/19	08:30 GW	07/18/19	AQ	Surface Water	BZ-3S
JC91885-4	07/18/19	08:30 GW	07/18/19	AQ	Surface Water	BZ-3M
JC91885-5	07/18/19	08:30 GW	07/18/19	AQ	Surface Water	BZ-3D
JC91885-6	07/18/19	11:05 GW	07/18/19	AQ	Surface Water	BZ-4S
JC91885-7	07/18/19	10:50 GW	07/18/19	AQ	Surface Water	BZ-5S
JC91885-8	07/18/19	07:45 GW	07/18/19	AQ	Surface Water	BZ-6S
JC91885-9	07/18/19	07:45 GW	07/18/19	AQ	Surface Water	BZ-6M
JC91885-10	07/18/19	07:45 GW	07/18/19	AQ	Surface Water	BZ-6D
JC91885-11	07/18/19	09:30 GW	07/18/19	AQ	Surface Water	BZ-7S
JC91885-12	07/18/19	09:30 GW	07/18/19	AQ	Surface Water	BZ-7M
JC91885-13	07/18/19	09:30 GW	07/18/19	AQ	Surface Water	BZ-7D



## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** USACE-Philadelphia District

**Job No** JC91885

**Site:** Philadelphia District, Reservoir Sampling

**Report Date** 7/30/2019 12:22:25 P

On 07/18/2019, 13 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. at a maximum corrected temperature of 3.7 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. Job Number of JC91885 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Compounds qualified as out of range in the continuing calibration summary report are acceptable as per method requirements when there is a high bias but the sample result is non-detect.

### General Chemistry By Method EPA 351.2/LACHAT

**Matrix:** AQ **Batch ID:** GP22637

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91885-1DUP, JC91885-1MS were used as the QC samples for Nitrogen, Total Kjeldahl.

### General Chemistry By Method EPA 353.2/LACHAT

**Matrix:** AQ **Batch ID:** GP22558

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91729-1DUP, JC91729-1MS were used as the QC samples for Nitrogen, Nitrate + Nitrite.

**Matrix:** AQ **Batch ID:** GP22559

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91885-8MS, JC91930-3DUP were used as the QC samples for Nitrogen, Nitrate + Nitrite.

## General Chemistry By Method EPA353.2/SM4500NO2B

**Matrix:** AQ **Batch ID:** R179983

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91885-1 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179984

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91885-2 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179985

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91885-3 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179986

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91885-4 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179987

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91885-5 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179995

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91885-7 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179996

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91885-6 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179998

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91885-8 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R179999

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91885-9 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180000

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91885-10 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180001

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91885-11 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180002

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91885-12 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180003

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC91885-13 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

## General Chemistry By Method SM2320 B-11

**Matrix:** AQ

**Batch ID:** GN97914

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91885-1DUP were used as the QC samples for Alkalinity, Total as CaCO<sub>3</sub>.
- JC91885-10 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC91885-6 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC91885-5 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC91885-4 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC91885-3 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC91885-2 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC91885-1 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC91885-13 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC91885-7 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC91885-12 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC91885-9 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC91885-8 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC91885-11 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.

## General Chemistry By Method SM2540 C-11

**Matrix:** AQ

**Batch ID:** GN97881

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91885-1DUP were used as the QC samples for Solids, Total Dissolved.

## General Chemistry By Method SM2540 D-11

**Matrix:** AQ

**Batch ID:** GN97874

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91885-1DUP were used as the QC samples for Solids, Total Suspended.

## General Chemistry By Method SM4500NH3 H-11LACHAT

**Matrix:** AQ

**Batch ID:** GP22621

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91829-1DUP, JC91829-1MS, JC91829-1MSD were used as the QC samples for Nitrogen, Ammonia.

## General Chemistry By Method SM4500NO2 B-11

**Matrix:** AQ

**Batch ID:** GN97713

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91885-1DUP, JC91885-1MS were used as the QC samples for Nitrogen, Nitrite.

## General Chemistry By Method SM5210 B-11

**Matrix:** AQ                      **Batch ID:** GP22506

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91885-1DUP were used as the QC samples for BOD, 5 Day.
- RPD(s) for Duplicate for BOD, 5 Day are outside control limits for sample GP22506-D1. RPD acceptable due to low duplicate and sample concentrations.

## General Chemistry By Method SM5310 B-11

**Matrix:** AQ                      **Batch ID:** GP22493

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91885-11MS, JC91885-11MSD were used as the QC samples for Total Organic Carbon.

**Matrix:** AQ                      **Batch ID:** GP22494

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC91885-1MS, JC91885-1MSD were used as the QC samples for Total Organic Carbon.

SGS North America Inc. certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS North America Inc. is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by SGS North America Inc indicated via signature on the report cover

## Summary of Hits

**Job Number:** JC91885  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 07/18/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
<b>JC91885-1</b>		<b>BZ-1S</b>				
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>		5.5	5.0		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>		0.72	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.74	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite		0.020	0.010		mg/l	SM4500NO2 B-11
Nitrogen, Total Kjeldahl		0.26	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		46.0	10		mg/l	SM2540 C-11
Solids, Total Suspended		17.6	4.0		mg/l	SM2540 D-11
Total Organic Carbon		1.7	1.0		mg/l	SM5310 B-11
<b>JC91885-2</b>		<b>BZ-2S</b>				
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>		10.5	5.0		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>		0.25	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.25	0.10		mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved		34.0	10		mg/l	SM2540 C-11
Total Organic Carbon		1.5	1.0		mg/l	SM5310 B-11
<b>JC91885-3</b>		<b>BZ-3S</b>				
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>		11.0	5.0		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>		0.31	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.31	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl		0.40	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		22.0	10		mg/l	SM2540 C-11
Total Organic Carbon		1.9	1.0		mg/l	SM5310 B-11
<b>JC91885-4</b>		<b>BZ-3M</b>				
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>		12.0	5.0		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>		0.60	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.61	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl		0.29	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		38.0	10		mg/l	SM2540 C-11
Total Organic Carbon		1.7	1.0		mg/l	SM5310 B-11
<b>JC91885-5</b>		<b>BZ-3D</b>				
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>		10.5	5.0		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>		0.71	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.75	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite		0.037	0.010		mg/l	SM4500NO2 B-11
Solids, Total Dissolved		48.0	10		mg/l	SM2540 C-11
Total Organic Carbon		1.2	1.0		mg/l	SM5310 B-11

## Summary of Hits

**Job Number:** JC91885  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 07/18/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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### JC91885-6 BZ-4S

Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	8.0	5.0			mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>	1.2	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	1.2	0.10			mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved	64.0	10			mg/l	SM2540 C-11
Solids, Total Suspended	7.9	4.0			mg/l	SM2540 D-11

### JC91885-7 BZ-5S

Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	13.0	5.0			mg/l	SM2320 B-11
Nitrogen, Ammonia	0.24	0.20			mg/l	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	1.1	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	1.1	0.10			mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl	0.22	0.20			mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	60.0	10			mg/l	SM2540 C-11
Solids, Total Suspended	6.0	4.0			mg/l	SM2540 D-11
Total Organic Carbon	1.7	1.0			mg/l	SM5310 B-11

### JC91885-8 BZ-6S

Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	10.5	5.0			mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>	0.28	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.29	0.10			mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl	0.21	0.20			mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved	29.0	10			mg/l	SM2540 C-11
Total Organic Carbon	1.6	1.0			mg/l	SM5310 B-11

### JC91885-9 BZ-6M

Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	12.0	5.0			mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>	0.74	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.78	0.10			mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.045	0.010			mg/l	SM4500NO2 B-11
Solids, Total Dissolved	44.0	10			mg/l	SM2540 C-11
Total Organic Carbon	1.4	1.0			mg/l	SM5310 B-11

### JC91885-10 BZ-6D

Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	10.0	5.0			mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>	0.75	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.78	0.10			mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.030	0.010			mg/l	SM4500NO2 B-11
Solids, Total Dissolved	41.0	10			mg/l	SM2540 C-11

## Summary of Hits

**Job Number:** JC91885  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 07/18/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Total Organic Carbon						
		1.1	1.0		mg/l	SM5310 B-11
<b>JC91885-11      BZ-7S</b>						
Alkalinity, Total as CaCO3 <sup>a</sup>						
		10.5	5.0		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>						
		0.27	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite						
		0.27	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl						
		0.25	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved						
		31.0	10		mg/l	SM2540 C-11
Total Organic Carbon						
		1.4	1.0		mg/l	SM5310 B-11
<b>JC91885-12      BZ-7M</b>						
Alkalinity, Total as CaCO3 <sup>a</sup>						
		11.5	5.0		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>						
		0.85	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite						
		0.85	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl						
		0.31	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved						
		45.0	10		mg/l	SM2540 C-11
Total Organic Carbon						
		1.6	1.0		mg/l	SM5310 B-11
<b>JC91885-13      BZ-7D</b>						
Alkalinity, Total as CaCO3 <sup>a</sup>						
		14.0	5.0		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>						
		0.77	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite						
		0.83	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite						
		0.065	0.010		mg/l	SM4500NO2 B-11
Nitrogen, Total Kjeldahl						
		0.29	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved						
		43.0	10		mg/l	SM2540 C-11
Solids, Total Suspended						
		53.2	4.0		mg/l	SM2540 D-11
Total Organic Carbon						
		1.3	1.0		mg/l	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

Sample Results

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Report of Analysis

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## Report of Analysis

<b>Client Sample ID:</b> BZ-1S	<b>Date Sampled:</b> 07/18/19
<b>Lab Sample ID:</b> JC91885-1	<b>Date Received:</b> 07/18/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	5.5	5.0	mg/l	1	07/25/19 09:13	CM	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	07/19/19 21:33	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/26/19 12:36	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.72	0.11	mg/l	1	07/24/19 16:01	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.74	0.10	mg/l	1	07/24/19 16:01	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.020	0.010	mg/l	1	07/18/19 23:15	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.26	0.20	mg/l	1	07/30/19 10:24	BM	EPA 351.2/LACHAT
Solids, Total Dissolved	46.0	10	mg/l	1	07/24/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	17.6	4.0	mg/l	1	07/24/19 09:41	RC	SM2540 D-11
Total Organic Carbon	1.7	1.0	mg/l	1	07/20/19 02:41	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-2S	<b>Date Sampled:</b> 07/18/19
<b>Lab Sample ID:</b> JC91885-2	<b>Date Received:</b> 07/18/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	10.5	5.0	mg/l	1	07/25/19 09:13	CM	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	07/19/19 21:36	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/26/19 12:37	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.25	0.11	mg/l	1	07/24/19 16:02	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.25	0.10	mg/l	1	07/24/19 16:02	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/18/19 23:15	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	07/30/19 10:25	BM	EPA 351.2/LACHAT
Solids, Total Dissolved	34.0	10	mg/l	1	07/24/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/24/19 09:41	RC	SM2540 D-11
Total Organic Carbon	1.5	1.0	mg/l	1	07/20/19 03:14	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

4.2  
4

## Report of Analysis

<b>Client Sample ID:</b> BZ-3S	<b>Date Sampled:</b> 07/18/19
<b>Lab Sample ID:</b> JC91885-3	<b>Date Received:</b> 07/18/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	11.0	5.0	mg/l	1	07/25/19 09:13	CM	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	07/19/19 21:39	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/26/19 12:39	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.31	0.11	mg/l	1	07/24/19 16:03	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.31	0.10	mg/l	1	07/24/19 16:03	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/18/19 23:15	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.40	0.20	mg/l	1	07/30/19 10:26	BM	EPA 351.2/LACHAT
Solids, Total Dissolved	22.0	10	mg/l	1	07/24/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/24/19 09:41	RC	SM2540 D-11
Total Organic Carbon	1.9	1.0	mg/l	1	07/20/19 03:25	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-3M	<b>Date Sampled:</b> 07/18/19
<b>Lab Sample ID:</b> JC91885-4	<b>Date Received:</b> 07/18/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	12.0	5.0	mg/l	1	07/25/19 09:13	CM	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	07/19/19 21:41	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/26/19 12:40	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.60	0.11	mg/l	1	07/24/19 16:04	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.61	0.10	mg/l	1	07/24/19 16:04	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/18/19 23:15	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.29	0.20	mg/l	1	07/30/19 10:26	BM	EPA 351.2/LACHAT
Solids, Total Dissolved	38.0	10	mg/l	1	07/24/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/24/19 09:41	RC	SM2540 D-11
Total Organic Carbon	1.7	1.0	mg/l	1	07/20/19 03:37	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-3D	<b>Date Sampled:</b> 07/18/19
<b>Lab Sample ID:</b> JC91885-5	<b>Date Received:</b> 07/18/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	10.5	5.0	mg/l	1	07/25/19 09:13	CM	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	07/19/19 21:45	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/26/19 12:42	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.71	0.11	mg/l	1	07/24/19 16:05	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.75	0.10	mg/l	1	07/24/19 16:05	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.037	0.010	mg/l	1	07/18/19 23:15	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	07/30/19 10:27	BM	EPA 351.2/LACHAT
Solids, Total Dissolved	48.0	10	mg/l	1	07/24/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/24/19 09:41	RC	SM2540 D-11
Total Organic Carbon	1.2	1.0	mg/l	1	07/20/19 03:48	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-4S	<b>Date Sampled:</b> 07/18/19
<b>Lab Sample ID:</b> JC91885-6	<b>Date Received:</b> 07/18/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	8.0	5.0	mg/l	1	07/25/19 09:13	CM	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	07/19/19 21:48	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/26/19 12:43	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	1.2	0.11	mg/l	1	07/24/19 16:07	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	1.2	0.10	mg/l	1	07/24/19 16:07	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/18/19 23:15	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	07/30/19 10:28	BM	EPA 351.2/LACHAT
Solids, Total Dissolved	64.0	10	mg/l	1	07/24/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	7.9	4.0	mg/l	1	07/24/19 09:41	RC	SM2540 D-11
Total Organic Carbon	< 1.0	1.0	mg/l	1	07/20/19 03:59	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-5S	<b>Date Sampled:</b> 07/18/19
<b>Lab Sample ID:</b> JC91885-7	<b>Date Received:</b> 07/18/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	13.0	5.0	mg/l	1	07/25/19 09:43	CM	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	07/19/19 21:51	EB	SM5210 B-11
Nitrogen, Ammonia	0.24	0.20	mg/l	1	07/26/19 12:45	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	1.1	0.11	mg/l	1	07/24/19 16:08	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	1.1	0.10	mg/l	1	07/24/19 16:08	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/18/19 23:36	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.22	0.20	mg/l	1	07/30/19 10:31	BM	EPA 351.2/LACHAT
Solids, Total Dissolved	60.0	10	mg/l	1	07/24/19	RC	SM2540 C-11
Solids, Total Suspended	6.0	4.0	mg/l	1	07/24/19 09:41	RC	SM2540 D-11
Total Organic Carbon	1.7	1.0	mg/l	1	07/20/19 04:32	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-6S	<b>Date Sampled:</b> 07/18/19
<b>Lab Sample ID:</b> JC91885-8	<b>Date Received:</b> 07/18/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	10.5	5.0	mg/l	1	07/25/19 09:43	CM	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	07/19/19 21:54	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/26/19 12:49	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.28	0.11	mg/l	1	07/24/19 16:29	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.29	0.10	mg/l	1	07/24/19 16:29	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/18/19 23:36	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.21	0.20	mg/l	1	07/30/19 10:32	BM	EPA 351.2/LACHAT
Solids, Total Dissolved	29.0	10	mg/l	1	07/24/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/24/19 09:41	RC	SM2540 D-11
Total Organic Carbon	1.6	1.0	mg/l	1	07/20/19 04:43	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit



## Report of Analysis

<b>Client Sample ID:</b> BZ-6M	<b>Date Sampled:</b> 07/18/19
<b>Lab Sample ID:</b> JC91885-9	<b>Date Received:</b> 07/18/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	12.0	5.0	mg/l	1	07/25/19 09:43	CM	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	07/19/19 21:57	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/26/19 12:50	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.74	0.11	mg/l	1	07/24/19 16:30	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.78	0.10	mg/l	1	07/24/19 16:30	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.045	0.010	mg/l	1	07/18/19 23:36	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	07/30/19 10:33	BM	EPA 351.2/LACHAT
Solids, Total Dissolved	44.0	10	mg/l	1	07/24/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/24/19 09:41	RC	SM2540 D-11
Total Organic Carbon	1.4	1.0	mg/l	1	07/20/19 04:55	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-6D	<b>Date Sampled:</b> 07/18/19
<b>Lab Sample ID:</b> JC91885-10	<b>Date Received:</b> 07/18/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	10.0	5.0	mg/l	1	07/25/19 09:43	CM	SM2320 B-11
BOD, 5 Day	< 4.5	4.5	mg/l	1	07/19/19 22:00	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/26/19 12:52	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.75	0.11	mg/l	1	07/24/19 16:31	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.78	0.10	mg/l	1	07/24/19 16:31	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.030	0.010	mg/l	1	07/18/19 23:36	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	07/30/19 10:34	BM	EPA 351.2/LACHAT
Solids, Total Dissolved	41.0	10	mg/l	1	07/24/19 14:45	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/24/19 09:41	RC	SM2540 D-11
Total Organic Carbon	1.1	1.0	mg/l	1	07/20/19 05:06	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-7S	<b>Date Sampled:</b> 07/18/19
<b>Lab Sample ID:</b> JC91885-11	<b>Date Received:</b> 07/18/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	10.5	5.0	mg/l	1	07/25/19 09:43	CM	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	07/19/19 22:03	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/26/19 12:53	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.27	0.11	mg/l	1	07/24/19 16:32	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.27	0.10	mg/l	1	07/24/19 16:32	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/18/19 23:36	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.25	0.20	mg/l	1	07/30/19 10:35	BM	EPA 351.2/LACHAT
Solids, Total Dissolved	31.0	10	mg/l	1	07/24/19	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/24/19 09:41	RC	SM2540 D-11
Total Organic Carbon	1.4	1.0	mg/l	1	07/20/19 00:38	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-7M	<b>Date Sampled:</b> 07/18/19
<b>Lab Sample ID:</b> JC91885-12	<b>Date Received:</b> 07/18/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	11.5	5.0	mg/l	1	07/25/19 09:43	CM	SM2320 B-11
BOD, 5 Day	< 3.4	3.4	mg/l	1	07/19/19 22:07	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/26/19 12:55	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.85	0.11	mg/l	1	07/24/19 16:33	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.85	0.10	mg/l	1	07/24/19 16:33	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	07/18/19 23:36	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.31	0.20	mg/l	1	07/30/19 10:36	BM	EPA 351.2/LACHAT
Solids, Total Dissolved	45.0	10	mg/l	1	07/24/19	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	07/24/19 09:41	RC	SM2540 D-11
Total Organic Carbon	1.6	1.0	mg/l	1	07/20/19 01:11	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-7D		<b>Date Sampled:</b> 07/18/19
<b>Lab Sample ID:</b> JC91885-13		<b>Date Received:</b> 07/18/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	14.0	5.0	mg/l	1	07/25/19 09:43	CM	SM2320 B-11
BOD, 5 Day	< 4.5	4.5	mg/l	1	07/19/19 22:10	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	07/26/19 12:56	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.77	0.11	mg/l	1	07/24/19 16:35	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.83	0.10	mg/l	1	07/24/19 16:35	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.065	0.010	mg/l	1	07/18/19 23:36	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.29	0.20	mg/l	1	07/30/19 10:36	BM	EPA 351.2/LACHAT
Solids, Total Dissolved	43.0	10	mg/l	1	07/24/19	RC	SM2540 C-11
Solids, Total Suspended	53.2	4.0	mg/l	1	07/24/19 09:41	RC	SM2540 D-11
Total Organic Carbon	1.3	1.0	mg/l	1	07/20/19 01:23	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

---

RL = Reporting Limit

4.13  
4

Misc. Forms

Custody Documents and Other Forms

---

Includes the following where applicable:

- Chain of Custody





CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusaa

FED-EX Tracking #
SGS Order Control #
SGS Quote #
SGS Job # JC91885

Client / Reporting Information, Project Information, Requested Analysis, Matrix Codes, Turn Around Time, Deliverable, Comments / Special Instructions, Chain of Custody table with columns for Sample #, Field ID, Date, Time, Matrix, etc.

5.1
5

JC91885: Chain of Custody

Page 2 of 4







COPY

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08610
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehausa

FED-Ex Tracking #
Bottle Order Control #
SGS Quote #
SGS Job # JC91885

Client / Reporting Information
Project Information
Requested Analysis
Matrix Codes
Company Name: USACE - Phila. District
Project Name: USACE Reservoirs - Beltzville
Street Address: 100 Penn Sq. East
City: Phila. PA. 19107
Project Contact: Joe Loeper
Phone #: 215-650-6545
Sampler(s) Name(s): Greg Wozniak
Project Manager: Tammy McClosky
Table with columns: Sample #, Field ID / Point of Collection, Date, Time, Matrix, # of bottles, etc.
Turn Around Time (Business Days)
Deliverable
Comments / Special Instructions: Samples provided to Eurofins lab
Chain of Custody table with columns: Date / Time, Received By, Relinequished By, etc.

IC-F and FCF

DELIVERED BY CUSTOMER

5.1 5



# SGS Sample Receipt Summary

**Job Number:** JC91885

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 7/18/2019 4:54:00 PM

**Delivery Method:** \_\_\_\_\_

**Airbill #s:** \_\_\_\_\_

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.6); Cooler 2: (3.3); Cooler 3: (3.7); Cooler 4: (3.5); Cooler 5: (3.4);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.6); Cooler 2: (3.3); Cooler 3: (3.7); Cooler 4: (3.5); Cooler 5: (3.4);

**Cooler Security**

Y or N

Y or N

- |                           |                                     |                          |                       |                                     |                          |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Cooler Temperature**

Y or N

- |                              |                                     |                          |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | IR Gun                              |                          |
| 3. Cooler media:             | Ice (Bag)                           |                          |
| 4. No. Coolers:              | 5                                   |                          |

**Quality Control Preservation**

Y or N

N/A

- |                                 |                                     |                                     |                                     |
|---------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 2. Trip Blank listed on COC:    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 3. Samples preserved properly:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. VOCs headspace free:         | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

**Sample Integrity - Documentation**

Y or N

- |  |                                     |                          |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete:        | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Sample Integrity - Condition**

Y or N

- |                                  |                                     |                          |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample:          | Intact                              |                          |

**Sample Integrity - Instructions**

Y or N N/A

- |   |                                     |                                     |                                     |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear:           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 2. Bottles received for unspecified tests | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |                                     |
| 3. Sufficient volume recvd for analysis:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. Compositing instructions clear:        | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear:          | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

Test Strip Lot #s:	pH 1-12: 229517	pH 12+: 208717	Other: (Specify) _____
--------------------	-----------------	----------------	------------------------

Comments

SM089-03  
Rev. Date 12/7/17

5.1  
5

The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC91885X

Sampling Date: 07/18/19

Report to:

USACE-Philadelphia District  
100 Penn Square East  
Philadelphia, PA 19107  
Joseph.M.Loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: **15**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read "Mike Earp".

Mike Earp  
General Manager

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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Test results relate only to samples analyzed.

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## Sample Summary

USACE-Philadelphia District

**Job No:** JC91885X

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Matrix Received	Code	Type	Client Sample ID
	Date	Time By				
JC91885-1X	07/18/19	06:40 GW	07/18/19	AQ	Surface Water	BZ-1S
JC91885-2X	07/18/19	11:25 GW	07/18/19	AQ	Surface Water	BZ-2S
JC91885-3X	07/18/19	08:30 GW	07/18/19	AQ	Surface Water	BZ-3S
JC91885-6X	07/18/19	11:05 GW	07/18/19	AQ	Surface Water	BZ-4S
JC91885-7X	07/18/19	10:50 GW	07/18/19	AQ	Surface Water	BZ-5S
JC91885-8X	07/18/19	07:45 GW	07/18/19	AQ	Surface Water	BZ-6S
JC91885-11X	07/18/19	09:30 GW	07/18/19	AQ	Surface Water	BZ-7S

Subcontract Lab Data

---

Report of Analysis

---

Serialized: 08/05/2019 05:17pm QC36

KRISTIN DEGRAW  
SGS NORTH AMERICA, INC.  
2235 ROUTE 130  
DAYTON, NJ 08810

Regarding:  
SGS NORTH AMERICA, INC.  
2235 ROUTE 130  
DAYTON, NJ 08810

**PROJECT ID:**  
W09769 USACE

**LABORATORY REPORT NUMBER:**  
L7146880



Authorized by: Douglas J. Gump  
Client Services Manager

KRISTIN DEGRAW  
 SGS NORTH AMERICA, INC.  
 2235 ROUTE 130  
 DAYTON, NJ 08810

Regarding:  
 KRISTIN DEGRAW  
 SGS NORTH AMERICA, INC.  
 2235 ROUTE 130  
 DAYTON, NJ 08810

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** 1986711 PI  
**PWSID No:**

Sample ID	Sample Description	Received Date/Time/Temp	Iced (Y/N)	Samp. Date/Time/Temp	Sampled by
L7146880-1	BZ-1S	07/18/19 12:59pm 8.0 C	Y	07/18/19 06:40am NA C	Customer

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- BZ-1S</b>							
Total Coliform, MF	>20000 Q		cfu/100ml	SM 9222B	1	100	07/18/19 03:19PM LK
Fecal Coliform, MF	41 Q		cfu/100ml	SM 9222D	100	1	07/18/19 02:43PM JG2

Sample ID	Sample Description	Received Date/Time/Temp	Iced (Y/N)	Samp. Date/Time/Temp	Sampled by
L7146880-2	BZ-2S	07/18/19 12:59pm 8.0 C	Y	07/18/19 06:40am NA C	Customer

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- BZ-2S</b>							
Total Coliform, MF	14400 E, Q		cfu/100ml	SM 9222B	1	100	07/18/19 03:55PM LK
Fecal Coliform, MF	47 Q		cfu/100ml	SM 9222D	100	1	07/18/19 02:43PM JG2

PIN: 28748

Serial Number: 6534313



**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** 1986711 PI  
**PWSID No:**

<b>Sample ID</b> L7146880-3	<b>Sample Description</b> BZ-3S	<b>Received Date/Time/Temp</b> 07/18/19 12:59pm 8.0 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/18/19 06:40am NA C	<b>Sampled by</b> Customer
--------------------------------	------------------------------------	--	----------------------	--	-------------------------------

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
-----------	--------	------	-------	--------	----	----	--------------------------

**ENVIRONMENTAL MICROBIOLOGY -- BZ-3S**

Total Coliform, MF	17900 E, Q		cfu/100ml	SM 9222B	1	100	07/18/19 03:19PM LK
Fecal Coliform, MF	<1 Q		cfu/100ml	SM 9222D	100	1	07/18/19 02:43PM JG2

<b>Sample ID</b> L7146880-4	<b>Sample Description</b> BZ-4S	<b>Received Date/Time/Temp</b> 07/18/19 12:59pm 8.0 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/18/19 06:40am NA C	<b>Sampled by</b> Customer
--------------------------------	------------------------------------	--	----------------------	--	-------------------------------

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
-----------	--------	------	-------	--------	----	----	--------------------------

**ENVIRONMENTAL MICROBIOLOGY -- BZ-4S**

Total Coliform, MF	>20000 Q		cfu/100ml	SM 9222B	1	100	07/18/19 03:19PM LK
Fecal Coliform, MF	42 Q		cfu/100ml	SM 9222D	100	1	07/18/19 02:43PM JG2

<b>Sample ID</b> L7146880-5	<b>Sample Description</b> BZ-5S	<b>Received Date/Time/Temp</b> 07/18/19 12:59pm 8.0 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/18/19 06:40am NA C	<b>Sampled by</b> Customer
--------------------------------	------------------------------------	--	----------------------	--	-------------------------------

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
-----------	--------	------	-------	--------	----	----	--------------------------

**ENVIRONMENTAL MICROBIOLOGY -- BZ-5S**

Total Coliform, MF	19100 E, Q		cfu/100ml	SM 9222B	1	100	07/18/19 03:19PM LK
Fecal Coliform, MF	310 Q		cfu/100ml	SM 9222D	10	10	07/18/19 02:43PM JG2

<b>Sample ID</b> L7146880-6	<b>Sample Description</b> BZ-6S	<b>Received Date/Time/Temp</b> 07/18/19 12:59pm 8.0 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 07/18/19 06:40am NA C	<b>Sampled by</b> Customer
--------------------------------	------------------------------------	--	----------------------	--	-------------------------------

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
-----------	--------	------	-------	--------	----	----	--------------------------

PIN: 28748

Serial Number: 6534313

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** 1986711 PI  
**PWSID No:**

<b>Sample ID</b>	<b>Sample Description</b>		<b>Samp. Date/Time/Temp</b>	<b>Sampled by</b>
L7146880-6	BZ-6S		07/18/19 06:40am NA C	Customer
	<b>Received Date/Time/Temp</b>	07/18/19 12:59pm 8.0 C	<b>Iced (Y/N):</b>	Y

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
-----------	--------	------	-------	--------	----	----	--------------------------

**ENVIRONMENTAL MICROBIOLOGY -- BZ-6S**

Total Coliform, MF	11200 E, Q		cfu/100ml	SM 9222B	1	100	07/18/19 03:19PM LK
Fecal Coliform, MF	1 Q		cfu/100ml	SM 9222D	100	1	07/18/19 02:43PM JG2

<b>Sample ID</b>	<b>Sample Description</b>		<b>Samp. Date/Time/Temp</b>	<b>Sampled by</b>
L7146880-7	BZ-7S		07/18/19 06:40am NA C	Customer
	<b>Received Date/Time/Temp</b>	07/18/19 12:59pm 8.0 C	<b>Iced (Y/N):</b>	Y

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
-----------	--------	------	-------	--------	----	----	--------------------------

**ENVIRONMENTAL MICROBIOLOGY -- BZ-7S**

Total Coliform, MF	2500 Q		cfu/100ml	SM 9222B	1	100	07/18/19 03:19PM LK
Fecal Coliform, MF	3 Q		cfu/100ml	SM 9222D	100	1	07/18/19 02:43PM JG2

**Sample Comments | Result Qualifiers:**

L7146880-1 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7146880-2 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7146880-3 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the

PIN: 28748

Serial Number: 6534313

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** 1986711 PI  
**PWSID No:**

test. The reported result may be considered an estimate.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7146880-4 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7146880-5 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7146880-6 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7146880-7 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.



PIN: 28748

Serial Number: 6534313

**DEFINITIONS**

The following terms or abbreviations are used in this report:

*Eurofins QC, LLC (EQC)*

<	Less than: In conjunction with a numerical value, indicates a concentration less than RL / MDL
>	Greater than: In conjunction with a numerical value, indicates a concentration greater than RL / MDL
CFU	Colony Forming Unit
DF	Dilution Factor (For Microbiology, DF = volume of sample tested)
DRY	Result was reported on a dry weight basis
MCL	EPA recommended "Maximum Contaminant Level"
MDL	Method Detection Limit
MF	Membrane Filtration
MPN	Most Probable Number
ND	For odor test: No Odor Observed
ND	For all other tests: Analyte concentration Not Detected greater than the RL / MDL

NEG	Negative / Absent
NTU	Nephelometric Turbidity Units
POS	Positive / Present
PPB (µg/L)	Parts per billion: equivalent to 1 microgram per kilogram (µg/Kg) for solids or one microgram per liter (µg/L) for aqueous samples
PPM (mg/L)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples
PRES	Presumptive
QUAL	Qualifier (Q)
RL	Laboratory Reporting Limit or Limit of Quantitation (LOQ)
TNTC	Too Numerous To Count
TON	Threshold Odor Number

**Data Qualifiers**

J	Estimated value > MDL, but < RL
T	Temperature exceedance at receipt, refer to Sample Comments / Results Qualifiers section
E	Estimated CFU count (Microbiology)
Q	Qualifier defined in Sample Comment section on report

**Warranties, Terms, and Conditions**

- Unless otherwise indicated in the Parameter field, analyses for environmental microbiology, odor, and pharmaceutical microbiology are performed at the EQC Horsham Facility (702 Electronic Dr. Horsham, PA 19044).
- Analyses for Field Parameters are performed by EQC Field staff. Locations and certifications are identified on the Chain of Custody as follows:
  - "ERF" = field staff performs tests under NJ State certification # 02015.
  - "VL" = field staff performs tests under NJ State certification # 06005.
  - "WG" = field staff performs tests under NJ State certification # PA001.
- Test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.
- The report shall not be reproduced, except in full, without the written consent of the laboratory.
- All samples are collected as "grab" samples unless otherwise identified.
- Reported results relate only to the sample as tested. EQC is not responsible for sample integrity unless sampling has been performed by a member of our staff.
- EQC is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. EQC's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Client Services for further information.
- The following personnel or their deputies have approved the results of the tests performed by EQC: Nicki Smith (Environmental Chemistry), Amanda Berd (Pharmaceutical Microbiology), and Zachary Smith (Water Microbiology).

**EQC Accreditations**

Horsham Facility	<u>NELAP/State IDs-</u> PA: 46-05499	NJ: PA093	NY: 12080	MD: 357
East Rutherford Facility	<u>State ID-</u>	NJ: 02015		
Vineland Facility	<u>State ID-</u>	NJ: 06005		
Wind Gap Facility	<u>State ID-</u>	NJ: PA001		

## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody





CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FED-EX Tracking #
SGS Order Control #
SGS Quote #
SGS Job # JC91885

Client / Reporting Information
Project Information
Requested Analysis
Matrix Codes
Company Name: USACE-Phila. District
Project Name: USACE-Reservoirs - Beltzville
Street Address: 100 Penn Sq. East
City: Phila. PA 19107
Project Contact: Joe Loeper
Phone #: 215-650-6545
Project Manager: Greg Wacik
Project Manager: Tammy Maclosky
Attention:
Number of preserved Bottles
Matrix: G SW 7 X
Matrix: G SW 7 X
Matrix: G SW 7 X

Turn Around Time (Business Days)
Deliverable
Comments / Special Instructions
10 Business Days
5 Business Days
3 Business Days
2 Business Days
1 Business Day
Other
Commercial "A" (Level 1)
Commercial "B" (Level 2)
NJ Reduced (Level 3)
Full Tier I (Level 4)
Commercial "C"
NJ DKQP
NYASP Category A
NYASP Category B
MA MCP Criteria
CT RCP Criteria
State Forms
EDD Format
DOD-QSMS
TPO4 samples to MTS Reider
TGF/FCF samples to Eurofins lab

Sample Custody must be documented below each time samples change possession, including courier delivery.
Received By: 1. P. Shah
Date / Time: 7/18/19 11:40
Relinquished By: 2. P. Shah
Date / Time: 7/18/19 16:54
Received By: 3.
Date / Time:
Relinquished By: 4.
Date / Time:
Received By: 5.
Date / Time:
Intact: [ ]
Not intact: [ ]
Preserved where applicable: [ ]
Absent: [ ]
Therm. ID:
On Ice: [ ]
Cooler Temp. °C: [ ]

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JC91885X: Chain of Custody

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COPY

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08610
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehausa

FED-EX Tracking #
Bottle Order Control #
SGS Quote #
SGS Job # JC91885

Client / Reporting Information
Project Information
Requested Analysis
Matrix Codes
Company Name: USACE - Phila. District
Project Name: USACE Reservoirs - Beltzville
Street Address: 100 Penn Sq. East
City: Phila. PA. 19107
Project Contact: Joe Loeper
Phone #: 215-650-6545
Sampler(s) Name(s): Greg Wozniak
Project Manager: Tammy McClosky
Table with columns: Sample #, Field ID / Point of Collection, Date, Time, Matrix, # of bottles, etc.
Turn Around Time (Business Days)
Deliverable
Comments / Special Instructions: Samples provided to Eurofins lab
Chain of Custody table with columns: Date / Time, Received By, Relinequished By, etc.

IC-F and FCF

DELIVERED BY CUSTOMER

31 3





## SGS Sample Receipt Summary

**Job Number:** JC91885

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 7/18/2019 4:54:00 PM

**Delivery Method:** \_\_\_\_\_

**Airbill #s:** \_\_\_\_\_

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.6); Cooler 2: (3.3); Cooler 3: (3.7); Cooler 4: (3.5); Cooler 5: (3.4);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.6); Cooler 2: (3.3); Cooler 3: (3.7); Cooler 4: (3.5); Cooler 5: (3.4);

**Cooler Security**

- |                           |                                     |           |                          |                       |                                     |           |                          |
|---------------------------|-------------------------------------|-----------|--------------------------|-----------------------|-------------------------------------|-----------|--------------------------|
|                           | <u>Y</u>                            | <u>or</u> | <u>N</u>                 |                       | <u>Y</u>                            | <u>or</u> | <u>N</u>                 |
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> | 3. COC Present:       | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |
| 2. Custody Seals Intact:  | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |

**Cooler Temperature**

- |                              |                                     |           |                          |
|------------------------------|-------------------------------------|-----------|--------------------------|
|                              | <u>Y</u>                            | <u>or</u> | <u>N</u>                 |
| 1. Temp criteria achieved:   | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |
| 2. Cooler temp verification: | IR Gun                              |           |                          |
| 3. Cooler media:             | Ice (Bag)                           |           |                          |
| 4. No. Coolers:              | 5                                   |           |                          |

**Quality Control Preservation**

- |                                 |                                     |           |                                     |                                     |
|---------------------------------|-------------------------------------|-----------|-------------------------------------|-------------------------------------|
|                                 | <u>Y</u>                            | <u>or</u> | <u>N</u>                            | <u>N/A</u>                          |
| 1. Trip Blank present / cooler: | <input type="checkbox"/>            |           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 2. Trip Blank listed on COC:    | <input type="checkbox"/>            |           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 3. Samples preserved properly:  | <input checked="" type="checkbox"/> |           | <input type="checkbox"/>            |                                     |
| 4. VOCs headspace free:         | <input type="checkbox"/>            |           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

**Sample Integrity - Documentation**

- |  |                                     |           |                          |
|--|-------------------------------------|-----------|--------------------------|
|  | <u>Y</u>                            | <u>or</u> | <u>N</u>                 |
| 1. Sample labels present on bottles:   | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |
| 2. Container labeling complete:        | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |

**Sample Integrity - Condition**

- |                                  |                                     |           |                          |
|----------------------------------|-------------------------------------|-----------|--------------------------|
|                                  | <u>Y</u>                            | <u>or</u> | <u>N</u>                 |
| 1. Sample recvd within HT:       | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> |           | <input type="checkbox"/> |
| 3. Condition of sample:          | Intact                              |           |                          |

**Sample Integrity - Instructions**

- |   |                                     |           |                                     |                                     |
|---|-------------------------------------|-----------|-------------------------------------|-------------------------------------|
|   | <u>Y</u>                            | <u>or</u> | <u>N</u>                            | <u>N/A</u>                          |
| 1. Analysis requested is clear:           | <input checked="" type="checkbox"/> |           | <input type="checkbox"/>            |                                     |
| 2. Bottles received for unspecified tests | <input type="checkbox"/>            |           | <input checked="" type="checkbox"/> |                                     |
| 3. Sufficient volume recvd for analysis:  | <input checked="" type="checkbox"/> |           | <input type="checkbox"/>            |                                     |
| 4. Compositing instructions clear:        | <input type="checkbox"/>            |           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear:          | <input type="checkbox"/>            |           | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

Test Strip Lot #s:      pH 1-12: 229517      pH 12+: 208717      Other: (Specify) \_\_\_\_\_

Comments

SM089-03  
Rev. Date 12/7/17

**JC91885X: Chain of Custody**

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3.1  
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The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC91885XA

Sampling Date: 07/18/19

Report to:

USACE-Philadelphia District  
100 Penn Square East  
Philadelphia, PA 19107  
Joseph.M.Loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: **23**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read "Mike Earp".

Mike Earp  
General Manager

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

This report shall not be reproduced, except in its entirety, without the written approval of SGS.  
Test results relate only to samples analyzed.

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<b>3.1: Chain of Custody</b> .....	<b>20</b>



## Sample Summary

USACE-Philadelphia District

**Job No:** JC91885XA

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC91885-1F	07/18/19	06:40 GW	07/18/19	AQ	Surface H2O Filtered	BZ-1S
JC91885-1XA	07/18/19	06:40 GW	07/18/19	AQ	Surface Water	BZ-1S
JC91885-2F	07/18/19	11:25 GW	07/18/19	AQ	Surface H2O Filtered	BZ-2S
JC91885-2XA	07/18/19	11:25 GW	07/18/19	AQ	Surface Water	BZ-2S
JC91885-3F	07/18/19	08:30 GW	07/18/19	AQ	Surface H2O Filtered	BZ-3S
JC91885-3XA	07/18/19	08:30 GW	07/18/19	AQ	Surface Water	BZ-3S
JC91885-4F	07/18/19	08:30 GW	07/18/19	AQ	Surface H2O Filtered	BZ-3M
JC91885-4XA	07/18/19	08:30 GW	07/18/19	AQ	Surface Water	BZ-3M
JC91885-5F	07/18/19	08:30 GW	07/18/19	AQ	Surface H2O Filtered	BZ-3D
JC91885-5XA	07/18/19	08:30 GW	07/18/19	AQ	Surface Water	BZ-3D
JC91885-6F	07/18/19	11:05 GW	07/18/19	AQ	Surface H2O Filtered	BZ-4S
JC91885-6XA	07/18/19	11:05 GW	07/18/19	AQ	Surface Water	BZ-4S
JC91885-7F	07/18/19	10:50 GW	07/18/19	AQ	Surface H2O Filtered	BZ-5S



## Sample Summary

(continued)

USACE-Philadelphia District

**Job No:** JC91885XA

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC91885-7XA	07/18/19	10:50 GW	07/18/19	AQ	Surface Water	BZ-5S
JC91885-8F	07/18/19	07:45 GW	07/18/19	AQ	Surface H2O Filtered	BZ-6S
JC91885-8XA	07/18/19	07:45 GW	07/18/19	AQ	Surface Water	BZ-6S
JC91885-9F	07/18/19	07:45 GW	07/18/19	AQ	Surface H2O Filtered	BZ-6M
JC91885-9XA	07/18/19	07:45 GW	07/18/19	AQ	Surface Water	BZ-6M
JC91885-10F	07/18/19	07:45 GW	07/18/19	AQ	Surface H2O Filtered	BZ-6D
JC91885-10XA	07/18/19	07:45 GW	07/18/19	AQ	Surface Water	BZ-6D
JC91885-11F	07/18/19	09:30 GW	07/18/19	AQ	Surface H2O Filtered	BZ-7S
JC91885-11XA	07/18/19	09:30 GW	07/18/19	AQ	Surface Water	BZ-7S
JC91885-12F	07/18/19	09:30 GW	07/18/19	AQ	Surface H2O Filtered	BZ-7M
JC91885-12XA	07/18/19	09:30 GW	07/18/19	AQ	Surface Water	BZ-7M
JC91885-13F	07/18/19	09:30 GW	07/18/19	AQ	Surface H2O Filtered	BZ-7D
JC91885-13XA	07/18/19	09:30 GW	07/18/19	AQ	Surface Water	BZ-7D

Subcontract Lab Data

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Report of Analysis

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

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

# Certificate of Analysis

2

**Laboratory No.:** 9025550  
**Report:** 08/01/19  
**Lab Contact:** Richard A Wheeler

**Attention:** Tammy McCloskey  
**Reported To:** SGS North America  
2235 US Highway 130  
Dayton, NJ 08810

**Project:** Army Corp Reservoirs

**Lab ID:** 9025550-01    **Collected By:** Client    **Sampled:** 07/18/19 06:40    **Received:** 07/23/19 10:00  
**Sample Desc:** BZ-1S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	07/24/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	07/24/19	U	JCL

**Lab ID:** 9025550-02    **Collected By:** Client    **Sampled:** 07/18/19 11:25    **Received:** 07/23/19 10:00  
**Sample Desc:** BZ-2S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	07/24/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	07/24/19	U	JCL

**Lab ID:** 9025550-03    **Collected By:** Client    **Sampled:** 07/18/19 08:30    **Received:** 07/23/19 10:00  
**Sample Desc:** BZ-3S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	07/24/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	07/24/19	U	JCL



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

**2**

**Lab ID:** 9025550-04      **Collected By:** Client      **Sampled:** 07/18/19 08:30      **Received:** 07/23/19 10:00  
**Sample Desc:** BZ-3M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	07/24/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	07/24/19	U	JCL

**Lab ID:** 9025550-05      **Collected By:** Client      **Sampled:** 07/18/19 08:30      **Received:** 07/23/19 10:00  
**Sample Desc:** BZ-3D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	07/24/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	07/24/19	U	JCL

**Lab ID:** 9025550-06      **Collected By:** Client      **Sampled:** 07/18/19 11:05      **Received:** 07/23/19 10:00  
**Sample Desc:** BZ-4S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.009	mg/l	0.007	0.05	SM 4500-P E	07/24/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	07/24/19	J	JCL

**Lab ID:** 9025550-07      **Collected By:** Client      **Sampled:** 07/18/19 10:50      **Received:** 07/23/19 10:00  
**Sample Desc:** BZ-5S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	07/24/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	07/24/19	J	JCL



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

**2**

**Lab ID:** 9025550-08      **Collected By:** Client      **Sampled:** 07/18/19 07:45      **Received:** 07/23/19 10:00  
**Sample Desc:** BZ-6S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	07/24/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	07/24/19	U	JCL

**Lab ID:** 9025550-09      **Collected By:** Client      **Sampled:** 07/18/19 07:45      **Received:** 07/23/19 10:00  
**Sample Desc:** BZ-6M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	07/24/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	07/24/19	U	JCL

**Lab ID:** 9025550-10      **Collected By:** Client      **Sampled:** 07/18/19 07:45      **Received:** 07/23/19 10:00  
**Sample Desc:** BZ-6D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	07/24/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	07/24/19	U	JCL

**Lab ID:** 9025550-11      **Collected By:** Client      **Sampled:** 07/18/19 09:30      **Received:** 07/23/19 10:00  
**Sample Desc:** BZ-7S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	07/24/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	07/24/19	U	JCL



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2

**Lab ID:** 9025550-12      **Collected By:** Client      **Sampled:** 07/18/19 09:30      **Received:** 07/23/19 10:00  
**Sample Desc:** BZ-7M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	07/24/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	07/24/19	U	JCL

**Lab ID:** 9025550-13      **Collected By:** Client      **Sampled:** 07/18/19 09:30      **Received:** 07/23/19 10:00  
**Sample Desc:** BZ-7D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	07/24/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.11	mg/l	0.01	0.05	SM 4500-P E	07/24/19		JCL



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Quality Control

General Chemistry

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
<b>Batch B9G1393</b>								
<b>MB (B9G1393-BLK1)</b> Prepared & Analyzed: 07/24/2019								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
<b>MB (B9G1393-BLK2)</b> Prepared & Analyzed: 07/24/2019								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
<b>MB (B9G1393-BLK3)</b> Prepared & Analyzed: 07/24/2019								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
<b>LFB (B9G1393-BS1)</b> Prepared & Analyzed: 07/24/2019								
Phosphorus as P, Total	1.01	0.05	mg/l	101	80-120			
<b>LFM (B9G1393-MS1)</b> Source: 9025550-12 Prepared & Analyzed: 07/24/2019								
Phosphorus as P, Total	1.00	0.05	mg/l	100	80-120			
<b>LFMD (B9G1393-MSD1)</b> Source: 9025550-12 Prepared & Analyzed: 07/24/2019								
Phosphorus as P, Total	1.00	0.05	mg/l	99.9	80-120	0.300	20	

Dissolved General Chemistry

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
<b>Batch B9G1394</b>								
<b>MB (B9G1394-BLK1)</b> Prepared & Analyzed: 07/24/2019								
Phosphorus as P, Dissolved	<0.05	0.05	mg/l					G-11, U
<b>LFB (B9G1394-BS1)</b> Prepared & Analyzed: 07/24/2019								
Phosphorus as P, Dissolved	1.02	0.05	mg/l	102	80-120			G-11
<b>LFM (B9G1394-MS1)</b> Source: 9025550-02 Prepared & Analyzed: 07/24/2019								
Phosphorus as P, Dissolved	1.00	0.05	mg/l	99.8	80-120			
<b>LFMD (B9G1394-MSD1)</b> Source: 9025550-02 Prepared & Analyzed: 07/24/2019								
Phosphorus as P, Dissolved	1.01	0.05	mg/l	101	80-120	1.10	20	



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**Preparation Methods**

Specific Method	Preparation Method	Prepared Date	Prepared By
<b>9025550-01</b>			
SM 4500-P E	SM 4500-P B	07/24/2019	JCL
<b>9025550-02</b>			
SM 4500-P E	SM 4500-P B	07/24/2019	JCL
<b>9025550-03</b>			
SM 4500-P E	SM 4500-P B	07/24/2019	JCL
<b>9025550-04</b>			
SM 4500-P E	SM 4500-P B	07/24/2019	JCL
<b>9025550-05</b>			
SM 4500-P E	SM 4500-P B	07/24/2019	JCL
<b>9025550-06</b>			
SM 4500-P E	SM 4500-P B	07/24/2019	JCL
<b>9025550-07</b>			
SM 4500-P E	SM 4500-P B	07/24/2019	JCL
<b>9025550-08</b>			
SM 4500-P E	SM 4500-P B	07/24/2019	JCL
<b>9025550-09</b>			
SM 4500-P E	SM 4500-P B	07/24/2019	JCL
<b>9025550-10</b>			
SM 4500-P E	SM 4500-P B	07/24/2019	JCL
<b>9025550-11</b>			
SM 4500-P E	SM 4500-P B	07/24/2019	JCL
<b>9025550-12</b>			
SM 4500-P E	SM 4500-P B	07/24/2019	JCL
<b>9025550-13</b>			
SM 4500-P E	SM 4500-P B	07/24/2019	JCL



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2

**Notes and Definitions**

- G-11 The sample was filtered after it was received at the laboratory.
- J Estimated value
- U Analyte was not detected above the indicated value.



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**CHAIN OF CUSTODY**  
 SGS North America Inc. - Dayton  
 2235 Route 130, Dayton, NJ 08810  
 TEL: 732-329-0200 FAX: 732-329-3493/3480  
 www.sgs.com/ehsusa

9025550

Client / Reporting Information		Project Information		Requested Analysis		Matrix Codes	
Company Name: Philadelphia District, Reservoir Sampling		Project Name: Philadelphia District, Reservoir Sampling		Requested Analysis: TP04, FILTERGN, TP04, M		Matrix Codes: DW - Drinking Water GW - Ground Water WW - Wastewater SW - Surface Water S - Soil SED - Sediment LIQ - Other Liquid AIR - Air SOL - Solid YIP - Yip FB - Field Blank EB - Equipment Blank RB - Rins Blank TB - Trip Blank	
Street Address: City: State: Zip:		Billing Information (if different from Report to): Company Name: Street Address: City: State: Zip:		Matrix Codes: LAB USE ONLY			
Project Contact: Phone #:		Project #: Client Purchase Order #:		Matrix Codes: LAB USE ONLY			
Sample(s) Name(s): GW		Phone: Project Manager:		Matrix Codes: LAB USE ONLY			
SGS Sample #	Field ID / Point of Collection	MCH040 Vial #	Date	Time	Collected	Number of preserved bottles	Matrix
7XA	BZ-5S		7/18/19	10:50:00 AM	GW	AQ	AQ
7F	BZ-5S		7/18/19	10:50:00 AM	GW	AQ	AQ
8XA	BZ-6S		7/18/19	7:45:00 AM	GW	AQ	AQ
8F	BZ-6S		7/18/19	7:45:00 AM	GW	AQ	AQ
9XA	BZ-6M		7/18/19	7:45:00 AM	GW	AQ	AQ
9F	BZ-6M		7/18/19	7:45:00 AM	GW	AQ	AQ
10XA	BZ-6D		7/18/19	7:45:00 AM	GW	AQ	AQ
10F	BZ-6D		7/18/19	7:45:00 AM	GW	AQ	AQ
11XA	BZ-7S		7/18/19	9:30:00 AM	GW	AQ	AQ
11F	BZ-7S		7/18/19	9:30:00 AM	GW	AQ	AQ
12XA	BZ-7M		7/18/19	9:30:00 AM	GW	AQ	AQ
12F	BZ-7M		7/18/19	9:30:00 AM	GW	AQ	AQ
Turnaround Times (Business days)							
Approved By (SGS PM): / Date:							
<input type="checkbox"/> Standard 10 Business Days <input type="checkbox"/> 5 Business Days RUSH <input type="checkbox"/> 3 Business Days RUSH <input type="checkbox"/> 2 Business Days RUSH <input type="checkbox"/> 1 Business Day EMERGENCY <input checked="" type="checkbox"/> Other Due 8/1/2019 Emergency & Rush 7A, data available via Lablink. Approval needed for RUSH/Emergency TAT.							
Relinquished by: <i>1. [Signature]</i>				Relinquished by: <i>Fedex</i>			
Date / Time: <i>7/23/19 17:00</i>				Date / Time: <i>7-23-19 10:00</i>			
Relinquished by: <i>3</i>				Relinquished by: <i>4</i>			
Date / Time: <i>3</i>				Date / Time: <i>4</i>			
Relinquished by: <i>5</i>				Relinquished by: <i>4</i>			
Date / Time: <i>5</i>				Date / Time: <i>4</i>			
Comments / Special Instructions: http://www.sgs.com/en/terms-and-conditions							

70-80-90-101-11-12







9025550

Date / Time: 7/22/2019 9:04:21 AM  
CSR: BETHW  
Job #: JC91885XA  
Client Project: Philadelphia District, Reservoir Sampling  
Deliverable: REDT2  
TAT: Due 8/1/2019

Sub Lab: MJ Reider Associates Inc, Env. Testing Laboratories  
Address: 107 Angelica Street  
City: Reading  
State: PA  
Zip: 19611  
Contact: Sample Receiving / Rich Wheeler  
Phone: 610-374-5129

SGS Sample #	Client Sample Description	Analysis	Location	Sampled By	Date Sampled	Time Sampled	Aliquot
JC91885-1XA	BZ-1S	TPO4		GW	7/18/2019	6:40:00 AM	
JC91885-1F	BZ-1S	FILTERGN_TPO4		GW	7/18/2019	6:40:00 AM	
JC91885-2XA	BZ-2S	TPO4		GW	7/18/2019	11:25:00 AM	
JC91885-2F	BZ-2S	FILTERGN_TPO4		GW	7/18/2019	11:25:00 AM	
JC91885-3XA	BZ-3S	TPO4		GW	7/18/2019	8:30:00 AM	
JC91885-3F	BZ-3S	FILTERGN_TPO4		GW	7/18/2019	8:30:00 AM	
JC91885-4XA	BZ-3M	TPO4		GW	7/18/2019	8:30:00 AM	
JC91885-4F	BZ-3M	FILTERGN_TPO4		GW	7/18/2019	8:30:00 AM	
JC91885-5XA	BZ-3D	TPO4		GW	7/18/2019	8:30:00 AM	
JC91885-5F	BZ-3D	FILTERGN_TPO4		GW	7/18/2019	8:30:00 AM	
JC91885-6XA	BZ-4S	TPO4		GW	7/18/2019	11:05:00 AM	
JC91885-6F	BZ-4S	FILTERGN_TPO4		GW	7/18/2019	11:05:00 AM	
JC91885-7XA	BZ-5S	TPO4		GW	7/18/2019	10:50:00 AM	
JC91885-7F	BZ-5S	FILTERGN_TPO4		GW	7/18/2019	10:50:00 AM	
JC91885-8XA	BZ-6S	TPO4		GW	7/18/2019	7:45:00 AM	
JC91885-8F	BZ-6S	FILTERGN_TPO4		GW	7/18/2019	7:45:00 AM	
JC91885-9XA	BZ-6M	TPO4		GW	7/18/2019	7:45:00 AM	



9025550

<u>JC91885-9F</u>	<u>BZ-6M</u>	<u>FILTERGN_TPO4_</u>	<u>GW</u>	<u>7/18/2019</u>	<u>7:45:00 AM</u>
<u>JC91885-10XA</u>	<u>BZ-6D</u>	<u>TPO4_</u>	<u>GW</u>	<u>7/18/2019</u>	<u>7:45:00 AM</u>
<u>JC91885-10F</u>	<u>BZ-6D</u>	<u>FILTERGN_TPO4_</u>	<u>GW</u>	<u>7/18/2019</u>	<u>7:45:00 AM</u>
<u>JC91885-11XA</u>	<u>BZ-7S</u>	<u>TPO4_</u>	<u>GW</u>	<u>7/18/2019</u>	<u>9:30:00 AM</u>
<u>JC91885-11F</u>	<u>BZ-7S</u>	<u>FILTERGN_TPO4_</u>	<u>GW</u>	<u>7/18/2019</u>	<u>9:30:00 AM</u>
<u>JC91885-12XA</u>	<u>BZ-7M</u>	<u>TPO4_</u>	<u>GW</u>	<u>7/18/2019</u>	<u>9:30:00 AM</u>
<u>JC91885-12F</u>	<u>BZ-7M</u>	<u>FILTERGN_TPO4_</u>	<u>GW</u>	<u>7/18/2019</u>	<u>9:30:00 AM</u>
<u>JC91885-13XA</u>	<u>BZ-7D</u>	<u>TPO4_</u>	<u>GW</u>	<u>7/18/2019</u>	<u>9:30:00 AM</u>
<u>JC91885-13F</u>	<u>BZ-7D</u>	<u>FILTERGN_TPO4_</u>	<u>GW</u>	<u>7/18/2019</u>	<u>9:30:00 AM</u>

Comments:

Sample Management Receipt: \_\_\_\_\_ Date: \_\_\_\_\_

**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

Reviewed and Approved by:



Rafael A Quijada For Richard A Wheeler  
Director of Field Services



107 Angelica Street Reading, PA 19611 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 CT (PH-0210), MD (261), NY(12094)

## Misc. Forms

---

### Custody Documents and Other Forms

---

Includes the following where applicable:

- Chain of Custody





CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FED-EX Tracking #
SGS Order Control #
SGS Quote #
SGS Job # JC91885

Client / Reporting Information
Project Information
Requested Analysis
Matrix Codes
Company Name: USACE-Phila. District
Project Name: USACE-Reservoirs - Beltzville
Street Address: 100 Penn Sq. East
City: Phila. PA 19107
Project Contact: Joe Loeper
Phone #: 215-650-6545
Project Manager: Greg Wacik
Project Manager: Tammy Maclosky
Attention:
Number of preserved Bottles
Matrix: G SW
Collection Date/Time: 7/18/19 0930
Matrix: G SW
Collection Date/Time: 7/18/19 0930
Matrix: G SW
Collection Date/Time: 7/18/19 0930
Requested Analysis: TP04 (Sub to MS Reider), Alkalinity, Ammonia, BOD, TKN, TDS, TSS, TOC, XN030

Turn Around Time (Business Days)
Deliverable
Comments / Special Instructions
10 Business Days
5 Business Days
3 Business Days
2 Business Days
1 Business Day
Other
Commercial "A" (Level 1)
Commercial "B" (Level 2)
NJ Reduced (Level 3)
Full Tier I (Level 4)
Commercial "C"
NJ DKQP
NYASP Category A
NYASP Category B
MA MCP Criteria
CT RCP Criteria
State Forms
EDD Format
DOD-QSMS
TP04 samples to MS Reider
TOC/FCF samples to Eurofins lab
http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.
Received By: 1. P. Shah
Date / Time: 7/18/19 11:40
Relinquished By: 2. P. Shah
Date / Time: 7/18/19 16:54
Received By: 3.
Date / Time:
Relinquished By: 4.
Date / Time:
Received By: 5.
Date / Time:
Intact / Preserved where applicable / On Ice / Cooler Temp. °C

JC91885XA: Chain of Custody

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COPY

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08610
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehausa

FED-Ex Tracking #
SGS Quote #
Bottle Order Control #
SGS Job # JC91885

Client / Reporting Information
Project Information
Requested Analysis
Matrix Codes
Company Name: USACE - Phila. District
Project Name: USACE Reservoirs - Beltzville
Street Address: 100 Penn Sq. East
City: Phila. PA. 19107
Project Contact: Joe Loeper
Phone #: 215-650-6545
Sampler(s) Name(s): Greg Wozniak
Project Manager: Tammy McClosky
Table with columns: Sample #, Field ID / Point of Collection, Date, Time, Matrix, # of bottles, etc.
Turn Around Time (Business Days)
Deliverable
Comments / Special Instructions: Samples provided to Eurofins lab
Chain of Custody table with columns: Date / Time, Received By, Relinequished By, etc.

31
3

DELIVERED BY CUSTOMER

TC, E and FCF

- Matrix Codes
DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED - Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB - Field Blank
EB - Equipment Blank
RB - Rinse Blank
TB - Trip Blank

LAB USE ONLY

Approved By (SGS PM): / Date:
Commercial "A" (Level 1)
Commercial "B" (Level 2)
NJ Reduced (Level 3)
Full Tier I (Level 4)
Commercial "C"
NJ DKQP
NYASP Category A
NYASP Category B
MA MCP Criteria
CT RCP Criteria
State Forms
EDD Format
DDO-QSMS
Samples provided to Eurofins lab
http://www.sgs.com/en/terms-and-conditions

yes mms



## SGS Sample Receipt Summary

**Job Number:** JC91885

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 7/18/2019 4:54:00 PM

**Delivery Method:**

**Airbill #s:**

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.6); Cooler 2: (3.3); Cooler 3: (3.7); Cooler 4: (3.5); Cooler 5: (3.4);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.6); Cooler 2: (3.3); Cooler 3: (3.7); Cooler 4: (3.5); Cooler 5: (3.4);

**Cooler Security**

	<u>Y</u>	<u>or</u>	<u>N</u>		<u>Y</u>	<u>or</u>	<u>N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

**Cooler Temperature**

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	5		

**Quality Control Preservation**

	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Sample Integrity - Documentation**

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

**Sample Integrity - Condition**

	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:	Intact		

**Sample Integrity - Instructions**

	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Test Strip Lot #s:      pH 1-12: 229517      pH 12+: 208717      Other: (Specify) \_\_\_\_\_

Comments

SM089-03  
Rev. Date 12/7/17



The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

Beltzville

SGS Job Number: JC92566

Sampling Date: 08/01/19

Report to:

Army Corps of Engineers

joseph.m.loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: **28**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read "Mike Earp".

Mike Earp  
General Manager

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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Test results relate only to samples analyzed.

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## Sample Summary

USACE-Philadelphia District

Job No: JC92566

Philadelphia District, Reservoir Sampling  
Project No: Beltzville

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC92566-1	08/01/19	06:40 GW	08/01/19	AQ	Surface Water	BZ-1S
JC92566-2	08/01/19	11:50 GW	08/01/19	AQ	Surface Water	BZ-2S
JC92566-3	08/01/19	09:00 GW	08/01/19	AQ	Surface Water	BZ-3S
JC92566-4	08/01/19	09:00 GW	08/01/19	AQ	Surface Water	BZ-3M
JC92566-5	08/01/19	09:00 GW	08/01/19	AQ	Surface Water	BZ-3D
JC92566-6	08/01/19	11:30 GW	08/01/19	AQ	Surface Water	BZ-4S
JC92566-7	08/01/19	11:15 GW	08/01/19	AQ	Surface Water	BZ-5S
JC92566-8	08/01/19	08:00 GW	08/01/19	AQ	Surface Water	BZ-6S
JC92566-9	08/01/19	08:00 GW	08/01/19	AQ	Surface Water	BZ-6M
JC92566-10	08/01/19	08:00 GW	08/01/19	AQ	Surface Water	BZ-6D
JC92566-11	08/01/19	09:45 GW	08/01/19	AQ	Surface Water	BZ-7S
JC92566-12	08/01/19	09:45 GW	08/01/19	AQ	Surface Water	BZ-7M
JC92566-13	08/01/19	09:45 GW	08/01/19	AQ	Surface Water	BZ-7D

## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** USACE-Philadelphia District

**Job No** JC92566

**Site:** Philadelphia District, Reservoir Sampling

**Report Date** 8/16/2019 2:12:52 PM

On 08/01/2019, 13 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. at a maximum corrected temperature of 4.1 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. Job Number of JC92566 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Compounds qualified as out of range in the continuing calibration summary report are acceptable as per method requirements when there is a high bias but the sample result is non-detect.

### General Chemistry By Method EPA 351.2/LACHAT

**Matrix:** AQ

**Batch ID:** GP22969

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92566-1DUP, JC92566-1MS were used as the QC samples for Nitrogen, Total Kjeldahl.

### General Chemistry By Method EPA 353.2/LACHAT

**Matrix:** AQ

**Batch ID:** GP22894

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92500-5DUP, JC92566-1MS were used as the QC samples for Nitrogen, Nitrate + Nitrite.

## General Chemistry By Method EPA353.2/SM4500NO2B

**Matrix:** AQ **Batch ID:** R180258

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92566-1 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180259

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92566-2 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180260

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92566-3 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180261

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92566-4 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180262

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92566-5 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180263

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92566-6 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180264

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92566-7 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180265

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92566-8 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180266

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92566-9 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180267

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92566-10 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180268

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92566-11 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180269

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92566-12 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180270

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC92566-13 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

## General Chemistry By Method SM2320 B-11

**Matrix:** AQ

**Batch ID:** GN98432

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92500-5DUP were used as the QC samples for Alkalinity, Total as CaCO<sub>3</sub>.
- JC92566-1 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC92566-7 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC92566-10 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC92566-2 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC92566-3 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC92566-4 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.5.
- JC92566-13 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC92566-8 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC92566-11 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC92566-12 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC92566-5 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC92566-6 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC92566-9 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.

## General Chemistry By Method SM2540 C-11

**Matrix:** AQ

**Batch ID:** GN98332

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92566-1DUP were used as the QC samples for Solids, Total Dissolved.

**Matrix:** AQ

**Batch ID:** GN98398

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92566-11DUP were used as the QC samples for Solids, Total Dissolved.

## General Chemistry By Method SM2540 D-11

**Matrix:** AQ

**Batch ID:** GN98384

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92566-1DUP were used as the QC samples for Solids, Total Suspended.

## General Chemistry By Method SM4500NH3 H-11LACHAT

**Matrix:** AQ

**Batch ID:** GP22971

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92566-1DUP, JC92566-1MS, JC92566-1MSD were used as the QC samples for Nitrogen, Ammonia.

### General Chemistry By Method SM4500NO2 B-11

**Matrix:** AQ                      **Batch ID:** GN98209

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92566-1DUP, JC92566-1MS were used as the QC samples for Nitrogen, Nitrite.

### General Chemistry By Method SM5210 B-11

**Matrix:** AQ                      **Batch ID:** GP22778

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92535-4DUP were used as the QC samples for BOD, 5 Day.
- RPD(s) for Duplicate for BOD, 5 Day are outside control limits. High RPD due to low results.

### General Chemistry By Method SM5310 B-11

**Matrix:** AQ                      **Batch ID:** GP22886

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92566-1MS, JC92566-1MSD were used as the QC samples for Total Organic Carbon.
- GP22886-B1: average of 3 injections

**Matrix:** AQ                      **Batch ID:** GP22887

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC92496-11MS, JC92496-11MSD were used as the QC samples for Total Organic Carbon.

SGS North America Inc. certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS North America Inc. is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by SGS North America Inc indicated via signature on the report cover

## Summary of Hits

**Job Number:** JC92566  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 08/01/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

**JC92566-1      BZ-1S**

Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	25.0	10			mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>	0.84	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.85	0.10			mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved	61.0	10			mg/l	SM2540 C-11
Total Organic Carbon	1.7	1.0			mg/l	SM5310 B-11

**JC92566-2      BZ-2S**

Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	20.0	10			mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>	0.31	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.31	0.10			mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved	61.0	10			mg/l	SM2540 C-11
Total Organic Carbon	1.4	1.0			mg/l	SM5310 B-11

**JC92566-3      BZ-3S**

Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	23.0	10			mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>	0.26	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.26	0.10			mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved	53.0	10			mg/l	SM2540 C-11
Total Organic Carbon	1.9	1.0			mg/l	SM5310 B-11

**JC92566-4      BZ-3M**

Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	27.0	10			mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>	0.73	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.82	0.10			mg/l	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.091	0.010			mg/l	SM4500NO2 B-11
Solids, Total Dissolved	61.0	10			mg/l	SM2540 C-11
Total Organic Carbon	1.5	1.0			mg/l	SM5310 B-11

**JC92566-5      BZ-3D**

Nitrogen, Nitrate <sup>b</sup>	0.79	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.79	0.10			mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved	58.0	10			mg/l	SM2540 C-11
Total Organic Carbon	1.3	1.0			mg/l	SM5310 B-11

**JC92566-6      BZ-4S**

Nitrogen, Nitrate <sup>b</sup>	0.17	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.17	0.10			mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved	39.0	10			mg/l	SM2540 C-11



## Summary of Hits

**Job Number:** JC92566  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 08/01/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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Solids, Total Suspended		4.8	4.0		mg/l	SM2540 D-11
Total Organic Carbon		1.7	1.0		mg/l	SM5310 B-11

**JC92566-7      BZ-5S**

Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>		15.0	10		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>		1.1	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		1.1	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl		0.24	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		66.0	10		mg/l	SM2540 C-11
Total Organic Carbon		1.5	1.0		mg/l	SM5310 B-11

**JC92566-8      BZ-6S**

Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>		14.0	10		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>		0.28	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.28	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl		0.20	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		63.0	10		mg/l	SM2540 C-11
Total Organic Carbon		1.9	1.0		mg/l	SM5310 B-11

**JC92566-9      BZ-6M**

Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>		14.0	10		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>		0.85	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.85	0.10		mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved		58.0	10		mg/l	SM2540 C-11
Total Organic Carbon		1.4	1.0		mg/l	SM5310 B-11

**JC92566-10      BZ-6D**

Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>		15.0	10		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>		0.79	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.79	0.10		mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved		59.0	10		mg/l	SM2540 C-11
Total Organic Carbon		1.3	1.0		mg/l	SM5310 B-11

**JC92566-11      BZ-7S**

Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>		12.0	10		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>		0.22	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.22	0.10		mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved		53.0	10		mg/l	SM2540 C-11
Total Organic Carbon		1.9	1.0		mg/l	SM5310 B-11

## Summary of Hits

**Job Number:** JC92566  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 08/01/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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**JC92566-12      BZ-7M**

Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>	15.0	10			mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>	0.69	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.70	0.10			mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved	69.0	10			mg/l	SM2540 C-11
Total Organic Carbon	1.6	1.0			mg/l	SM5310 B-11

**JC92566-13      BZ-7D**

Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>	14.0	10			mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>	0.87	0.11			mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.87	0.10			mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved	70.0	10			mg/l	SM2540 C-11
Total Organic Carbon	1.5	1.0			mg/l	SM5310 B-11

- (a) Sample was titrated to a final pH of 4.5.
- (b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)
- (c) Sample was titrated to a final pH of 4.2.

Sample Results

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Report of Analysis

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## Report of Analysis

<b>Client Sample ID:</b> BZ-1S		<b>Date Sampled:</b> 08/01/19
<b>Lab Sample ID:</b> JC92566-1		<b>Date Received:</b> 08/01/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	25.0	10	mg/l	1	08/07/19 20:39	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	08/02/19 16:03	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/13/19 10:15	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.84	0.11	mg/l	1	08/08/19 16:37	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.85	0.10	mg/l	1	08/08/19 16:37	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/01/19 22:40	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	08/14/19 11:27	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	61.0	10	mg/l	1	08/06/19 15:37	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/07/19 10:38	RC	SM2540 D-11
Total Organic Carbon	1.7	1.0	mg/l	1	08/09/19 21:56	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

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RL = Reporting Limit

4.1  
4

## Report of Analysis

<b>Client Sample ID:</b> BZ-2S	<b>Date Sampled:</b> 08/01/19
<b>Lab Sample ID:</b> JC92566-2	<b>Date Received:</b> 08/01/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO3 <sup>a</sup>	20.0	10	mg/l	1	08/07/19 20:39	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	08/02/19 16:33	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/13/19 10:19	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.31	0.11	mg/l	1	08/08/19 16:39	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.31	0.10	mg/l	1	08/08/19 16:39	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/01/19 22:40	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	08/14/19 11:23	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	61.0	10	mg/l	1	08/06/19 15:37	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/07/19 10:38	RC	SM2540 D-11
Total Organic Carbon	1.4	1.0	mg/l	1	08/09/19 22:30	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

4.2  
4

## Report of Analysis

<b>Client Sample ID:</b> BZ-3S		<b>Date Sampled:</b> 08/01/19
<b>Lab Sample ID:</b> JC92566-3		<b>Date Received:</b> 08/01/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	23.0	10	mg/l	1	08/07/19 21:03	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	08/02/19 16:35	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/13/19 10:20	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.26	0.11	mg/l	1	08/08/19 16:40	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.26	0.10	mg/l	1	08/08/19 16:40	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/01/19 22:40	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	08/14/19 11:24	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	53.0	10	mg/l	1	08/06/19 15:37	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/07/19 10:38	RC	SM2540 D-11
Total Organic Carbon	1.9	1.0	mg/l	1	08/09/19 22:41	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

4.3  
4

## Report of Analysis

<b>Client Sample ID:</b> BZ-3M	<b>Date Sampled:</b> 08/01/19
<b>Lab Sample ID:</b> JC92566-4	<b>Date Received:</b> 08/01/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	27.0	10	mg/l	1	08/07/19 21:03	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	08/02/19 16:37	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/13/19 10:22	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.73	0.11	mg/l	1	08/08/19 16:41	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.82	0.10	mg/l	1	08/08/19 16:41	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	0.091	0.010	mg/l	1	08/01/19 22:40	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	08/16/19 10:21	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	61.0	10	mg/l	1	08/06/19 15:37	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/07/19 10:38	RC	SM2540 D-11
Total Organic Carbon	1.5	1.0	mg/l	1	08/09/19 22:52	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.5.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-3D	<b>Date Sampled:</b> 08/01/19
<b>Lab Sample ID:</b> JC92566-5	<b>Date Received:</b> 08/01/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/07/19 21:03	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	08/02/19 16:39	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/13/19 10:23	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.79	0.11	mg/l	1	08/08/19 16:42	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.79	0.10	mg/l	1	08/08/19 16:42	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/01/19 22:40	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	08/14/19 11:26	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	58.0	10	mg/l	1	08/06/19 15:37	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/07/19 10:38	RC	SM2540 D-11
Total Organic Carbon	1.3	1.0	mg/l	1	08/09/19 23:04	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit



## Report of Analysis

<b>Client Sample ID:</b> BZ-4S		<b>Date Sampled:</b> 08/01/19
<b>Lab Sample ID:</b> JC92566-6		<b>Date Received:</b> 08/01/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/07/19 21:03	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	08/02/19 16:41	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/13/19 10:25	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.17	0.11	mg/l	1	08/08/19 16:43	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.17	0.10	mg/l	1	08/08/19 16:43	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/01/19 22:40	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	08/14/19 11:28	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	39.0	10	mg/l	1	08/06/19 15:37	RC	SM2540 C-11
Solids, Total Suspended	4.8	4.0	mg/l	1	08/07/19 10:38	RC	SM2540 D-11
Total Organic Carbon	1.7	1.0	mg/l	1	08/09/19 23:15	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

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RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-5S		<b>Date Sampled:</b> 08/01/19
<b>Lab Sample ID:</b> JC92566-7		<b>Date Received:</b> 08/01/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	15.0	10	mg/l	1	08/07/19 21:03	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	08/02/19 16:44	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/13/19 10:26	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	1.1	0.11	mg/l	1	08/08/19 16:46	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	1.1	0.10	mg/l	1	08/08/19 16:46	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/01/19 22:53	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.24	0.20	mg/l	1	08/16/19 10:22	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	66.0	10	mg/l	1	08/06/19 15:37	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/07/19 10:38	RC	SM2540 D-11
Total Organic Carbon	1.5	1.0	mg/l	1	08/09/19 23:26	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

4.7  
4

## Report of Analysis

<b>Client Sample ID:</b> BZ-6S	<b>Date Sampled:</b> 08/01/19
<b>Lab Sample ID:</b> JC92566-8	<b>Date Received:</b> 08/01/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	14.0	10	mg/l	1	08/07/19 21:03	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	08/02/19 16:46	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/13/19 10:28	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.28	0.11	mg/l	1	08/08/19 16:48	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.28	0.10	mg/l	1	08/08/19 16:48	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/01/19 22:53	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.20	0.20	mg/l	1	08/14/19 11:29	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	63.0	10	mg/l	1	08/06/19 15:37	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/07/19 10:38	RC	SM2540 D-11
Total Organic Carbon	1.9	1.0	mg/l	1	08/09/19 23:37	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

4.8  
4

## Report of Analysis

<b>Client Sample ID:</b> BZ-6M	<b>Date Sampled:</b> 08/01/19
<b>Lab Sample ID:</b> JC92566-9	<b>Date Received:</b> 08/01/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	14.0	10	mg/l	1	08/07/19 21:03	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	08/02/19 17:32	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/13/19 10:29	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.85	0.11	mg/l	1	08/08/19 16:49	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.85	0.10	mg/l	1	08/08/19 16:49	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/01/19 22:53	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	08/14/19 11:32	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	58.0	10	mg/l	1	08/06/19 15:37	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/07/19 10:38	RC	SM2540 D-11
Total Organic Carbon	1.4	1.0	mg/l	1	08/10/19 00:11	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-6D	<b>Date Sampled:</b> 08/01/19
<b>Lab Sample ID:</b> JC92566-10	<b>Date Received:</b> 08/01/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	15.0	10	mg/l	1	08/07/19 21:03	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	08/02/19 17:35	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/13/19 10:30	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.79	0.11	mg/l	1	08/08/19 16:50	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.79	0.10	mg/l	1	08/08/19 16:50	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/01/19 22:53	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	08/14/19 11:33	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	59.0	10	mg/l	1	08/06/19 15:37	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/07/19 10:38	RC	SM2540 D-11
Total Organic Carbon	1.3	1.0	mg/l	1	08/10/19 00:29	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-7S		<b>Date Sampled:</b> 08/01/19
<b>Lab Sample ID:</b> JC92566-11		<b>Date Received:</b> 08/01/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

4.11  
4

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	12.0	10	mg/l	1	08/07/19 21:03	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	08/02/19 17:37	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/13/19 10:32	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.22	0.11	mg/l	1	08/08/19 16:51	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.22	0.10	mg/l	1	08/08/19 16:51	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/01/19 22:53	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	08/14/19 11:33	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	53.0	10	mg/l	1	08/07/19 14:27	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/07/19 10:38	RC	SM2540 D-11
Total Organic Carbon	1.9	1.0	mg/l	1	08/09/19 19:57	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-7M		<b>Date Sampled:</b> 08/01/19
<b>Lab Sample ID:</b> JC92566-12		<b>Date Received:</b> 08/01/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

4.12  
4

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	15.0	10	mg/l	1	08/07/19 21:03	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	08/02/19 17:39	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/13/19 10:36	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.69	0.11	mg/l	1	08/08/19 16:52	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.70	0.10	mg/l	1	08/08/19 16:52	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/01/19 22:53	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	08/16/19 10:23	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	69.0	10	mg/l	1	08/07/19 14:27	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/07/19 10:38	RC	SM2540 D-11
Total Organic Carbon	1.6	1.0	mg/l	1	08/09/19 20:08	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-7D		<b>Date Sampled:</b> 08/01/19
<b>Lab Sample ID:</b> JC92566-13		<b>Date Received:</b> 08/01/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

4.13  
4

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	14.0	10	mg/l	1	08/07/19 21:25	MS	SM2320 B-11
BOD, 5 Day	< 5.0	5.0	mg/l	1	08/02/19 17:41	RI	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	08/13/19 10:38	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.87	0.11	mg/l	1	08/08/19 16:53	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.87	0.10	mg/l	1	08/08/19 16:53	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/01/19 22:53	EB	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	08/14/19 11:35	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	70.0	10	mg/l	1	08/07/19 14:27	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/07/19 10:38	RC	SM2540 D-11
Total Organic Carbon	1.5	1.0	mg/l	1	08/09/19 20:19	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

---

RL = Reporting Limit



Misc. Forms

Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody





CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/usausa

FED-EX Tracking #
Bottle Order Contract #
SGS Quote #
SGS Job # JC92566

Client / Reporting Information, Project Information, Requested Analysis, Matrix Codes, Turn Around Time, Deliverable, Comments / Special Instructions, Sample Custody, and signature blocks.

5.1
5



## SGS Sample Receipt Summary

**Job Number:** JC92566

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 8/1/2019 5:29:00 PM

**Delivery Method:** \_\_\_\_\_

**Airbill #s:** \_\_\_\_\_

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.2); Cooler 2: (3.3); Cooler 3: (4.2); Cooler 4: (2.8);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.1); Cooler 2: (3.2); Cooler 3: (4.1); Cooler 4: (2.7);

**Cooler Security**

- |                           |                                     |                          |                       |                                     |                          |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Cooler Temperature**

- |                              |                                     |                          |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | IR Gun                              |                          |
| 3. Cooler media:             | Ice (Bag)                           |                          |
| 4. No. Coolers:              | 4                                   |                          |

**Quality Control Preservation**

- |                                 |                                     |                                     |                                     |
|---------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 2. Trip Blank listed on COC:    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 3. Samples preserved properly:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. VOCs headspace free:         | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

**Sample Integrity - Documentation**

- |  |                                     |                          |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete:        | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Sample Integrity - Condition**

- |                                  |                                     |                          |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample:          | Intact                              |                          |

**Sample Integrity - Instructions**

- |   |                                     |                                     |                                     |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear:           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 2. Bottles received for unspecified tests | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |                                     |
| 3. Sufficient volume recvd for analysis:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. Compositing instructions clear:        | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear:          | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

Test Strip Lot #s:      pH 1-12: 229517      pH 12+: 208717      Other: (Specify) \_\_\_\_\_

Comments

SM089-03  
Rev. Date 12/7/17

**JC92566: Chain of Custody**

**Page 3 of 3**

5.1  
5

The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

Beltzville

SGS Job Number: JC92566X

Sampling Date: 08/01/19

Report to:

USACE-Philadelphia District  
100 Penn Square East  
Philadelphia, PA 19107  
Joseph.M.Loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: **16**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read "Mike Earp".

Mike Earp  
General Manager

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

This report shall not be reproduced, except in its entirety, without the written approval of SGS.  
Test results relate only to samples analyzed.

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<b>3.1: Chain of Custody</b> .....	<b>14</b>



## Sample Summary

USACE-Philadelphia District

**Job No:** JC92566X

Philadelphia District, Reservoir Sampling  
 Project No: Beltzville

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC92566-1X	08/01/19	06:40 GW	08/01/19	AQ	Surface Water	BZ-1S
JC92566-2X	08/01/19	11:50 GW	08/01/19	AQ	Surface Water	BZ-2S
JC92566-3X	08/01/19	09:00 GW	08/01/19	AQ	Surface Water	BZ-3S
JC92566-6X	08/01/19	11:30 GW	08/01/19	AQ	Surface Water	BZ-4S
JC92566-7X	08/01/19	11:15 GW	08/01/19	AQ	Surface Water	BZ-5S
JC92566-8X	08/01/19	08:00 GW	08/01/19	AQ	Surface Water	BZ-6S
JC92566-11X	08/01/19	09:45 GW	08/01/19	AQ	Surface Water	BZ-7S

Subcontract Lab Data

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Report of Analysis

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Serialized: 08/16/2019 10:16am QC35

KRISTIN DEGRAW  
SGS NORTH AMERICA, INC.  
2235 ROUTE 130  
DAYTON, NJ 08810

Regarding:

SGS NORTH AMERICA, INC.  
2235 ROUTE 130  
DAYTON, NJ 08810

**PROJECT ID:**

**W09769 USACE**

**LABORATORY REPORT NUMBER:**

**L7147935**



Authorized by: Douglas J. Gump  
Client Services Manager

KRISTIN DEGRAW  
 SGS NORTH AMERICA, INC.  
 2235 ROUTE 130  
 DAYTON, NJ 08810

Regarding:  
 KRISTIN DEGRAW  
 SGS NORTH AMERICA, INC.  
 2235 ROUTE 130  
 DAYTON, NJ 08810

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** PI  
**PWSID No:**

Sample ID	Sample Description	Received Date/Time/Temp		Iced (Y/N):	Samp. Date/Time/Temp	Sampled by	
L7147935-1	BZ-1S	08/01/19 01:46pm	5.3 C	Y	08/01/19 06:40am NA C	Customer	
Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- BZ-1S</b>							
Total Coliform, MF	>2000 Q		cfu/100ml	SM 9222B	10	10	08/01/19 04:37PM LK
Fecal Coliform, MF	8 Q		cfu/100ml	SM 9222D	100	1	08/01/19 06:00PM LK

Sample ID	Sample Description	Received Date/Time/Temp		Iced (Y/N):	Samp. Date/Time/Temp	Sampled by	
L7147935-2	BZ-2S	08/01/19 01:46pm	5.3 C	Y	08/01/19 11:50am NA C	Customer	
Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- BZ-2S</b>							
Total Coliform, MF	>2000		cfu/100ml	SM 9222B	10	10	08/01/19 04:37PM LK
Fecal Coliform, MF	21 Q		cfu/100ml	SM 9222D	100	1	08/01/19 06:00PM LK

PIN: 28748

Serial Number: 6536943

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** PI  
**PWSID No:**

<b>Sample ID</b> L7147935-3	<b>Sample Description</b> BZ-3S	<b>Received Date/Time/Temp</b> 08/01/19 01:46pm 5.3 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 08/01/19 09:00am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- BZ-3S**

Total Coliform, MF	>2000	cfu/100ml	SM 9222B	10	10	08/01/19 04:37PM LK
Fecal Coliform, MF	<1 Q	cfu/100ml	SM 9222D	100	1	08/01/19 06:00PM LK

<b>Sample ID</b> L7147935-4	<b>Sample Description</b> BZ-4S	<b>Received Date/Time/Temp</b> 08/01/19 01:46pm 5.3 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 08/01/19 11:30am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- BZ-4S**

Total Coliform, MF	CONFLUENT GROWTH	cfu/100ml	SM 9222B	10	10	08/01/19 04:37PM LK
Fecal Coliform, MF	210 Q	cfu/100ml	SM 9222D	10	10	08/01/19 06:00PM LK

<b>Sample ID</b> L7147935-5	<b>Sample Description</b> BZ-5S	<b>Received Date/Time/Temp</b> 08/01/19 01:46pm 5.3 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 08/01/19 11:15am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- BZ-5S**

Total Coliform, MF	>2000	cfu/100ml	SM 9222B	10	10	08/01/19 04:37PM LK
Fecal Coliform, MF	300 Q	cfu/100ml	SM 9222D	10	10	08/01/19 06:00PM LK

<b>Sample ID</b> L7147935-6	<b>Sample Description</b> BZ-6S	<b>Received Date/Time/Temp</b> 08/01/19 01:46pm 5.3 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 08/01/19 08:00am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual Units	Method	DF	RL	Test Date, Time, Analyst
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PIN: 28748

Serial Number: 6536943

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** PI  
**PWSID No:**

<b>Sample ID</b>	<b>Sample Description</b>				<b>Samp. Date/Time/Temp</b>	<b>Sampled by</b>
L7147935-6	BZ-6S				08/01/19 08:00am NA C	Customer
	<b>Received Date/Time/Temp</b>	08/01/19 01:46pm 5.3 C	<b>Iced (Y/N):</b>	Y		

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- BZ-6S</b>							
Total Coliform, MF	>2000 Q		cfu/100ml	SM 9222B	10	10	08/01/19 04:37PM LK
Fecal Coliform, MF	4 Q		cfu/100ml	SM 9222D	100	1	08/01/19 06:00PM LK

<b>Sample ID</b>	<b>Sample Description</b>				<b>Samp. Date/Time/Temp</b>	<b>Sampled by</b>
L7147935-7	BZ-7S				08/01/19 09:45am NA C	Customer
	<b>Received Date/Time/Temp</b>	08/01/19 01:46pm 5.3 C	<b>Iced (Y/N):</b>	Y		

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- BZ-7S</b>							
Total Coliform, MF	>2000		cfu/100ml	SM 9222B	10	10	08/01/19 04:37PM LK
Fecal Coliform, MF	<1 Q		cfu/100ml	SM 9222D	100	1	08/01/19 06:00PM LK

**Sample Comments | Result Qualifiers:**

L7147935-1 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7147935-2 :

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7147935-3 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7147935-4 :

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

PIN: 28748

Serial Number: 6536943

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** PI  
**PWSID No:**

L7147935-5 :

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7147935-6 :

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

L7147935-7 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.



PIN: 28748

Serial Number: 6536943

**DEFINITIONS**

The following terms or abbreviations are used in this report:

*Eurofins QC, LLC (EQC)*

<	Less than: In conjunction with a numerical value, indicates a concentration less than RL / MDL
>	Greater than: In conjunction with a numerical value, indicates a concentration greater than RL / MDL
CFU	Colony Forming Unit
DF	Dilution Factor (For Microbiology, DF = volume of sample tested)
DRY	Result was reported on a dry weight basis
MCL	EPA recommended "Maximum Contaminant Level"
MDL	Method Detection Limit
MF	Membrane Filtration
MPN	Most Probable Number
ND	For odor test: No Odor Observed
ND	For all other tests: Analyte concentration Not Detected greater than the RL / MDL

NEG	Negative / Absent
NTU	Nephelometric Turbidity Units
POS	Positive / Present
PPB (µg/L)	Parts per billion: equivalent to 1 microgram per kilogram (µg/Kg) for solids or one microgram per liter (µg/L) for aqueous samples
PPM (mg/L)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples
PRES	Presumptive
QUAL	Qualifier (Q)
RL	Laboratory Reporting Limit or Limit of Quantitation (LOQ)
TNTC	Too Numerous To Count
TON	Threshold Odor Number

**Data Qualifiers**

J	Estimated value > MDL, but < RL
T	Temperature exceedance at receipt, refer to Sample Comments / Results Qualifiers section
E	Estimated CFU count (Microbiology)
Q	Qualifier defined in Sample Comment section on report

**Warranties, Terms, and Conditions**

- Unless otherwise indicated in the Parameter field, analyses for environmental microbiology, odor, and pharmaceutical microbiology are performed at the EQC Horsham Facility (702 Electronic Dr. Horsham, PA 19044).
- Analyses for Field Parameters are performed by EQC Field staff. Locations and certifications are identified on the Chain of Custody as follows:
  - "ERF" = field staff performs tests under NJ State certification # 02015.
  - "VL" = field staff performs tests under NJ State certification # 06005.
  - "WG" = field staff performs tests under NJ State certification # PA001.
- Test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.
- The report shall not be reproduced, except in full, without the written consent of the laboratory.
- All samples are collected as "grab" samples unless otherwise identified.
- Reported results relate only to the sample as tested. EQC is not responsible for sample integrity unless sampling has been performed by a member of our staff.
- EQC is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. EQC's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Client Services for further information.
- The following personnel or their deputies have approved the results of the tests performed by EQC: Nicki Smith (Environmental Chemistry), Amanda Berd (Pharmaceutical Microbiology), and Zachary Smith (Water Microbiology).

**EQC Accreditations**

Horsham Facility	<u>NELAP/State IDs-</u> PA: 46-05499	NJ: PA093	NY: 12080	MD: 357
East Rutherford Facility	<u>State ID-</u>	NJ: 02015		
Vineland Facility	<u>State ID-</u>	NJ: 06005		
Wind Gap Facility	<u>State ID-</u>	NJ: PA001		



## Anna Marie Smith

---

**From:** Wasserman, Beth (Dayton) <Beth.Wasserman@sgs.com>  
**Sent:** Thursday, August 01, 2019 4:44 PM  
**To:** Anna Marie Smith  
**Cc:** McCloskey, Tammy (Dayton); DeGraw, Kristin (Dayton)  
**Subject:** RE: [EXTERNAL] FW: USACE

EXTERNAL EMAIL\*

Hi Ann,

Per client, please analyze out of hold.

Thank you,  
**Beth Wasserman**  
**Environment, Health & Safety**  
Project Manager Assistant

**SGS North America Inc.**  
2235 US Hwy 130  
Dayton, NJ 08810

Phone: +1 732 329 0200 x 14563 NEW  
Direct: +1 732 355 4563 NEW  
E-mail: [Beth.Wasserman@sgs.com](mailto:Beth.Wasserman@sgs.com)



### CONTINUOUS SERVICE IMPROVEMENT!

Our goal is to continuously improve our service to you. Please share your ideas about how we can serve you better at [EHS.US.CustomerCare@sgs.com](mailto:EHS.US.CustomerCare@sgs.com). Your feedback is appreciated!

**From:** [AnnSmith@eurofinsUS.com](mailto:AnnSmith@eurofinsUS.com) <[AnnSmith@eurofinsUS.com](mailto:AnnSmith@eurofinsUS.com)>  
**Sent:** Thursday, August 01, 2019 2:33 PM  
**To:** DeGraw, Kristin (Dayton) <[Kristin.DeGraw@sgs.com](mailto:Kristin.DeGraw@sgs.com)>  
**Subject:** RE: [EXTERNAL] FW: USACE

Here you go! Appears it was only 1 sample at 640.

Best Regards,

**Ann Smith**  
Sales Manager  
Eurofins QC, LLC

Mobile: 1-215-444-5254  
Fax: 1-215-392-0626





## Misc. Forms

---

### Custody Documents and Other Forms

---

Includes the following where applicable:

- Chain of Custody





CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/usausa

FED-EX Tracking #
Buttle Order Contract #
SGS Quote #
SGS Job # JC92566

Client / Reporting Information, Project Information, Requested Analysis, Matrix Codes, and a table with columns for Sample #, Field ID, Date, Time, and various chemical analysis results (e.g., pH, TDS, TOC).

Turn Around Time (Business Days), Deliverable, and Comments / Special Instructions sections.

Signature and Date fields for various stages: Prepared by, Relinquished by, Received by, and Retained by.

Footer section with checkboxes for 'Intact', 'Not intact', 'Preserved where applicable', and 'Absent', along with a 'Therm. ID.' field.

31
3



## SGS Sample Receipt Summary

**Job Number:** JC92566

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 8/1/2019 5:29:00 PM

**Delivery Method:** \_\_\_\_\_

**Airbill #s:** \_\_\_\_\_

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.2); Cooler 2: (3.3); Cooler 3: (4.2); Cooler 4: (2.8);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.1); Cooler 2: (3.2); Cooler 3: (4.1); Cooler 4: (2.7);

<u>Cooler Security</u>	<u>Y or N</u>		<u>Y or N</u>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/> <input type="checkbox"/>

<u>Cooler Temperature</u>	<u>Y or N</u>	
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Cooler temp verification:	IR Gun	
3. Cooler media:	Ice (Bag)	
4. No. Coolers:	4	

<u>Quality Control Preservation</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. VOCs headspace free:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Sample Integrity - Documentation</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<u>Sample Integrity - Condition</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Condition of sample:	Intact		

<u>Sample Integrity - Instructions</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Bottles received for unspecified tests	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Compositing instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Test Strip Lot #s:	pH 1-12: 229517	pH 12+: 208717	Other: (Specify) _____
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Comments

SM089-03  
Rev. Date 12/7/17

**JC92566X: Chain of Custody**

Page 3 of 3

The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

Beltzville

SGS Job Number: JC92566XA

Sampling Date: 08/01/19

Report to:

USACE-Philadelphia District  
100 Penn Square East  
Philadelphia, PA 19107  
Joseph.M.Loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: **20**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read "Mike Earp".

Mike Earp  
General Manager

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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Test results relate only to samples analyzed.

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## Sample Summary

USACE-Philadelphia District

**Job No:** JC92566XA

Philadelphia District, Reservoir Sampling  
 Project No: Beltzville

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC92566-1F	08/01/19	06:40 GW	08/01/19	AQ	Surface H2O Filtered	BZ-1S
JC92566-1XA	08/01/19	06:40 GW	08/01/19	AQ	Surface Water	BZ-1S
JC92566-2F	08/01/19	11:50 GW	08/01/19	AQ	Surface H2O Filtered	BZ-2S
JC92566-2XA	08/01/19	11:50 GW	08/01/19	AQ	Surface Water	BZ-2S
JC92566-3F	08/01/19	09:00 GW	08/01/19	AQ	Surface H2O Filtered	BZ-3S
JC92566-3XA	08/01/19	09:00 GW	08/01/19	AQ	Surface Water	BZ-3S
JC92566-4F	08/01/19	09:00 GW	08/01/19	AQ	Surface H2O Filtered	BZ-3M
JC92566-4XA	08/01/19	09:00 GW	08/01/19	AQ	Surface Water	BZ-3M
JC92566-5F	08/01/19	09:00 GW	08/01/19	AQ	Surface H2O Filtered	BZ-3D
JC92566-5XA	08/01/19	09:00 GW	08/01/19	AQ	Surface Water	BZ-3D
JC92566-6F	08/01/19	11:30 GW	08/01/19	AQ	Surface H2O Filtered	BZ-4S
JC92566-6XA	08/01/19	11:30 GW	08/01/19	AQ	Surface Water	BZ-4S
JC92566-7F	08/01/19	11:15 GW	08/01/19	AQ	Surface H2O Filtered	BZ-5S



## Sample Summary

(continued)

USACE-Philadelphia District

**Job No:** JC92566XA

Philadelphia District, Reservoir Sampling  
 Project No: Beltzville

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC92566-7XA	08/01/19	11:15 GW	08/01/19	AQ	Surface Water	BZ-5S
JC92566-8F	08/01/19	08:00 GW	08/01/19	AQ	Surface H2O Filtered	BZ-6S
JC92566-8XA	08/01/19	08:00 GW	08/01/19	AQ	Surface Water	BZ-6S
JC92566-9F	08/01/19	08:00 GW	08/01/19	AQ	Surface H2O Filtered	BZ-6M
JC92566-9XA	08/01/19	08:00 GW	08/01/19	AQ	Surface Water	BZ-6M
JC92566-10F	08/01/19	08:00 GW	08/01/19	AQ	Surface H2O Filtered	BZ-6D
JC92566-10XA	08/01/19	08:00 GW	08/01/19	AQ	Surface Water	BZ-6D
JC92566-11F	08/01/19	09:45 GW	08/01/19	AQ	Surface H2O Filtered	BZ-7S
JC92566-11XA	08/01/19	09:45 GW	08/01/19	AQ	Surface Water	BZ-7S
JC92566-12F	08/01/19	09:45 GW	08/01/19	AQ	Surface H2O Filtered	BZ-7M
JC92566-12XA	08/01/19	09:45 GW	08/01/19	AQ	Surface Water	BZ-7M
JC92566-13F	08/01/19	09:45 GW	08/01/19	AQ	Surface H2O Filtered	BZ-7D
JC92566-13XA	08/01/19	09:45 GW	08/01/19	AQ	Surface Water	BZ-7D



Subcontract Lab Data

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Report of Analysis

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

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

# Certificate of Analysis

2

**Laboratory No.:** 9027531  
**Report:** 08/09/19  
**Lab Contact:** Amy L. Morriss

**Attention:** Tammy McCloskey  
**Reported To:** SGS North America  
2235 US Highway 130  
Dayton, NJ 08810

**Project:** Army Corp Reservoirs

**Lab ID:** 9027531-01    **Collected By:** Client    **Sampled:** 08/01/19 06:40    **Received:** 08/07/19 09:50  
**Sample Desc:** BZ-1S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	08/08/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/08/19	U	JCL

**Lab ID:** 9027531-02    **Collected By:** Client    **Sampled:** 08/01/19 11:50    **Received:** 08/07/19 09:50  
**Sample Desc:** BZ-2S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.009	mg/l	0.007	0.05	SM 4500-P E	08/08/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/08/19	U	JCL

**Lab ID:** 9027531-03    **Collected By:** Client    **Sampled:** 08/01/19 09:00    **Received:** 08/07/19 09:50  
**Sample Desc:** BZ-3S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	08/08/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/08/19	U	JCL



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

2

**Lab ID:** 9027531-04      **Collected By:** Client      **Sampled:** 08/01/19 09:00      **Received:** 08/07/19 09:50  
**Sample Desc:** BZ-3M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	08/08/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/08/19	U	JCL

**Lab ID:** 9027531-05      **Collected By:** Client      **Sampled:** 08/01/19 09:00      **Received:** 08/07/19 09:50  
**Sample Desc:** BZ-3D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.009	mg/l	0.007	0.05	SM 4500-P E	08/08/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/08/19	U	JCL

**Lab ID:** 9027531-06      **Collected By:** Client      **Sampled:** 08/01/19 11:30      **Received:** 08/07/19 09:50  
**Sample Desc:** BZ-4S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	08/08/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	08/08/19	J	JCL

**Lab ID:** 9027531-07      **Collected By:** Client      **Sampled:** 08/01/19 11:15      **Received:** 08/07/19 09:50  
**Sample Desc:** BZ-5S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.02	mg/l	0.007	0.05	SM 4500-P E	08/08/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.04	mg/l	0.01	0.05	SM 4500-P E	08/08/19	J	JCL



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

**2**

**Lab ID:** 9027531-08      **Collected By:** Client      **Sampled:** 08/01/19 08:00      **Received:** 08/07/19 09:50  
**Sample Desc:** BZ-6S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	08/08/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/08/19	U	JCL

**Lab ID:** 9027531-09      **Collected By:** Client      **Sampled:** 08/01/19 08:00      **Received:** 08/07/19 09:50  
**Sample Desc:** BZ-6M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	08/08/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/08/19	U	JCL

**Lab ID:** 9027531-10      **Collected By:** Client      **Sampled:** 08/01/19 08:00      **Received:** 08/07/19 09:50  
**Sample Desc:** BZ-6D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.009	mg/l	0.007	0.05	SM 4500-P E	08/08/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/08/19	U	JCL

**Lab ID:** 9027531-11      **Collected By:** Client      **Sampled:** 08/01/19 09:45      **Received:** 08/07/19 09:50  
**Sample Desc:** BZ-7S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	08/08/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/08/19	U	JCL



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Additional accreditations by CT (PH-0210), MD (261), NY(12094)

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

2

**Lab ID:** 9027531-12      **Collected By:** Client      **Sampled:** 08/01/19 09:45      **Received:** 08/07/19 09:50  
**Sample Desc:** BZ-7M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	08/08/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	08/08/19	J	JCL

**Lab ID:** 9027531-13      **Collected By:** Client      **Sampled:** 08/01/19 09:45      **Received:** 08/07/19 09:50  
**Sample Desc:** BZ-7D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	08/08/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/08/19	U	JCL



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**Quality Control**

**General Chemistry**

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
<b>Batch B9H0457</b>								
<b>MB (B9H0457-BLK1)</b>								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
Prepared & Analyzed: 08/08/2019								
<b>MB (B9H0457-BLK2)</b>								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
Prepared & Analyzed: 08/08/2019								
<b>MB (B9H0457-BLK3)</b>								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
Prepared & Analyzed: 08/08/2019								
<b>LFB (B9H0457-BS1)</b>								
Phosphorus as P, Total	1.00	0.05	mg/l	99.6	80-120			
Prepared & Analyzed: 08/08/2019								
<b>LFM (B9H0457-MS1)</b>								
Phosphorus as P, Total	1.01	0.05	mg/l	101	80-120			
Source: 9027531-02 Prepared & Analyzed: 08/08/2019								
<b>LFMD (B9H0457-MSD1)</b>								
Phosphorus as P, Total	1.00	0.05	mg/l	100	80-120	0.794	20	
Source: 9027531-02 Prepared & Analyzed: 08/08/2019								

**Dissolved General Chemistry**

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
<b>Batch B9H0458</b>								
<b>MB (B9H0458-BLK1)</b>								
Phosphorus as P, Dissolved	<0.05	0.05	mg/l					G-11, U
Prepared & Analyzed: 08/08/2019								
<b>LFB (B9H0458-BS1)</b>								
Phosphorus as P, Dissolved	1.00	0.05	mg/l	99.5	80-120			G-11
Prepared & Analyzed: 08/08/2019								
<b>LFM (B9H0458-MS1)</b>								
Phosphorus as P, Dissolved	1.00	0.05	mg/l	99.7	80-120			
Source: 9027531-09 Prepared & Analyzed: 08/08/2019								
<b>LFMD (B9H0458-MSD1)</b>								
Phosphorus as P, Dissolved	0.99	0.05	mg/l	99.1	80-120	0.604	20	
Source: 9027531-09 Prepared & Analyzed: 08/08/2019								



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Additional accreditations by CT (PH-0210), MD (261), NY(12094)

**Preparation Methods**

Specific Method	Preparation Method	Prepared Date	Prepared By
<b>9027531-01</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL
<b>9027531-02</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL
<b>9027531-03</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL
<b>9027531-04</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL
<b>9027531-05</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL
<b>9027531-06</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL
<b>9027531-07</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL
<b>9027531-08</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL
<b>9027531-09</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL
<b>9027531-10</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL
<b>9027531-11</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL
<b>9027531-12</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL
<b>9027531-13</b>			
SM 4500-P E	SM 4500-P B	08/08/2019	JCL



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M.J. Reider Associates, Inc.

**Notes and Definitions**

- G-11 The sample was filtered after it was received at the laboratory.
- J Estimated value
- U Analyte was not detected above the indicated value.



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**CHAIN OF CUSTODY**  
 SGS North America Inc. - Dayton  
 2235 Route 130, Dayton, NJ 08810  
 TEL: 732-328-0200 FAX: 732-328-3489/3480

9027531

Client / Reporting Information Company Name: Philadelphia District, Reservoir Sampling Street: _____ City: _____ State: _____ Zip: _____ Project # _____ Client Purchase Order # _____ Project Manager: _____ Phone: _____		Project Information Project Name: Philadelphia District, Reservoir Sampling Billing Information (if different from Report to): Street: _____ State: _____ Zip: _____ City: _____ State: _____ Zip: _____ Attention: _____		Matrix Codes DW - Drinking Water GW - Ground Water SW - Surface Water SED - Sediment SO <sub>2</sub> - Sludge DI - Oil LIQ - Other Liquid SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinsate Blank TB - Trip Blank						
Project Information Project Name: Philadelphia District, Reservoir Sampling Billing Information (if different from Report to): Street: _____ State: _____ Zip: _____ City: _____ State: _____ Zip: _____ Attention: _____		Project Information Project Name: Philadelphia District, Reservoir Sampling Billing Information (if different from Report to): Street: _____ State: _____ Zip: _____ City: _____ State: _____ Zip: _____ Attention: _____		Matrix Codes DW - Drinking Water GW - Ground Water SW - Surface Water SED - Sediment SO <sub>2</sub> - Sludge DI - Oil LIQ - Other Liquid SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinsate Blank TB - Trip Blank						
Sample ID / Point of Collection 13XA 13F	Field ID / Point of Collection BZ-7D BZ-7D	Date 8/1/19 8/1/19	Time 9:45:00 AM 9:45:00 AM	Matrix GW AQ	Number of preservative bottles ENCORE MECH DI WATER NONE H <sub>2</sub> SO <sub>4</sub> HNO <sub>3</sub> HCl	Number of bottles _____ _____ _____ _____ _____ _____	SAMPLED BY _____ _____ _____	COMMENTS / SPECIAL INSTRUCTIONS FILTERRN TPO4 X X	Requested Analysis _____ _____ _____	Matrix Codes DW - Drinking Water GW - Ground Water SW - Surface Water SED - Sediment SO <sub>2</sub> - Sludge DI - Oil LIQ - Other Liquid SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinsate Blank TB - Trip Blank

Approved By (SGS PM): / Date _____ / _____ _____ / _____ _____ / _____ _____ / _____ _____ / _____ _____ / _____	Data Deliverable Information <input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULLT1 (Level 3+4) <input type="checkbox"/> NJ Reduced <input type="checkbox"/> Commercial "C" <input type="checkbox"/> NYASP Category A <input type="checkbox"/> NYASP Category B <input type="checkbox"/> State Forms <input type="checkbox"/> EDO Format <input checked="" type="checkbox"/> Other REDT2 Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial "C" = Results + QC Summary + Partial Raw data
Turnaround Time (Business Days) <input type="checkbox"/> Standard 10 Business Days <input type="checkbox"/> 5 Business Days RUSH <input type="checkbox"/> 3 Business Days RUSH <input type="checkbox"/> 2 Business Days RUSH <input type="checkbox"/> 1 Business Day EMERGENCY <input checked="" type="checkbox"/> Other Due 8/15/2019 Approval needed for RUSH/Emergency TAT.	Sample Custody must be documented below each time samples change possession, including courier delivery. Received By: 1. <i>Michelle Jenkins</i> Date / Time: 8/1/19 17:00 Received By: 2. <i>Fedex</i> Date / Time: 8-7-19 9:50 Received By: 3. <i>Fedex</i> Date / Time: 8-7-19 9:50 Received By: 4. <i>J. E. Wever</i> Date / Time: 8-7-19 9:50 Received By: 5. _____ Date / Time: _____
Reinsured by: _____ Date / Time: _____	Reinsured by: _____ Date / Time: _____
Reinsured by: _____ Date / Time: _____	Reinsured by: _____ Date / Time: _____
Reinsured by: _____ Date / Time: _____	Reinsured by: _____ Date / Time: _____

Date / Time: 8-7-19 9:50 Received By: <i>J. E. Wever</i>	Date / Time: 8-7-19 9:50 Received By: <i>J. E. Wever</i>
Date / Time: _____ Received By: _____	Date / Time: _____ Received By: _____
Date / Time: _____ Received By: _____	Date / Time: _____ Received By: _____
Date / Time: _____ Received By: _____	Date / Time: _____ Received By: _____
Date / Time: _____ Received By: _____	Date / Time: _____ Received By: _____



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

2

**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.

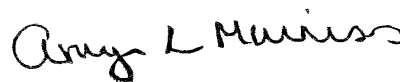
**Payment Terms**

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

Reviewed and Approved by:



Amy L Morriss  
Project Manager



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## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody





CHAIN OF CUSTODY

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www.sgs.com/usausa

FED-EX Tracking #
Bottle Order Contact #
SGS Quote #
SGS Job # JC92566

Client / Reporting Information, Project Information, Requested Analysis, Matrix Codes, Collection table with columns for Date, Time, Sample ID, Matrix, # of bottles, and various analysis parameters like HCl, HNO3, etc.

Turn Around Time (Business Days), Deliverable, Comments / Special Instructions. Includes checkboxes for business days and specific deliverable options like Commercial 'A' or NYASP Category A.

Signature and Date section for Chain of Custody. Includes fields for Prepared By, Relinquished By, Received By, Date / Time, and Custody Seal #.

Preservation and Storage section. Includes checkboxes for Intact, Not intact, Preserved where applicable, and Therm. ID. Also includes Cooler Temp. °C.

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3



## SGS Sample Receipt Summary

**Job Number:** JC92566

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 8/1/2019 5:29:00 PM

**Delivery Method:** \_\_\_\_\_

**Airbill #s:** \_\_\_\_\_

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.2); Cooler 2: (3.3); Cooler 3: (4.2); Cooler 4: (2.8);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.1); Cooler 2: (3.2); Cooler 3: (4.1); Cooler 4: (2.7);

**Cooler Security**

- |  |   |
|--|---|
| <b>Y or N</b>  | <b>Y or N</b>   |
| 1. Custody Seals Present: <input checked="" type="checkbox"/> <input type="checkbox"/> | 3. COC Present: <input checked="" type="checkbox"/> <input type="checkbox"/>        |
| 2. Custody Seals Intact: <input checked="" type="checkbox"/> <input type="checkbox"/>  | 4. Smpl Dates/Time OK: <input checked="" type="checkbox"/> <input type="checkbox"/> |

**Cooler Temperature**

- |   |           |
|---|-----------|
| <b>Y or N</b>   |           |
| 1. Temp criteria achieved: <input checked="" type="checkbox"/> <input type="checkbox"/> |           |
| 2. Cooler temp verification: _____  | IR Gun    |
| 3. Cooler media: _____  | Ice (Bag) |
| 4. No. Coolers: _____   | 4         |

**Quality Control Preservation**

- |   |            |
|---|------------|
| <b>Y or N</b>   | <b>N/A</b> |
| 1. Trip Blank present / cooler: <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> |            |
| 2. Trip Blank listed on COC: <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>    |            |
| 3. Samples preserved properly: <input checked="" type="checkbox"/> <input type="checkbox"/>                           |            |
| 4. VOCs headspace free: <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>         |            |

**Sample Integrity - Documentation**

- |  |  |
|--|--|
|  | <b>Y or N</b>  |
| 1. Sample labels present on bottles:   | <input checked="" type="checkbox"/> <input type="checkbox"/> |
| 2. Container labeling complete:        | <input checked="" type="checkbox"/> <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> <input type="checkbox"/> |

**Sample Integrity - Condition**

- |                                  |  |
|----------------------------------|--|
|                                  | <b>Y or N</b>  |
| 1. Sample recvd within HT:       | <input checked="" type="checkbox"/> <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> <input type="checkbox"/> |
| 3. Condition of sample:          | Intact _____   |

**Sample Integrity - Instructions**

- |  |   |
|--|---|
| <b>Y or N</b>                              | <b>N/A</b>  |
| 1. Analysis requested is clear:            | <input checked="" type="checkbox"/> <input type="checkbox"/>                          |
| 2. Bottles received for unspecified tests: | <input type="checkbox"/> <input checked="" type="checkbox"/>                          |
| 3. Sufficient volume recvd for analysis:   | <input checked="" type="checkbox"/> <input type="checkbox"/>                          |
| 4. Compositing instructions clear:         | <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear:           | <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> |

Test Strip Lot #s:      pH 1-12: 229517      pH 12+: 208717      Other: (Specify) \_\_\_\_\_

Comments

SM089-03  
Rev. Date 12/7/17

**JC92566XA: Chain of Custody**

Page 3 of 3



The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC93663

Sampling Date: 08/21/19

Report to:

Army Corps of Engineers

joseph.m.loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: **30**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read "Mike Earp".

Mike Earp  
General Manager

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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Test results relate only to samples analyzed.

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## Sample Summary

USACE-Philadelphia District

Job No: JC93663

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC93663-1	08/21/19	11:10 GW	08/21/19	AQ	Surface Water	BZ-1S
JC93663-2	08/21/19	14:40 GW	08/21/19	AQ	Surface Water	BZ-2S
JC93663-3	08/21/19	12:30 GW	08/21/19	AQ	Surface Water	BZ-3S
JC93663-4	08/21/19	12:30 GW	08/21/19	AQ	Surface Water	BZ-3M
JC93663-5	08/21/19	12:30 GW	08/21/19	AQ	Surface Water	BZ-3D
JC93663-6	08/21/19	14:30 GW	08/21/19	AQ	Surface Water	BZ-4S
JC93663-7	08/21/19	14:15 GW	08/21/19	AQ	Surface Water	BZ-5S
JC93663-8	08/21/19	11:45 GW	08/21/19	AQ	Surface Water	BZ-6S
JC93663-9	08/21/19	11:45 GW	08/21/19	AQ	Surface Water	BZ-6M
JC93663-10	08/21/19	11:45 GW	08/21/19	AQ	Surface Water	BZ-6D
JC93663-11	08/21/19	13:15 GW	08/21/19	AQ	Surface Water	BZ-7S
JC93663-12	08/21/19	13:15 GW	08/21/19	AQ	Surface Water	BZ-7M
JC93663-13	08/21/19	13:15 GW	08/21/19	AQ	Surface Water	BZ-7D

## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** USACE-Philadelphia District

**Job No** JC93663

**Site:** Philadelphia District, Reservoir Sampling

**Report Date** 9/4/2019 4:50:22 PM

On 08/21/2019, 13 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. at a maximum corrected temperature of 3.6 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. Job Number of JC93663 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Compounds qualified as out of range in the continuing calibration summary report are acceptable as per method requirements when there is a high bias but the sample result is non-detect.

### General Chemistry By Method EPA 351.2/LACHAT

**Matrix:** AQ

**Batch ID:** GP23359

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93689-4DUP, JC93689-4MS were used as the QC samples for Nitrogen, Total Kjeldahl.
- Matrix Spike Recovery(s) for Nitrogen, Total Kjeldahl are outside control limits. Spike recovery indicates possible matrix interference.

### General Chemistry By Method EPA 353.2/LACHAT

**Matrix:** AQ

**Batch ID:** GP23398

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93663-1DUP, JC93663-1MS were used as the QC samples for Nitrogen, Nitrate + Nitrite.

## General Chemistry By Method EPA353.2/SM4500NO2B

**Matrix:** AQ **Batch ID:** R180705

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93663-1 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180707

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93663-2 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180708

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93663-3 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180709

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93663-4 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180710

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93663-5 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180711

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93663-6 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180712

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93663-7 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180713

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93663-8 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180714

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93663-9 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180715

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93663-10 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180716

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93663-11 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180717

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93663-12 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R180718

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC93663-13 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

## General Chemistry By Method SM2320 B-11

**Matrix:** AQ

**Batch ID:** GN99376

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93690-1DUP were used as the QC samples for Alkalinity, Total as CaCO<sub>3</sub>.
- JC93663-8 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC93663-7 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC93663-12 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC93663-6 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC93663-10 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC93663-5 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC93663-3 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC93663-13 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC93663-2 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC93663-9 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC93663-1 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC93663-11 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC93663-4 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.

## General Chemistry By Method SM2540 C-11

**Matrix:** AQ

**Batch ID:** GN99188

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93663-1DUP were used as the QC samples for Solids, Total Dissolved.

## General Chemistry By Method SM2540 D-11

**Matrix:** AQ

**Batch ID:** GN99186

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93663-1DUP were used as the QC samples for Solids, Total Suspended.
- JC93663-1 for Solids, Total Suspended: Reported sample aliquot obtained from filtration of 550 mL of sample. Volume was reduced from 1 liter due to limited volume.

## General Chemistry By Method SM4500NH3 H-11LACHAT

**Matrix:** AQ

**Batch ID:** GP23396

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93690-1DUP, JC93690-1MSD were used as the QC samples for Nitrogen, Ammonia.
- Matrix Spike Recovery(s) for Nitrogen, Ammonia are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.

### General Chemistry By Method SM4500NO2 B-11

**Matrix:** AQ                      **Batch ID:** GN98981

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93663-1DUP, JC93663-1MS were used as the QC samples for Nitrogen, Nitrite.

### General Chemistry By Method SM5210 B-11

**Matrix:** AQ                      **Batch ID:** GP23197

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93663-8DUP were used as the QC samples for BOD, 5 Day.
- JC93663-7 for BOD, 5 Day: DO depletion was less than 2.
- JC93663-1 for BOD, 5 Day: DO depletion was less than 2.
- JC93663-2 for BOD, 5 Day: DO depletion was less than 2.
- JC93663-3 for BOD, 5 Day: DO depletion was less than 2.
- JC93663-10 for BOD, 5 Day: DO depletion was less than 2.
- JC93663-4 for BOD, 5 Day: DO depletion was less than 2.
- JC93663-11 for BOD, 5 Day: DO depletion was less than 2.

### General Chemistry By Method SM5310 B-11

**Matrix:** AQ                      **Batch ID:** GP23347

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93663-1MS, JC93663-1MSD were used as the QC samples for Total Organic Carbon.

**Matrix:** AQ                      **Batch ID:** GP23405

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC93663-11MS, JC93663-11MSD were used as the QC samples for Total Organic Carbon.

SGS North America Inc. certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS North America Inc. is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. Data release is authorized by SGS North America Inc indicated via signature on the report cover

## Summary of Hits

**Job Number:** JC93663  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 08/21/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
<b>JC93663-1</b>		<b>BZ-1S</b>				
BOD, 5 Day <sup>a</sup>		1.9	1.0		mg/l	SM5210 B-11
Nitrogen, Nitrate <sup>b</sup>		0.86	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.86	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl		1.5	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		54.0	10		mg/l	SM2540 C-11
Total Organic Carbon		1.6	1.0		mg/l	SM5310 B-11
<b>JC93663-2</b>		<b>BZ-2S</b>				
BOD, 5 Day <sup>a</sup>		1.2	1.0		mg/l	SM5210 B-11
Nitrogen, Nitrate <sup>b</sup>		0.34	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.34	0.10		mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved		56.0	10		mg/l	SM2540 C-11
Total Organic Carbon		1.5	1.0		mg/l	SM5310 B-11
<b>JC93663-3</b>		<b>BZ-3S</b>				
BOD, 5 Day <sup>a</sup>		1.2	1.0		mg/l	SM5210 B-11
Nitrogen, Nitrate <sup>b</sup>		0.32	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.32	0.10		mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved		52.0	10		mg/l	SM2540 C-11
Total Organic Carbon		2.0	1.0		mg/l	SM5310 B-11
<b>JC93663-4</b>		<b>BZ-3M</b>				
BOD, 5 Day <sup>a</sup>		1.5	1.0		mg/l	SM5210 B-11
Nitrogen, Nitrate <sup>b</sup>		0.84	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.84	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl		0.20	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		55.0	10		mg/l	SM2540 C-11
Total Organic Carbon		1.1	1.0		mg/l	SM5310 B-11
<b>JC93663-5</b>		<b>BZ-3D</b>				
Nitrogen, Nitrate <sup>b</sup>		0.85	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.85	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl		0.82	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		59.0	10		mg/l	SM2540 C-11
Solids, Total Suspended		19.5	4.0		mg/l	SM2540 D-11
Total Organic Carbon		1.5	1.0		mg/l	SM5310 B-11



## Summary of Hits

**Job Number:** JC93663  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 08/21/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
<b>JC93663-6</b>		<b>BZ-4S</b>				
	Nitrogen, Nitrate <sup>b</sup>	0.12	0.11		mg/l	EPA353.2/SM4500NO2B
	Nitrogen, Nitrate + Nitrite	0.12	0.10		mg/l	EPA 353.2/LACHAT
	Nitrogen, Total Kjeldahl	0.31	0.20		mg/l	EPA 351.2/LACHAT
	Solids, Total Dissolved	32.0	10		mg/l	SM2540 C-11
	Total Organic Carbon	1.5	1.0		mg/l	SM5310 B-11
<b>JC93663-7</b>		<b>BZ-5S</b>				
	BOD, 5 Day <sup>a</sup>	1.7	1.0		mg/l	SM5210 B-11
	Nitrogen, Nitrate <sup>b</sup>	1.2	0.11		mg/l	EPA353.2/SM4500NO2B
	Nitrogen, Nitrate + Nitrite	1.2	0.10		mg/l	EPA 353.2/LACHAT
	Solids, Total Dissolved	52.0	10		mg/l	SM2540 C-11
	Solids, Total Suspended	20.9	4.0		mg/l	SM2540 D-11
	Total Organic Carbon	2.1	1.0		mg/l	SM5310 B-11
<b>JC93663-8</b>		<b>BZ-6S</b>				
	Nitrogen, Nitrate <sup>b</sup>	0.26	0.11		mg/l	EPA353.2/SM4500NO2B
	Nitrogen, Nitrate + Nitrite	0.27	0.10		mg/l	EPA 353.2/LACHAT
	Solids, Total Dissolved	47.0	10		mg/l	SM2540 C-11
	Total Organic Carbon	1.9	1.0		mg/l	SM5310 B-11
<b>JC93663-9</b>		<b>BZ-6M</b>				
	Nitrogen, Nitrate <sup>b</sup>	0.89	0.11		mg/l	EPA353.2/SM4500NO2B
	Nitrogen, Nitrate + Nitrite	0.89	0.10		mg/l	EPA 353.2/LACHAT
	Nitrogen, Total Kjeldahl	0.30	0.20		mg/l	EPA 351.2/LACHAT
	Solids, Total Dissolved	47.0	10		mg/l	SM2540 C-11
	Total Organic Carbon	1.3	1.0		mg/l	SM5310 B-11
<b>JC93663-10</b>		<b>BZ-6D</b>				
	BOD, 5 Day <sup>a</sup>	1.4	1.0		mg/l	SM5210 B-11
	Nitrogen, Nitrate <sup>b</sup>	0.81	0.11		mg/l	EPA353.2/SM4500NO2B
	Nitrogen, Nitrate + Nitrite	0.81	0.10		mg/l	EPA 353.2/LACHAT
	Nitrogen, Total Kjeldahl	0.24	0.20		mg/l	EPA 351.2/LACHAT
	Solids, Total Dissolved	49.0	10		mg/l	SM2540 C-11
	Solids, Total Suspended	6.6	4.0		mg/l	SM2540 D-11
	Total Organic Carbon	1.0	1.0		mg/l	SM5310 B-11
<b>JC93663-11</b>		<b>BZ-7S</b>				
	BOD, 5 Day <sup>a</sup>	1.5	1.0		mg/l	SM5210 B-11

## Summary of Hits

**Job Number:** JC93663  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 08/21/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
		Nitrogen, Nitrate <sup>b</sup>	0.23	0.11	mg/l	EPA353.2/SM4500NO2B
		Nitrogen, Nitrate + Nitrite	0.23	0.10	mg/l	EPA 353.2/LACHAT
		Nitrogen, Total Kjeldahl	0.90	0.20	mg/l	EPA 351.2/LACHAT
		Solids, Total Dissolved	43.0	10	mg/l	SM2540 C-11
		Total Organic Carbon	1.9	1.0	mg/l	SM5310 B-11
<b>JC93663-12      BZ-7M</b>						
		Nitrogen, Nitrate <sup>b</sup>	0.84	0.11	mg/l	EPA353.2/SM4500NO2B
		Nitrogen, Nitrate + Nitrite	0.84	0.10	mg/l	EPA 353.2/LACHAT
		Nitrogen, Total Kjeldahl	0.39	0.20	mg/l	EPA 351.2/LACHAT
		Solids, Total Dissolved	47.0	10	mg/l	SM2540 C-11
		Total Organic Carbon	1.6	1.0	mg/l	SM5310 B-11
<b>JC93663-13      BZ-7D</b>						
		Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>	9.5	5.0	mg/l	SM2320 B-11
		Nitrogen, Nitrate <sup>b</sup>	0.76	0.11	mg/l	EPA353.2/SM4500NO2B
		Nitrogen, Nitrate + Nitrite	0.76	0.10	mg/l	EPA 353.2/LACHAT
		Nitrogen, Total Kjeldahl	0.30	0.20	mg/l	EPA 351.2/LACHAT
		Solids, Total Dissolved	47.0	10	mg/l	SM2540 C-11
		Total Organic Carbon	1.3	1.0	mg/l	SM5310 B-11

- (a) DO depletion was less than 2.
- (b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)
- (c) Sample was titrated to a final pH of 4.2.

Sample Results

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Report of Analysis

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## Report of Analysis

<b>Client Sample ID:</b> BZ-1S		<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93663-1		<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/30/19 12:23	UP	SM2320 B-11
BOD, 5 Day <sup>b</sup>	1.9	1.0	mg/l	1	08/22/19 21:00	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/03/19 14:39	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>c</sup>	0.86	0.11	mg/l	1	09/03/19 10:56	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.86	0.10	mg/l	1	09/03/19 10:56	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/21/19 23:29	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	1.5	0.20	mg/l	1	08/30/19 13:57	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	54.0	10	mg/l	1	08/28/19 08:48	RC	SM2540 C-11
Solids, Total Suspended <sup>d</sup>	< 4.0	4.0	mg/l	1	08/27/19 09:35	RC	SM2540 D-11
Total Organic Carbon	1.6	1.0	mg/l	1	08/30/19 00:59	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) DO depletion was less than 2.

(c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

(d) Reported sample aliquot obtained from filtration of 550 mL of sample. Volume was reduced from 1 liter due to limited volume.

RL = Reporting Limit

4.1  
4

## Report of Analysis

<b>Client Sample ID:</b> BZ-2S	<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93663-2	<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/30/19 12:23	UP	SM2320 B-11
BOD, 5 Day <sup>b</sup>	1.2	1.0	mg/l	1	08/22/19 21:03	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/03/19 14:40	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>c</sup>	0.34	0.11	mg/l	1	09/03/19 10:57	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.34	0.10	mg/l	1	09/03/19 10:57	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/21/19 23:29	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	08/30/19 13:57	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	56.0	10	mg/l	1	08/28/19 08:48	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/27/19 09:35	RC	SM2540 D-11
Total Organic Carbon	1.5	1.0	mg/l	1	08/30/19 01:33	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) DO depletion was less than 2.

(c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-3S	<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93663-3	<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/30/19 12:23	UP	SM2320 B-11
BOD, 5 Day <sup>b</sup>	1.2	1.0	mg/l	1	08/22/19 21:05	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/03/19 14:42	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>c</sup>	0.32	0.11	mg/l	1	09/03/19 10:58	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.32	0.10	mg/l	1	09/03/19 10:58	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/21/19 23:29	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	08/30/19 13:58	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	52.0	10	mg/l	1	08/28/19 08:48	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/27/19 09:35	RC	SM2540 D-11
Total Organic Carbon	2.0	1.0	mg/l	1	08/30/19 01:44	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) DO depletion was less than 2.

(c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-3M		<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93663-4		<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/30/19 12:23	UP	SM2320 B-11
BOD, 5 Day <sup>b</sup>	1.5	1.0	mg/l	1	08/22/19 21:07	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/03/19 14:43	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>c</sup>	0.84	0.11	mg/l	1	09/03/19 10:59	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.84	0.10	mg/l	1	09/03/19 10:59	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/21/19 23:29	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.20	0.20	mg/l	1	09/04/19 14:28	BM	EPA 351.2/LACHAT
Solids, Total Dissolved	55.0	10	mg/l	1	08/28/19 08:48	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/27/19 09:35	RC	SM2540 D-11
Total Organic Carbon	1.1	1.0	mg/l	1	08/30/19 01:55	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) DO depletion was less than 2.

(c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

4.4  
4

## Report of Analysis

<b>Client Sample ID:</b> BZ-3D		<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93663-5		<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/30/19 12:23	UP	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	08/22/19 21:10	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/03/19 14:45	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.85	0.11	mg/l	1	09/03/19 11:00	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.85	0.10	mg/l	1	09/03/19 11:00	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/21/19 23:29	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.82	0.20	mg/l	1	09/04/19 14:29	BM	EPA 351.2/LACHAT
Solids, Total Dissolved	59.0	10	mg/l	1	08/28/19 08:48	RC	SM2540 C-11
Solids, Total Suspended	19.5	4.0	mg/l	1	08/27/19 09:35	RC	SM2540 D-11
Total Organic Carbon	1.5	1.0	mg/l	1	08/30/19 02:28	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

4.5  
4



## Report of Analysis

<b>Client Sample ID:</b> BZ-4S	<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93663-6	<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/30/19 14:30	UP	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	08/22/19 21:13	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/03/19 14:46	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.12	0.11	mg/l	1	09/03/19 11:04	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.12	0.10	mg/l	1	09/03/19 11:04	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/21/19 23:29	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.31	0.20	mg/l	1	09/04/19 14:30	BM	EPA 351.2/LACHAT
Solids, Total Dissolved	32.0	10	mg/l	1	08/28/19 08:48	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/27/19 09:35	RC	SM2540 D-11
Total Organic Carbon	1.5	1.0	mg/l	1	08/30/19 02:40	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-5S	<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93663-7	<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/30/19 14:30	UP	SM2320 B-11
BOD, 5 Day <sup>b</sup>	1.7	1.0	mg/l	1	08/22/19 21:15	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/03/19 14:47	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>c</sup>	1.2	0.11	mg/l	1	09/03/19 11:05	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	1.2	0.10	mg/l	1	09/03/19 11:05	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/21/19 23:47	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	08/30/19 14:03	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	52.0	10	mg/l	1	08/28/19 08:48	RC	SM2540 C-11
Solids, Total Suspended	20.9	4.0	mg/l	1	08/27/19 09:35	RC	SM2540 D-11
Total Organic Carbon	2.1	1.0	mg/l	1	08/30/19 02:51	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) DO depletion was less than 2.

(c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-6S	<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93663-8	<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 5.0	5.0	mg/l	1	08/30/19 14:30	UP	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	08/22/19 22:02	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/03/19 14:52	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.26	0.11	mg/l	1	09/03/19 11:06	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.27	0.10	mg/l	1	09/03/19 11:06	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/21/19 23:47	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	08/30/19 14:04	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	47.0	10	mg/l	1	08/28/19 08:48	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/27/19 09:35	RC	SM2540 D-11
Total Organic Carbon	1.9	1.0	mg/l	1	08/30/19 03:05	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-6M	<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93663-9	<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/30/19 14:30	UP	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	08/22/19 22:04	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/03/19 14:53	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.89	0.11	mg/l	1	09/03/19 11:07	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.89	0.10	mg/l	1	09/03/19 11:07	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/21/19 23:47	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.30	0.20	mg/l	1	08/30/19 14:05	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	47.0	10	mg/l	1	08/28/19 08:48	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/27/19 09:35	RC	SM2540 D-11
Total Organic Carbon	1.3	1.0	mg/l	1	08/30/19 03:13	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-6D		<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93663-10		<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

4.10  
4

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 5.0	5.0	mg/l	1	08/30/19 14:30	UP	SM2320 B-11
BOD, 5 Day <sup>b</sup>	1.4	1.0	mg/l	1	08/22/19 22:06	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/03/19 14:55	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>c</sup>	0.81	0.11	mg/l	1	09/03/19 11:08	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.81	0.10	mg/l	1	09/03/19 11:08	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/21/19 23:47	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.24	0.20	mg/l	1	08/30/19 14:06	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	49.0	10	mg/l	1	08/28/19 08:48	RC	SM2540 C-11
Solids, Total Suspended	6.6	4.0	mg/l	1	08/27/19 09:35	RC	SM2540 D-11
Total Organic Carbon	1.0	1.0	mg/l	1	08/30/19 03:24	CD	SM5310 B-11

- (a) Sample was titrated to a final pH of 4.2.
- (b) DO depletion was less than 2.
- (c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-7S		<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93663-11		<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

4.11  
4

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 5.0	5.0	mg/l	1	08/30/19 14:30	UP	SM2320 B-11
BOD, 5 Day <sup>b</sup>	1.5	1.0	mg/l	1	08/22/19 22:08	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/03/19 14:56	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>c</sup>	0.23	0.11	mg/l	1	09/03/19 11:09	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.23	0.10	mg/l	1	09/03/19 11:09	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/21/19 23:47	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.90	0.20	mg/l	1	08/30/19 14:07	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	43.0	10	mg/l	1	08/28/19 08:48	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/27/19 09:35	RC	SM2540 D-11
Total Organic Carbon	1.9	1.0	mg/l	1	09/03/19 15:18	CD	SM5310 B-11

- (a) Sample was titrated to a final pH of 4.2.
- (b) DO depletion was less than 2.
- (c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

---

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-7M		<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93663-12		<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

4.12  
4

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 10	10	mg/l	1	08/30/19 14:30	UP	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	08/22/19 22:10	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/03/19 14:58	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.84	0.11	mg/l	1	09/03/19 11:10	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.84	0.10	mg/l	1	09/03/19 11:10	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/21/19 23:47	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.39	0.20	mg/l	1	08/30/19 14:07	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	47.0	10	mg/l	1	08/28/19 08:48	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/27/19 09:35	RC	SM2540 D-11
Total Organic Carbon	1.6	1.0	mg/l	1	09/03/19 16:10	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

---

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-7D	<b>Date Sampled:</b> 08/21/19
<b>Lab Sample ID:</b> JC93663-13	<b>Date Received:</b> 08/21/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	9.5	5.0	mg/l	1	08/30/19 14:30	UP	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	08/22/19 22:12	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/03/19 14:59	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.76	0.11	mg/l	1	09/03/19 11:12	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.76	0.10	mg/l	1	09/03/19 11:12	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	08/21/19 23:47	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.30	0.20	mg/l	1	08/30/19 14:08	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	47.0	10	mg/l	1	08/28/19 08:48	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	08/27/19 09:35	RC	SM2540 D-11
Total Organic Carbon	1.3	1.0	mg/l	1	09/03/19 16:52	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit



Misc. Forms

Custody Documents and Other Forms

---

Includes the following where applicable:

- Chain of Custody



SW

### CHAIN OF CUSTODY

E

SGS North America Inc. - Dayton  
 2235 Route 130, Dayton, NJ 08610  
 TEL: 732-329-0200 FAX: 732-329-3499/3480  
 www.sgs.com/ehsusa

FED-EX Tracking #  
 SGS Quote #  
 Order/Contract # **081219-6**  
 SGS Job # **JC93663**

Client / Reporting Information		Project Information										Requested Analysis										Matrix Codes
Company Name: <b>USACE - Phila. District</b>		Project Name: <b>USACE Reservoirs - Beltzville</b>										<b>TPO4 (Sub to M.S. Reider)</b> <b>Alkalinity, Ammonia</b> <b>BOB, TKN, TDS, FSS</b> <b>TOC, XAN30</b>										DW - Drinking Water GW - Ground Water WW - Wastewater SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solids WP - Wipes FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank
Street Address: <b>100 Penn Sq. East</b>		Street: <b>Lehightown PA</b>																				
City, State, Zip: <b>Phila. PA 19107</b>		Billing Information (if different from Report to): City, State, Zip: <b>Lehightown PA</b>																				
Project Contact: <b>Joe Loeper</b>		Client Purchase Order #																				
Phone #: <b>215-656-6545</b>		City, State, Zip																				
Sanitizer(s) Name(s): <b>Greg Wagik</b>		Project Manager: <b>Tummy McClosky</b>																				
Phone #: <b>610-597-9780</b>		Attention:																				
SGS Sample #	Field ID / Point of Collection	MEHQ/VI Viol #	Date	Time	Sampled By	Gen-ID (SGS) (C)	Matrix	# of bottles	TC	MPD	MPD	USP	TURB	IN VIAL	REDOX	ENCORE	LAB USE ONLY					
1F	BZ-1S		8/21/09	11:10	G	SW	9	X	X	X	X	X	X	X	X	X	X	M5				
2F	BZ-2S		8/21/09	12:40	G	SW	9	X	X	X	X	X	X	X	X	X	X	19J3				
3F	BZ-3S		8/21/09	12:30	G	SW	9	X	X	X	X	X	X	X	X	X	X	63073				
4F	BZ-3M		8/21/09	12:30	G	SW	9	X	X	X	X	X	X	X	X	X	X					
5F	BZ-3D		8/21/09	12:30	G	SW	9	X	X	X	X	X	X	X	X	X	X	SUB				
6F	BZ-4S		8/21/09	2:30	G	SW	9	X	X	X	X	X	X	X	X	X	X					
7F	BZ-5S		8/21/09	2:15	G	SW	9	X	X	X	X	X	X	X	X	X	X					
8F	BZ-6S		8/21/09	11:45	G	SW	9	X	X	X	X	X	X	X	X	X	X					
9F	BZ-6M		8/21/09	11:45	G	SW	9	X	X	X	X	X	X	X	X	X	X					
10F	BZ-6D		8/21/09	11:45	G	SW	9	X	X	X	X	X	X	X	X	X	X					

5.1  
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CHAIN OF CUSTODY

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2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FED-EX Tracking #
Batch Order Control #
SGS Quote #
SGS Job # JC93663

Client / Reporting Information, Project Information, Requested Analysis, Matrix Codes, and a table with columns for Sample #, Field ID, Date, Time, Matrix, and various test results.

Turn Around Time (Business Days), Deliverable, and Comments / Special Instructions sections.

Signature and Date section for chain of custody tracking, including fields for Relinquished by, Received by, Date / Time, and Custody Seal #.

5.1
5





CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

Client / Reporting Information, Project Information, Requested Analysis, Matrix Codes, Turn Around Time (Business Days), Deliverable, Comments / Special Instructions, Chain of Custody table, and signature blocks.

5.1 5



## SGS Sample Receipt Summary

**Job Number:** JC93663

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 8/21/2019 6:38:00 PM

**Delivery Method:** \_\_\_\_\_

**Airbill #s:** \_\_\_\_\_

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.7); Cooler 2: (3.6); Cooler 3: (2.9); Cooler 4: (3.2); Cooler 5: (3.5); Cooler 6: (3.5); Cooler 7: (3.3); Cooler 8: (3.6);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.6); Cooler 2: (3.5); Cooler 3: (2.8); Cooler 4: (3.1); Cooler 5: (3.4); Cooler 6: (3.4); Cooler 7: (3.2); Cooler 8: (3.5);

**Cooler Security**

Y or N

Y or N

- |                           |                                     |                          |                       |                                     |                          |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. SmpI Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Cooler Temperature**

Y or N

- |                              |                                     |                          |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | IR Gun                              |                          |
| 3. Cooler media:             | Ice (Bag)                           |                          |
| 4. No. Coolers:              | 8                                   |                          |

**Quality Control Preservation**

Y or N

N/A

- |                                 |                                     |                                     |                                     |
|---------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 2. Trip Blank listed on COC:    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 3. Samples preserved properly:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. VOCs headspace free:         | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

**Sample Integrity - Documentation**

Y or N

- |  |                                     |                          |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete:        | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Sample Integrity - Condition**

Y or N

- |                                  |                                     |                          |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample:          | Intact                              |                          |

**Sample Integrity - Instructions**

Y or N

N/A

- |   |                                     |                                     |                                     |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear:           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 2. Bottles received for unspecified tests | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |                                     |
| 3. Sufficient volume recvd for analysis:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. Compositing instructions clear:        | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear:          | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

Test Strip Lot #s:	pH 1-12: <u>229517</u>	pH 12+: <u>208717</u>	Other: (Specify) _____
--------------------	------------------------	-----------------------	------------------------

Comments

SM089-03  
Rev. Date 12/7/17

**JC93663: Chain of Custody**

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**JC93663: Chain of Custody**  
**Page 5 of 5**

The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC93663X

Sampling Date: 08/21/19

Report to:

USACE-Philadelphia District  
100 Penn Square East  
Philadelphia, PA 19107  
Joseph.M.Loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: **17**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read "Mike Earp".

Mike Earp  
General Manager

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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Test results relate only to samples analyzed.

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## Sample Summary

USACE-Philadelphia District

**Job No:** JC93663X

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC93663-1X	08/21/19	11:10 GW	08/21/19	AQ	Surface Water	BZ-1S
JC93663-2X	08/21/19	14:40 GW	08/21/19	AQ	Surface Water	BZ-2S
JC93663-3X	08/21/19	12:30 GW	08/21/19	AQ	Surface Water	BZ-3S
JC93663-6X	08/21/19	14:30 GW	08/21/19	AQ	Surface Water	BZ-4S
JC93663-7X	08/21/19	14:15 GW	08/21/19	AQ	Surface Water	BZ-5S
JC93663-8X	08/21/19	11:45 GW	08/21/19	AQ	Surface Water	BZ-6S
JC93663-11X	08/21/19	13:15 GW	08/21/19	AQ	Surface Water	BZ-7S

Subcontract Lab Data

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Report of Analysis

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Serialized: 09/05/2019 06:09pm QC35

KRISTIN DEGRAW  
SGS NORTH AMERICA, INC.  
2235 ROUTE 130  
DAYTON, NJ 08810

Regarding:

SGS NORTH AMERICA, INC.  
2235 ROUTE 130  
DAYTON, NJ 08810

**PROJECT ID:**

**W09769 USACE**

**LABORATORY REPORT NUMBER:**

**L7156478**



Authorized by: Douglas J. Gump  
Client Services Manager

KRISTIN DEGRAW  
 SGS NORTH AMERICA, INC.  
 2235 ROUTE 130  
 DAYTON, NJ 08810

Regarding:  
 KRISTIN DEGRAW  
 SGS NORTH AMERICA, INC.  
 2235 ROUTE 130  
 DAYTON, NJ 08810

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** 1990908 PI  
**PWSID No:**

Sample ID	Sample Description	Samp. Date/Time/Temp	Sampled by
L7156478-1	BZ-1S	08/21/19 11:10am NA C	Customer
	<b>Received Date/Time/Temp</b> 08/21/19 05:02pm 5.4 C	<b>Iced (Y/N):</b> Y	

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- BZ-1S</b>							
Total Coliform, MF	1410 E, Q		cfu/100ml	SM 9222B	10	10	08/21/19 07:08PM JG2
Fecal Coliform, MF	47		cfu/100ml	SM 9222D	100	1	08/21/19 06:45PM JG2

Sample ID	Sample Description	Samp. Date/Time/Temp	Sampled by
L7156478-2	BZ-2S	08/21/19 02:40pm NA C	Customer
	<b>Received Date/Time/Temp</b> 08/21/19 05:02pm 5.4 C	<b>Iced (Y/N):</b> Y	

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- BZ-2S</b>							
Total Coliform, MF	>2000 Q		cfu/100ml	SM 9222B	10	10	08/21/19 07:08PM JG2
Fecal Coliform, MF	21		cfu/100ml	SM 9222D	100	1	08/21/19 06:45PM JG2

PIN: 28748

Serial Number: 6542364

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** 1990908 PI  
**PWSID No:**

<b>Sample ID</b> L7156478-3	<b>Sample Description</b> BZ-3S	<b>Received Date/Time/Temp</b> 08/21/19 05:02pm 5.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 08/21/19 12:30pm NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
-----------	--------	------	-------	--------	----	----	--------------------------

**ENVIRONMENTAL MICROBIOLOGY -- BZ-3S**

Total Coliform, MF	22 Q		cfu/100ml	SM 9222B	100	1	08/21/19 07:08PM JG2
Fecal Coliform, MF	<1		cfu/100ml	SM 9222D	100	1	08/21/19 06:45PM JG2

<b>Sample ID</b> L7156478-4	<b>Sample Description</b> BZ-4S	<b>Received Date/Time/Temp</b> 08/21/19 05:02pm 5.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 08/21/19 02:30pm NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- BZ-4S**

Total Coliform, MF	>2000 Q		cfu/100ml	SM 9222B	10	10	08/21/19 07:08PM JG2
Fecal Coliform, MF	42		cfu/100ml	SM 9222D	100	1	08/21/19 06:45PM JG2

<b>Sample ID</b> L7156478-5	<b>Sample Description</b> BZ-5S	<b>Received Date/Time/Temp</b> 08/21/19 05:02pm 5.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 08/21/19 02:15pm NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- BZ-5S**

Total Coliform, MF	>2000 Q		cfu/100ml	SM 9222B	10	10	08/21/19 07:08PM JG2
Fecal Coliform, MF	370		cfu/100ml	SM 9222D	10	10	08/21/19 06:45PM JG2

<b>Sample ID</b> L7156478-6	<b>Sample Description</b> BZ-6S	<b>Received Date/Time/Temp</b> 08/21/19 05:02pm 5.4 C	<b>Iced (Y/N):</b> Y	<b>Samp. Date/Time/Temp</b> 08/21/19 11:45am NA C	<b>Sampled by</b> Customer
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Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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PIN: 28748

Serial Number: 6542364

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** 1990908 PI  
**PWSID No:**

<b>Sample ID</b>	<b>Sample Description</b>		<b>Samp. Date/Time/Temp</b>	<b>Sampled by</b>
L7156478-6	BZ-6S		08/21/19 11:45am NA C	Customer
	<b>Received Date/Time/Temp</b>	08/21/19 05:02pm 5.4 C	<b>Iced (Y/N):</b>	Y

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
-----------	--------	------	-------	--------	----	----	--------------------------

**ENVIRONMENTAL MICROBIOLOGY -- BZ-6S**

Total Coliform, MF	580 Q		cfu/100ml	SM 9222B	10	10	08/21/19 07:08PM JG2
Fecal Coliform, MF	<1		cfu/100ml	SM 9222D	100	1	08/21/19 06:45PM JG2

<b>Sample ID</b>	<b>Sample Description</b>		<b>Samp. Date/Time/Temp</b>	<b>Sampled by</b>
L7156478-7	BZ-7S		08/21/19 01:15pm NA C	Customer
	<b>Received Date/Time/Temp</b>	08/21/19 05:02pm 5.4 C	<b>Iced (Y/N):</b>	Y

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- BZ-7S**

Total Coliform, MF	610 Q		cfu/100ml	SM 9222B	10	10	08/21/19 07:08PM JG2
Fecal Coliform, MF	<1		cfu/100ml	SM 9222D	100	1	08/21/19 06:45PM JG2

**Sample Comments | Result Qualifiers:**

L7156478-1 :

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

L7156478-2 :

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7156478-3 :

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7156478-4 :

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7156478-5 :

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available,

PIN: 28748

Serial Number: 6542364

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** 1990908 PI  
**PWSID No:**

the reported result may not be acceptable for regulatory purposes.

L7156478-6 :

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7156478-7 :

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.



PIN: 28748

Serial Number: 6542364

**DEFINITIONS**

The following terms or abbreviations are used in this report:

*Eurofins QC, LLC (EQC)*

<	Less than: In conjunction with a numerical value, indicates a concentration less than RL / MDL
>	Greater than: In conjunction with a numerical value, indicates a concentration greater than RL / MDL
CFU	Colony Forming Unit
DF	Dilution Factor (For Microbiology, DF = volume of sample tested)
DRY	Result was reported on a dry weight basis
MCL	EPA recommended "Maximum Contaminant Level"
MDL	Method Detection Limit
MF	Membrane Filtration
MPN	Most Probable Number
ND	For odor test: No Odor Observed
ND	For all other tests: Analyte concentration Not Detected greater than the RL / MDL

NEG	Negative / Absent
NTU	Nephelometric Turbidity Units
POS	Positive / Present
PPB (µg/L)	Parts per billion: equivalent to 1 microgram per kilogram (µg/Kg) for solids or one microgram per liter (µg/L) for aqueous samples
PPM (mg/L)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples
PRES	Presumptive
QUAL	Qualifier (Q)
RL	Laboratory Reporting Limit or Limit of Quantitation (LOQ)
TNTC	Too Numerous To Count
TON	Threshold Odor Number

**Data Qualifiers**

J	Estimated value > MDL, but < RL
T	Temperature exceedance at receipt, refer to Sample Comments / Results Qualifiers section
E	Estimated CFU count (Microbiology)
Q	Qualifier defined in Sample Comment section on report

**Warranties, Terms, and Conditions**

- Unless otherwise indicated in the Parameter field, analyses for environmental microbiology, odor, and pharmaceutical microbiology are performed at the EQC Horsham Facility (702 Electronic Dr. Horsham, PA 19044).
- Analyses for Field Parameters are performed by EQC Field staff. Locations and certifications are identified on the Chain of Custody as follows:
  - "ERF" = field staff performs tests under NJ State certification # 02015.
  - "VL" = field staff performs tests under NJ State certification # 06005.
  - "WG" = field staff performs tests under NJ State certification # PA001.
- Test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.
- The report shall not be reproduced, except in full, without the written consent of the laboratory.
- All samples are collected as "grab" samples unless otherwise identified.
- Reported results relate only to the sample as tested. EQC is not responsible for sample integrity unless sampling has been performed by a member of our staff.
- EQC is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. EQC's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Client Services for further information.
- The following personnel or their deputies have approved the results of the tests performed by EQC: Nicki Smith (Environmental Chemistry), Amanda Berd (Pharmaceutical Microbiology), and Zachary Smith (Water Microbiology).

**EQC Accreditations**

Horsham Facility	<u>NELAP/State IDs-</u> PA: 46-05499	NJ: PA093	NY: 12080	MD: 357
East Rutherford Facility	<u>State ID-</u>	NJ: 02015		
Vineland Facility	<u>State ID-</u>	NJ: 06005		
Wind Gap Facility	<u>State ID-</u>	NJ: PA001		





## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody





CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FED-EX Tracking #
Batch Order Control #
SGS Quote #
SGS Job # JC93663

Client / Reporting Information, Project Information, Requested Analysis, Matrix Codes, and a table with columns for Sample #, Field ID, Date, Time, Matrix, # of bottles, and various test parameters (PCB, MEQ, HCB, etc.).

Turn Around Time (Business Days), Deliverable, and Comments / Special Instructions. Includes checkboxes for business days and delivery options.

Chain of custody table with columns for Relinquished by, Date / Time, Received By, and Date / Time. Includes handwritten signatures and dates.

JC93663X: Chain of Custody

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CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsus

Form containing Client/Reporting Information, Project Information, Requested Analysis, Matrix Codes, Turn Around Time, Deliverable, and Chain of Custody table with columns for Date, Time, Sampled, and various analysis codes.

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JC93663X: Chain of Custody

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5.4°C TUB Iced EOC

## SGS Sample Receipt Summary

**Job Number:** JC93663

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 8/21/2019 6:38:00 PM

**Delivery Method:** \_\_\_\_\_

**Airbill #'s:** \_\_\_\_\_

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.7); Cooler 2: (3.6); Cooler 3: (2.9); Cooler 4: (3.2); Cooler 5: (3.5); Cooler 6: (3.5); Cooler 7: (3.3); Cooler 8: (3.6);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.6); Cooler 2: (3.5); Cooler 3: (2.8); Cooler 4: (3.1); Cooler 5: (3.4); Cooler 6: (3.4); Cooler 7: (3.2); Cooler 8: (3.5);

**Cooler Security**

Y or N

Y or N

- |                           |                                     |                          |                      |                                     |                          |
|---------------------------|-------------------------------------|--------------------------|----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present:      | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smp Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Cooler Temperature**

Y or N

- |                              |                                     |                          |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | IR Gun                              |                          |
| 3. Cooler media:             | Ice (Bag)                           |                          |
| 4. No. Coolers:              | 8                                   |                          |

**Quality Control Preservation**

Y or N

N/A

- |                                 |                                     |                                     |                                     |
|---------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 2. Trip Blank listed on COC:    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 3. Samples preserved properly:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. VOCs headspace free:         | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

**Sample Integrity - Documentation**

Y or N

- |  |                                     |                          |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete:        | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Sample Integrity - Condition**

Y or N

- |                                  |                                     |                          |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample:          | Intact                              |                          |

**Sample Integrity - Instructions**

Y or N

N/A

- |   |                                     |                                     |                                     |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear:           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 2. Bottles received for unspecified tests | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |                                     |
| 3. Sufficient volume recvd for analysis:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. Compositing instructions clear:        | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear:          | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

Test Strip Lot #s:	pH 1-12: <u>229517</u>	pH 12+: <u>208717</u>	Other: (Specify) _____
--------------------	------------------------	-----------------------	------------------------

Comments

SM089-03  
Rev. Date 12/7/17

**JC93663X: Chain of Custody**

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3.1  
3

**JC93663X: Chain of Custody**  
**Page 5 of 5**

The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC93663XA

Sampling Date: 08/21/19

Report to:

USACE-Philadelphia District  
100 Penn Square East  
Philadelphia, PA 19107  
Joseph.M.Loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: **24**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read "Mike Earp".

Mike Earp  
General Manager

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

This report shall not be reproduced, except in its entirety, without the written approval of SGS.  
Test results relate only to samples analyzed.



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<b>Section 2: Subcontract Lab Data</b> .....	<b>5</b>
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<b>3.1: Chain of Custody</b> .....	<b>20</b>



## Sample Summary

USACE-Philadelphia District

**Job No:** JC93663XA

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC93663-1F	08/21/19	11:10 GW	08/21/19	AQ	Surface H2O Filtered	BZ-1S
JC93663-1XA	08/21/19	11:10 GW	08/21/19	AQ	Surface Water	BZ-1S
JC93663-2F	08/21/19	14:40 GW	08/21/19	AQ	Surface H2O Filtered	BZ-2S
JC93663-2XA	08/21/19	14:40 GW	08/21/19	AQ	Surface Water	BZ-2S
JC93663-3F	08/21/19	12:30 GW	08/21/19	AQ	Surface H2O Filtered	BZ-3S
JC93663-3XA	08/21/19	12:30 GW	08/21/19	AQ	Surface Water	BZ-3S
JC93663-4F	08/21/19	12:30 GW	08/21/19	AQ	Surface H2O Filtered	BZ-3M
JC93663-4XA	08/21/19	12:30 GW	08/21/19	AQ	Surface Water	BZ-3M
JC93663-5F	08/21/19	12:30 GW	08/21/19	AQ	Surface H2O Filtered	BZ-3D
JC93663-5XA	08/21/19	12:30 GW	08/21/19	AQ	Surface Water	BZ-3D
JC93663-6F	08/21/19	14:30 GW	08/21/19	AQ	Surface H2O Filtered	BZ-4S
JC93663-6XA	08/21/19	14:30 GW	08/21/19	AQ	Surface Water	BZ-4S
JC93663-7F	08/21/19	14:15 GW	08/21/19	AQ	Surface H2O Filtered	BZ-5S



## Sample Summary

(continued)

USACE-Philadelphia District

**Job No:** JC93663XA

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC93663-7XA	08/21/19	14:15 GW	08/21/19	AQ	Surface Water	BZ-5S
JC93663-8F	08/21/19	11:45 GW	08/21/19	AQ	Surface H2O Filtered	BZ-6S
JC93663-8XA	08/21/19	11:45 GW	08/21/19	AQ	Surface Water	BZ-6S
JC93663-9F	08/21/19	11:45 GW	08/21/19	AQ	Surface H2O Filtered	BZ-6M
JC93663-9XA	08/21/19	11:45 GW	08/21/19	AQ	Surface Water	BZ-6M
JC93663-10F	08/21/19	11:45 GW	08/21/19	AQ	Surface H2O Filtered	BZ-6D
JC93663-10XA	08/21/19	11:45 GW	08/21/19	AQ	Surface Water	BZ-6D
JC93663-11F	08/21/19	13:15 GW	08/21/19	AQ	Surface H2O Filtered	BZ-7S
JC93663-11XA	08/21/19	13:15 GW	08/21/19	AQ	Surface Water	BZ-7S
JC93663-12F	08/21/19	13:15 GW	08/21/19	AQ	Surface H2O Filtered	BZ-7M
JC93663-12XA	08/21/19	13:15 GW	08/21/19	AQ	Surface Water	BZ-7M
JC93663-13F	08/21/19	13:15 GW	08/21/19	AQ	Surface H2O Filtered	BZ-7D
JC93663-13XA	08/21/19	13:15 GW	08/21/19	AQ	Surface Water	BZ-7D

Subcontract Lab Data

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Report of Analysis

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**M.J. Reider Associates, Inc.**  
 ENVIRONMENTAL TESTING LABORATORY  
 U.S. EPA/PA DEP #06-00003

# Certificate of Analysis

2

**Laboratory No.:** 9030181  
**Report:** 08/29/19  
**Lab Contact:** Amy L. Morriss

**Attention:** Tammy McCloskey  
**Reported To:** SGS North America  
 2235 US Highway 130  
 Dayton, NJ 08810

**Project:** Army Corp Reservoirs

**Lab ID:** 9030181-01    **Collected By:** Client    **Sampled:** 08/21/19 11:10    **Received:** 08/27/19 09:39  
**Sample Desc:** BZ-1S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	08/28/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/28/19	U	JCL

**Lab ID:** 9030181-02    **Collected By:** Client    **Sampled:** 08/21/19 14:40    **Received:** 08/27/19 09:39  
**Sample Desc:** BZ-2S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	08/28/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/28/19	U	JCL

**Lab ID:** 9030181-03    **Collected By:** Client    **Sampled:** 08/21/19 12:30    **Received:** 08/27/19 09:39  
**Sample Desc:** BZ-3S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	08/28/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/28/19	U	JCL



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

**2**

**Lab ID:** 9030181-04     **Collected By:** Client     **Sampled:** 08/21/19 12:30     **Received:** 08/27/19 09:39  
**Sample Desc:** BZ-3M     **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	08/28/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/28/19	U	JCL

**Lab ID:** 9030181-05     **Collected By:** Client     **Sampled:** 08/21/19 12:30     **Received:** 08/27/19 09:39  
**Sample Desc:** BZ-3D     **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	08/28/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	0.07	mg/l	0.01	0.05	SM 4500-P E	08/28/19		JCL

**Lab ID:** 9030181-06     **Collected By:** Client     **Sampled:** 08/21/19 14:30     **Received:** 08/27/19 09:39  
**Sample Desc:** BZ-4S     **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	08/28/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/28/19	U	JCL

**Lab ID:** 9030181-07     **Collected By:** Client     **Sampled:** 08/21/19 14:15     **Received:** 08/27/19 09:39  
**Sample Desc:** BZ-5S     **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l	0.007	0.05	SM 4500-P E	08/28/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	08/28/19	J	JCL



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**2**

**Lab ID:** 9030181-08      **Collected By:** Client      **Sampled:** 08/21/19 11:45      **Received:** 08/27/19 09:39  
**Sample Desc:** BZ-6S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	08/28/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/28/19	U	JCL

**Lab ID:** 9030181-09      **Collected By:** Client      **Sampled:** 08/21/19 11:45      **Received:** 08/27/19 09:39  
**Sample Desc:** BZ-6M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	08/28/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/28/19	U	JCL

**Lab ID:** 9030181-10      **Collected By:** Client      **Sampled:** 08/21/19 11:45      **Received:** 08/27/19 09:39  
**Sample Desc:** BZ-6D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	08/28/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	0.31	mg/l	0.01	0.05	SM 4500-P E	08/28/19		JCL

**Lab ID:** 9030181-11      **Collected By:** Client      **Sampled:** 08/21/19 13:15      **Received:** 08/27/19 09:39  
**Sample Desc:** BZ-7S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	08/28/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/28/19	U	JCL



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2

**Lab ID:** 9030181-12      **Collected By:** Client      **Sampled:** 08/21/19 13:15      **Received:** 08/27/19 09:39  
**Sample Desc:** BZ-7M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	08/28/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/28/19	U	JCL

**Lab ID:** 9030181-13      **Collected By:** Client      **Sampled:** 08/21/19 13:15      **Received:** 08/27/19 09:39  
**Sample Desc:** BZ-7D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Procedure	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	08/28/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	08/28/19	U	JCL



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**Quality Control**

**General Chemistry**

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
<b>Batch B9H1622</b>								
<b>MB (B9H1622-BLK1)</b> Prepared & Analyzed: 08/28/2019								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
<b>MB (B9H1622-BLK2)</b> Prepared & Analyzed: 08/28/2019								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
<b>LFB (B9H1622-BS1)</b> Prepared & Analyzed: 08/28/2019								
Phosphorus as P, Total	1.01	0.05	mg/l	101	80-120			
<b>Batch B9H1637</b>								
<b>MB (B9H1637-BLK1)</b> Prepared & Analyzed: 08/28/2019								
Phosphorus as P, Total	<0.05	0.05	mg/l					U

**Dissolved General Chemistry**

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
<b>Batch B9H1623</b>								
<b>MB (B9H1623-BLK1)</b> Prepared & Analyzed: 08/28/2019								
Phosphorus as P, Dissolved	<0.05	0.05	mg/l					G-11, U
<b>MB (B9H1623-BLK2)</b> Prepared & Analyzed: 08/28/2019								
Phosphorus as P, Dissolved	<0.05	0.05	mg/l					U
<b>LFB (B9H1623-BS1)</b> Prepared & Analyzed: 08/28/2019								
Phosphorus as P, Dissolved	1.00	0.05	mg/l	100	80-120			G-11
<b>LFM (B9H1623-MS1)</b> Source: 9030181-06 Prepared & Analyzed: 08/28/2019								
Phosphorus as P, Dissolved	1.00	0.05	mg/l	99.5	80-120			
<b>LFMD (B9H1623-MSD1)</b> Source: 9030181-06 Prepared & Analyzed: 08/28/2019								
Phosphorus as P, Dissolved	0.99	0.05	mg/l	98.8	80-120	0.706	20	
<b>Batch B9H1638</b>								
<b>MB (B9H1638-BLK1)</b> Prepared & Analyzed: 08/28/2019								
Phosphorus as P, Dissolved	<0.05	0.05	mg/l					G-11, U
<b>LFB (B9H1638-BS1)</b> Prepared & Analyzed: 08/28/2019								
Phosphorus as P, Dissolved	1.00	0.05	mg/l	100	80-120			G-11



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**Preparation Methods**

Specific Method	Preparation Method	Prepared Date	Prepared By
<b>9030181-01</b>			
SM 4500-P E	SM 4500-P B	08/28/2019	JCL
<b>9030181-02</b>			
SM 4500-P E	SM 4500-P B	08/28/2019	JCL
<b>9030181-03</b>			
SM 4500-P E	SM 4500-P B	08/28/2019	JCL
<b>9030181-04</b>			
SM 4500-P E	SM 4500-P B	08/28/2019	JCL
<b>9030181-05</b>			
SM 4500-P E	SM 4500-P B	08/28/2019	JCL
<b>9030181-06</b>			
SM 4500-P E	SM 4500-P B	08/28/2019	JCL
<b>9030181-07</b>			
SM 4500-P E	SM 4500-P B	08/28/2019	JCL
<b>9030181-08</b>			
SM 4500-P E	SM 4500-P B	08/28/2019	JCL
<b>9030181-09</b>			
SM 4500-P E	SM 4500-P B	08/28/2019	JCL
<b>9030181-10</b>			
SM 4500-P E	SM 4500-P B	08/28/2019	JCL
<b>9030181-11</b>			
SM 4500-P E	SM 4500-P B	08/28/2019	JCL
<b>9030181-12</b>			
SM 4500-P E	SM 4500-P B	08/28/2019	JCL
<b>9030181-13</b>			
SM 4500-P E	SM 4500-P B	08/28/2019	JCL



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2

**Notes and Definitions**

- G-11 The sample was filtered after it was received at the laboratory.
- J Estimated value
- U Analyte was not detected above the indicated value.



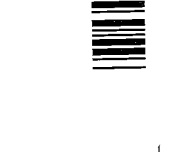
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 SGS North America Inc  
 2235 Route 130, Dayton,  
 TEL: 732-329-0200 FAX: 732  
 www.sgs.com/ehs

SGS North America  
 Army Corp Reservoirs



Project Name: Philadelphia District, Reservoir Sampling  
 Project #  
 Client Purchase Order #  
 Project Manager

Company Name: Philadelphia District, Reservoir Sampling  
 Street  
 City  
 State  
 Zip  
 Billing Information (if different from Report to)  
 Company Name  
 Billing Address  
 City  
 State  
 Zip

SGS Sample #	Field ID / Point of Collection	Date	Time	Collection	Sampled by	Matrix	# of bottles	H <sub>2</sub> O	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NONE	DI Water	MEHQ	ENCORE	LAB USE ONLY
1XA	BZ-1S	8/21/19	11:10:00 AM	GW	AQ	2									
1F	BZ-1S	8/21/19	11:10:00 AM	GW	AQ	2									
2XA	BZ-2S	8/21/19	2:40:00 PM	GW	AQ	2									
2F	BZ-2S	8/21/19	2:40:00 PM	GW	AQ	2									
3XA	BZ-3S	8/21/19	12:30:00 PM	GW	AQ	2									
3F	BZ-3S	8/21/19	12:30:00 PM	GW	AQ	2									
4XA	BZ-3M	8/21/19	12:30:00 PM	GW	AQ	2									
4F	BZ-3M	8/21/19	12:30:00 PM	GW	AQ	2									
5XA	BZ-3D	8/21/19	12:30:00 PM	GW	AQ	2									
5F	BZ-3D	8/21/19	12:30:00 PM	GW	AQ	2									
6XA	BZ-4S	8/21/19	2:30:00 PM	GW	AQ	2									
6F	BZ-4S	8/21/19	2:30:00 PM	GW	AQ	2									

Turnaround Time (Business days)  
 Approved by (SGS PM) / Date:  
 Commercial "A" (Level 1)  
 Commercial "B" (Level 2)  
 FULLT1 (Level 3+4)  
 NJ Redacted  
 Commercial "C"  
 Commercial "X" = Results Only  
 Commercial "Y" = Results + QC Summary  
 Commercial "Z" = Results + QC Summary + Partial Raw data

Relinquished by: [Signature] Date / Time: 8/26/19 17:00  
 Relinquished by: [Signature] Date / Time: 8/26/19 17:00  
 Relinquished by: [Signature] Date / Time: 8/26/19 17:00  
 Relinquished by: [Signature] Date / Time: 8/26/19 17:00

Matrix Codes  
 DW - Drinking Water  
 GW - Ground Water  
 SV - Surface Water  
 SL - Sludge  
 SED - Sediment  
 LIQ - Other Liquid  
 SOL - Other Solid  
 WP - Waste  
 FB - Field Blank  
 EB - Equipment Blank  
 RB - In-use Blank  
 TB - Trip Blank

Comments / Special Instructions  
 FILTER, TPO4, X  
 TPO4, X  
 X  
 X  
 X  
 X  
 X  
 X  
 X  
 X

Matrix Codes  
 DW - Drinking Water  
 GW - Ground Water  
 SV - Surface Water  
 SL - Sludge  
 SED - Sediment  
 LIQ - Other Liquid  
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 Relinquished by: [Signature] Date / Time: 8/26/19 17:00



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 TEL: 732-328-0200 FAX: 732-329-3499/3480  
 www.sgs.com/usa

9030181

Client / Reporting Information		Project Information		Requested Analysis		Matrix Codes	
Company Name: Philadelphia District, Reservoir Sampling		Project Name: Philadelphia District, Reservoir Sampling		Requested Analysis: FILTERON, TP04, hr		Matrix Codes: DW - Drinking Water, WW - Wastewater, SW - Surface Water, etc.	
Street Address: [Blank]		Billing Information (if different from Report to): [Blank]		Requested Analysis: [Blank]		Matrix Codes: [Blank]	
City: [Blank]	State: [Blank]	City: [Blank]	State: [Blank]	Requested Analysis: [Blank]		Matrix Codes: [Blank]	
Project Contact: amy.mcdesky@sgs.com	Project #	Street Address	City	Requested Analysis: [Blank]		Matrix Codes: [Blank]	
Phone #	Client Purchase Order #	Project Manager	Attention:	Requested Analysis: [Blank]		Matrix Codes: [Blank]	
Sampler(s) Name(s): GW	MECHID/Vial #	Date	Time	Matrix	Sampled by	Number of Reservoir Samples	LAB USE ONLY
7XA	BZ-5S	8/21/19	2:15:00 PM	GW	AQ	2	
7F	BZ-5S	8/21/19	2:15:00 PM	GW	AQ	2	
8XA	BZ-6S	8/21/19	11:45:00 AM	GW	AQ	2	
8F	BZ-6S	8/21/19	11:45:00 AM	GW	AQ	2	
9XA	BZ-6M	8/21/19	11:45:00 AM	GW	AQ	2	
9F	BZ-6M	8/21/19	11:45:00 AM	GW	AQ	2	
10XA	BZ-6D	8/21/19	11:45:00 AM	GW	AQ	2	
10F	BZ-6D	8/21/19	11:45:00 AM	GW	AQ	2	
11XA	BZ-7S	8/21/19	1:15:00 PM	GW	AQ	2	
11F	BZ-7S	8/21/19	1:15:00 PM	GW	AQ	2	
12XA	BZ-7M	8/21/19	1:15:00 PM	GW	AQ	2	
12F	BZ-7M	8/21/19	1:15:00 PM	GW	AQ	2	

rcud @ 1°C on ice

UGW  
8/27/19

0939

10  
11  
12





9030181

Date / Time: 8/26/2019 11:45:09 AM  
 CSR: TAMMY  
 Job #: JC93663XA  
 Client Project: Philadelphia District, Reservoir Sampling  
 Deliverable: REDT2  
 TAT: Due 9/4/2019

Sub Lab: MJ Reider Associates Inc, Env. Testing Laboratories  
 Address: 107 Angelica Street  
 City: Reading  
 State: PA  
 Zip: 19611  
 Contact: Sample Receiving / Rich Wheeler  
 Phone: 610-374-5129

SGS Sample #	Client Sample Description	Analysis	Location	Sampled By	Date Sampled	Time Sampled	Aliquot
JC93663-1XA	BZ-1S	TPO4		GW	8/21/2019	11:10:00 AM	
JC93663-1F	BZ-1S	FILTERGN_TPO4		GW	8/21/2019	11:10:00 AM	
JC93663-2XA	BZ-2S	TPO4		GW	8/21/2019	2:40:00 PM	
JC93663-2F	BZ-2S	FILTERGN_TPO4		GW	8/21/2019	2:40:00 PM	
JC93663-3XA	BZ-3S	TPO4		GW	8/21/2019	12:30:00 PM	
JC93663-3F	BZ-3S	FILTERGN_TPO4		GW	8/21/2019	12:30:00 PM	
JC93663-4XA	BZ-3M	TPO4		GW	8/21/2019	12:30:00 PM	
JC93663-4F	BZ-3M	FILTERGN_TPO4		GW	8/21/2019	12:30:00 PM	
JC93663-5XA	BZ-3D	TPO4		GW	8/21/2019	12:30:00 PM	
JC93663-5F	BZ-3D	FILTERGN_TPO4		GW	8/21/2019	12:30:00 PM	
JC93663-6XA	BZ-4S	TPO4		GW	8/21/2019	2:30:00 PM	
JC93663-6F	BZ-4S	FILTERGN_TPO4		GW	8/21/2019	2:30:00 PM	
JC93663-7XA	BZ-5S	TPO4		GW	8/21/2019	2:15:00 PM	
JC93663-7F	BZ-5S	FILTERGN_TPO4		GW	8/21/2019	2:15:00 PM	
JC93663-8XA	BZ-6S	TPO4		GW	8/21/2019	11:45:00 AM	
JC93663-8F	BZ-6S	FILTERGN_TPO4		GW	8/21/2019	11:45:00 AM	
JC93663-9XA	BZ-6M	TPO4		GW	8/21/2019	11:45:00 AM	

9030181

JC93663-9F	<u>BZ-6M</u>	<u>FILTERGN_TPO4</u>	<u>GW</u>	<u>8/21/2019</u>	<u>11:45:00 AM</u>
JC93663-10XA	<u>BZ-6D</u>	<u>TPO4</u>	<u>GW</u>	<u>8/21/2019</u>	<u>11:45:00 AM</u>
JC93663-10F	<u>BZ-6D</u>	<u>FILTERGN_TPO4</u>	<u>GW</u>	<u>8/21/2019</u>	<u>11:45:00 AM</u>
JC93663-11XA	<u>BZ-7S</u>	<u>TPO4</u>	<u>GW</u>	<u>8/21/2019</u>	<u>1:15:00 PM</u>
JC93663-11F	<u>BZ-7S</u>	<u>FILTERGN_TPO4</u>	<u>GW</u>	<u>8/21/2019</u>	<u>1:15:00 PM</u>
JC93663-12XA	<u>BZ-7M</u>	<u>TPO4</u>	<u>GW</u>	<u>8/21/2019</u>	<u>1:15:00 PM</u>
JC93663-12F	<u>BZ-7M</u>	<u>FILTERGN_TPO4</u>	<u>GW</u>	<u>8/21/2019</u>	<u>1:15:00 PM</u>
JC93663-13XA	<u>BZ-7D</u>	<u>TPO4</u>	<u>GW</u>	<u>8/21/2019</u>	<u>1:15:00 PM</u>
JC93663-13F	<u>BZ-7D</u>	<u>FILTERGN_TPO4</u>	<u>GW</u>	<u>8/21/2019</u>	<u>1:15:00 PM</u>

Comments:

Sample Management Receipt:

Date:

*Handwritten initials*



**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

Reviewed and Approved by:



Rafael A Quijada For Amy L Morriss  
Project Manager



107 Angelica Street Reading, PA 19611 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 CT (PH-0210), MD (261), NY(12094)

## Misc. Forms

---

### Custody Documents and Other Forms

---

Includes the following where applicable:

- Chain of Custody





CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsusa

FED-EX Tracking #
Batch Order Control #
SGS Quote #
SGS Job # JC93663

Client / Reporting Information, Project Information, Requested Analysis, Matrix Codes, and a table with columns for Sample #, Field ID, Date, Time, Matrix, and various test results (TPO4, Alkalinity, etc.).

Turn Around Time (Business Days), Deliverable, and Comments / Special Instructions sections.

Signature and Date section for Chain of Custody, including fields for Relinquished by, Received by, Date / Time, and Custody Seal #.

31
3

JC93663XA: Chain of Custody

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CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehsus

FED-EX Tracking #
Batch Order Control #
SGS Quote # JC93663

Client / Reporting Information
Project Name: USACE Reservoirs - Beltzville
Requested Analysis
Matrix Codes
Turn Around Time (Business Days)
Deliverable
Comments / Special Instructions
Sample Custody must be documented below each time samples change possession, including courier delivery.

31
3

JC93663XA: Chain of Custody



5.4°C TUB iced EOC

## SGS Sample Receipt Summary

**Job Number:** JC93663

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 8/21/2019 6:38:00 PM

**Delivery Method:** \_\_\_\_\_

**Airbill #'s:** \_\_\_\_\_

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.7); Cooler 2: (3.6); Cooler 3: (2.9); Cooler 4: (3.2); Cooler 5: (3.5); Cooler 6: (3.5); Cooler 7: (3.3); Cooler 8: (3.6);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.6); Cooler 2: (3.5); Cooler 3: (2.8); Cooler 4: (3.1); Cooler 5: (3.4); Cooler 6: (3.4); Cooler 7: (3.2); Cooler 8: (3.5);

**Cooler Security**

Y or N

Y or N

- |                           |                                     |                          |                       |                                     |                          |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. SmpI Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Cooler Temperature**

Y or N

- |                              |                                     |                          |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | IR Gun                              |                          |
| 3. Cooler media:             | Ice (Bag)                           |                          |
| 4. No. Coolers:              | 8                                   |                          |

**Quality Control Preservation**

Y or N

N/A

- |                                 |                                     |                                     |                                     |
|---------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 2. Trip Blank listed on COC:    | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 3. Samples preserved properly:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. VOCs headspace free:         | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

**Sample Integrity - Documentation**

Y or N

- |  |                                     |                          |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete:        | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

**Sample Integrity - Condition**

Y or N

- |                                  |                                     |                          |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample:          | Intact                              |                          |

**Sample Integrity - Instructions**

Y or N

N/A

- |   |                                     |                                     |                                     |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear:           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 2. Bottles received for unspecified tests | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |                                     |
| 3. Sufficient volume recvd for analysis:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. Compositing instructions clear:        | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear:          | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

Test Strip Lot #s:	pH 1-12: <u>229517</u>	pH 12+: <u>208717</u>	Other: (Specify) _____
--------------------	------------------------	-----------------------	------------------------

Comments

SM089-03  
Rev. Date 12/7/17

**JC93663XA: Chain of Custody**  
**Page 5 of 5**

The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC94924

Sampling Date: 09/12/19

Report to:

Army Corps of Engineers

joseph.m.loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: 29



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read "Laura Degenhardt".

Laura Degenhardt  
General Manager

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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Test results relate only to samples analyzed.



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## Sample Summary

USACE-Philadelphia District

Job No: JC94924

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC94924-1	09/12/19	06:30 GW	09/12/19	AQ	Surface Water	BZ-1S
JC94924-2	09/12/19	11:20 GW	09/12/19	AQ	Surface Water	BZ-2S
JC94924-3	09/12/19	08:45 GW	09/12/19	AQ	Surface Water	BZ-3S
JC94924-4	09/12/19	08:45 GW	09/12/19	AQ	Surface Water	BZ-3M
JC94924-5	09/12/19	08:45 GW	09/12/19	AQ	Surface Water	BZ-3D
JC94924-6	09/12/19	11:10 GW	09/12/19	AQ	Surface Water	BZ-4S
JC94924-7	09/12/19	11:00 GW	09/12/19	AQ	Surface Water	BZ-5S
JC94924-8	09/12/19	07:45 GW	09/12/19	AQ	Surface Water	BZ-6S
JC94924-9	09/12/19	07:45 GW	09/12/19	AQ	Surface Water	BZ-6M
JC94924-10	09/12/19	07:45 GW	09/12/19	AQ	Surface Water	BZ-6D
JC94924-11	09/12/19	09:40 GW	09/12/19	AQ	Surface Water	BZ-7S
JC94924-12	09/12/19	09:40 GW	09/12/19	AQ	Surface Water	BZ-7M
JC94924-13	09/12/19	09:40 GW	09/12/19	AQ	Surface Water	BZ-7D

## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** USACE-Philadelphia District

**Job No** JC94924

**Site:** Philadelphia District, Reservoir Sampling

**Report Date** 9/30/2019 9:58:42 AM

On 09/12/2019, 13 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. at a maximum corrected temperature of 3.8 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. Job Number of JC94924 was assigned to the project. Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Compounds qualified as out of range in the continuing calibration summary report are acceptable as per method requirements when there is a high bias but the sample result is non-detect.

### General Chemistry By Method EPA 351.2/LACHAT

<b>Matrix:</b> AQ	<b>Batch ID:</b> GP23816
-------------------	--------------------------

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94924-1DUP, JC94924-1MS were used as the QC samples for Nitrogen, Total Kjeldahl.
- Matrix Spike Recovery(s) for Nitrogen, Total Kjeldahl are outside control limits. Spike recovery indicates possible matrix interference.

<b>Matrix:</b> AQ	<b>Batch ID:</b> GP23862
-------------------	--------------------------

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94821-13DUP, JC94821-13MS were used as the QC samples for Nitrogen, Total Kjeldahl.

### General Chemistry By Method EPA 353.2/LACHAT

<b>Matrix:</b> AQ	<b>Batch ID:</b> GP23913
-------------------	--------------------------

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94924-1DUP, JC94924-1MS, JC94924-4MS were used as the QC samples for Nitrogen, Nitrate + Nitrite.

## General Chemistry By Method EPA353.2/SM4500NO2B

**Matrix:** AQ **Batch ID:** R181390

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94924-1 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R181391

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94924-2 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R181392

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94924-3 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R181393

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94924-4 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R181394

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94924-5 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R181395

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94924-6 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R181396

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94924-7 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R181397

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94924-8 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R181398

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94924-9 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R181399

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94924-10 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R181400

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94924-11 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R181401

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94924-12 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

**Matrix:** AQ **Batch ID:** R181402

- The data for EPA353.2/SM4500NO2B meets quality control requirements.
- JC94924-13 for Nitrogen, Nitrate: Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

## General Chemistry By Method SM2320 B-11

**Matrix:** AQ

**Batch ID:** GN411

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94924-1DUP were used as the QC samples for Alkalinity, Total as CaCO<sub>3</sub>.
- JC94924-11 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC94924-12 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC94924-8 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC94924-1 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC94924-5 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC94924-2 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC94924-6 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC94924-10 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC94924-13 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC94924-3 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC94924-7 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC94924-9 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.
- JC94924-4 for Alkalinity, Total as CaCO<sub>3</sub>: Sample was titrated to a final pH of 4.2.

## General Chemistry By Method SM2540 C-11

**Matrix:** AQ

**Batch ID:** GN136

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94924-1DUP were used as the QC samples for Solids, Total Dissolved.

## General Chemistry By Method SM2540 D-11

**Matrix:** AQ

**Batch ID:** GN176

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC95027-1DUP were used as the QC samples for Solids, Total Suspended.

## General Chemistry By Method SM4500NH3 H-11LCHAT

**Matrix:** AQ

**Batch ID:** GP23837

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94890-5DUP, JC94890-5MS, JC94890-5MSD were used as the QC samples for Nitrogen, Ammonia.

**Matrix:** AQ

**Batch ID:** GP23838

- All samples were prepared within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JC94992-2DUP, JC94992-2MSD were used as the QC samples for Nitrogen, Ammonia.
- Matrix Spike Recovery(s) for Nitrogen, Ammonia are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.



## Summary of Hits

**Job Number:** JC94924  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 09/12/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
<b>JC94924-1</b>		<b>BZ-1S</b>				
BOD, 5 Day <sup>a</sup>		1.1	1.0		mg/l	SM5210 B-11
Nitrogen, Nitrate <sup>b</sup>		0.80	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.80	0.10		mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved		54.0	10		mg/l	SM2540 C-11
Solids, Total Suspended		4.0	4.0		mg/l	SM2540 D-11
Total Organic Carbon		1.3	1.0		mg/l	SM5310 B-11
<b>JC94924-2</b>		<b>BZ-2S</b>				
Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>		7.5	5.0		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>		0.27	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.27	0.10		mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved		56.0	10		mg/l	SM2540 C-11
<b>JC94924-3</b>		<b>BZ-3S</b>				
Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>		9.0	5.0		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>		0.31	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.31	0.10		mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved		41.0	10		mg/l	SM2540 C-11
Total Organic Carbon		1.3	1.0		mg/l	SM5310 B-11
<b>JC94924-4</b>		<b>BZ-3M</b>				
Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>		10.5	5.0		mg/l	SM2320 B-11
BOD, 5 Day <sup>a</sup>		1.0	1.0		mg/l	SM5210 B-11
Nitrogen, Nitrate <sup>b</sup>		0.78	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.78	0.10		mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved		39.0	10		mg/l	SM2540 C-11
Total Organic Carbon		1.1	1.0		mg/l	SM5310 B-11
<b>JC94924-5</b>		<b>BZ-3D</b>				
Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>		11.0	5.0		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>		0.70	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.70	0.10		mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved		56.0	10		mg/l	SM2540 C-11
Total Organic Carbon		1.2	1.0		mg/l	SM5310 B-11
<b>JC94924-6</b>		<b>BZ-4S</b>				
Nitrogen, Nitrate <sup>b</sup>		0.42	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.42	0.10		mg/l	EPA 353.2/LACHAT

## Summary of Hits

**Job Number:** JC94924  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 09/12/19



Lab Sample ID	Client Sample ID	Result/ Analyte	RL	MDL	Units	Method
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Solids, Total Dissolved		39.0	10		mg/l	SM2540 C-11
Total Organic Carbon		1.3	1.0		mg/l	SM5310 B-11

### JC94924-7 BZ-5S

Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>		14.0	5.0		mg/l	SM2320 B-11
BOD, 5 Day <sup>a</sup>		1.6	1.0		mg/l	SM5210 B-11
Nitrogen, Nitrate <sup>b</sup>		1.4	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		1.4	0.10		mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved		67.0	10		mg/l	SM2540 C-11
Solids, Total Suspended		13.4	4.0		mg/l	SM2540 D-11
Total Organic Carbon		1.2	1.0		mg/l	SM5310 B-11

### JC94924-8 BZ-6S

Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>		10.0	5.0		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>		0.36	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.36	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl		0.26	0.20		mg/l	EPA 351.2/LACHAT
Solids, Total Dissolved		49.0	10		mg/l	SM2540 C-11
Total Organic Carbon		1.4	1.0		mg/l	SM5310 B-11

### JC94924-9 BZ-6M

Nitrogen, Nitrate <sup>b</sup>		0.94	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.94	0.10		mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved		170	10		mg/l	SM2540 C-11
Total Organic Carbon		1.1	1.0		mg/l	SM5310 B-11

### JC94924-10 BZ-6D

Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>		12.0	5.0		mg/l	SM2320 B-11
BOD, 5 Day <sup>a</sup>		2.3	1.0		mg/l	SM5210 B-11
Nitrogen, Nitrate <sup>b</sup>		0.57	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.57	0.10		mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved		63.0	10		mg/l	SM2540 C-11
Solids, Total Suspended		46.0	4.0		mg/l	SM2540 D-11
Total Organic Carbon		1.3	1.0		mg/l	SM5310 B-11

### JC94924-11 BZ-7S

Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>		10.5	5.0		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>		0.29	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.29	0.10		mg/l	EPA 353.2/LACHAT
Nitrogen, Total Kjeldahl		0.30	0.20		mg/l	EPA 351.2/LACHAT



## Summary of Hits

**Job Number:** JC94924  
**Account:** USACE-Philadelphia District  
**Project:** Philadelphia District, Reservoir Sampling  
**Collected:** 09/12/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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Solids, Total Dissolved		52.0	10		mg/l	SM2540 C-11
Total Organic Carbon		1.4	1.0		mg/l	SM5310 B-11

**JC94924-12      BZ-7M**

Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>		11.0	5.0		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>		0.73	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.73	0.10		mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved		60.0	10		mg/l	SM2540 C-11
Total Organic Carbon		1.2	1.0		mg/l	SM5310 B-11

**JC94924-13      BZ-7D**

Alkalinity, Total as CaCO <sub>3</sub> <sup>c</sup>		12.5	5.0		mg/l	SM2320 B-11
Nitrogen, Nitrate <sup>b</sup>		0.74	0.11		mg/l	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite		0.75	0.10		mg/l	EPA 353.2/LACHAT
Solids, Total Dissolved		62.0	10		mg/l	SM2540 C-11
Total Organic Carbon		1.3	1.0		mg/l	SM5310 B-11

- (a) Sample set up with 3 separate dilutions, but DO difference is less than 2 on all of the dilutions. Results reported are from the lowest dilution.
- (b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)
- (c) Sample was titrated to a final pH of 4.2.

Sample Results

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Report of Analysis

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## Report of Analysis

<b>Client Sample ID:</b> BZ-1S	<b>Date Sampled:</b> 09/12/19
<b>Lab Sample ID:</b> JC94924-1	<b>Date Received:</b> 09/12/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 5.0	5.0	mg/l	1	09/25/19 12:31	UP	SM2320 B-11
BOD, 5 Day <sup>b</sup>	1.1	1.0	mg/l	1	09/13/19 21:40	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/24/19 12:30	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>c</sup>	0.80	0.11	mg/l	1	09/26/19 16:36	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.80	0.10	mg/l	1	09/26/19 16:36	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/13/19 00:47	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	09/23/19 10:58	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	54.0	10	mg/l	1	09/19/19 16:30	RC	SM2540 C-11
Solids, Total Suspended	4.0	4.0	mg/l	1	09/18/19 19:30	EB	SM2540 D-11
Total Organic Carbon	1.3	1.0	mg/l	1	09/27/19 15:52	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Sample set up with 3 separate dilutions, but DO difference is less than 2 on all of the dilutions. Results reported are from the lowest dilution.

(c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-2S	<b>Date Sampled:</b> 09/12/19
<b>Lab Sample ID:</b> JC94924-2	<b>Date Received:</b> 09/12/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	7.5	5.0	mg/l	1	09/25/19 12:31	UP	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	09/13/19 21:42	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/24/19 12:31	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.27	0.11	mg/l	1	09/26/19 16:37	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.27	0.10	mg/l	1	09/26/19 16:37	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/13/19 00:47	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	09/23/19 11:04	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	56.0	10	mg/l	1	09/19/19 16:30	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	09/18/19 19:30	EB	SM2540 D-11
Total Organic Carbon	< 1.0	1.0	mg/l	1	09/27/19 16:57	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-3S		<b>Date Sampled:</b> 09/12/19
<b>Lab Sample ID:</b> JC94924-3		<b>Date Received:</b> 09/12/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	9.0	5.0	mg/l	1	09/25/19 12:31	UP	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	09/13/19 21:43	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/25/19 15:18	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.31	0.11	mg/l	1	09/26/19 16:38	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.31	0.10	mg/l	1	09/26/19 16:38	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/13/19 00:47	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	09/23/19 10:59	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	41.0	10	mg/l	1	09/19/19 16:30	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	09/18/19 19:30	EB	SM2540 D-11
Total Organic Carbon	1.3	1.0	mg/l	1	09/27/19 17:08	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

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RL = Reporting Limit

4.3  
4

## Report of Analysis

<b>Client Sample ID:</b> BZ-3M	<b>Date Sampled:</b> 09/12/19
<b>Lab Sample ID:</b> JC94924-4	<b>Date Received:</b> 09/12/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	10.5	5.0	mg/l	1	09/25/19 12:31	UP	SM2320 B-11
BOD, 5 Day <sup>b</sup>	1.0	1.0	mg/l	1	09/13/19 21:45	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/25/19 15:19	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>c</sup>	0.78	0.11	mg/l	1	09/26/19 16:40	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.78	0.10	mg/l	1	09/26/19 16:40	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/13/19 00:47	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	09/23/19 11:00	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	39.0	10	mg/l	1	09/19/19 16:30	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	09/18/19 19:30	EB	SM2540 D-11
Total Organic Carbon	1.1	1.0	mg/l	1	09/27/19 17:20	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Sample set up with 3 separate dilutions, but DO difference is less than 2 on all of the dilutions. Results reported are from the lowest dilution.

(c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-3D		<b>Date Sampled:</b> 09/12/19
<b>Lab Sample ID:</b> JC94924-5		<b>Date Received:</b> 09/12/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	11.0	5.0	mg/l	1	09/25/19 12:31	UP	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	09/13/19 21:47	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/25/19 15:21	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.70	0.11	mg/l	1	09/26/19 16:41	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.70	0.10	mg/l	1	09/26/19 16:41	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/13/19 00:47	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	09/23/19 11:01	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	56.0	10	mg/l	1	09/19/19 16:30	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	09/18/19 19:30	EB	SM2540 D-11
Total Organic Carbon	1.2	1.0	mg/l	1	09/27/19 17:31	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

4.5  
4

## Report of Analysis

<b>Client Sample ID:</b> BZ-4S	<b>Date Sampled:</b> 09/12/19
<b>Lab Sample ID:</b> JC94924-6	<b>Date Received:</b> 09/12/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 5.0	5.0	mg/l	1	09/25/19 12:31	UP	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	09/13/19 21:48	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/25/19 15:22	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.42	0.11	mg/l	1	09/26/19 16:42	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.42	0.10	mg/l	1	09/26/19 16:42	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/13/19 00:47	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	09/23/19 11:05	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	39.0	10	mg/l	1	09/19/19 16:30	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	09/18/19 19:30	EB	SM2540 D-11
Total Organic Carbon	1.3	1.0	mg/l	1	09/27/19 17:42	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit



## Report of Analysis

<b>Client Sample ID:</b> BZ-5S	<b>Date Sampled:</b> 09/12/19
<b>Lab Sample ID:</b> JC94924-7	<b>Date Received:</b> 09/12/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	14.0	5.0	mg/l	1	09/25/19 12:56	UP	SM2320 B-11
BOD, 5 Day <sup>b</sup>	1.6	1.0	mg/l	1	09/13/19 21:51	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/25/19 15:24	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>c</sup>	1.4	0.11	mg/l	1	09/26/19 16:45	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	1.4	0.10	mg/l	1	09/26/19 16:45	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/13/19 01:11	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	09/25/19 11:53	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	67.0	10	mg/l	1	09/19/19 16:30	RC	SM2540 C-11
Solids, Total Suspended	13.4	4.0	mg/l	1	09/18/19 19:30	EB	SM2540 D-11
Total Organic Carbon	1.2	1.0	mg/l	1	09/27/19 17:53	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Sample set up with 3 separate dilutions, but DO difference is less than 2 on all of the dilutions. Results reported are from the lowest dilution.

(c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-6S		<b>Date Sampled:</b> 09/12/19
<b>Lab Sample ID:</b> JC94924-8		<b>Date Received:</b> 09/12/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	10.0	5.0	mg/l	1	09/25/19 12:56	UP	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	09/13/19 21:53	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/25/19 15:25	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.36	0.11	mg/l	1	09/26/19 16:46	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.36	0.10	mg/l	1	09/26/19 16:46	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/13/19 01:11	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.26	0.20	mg/l	1	09/25/19 11:48	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	49.0	10	mg/l	1	09/19/19 16:30	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	09/18/19 19:30	EB	SM2540 D-11
Total Organic Carbon	1.4	1.0	mg/l	1	09/27/19 18:04	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

4.8  
4

## Report of Analysis

<b>Client Sample ID:</b> BZ-6M	<b>Date Sampled:</b> 09/12/19
<b>Lab Sample ID:</b> JC94924-9	<b>Date Received:</b> 09/12/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	< 5.0	5.0	mg/l	1	09/25/19 12:56	UP	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	09/13/19 21:55	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/25/19 15:26	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.94	0.11	mg/l	1	09/26/19 16:47	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.94	0.10	mg/l	1	09/26/19 16:47	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/13/19 01:11	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	09/25/19 11:49	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	170	10	mg/l	1	09/19/19 16:30	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	09/18/19 19:30	EB	SM2540 D-11
Total Organic Carbon	1.1	1.0	mg/l	1	09/27/19 18:15	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-6D	<b>Date Sampled:</b> 09/12/19
<b>Lab Sample ID:</b> JC94924-10	<b>Date Received:</b> 09/12/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	12.0	5.0	mg/l	1	09/25/19 12:56	UP	SM2320 B-11
BOD, 5 Day <sup>b</sup>	2.3	1.0	mg/l	1	09/13/19 21:56	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/25/19 15:28	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>c</sup>	0.57	0.11	mg/l	1	09/26/19 16:49	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.57	0.10	mg/l	1	09/26/19 16:49	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/13/19 01:11	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	09/25/19 11:55	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	63.0	10	mg/l	1	09/19/19 16:30	RC	SM2540 C-11
Solids, Total Suspended	46.0	4.0	mg/l	1	09/18/19 19:30	EB	SM2540 D-11
Total Organic Carbon	1.3	1.0	mg/l	1	09/27/19 18:27	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Sample set up with 3 separate dilutions, but DO difference is less than 2 on all of the dilutions. Results reported are from the lowest dilution.

(c) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-7S	<b>Date Sampled:</b> 09/12/19
<b>Lab Sample ID:</b> JC94924-11	<b>Date Received:</b> 09/12/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	10.5	5.0	mg/l	1	09/25/19 12:56	UP	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	09/13/19 21:58	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/25/19 15:29	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.29	0.11	mg/l	1	09/26/19 16:50	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.29	0.10	mg/l	1	09/26/19 16:50	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/13/19 01:11	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	0.30	0.20	mg/l	1	09/25/19 11:51	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	52.0	10	mg/l	1	09/19/19 16:30	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	09/18/19 19:30	EB	SM2540 D-11
Total Organic Carbon	1.4	1.0	mg/l	1	09/27/19 19:23	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-7M		<b>Date Sampled:</b> 09/12/19
<b>Lab Sample ID:</b> JC94924-12		<b>Date Received:</b> 09/12/19
<b>Matrix:</b> AQ - Surface Water		<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling		

4.12  
4

### General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	11.0	5.0	mg/l	1	09/25/19 12:56	UP	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	09/13/19 21:59	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/25/19 15:34	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.73	0.11	mg/l	1	09/26/19 16:51	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.73	0.10	mg/l	1	09/26/19 16:51	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/13/19 01:11	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	09/25/19 12:00	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	60.0	10	mg/l	1	09/19/19 16:30	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	09/18/19 19:30	EB	SM2540 D-11
Total Organic Carbon	1.2	1.0	mg/l	1	09/27/19 19:56	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

## Report of Analysis

<b>Client Sample ID:</b> BZ-7D	<b>Date Sampled:</b> 09/12/19
<b>Lab Sample ID:</b> JC94924-13	<b>Date Received:</b> 09/12/19
<b>Matrix:</b> AQ - Surface Water	<b>Percent Solids:</b> n/a
<b>Project:</b> Philadelphia District, Reservoir Sampling	

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Total as CaCO <sub>3</sub> <sup>a</sup>	12.5	5.0	mg/l	1	09/25/19 12:56	UP	SM2320 B-11
BOD, 5 Day	< 1.0	1.0	mg/l	1	09/13/19 22:02	EB	SM5210 B-11
Nitrogen, Ammonia	< 0.20	0.20	mg/l	1	09/25/19 15:35	KI	SM4500NH3 H-11LACHAT
Nitrogen, Nitrate <sup>b</sup>	0.74	0.11	mg/l	1	09/26/19 16:52	KI	EPA353.2/SM4500NO2B
Nitrogen, Nitrate + Nitrite	0.75	0.10	mg/l	1	09/26/19 16:52	KI	EPA 353.2/LACHAT
Nitrogen, Nitrite	< 0.010	0.010	mg/l	1	09/13/19 01:11	CM	SM4500NO2 B-11
Nitrogen, Total Kjeldahl	< 0.20	0.20	mg/l	1	09/25/19 11:56	KI	EPA 351.2/LACHAT
Solids, Total Dissolved	62.0	10	mg/l	1	09/19/19 16:30	RC	SM2540 C-11
Solids, Total Suspended	< 4.0	4.0	mg/l	1	09/18/19 19:30	EB	SM2540 D-11
Total Organic Carbon	1.3	1.0	mg/l	1	09/27/19 20:07	CD	SM5310 B-11

(a) Sample was titrated to a final pH of 4.2.

(b) Calculated as: (Nitrogen, Nitrate + Nitrite) - (Nitrogen, Nitrite)

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody







CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehausa

FED-EX Tracking #
Sub Order Control #
SGS Quote #
SGS Job # JC94924

Client / Reporting Information, Project Information, Requested Analysis, Matrix Codes, Turn Around Time, Deliverable, Comments / Special Instructions, Chain of Custody table, and signature blocks.

TP04 (subs to Mrs Reider)
Alkalinity, Ammonia
BOD, TKN, TDS, TSS
TOC, XN030

- DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED - Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipes
FB - Field Blank
EB - Equipment Blank
RB - Rinse Blank
TB - Trip Blank

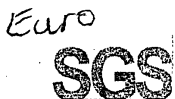
Table with columns: Field ID / Point of Collection, MECHDI Viol #, Date, Time, Sampled by, Grab (G) / Composite (C), Matrix, # of bottles, and various test parameters (HCl, NH3-N, NH4-N, NO3-N, NO2-N, TP, TSS, TOC, TDS, TKN, TSS, WSP, WSP-100, WSP-500, WSP-1000, WSP-2000, WSP-5000, WSP-10000, WSP-20000, WSP-50000, WSP-100000, WSP-200000, WSP-500000, WSP-1000000).

TP04 samples to Mrs Reider
TCF/FCF samples to Eurofins lab

3.4 CPD
3.7 CPD
3.9 CPD
2.8 CPD



5.1
5



CHAIN OF CUSTODY

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www.sgs.com/ehsusa

FED-EX Tracking #
SGS Order #
SGS Job # JC94924

Client / Reporting Information, Project Information, Requested Analysis, Matrix Codes, and a table of samples with columns for Field ID, Date, Time, Matrix, and various analysis codes.

DELIVERED BY CUSTOMER

Turn Around Time (Business Days), Deliverable options, Comments / Special Instructions, and a chain of custody table with columns for Relinquished By, Date / Time, and Received By.



5.1 5

# SGS Sample Receipt Summary

**Job Number:** JC94924

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 9/12/2019 6:11:00 PM

**Delivery Method:**

**Airbill #'s:**

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.4); Cooler 2: (2.7); Cooler 3: (3.9); Cooler 4: (2.8);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.3); Cooler 2: (2.6); Cooler 3: (3.8); Cooler 4: (2.7);

<u>Cooler Security</u>	<u>Y or N</u>		<u>Y or N</u>	
1. Custody Seals Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/> <input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/> <input type="checkbox"/>

<u>Cooler Temperature</u>	<u>Y or N</u>	
1. Temp criteria achieved:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Cooler temp verification:	IR Gun	
3. Cooler media:	Ice (Bag)	
4. No. Coolers:	4	

<u>Quality Control Preservation</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

<u>Sample Integrity - Documentation</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

<u>Sample Integrity - Condition</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:	Intact		

<u>Sample Integrity - Instructions</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Test Strip Lot #s:	pH 1-12: 229517	pH 12+: 208717	Other: (Specify)
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Comments

SM089-03  
Rev. Date 12/7/17

The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC94924X

Sampling Date: 09/12/19

Report to:

USACE-Philadelphia District  
100 Penn Square East  
Philadelphia, PA 19107  
Joseph.M.Loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: **23**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read 'Laura Degenhardt'.

Laura Degenhardt  
General Manager

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

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Test results relate only to samples analyzed.

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## Sample Summary

USACE-Philadelphia District

**Job No:** JC94924X

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC94924-1F	09/12/19	06:30 GW	09/12/19	AQ	Surface H2O Filtered	BZ-1S
JC94924-1X	09/12/19	06:30 GW	09/12/19	AQ	Surface Water	BZ-1S
JC94924-2F	09/12/19	11:20 GW	09/12/19	AQ	Surface H2O Filtered	BZ-2S
JC94924-2X	09/12/19	11:20 GW	09/12/19	AQ	Surface Water	BZ-2S
JC94924-3F	09/12/19	08:45 GW	09/12/19	AQ	Surface H2O Filtered	BZ-3S
JC94924-3X	09/12/19	08:45 GW	09/12/19	AQ	Surface Water	BZ-3S
JC94924-4F	09/12/19	08:45 GW	09/12/19	AQ	Surface H2O Filtered	BZ-3M
JC94924-4X	09/12/19	08:45 GW	09/12/19	AQ	Surface Water	BZ-3M
JC94924-5F	09/12/19	08:45 GW	09/12/19	AQ	Surface H2O Filtered	BZ-3D
JC94924-5X	09/12/19	08:45 GW	09/12/19	AQ	Surface Water	BZ-3D
JC94924-6F	09/12/19	11:10 GW	09/12/19	AQ	Surface H2O Filtered	BZ-4S
JC94924-6X	09/12/19	11:10 GW	09/12/19	AQ	Surface Water	BZ-4S
JC94924-7F	09/12/19	11:00 GW	09/12/19	AQ	Surface H2O Filtered	BZ-5S



## Sample Summary

(continued)

USACE-Philadelphia District

**Job No:** JC94924X

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC94924-7X	09/12/19	11:00 GW	09/12/19	AQ	Surface Water	BZ-5S
JC94924-8F	09/12/19	07:45 GW	09/12/19	AQ	Surface H2O Filtered	BZ-6S
JC94924-8X	09/12/19	07:45 GW	09/12/19	AQ	Surface Water	BZ-6S
JC94924-9F	09/12/19	07:45 GW	09/12/19	AQ	Surface H2O Filtered	BZ-6M
JC94924-9X	09/12/19	07:45 GW	09/12/19	AQ	Surface Water	BZ-6M
JC94924-10F	09/12/19	07:45 GW	09/12/19	AQ	Surface H2O Filtered	BZ-6D
JC94924-10X	09/12/19	07:45 GW	09/12/19	AQ	Surface Water	BZ-6D
JC94924-11F	09/12/19	09:40 GW	09/12/19	AQ	Surface H2O Filtered	BZ-7S
JC94924-11X	09/12/19	09:40 GW	09/12/19	AQ	Surface Water	BZ-7S
JC94924-12F	09/12/19	09:40 GW	09/12/19	AQ	Surface H2O Filtered	BZ-7M
JC94924-12X	09/12/19	09:40 GW	09/12/19	AQ	Surface Water	BZ-7M
JC94924-13F	09/12/19	09:40 GW	09/12/19	AQ	Surface H2O Filtered	BZ-7D
JC94924-13X	09/12/19	09:40 GW	09/12/19	AQ	Surface Water	BZ-7D



Subcontract Lab Data

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Report of Analysis

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**M.J. Reider Associates, Inc.**  
 ENVIRONMENTAL TESTING LABORATORY  
 U.S. EPA/PA DEP #06-00003

# Certificate of Analysis

2

**Laboratory No.:** 9033112  
**Report:** 09/23/19  
**Lab Contact:** Amy L. Morriss

**Attention:** Tammy McCloskey  
**Reported To:** SGS North America  
 2235 US Highway 130  
 Dayton, NJ 08810

**Project:** Army Corp Reservoirs

**Lab ID:** 9033112-01    **Collected By:** Client    **Sampled:** 09/12/19 06:30    **Received:** 09/18/19 10:23  
**Sample Desc:** BZ-1S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	09/19/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	09/19/19	U	JCL

**Lab ID:** 9033112-02    **Collected By:** Client    **Sampled:** 09/12/19 11:20    **Received:** 09/18/19 10:23  
**Sample Desc:** BZ-2S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	09/19/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	09/19/19	U	JCL

**Lab ID:** 9033112-03    **Collected By:** Client    **Sampled:** 09/12/19 08:45    **Received:** 09/18/19 10:23  
**Sample Desc:** BZ-3S    **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	09/19/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	09/19/19	U	JCL



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 Additional accreditations by CT (PH-0210), MD (261), NY(12094)



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

**2**

**Lab ID:** 9033112-04     **Collected By:** Client     **Sampled:** 09/12/19 08:45     **Received:** 09/18/19 10:23  
**Sample Desc:** BZ-3M     **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	09/19/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	09/19/19	U	JCL

**Lab ID:** 9033112-05     **Collected By:** Client     **Sampled:** 09/12/19 08:45     **Received:** 09/18/19 10:23  
**Sample Desc:** BZ-3D     **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	09/19/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	09/19/19	U	JCL

**Lab ID:** 9033112-06     **Collected By:** Client     **Sampled:** 09/12/19 11:00     **Received:** 09/18/19 10:23  
**Sample Desc:** BZ-4S     **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	09/19/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	09/19/19	J	JCL

**Lab ID:** 9033112-07     **Collected By:** Client     **Sampled:** 09/12/19 11:00     **Received:** 09/18/19 10:23  
**Sample Desc:** BZ-5S     **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	09/19/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	0.02	mg/l	0.01	0.05	SM 4500-P E	09/19/19	J	JCL



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Additional accreditations by CT (PH-0210), MD (261), NY(12094)

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

**2**

**Lab ID:** 9033112-08      **Collected By:** Client      **Sampled:** 09/12/19 07:45      **Received:** 09/18/19 10:23  
**Sample Desc:** BZ-6S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	09/19/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	0.32	mg/l	0.01	0.05	SM 4500-P E	09/19/19		JCL

**Lab ID:** 9033112-09      **Collected By:** Client      **Sampled:** 09/12/19 07:45      **Received:** 09/18/19 10:23  
**Sample Desc:** BZ-6M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	09/19/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	09/19/19	U	JCL

**Lab ID:** 9033112-10      **Collected By:** Client      **Sampled:** 09/12/19 07:45      **Received:** 09/18/19 10:23  
**Sample Desc:** BZ-6D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	09/19/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	0.11	mg/l	0.01	0.05	SM 4500-P E	09/19/19		JCL

**Lab ID:** 9033112-11      **Collected By:** Client      **Sampled:** 09/12/19 09:40      **Received:** 09/18/19 10:23  
**Sample Desc:** BZ-7S      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.009	mg/l	0.007	0.05	SM 4500-P E	09/19/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	09/19/19	U	JCL



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Additional accreditations by CT (PH-0210), MD (261), NY(12094)

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

**2**

**Lab ID:** 9033112-12      **Collected By:** Client      **Sampled:** 09/12/19 09:40      **Received:** 09/18/19 10:23  
**Sample Desc:** BZ-7M      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.008	mg/l	0.007	0.05	SM 4500-P E	09/19/19	G-11, J	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	09/19/19	U	JCL

**Lab ID:** 9033112-13      **Collected By:** Client      **Sampled:** 09/12/19 09:40      **Received:** 09/18/19 10:23  
**Sample Desc:** BZ-7D      **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.007	mg/l	0.007	0.05	SM 4500-P E	09/19/19	G-11, U	JCL
General Chemistry								
Phosphorus as P, Total	<0.01	mg/l	0.01	0.05	SM 4500-P E	09/19/19	U	JCL



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**Quality Control**

**General Chemistry**

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
<b>Batch B9I1172</b>								
<b>MB (B9I1172-BLK1)</b> Prepared & Analyzed: 09/19/2019								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
<b>MB (B9I1172-BLK2)</b> Prepared & Analyzed: 09/19/2019								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
<b>MB (B9I1172-BLK3)</b> Prepared & Analyzed: 09/19/2019								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
<b>LFB (B9I1172-BS1)</b> Prepared & Analyzed: 09/19/2019								
Phosphorus as P, Total	1.02	0.05	mg/l	102	80-120			
<b>Batch B9I1192</b>								
<b>MB (B9I1192-BLK1)</b> Prepared & Analyzed: 09/19/2019								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
<b>MB (B9I1192-BLK2)</b> Prepared & Analyzed: 09/19/2019								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
<b>MB (B9I1192-BLK3)</b> Prepared & Analyzed: 09/19/2019								
Phosphorus as P, Total	<0.05	0.05	mg/l					U
<b>LFB (B9I1192-BS1)</b> Prepared & Analyzed: 09/19/2019								
Phosphorus as P, Total	1.02	0.05	mg/l	102	80-120			

**Dissolved General Chemistry**

	Result	Reporting Limit	Units	%REC	%REC Limits	RPD	RPD Limit	Analyte Notes
<b>Batch B9I1173</b>								
<b>MB (B9I1173-BLK1)</b> Prepared & Analyzed: 09/19/2019								
Phosphorus as P, Dissolved	<0.05	0.05	mg/l					G-11, U
<b>LFB (B9I1173-BS1)</b> Prepared & Analyzed: 09/19/2019								
Phosphorus as P, Dissolved	1.02	0.05	mg/l	102	80-120			G-11
<b>LFM (B9I1173-MS1)</b> <b>Source: 9033112-03</b> Prepared & Analyzed: 09/19/2019								
Phosphorus as P, Dissolved	0.98	0.05	mg/l	98.4	80-120			
<b>LFMD (B9I1173-MSD1)</b> <b>Source: 9033112-03</b> Prepared & Analyzed: 09/19/2019								
Phosphorus as P, Dissolved	0.97	0.05	mg/l	97.2	80-120	1.23	20	
<b>Batch B9I1193</b>								
<b>MB (B9I1193-BLK1)</b> Prepared & Analyzed: 09/19/2019								
Phosphorus as P, Dissolved	<0.05	0.05	mg/l					G-11, U
<b>LFB (B9I1193-BS1)</b> Prepared & Analyzed: 09/19/2019								
Phosphorus as P, Dissolved	1.01	0.05	mg/l	101	80-120			G-11



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**Preparation Methods**

Specific Method	Preparation Method	Prepared Date	Prepared By
<b>9033112-01</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
<b>9033112-02</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
<b>9033112-03</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
<b>9033112-04</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
<b>9033112-05</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
<b>9033112-06</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
<b>9033112-07</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
<b>9033112-08</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
<b>9033112-09</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
<b>9033112-10</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
<b>9033112-11</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
<b>9033112-12</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL
<b>9033112-13</b>			
SM 4500-P E	SM 4500-P B	09/19/2019	JCL



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**Notes and Definitions**

- G-11 The sample was filtered after it was received at the laboratory.
- J Estimated value
- U Analyte was not detected above the indicated value.



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 SGS North America Inc. - Dayton  
 2235 Route 130, Dayton, NJ 08840  
 TEL: 732-328-0200 FAX: 732-328-3499/3480  
 www.sgs.com/labusa

9033112

Page 3 of 3

<b>Client / Reporting Information</b> Company Name: Philadelphia District, Reservoir Sampling Street: _____ City: _____ State: _____ Zip: _____ Project # _____ Billing information (if different from Report to) Company Name: _____ Street Address: _____ City: _____ State: _____ Zip: _____ Project Contact: tammy.metcosky@sgs.com E-mail: _____ Phone # _____ Client Purchase Order # _____ Sampler(s) Name(s): _____ Project Manager: _____ GW _____ Attention: _____		<b>Requested Analysis</b> Matrix Codes DW - Drinking Water GW - Ground Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Trip Blank TB - Trip Blank LAB USE ONLY	
<b>Project Information</b> Project Name: Philadelphia District, Reservoir Sampling Street: _____ City: _____ State: _____ Zip: _____ Project # _____ Billing information (if different from Report to) Company Name: _____ Street Address: _____ City: _____ State: _____ Zip: _____ Project Contact: tammy.metcosky@sgs.com E-mail: _____ Phone # _____ Client Purchase Order # _____ Sampler(s) Name(s): _____ Project Manager: _____ GW _____ Attention: _____		<b>Requested Analysis</b> Matrix Codes DW - Drinking Water GW - Ground Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Trip Blank TB - Trip Blank LAB USE ONLY	
<b>Turnaround Time (Business Days)</b> <input type="checkbox"/> Standard 10 Business Days <input type="checkbox"/> 6 Business Days RUSH <input type="checkbox"/> 3 Business Days RUSH <input type="checkbox"/> 2 Business Days RUSH <input type="checkbox"/> 1 Business Day EMERGENCY <input checked="" type="checkbox"/> Other Due 10/21/2019 Emergency & Night/7A data available via Lablink. Approval needed for RUSH/Emergency JAT		<b>Data Deliverable Information</b> <input type="checkbox"/> Commercial "A" (Level 1) <input type="checkbox"/> Commercial "B" (Level 2) <input type="checkbox"/> FULLT1 (Level 3+4) <input type="checkbox"/> NJ Reduced <input type="checkbox"/> Commercial "C" <input checked="" type="checkbox"/> Other REDT2 Commercial "A" = Results Only Commercial "B" = Results + GC Summary Commercial "C" = Results + GC Summary + Partial Raw data	
<b>Approved by (SGS PM):</b> _____ Date: _____ <b>Approved by (Client):</b> _____ Date: _____		<b>Comments / Special Instructions</b> _____ _____ _____	
<b>Sample(s) / Collection</b> Field ID / Point of Collection: BZ-7D Date: 9/12/19 Time: 9:40:00 AM Matrix: GW Filter: AQ Number of Preserved Bottles: 1 Matrix: GW Filter: AQ Number of Preserved Bottles: 1		<b>Requested Analysis</b> Matrix Codes DW - Drinking Water GW - Ground Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Trip Blank TB - Trip Blank LAB USE ONLY	
<b>Relinquished by:</b> _____ Date / Time: 9/17/19 <b>Relinquished by:</b> _____ Date / Time: _____ <b>Relinquished by:</b> _____ Date / Time: _____		<b>Relinquished by:</b> _____ Date / Time: _____ <b>Relinquished by:</b> _____ Date / Time: _____ <b>Relinquished by:</b> _____ Date / Time: _____	

-13

19' C service  
 10/20/19  
 9/18/19

Jana B. Meener 9/18/19 1023

for

9033112

Date / Time: 9/17/2019 10:40:38 AM

CSR: TAMMY

Job #: JC94924X

Client Project: Philadelphia District, Reservoir Sampling

Deliverable: REDT2

TAT: Due 10/2/2019

Sub Lab: MJ Reider Associates Inc, Env. Testing Laboratories

Address: 107 Angelica Street

City: Reading

State: PA Zip: 19611

Contact: Sample Receiving / Rich Wheeler

Phone: 610-374-5129

SGS Sample #	Client Sample Description	Analysis	Location	Sampled By	Date Sampled	Time Sampled	Aliquot
JC94924-1F	BZ-1S	FILTERGN_TPO4	SUB	GW	9/12/2019	6:30:00 AM	
JC94924-1X	BZ-1S	TPO4		GW	9/12/2019	6:30:00 AM	
JC94924-2F	BZ-2S	FILTERGN_TPO4	SUB	GW	9/12/2019	11:20:00 AM	
JC94924-2X	BZ-2S	TPO4		GW	9/12/2019	11:20:00 AM	
JC94924-3F	BZ-3S	FILTERGN_TPO4	SUB	GW	9/12/2019	8:45:00 AM	
JC94924-3X	BZ-3S	TPO4		GW	9/12/2019	8:45:00 AM	
JC94924-4F	BZ-3M	FILTERGN_TPO4	SUB	GW	9/12/2019	8:45:00 AM	
JC94924-4X	BZ-3M	TPO4		GW	9/12/2019	8:45:00 AM	
JC94924-5F	BZ-3D	FILTERGN_TPO4	SUB	GW	9/12/2019	8:45:00 AM	
JC94924-5X	BZ-3D	TPO4		GW	9/12/2019	8:45:00 AM	
JC94924-6F	BZ-4S	FILTERGN_TPO4	SUB	GW	9/12/2019	11:10:00 AM	
JC94924-6X	BZ-4S	TPO4		GW	9/12/2019	11:10:00 AM	
JC94924-7F	BZ-5S	FILTERGN_TPO4	SUB	GW	9/12/2019	11:00:00 AM	
JC94924-7X	BZ-5S	TPO4		GW	9/12/2019	11:00:00 AM	
JC94924-8F	BZ-6S	FILTERGN_TPO4	SUB	GW	9/12/2019	7:45:00 AM	
JC94924-8X	BZ-6S	TPO4		GW	9/12/2019	7:45:00 AM	
JC94924-9F	BZ-6M	FILTERGN_TPO4	SUB	GW	9/12/2019	7:45:00 AM	

9033112

<u>JC94924-9X</u>	<u>BZ-6M</u>	<u>TPO4</u>	<u>GW</u>	<u>9/12/2019</u>	<u>7:45:00 AM</u>
<u>JC94924-10E</u>	<u>BZ-6D</u>	<u>FILTERGN_TPO4</u>	<u>GW</u>	<u>9/12/2019</u>	<u>7:45:00 AM</u>
<u>JC94924-10X</u>	<u>BZ-6D</u>	<u>TPO4</u>	<u>GW</u>	<u>9/12/2019</u>	<u>7:45:00 AM</u>
<u>JC94924-11E</u>	<u>BZ-7S</u>	<u>FILTERGN_TPO4</u>	<u>GW</u>	<u>9/12/2019</u>	<u>9:40:00 AM</u>
<u>JC94924-11X</u>	<u>BZ-7S</u>	<u>TPO4</u>	<u>GW</u>	<u>9/12/2019</u>	<u>9:40:00 AM</u>
<u>JC94924-12E</u>	<u>BZ-7M</u>	<u>FILTERGN_TPO4</u>	<u>GW</u>	<u>9/12/2019</u>	<u>9:40:00 AM</u>
<u>JC94924-12X</u>	<u>BZ-7M</u>	<u>TPO4</u>	<u>GW</u>	<u>9/12/2019</u>	<u>9:40:00 AM</u>
<u>JC94924-13E</u>	<u>BZ-7D</u>	<u>FILTERGN_TPO4</u>	<u>GW</u>	<u>9/12/2019</u>	<u>9:40:00 AM</u>
<u>JC94924-13X</u>	<u>BZ-7D</u>	<u>TPO4</u>	<u>GW</u>	<u>9/12/2019</u>	<u>9:40:00 AM</u>

Comments:

Sample Management Receipt:

Date:



M.J. Reider Associates, Inc.

2

### 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

Reviewed and Approved by:



Amy L Morriss  
Project Manager



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## Misc. Forms

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### Custody Documents and Other Forms

---

Includes the following where applicable:

- Chain of Custody







CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehausa

FED-EX Tracking #
Sub Order Control #
SGS Quote #
SGS Job # JC94924

Client / Reporting Information, Project Information, Requested Analysis, Matrix Codes, Turn Around Time, Deliverable, Comments / Special Instructions, Chain of Custody table with columns for Sample #, Field ID, Date, Time, Matrix, etc.

3.4 CPD
3.7 CPD
3.9 CPD
2.8 CPD

JC94924X: Chain of Custody

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3





## SGS Sample Receipt Summary

**Job Number:** JC94924

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 9/12/2019 6:11:00 PM

**Delivery Method:** \_\_\_\_\_

**Airbill #s:** \_\_\_\_\_

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.4); Cooler 2: (2.7); Cooler 3: (3.9); Cooler 4: (2.8);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.3); Cooler 2: (2.6); Cooler 3: (3.8); Cooler 4: (2.7);

<u>Cooler Security</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>	<input type="checkbox"/>

<u>Cooler Temperature</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	4		

<u>Quality Control Preservation</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

<u>Sample Integrity - Documentation</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

<u>Sample Integrity - Condition</u>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:	Intact		

<u>Sample Integrity - Instructions</u>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Test Strip Lot #s:	pH 1-12: 229517	pH 12+: 208717	Other: (Specify) _____
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Comments

SM089-03  
Rev. Date 12/7/17

**JC94924X: Chain of Custody**

**Page 4 of 4**

The results set forth herein are provided by SGS North America Inc.

*e-Hardcopy 2.0*  
*Automated Report*

## Technical Report for

USACE-Philadelphia District

Philadelphia District, Reservoir Sampling

CONTRACT#W912BU18D0003/TO#W912BU19F0065

SGS Job Number: JC94924XA

Sampling Date: 09/12/19

Report to:

USACE-Philadelphia District  
100 Penn Square East  
Philadelphia, PA 19107  
Joseph.M.Loeper@usace.army.mil

ATTN: Joseph Loeper

Total number of pages in report: **16**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

A handwritten signature in black ink, appearing to read "Mike Earp".

Mike Earp  
General Manager

Client Service contact: Tammy McCloskey 732-329-0200

Certifications: NJ(12129), NY(10983), CA, CT, FL, IL, IN, KS, KY, LA, MA, MD, ME, MN, NC, OH VAP (CL0056), AK (UST-103), AZ (AZ0786), PA, RI, SC, TX, UT, VA, WV, DoD ELAP (ANAB L2248)

This report shall not be reproduced, except in its entirety, without the written approval of SGS.  
Test results relate only to samples analyzed.



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## Sample Summary

USACE-Philadelphia District

**Job No:** JC94924XA

Philadelphia District, Reservoir Sampling

Project No: CONTRACT#W912BU18D0003/TO#W912BU19F0065

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
JC94924-1XA	09/12/19	06:30 GW	09/12/19	AQ	Surface Water	BZ-1S
JC94924-2XA	09/12/19	11:20 GW	09/12/19	AQ	Surface Water	BZ-2S
JC94924-3XA	09/12/19	08:45 GW	09/12/19	AQ	Surface Water	BZ-3S
JC94924-6XA	09/12/19	11:10 GW	09/12/19	AQ	Surface Water	BZ-4S
JC94924-7XA	09/12/19	11:00 GW	09/12/19	AQ	Surface Water	BZ-5S
JC94924-8XA	09/12/19	07:45 GW	09/12/19	AQ	Surface Water	BZ-6S
JC94924-11XA	09/12/19	09:40 GW	09/12/19	AQ	Surface Water	BZ-7S

Subcontract Lab Data

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Report of Analysis

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Serialized: 09/16/2019 10:39am QC35

KRISTIN DEGRAW  
SGS NORTH AMERICA, INC.  
2235 ROUTE 130  
DAYTON, NJ 08810

Regarding:

SGS NORTH AMERICA, INC.  
2235 ROUTE 130  
DAYTON, NJ 08810

**PROJECT ID:**

**W09769 USACE**

**LABORATORY REPORT NUMBER:**

**L7160959**



Authorized by: Douglas J. Gump  
Client Services Manager



KRISTIN DEGRAW  
 SGS NORTH AMERICA, INC.  
 2235 ROUTE 130  
 DAYTON, NJ 08810

Regarding:  
 KRISTIN DEGRAW  
 SGS NORTH AMERICA, INC.  
 2235 ROUTE 130  
 DAYTON, NJ 08810

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** 1991782 PI  
**PWSID No:**

Sample ID	Sample Description			Samp. Date/Time/Temp			Sampled by
L7160959-1	BZ-1S			09/12/19 06:30am NA C			Customer
		<b>Received Date/Time/Temp</b> 09/12/19 01:55pm 12.9 C		<b>Iced (Y/N):</b> Y			
		<b>Exceeds recommended temperature for microbiological testing.(T)</b>					
Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- BZ-1S</b>							
Total Coliform, MF	3600 Q		cfu/100ml	SM 9222B	1	100	09/12/19 03:56PM SRK
Fecal Coliform, MF	13 Q		cfu/100ml	SM 9222D	100	1	09/12/19 05:46PM SRK

Sample ID	Sample Description			Samp. Date/Time/Temp			Sampled by
L7160959-2	BZ-2S			09/12/19 11:20am NA C			Customer
		<b>Received Date/Time/Temp</b> 09/12/19 01:55pm 12.9 C		<b>Iced (Y/N):</b> Y			
		<b>Exceeds recommended temperature for microbiological testing.(T)</b>					
Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- BZ-2S</b>							
Total Coliform, MF	7900 Q		cfu/100ml	SM 9222B	1	100	09/12/19 03:56PM SRK
Fecal Coliform, MF	18		cfu/100ml	SM 9222D	100	1	09/12/19 05:46PM SRK

PIN: 28748

Serial Number: 6544403

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** 1991782 PI  
**PWSID No:**

<b>Sample ID</b> L7160959-3	<b>Sample Description</b> BZ-3S	<b>Samp. Date/Time/Temp</b> 09/12/19 08:45am NA C	<b>Sampled by</b> Customer
Received Date/Time/Temp 09/12/19 01:55pm 12.9 C Iced (Y/N): Y Exceeds recommended temperature for microbiological testing.(T)			

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- BZ-3S**

Total Coliform, MF	>2000 Q		cfu/100ml	SM 9222B	10	10	09/12/19 03:56PM SRK
Fecal Coliform, MF	1 Q		cfu/100ml	SM 9222D	100	1	09/12/19 05:46PM SRK

<b>Sample ID</b> L7160959-4	<b>Sample Description</b> BZ-4S	<b>Samp. Date/Time/Temp</b> 09/12/19 11:10am NA C	<b>Sampled by</b> Customer
Received Date/Time/Temp 09/12/19 01:55pm 12.9 C Iced (Y/N): Y Exceeds recommended temperature for microbiological testing.(T)			

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- BZ-4S**

Total Coliform, MF	>20000 Q		cfu/100ml	SM 9222B	1	100	09/12/19 03:56PM SRK
Fecal Coliform, MF	27		cfu/100ml	SM 9222D	100	1	09/12/19 05:46PM SRK

<b>Sample ID</b> L7160959-5	<b>Sample Description</b> BZ-5S	<b>Samp. Date/Time/Temp</b> 09/12/19 11:00am NA C	<b>Sampled by</b> Customer
Received Date/Time/Temp 09/12/19 01:55pm 12.9 C Iced (Y/N): Y Exceeds recommended temperature for microbiological testing.(T)			

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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**ENVIRONMENTAL MICROBIOLOGY -- BZ-5S**

Total Coliform, MF	>20000 Q		cfu/100ml	SM 9222B	1	100	09/12/19 03:56PM SRK
Fecal Coliform, MF	210		cfu/100ml	SM 9222D	10	10	09/12/19 05:46PM SRK

<b>Sample ID</b> L7160959-6	<b>Sample Description</b> BZ-6S	<b>Samp. Date/Time/Temp</b> 09/12/19 07:45am NA C	<b>Sampled by</b> Customer
Received Date/Time/Temp 09/12/19 01:55pm 12.9 C Iced (Y/N): Y Exceeds recommended temperature for microbiological testing.(T)			

Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
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PIN: 28748

Serial Number: 6544403

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** 1991782 PI  
**PWSID No:**

Sample ID	Sample Description	Samp. Date/Time/Temp		Samp. Date/Time/Temp		Sampled by	
L7160959-6	BZ-6S	09/12/19 01:55pm 12.9 C		09/12/19 07:45am NA C		Customer	
<b>Received Date/Time/Temp 09/12/19 01:55pm 12.9 C Iced (Y/N): Y</b> <b>Exceeds recommended temperature for microbiological testing.(T)</b>							
Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- BZ-6S</b>							
Total Coliform, MF	1240 E, Q		cfu/100ml	SM 9222B	10	10	09/12/19 03:56PM SRK
Fecal Coliform, MF	<1 Q		cfu/100ml	SM 9222D	100	1	09/12/19 05:46PM SRK

Sample ID	Sample Description	Samp. Date/Time/Temp		Samp. Date/Time/Temp		Sampled by	
L7160959-7	BZ-7S	09/12/19 01:55pm 12.9 C		09/12/19 09:40am NA C		Customer	
<b>Received Date/Time/Temp 09/12/19 01:55pm 12.9 C Iced (Y/N): Y</b> <b>Exceeds recommended temperature for microbiological testing.(T)</b>							
Parameter	Result	Qual	Units	Method	DF	RL	Test Date, Time, Analyst
<b>ENVIRONMENTAL MICROBIOLOGY -- BZ-7S</b>							
Total Coliform, MF	>2000 Q		cfu/100ml	SM 9222B	10	10	09/12/19 03:56PM SRK
Fecal Coliform, MF	1 Q		cfu/100ml	SM 9222D	100	1	09/12/19 05:46PM SRK

**Sample Comments | Result Qualifiers:**

L7160959-1 :

T: Samples for microbiological testing were received at the laboratory outside of the allowed temperature range of just above 0 to 10 degrees C. Because ice is present and the chilling process begun, the sample storage criteria is considered acceptable.

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7160959-2 :

T: Samples for microbiological testing were received at the laboratory outside of the allowed temperature range of just above 0 to 10 degrees C. Because ice is present and the chilling process begun, the sample storage criteria is considered acceptable.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7160959-3 :

T: Samples for microbiological testing were received at the laboratory outside of the allowed temperature range of just above 0 to 10 degrees C. Because ice is present and the chilling process begun, the sample storage criteria is considered acceptable.

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory

PIN: 28748

Serial Number: 6544403

**Account No:** W09769, SGS NORTH AMERICA, INC.  
**Project No:** W09769 USACE, USACE

**P.O. No:**

**Inv. No:** 1991782 PI  
**PWSID No:**

purposes.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7160959-4 :

T: Samples for microbiological testing were received at the laboratory outside of the allowed temperature range of just above 0 to 10 degrees C. Because ice is present and the chilling process begun, the sample storage criteria is considered acceptable.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7160959-5 :

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

T: Samples for microbiological testing were received at the laboratory outside of the allowed temperature range of just above 0 to 10 degrees C. Because ice is present and the chilling process begun, the sample storage criteria is considered acceptable.

L7160959-6 :

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

T: Samples for microbiological testing were received at the laboratory outside of the allowed temperature range of just above 0 to 10 degrees C. Because ice is present and the chilling process begun, the sample storage criteria is considered acceptable.

E: For microbiology testing by membrane filtration, the reported result was based on a colony count outside the recommended range of the test. The reported result may be considered an estimate.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.

L7160959-7 :

T: Samples for microbiological testing were received at the laboratory outside of the allowed temperature range of just above 0 to 10 degrees C. Because ice is present and the chilling process begun, the sample storage criteria is considered acceptable.

Q: Microbiological testing was conducted outside of the recommended holding time of 8 hours. Results may not be acceptable for regulatory purposes.

Q: For microbiological test, this sample was received in an unverified container. Because container lot quality records are not available, the reported result may not be acceptable for regulatory purposes.



PIN: 28748

Serial Number: 6544403

**DEFINITIONS**

The following terms or abbreviations are used in this report:

*Eurofins QC, LLC (EQC)*

<	Less than: In conjunction with a numerical value, indicates a concentration less than RL / MDL
>	Greater than: In conjunction with a numerical value, indicates a concentration greater than RL / MDL
CFU	Colony Forming Unit
DF	Dilution Factor (For Microbiology, DF = volume of sample tested)
DRY	Result was reported on a dry weight basis
MCL	EPA recommended "Maximum Contaminant Level"
MDL	Method Detection Limit
MF	Membrane Filtration
MPN	Most Probable Number
ND	For odor test: No Odor Observed
ND	For all other tests: Analyte concentration Not Detected greater than the RL / MDL

NEG	Negative / Absent
NTU	Nephelometric Turbidity Units
POS	Positive / Present
PPB (µg/L)	Parts per billion: equivalent to 1 microgram per kilogram (µg/Kg) for solids or one microgram per liter (µg/L) for aqueous samples
PPM (mg/L)	Parts per million: equivalent to 1 milligram per kilogram (mg/Kg) for solids or one milligram per liter (mg/L) for aqueous samples
PRES	Presumptive
QUAL	Qualifier (Q)
RL	Laboratory Reporting Limit or Limit of Quantitation (LOQ)
TNTC	Too Numerous To Count
TON	Threshold Odor Number

**Data Qualifiers**

J	Estimated value > MDL, but < RL
T	Temperature exceedance at receipt, refer to Sample Comments / Results Qualifiers section
E	Estimated CFU count (Microbiology)
Q	Qualifier defined in Sample Comment section on report

**Warranties, Terms, and Conditions**

- Unless otherwise indicated in the Parameter field, analyses for environmental microbiology, odor, and pharmaceutical microbiology are performed at the EQC Horsham Facility (702 Electronic Dr. Horsham, PA 19044).
- Analyses for Field Parameters are performed by EQC Field staff. Locations and certifications are identified on the Chain of Custody as follows:
  - "ERF" = field staff performs tests under NJ State certification # 02015.
  - "VL" = field staff performs tests under NJ State certification # 06005.
  - "WG" = field staff performs tests under NJ State certification # PA001.
- Test results meet all TNI or other applicable regulatory agency requirements, including holding times and preservation, unless otherwise indicated.
- The report shall not be reproduced, except in full, without the written consent of the laboratory.
- All samples are collected as "grab" samples unless otherwise identified.
- Reported results relate only to the sample as tested. EQC is not responsible for sample integrity unless sampling has been performed by a member of our staff.
- EQC is not responsible for sampling and/or testing omissions. Note that regulatory authorities may assess substantial fines for testing omissions. Please track your sample collection schedules and results on a regular basis (e.g. weekly, monthly, or quarterly) to ensure compliance. EQC's internet program "LIVE ACCESS" will provide you with real-time access to collection dates and testing results. Please contact Client Services for further information.
- The following personnel or their deputies have approved the results of the tests performed by EQC: Nicki Smith (Environmental Chemistry), Amanda Berd (Pharmaceutical Microbiology), and Zachary Smith (Water Microbiology).

**EQC Accreditations**

Horsham Facility	<u>NELAP/State IDs-</u> PA: 46-05499	NJ: PA093	NY: 12080	MD: 357
East Rutherford Facility	<u>State ID-</u>	NJ: 02015		
Vineland Facility	<u>State ID-</u>	NJ: 06005		
Wind Gap Facility	<u>State ID-</u>	NJ: PA001		



## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody







CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL: 732-329-0200 FAX: 732-329-3499/3480
www.sgs.com/ehausa

FED-EX Tracking #
Sub Order Control #
SGS Quote #
SGS Job # JC94924

Client / Reporting Information, Project Information, Requested Analysis, Matrix Codes, Turn Around Time, Deliverable, Comments / Special Instructions, Chain of Custody table, and signature blocks.

31
3

JC94924XA: Chain of Custody

Page 2 of 4





## SGS Sample Receipt Summary

**Job Number:** JC94924

**Client:** USACE-PHILADELPHIA DISTRICT

**Project:** PHILADELPHIA DISTRICT, RESERVOIR SAMPL

**Date / Time Received:** 9/12/2019 6:11:00 PM

**Delivery Method:** \_\_\_\_\_

**Airbill #s:** \_\_\_\_\_

**Cooler Temps (Raw Measured) °C:** Cooler 1: (3.4); Cooler 2: (2.7); Cooler 3: (3.9); Cooler 4: (2.8);

**Cooler Temps (Corrected) °C:** Cooler 1: (3.3); Cooler 2: (2.6); Cooler 3: (3.8); Cooler 4: (2.7);

<b>Cooler Security</b>	<u>Y</u>	<u>or</u>	<u>N</u>		<u>Y</u>	<u>or</u>	<u>N</u>
1. Custody Seals Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	3. COC Present:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Custody Seals Intact:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	4. Smpl Dates/Time OK	<input checked="" type="checkbox"/>		<input type="checkbox"/>

<b>Cooler Temperature</b>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Temp criteria achieved:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Cooler temp verification:	IR Gun		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	4		

<b>Quality Control Preservation</b>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Trip Blank present / cooler:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
2. Trip Blank listed on COC:	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Samples preserved properly:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. VOCs headspace free:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

<b>Sample Integrity - Documentation</b>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample labels present on bottles:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. Container labeling complete:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Sample container label / COC agree:	<input checked="" type="checkbox"/>		<input type="checkbox"/>

<b>Sample Integrity - Condition</b>	<u>Y</u>	<u>or</u>	<u>N</u>
1. Sample recvd within HT:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
2. All containers accounted for:	<input checked="" type="checkbox"/>		<input type="checkbox"/>
3. Condition of sample:	Intact		

<b>Sample Integrity - Instructions</b>	<u>Y</u>	<u>or</u>	<u>N</u>	<u>N/A</u>
1. Analysis requested is clear:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
2. Bottles received for unspecified tests	<input type="checkbox"/>		<input checked="" type="checkbox"/>	
3. Sufficient volume recvd for analysis:	<input checked="" type="checkbox"/>		<input type="checkbox"/>	
4. Compositing instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Filtering instructions clear:	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

Test Strip Lot #s:	pH 1-12: 229517	pH 12+: 208717	Other: (Specify) _____
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Comments

SM089-03  
Rev. Date 12/7/17

**JC94924XA: Chain of Custody**

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