

**2016 WATER QUALITY MONITORING
BELTZVILLE RESERVOIR
LEHIGHTON, PENNSYLVANIA**



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

December 2016

**2016 Water Quality Monitoring
Beltzville Reservoir
Lehigh, Pennsylvania**

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1.0 INTRODUCTION

1.1 PURPOSE OF THE MONITORING PROGRAM

The U.S. Army Corps of Engineers (USACE) manages 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 12 May to 14 September 2016.

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 2016 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 12 May and ending on 14 September 2016; and
- Monthly profile samples for temperature, dissolved oxygen, chlorophyll a, pH, turbidity, and conductivity at all stations in the reservoir and watershed.

2.0 METHODS

2.1 STRATIFICATION MONITORING

Physical stratification monitoring of the water column was conducted five times at Beltzville Reservoir between 12 May and 14 September 2016 (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), where applicable.

2.2 WATER COLUMN CHEMISTRY MONITORING

Water column chemistry monitoring was conducted five times (once a month) at Beltzville Reservoir between 12 May and 14 September 2016 (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. MJ Reider Associates in Reading, Pennsylvania conducted the laboratory water sample analysis for 2016.

Water samples from all depths were analyzed for ammonia, nitrite, nitrate, total Kjeldahl nitrogen, total phosphorus, ortho-phosphate, 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 2016

Date of Sample Collection	Physical Stratification Monitoring (All Stations)	Water Column Chemistry Monitoring (All Stations)	BTEX Monitoring⁽²⁾ (BZ-3 and -6)	Trophic State Assessment⁽³⁾ (BZ-6)	Coliform Bacteria Monitoring (All Surface Stations)	Drinking Water Monitoring⁽¹⁾
12 May	X	X		Insufficient data	X	
08 June	X	X		Insufficient data	X	
20 July	X	X		X	X	
18 August	X	X		X	X	
14 September	X	X		X	X	

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

(2) BTEX sampling was not conducted in 2016 based on historically low and non-detectable levels of these parameters.

(3) Equipment failure. Chlorophyll a was not collected in two sampling events and is needed for trophic state calculation.

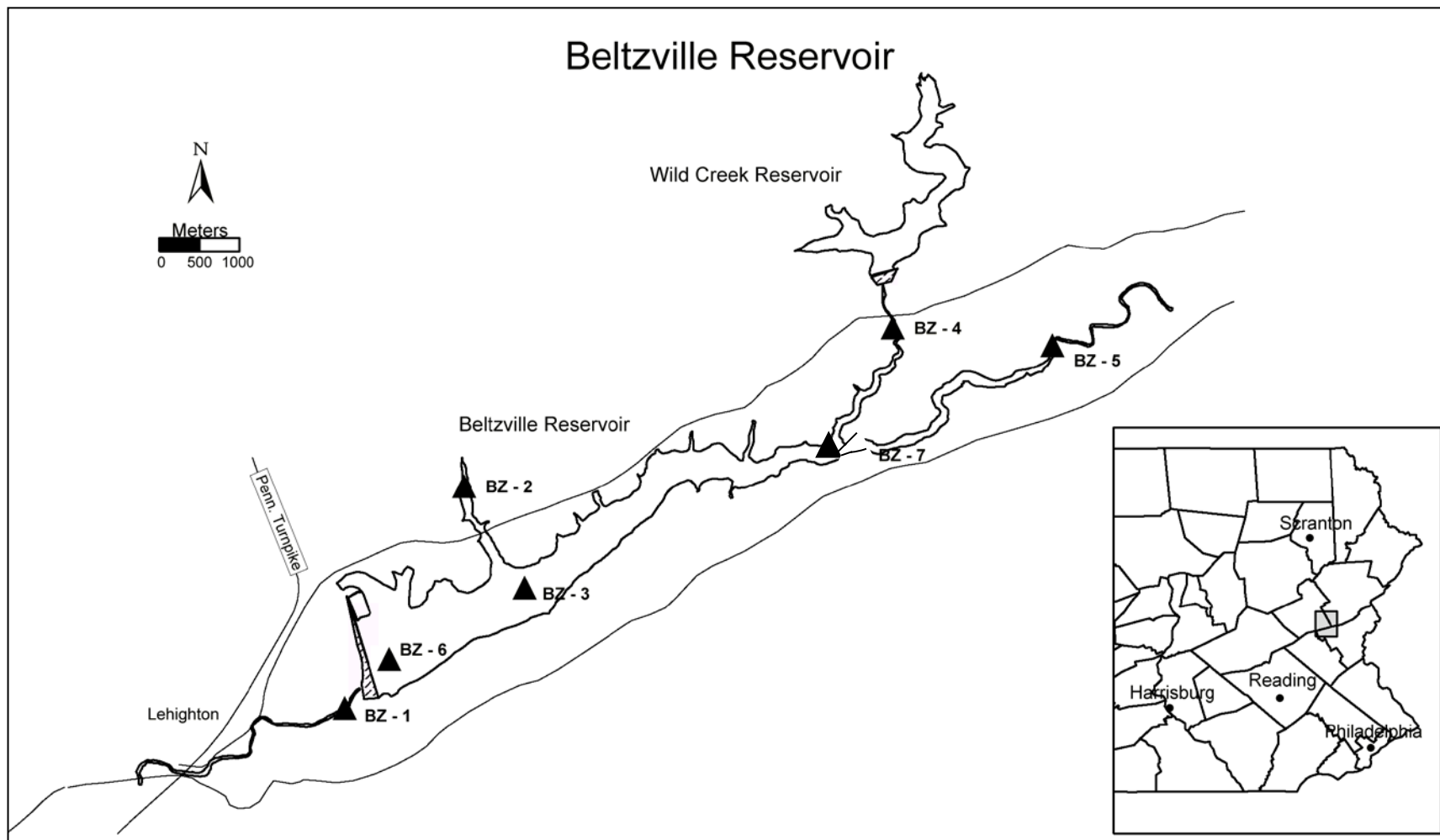


Figure 2-1. Beltzville Reservoir and the location of water quality monitoring stations in 2016.

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 2016

Parameter	(2) Method	Reporting Limit	PADEP Surface Water Quality Criteria	Allowable Hold Times (Days)
Total Alkalinity	SM20 2320B	1.0 mg/L	Min. 20 mg/L CaCO ₃	14
Biochemical Oxygen Demand (BOD)	SM20 5210B	2.0 mg/L	None	2
Total Phosphorus	SM20 4500-PE	0.01 mg/L	None	28
Diss./Ortho-Phosphate	SM20 4500-PE	0.01 mg/L	None	28
Soluble Phosphorus	SM-20 4500-PE	0.05 mg/L	None	28
Total Organic Carbon (TOC)	SM-20 5310C	1.0 mg/L	None	28
Total Inorganic Carbon (TIC) *	SM-20 5310B	NA	None	28
Total Carbon (TOC + TIC) *	SM-20 5310B	NA	None	28
(1) Chlorophyll a	YSI Probe	----	None	In Situ
Total Kjeldahl Nitrogen	351.2 MCAWW	0.25 mg/L	None	28
Ammonia	D6919-03	0.05 mg/L	Temp. and pH dependent	28
Nitrate	MCAWW 353.2	0.05 mg/L	Maximum 10 mg/L (nitrate + nitrite)	28
Nitrite	MCAWW 353.2	0.05 mg/L		28
Total Dissolved Solids	SM20 2540C	5.0 mg/L	Maximum 750 mg/L	7
Total Suspended Solids	SM20 2540D	3.0 mg/L	None	7

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

(2) Laboratory Methods Reference:

MCAWW- "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SM-20- "Standard Methods for the Examination of Water and Wastewater", 22nd Edition, 2012.

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

* Total Inorganic Carbon and Total Carbon were not sampled for in 2016

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 only for Station BZ-6 within the deepest portion of the reservoir.

2.4 RESERVOIR BACTERIA MONITORING

Monitoring for coliform bacteria contaminants was conducted five times at Beltzville Reservoir between 12 May and 14 September 2016 (Table 2-1). Surface water samples were collected at all seven stations and analyzed for total coliform and fecal coliform. 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 2016. The bacteria analytical method was based on a membrane filtration technique. All of the samples were analyzed within their maximum allowable hold times.

Table 2-3. Water quality test methods, detection limits, PADEP standards, and sample holding times for bacteria parameters monitored at Beltzville Reservoir in 2016.		
Parameter	Total Coliform/E-coli	Fecal Coliform
Test method	SM 9223B	SM9222D
Detection limit	1 clns/100-mls	2 clns/100-mls
PADEP standard	None	Geometric mean < 200 clns/100-mls or a single sample reading of < 1000 clns/100-mls
Maximum 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 May to September 2016. 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 2016 with maximum surface water temperatures seen in July and August (Fig. 3-1). The maximum upstream tributary station temperature of 25.50 °C was seen at station BZ-4S on 18 August and station BZ-5S on 20 July. The maximum downstream release (BZ-1S) surface water temperature was 13.54 °C on 18 August. 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 come 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 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 2016 (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 May, the onset of stratification was apparent with surface temperatures (13.38°C) approximately 6.37°C warmer than the lower water column (7.01°C). A strong stratification pattern was evident from early June into September. In September, cooling surface temperatures and erosion of the epilimnion marked the onset of fall turnover within the reservoir.

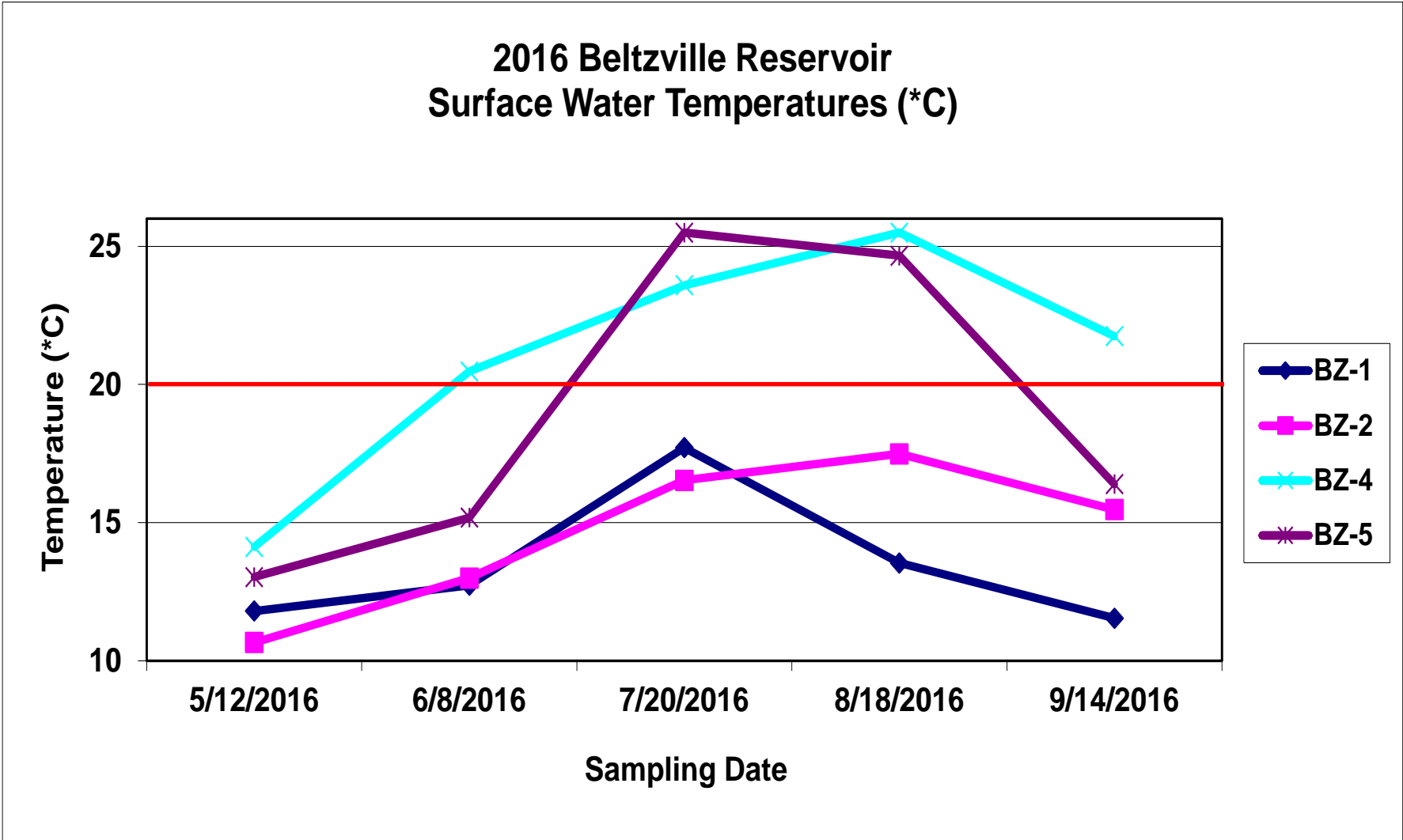


Figure 3-1. Tributary and downstream surface water temperature (°C) measured at Beltzville Reservoir in 2016. See Appendix A for Summary of plotted values. Station BZ-1 reflects releases surface water temperatures downstream of Beltzville Reservoir. The coldwater species preference temperature of 20°C is shown as a red line reference.

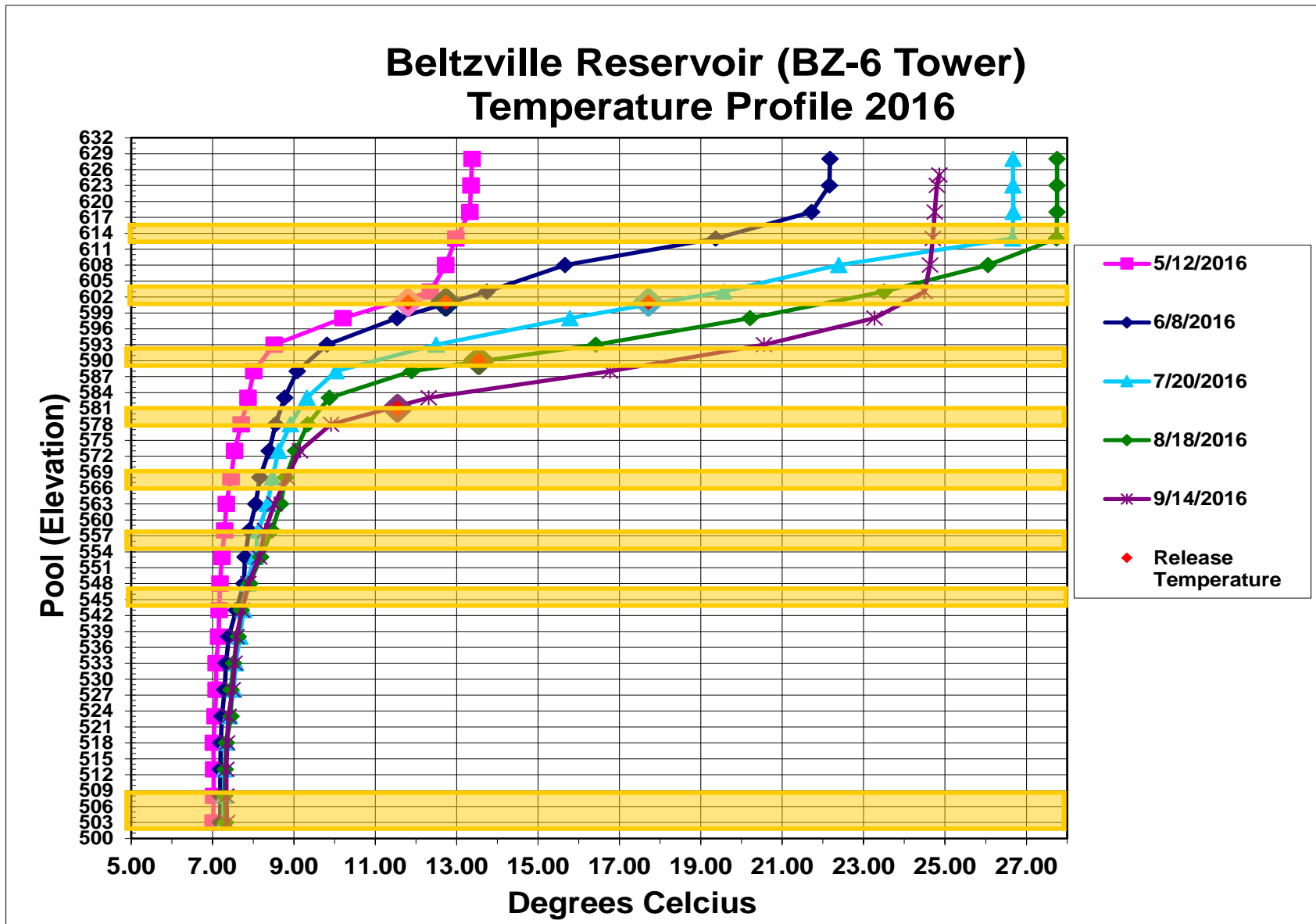


Figure 3-2. Lake temperature profile at station BZ-6 of Beltville Reservoir in 2016. See Appendix A for summary of plotted values. The yellow bars represent the locations of water control gates in the Beltville Reservoir control tower. Corresponding downstream release water temperatures at Station BZ-1S 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 8-11 mg/L range of values and followed a similar seasonal pattern throughout the watershed of Beltzville Reservoir during 2016 (Fig. 3-3). The exception to this pattern was seen at station BZ-5S. A greater swing in DO levels was seen at this station as a potential result of low flow conditions during the summer with an increase in algal productivity in July and subsequent algal die off in August. Dissolved oxygen concentrations downstream of the reservoir (BZ-1S) and at the upstream tributary stations (BZ-2S, -4S, -5S) averaged 9.56 mg/L for the sampling season. The maximum DO reading of 12.71 mg/L occurred at BZ-5S on 20 July and a minimum reading of 7.15 mg/L occurred at BZ-5S on 18 August.

Dissolved Oxygen in the water column at station BZ-6 of Beltzville Reservoir from July 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). 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 2016. 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 encountered in August and September, but were located 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 2016, these conditions were seen in the water column at station BZ-6 in September (Appendix A).

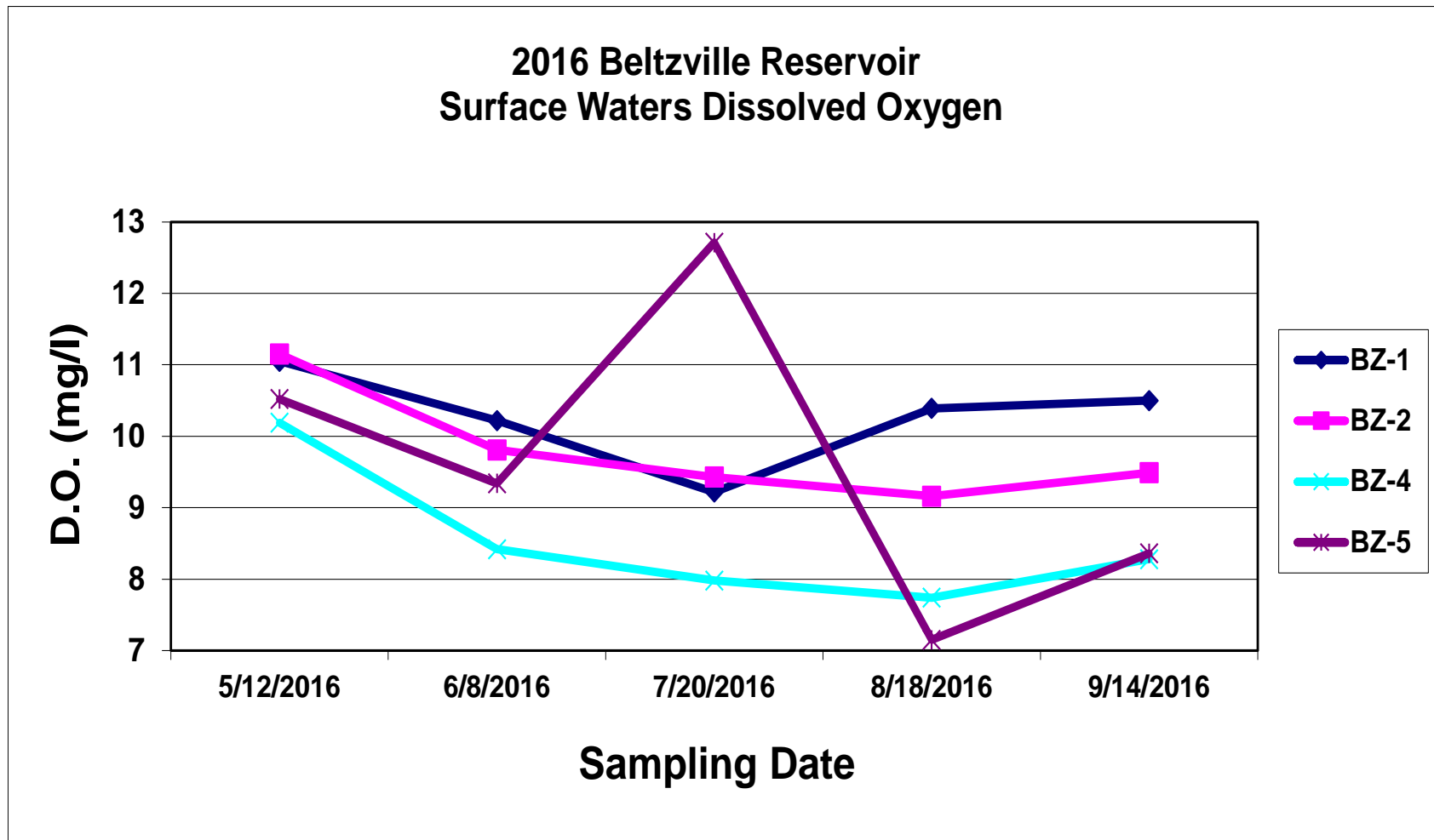


Figure 3-3. Dissolved oxygen concentrations measured in tributary and downstream surface waters at Beltzville Reservoir in 2016. (The PADEP water quality standard for dissolved oxygen is a minimum concentration of 5 mg/L.) See Appendix A for summary of plotted values. Station BZ-1S reflects reservoir release surface waters downstream of Beltzville Reservoir.

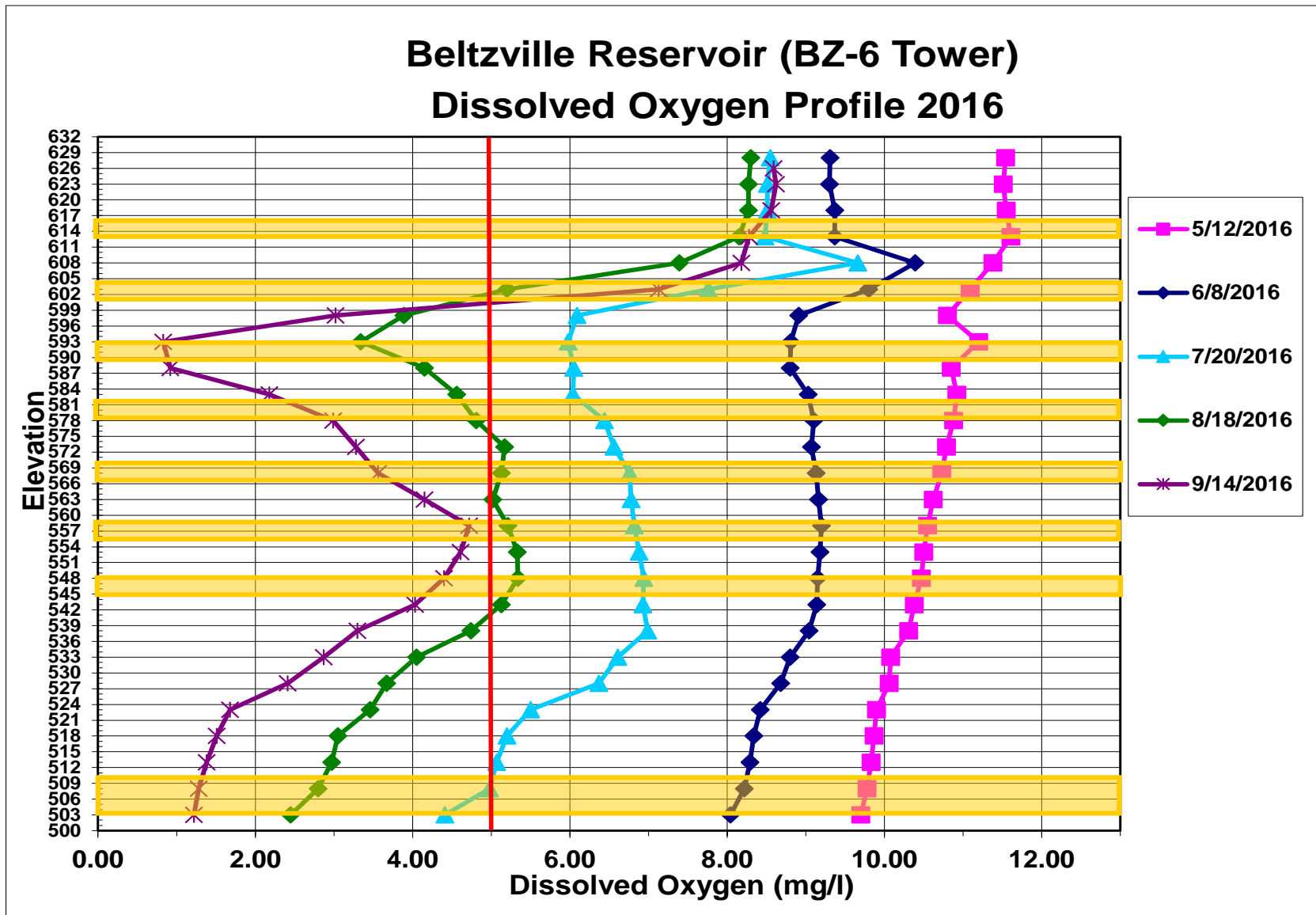


Figure 3-4. Dissolved oxygen profile at station BZ-6 of Beltzville Reservoir in 2016. (The PADEP water quality standard for DO is a minimum concentration of 5 mg/L.) See Appendix A for summary of plotted values.

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 primarily stayed within a tight range of values and followed a similar seasonal pattern at Beltzville Reservoir during 2016 (Fig. 3-5). A spike in pH (9.49) at station BZ-5S on 20 July was likely the result of low flow conditions and increased algal productivity at that time. The minimum pH value of 6.41 was recorded at station BZ-1S on 14 September.

In all months sampled in 2016, pH values in the lake water column were slightly higher near the water surface, declined rapidly, and remained relatively constant or slightly increasing 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. A slight increase in pH in bottom waters occurred in the portions of the water column experiencing anoxic or low oxygen conditions. This increase in pH may be attributed to anaerobic oxidation processes in the bottom waters of the lake. The pH measures at all but one lake and tributary station at Beltzville Reservoir during 2016 were in compliance with PADEP pH criteria. A spike in pH (9.49) at station BZ-5S on 20 July was likely the result of low flow conditions and increased algal productivity at that time. The standard for pH is a range of acceptable measures between 6 and 9.

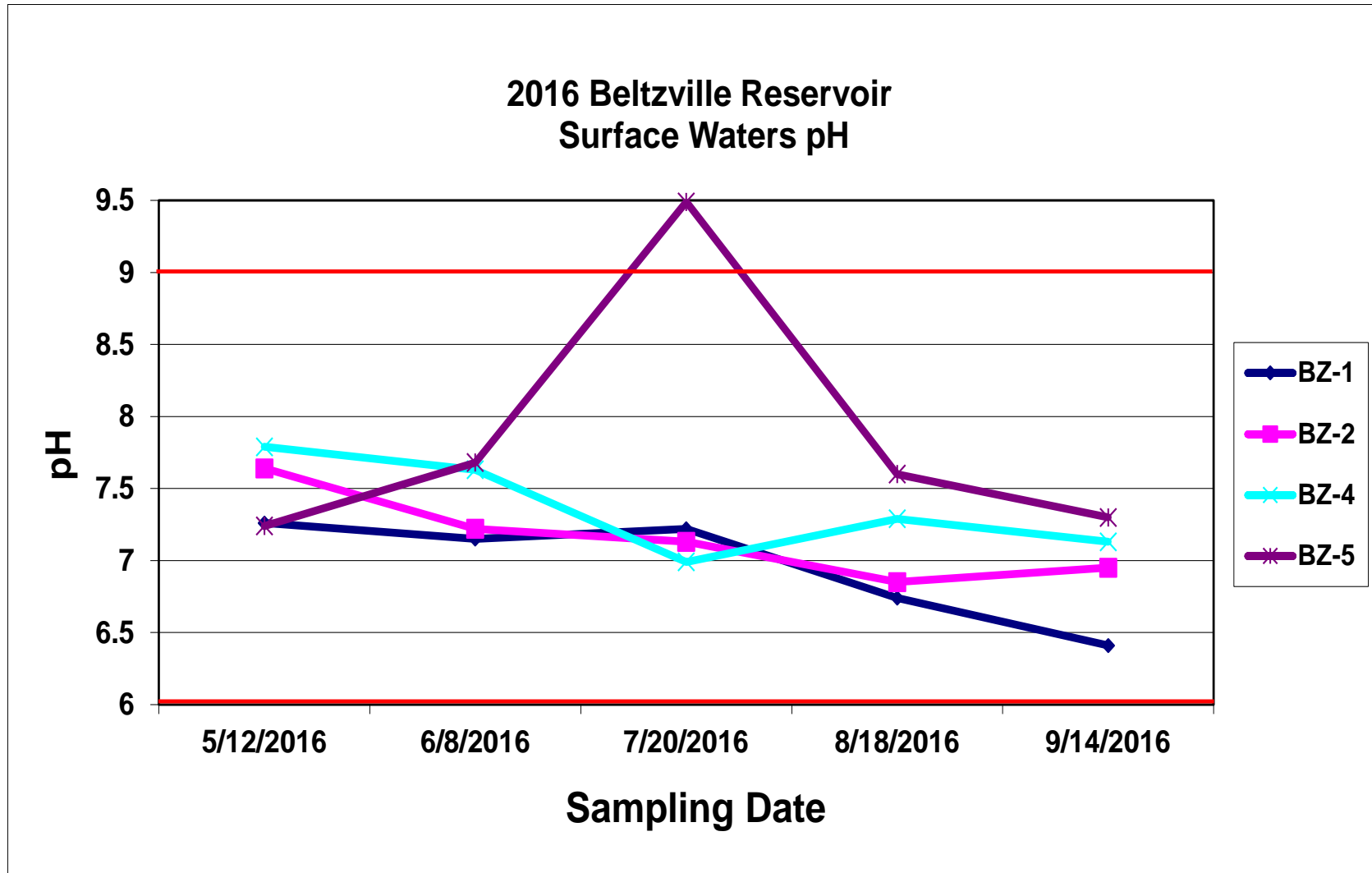


Figure 3-5. pH concentrations measured in tributary and downstream surface waters at Beltzville Reservoir in 2016. (The PADEP water quality standard for pH is between 6 and 9) See Appendix A for summary of plotted values.

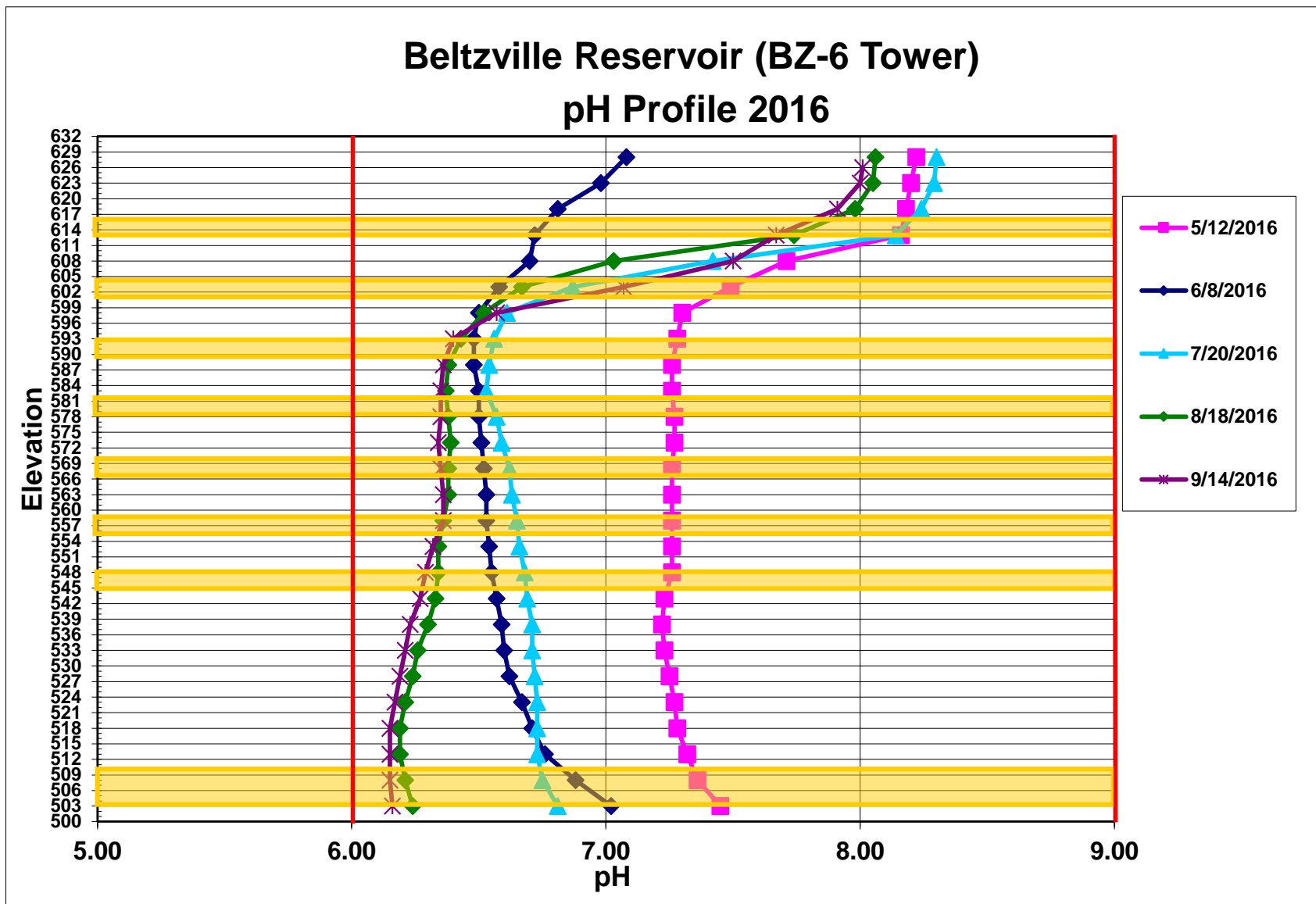


Figure 3-6. pH profile at station BZ-6 of Beltzville Reservoir in 2016. (The PADEP water quality standard for pH is between 6 and 9) See Appendix A for summary of plotted value

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 2016 (Table 3-2).

3.2.1 Ammonia

Total Ammonia (NH₃) 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. Excess ammonia contributes to eutrophication of water bodies. This can result in excessive algal growths and impacts on recreation and drinking water supplies. In high concentrations, ammonia is toxic to aquatic life.

Ammonia concentrations were low in Beltzville Reservoir during 2016. With the exception of one sample, concentrations measured at all stations and depths were less than the laboratory reporting limit of 0.05 mg/L during the entire sampling season and at all stations and depths. The single recorded sample of 0.12 mg/L was collected from station BZ-7B on 14 September. Concentrations of ammonia measured at Beltzville Reservoir were in compliance with the PADEP water quality standards during 2016. The state water quality standard for ammonia is dependent on temperature and pH (Table 3-1).

PH	10 °C	15 °C	20 °C	25 °C	30 °C
6.50	25.5	17.4	12.0	8.4	5.9
6.75	23.6	16.0	11.1	7.7	5.5
7.00	20.6	14.0	9.7	6.8	4.8
7.25	16.7	11.4	7.8	5.5	3.9
7.50	12.4	8.5	5.9	4.1	2.9
7.75	8.5	5.8	4.0	2.8	2.0
8.00	5.5	5.8	4.0	2.8	2.0
8.25	3.4	2.3	1.6	1.2	0.9
8.50	2.0	1.4	1.0	0.7	0.6
8.75	1.2	0.9	0.6	0.5	0.4
9.00	0.8	0.5	0.4	0.3	0.3
9.25	0.36	0.24	0.17	0.12	0.08
9.50	0.20	0.13	0.10	0.07	0.05

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	5/12/2016	11	<2	<.05	<.05	<.05	0.64	<.01	126	0.3	2	<.01	<3
	6/8/2016	10	<2	<.05	<.05	<.05	0.56	<.01	24	0.55	1.5	<.01	<3
	7/20/2016	53	<2	<.05	<.05	<.05	0.63	<.01	56	0.45	1.7	<.01	102
	8/18/2016	12	<2	0.2	<.05	<.05	0.69	<.01	47	0.32	1.6	0.2	<3
	9/14/2016	12	<2	<.05	<.05	<.05	0.66	<.01	36	<.25	1.1	<.01	<3
	Mean	20	2	0.08	0.05	0.05	0.64	0.01	58	0.37	1.6	0.05	23
	Stdev	19	0	0.07	0	0	0.05	0.00	40	0.12	0.3	0.08	44
	Max	53	2	0.2	0.05	0.05	0.69	0.01	126	0.55	2	0.2	102
	Min	10	2	0.05	0.05	0.05	0.56	0.01	24	0.25	1.1	0.01	3
	No. of Det	5	0	1	0	0	5	0	5	4	5	1	1
BZ-2S	5/12/2016	7	<2	<.05	<.05	<.05	0.14	<.01	144	<.25	<1	<.01	3
	6/8/2016	7	<2	<.05	<.05	<.05	0.22	<.01	17	0.37	1	<.01	57
	7/20/2016	51	<2	<.05	<.05	<.05	0.24	0.01	49	<.25	<1	<.01	<3
	8/18/2016	11	<2	0.37	<.05	<.05	0.45	<.01	33	<.25	<1	0.4	<3
	9/14/2016	12	<2	<.05	<.05	<.05	0.28	<.01	30	<.25	<1	<.01	<3
	Mean	18	2	0.11	0.05	0.05	0.27	0.01	55	0.27	1	0.09	14
	Stdev	19	0	0.14	0	0	0.11	0.00	51	0.05	0.0	0.17	24
	Max	51	2	0.37	0.05	0.05	0.45	0.01	144	0.37	1	0.4	57
	Min	7	2	0.05	0.05	0.05	0.14	0.01	17	0.25	1	0.01	3
	No. of Det	5	0	1	0	0	5	1	5	1	1	1	2

Table 3.2 Continued. Summary of surface, middle, and bottom water quality monitoring data for Beltzville Reservoir in 2016

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	5/12/2016	12	<2	<.05	<.05	<.05	0.61	<.01	169	0.29	1.3	0.02	<3
	6/8/2016	13	<2	<.05	<.05	<.05	0.51	<.01	25	0.41	1.8	<.01	<3
	7/20/2016	45	<2	<.05	<.05	<.05	0.36	<.01	54	0.4	2.1	0.02	<3
	8/18/2016	15	<2	0.41	<.05	<.05	0.23	<.01	41	0.37	2	0.46	<3
	9/14/2016	14	<2	<.05	<.05	<.05	0.19	<.01	31	0.31	1.8	<.01	<3
	Mean	20	2	0.12	0.05	0.05	0.38	0.01	64	0.36	1.8	0.10	3
	Stdev	14	0	0.16	0	0	0.18	0	60	0.05	0.3	0.20	0
	Max	45	2	0.41	0.05	0.05	0.61	0.01	169	0.41	2.1	0.46	3
	Min	12	2	0.05	0.05	0.05	0.19	0.01	25	0.29	1.3	0.01	3
	No. of Det	5	0	1	0	0	5	0	5	5	5	3	0
BZ-3M	5/12/2016	9	<2	<.05	<.05	<.05	0.69	<.01	133	<.25	1	<.01	<3
	6/8/2016	10	<2	0.11	<.05	<.05	0.64	<.01	40	0.54	<1	0.05	<3
	7/20/2016	67	<2	<.05	<.05	<.05	0.71	<.01	62	0.27	1.2	<.01	<3
	8/18/2016	11	<2	0.4	<.05	<.05	0.75	<.01	30	0.28	1	0.46	<3
	9/14/2016	13	<2	<.05	<.05	<.05	0.62	<.01	43	<.25	1.1	<.01	<3
	Mean	22	2	0.13	0.05	0.05	0.68	0.01	62	0.32	1.1	0.11	3
	Stdev	25	0	0.15	0	0	0.05	0.00	42	0.12	0.1	0.20	0
	Max	67	2	0.4	0.05	0.05	0.75	0.01	133	0.54	1.2	0.46	3
	Min	9	2	0.05	0.05	0.05	0.62	0.01	30	0.25	1	0.01	3
	No. of Det	5	0	2	0	0	5	0	5	3	4	2	0

Table 3.2 Continued. Summary of surface, middle, and bottom water quality monitoring data for Beltzville Reservoir in 2016

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	5/12/2016	9	<2	<.05	<.05	<.05	0.68	<.01	109	<.25	1	<.01	<3
	6/8/2016	11	<2	<.05	<.05	<.05	0.61	<.01	35	0.42	<1	0.03	<3
	7/20/2016	51	<2	<.05	<.05	<.05	0.66	<.01	50	0.3	1.2	<.01	4
	8/18/2016	13	<2	0.48	<.05	<.05	0.59	<.01	43	0.33	1.2	0.47	9
	9/14/2016	15	2	<.05	<.05	<.05	0.41	0.01	51	0.73	1.8	<.01	77
	Mean	20	2	0.14	0.05	0.05	0.59	0.01	58	0.41	1.2	0.11	19
	Stdev	18	0	0.19	0	0	0.11	0.00	29	0.19	0.3	0.20	32
	Max	51	2	0.48	0.05	0.05	0.68	0.01	109	0.73	1.8	0.47	77
	Min	9	2	0.05	0.05	0.05	0.41	0.01	35	0.25	1	0.01	3
	No. of Det	5	1	1	0	0	5	1	5	4	4	2	3
BZ-4S	5/12/2016	6	<2	<.05	<.05	<.05	2.45	<.01	70	<.25	1.4	<.01	<3
	6/8/2016	7	<2	0.07	<.05	<.05	1.34	0.01	60	0.69	1.3	0.08	4
	7/20/2016	46	<2	<.05	<.05	<.05	0.19	<.01	17	0.37	1.5	<.01	<3
	8/18/2016	8	<2	0.39	<.05	<.05	0.36	<.01	19	0.29	1.4	0.4	<3
	9/14/2016	7	<2	<.05	<.05	<.05	0.08	<.01	18	<.25	1.2	<.01	<3
	Mean	15	2	0.12	0.05	0.05	0.88	0.01	37	0.37	1.4	0.10	3
	Stdev	17	0	0.15	0	0	1.01	0	26	0.19	0.1	0.17	0
	Max	46	2	0.39	0.05	0.05	2.45	0.01	70	0.69	1.5	0.4	4
	Min	6	2	0.05	0.05	0.05	0.08	0.01	17	0.25	1.2	0.01	3
	No. of Det	5	0	2	0	0	5	1	5	3	5	2	1

Table 3.2 Continued. Summary of surface, middle, and bottom water quality monitoring data for Beltzville Reservoir in 2016

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	5/12/2016	13	8	<.05	<.05	<.05	0.96	<.01	125	0.38	1.4	<.01	789
	6/8/2016	14	<2	<.05	<.05	<.05	1.14	0.02	66	0.84	1.5	0.04	18
	7/20/2016	41	9	<.05	<.05	<.05	0.22	0.01	60	1.68	4.8	0.05	128
	8/18/2016	21	<2	0.42	<.05	<.05	0.31	<.01	44	1.08	3	0.42	4
	9/14/2016	21	5	<.05	<.05	<.05	0.95	0.01	58	0.32	1.5	<.01	26
	Mean	22	5	0.12	0.05	0.05	0.72	0.01	71	0.86	2.4	0.11	193
	Stdev	11	3	0.17	0	0	0.42	0.00	31	0.56	1.5	0.18	337
	Max	41	9	0.42	0.05	0.05	1.14	0.02	125	1.68	4.8	0.42	789
	Min	13	2	0.05	0.05	0.05	0.22	0.01	44	0.32	1.4	0.01	4
	No. of Det	5	3	1	0	0	5	3	5	5	5	3	5
BZ-6S	5/12/2016	10	<2	<.05	<.05	<.05	0.6	<.01	55	0.29	1.3	<.01	<3
	6/8/2016	11	<2	<.05	<.05	<.05	0.52	0.01	45	0.44	1.7	0.01	<3
	7/20/2016	45	<2	<.05	<.05	<.05	0.37	<.01	49	0.35	2.8	0.01	<3
	8/18/2016	14	<2	0.4	<.05	<.05	0.25	<.01	45	0.41	2	0.4	<3
	9/14/2016	14	<2	<.05	<.05	<.05	0.19	<.01	35	<.25	1.7	<.01	<3
	Mean	19	2	0.12	0.05	0.05	0.39	0.01	46	0.35	1.9	0.09	3
	Stdev	15	0	0.16	0	0	0.17	0.00	7	0.08	0.6	0.17	0
	Max	45	2	0.4	0.05	0.05	0.6	0.01	55	0.44	2.8	0.4	3
	Min	10	2	0.05	0.05	0.05	0.19	0.01	35	0.25	1.3	0.01	3
	No. of Det	5	0	1	0	0	5	1	5	4	5	3	0

Table 3.2 Continued. Summary of surface, middle, and bottom water quality monitoring data for Beltzville Reservoir in 2016

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	5/12/2016	9	<2	<.05	<.05	<.05	0.68	<.01	105	0.31	1.1	0.06	<3
	6/8/2016	10	<2	<.05	<.05	<.05	0.62	<.01	40	<.25	<1	<.01	<3
	7/20/2016	41	<2	<.05	<.05	<.05	0.71	<.01	59	<.25	1.2	<.01	<3
	8/18/2016	11	<2	0.34	<.05	<.05	0.73	<.01	50	0.27	1	0.36	<3
	9/14/2016	13	<2	<.05	<.05	<.05	0.67	<.01	46	<.25	1	<.01	<3
	Mean	17	2	0.11	0.05	0.05	0.68	0.01	60	0.27	1.1	0.09	3
	Stdev	14	0	0.13	0	0	0.04	0.00	26	0.03	0.1	0.15	0
	Max	41	2	0.34	0.05	0.05	0.73	0.01	105	0.31	1.2	0.36	3
	Min	9	2	0.05	0.05	0.05	0.62	0.01	40	0.25	1	0.01	3
	No. of Det	5	0	1	0	0	5	0	5	2	4	2	0
BZ-6B	5/12/2016	9	<2	<.05	<.05	<.05	0.68	<.01	124	<.25	1	<.01	<3
	6/8/2016	10	<2	<.05	<.05	<.05	0.61	0.01	60	0.36	<1	0.02	<3
	7/20/2016	51	<2	<.05	<.05	<.05	0.62	<.01	55	0.28	1.3	0.01	<3
	8/18/2016	14	<2	0.26	<.05	<.05	0.59	<.01	48	0.28	1.2	0.25	<3
	9/14/2016	16	<2	<.05	<.05	<.05	0.47	<.01	60	<.25	1.3	<.01	63
	Mean	20	2	0.09	0.05	0.05	0.59	0.01	69	0.28	1.2	0.06	15
	Stdev	18	0	0.09	0	0	0.08	0.00	31	0.05	0.2	0.11	27
	Max	51	2	0.26	0.05	0.05	0.68	0.01	124	0.36	1.3	0.25	63
	Min	9	2	0.05	0.05	0.05	0.47	0.01	48	0.25	1	0.01	3
	No. of Det	5	0	1	0	0	5	1	5	3	4	3	1

Table 3.2 Continued. Summary of surface, middle, and bottom water quality monitoring data for Beltzville Reservoir in 2016

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	5/12/2016	11	<2	<.05	<.05	<.05	0.61	<.01	110	0.32	1.4	<.01	<3
	6/8/2016	12	<2	0.05	<.05	<.05	0.44	0.01	56	0.44	1.6	0.02	<3
	7/20/2016	45	<2	<.05	<.05	<.05	0.3	<.01	56	0.3	2.5	<.01	<3
	8/18/2016	13	<2	0.24	<.05	<.05	0.19	<.01	43	0.47	2.1	0.25	<3
	9/14/2016	11	<2	<.05	<.05	<.05	0.18	<.01	43	<.25	1.7	<.01	<3
	Mean	18	2	0.09	0.05	0.05	0.34	0.01	62	0.36	1.9	0.06	3
	Stdev	15	0	0.08	0	0	0.18	0	28	0.09	0.4	0.11	0
	Max	45	2	0.24	0.05	0.05	0.61	0.01	110	0.47	2.5	0.25	3
	Min	11	2	0.05	0.05	0.05	0.18	0.01	43	0.25	1.4	0.01	3
	No. of Det	5	0	2	0	0	5	1	5	4	5	2	0
BZ-7M	5/12/2016	11	<2	<.05	<.05	<.05	0.74	<.01	102	<.25	1.2	<.01	<3
	6/8/2016	12	<2	0.08	<.05	<.05	0.73	0.01	56	0.53	1.8	0.02	<3
	7/20/2016	54	<2	<.05	<.05	<.05	0.7	<.01	66	0.27	1.5	<.01	<3
	8/18/2016	15	<2	0.19	<.05	<.05	0.61	<.01	53	0.38	1.2	0.05	<3
	9/14/2016	12	<2	<.05	<.05	<.05	0.13	<.01	23	0.31	1.5	<.01	<3
	Mean	21	2	0.08	0.05	0.05	0.58	0.01	60	0.35	1.4	0.02	3
	Stdev	19	0	0.06	0	0	0.26	0.00	28	0.11	0.3	0.02	0.0
	Max	54	2	0.19	0.05	0.05	0.74	0.01	102	0.53	1.8	0.05	3
	Min	11	2	0.05	0.05	0.05	0.13	0.01	23	0.25	1.2	0.01	3
	No. of Det	5	0	2	0	0	5	1	5	4	5	2	0

Table 3.2 Continued. Summary of surface, middle, and bottom water quality monitoring data for Beltzville Reservoir in 2016

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	5/12/2016	10	<2	<.05	<.05	<.05	0.69	<.01	61	0.28	1.1	<.01	49
	6/8/2016	10	<2	<.05	<.05	<.05	0.62	0.01	55	0.5	<1	0.03	<3
	7/20/2016	46	<2	<.05	<.05	<.05	0.68	<.01	59	0.33	1.3	<.01	4
	8/18/2016	12	<2	0.5	<.05	<.05	0.58	<.01	55	0.93	1.4	0.54	40
	9/14/2016	19	<2	<.05	0.12	<.05	0.21	<.01	48	0.29	1.4	<.01	15
	Mean	19	2	0.14	0.06	0.05	0.56	0.01	56	0.47	1.2	0.12	22
	Stdev	15	0	0.20	0.03	0	0.20	0.00	5	0.27	0.2	0.23	21
	Max	46	2	0.5	0.12	0.05	0.69	0.01	61	0.93	1.4	0.54	49
	Min	10	2	0.05	0.05	0.05	0.21	0.01	48	0.28	1	0.01	3
	No. of Det	5	0	1	1	0	5	1	5	5	4	2	4

< Laboratory analysis result was less than the method or reporting limit.

3.2.2 Nitrite and Nitrate

Nitrite (NO₂) is a measure of a form of nitrogen that occurs as an intermediate in the nitrogen cycle. It is unstable and can rapidly be oxidized to nitrate or reduced to nitrogen gas. Nitrite is a source of nutrients for plants and can be toxic to aquatic life in relatively low concentrations. Nitrite concentrations in the waters of Beltzville Reservoir measured at all stations and depths never exceeded the laboratory reporting limit of 0.05 mg/L during the 2016 sampling season.

Nitrate (NO₃) 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 2016 with sample results ranging from 0.08 mg/L to 2.45 mg/L (Table 3-2). The highest recorded single nitrate measure of 2.45 mg/L was measured on 12 May at station BZ-4S. Station BZ-4S maintained the highest seasonal mean concentration (0.88 mg/L) of all stations.

Beltzville Reservoir was in compliance with the PADEP water quality standard for nitrite and nitrate during 2016. 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 2.50 mg/L was measured at station BZ-4S on 12 May.

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 2016 with sample concentrations ranging from less than the 0.25 mg/L laboratory reporting limit to 1.68 mg/L (Table 3-2). The highest concentration of 1.68 mg/L was recorded at station BZ-5S on 20 July.

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 2016, less than half of the samples measured for total phosphorus were less than or slightly exceeding the EPA suggested maximum concentration and laboratory reporting limit of

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0.01 mg/L (Table 3-2). The highest single sample concentration of 0.54 mg/L was measured in the reservoir bottom waters at Station BZ-7B on 18 August. Elevated TP readings in deep reservoir waters are typically associated with phosphorus release from bottom sediments during low oxygen conditions. Upstream tributary station BZ-5S (Pohopoco Creek) exceeded the EPA 0.01 mg/L suggested concentration throughout much of the sampling season. Land use or some other watershed factors contribute to nutrient loading in this tributary.

3.2.5 Dissolved Phosphorus

In 2016, all but one dissolved phosphorus (Diss. P) concentration measured at all stations and depths in the water column of Beltzville Reservoir were less than or equal to the reporting limit of 0.05 mg/L (Table 3-2). The single sample concentration (0.02 mg/L) exceeding the reporting limit was seen at station BZ-5S during the 8 June sampling event.

3.2.6 Dissolved Phosphate

Orthophosphate (PO₄) is a measure of the inorganic oxidized form of soluble phosphorus. This form of phosphorus is the most readily available for uptake during photosynthesis. In freshwater environments, dissolved phosphate is usually a limiting nutrient and is readily taken up by freshwater plants and algae. In 2016, dissolved phosphate concentrations were low with all but one (0.02 mg/L) sample concentration remaining below the laboratory reporting limit of 0.01 mg/L. The highest concentration of 0.02 mg/L was measured at station BZ-5S on 08 June.

3.2.7 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 2016 (Table 3-2). Concentrations among all stations and depths ranged from 17 to 169 mg/L. Total dissolved solids measured at Beltzville Reservoir in 2016 were in compliance with PADEP water quality standards. The state water quality standard for TDS is a maximum concentration of 500 mg/L.

3.2.8 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 2016 (Table 3-2). Many concentrations measured at all stations and depths were less than or near the laboratory reporting limit of 3.0 mg/L. The maximum concentration of 789 mg/L was measured in tributary surface waters at station BZ-5S on 12 May. This spike in TSS at Station BZ-5S may be attributed to stormwater runoff experienced in that tributary watershed. High measures of TSS can also be the result of

sample collection error associated with capturing disturbed fine sediments in the lake bottom sample during field sampling. This sample error particularly applies to any elevated or unexplained high TSS water samples collected at bottom water sampling stations BZ-6B, BZ-3B, and BZ-7B.

3.2.9 Biochemical Oxygen Demand

Five-day biochemical oxygen demand (BOD₅) 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). All but three samples were below the laboratory reporting limit of 2.0 mg/L for the entire sampling season. The three elevated samples were collected at station BZ-5S and correlated with high TSS readings on those dates. Based on the seasonal sampling results, it is inferred that in 2016 Beltzville Reservoir and its associated tributaries contain very clean water with little biodegradable organic wastes.

3.2.10 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 CaCO₃ except where natural conditions are less.

Alkalinity in the waters of Beltzville Reservoir was relatively low during 2016 (Table 3-2). For all sampling stations and depths, alkalinity measures ranged from 67.0 mg/L to 6.0 mg/L. All stations experienced a spike in alkalinity measure during the 20 July sampling event. This spike may be attributed to storm water flow and a precipitation event during the sampling date. All other samples remained below the state minimum criteria for 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.

3.2.11 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 2016 (Table 3-2). Concentrations of TOC at all stations and depths in 2016 ranged from 4.80 mg/L to <1.0 mg/L (laboratory reporting limit).

3.2.12 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. As a result of equipment failure in the sampling months of May and June, no chlorophyll a measures were taken during those sampling events. For the remainder of the 2016 season, chlorophyll a concentrations in the surface waters (0-15 feet) of Beltzville Reservoir remained low (Appendix A). Concentrations measured in surface waters at all lake body stations ranged between 0.0 and 4.9 ug/L with an average concentration of 2.22 ug/L.

3.3 TROPIC STATE DETERMINATION

Carlson's (1977) trophic state index (TSI) is a method of quantitatively expressing the magnitude of eutrophication for a lake. The trophic state analysis calculates separate indices for eutrophication based on measures of total phosphorus, chlorophyll a, and secchi disk. 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 sampling season taken at station BZ-6 (Figure 3-7).

TSIs calculated for measures of total phosphorus (Figure 3-7) classified Beltzville Reservoir as eutrophic in August (57.34) and oligotrophic in May (37.35), June (37.35), July (37.35) and September (37.35). TSIs calculated for measures of secchi disk depth (Figure 3-7) classified Beltzville Reservoir as mesotrophic in June (47.32), July (43.28), and August (41.42) and oligotrophic in May (37.16) and September (38.01). TSIs calculated for measures of chlorophyll a (Figure 3-7) classified Beltzville Reservoir as oligotrophic in July (23.80) and

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September (38.02) and mesotrophic in August (40.94). Chlorophyll sampling equipment failure prevented the measure of chlorophyll during the May and June 2016 sampling events.

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, the trophic state of the reservoir, based on TSI's, was mesotrophic/oligotrophic throughout the 2016 sampling season.

The EPA (1983) also provides criteria for defining the trophic conditions of lakes of the north-temperate zone based on concentrations of total phosphorus, chlorophyll *a*, and secchi depth (Table 3-3). Taking into account the general agreement between the EPA classifications with that of the Carlson TSI's, the trophic condition of Beltzville Reservoir was predominantly mesotrophic/oligotrophic in 2016.

Water Quality Variable	Oligo-trophic	Meso-trophic	Eutrophic	12 May	08 June	20 July	18 August	14 September
Total phos. (ppb)	<10	10-20	>20	<10	<10	<10	40	<10
Chlorophyll a (ppb)	<4	4-10	>10	EF	EF	0.5	2.87	2.13
Secchi depth (meters)	>4	2-4	<2	4.88	2.41	3.19	3.63	4.6

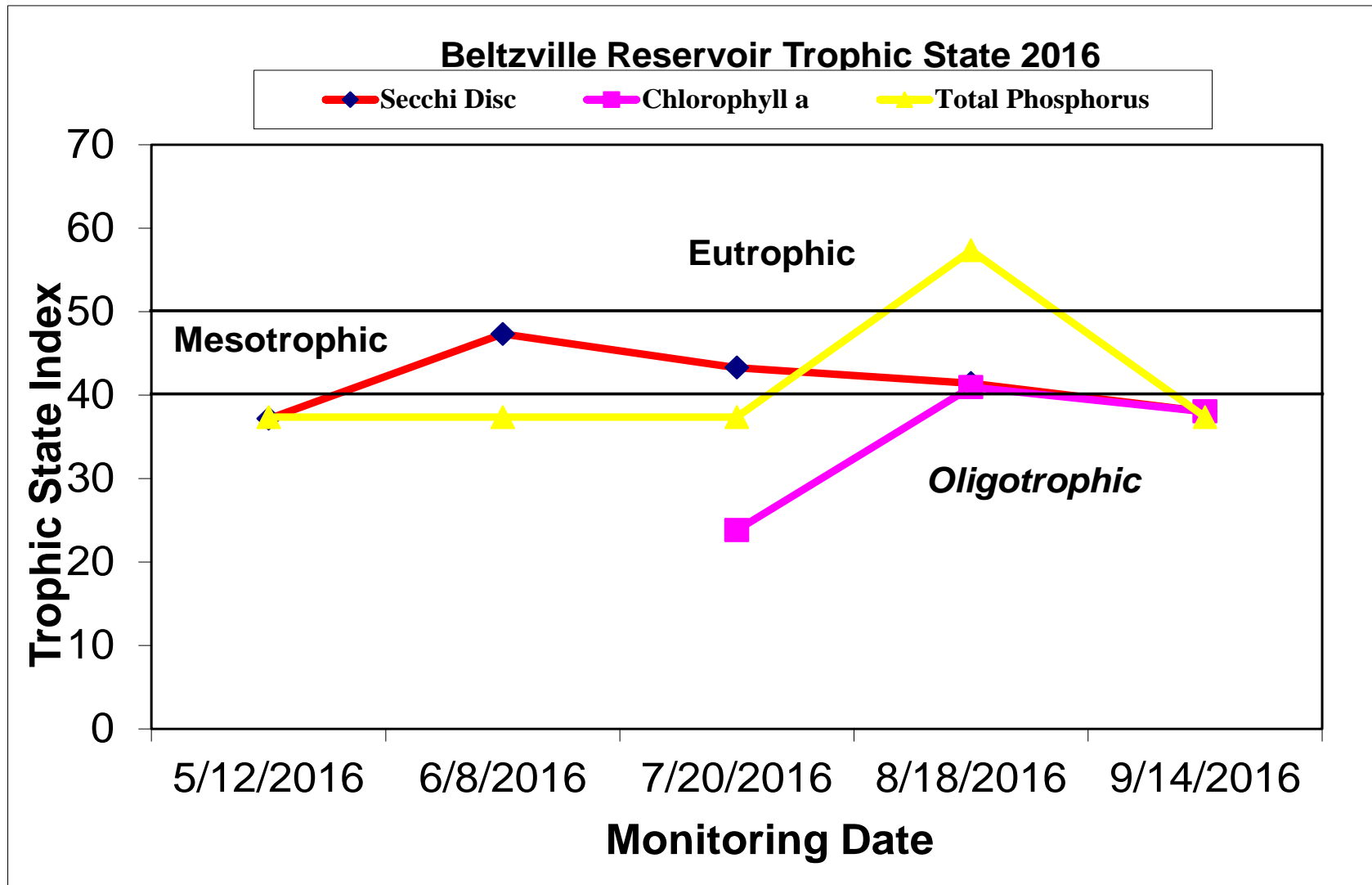


Figure 3-7. Trophic state indices calculated from secchi disk depth and concentrations of total phosphorus and chlorophyll *a* at reservoir Station BZ-6 for Beltzville Reservoir in 2016.

3.4 RESERVOIR BACTERIA MONITORING

Two forms of coliform bacteria contamination were monitored in the tributary and lake surface waters at Beltzville Reservoir during 2016 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 34 colonies/100-ml to greater than the detection limit of 2400 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 standards, fecal coliform bacteria contamination was low in Beltzville Reservoir and its tributaries during 2016. The PADEP 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 calculated for not less than five fecal coliform samples collected over a consecutive thirty day period. Given that our regular monitoring was completed on one day as 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 in 2016. Fecal coliform values for all tributary and lake stations ranged from less than the detection limit of 2 colonies/100ml to 240 colonies/100ml at upstream tributary station BZ-2S on 08 June. The elevated sample results occurred primarily in upstream tributary stations and is reflective of the watershed and the land use types upstream that directly influence the water quality of the reservoir and its tributaries. 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.

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Table 3-4 Bacteria counts (colonies/100ml) at Beltzville Reservoir and tributaries during 2016. NS = Not Sampled in 2016

STATION	DATE	Total Coliform (TC)		Fecal Coliform (FC)		Escherichia coli	
		<	>	<	>	<	>
BZ-1S	5/12/16		220	<	2		NS
	6/8/16	>	2400		230		NS
	7/20/16	>	2400		23		NS
	8/18/16	>	2400		58		NS
	9/14/16		1200		13		NS
BZ-2S	5/12/16		730		13		NS
	6/8/16	>	2400		240		NS
	7/20/16		2000		15		NS
	8/18/16	>	2400		210		NS
	9/14/16		920		50		NS
BZ-3S	5/12/16		34	<	2		NS
	6/8/16		75		3		NS
	7/20/16		110	<	2		NS
	8/18/16		2000		2		NS
	9/14/16		820	<	2		NS
BZ-4S	5/12/16		2000	<	2		NS
	6/8/16	>	2400		34		NS
	7/20/16		2400		13		NS
	8/18/16	>	2400		64		NS
	9/14/16		2400		16		NS
BZ-5S	5/12/16		1400		60		NS
	6/8/16	>	2400		230		NS
	7/20/16		120		5		NS
	8/18/16	>	2400		46		NS
	9/14/16	>	2400		54		NS
BZ-6S	5/12/16		77	<	2		NS
	6/8/16		170		2		NS
	7/20/16		360		2		NS
	8/18/16		1700	<	2		NS
	9/14/16		1600	<	2		NS
BZ-7S	5/12/16		76	<	2		NS
	6/8/16		390		5		NS
	7/20/16		440	<	2		NS
	8/18/16		2000	<	2		NS
	9/14/16	>	2400	<	2		NS

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

4.0 REFERENCES

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APPENDIX A

STRATIFICATION DATA TABLES

2016 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-1S Outfall Pohopoco	5/12/2016	10:42:03	0.5	11.8	102	11.05	7.26	-67.2	202.8	NA	NA	NA
	6/8/2016	10:59:31	0.5	12.73	96.4	10.22	7.15	-61	159.9	NA	NA	NA
	7/20/2016	11:00:30	0.5	17.71	104	9.92	7.22	-33.8	186.6	0.9	3.8	0.107
	8/18/2016	8:25:31	0.5	13.54	99.9	10.39	6.74	-6.7	167.4	0	2.2	0.083
	9/14/2016	8:21:40	0.5	11.54	96.4	10.5	6.41	12.3	186.5	0.2	0.9	0.078
BZ-2S Pine Run Trib.	5/12/2016	10:32:15	0.5	10.66	100	11.15	7.64	-88.5	194.7	NA	NA	NA
	6/8/2016	10:48:39	0.5	12.99	93.1	9.81	7.22	-65	194.5	NA	NA	NA
	7/20/2016	10:48:53	0.5	16.53	96.6	9.43	7.13	-28.7	182	1.4	0.8	0.086
	8/18/2016	8:13:17	0.5	17.49	95.7	9.16	6.85	-12.6	159.4	2.7	1.1	0.083
	9/14/2016	8:07:31	0.5	15.47	95.1	9.49	6.95	-18.3	161.8	4	0	0.072
BZ-3 Bouy/Beach	5/12/2016	8:45:21	0.5	13.77	111	11.51	8.05	-112.2	138.1	NA	NA	NA
		8:44:52	5	13.71	111	11.51	7.99	-108.6	137.7	NA	NA	NA
		8:44:00	10	13.07	109	11.44	7.83	-99.2	136.7	NA	NA	NA
		8:43:10	15	12.85	107	11.26	7.57	-84.5	138.4	NA	NA	NA
		8:42:26	20	12.49	103	11.02	7.42	-76.2	141.6	NA	NA	NA
		8:41:38	25	11.36	97.1	10.62	7.32	-70.8	145.6	NA	NA	NA
		8:40:56	30	9.34	93.3	10.69	7.31	-70	146.5	NA	NA	NA
		8:40:05	35	8.61	93.2	10.88	7.32	-70.5	145.5	NA	NA	NA
		8:39:30	40	8.01	91.8	10.87	7.33	-70.7	145	NA	NA	NA
		8:38:41	45	7.75	91.9	10.96	7.34	-71.2	143.7	NA	NA	NA
		8:38:07	50	7.6	89.9	10.75	7.33	-71.2	143.2	NA	NA	NA
		8:37:35	55	7.52	89.3	10.7	7.34	-71.6	142.1	NA	NA	NA
		8:36:50	60	7.46	89.3	10.71	7.36	-72.3	140.5	NA	NA	NA
		8:34:27	65	7.37	87.3	10.5	7.38	-73.9	135.8	NA	NA	NA
		8:33:55	70	7.27	86.4	10.42	7.39	-74.2	134.7	NA	NA	NA
		8:33:21	75	7.22	85.7	10.35	7.4	-74.8	133.1	NA	NA	NA
		8:32:45	80	7.19	84.9	10.25	7.41	-75	131.5	NA	NA	NA
		8:32:02	85	7.11	83.2	10.06	7.41	-75.2	129.7	NA	NA	NA
		8:31:24	90	7.09	81.6	9.88	7.42	-75.6	127.6	NA	NA	NA
8:30:19	95	7.07	75.2	9.11	7.46	-77.8	121.5	NA	NA	NA		
8:29:12	100	7.13	53	6.41	7.38	-73.5	116.3	NA	NA	NA		

2016 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-3 Bouy/Beach	6/8/2016	9:01:40	0.5	22.58	106	9.19	7.38	-74.7	196	NA	NA	NA
		8:59:51	5	22.52	106	9.21	7.04	-55.1	199.9	NA	NA	NA
		8:59:03	10	22.47	106	9.19	6.87	-44.8	202.5	NA	NA	NA
		8:57:59	15	19.8	102	9.27	6.65	-32.3	210.2	NA	NA	NA
		8:57:06	20	16.06	100	9.87	6.62	-31	212.2	NA	NA	NA
		8:56:23	25	13.6	97.3	10.12	6.57	-28.6	214.9	NA	NA	NA
		8:54:50	30	11.66	80.3	8.72	6.43	-20.7	220.1	NA	NA	NA
		8:54:07	35	10.15	76.2	8.57	6.41	-19.8	221.6	NA	NA	NA
		8:53:24	40	9.12	72.9	8.41	6.4	-19.6	222.4	NA	NA	NA
		8:52:53	45	8.8	73.3	8.51	6.41	-20.2	222.3	NA	NA	NA
		8:52:14	50	8.39	74.8	8.77	6.43	-21.2	221.9	NA	NA	NA
		8:51:46	55	8.27	75.2	8.85	6.44	-21.8	221.4	NA	NA	NA
		8:51:03	60	8.15	76.6	9.04	6.46	-22.8	220.8	NA	NA	NA
		8:50:26	65	7.95	77.2	9.15	6.48	-23.6	220.3	NA	NA	NA
		8:49:51	70	7.83	77.4	9.21	6.49	-24.3	219.8	NA	NA	NA
		8:49:13	75	7.7	77.1	9.2	6.5	-25.1	219.1	NA	NA	NA
		8:48:32	80	7.55	75.3	9.02	6.51	-25.5	218.9	NA	NA	NA
		8:47:47	85	7.46	75.1	9.01	6.53	-26.5	218.2	NA	NA	NA
		8:46:38	90	7.35	72	8.66	6.55	-27.9	217.3	NA	NA	NA
		8:46:06	95	7.25	69.7	8.41	6.56	-28.6	216.9	NA	NA	NA
8:44:53	100	7.24	68.7	8.29	6.62	-31.5	214.7	NA	NA	NA		
8:45:14	105	7.23	68.7	8.28	6.6	-30.6	215.6	NA	NA	NA		
BZ-3 Bouy/Beach	7/20/2016	9:03:21	0.5	26.98	106	8.46	8.27	-96.9	162.4	1.5	0	0.104
		9:02:43	5	26.99	106	8.44	8.23	-94.3	165.4	1.2	0.2	0.104
		9:01:39	10	26.95	106	8.47	8.05	-83.5	167.3	0.6	1	0.104
		9:00:44	15	24.8	111	9.24	7.52	-52.2	171.3	2.2	4.3	0.104
		8:59:52	20	22.25	96.9	8.43	6.94	-17.6	181	1.3	6.4	0.110
		8:58:55	25	19.22	70.7	6.53	6.68	-2.7	185.3	1.2	5.5	0.111
		8:57:56	30	16.14	58.2	5.73	6.56	4.2	185.5	0.6	2.9	0.108
		8:56:54	35	12.22	56.4	6.04	6.54	5.1	184.5	0.4	3.6	0.103
		8:56:16	40	10.19	55.2	6.2	6.52	5.6	184.5	0.3	3	0.103
		8:55:23	45	9.27	55.4	6.36	6.53	5.4	183.8	0	2.6	0.103
		8:54:21	50	8.96	56.2	6.5	6.54	4.4	182.6	1	1.9	0.102
		8:53:14	55	8.76	57.3	6.66	6.56	3.4	181.3	0	1.9	0.103
		8:52:27	60	8.65	57.6	6.71	6.57	2.8	180.5	0	1.6	0.103
		8:51:17	65	8.47	60.1	7.04	6.6	1.2	178.9	0	1.9	0.102
		8:49:22	70	8.22	59.3	6.98	6.61	0.8	176.9	0	1.9	0.103
		8:48:16	75	8	59.5	7.05	6.62	0.1	176	0	1.5	0.102
		8:47:14	80	7.79	58.5	6.97	6.61	0.3	175.4	0	2.2	0.103
		8:45:54	85	7.69	59.1	7.05	6.62	0	174.6	0	1.8	0.103
		8:44:34	90	7.55	58.5	7	6.63	-0.7	173.8	0	1.7	0.102
		8:43:38	95	7.49	56.7	6.8	6.65	-1.7	173	0	2.2	0.102
8:42:12	100	7.32	45.4	5.46	6.67	-3.1	172.2	1.9	2.4	0.106		

2016 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-3 Bouy/Beach	8/18/2016	10:07:04	0.5	27.78	107	8.38	8.24	-95.2	139.5	1.2	2.3	0.107
		10:04:35	5	27.83	106	8.32	8.21	-93.4	143.7	0.9	3.9	0.107
		10:03:48	10	27.83	105	8.23	8.08	-85.6	145.3	1.5	3.2	0.107
		10:02:46	15	27.77	103	8.09	7.68	-61.6	148.8	1.2	3.9	0.107
		10:01:48	20	25.47	85.3	6.98	6.89	-14.8	161.4	1.5	4.3	0.105
		10:00:54	25	23.07	58.4	5	6.63	0.8	169.2	1.1	3.3	0.107
		9:59:51	30	19.98	41.7	3.8	6.51	7.2	168.9	1.6	3.1	0.102
		9:58:27	35	16.28	30.3	2.97	6.37	15.1	170.4	0.5	2	0.092
		9:57:49	40	12.33	30.4	3.25	6.35	15.6	170.3	0.6	2.7	0.08
		9:57:00	45	9.94	24.3	2.75	6.33	16.6	170.2	0.1	1.9	0.075
		9:56:02	50	9.42	28.1	3.22	6.34	15.9	169.3	0	1.7	0.074
		9:54:39	55	9.07	36.1	4.17	6.36	14.4	168.7	0	1.9	0.072
		9:53:48	60	8.88	40.8	4.73	6.38	13.3	168.1	0	2.2	0.072
		9:52:49	65	8.69	44.2	5.15	6.4	12.4	167.5	0.8	1.6	0.071
		9:51:48	70	8.54	46.5	5.43	6.39	12.8	167.5	0	2	0.071
		9:50:59	75	8.3	50	5.88	6.4	12	166.8	0	2	0.07
		9:49:58	80	8.07	52.6	6.22	6.41	11.4	166.3	0.1	2.2	0.07
		9:44:07	85	7.85	46.5	5.53	6.29	18.5	166.4	0.3	2.5	0.07
		9:42:42	90	7.74	45.1	5.37	6.26	20.2	166.3	0.4	2.6	0.07
	9:41:11	95	7.55	42.6	5.1	6.27	19.2	164	0	2.1	0.069	
9:40:20	100	7.46	34.5	4.14	6.27	19.3	163.2	0.5	2.3	0.07		
9:39:32	105	7.43	32	3.84	6.31	17.4	161.1	1.9	2.4	0.07		
9:38:42	110	7.4	30.2	3.63	6.38	13.3	155.5	3.1	2.5	0.071		
BZ-3 Bouy/Beach	9/14/2016	10:28:58	0.5	25.12	106	8.75	8.28	-96.8	139.5	0.0	1.1	0.102
		10:27:22	5	24.97	106	8.78	8.4	-104.3	139.1	0.9	2.5	0.102
		10:26:00	10	24.9	105	8.7	8.33	-100.1	140.1	0.8	3.3	0.102
		10:23:58	15	24.86	103	8.49	8.03	-82.1	142.4	0.7	2.5	0.101
		10:23:07	20	24.81	98.9	8.2	7.63	-58.4	146.7	1.3	2.4	0.101
		10:22:01	25	24.41	72.3	6.04	6.89	-15	157.3	0.8	1	0.102
		10:20:15	30	22.88	28.9	2.48	6.54	5.5	162.2	1	0.7	0.103
		10:19:09	35	20.84	5.9	0.52	6.4	13.8	162.5	0.8	1	0.104
		10:17:41	40	16.23	8.2	0.81	6.35	16.2	160.4	0.1	2	0.092
		10:16:49	45	11.88	12	1.29	6.29	18.9	160.9	0	1.5	0.079
		10:16:07	50	9.88	10.7	1.21	6.3	18.1	158.9	0.1	2.3	0.075
		10:14:50	55	9.27	23.6	2.71	6.3	18	157.9	0	2	0.073
		10:14:11	60	8.9	31.4	3.63	6.34	15.7	156.4	0.2	2.6	0.072
		10:13:05	65	8.68	36.6	4.27	6.35	15	154	0.2	1.4	0.072
		10:11:35	70	8.45	39.2	4.59	6.33	16.4	152.2	0	2.7	0.071
		10:10:42	75	8.17	40.7	4.79	6.33	16.1	150.1	0	2.3	0.07
		10:09:00	80	7.96	36.2	4.29	6.29	18.4	146.5	0.2	2.7	0.07
		10:07:47	85	7.84	36.8	4.37	6.27	19.4	143.3	0	1.7	0.07
		10:06:10	90	7.63	34.3	4.1	6.24	21	137.9	0.3	1.4	0.07
10:05:02	95	7.54	32.3	3.87	6.23	21.4	132.9	0.2	2.5	0.07		
10:03:31	100	7.47	20.8	2.49	6.22	22.3	123.2	6.5	2.3	0.071		
10:02:00	105	7.44	14.7	1.77	6.22	22.4	105.9	479.1	27	0.072		

2016 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-4S Wild Creek Upstream	5/12/2016	10:19:47	0.5	14.12	99.1	10.19	7.79	-97.4	168.5	NA	NA	NA
	6/8/2016	10:37:03	0.5	20.47	93.5	8.42	7.63	-88.9	170.7	NA	NA	NA
	7/20/2016	10:36:53	0.5	23.59	94	7.98	6.99	-20.9	169.1	0	0	0.049
	8/18/2016	7:59:30	0.5	25.5	94.6	7.74	7.29	-38.7	125	0	0.4	0.048
	9/14/2016	7:49:52	0.5	21.75	94.2	8.28	7.13	-29	121.9	0	0	0.046
BZ-5S Pohopoco Upstream	5/12/2016	10:09:47	0.5	13.03	99.9	10.52	7.24	-66.4	180	NA	NA	NA
	6/8/2016	10:27:37	0.5	15.18	93	9.34	7.68	-91.3	175.5	NA	NA	NA
	7/20/2016	10:19:32	0.5	25.5	155	12.71	9.49	-168.8	120.5	19.6	22.4	0.115
	8/18/2016	7:49:25	1	24.66	86	7.15	7.6	-57	129.2	11.3	56.5	0.121
	9/14/2016	7:34:46	0.5	16.39	85.4	8.36	7.3	-38.2	76.1	6	0.5	0.119
BZ-6 In-Lake Tower Secchi 4.88 M	5/12/2016	8:18:17	0.5	13.38	111	11.54	8.22	-121.2	158.1	NA	NA	NA
		8:17:40	5	13.35	110	11.51	8.2	-120	158	NA	NA	NA
		8:17:06	10	13.32	110	11.55	8.18	-119.4	158	NA	NA	NA
		8:16:29	15	12.98	110	11.61	8.16	-117.9	157.1	NA	NA	NA
		8:14:53	20	12.73	107	11.38	7.71	-92.8	156.6	NA	NA	NA
		8:14:12	25	12.35	104	11.09	7.49	-80	160.7	NA	NA	NA
		8:12:47	30	10.2	96.1	10.8	7.3	-69.1	166.5	NA	NA	NA
		8:11:30	35	8.51	95.7	11.2	7.28	-68.4	167.5	NA	NA	NA
		8:10:10	40	8.01	91.6	10.85	7.26	-67	168.3	NA	NA	NA
		8:08:54	45	7.87	91.9	10.92	7.26	-67.2	168	NA	NA	NA
		8:07:55	50	7.7	91.2	10.88	7.27	-67.4	167.6	NA	NA	NA
		8:07:10	55	7.54	90.1	10.79	7.27	-67.3	167.5	NA	NA	NA
		8:06:27	60	7.45	89.4	10.73	7.26	-67.2	167.5	NA	NA	NA
		8:05:26	65	7.34	88.3	10.62	7.26	-67	167.4	NA	NA	NA
		8:04:05	70	7.3	87.6	10.55	7.26	-66.8	167.5	NA	NA	NA
		8:03:24	75	7.23	87	10.5	7.26	-66.9	167.4	NA	NA	NA
		8:02:38	80	7.18	86.7	10.47	7.26	-66.8	167.4	NA	NA	NA
		8:01:25	85	7.16	85.9	10.38	7.23	-65.3	168.8	NA	NA	NA
		8:00:23	90	7.15	85.3	10.31	7.22	-64.8	169.1	NA	NA	NA
		7:59:16	95	7.09	83.3	10.08	7.23	-65.2	168.8	NA	NA	NA
7:58:22	100	7.09	83	10.06	7.25	-66.3	167.9	NA	NA	NA		
7:57:25	105	7.06	81.7	9.9	7.27	-67.4	167.2	NA	NA	NA		
7:56:39	110	7.02	81.3	9.87	7.28	-68.4	166.6	NA	NA	NA		
7:55:50	115	7.03	81	9.83	7.32	-70.2	165.1	NA	NA	NA		
7:55:13	120	7.03	80.6	9.78	7.36	-72.4	163.3	NA	NA	NA		
7:54:26	125	7.01	79.9	9.7	7.45	-77.3	157.7	NA	NA	NA		

2016 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-6 In-Lake Tower	6/8/2016	8:34:06	0.5	22.17	107	9.31	7.08	-57.2	196.5	NA	NA	NA
		8:33:12	5	22.16	107	9.3	6.98	-51.5	195.9	NA	NA	NA
		8:32:26	10	21.72	107	9.37	6.81	-41.7	200.6	NA	NA	NA
		8:31:23	15	19.36	102	9.37	6.72	-36.3	204.2	NA	NA	NA
		8:30:08	20	15.66	105	10.39	6.7	-35.6	205.2	NA	NA	NA
		8:28:57	25	13.74	94.6	9.8	6.58	-28.8	209.6	NA	NA	NA
		8:27:58	30	11.53	81.8	8.91	6.5	-24.6	213.3	NA	NA	NA
		8:26:59	35	9.81	77.7	8.81	6.48	-23.6	214.9	NA	NA	NA
		8:26:08	40	9.08	76.3	8.8	6.48	-23.9	214.9	NA	NA	NA
		8:25:01	45	8.77	77.7	9.03	6.5	-24.8	214.3	NA	NA	NA
		8:24:20	50	8.55	77.9	9.1	6.5	-25.2	214	NA	NA	NA
		8:23:35	55	8.39	77.3	9.07	6.51	-25.5	213.8	NA	NA	NA
		8:22:31	60	8.16	77.4	9.13	6.52	-26	213.5	NA	NA	NA
		8:21:46	65	8.06	77.5	9.16	6.53	-26.6	212.9	NA	NA	NA
		8:20:47	70	7.9	77.5	9.2	6.53	-26.9	212.6	NA	NA	NA
		8:20:02	75	7.8	77.2	9.18	6.54	-27.2	212.4	NA	NA	NA
		8:19:07	80	7.77	76.8	9.15	6.55	-27.8	211.9	NA	NA	NA
		8:17:52	85	7.58	76.4	9.14	6.57	-29.1	210.5	NA	NA	NA
		8:17:17	90	7.4	75.2	9.04	6.59	-29.8	209.9	NA	NA	NA
		8:16:30	95	7.33	73.1	8.8	6.6	-30.8	209.1	NA	NA	NA
8:15:53	100	7.3	72	8.68	6.62	-31.9	208	NA	NA	NA		
8:14:59	105	7.23	69.7	8.42	6.67	-34.4	205.9	NA	NA	NA		
8:14:16	110	7.2	69.1	8.34	6.71	-36.8	203.6	NA	NA	NA		
8:13:39	115	7.19	68.7	8.29	6.76	-39.4	201.1	NA	NA	NA		
8:12:21	120	7.19	68	8.22	6.88	-45.8	194.9	NA	NA	NA		
8:10:47	125	7.19	66.6	8.04	7.02	-53.5	186.5	NA	NA	NA		
BZ-6 In-Lake Tower	7/20/2016	8:32:25	0.5	26.67	107	8.55	8.3	-98.6	149.9	0.9	0	0.104
		8:31:54	5	26.67	106	8.51	8.29	-97.8	150.8	0.9	0.3	0.104
		8:30:47	10	26.68	106	8.51	8.24	-94.8	152.6	1.1	1.2	0.104
		8:30:05	15	26.66	106	8.48	8.14	-88.9	154.4	1.6	0.6	0.104
		8:28:31	20	22.39	111	9.66	7.42	-46.1	164	1.8	8.4	0.108
		8:26:22	25	19.56	84.6	7.76	6.87	-13.5	172.3	1.8	5.7	0.109
		8:24:05	30	15.78	61.5	6.09	6.61	1.3	173.6	1.8	3.2	0.106
		8:22:52	35	12.49	56.1	5.98	6.56	3.6	172.4	1.6	2.7	0.102
		8:21:43	40	10.03	53.7	6.05	6.54	4.7	172.3	0.3	2.9	0.104
		8:20:50	45	9.32	52.6	6.04	6.53	4.8	171.9	0.7	2.2	0.103
		8:19:47	50	8.91	55.6	6.44	6.57	2.9	170.8	0	2.1	0.103
		8:18:24	55	8.62	56.2	6.56	6.59	1.7	169.6	0.1	2	0.103
		8:17:25	60	8.47	57.7	6.76	6.62	0.2	168.6	0	1.5	0.102
		8:16:22	65	8.35	57.8	6.78	6.63	-0.5	167.5	0	1.7	0.103
		8:15:10	70	8.13	57.8	6.82	6.65	-1.5	166.4	0	1.4	0.103
		8:14:17	75	8.04	58.2	6.88	6.66	-2.4	165.4	0	1.5	0.102
		8:13:11	80	7.84	58.4	6.94	6.68	-3.4	164.2	0	1.6	0.103
		8:12:18	85	7.76	58.2	6.93	6.69	-4	163.1	0	1.7	0.103
		8:10:49	90	7.67	58.6	6.99	6.71	-4.9	161.5	0	1.4	0.102
		8:09:14	95	7.57	55.2	6.61	6.71	-5	159.9	0	1.8	0.102
8:08:01	100	7.52	53.2	6.37	6.72	-5.6	158.5	0.8	2	0.102		
8:05:51	105	7.41	45.8	5.5	6.73	-6.1	156.2	0.6	1.8	0.104		
8:04:55	110	7.34	43.2	5.2	6.73	-6.1	155.4	0.7	2	0.104		
8:03:55	115	7.3	42.1	5.07	6.73	-6.5	154.3	2.4	2.5	0.104		
8:02:48	120	7.28	41.3	4.98	6.75	-7.6	152.9	3.5	2.8	0.104		
8:01:15	125	7.26	36.6	4.41	6.81	-11	147.8	3.6	18.4	0.104		

2016 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-6 In-Lake Tower	8/18/2016	9:30:43	0.5	27.75	106	8.3	8.06	-84.8	137.9	0.5	2.7	0.065
		9:30:07	5	27.75	105	8.27	8.05	-83.7	138.2	0.7	2.8	0.107
		9:29:16	10	27.75	105	8.27	7.98	-79.6	140	0.8	3.1	0.107
		9:28:04	15	27.74	104	8.15	7.74	-65.5	142.2	1.3	3.1	0.107
		9:27:08	20	26.06	91.1	7.39	7.03	-22.9	152.9	1.6	3.4	0.106
		9:25:52	25	23.5	61.2	5.2	6.67	-1.7	160	0.5	2.3	0.107
		9:24:08	30	20.21	42.9	3.89	6.52	6.5	161.7	1.4	2.6	0.102
		9:22:44	35	16.42	34.1	3.34	6.43	11.6	162.7	1.2	1.9	0.091
		9:21:20	40	11.89	38.4	4.15	6.38	13.8	162.4	0	2.4	0.078
		9:20:05	45	9.87	40.3	4.56	6.37	14	162.2	0	2.6	0.074
		9:18:53	50	9.34	42	4.81	6.38	13.6	161.3	0	1.9	0.073
		9:17:10	55	9.04	44.7	5.17	6.39	12.8	159.8	1	2	0.072
		9:15:59	60	8.8	44.2	5.13	6.38	13.2	159.3	0	2.5	0.071
		9:15:17	65	8.67	43.1	5.02	6.38	13.3	158.8	0	1.7	0.071
		9:13:52	70	8.46	44.5	5.21	6.36	14.3	158.5	0.5	2	0.071
		9:12:57	75	8.18	45.2	5.33	6.34	15.4	158.7	0.4	2.4	0.07
		9:12:14	80	7.91	45	5.34	6.34	15.5	158.3	0.1	2	0.07
		9:11:13	85	7.7	43	5.13	6.33	16.3	158.1	0	1.8	0.069
		9:09:07	90	7.63	39.7	4.74	6.3	17.9	156.5	0	2.6	0.069
		9:07:31	95	7.51	33.8	4.05	6.26	19.9	156.2	1.2	1.8	0.07
9:06:26	100	7.45	30.5	3.67	6.24	21.1	155.5	0.8	1.8	0.07		
9:05:21	105	7.45	28.9	3.46	6.21	22.5	155	0.3	2.2	0.07		
9:03:56	110	7.34	25.4	3.05	6.19	23.7	153.8	1.8	2.5	0.071		
9:02:59	115	7.31	24.6	2.97	6.19	23.8	152	0.3	2.3	0.071		
9:01:35	120	7.3	23.3	2.8	6.21	22.8	145.8	3.2	2.5	0.071		
9:00:41	125	7.32	20.3	2.45	6.24	21.3	135.3	15.2	3	0.072		
BZ-6 In-Lake Tower	9/14/2016	9:48:14	0.5	24.86	104	8.59	8.01	-80.8	167.1	0.2	1.1	0.101
		9:46:55	5	24.8	104	8.62	8	-80.1	169.7	1.3	3	0.101
		9:45:57	10	24.75	103	8.56	7.91	-75.2	171.3	0.7	2.3	0.101
		9:44:04	15	24.7	99.6	8.28	7.67	-60.8	174.4	1.2	3.2	0.101
		9:42:38	20	24.63	98.3	8.18	7.5	-50.9	175.6	1.1	1.6	0.101
		9:41:35	25	24.5	85.5	7.13	7.07	-25.2	181.1	0.7	1.6	0.101
		9:39:49	30	23.27	35.4	3.02	6.57	3.9	189.2	0.3	1.5	0.105
		9:37:17	35	20.55	9.3	0.83	6.4	13.7	192.3	1	0	0.103
		9:35:55	40	16.77	9.5	0.92	6.36	15.3	192.5	0.3	0.9	0.093
		9:33:39	45	12.31	20.4	2.18	6.35	15.5	191	0	1.5	0.079
		9:30:12	50	9.91	26.4	2.99	6.35	15.3	188.8	0	1	0.074
		9:28:04	55	9.15	28.5	3.28	6.34	15.8	188.3	0	1.7	0.073
		9:27:07	60	8.83	30.7	3.56	6.35	14.9	187	0.6	1.6	0.072
		9:25:13	65	8.52	35.5	4.15	6.36	14.8	186.3	0.8	2.1	0.071
		9:23:58	70	8.29	40.1	4.72	6.36	14.4	185.5	0	1.6	0.071
		9:22:49	75	8.15	39.1	4.61	6.32	16.5	186.1	0.2	1.8	0.07
		9:21:45	80	7.88	37.1	4.4	6.29	18.1	186	0	2.3	0.07
		9:20:36	85	7.72	33.8	4.03	6.27	19.6	185.9	0	2	0.07
		9:18:51	90	7.59	27.6	3.3	6.23	21.5	184.8	0	1.7	0.07
		9:17:42	95	7.54	23.9	2.87	6.21	22.6	184.1	0	1.6	0.07
9:16:24	100	7.49	20.1	2.41	6.19	23.9	183	0.9	1.8	0.07		
9:15:15	105	7.39	14	1.68	6.17	25.1	182.2	1.2	2	0.071		
9:14:09	110	7.36	12.6	1.51	6.15	25.9	180.9	2.2	1.8	0.072		
9:13:06	115	7.34	11.4	1.38	6.15	26	178.7	2.7	1.8	0.072		
9:11:48	120	7.34	10.6	1.28	6.15	25.8	170.8	7.3	4.2	0.072		
9:11:02	123	7.36	10.2	1.22	6.16	25.4	166.4	139.4	34.9	0.072		

2016 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	5/12/2016	9:12:55	0.5	14.86	113	11.41	7.91	-104	149.4	NA	NA	NA
		9:12:03	5	14.68	113	11.44	7.82	-98.9	148.8	NA	NA	NA
		9:10:59	10	14.57	110	11.22	7.64	-89	149	NA	NA	NA
		9:10:08	15	13.75	105	10.92	7.44	-77.6	155.1	NA	NA	NA
		9:09:01	20	12.53	97.4	10.37	7.38	-73.8	157.5	NA	NA	NA
		9:08:00	25	10.36	88.8	9.94	7.36	-72.5	159.7	NA	NA	NA
		9:07:20	30	8.82	85.4	9.91	7.39	-74.1	159.2	NA	NA	NA
		9:06:15	35	8.45	85.1	9.96	7.44	-77	157.2	NA	NA	NA
		9:05:15	40	8.33	85	9.98	7.48	-79.4	155.8	NA	NA	NA
		9:04:36	45	8.12	84.7	10	7.52	-81.3	154.8	NA	NA	NA
		9:04:03	50	8.1	84.7	10	7.55	-82.9	153.7	NA	NA	NA
		9:02:39	55	8.11	84.7	10	7.61	-86.6	150.6	NA	NA	NA
BZ-7 Upper Lake No-Wake	6/8/2016	9:28:33	0.5	23.61	104	8.8	7.34	-72.3	156.9	NA	NA	NA
		9:27:34	5	23.59	103	8.74	7.21	-65	157.1	NA	NA	NA
		9:26:48	10	23.59	102	8.67	7.09	-57.8	157.7	NA	NA	NA
		9:25:53	15	21.05	89.5	7.97	6.81	-41.4	170	NA	NA	NA
		9:24:30	20	16.39	76.6	7.5	6.7	-35.8	174.8	NA	NA	NA
		9:21:58	25	14.5	73.2	7.47	6.69	-35.2	171.8	NA	NA	NA
		9:20:55	30	11.23	67.9	7.44	6.69	-35.4	172	NA	NA	NA
		9:20:15	35	9.84	66.9	7.58	6.72	-37.2	169.3	NA	NA	NA
		9:19:36	40	9.09	67.1	7.73	6.75	-39.1	165.3	NA	NA	NA
		9:18:52	45	8.96	66.8	7.73	6.79	-41.2	158.7	NA	NA	NA
		9:18:22	50	8.86	66.1	7.67	6.82	-42.8	152.6	NA	NA	NA
		9:17:17	55	8.83	60.3	7	6.89	-46.3	135	NA	NA	NA
BZ-7 Upper Lake No-Wake	7/20/2016	9:32:02	0.5	27.5	107	8.47	8.27	-96.9	173.4	0.3	0	0.100
		9:31:16	5	27.5	107	8.46	8.21	-93.3	175.5	0.6	0.5	0.100
		9:30:15	10	27.43	106	8.39	7.98	-80	181.5	1	0.1	0.100
		9:29:01	15	24.67	93.2	7.75	7	-21.4	197.5	3	4.8	0.111
		9:26:55	20	22.66	64.6	5.58	6.67	-2.1	200.3	2.6	2.9	0.124
		9:25:47	25	18.87	37	3.44	6.48	9	200.1	1.3	3.3	0.118
		9:24:59	30	15.71	31.3	3.11	6.42	12.2	200	3.2	2.2	0.112
		9:24:16	35	13.12	28.3	2.98	6.39	13.3	199.7	0.6	2.8	0.110
		9:23:21	40	10.19	26	2.92	6.37	14.2	199.4	0.2	2.7	0.106
		9:22:29	45	9.29	26.6	3.06	6.36	14.7	199.9	0.6	2.5	0.104
		9:21:18	50	8.96	28.9	3.35	6.38	13.7	200.1	0.8	1.9	0.104
		9:20:17	55	8.83	30.1	3.49	6.43	10.8	200.5	0.7	2.1	0.104
		9:19:01	60	8.84	30.4	3.53	6.61	0.3	200.7	1.1	2.2	0.104
BZ-7 Upper Lake No-Wake	8/18/2016	10:38:08	0.5	28.51	110	8.54	8.63	-119	135.9	1.1	4	0.104
		10:37:22	5	28.49	109	8.48	8.62	-118	137.8	1	4.9	0.104
		10:36:50	10	28.46	108	8.34	8.48	-109.8	140	1.4	3.4	0.104
		10:35:43	15	26.38	71.9	5.8	6.77	-7.4	162.7	1.8	2.7	0.101
		10:34:51	20	24.86	62	5.13	6.71	-4.1	165.3	2	2.5	0.111
		10:32:54	25	23.21	41.1	3.51	6.56	4.5	167.5	2.2	2.1	0.11
		10:31:36	30	20.89	17.2	1.53	6.42	12.4	168.2	2.1	2.2	0.106
		10:30:29	35	17.47	5.9	0.56	6.36	15.7	167.4	1.2	2.1	0.099
		10:29:26	40	12.16	3.6	0.39	6.19	24.8	173.2	1.2	2.5	0.083
		10:28:13	45	10.14	4.8	0.54	6.1	29.5	174.7	324.4	81.4	0.078
		10:27:02	50	9.48	7.8	0.89	6.08	30.3	176.7	26.9	13	0.075
		10:25:22	55	9.33	8.6	0.99	6.14	26.8	172.4	11.2	17.1	0.075

2016 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	9/14/2016	10:59:25	0.5	25.35	104	8.51	7.73	-64.5	141.8	1.1	1.2	0.1
		10:58:25	5	25.24	104	8.56	7.77	-67.1	140.7	0.6	2	0.1
		10:57:10	10	25.14	104	8.53	7.76	-66	140.5	3.5	2.9	0.1
		10:55:31	15	25.1	101	8.35	7.59	-56.2	141.4	1.4	1.8	0.099
		10:54:01	20	25.07	98.7	8.15	7.4	-45	142.8	1.2	2.2	0.099
		10:52:10	25	24.34	81.6	6.82	6.87	-13.7	149.3	1.3	1.1	0.085
		10:50:47	30	22.77	57.9	4.99	6.68	-2.6	150.9	3.5	1.6	0.103
		10:49:40	35	18.88	2.9	0.27	6.42	12.1	153.2	2.2	0.6	0.102
		10:48:09	40	16.98	2	0.19	6.27	21.1	151.9	1.9	1.7	0.098
		10:47:00	45	14.97	2.2	0.22	6.22	23.2	142.9	7	2.2	0.095
		10:45:33	48	13.02	2.9	0.31	6.27	20.4	138.9	9.1	1	0.09

APPENDIX B

LABORATORY CUSTODY SHEETS

CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.

Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 05/24/16
 Lab ID: 3157-16-0016769

Date Collected: 05/12/16 10:50
 Collected By: Client

Sample Desc: BZ-1 Surface

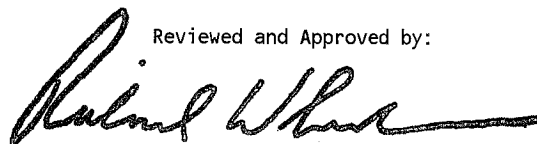
Date Received: 05/12/16 13:00

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTERIOLOGY								
MICROBIOLOGY								
Fecal Coliform	<2	/100mL	2	1	SM 9222D	05/12	14:00	RES
Total Coliform	220	mpn/100mL	1	1	SM 9223B	05/13	11:30	KAW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	05/13	15:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	05/16	17:30	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	05/16	17:05	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	05/12	22:29	JCL
Nitrogen, Nitrate	0.64	mg/L	.05	1	EPA 353.2	05/12	17:37	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	05/12	16:07	JCL
Nitrogen, Total Kjeldahl	0.30	mg/L	.25	1	EPA 351.2	05/18	17:08	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	05/12	11:45	EMW
Total Organic Carbon	2.0	mg/L	1	1	SM5310 C	05/13	23:19	ALD
RESIDUES								
Solids, Total Dissolved	126	mg/L	5	1	SM 2540C	05/16	12:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	05/16	11:15	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	05/16	12:05	AEH

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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CERTIFICATE OF ANALYSIS
M.J. Reider Associates, Inc.



Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 05/24/16
Lab ID: 3157-16-0016769

Date Collected: 05/12/16 10:50
Collected By: Client

Sample Desc: BZ-1 Surface

Date Received: 05/12/16 13:00

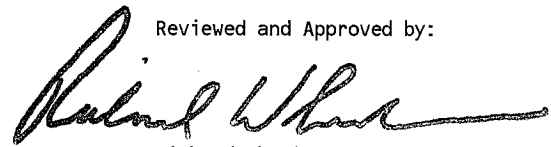
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The total coliform sample was placed in the incubator on 05/12/2016 at 16:10.
- 02 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 03 The Ammonia matrix spike was low indicating possible sample matrix interference.

Distribution of Reports:
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M.J. Reider Associates, Inc.

Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 05/24/16
 Lab ID: 3157-16-0016770

Date Collected: 05/12/16 10:35
 Collected By: Client

Sample Desc: BZ-2 Surface

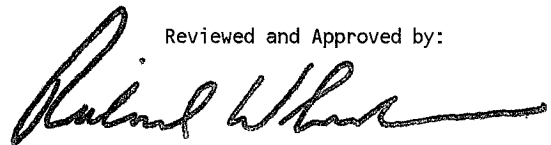
Date Received: 05/12/16 13:00

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	13	/100mL	2	1	SM 9222D	05/12	14:00	RES
Total Coliform	730	mpn/100mL	1	1	SM 9223B	05/13	11:30	KAW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	05/13	15:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	05/16	17:30	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	05/16	17:05	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	05/12	23:13	JCL
Nitrogen, Nitrate	0.14	mg/L	.05	1	EPA 353.2	05/12	17:41	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	05/12	16:12	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	05/18	17:09	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	05/12	11:45	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	05/13	23:31	ALD
RESIDUES								
Solids, Total Dissolved	144	mg/L	5	1	SM 2540C	05/16	12:35	ALD
Solids, Total Suspended	3	mg/L	3	1	SM 2540D	05/16	11:15	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	7	mg/L	1	1	SM 2320 B	05/16	12:05	AEH

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:



Richard Wheeler

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M.J. Reider Associates, Inc.

Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 05/24/16
Lab ID: 3157-16-0016770

Date Collected: 05/12/16 10:35
Collected By: Client

Sample Desc: BZ-2 Surface

Date Received: 05/12/16 13:00

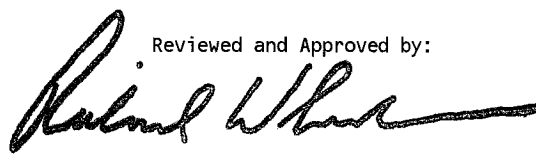
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
-----	-----	-----	-----	-----	-----	-----	-----

COMMENTS

- 01 The total coliform sample was placed in the incubator on 05/12/2016 at 16:10.
- 02 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

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Reviewed and Approved by:

Richard Wheeler

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 05/24/16
 Lab ID: 3157-16-0016771

Date Collected: 05/12/16 08:35
 Collected By: Client

Sample Desc: BZ-3 Surface

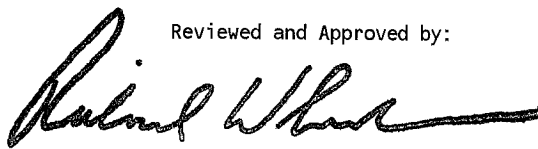
Date Received: 05/12/16 13:00

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTERIOLOGY								
MICROBIOLOGY								
Fecal Coliform	<2	/100ml	2	1	SM 9222D	05/12	14:00	RES
Total Coliform	34	mpn/100ml	1	1	SM 9223B	05/13	11:30	KAW
CHEMISTRY								
COLORIMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	05/13	15:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	05/16	17:30	AEH
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	05/16	17:05	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	05/12	23:28	JCL
Nitrogen, Nitrate	0.61	mg/L	.05	1	EPA 353.2	05/12	17:42	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	05/12	16:13	JCL
Nitrogen, Total Kjeldahl	0.29	mg/L	.25	1	EPA 351.2	05/18	17:11	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	05/12	11:45	EMW
Total Organic Carbon	1.3	mg/L	1	1	SM5310 C	05/13	23:43	ALD
RESIDUES								
Solids, Total Dissolved	169	mg/L	5	1	SM 2540C	05/16	12:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	05/16	11:15	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/L	1	1	SM 2320 B	05/16	12:05	AEH

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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M.J. Reider Associates, Inc.

Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 05/24/16
Lab ID: 3157-16-0016771
Date Collected: 05/12/16 08:35
Collected By: Client
Date Received: 05/12/16 13:00

Sample Desc: BZ-3 Surface

PWSID: 3130843

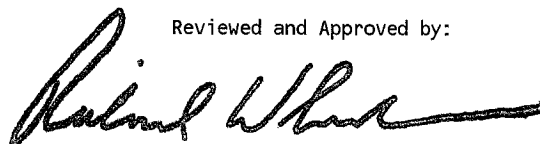
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The total coliform sample was placed in the incubator on 05/12/2016 at 16:10.
- 02 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


Richard Wheeler

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 05/24/16
 Lab ID: 3157-16-0016772

Date Collected: 05/12/16 08:35
 Collected By: Client

Sample Desc: BZ-3 Mid-Depth

Date Received: 05/12/16 13:00

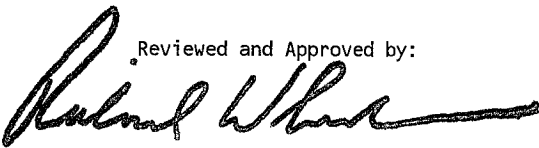
PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	05/13	15:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	05/16	17:30	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	05/16	17:05	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	05/12	23:42	JCL
Nitrogen, Nitrate	0.69	mg/L	.05	1	EPA 353.2	05/12	17:43	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	05/12	16:14	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	05/18	17:12	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	05/12	11:45	EMW
Total Organic Carbon	1.0	mg/L	1	1	SM5310 C	05/16	10:33	ALD
RESIDUES								
Solids, Total Dissolved	133	mg/L	5	1	SM 2540C	05/16	12:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	05/16	11:15	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	9	mg/L	1	1	SM 2320 B	05/16	12:05	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

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Reviewed and Approved by:

 Richard Wheeler

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ACIL Seal of Excellence

CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.

Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 05/24/16
 Lab ID: 3157-16-0016773

Date Collected: 05/12/16 08:35
 Collected By: Client

Sample Desc: BZ-3 Deep

Date Received: 05/12/16 13:00

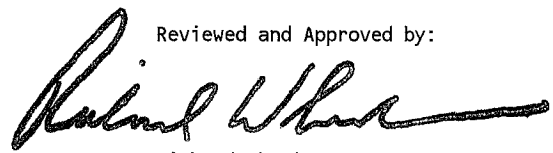
PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	05/13	15:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	05/16	17:35	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	05/16	17:10	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	05/12	23:57	JCL
Nitrogen, Nitrate	0.68	mg/L	.05	1	EPA 353.2	05/12	17:44	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	05/12	16:15	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	05/18	17:13	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	05/12	11:45	EMW
Total Organic Carbon	1.0	mg/L	1	1	SM5310 C	05/16	10:56	ALD
RESIDUES								
Solids, Total Dissolved	109	mg/L	5	1	SM 2540C	05/16	12:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	05/16	11:15	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	9	mg/L	1	1	SM 2320 B	05/16	12:05	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

 Richard Wheeler

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CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.

Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 05/24/16
 Lab ID: 3157-16-0016774

Date Collected: 05/12/16 10:25
 Collected By: Client

Sample Desc: BZ-4 Surface

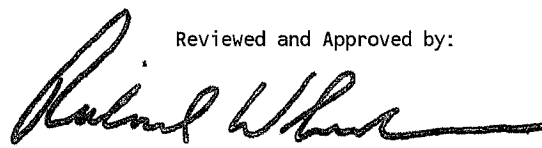
Date Received: 05/12/16 13:00

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTERIOLOGY								
MICROBIOLOGY								
Fecal Coliform	<2	/100mL	2	1	SM 9222D	05/12	14:00	TNS
Total Coliform	2000	mpn/100mL	1	1	SM 9223B	05/13	11:30	KAW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	05/13	15:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	05/16	17:35	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	05/16	17:10	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	05/13	00:12	JCL
Nitrogen, Nitrate	2.45	mg/L	.05	1	EPA 353.2	05/12	17:45	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	05/12	16:16	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	05/18	17:14	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	05/12	11:45	EMW
Total Organic Carbon	1.4	mg/L	1	1	SM5310 C	05/16	11:31	ALD
RESIDUES								
Solids, Total Dissolved	70	mg/L	5	1	SM 2540C	05/16	12:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	05/16	12:35	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	6	mg/L	1	1	SM 2320 B	05/16	12:05	AEH

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 05/24/16
Lab ID: 3157-16-0016774

Date Collected: 05/12/16 10:25
Collected By: Client

Sample Desc: BZ-4 Surface

Date Received: 05/12/16 13:00

PWSID: 3130843

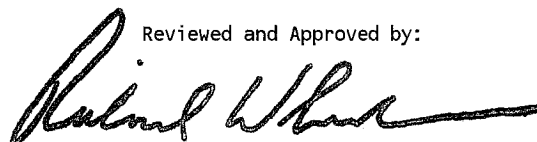
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
-----	-----	-----	-----	-----	-----	-----	-----

COMMENTS

- 01 The total coliform sample was placed in the incubator on 05/12/2016 at 16:10.

- 02 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
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Reviewed and Approved by:

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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 05/24/16
 Lab ID: 3157-16-0016775

Date Collected: 05/12/16 10:10
 Collected By: Client

Sample Desc: BZ-5 Surface

Date Received: 05/12/16 13:00

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	60	/100ml	2	1	SM 9222D	05/12	14:30	TNS
Total Coliform	1400	mpn/100ml	1	1	SM 9223B	05/13	11:30	KAW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	05/13	15:50	AEH
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	05/16	17:35	AEH
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	05/16	17:10	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	05/13	00:26	JCL
Nitrogen, Nitrate	0.96	mg/l	.05	1	EPA 353.2	05/12	17:46	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	05/12	16:17	JCL
Nitrogen, Total Kjeldahl	0.38	mg/l	.25	1	EPA 351.2	05/18	17:15	JCL
OTHER								
Biochemical Oxygen Demand	8	mg/l	2	1	SM 5210B	05/12	11:45	EMW
Total Organic Carbon	1.4	mg/l	1	1	SM5310 C	05/16	11:43	ALD
RESIDUES								
Solids, Total Dissolved	125	mg/l	5	1	SM 2540C	05/16	12:35	ALD
Solids, Total Suspended	789	mg/l	3	1	SM 2540D	05/16	12:35	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	13	mg/l	1	1	SM 2320 B	05/16	12:05	AEH

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 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 05/24/16
 Lab ID: 3157-16-0016775

Date Collected: 05/12/16 10:10
 Collected By: Client

Sample Desc: BZ-5 Surface

Date Received: 05/12/16 13:00

PWSID: 3130843

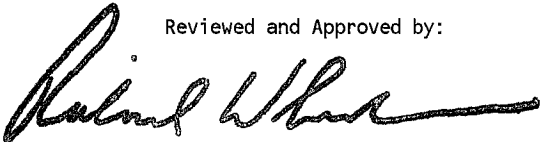
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The total coliform sample was placed in the incubator on 05/12/2016 at 16:10.

- 02 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 05/24/16
 Lab ID: 3157-16-0016776

Date Collected: 05/12/16 08:05
 Collected By: Client

Sample Desc: BZ-6 Surface

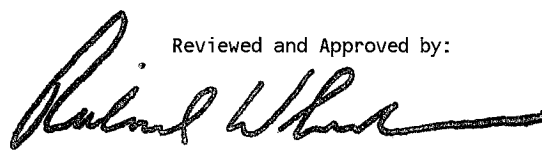
Date Received: 05/12/16 13:00

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	<2	/100mL	2	1	SM 9222D	05/12	14:30	TNS
Total Coliform	77	mpn/100mL	1	1	SM 9223B	05/13	11:30	KAW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	05/13	15:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	05/16	17:35	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	05/16	17:10	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	05/13	00:41	JCL
Nitrogen, Nitrate	0.60	mg/L	.05	1	EPA 353.2	05/12	17:47	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	05/12	16:18	JCL
Nitrogen, Total Kjeldahl	0.29	mg/L	.25	1	EPA 351.2	05/18	17:18	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	05/12	11:45	EMW
Total Organic Carbon	1.3	mg/L	1	1	SM5310 C	05/16	11:55	ALD
RESIDUES								
Solids, Total Dissolved	55	mg/L	5	1	SM 2540C	05/16	12:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	05/16	12:35	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/L	1	1	SM 2320 B	05/16	12:05	AEH

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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 05/24/16
Lab ID: 3157-16-0016776

Date Collected: 05/12/16 08:05
Collected By: Client

Sample Desc: BZ-6 Surface

Date Received: 05/12/16 13:00

PWSID: 3130843

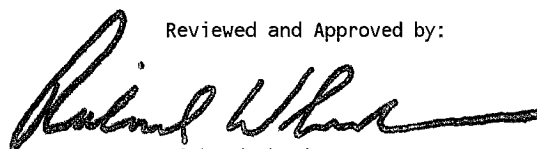
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The total coliform sample was placed in the incubator on 05/12/2016 at 16:10.
- 02 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2S04 to pH <2 after the sample was received at the laboratory.

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Gregory Wacik - USACE (Beltzville Dam)

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 05/24/16
 Lab ID: 3157-16-0016777

Date Collected: 05/12/16 08:05
 Collected By: Client

Sample Desc: BZ-6 Mid-Depth

Date Received: 05/12/16 13:00

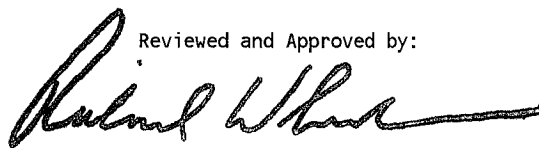
PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	05/13	15:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	05/16	17:35	AEH
Phosphorus as P, Total	0.06	mg/L	.01	1	SM 4500P-E	05/16	17:10	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	05/13	00:55	JCL
Nitrogen, Nitrate	0.68	mg/L	.05	1	EPA 353.2	05/12	17:48	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	05/12	16:19	JCL
Nitrogen, Total Kjeldahl	0.31	mg/L	.25	1	EPA 351.2	05/18	17:19	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	05/12	11:45	EMW
Total Organic Carbon	1.1	mg/L	1	1	SM5310 C	05/16	12:06	ALD
RESIDUES								
Solids, Total Dissolved	105	mg/L	5	1	SM 2540C	05/16	12:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	05/16	12:35	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	9	mg/L	1	1	SM 2320 B	05/16	12:05	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 05/24/16
 Lab ID: 3157-16-0016778

Date Collected: 05/12/16 08:05
 Collected By: Client

Sample Desc: BZ-6 Deep

Date Received: 05/12/16 13:00

PWSID: 3130843

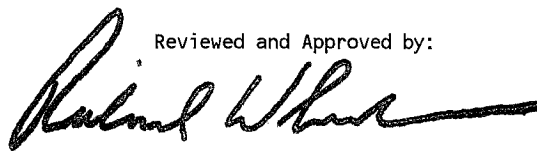
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	05/13	15:50	AEH
Phosphorus as P, Dissolved	<.05	mg/l	.05	1	SM 4500P-E	05/16	17:35	AEH
Phosphorus as P, Total	<.01	mg/l	.01	1	SM 4500P-E	05/16	17:10	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	05/13	01:10	JCL
Nitrogen, Nitrate	0.68	mg/l	.05	1	EPA 353.2	05/12	17:53	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	05/12	16:24	JCL
Nitrogen, Total Kjeldahl	<.25	mg/l	.25	1	EPA 351.2	05/18	17:20	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	05/12	11:45	EMW
Total Organic Carbon	1.0	mg/l	1	1	SM5310 C	05/16	12:18	ALD
RESIDUES								
Solids, Total Dissolved	124	mg/l	5	1	SM 2540C	05/16	12:35	ALD
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	05/16	12:35	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	9	mg/l	1	1	SM 2320 B	05/16	12:05	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 05/24/16
 Lab ID: 3157-16-0016779

Date Collected: 05/12/16 09:05
 Collected By: Client

Sample Desc: BZ-7 Surface

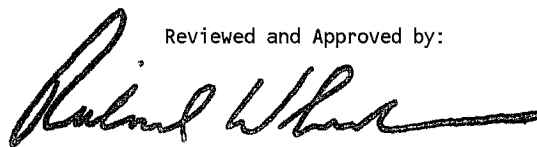
Date Received: 05/12/16 13:00

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	<2	/100ml	2	1	SM 9222D	05/12	14:30	TNS
Total Coliform	76	mpn/100mL	1	1	SM 9223B	05/13	11:30	KAW
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	05/13	15:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	05/16	17:40	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	05/16	17:10	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	05/13	01:25	JCL
Nitrogen, Nitrate	0.61	mg/L	.05	1	EPA 353.2	05/12	17:54	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	05/12	16:25	JCL
Nitrogen, Total Kjeldahl	0.32	mg/L	.25	1	EPA 351.2	05/18	17:21	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	05/12	11:45	EMW
Total Organic Carbon	1.4	mg/L	1	1	SM5310 C	05/16	12:29	ALD
RESIDUES								
Solids, Total Dissolved	110	mg/L	5	1	SM 2540C	05/16	12:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	05/16	13:10	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	05/16	12:05	AEH

Distribution of Reports:
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Reviewed and Approved by:



Richard Wheeler

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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 05/24/16
Lab ID: 3157-16-0016779

Date Collected: 05/12/16 09:05
Collected By: Client

Sample Desc: BZ-7 Surface

Date Received: 05/12/16 13:00

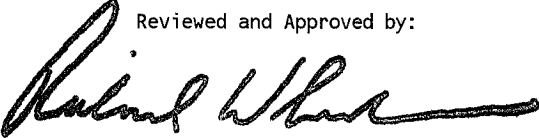
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The total coliform sample was placed in the incubator on 05/12/2016 at 16:10.
- 02 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

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Attention: David Wertz
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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 05/24/16
 Lab ID: 3157-16-0016780

Date Collected: 05/12/16 09:05
 Collected By: Client

Sample Desc: BZ-7 Mid-Depth

Date Received: 05/12/16 13:00

PWSID: 3130843

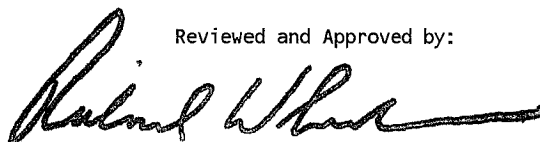
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	05/13	16:00	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	05/16	17:40	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	05/16	17:15	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	05/13	01:39	JCL
Nitrogen, Nitrate	0.74	mg/L	.05	1	EPA 353.2	05/12	17:55	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	05/12	16:26	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	05/18	17:23	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	05/12	11:45	EMW
Total Organic Carbon	1.2	mg/L	1	1	SM5310 C	05/16	12:41	ALD
RESIDUES								
Solids, Total Dissolved	102	mg/L	5	1	SM 2540C	05/16	12:35	ALD
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	05/16	13:10	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	05/16	12:05	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

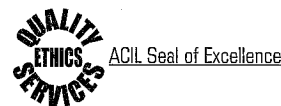
Reviewed and Approved by:


 Richard Wheeler

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CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.

Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 05/24/16
 Lab ID: 3157-16-0016781

Date Collected: 05/12/16 09:05
 Collected By: Client

Sample Desc: BZ-7 Deep

Date Received: 05/12/16 13:00

PWSID: 3130843

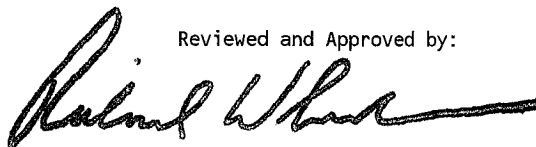
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	05/13	16:00	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	05/16	17:40	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	05/16	17:15	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	05/13	01:54	JCL
Nitrogen, Nitrate	0.69	mg/L	.05	1	EPA 353.2	05/12	17:56	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	05/12	16:27	JCL
Nitrogen, Total Kjeldahl	0.28	mg/L	.25	1	EPA 351.2	05/18	17:24	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	05/12	11:45	EMW
Total Organic Carbon	1.1	mg/L	1	1	SM5310 C	05/16	12:52	ALD
RESIDUES								
Solids, Total Dissolved	61	mg/L	5	1	SM 2540C	05/16	12:35	ALD
Solids, Total Suspended	49	mg/L	3	1	SM 2540D	05/16	13:10	ALD
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/L	1	1	SM 2320 B	05/16	12:05	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:



Richard Wheeler

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ACIL Seal of Excellence

Account: 3157 Work Order: 006226 Project Leader: rxw No: 274496
Customer: David Wertz Chain of Custody
Address: Tetra Tech (Beltzville Dam) 1320 North Courthouse Rd., Ste. 600
Arlington VA 22201
Phone: 703-387-5516 Ext: 2

Work Order Description: Beltzville Reservoir
Remarks:
Total Sampling Time (hours):
Laboratory Receipt Temp: 6 Deg C. If Temp Unacceptable, On Ice? N
Approved By: WACIK

Sample No: 1 Desc: BZ-1 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod
fc, tc, TNS
Date: 5/12/16
Time: 1050

Sample No: 2 Desc: BZ-2 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod
fc, tc, TNS
Date: 5/12/16
Time: 1035

Sample No: 3 Desc: BZ-3 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod
fc, tc, TNS
Date: 5/12/16
Time: 0835

Received by: [Signature] Received for laboratory by: [Signature]
Date: 5/12/16 1130 Date: 5/12/16 1300
Time: 1130 Time: 1300
Sample entered by: 09M

Account: 3157 Work Order: 006226
Customer: David Wertz Work Order Description: Beltzville Reservoir

No: 274496

Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext:

Samplers: WACIK

Chain of Custody

Project Leader: ixw

Remarks:

Total Sampling Time (hours): _____ Bottle Prep by: _____

Laboratory Receipt Temp: 6 Deg C. If Temp Unacceptable, On Ice? Y N

Approved By: RES

5/12/16
0835

Matrix:	o	Date:	<u>5/12/16</u>
		Time:	<u>0835</u>
A -	1 X Pt nh3 p w/ H2SO4 (pH<2);		
B -	1 X 8oz Alk p w/ Cool to 6 C;		
C -	1 X 2xambervoa g w/ H3PO4/zero headspace		
D -	1 X L bod p w/ Cool to 6 C;		
E -	1 X Pt no3no2 p w/ Cool to 6 C;		

5/12/16
0835

Matrix:	o	Date:	<u>5/12/16</u>
		Time:	<u>0835</u>
A -	1 X Pt nh3 p w/ H2SO4 (pH<2);		
B -	1 X 8oz Alk p w/ Cool to 6 C;		
C -	1 X 2xambervoa g w/ H3PO4/zero headspace		
D -	1 X L bod p w/ Cool to 6 C;		
E -	1 X Pt no3no2 p w/ Cool to 6 C;		

5/12/16
0835

Matrix:	o	Date:	<u>5/12/16</u>
		Time:	<u>0835</u>
A -	1 X Pt nh3 p w/ H2SO4 (pH<2);		
B -	1 X 8oz Alk p w/ Cool to 6 C;		
C -	1 X 2xambervoa g w/ H3PO4/zero headspace		
D -	1 X L bod p w/ Cool to 6 C;		
E -	1 X Pt no3no2 p w/ Cool to 6 C;		
F -	1 X 250mlMicro p w/ Sterile/Na2S2O3;		

16772 Sample No: 4 Desc: BZ-3 Mid-Depth
nh3-n, tkn, alk, tds, tss, po4-p, toc,
MA ⁴⁴
no2-n, no3-n, d-po4-p, o-po4, bod₅

16773 Sample No: 5 Desc: BZ-3 Deep
nh3-n, tkn, alk, tds, tss, po4-p, toc,
MA ^{Alk}
no2-n, no3-n, d-po4-p, o-po4, bod₅

16774 Sample No: 6 Desc: BZ-4 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
MA ⁴⁴
no2-n, no3-n, d-po4-p, o-po4, bod₅
fc, tc,
ND

[Signature]
Received by: Paul Stange

Date: 5/12/16 1130

[Signature]
Relinquished by: Paul Stange

Time: 1136

Received for Laboratory by: Paul Stange

Date: 5/12/16 Time: 1300

Sample entered by: 98M

Account: 3157 Work Order: 006226 Project Leader: rxw No: 274496
Customer: David Wertz Work Order Description: Beltzville Reservoir

Address: Tetra Tech (Beltzville Dam) 1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext: WAcik
Samplers: WAcik

Sample No: 7 Desc: BZ-5 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod₅
fc, tc, TNS

Sample No: 8 Desc: BZ-6 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod₅
fc, tc, TNS

Sample No: 9 Desc: BZ-6 Mid-Depth
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod₅
fc, tc, TNS

Relinquished by: [Signature] Received by: [Signature]
Date: 5/12/16 Time: 1130 Date: 5/12/16 Time: 1300

Chain of Custody
Total Sampling Time (hours): _____ Bottle Prep by: _____
Laboratory Receipt Temp: 0 Deg C. If Temp Unacceptable, On Ice? (Y) N
Approved By: [Signature]

Matrix:	Date:	Time:
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);	5/12/16	1010
B - 1 X 8oz Alk p w/ Cool to 6 C;		
C - 1 X 2xambervoa g w/ H3PO4/zero headspace		
D - 1 X L bod p w/ Cool to 6 C;		
E - 1 X Pt no3no2 p w/ Cool to 6 C;		
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;		
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);	5/12/16	0805
B - 1 X 8oz Alk p w/ Cool to 6 C;		
C - 1 X 2xambervoa g w/ H3PO4/zero headspace		
D - 1 X L bod p w/ Cool to 6 C;		
E - 1 X Pt no3no2 p w/ Cool to 6 C;		
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;		
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);	5/12/16	0805
B - 1 X 8oz Alk p w/ Cool to 6 C;		
C - 1 X 2xambervoa g w/ H3PO4/zero headspace		
D - 1 X L bod p w/ Cool to 6 C;		
E - 1 X Pt no3no2 p w/ Cool to 6 C;		
F - 1 X 250mlMicro p w/ Cool to 6 C;		

Sample entered by: [Signature]

M. J. REIDER ASSOCIATES, INC.

IXW 04/26/16 12:24:27 PM

Chain of Custody

Account: 3157 Work Order: 006226 Project Leader: IXW No: 274496

Customer: David Wertz Work Order Description: Beltzville Reservoir

Address: Tetra Tech (Beltzville Dam) 1320 North Courthouse Rd., Ste. 600

Arlington VA 22201

Phone: 703-387-5516 Ext: WACIK

Samplers: WACIK

Remarks: Total Sampling Time (hours): Bottle Prep by: Laboratory Receipt Temp: 6 Deg C. If Temp Unacceptable, On Ice? N Approved By: RES

Table with columns: Sample No, Desc, Matrix, Date, Time. Rows include samples 10 (BZ-6 Deep), 11 (BZ-7 Surface), and 12 (BZ-7 Mid-Depth).

Relinquished by: [Signature] Received by: [Signature] Date: 5/12/16 Time: 1130

Received for laboratory by: [Signature] Date: 5/12/16 Time: 1300

Sample entered by: [Signature]

Account: 3157 Work Order: 006226 Project Leader: rxw No: 274496
Customer: David Wertz Work Order Description: Beltzville Reservoir

Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext: WACIK
Samplers: WACIK

Sample No: 13 Desc: BZ-7 Deep
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod
Matrix: 0
Date: 5/12/16
Time: 0705

Remarks:
Total Sampling Time (hours): _____ Bottle Prep by: _____
Laboratory Receipt Temp: 6 Deg C. If Temp Unacceptable, On Ice? Y N
Approved By: RES

Relinquished by: [Signature] Received by: [Signature]
Date: 5/12/16 Time: 1130
Date: 5/12/16 Time: 1300

Received for laboratory by: [Signature]
Date: 5/12/16 Time: 1300
Sample entered by: 94

CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.

Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 06/21/16
 Lab ID: 3157-16-0018031

Date Collected: 06/08/16 10:50
 Collected By: Client

Sample Desc: BZ-1 Surface

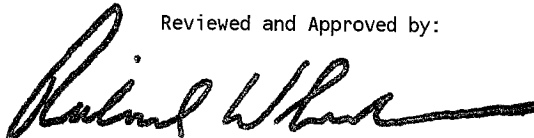
Date Received: 06/08/16 12:30

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTERIOLOGY								
MICROBIOLOGY								
Fecal Coliform	230	/100mL	2	1	SM 9222D	06/08	14:00	TNS
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	06/09	11:05	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/08	14:40	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/08	17:00	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	06/08	17:25	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/09	11:58	HRG
Nitrogen, Nitrate	0.56	mg/L	.05	1	EPA 353.2	06/08	16:21	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/08	14:46	JCL
Nitrogen, Total Kjeldahl	0.55	mg/L	.25	1	EPA 351.2	06/16	17:53	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/08	13:50	EMW
Total Organic Carbon	1.5	mg/L	1	1	SM5310 C	06/13	11:23	ALD
RESIDUES								
Solids, Total Dissolved	24	mg/L	5	1	SM 2540C	06/13	13:10	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/13	13:10	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/L	1	1	SM 2320 B	06/17	13:30	AEH

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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CERTIFICATE OF ANALYSIS
M.J. Reider Associates, Inc.



Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 06/21/16
Lab ID: 3157-16-0018031
Date Collected: 06/08/16 10:50
Collected By: Client
Date Received: 06/08/16 12:30

Sample Desc: BZ-1 Surface

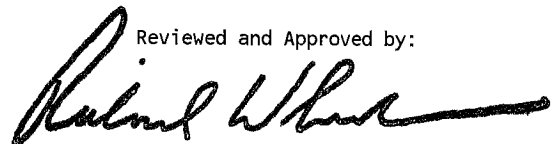
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 06/08/2016 at 16:45.

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.

Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 06/21/16
 Lab ID: 3157-16-0018032

Date Collected: 06/08/16 10:35
 Collected By: Client

Sample Desc: BZ-2 Surface

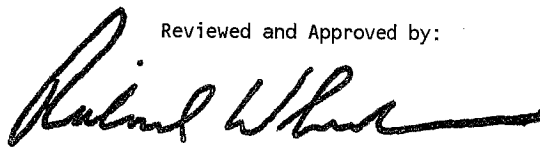
Date Received: 06/08/16 12:30

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	240	/100mL	2	1	SM 9222D	06/08	14:00	TNS
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	06/09	11:05	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/08	14:40	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/08	17:00	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	06/08	17:25	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/09	12:12	HRG
Nitrogen, Nitrate	0.22	mg/L	.05	1	EPA 353.2	06/08	16:26	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/08	14:49	JCL
Nitrogen, Total Kjeldahl	0.37	mg/L	.25	1	EPA 351.2	06/16	17:54	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/08	13:50	EMW
Total Organic Carbon	1.0	mg/L	1	1	SM5310 C	06/13	11:47	ALD
RESIDUES								
Solids, Total Dissolved	17	mg/L	5	1	SM 2540C	06/13	13:10	TMH
Solids, Total Suspended	57	mg/L	3	1	SM 2540D	06/13	13:10	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	7	mg/L	1	1	SM 2320 B	06/17	16:05	AEH

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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CERTIFICATE OF ANALYSIS
M.J. Reider Associates, Inc.



Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 06/21/16
Lab ID: 3157-16-0018032
Date Collected: 06/08/16 10:35
Collected By: Client
Date Received: 06/08/16 12:30

Sample Desc: BZ-2 Surface

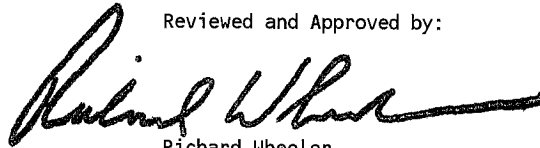
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
--------	------	-----------	---------------	-----------	-----------	-----------	---------

COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 06/08/2016 at 16:45.

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.

Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 06/21/16
 Lab ID: 3157-16-0018033
 Date Collected: 06/08/16 08:40
 Collected By: Client
 Date Received: 06/08/16 12:30

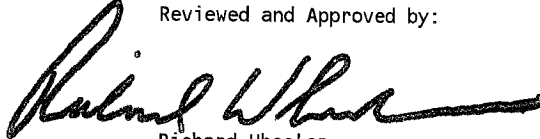
Sample Desc: BZ-3 Surface

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTERIOLOGY								
MICROBIOLOGY								
Fecal Coliform	3	/100mL	2	1	SM 9222D	06/08	14:00	TNS
Total Coliform	75	mpn/100mL	1	1	SM 9223B	06/09	11:05	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/08	14:40	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/08	17:05	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	06/08	17:25	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/09	12:27	HRG
Nitrogen, Nitrate	0.51	mg/L	.05	1	EPA 353.2	06/08	16:27	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/08	14:50	JCL
Nitrogen, Total Kjeldahl	0.41	mg/L	.25	1	EPA 351.2	06/16	17:55	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/08	13:50	EMW
Total Organic Carbon	1.8	mg/L	1	1	SM5310 C	06/13	12:23	ALD
RESIDUES								
Solids, Total Dissolved	25	mg/L	5	1	SM 2540C	06/13	13:10	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/13	13:10	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	13	mg/L	1	1	SM 2320 B	06/17	16:05	AEH

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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CERTIFICATE OF ANALYSIS
M.J. Reider Associates, Inc.



Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 06/21/16
Lab ID: 3157-16-0018033

Date Collected: 06/08/16 08:40
Collected By: Client

Sample Desc: BZ-3 Surface

Date Received: 06/08/16 12:30

PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 06/08/2016 at 16:45.

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 06/21/16
 Lab ID: 3157-16-0018034

Date Collected: 06/08/16 08:40
 Collected By: Client

Sample Desc: BZ-3 Mid-Depth

Date Received: 06/08/16 12:30

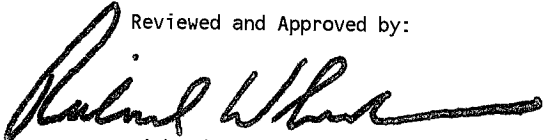
PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/08	14:40	AEH
Phosphorus as P, Dissolved	0.11	mg/L	.05	1	SM 4500P-E	06/08	17:05	AEH
Phosphorus as P, Total	0.05	mg/L	.01	1	SM 4500P-E	06/08	17:30	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/09	12:42	HRG
Nitrogen, Nitrate	0.64	mg/L	.05	1	EPA 353.2	06/08	16:28	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/08	14:50	JCL
Nitrogen, Total Kjeldahl	0.54	mg/L	.25	1	EPA 351.2	06/20	16:07	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/08	13:50	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	06/13	12:34	ALD
RESIDUES								
Solids, Total Dissolved	40	mg/L	5	1	SM 2540C	06/13	13:10	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/13	13:10	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/L	1	1	SM 2320 B	06/17	16:05	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

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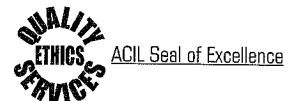
Reviewed and Approved by:

 Richard Wheeler

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Attention: David Wertz
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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 06/21/16
 Lab ID: 3157-16-0018035

Date Collected: 06/08/16 08:40
 Collected By: Client

Sample Desc: BZ-3 Deep

Date Received: 06/08/16 12:30

PWSID: 3130843

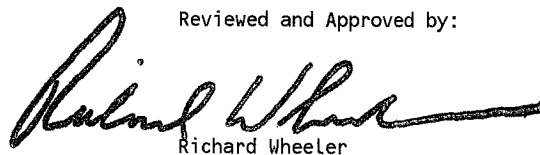
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/08	14:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/08	17:05	AEH
Phosphorus as P, Total	0.03	mg/L	.01	1	SM 4500P-E	06/08	17:30	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/09	12:56	HRG
Nitrogen, Nitrate	0.61	mg/L	.05	1	EPA 353.2	06/08	16:29	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/08	14:51	JCL
Nitrogen, Total Kjeldahl	0.42	mg/L	.25	1	EPA 351.2	06/20	16:10	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/08	13:50	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	06/13	12:58	ALD
RESIDUES								
Solids, Total Dissolved	35	mg/L	5	1	SM 2540C	06/13	13:10	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/13	13:10	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	06/17	16:05	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

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 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 06/21/16
 Lab ID: 3157-16-0018036

Date Collected: 06/08/16 10:25
 Collected By: Client

Sample Desc: BZ-4 Surface

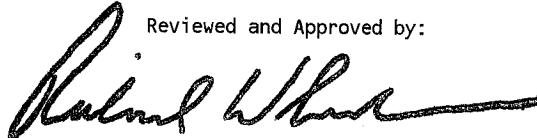
Date Received: 06/08/16 12:30

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTERIOLOGY								
MICROBIOLOGY								
Fecal Coliform	34	/100mL	2	1	SM 9222D	06/08	14:00	TNS
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	06/09	11:05	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.01	mg/L	.01	1	SM 4500P-E	06/08	14:50	AEH
Phosphorus as P, Dissolved	0.07	mg/L	.05	1	SM 4500P-E	06/08	17:05	AEH
Phosphorus as P, Total	0.08	mg/L	.01	1	SM 4500P-E	06/08	17:30	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/09	13:11	HRG
Nitrogen, Nitrate	1.34	mg/L	.05	1	EPA 353.2	06/08	16:30	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/08	14:52	JCL
Nitrogen, Total Kjeldahl	0.69	mg/L	.25	1	EPA 351.2	06/20	16:11	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/08	13:50	EMW
Total Organic Carbon	1.3	mg/L	1	1	SM5310 C	06/13	13:09	ALD
RESIDUES								
Solids, Total Dissolved	60	mg/L	5	1	SM 2540C	06/13	13:10	TMH
Solids, Total Suspended	4	mg/L	3	1	SM 2540D	06/13	13:10	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	7	mg/L	1	1	SM 2320 B	06/17	16:05	AEH

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Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 06/21/16
Lab ID: 3157-16-0018036
Date Collected: 06/08/16 10:25
Collected By: Client
Date Received: 06/08/16 12:30

Sample Desc: BZ-4 Surface

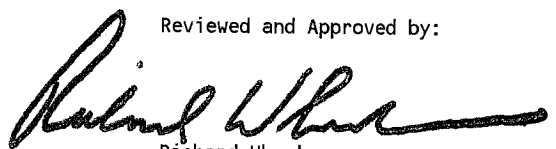
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 06/08/2016 at 16:45.

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Date of Report: 06/21/16
 Lab ID: 3157-16-0018037

Date Collected: 06/08/16 10:15
 Collected By: Client

Sample Desc: BZ-5 Surface

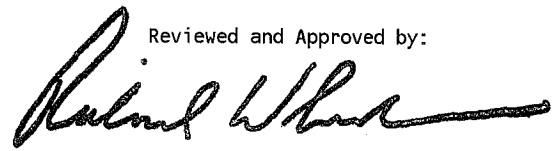
Date Received: 06/08/16 12:30

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	230	/100ml	2	1	SM 9222D	06/08	14:00	TNS
Total Coliform	>2400	mpn/100ml	1	1	SM 9223B	06/09	11:05	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.02	mg/L	.01	1	SM 4500P-E	06/08	14:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/08	17:05	AEH
Phosphorus as P, Total	0.04	mg/L	.01	1	SM 4500P-E	06/08	17:30	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/09	13:25	HRG
Nitrogen, Nitrate	1.14	mg/L	.05	1	EPA 353.2	06/08	16:31	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/08	14:53	JCL
Nitrogen, Total Kjeldahl	0.84	mg/L	.25	1	EPA 351.2	06/20	16:12	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/08	13:50	EMW
Total Organic Carbon	1.5	mg/L	1	1	SM5310 C	06/13	13:21	ALD
RESIDUES								
Solids, Total Dissolved	66	mg/L	5	1	SM 2540C	06/13	13:10	TMH
Solids, Total Suspended	18	mg/L	3	1	SM 2540D	06/13	13:10	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	14	mg/L	1	1	SM 2320 B	06/17	16:05	AEH

Distribution of Reports:
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Reviewed and Approved by:



Richard Wheeler

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Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 06/21/16
Lab ID: 3157-16-0018037
Date Collected: 06/08/16 10:15
Collected By: Client
Date Received: 06/08/16 12:30

Sample Desc: BZ-5 Surface

PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 06/08/2016 at 16:45.

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Gregory Wacik - USACE (Beltzville Dam)

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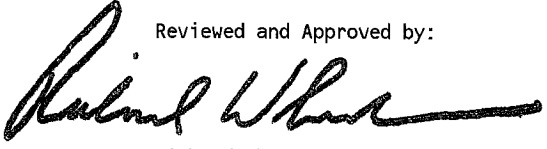
Date of Report: 06/21/16
 Lab ID: 3157-16-0018038
 Date Collected: 06/08/16 08:00
 Collected By: Client
 Date Received: 06/08/16 12:30

Sample Desc: BZ-6 Surface

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTERIOLOGY								
MICROBIOLOGY								
Fecal Coliform	2	/100mL	2	1	SM 9222D	06/08	14:00	TNS
Total Coliform	170	mpn/100mL	1	1	SM 9223B	06/09	11:05	TNS
CHEMISTRY								
COLORIMETRIC								
Phosphate as P, Ortho	0.01	mg/L	.01	1	SM 4500P-E	06/08	14:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/08	17:05	AEH
Phosphorus as P, Total	0.01	mg/L	.01	1	SM 4500P-E	06/08	17:30	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/09	13:40	HRG
Nitrogen, Nitrate	0.52	mg/L	.05	1	EPA 353.2	06/08	16:32	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/08	14:54	JCL
Nitrogen, Total Kjeldahl	0.44	mg/L	.25	1	EPA 351.2	06/20	16:13	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/08	13:50	EMW
Total Organic Carbon	1.7	mg/L	1	1	SM5310 C	06/13	13:44	ALD
RESIDUES								
Solids, Total Dissolved	45	mg/L	5	1	SM 2540C	06/13	13:10	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/13	13:10	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	06/17	16:05	AEH

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Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 06/21/16
Lab ID: 3157-16-0018038

Date Collected: 06/08/16 08:00
Collected By: Client

Sample Desc: BZ-6 Surface

Date Received: 06/08/16 12:30

PWSID: 3130843

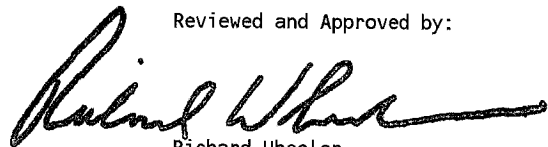
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 06/08/2016 at 16:45.

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 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 06/21/16
 Lab ID: 3157-16-0018039
 Date Collected: 06/08/16 08:00
 Collected By: Client
 Date Received: 06/08/16 12:30

Sample Desc: BZ-6 Mid-Depth

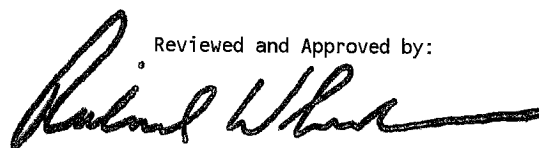
PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	06/08	14:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/08	17:05	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	06/08	17:35	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/09	13:55	HRG
Nitrogen, Nitrate	0.62	mg/L	.05	1	EPA 353.2	06/08	16:33	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/08	14:55	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	06/20	16:14	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/08	13:50	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	06/13	13:56	ALD
RESIDUES								
Solids, Total Dissolved	40	mg/L	5	1	SM 2540C	06/13	13:10	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/13	13:10	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/L	1	1	SM 2320 B	06/17	16:05	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

 Richard Wheeler

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CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.

Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 06/21/16
 Lab ID: 3157-16-0018040
 Date Collected: 06/08/16 08:00
 Collected By: Client
 Date Received: 06/08/16 12:30

Sample Desc: BZ-6 Deep

PWSID: 3130843

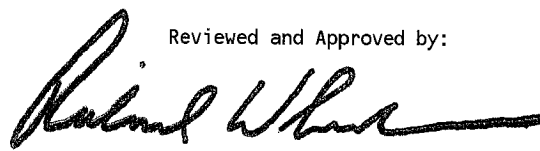
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.01	mg/L	.01	1	SM 4500P-E	06/08	14:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/08	17:05	AEH
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	06/08	17:35	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/09	14:38	HRG
Nitrogen, Nitrate	0.61	mg/L	.05	1	EPA 353.2	06/08	16:38	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/08	15:00	JCL
Nitrogen, Total Kjeldahl	0.36	mg/L	.25	1	EPA 351.2	06/20	16:15	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/08	13:50	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	06/13	14:57	ALD
RESIDUES								
Solids, Total Dissolved	60	mg/L	5	1	SM 2540C	06/13	13:10	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/13	13:10	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/L	1	1	SM 2320 B	06/17	16:05	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.

Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 06/21/16
 Lab ID: 3157-16-0018041

Date Collected: 06/08/16 09:05
 Collected By: Client

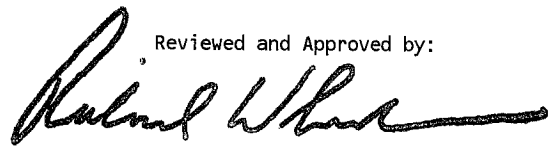
Sample Desc: BZ-7 Surface

Date Received: 06/08/16 12:30

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	5	/100mL	2	1	SM 9222D	06/08	14:00	TNS
Total Coliform	390	mpn/100mL	1	1	SM 9223B	06/09	11:05	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.01	mg/L	.01	1	SM 4500P-E	06/08	14:50	AEH
Phosphorus as P, Dissolved	0.05	mg/L	.05	1	SM 4500P-E	06/08	17:10	AEH
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	06/08	17:35	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/09	14:53	HRG
Nitrogen, Nitrate	0.44	mg/L	.05	1	EPA 353.2	06/08	16:39	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/08	15:01	JCL
Nitrogen, Total Kjeldahl	0.44	mg/L	.25	1	EPA 351.2	06/20	16:15	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/08	13:50	EMW
Total Organic Carbon	1.6	mg/L	1	1	SM5310 C	06/13	15:08	ALD
RESIDUES								
Solids, Total Dissolved	56	mg/L	5	1	SM 2540C	06/13	13:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/13	13:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/L	1	1	SM 2320 B	06/17	16:05	AEH

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

 Richard Wheeler

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CERTIFICATE OF ANALYSIS
M.J. Reider Associates, Inc.



Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 06/21/16
Lab ID: 3157-16-0018041

Date Collected: 06/08/16 09:05
Collected By: Client

Sample Desc: BZ-7 Surface

Date Received: 06/08/16 12:30

PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
--------	------	-----------	---------------	-----------	-----------	-----------	---------

COMMENTS

- 01 The total coliform sample was placed in the incubator on 06/08/2016 at 16:45.
- 02 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.

Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 06/21/16
 Lab ID: 3157-16-0018042

Date Collected: 06/08/16 09:05
 Collected By: Client

Sample Desc: BZ-7 Mid-Depth

Date Received: 06/08/16 12:30

PWSID: 3130843

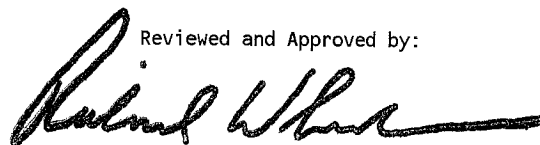
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.01	mg/L	.01	1	SM 4500P-E	06/08	14:50	AEH
Phosphorus as P, Dissolved	0.08	mg/L	.05	1	SM 4500P-E	06/08	17:10	AEH
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	06/08	17:35	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/09	15:08	HRG
Nitrogen, Nitrate	0.73	mg/L	.05	1	EPA 353.2	06/08	16:40	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/08	15:02	JCL
Nitrogen, Total Kjeldahl	0.53	mg/L	.25	1	EPA 351.2	06/20	16:18	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/08	13:50	EMW
Total Organic Carbon	1.8	mg/L	1	1	SM5310 C	06/13	15:20	ALD
RESIDUES								
Solids, Total Dissolved	56	mg/L	5	1	SM 2540C	06/13	13:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/13	13:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/L	1	1	SM 2320 B	06/17	16:05	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.



Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 06/21/16
 Lab ID: 3157-16-0018043

Date Collected: 06/08/16 09:05
 Collected By: Client

Sample Desc: BZ-7 Deep

Date Received: 06/08/16 12:30

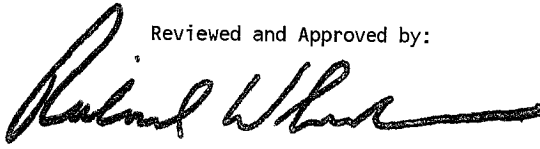
PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.01	mg/L	.01	1	SM 4500P-E	06/08	14:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	06/08	17:10	AEH
Phosphorus as P, Total	0.03	mg/L	.01	1	SM 4500P-E	06/08	17:35	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	06/09	15:22	HRG
Nitrogen, Nitrate	0.62	mg/L	.05	1	EPA 353.2	06/08	16:40	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	06/08	15:03	JCL
Nitrogen, Total Kjeldahl	0.50	mg/L	.25	1	EPA 351.2	06/20	16:19	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	06/08	13:50	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	06/13	15:31	ALD
RESIDUES								
Solids, Total Dissolved	55	mg/L	5	1	SM 2540C	06/13	13:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	06/13	13:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	10	mg/L	1	1	SM 2320 B	06/17	16:05	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

 Richard Wheeler

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Chain of Custody

Account: 3157 Work Order: 006226 Project Leader: rxw No: 275163
 Customer: David Wertz Work Order Description: Beltzville Reservoir
 Address: Tetra Tech (Beltzville Dam) 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201
 Phone: 703-387-5516 Ext: _____
 Samplers: WACIK

Remarks: _____
 Total Sampling Time (hours): _____ Bottle Prep by: _____
 Laboratory Receipt Temp: 3 Deg C. If Temp Unacceptable, On Ice? Y
 Approved By: RES

18031 =====

Sample No: 1 Desc: BZ-1 Surface
 nh3-n, tkn, alk, tds, tss, po4-p, toc,
M AM
 no2-n, no3-n, d-po4-p, o-po4, bod₅
 fc, RES
 Matrix: o Date: 6/8/16
 Time: 1050

18032 =====

Sample No: 2 Desc: BZ-2 Surface
 nh3-n, tkn, alk, tds, tss, po4-p, toc,
M AM
 no2-n, no3-n, d-po4-p, o-po4, bod₅
 fc, RES
 Matrix: o Date: 6/8/16
 Time: 1035

18033 =====

Sample No: 3 Desc: BZ-3 Surface
 nh3-n, tkn, alk, tds, tss, po4-p, toc,
M AM
 no2-n, no3-n, d-po4-p, o-po4, bod₅
 fc, RES
 Matrix: o Date: 6/8/16
 Time: 6840

Relinquished by: [Signature] Received by: [Signature]
 Date: 6/8/16 Time: 11:00
 Date: 6/8/16 Time: 12:30

Sample entered by: [Signature]

Chain of Custody

Account: 3157 Work Order: 006226
Customer: David Wertz Work Order Description: Beltzville Reservoir
Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

No: 275163

Project Leader: rxw

Remarks:

Total Sampling Time (hours): _____ Bottle Prep by: _____

Laboratory Receipt Temp: 3 Deg C. If Temp Unacceptable, On Ice? Y N
Approved By: RES

Date: 6/8/16
Time: 0840

18034 Sample No: 4 Desc: BZ-3 Mid-Depth
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod₅
RA

Matrix: o Date: 6/8/16
Time: 0840
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;

18035 Sample No: 5 Desc: BZ-3 Deep
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod₅
AL

Matrix: o Date: 6/8/16
Time: 0840
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;

18036 Sample No: 6 Desc: BZ-4 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod₅
fc_{tc}
RES

Matrix: o Date: 6/8/16
Time: 1025
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Relinquished by: *[Signature]*

Received for laboratory by: *[Signature]*

Date: 6/8/16 Time: 11:00

Date: 6/8/16 Time: 1230

Sample entered by: [Signature]

Account: 3157

Work Order: 006226

Project Leader: rxw

No: 275163

Customer: David Wertz

Work Order Description: Beltzville Reservoir

Chain of Custody

Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Remarks:

Phone: 703-387-5516 Ext:

Total Sampling Time (hours): _____ Bottle Prep by: _____

Samplers: WACIK

Laboratory Receipt Temp: 3 Deg C. If Temp Unacceptable, On Ice? Y N
Approved By: [Signature]

18037 Sample No: 7 Desc: BZ-5 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
M *AA*
no2-n, no3-n, d-po4-p, o-po4, bod₅

Matrix: o Date: 6/8/16
Time: 10:15

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;
- F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

18038 Sample No: 8 Desc: BZ-6 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
M *AA*
no2-n, no3-n, d-po4-p, o-po4, bod₅

Matrix: o Date: 6/8/16
Time: 0800

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;
- F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

18039 Sample No: 9 Desc: BZ-6 Mid-Depth
nh3-n, tkn, alk, tds, tss, po4-p, toc,
M *AA*
no2-n, no3-n, d-po4-p, o-po4, bod₅

Matrix: o Date: 6/8/16
Time: 0900

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;

Relinquished by: [Signature] Received by: [Signature]

Received for laboratory by: [Signature]

Date: 6/8/16 Time: 11:00

Date: 6/8/16 Time: 1230

Sample entered by: [Signature]

Chain of Custody

Account: 3157 Work Order: 006226
Customer: David Wertz Work Order Description: Beltzville Reservoir
Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Project Leader: rxw
No: 275163

Remarks:

Total Sampling Time (hours): _____ Bottle Prep by: _____

Laboratory Receipt Temp: 3 Deg C. If Temp Unacceptable, On Ice? (Y) N
Approved By: [Signature]

Phone: 703-387-5516 Ext: _____
Samplers: WACIK

18040 Sample No: 10 Desc: BZ-6 Deep

nh3-n, tkn, alk, tds, tss, po4-p, toc,
tn *AA*
no2-n, no3-n, d-po4-p, o-po4, bod

18041 Sample No: 11 Desc: BZ-7 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
m *AA*
no2-n, no3-n, d-po4-p, o-po4, bod
fc, tds *MS*

18042 Sample No: 12 Desc: BZ-7 Mid-Depth
nh3-n, tkn, alk, tds, tss, po4-p, toc,
M *AA*
no2-n, no3-n, d-po4-p, o-po4, bod

Matrix: o Date: 6/8/16
Time: 0800

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;

Matrix: o Date: 6/8/16
Time: 0915

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;
- F - 1 X 250mlmicro p w/ Sterile/Na2S2O3;

Matrix: o Date: 6/8/16
Time: 0915

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;

Relinquished by: [Signature]
Date: 6/8/16 Time: 11:00

Received by: [Signature]

Received for laboratory by: [Signature]
Date: 6/9/16 Time: 12:30

Sample entered by: (B)

Chain of Custody

Account: 3157 Work Order: 006226 Project Leader: rxw No: 275163
Customer: David Wertz Work Order Description: Beltzville Reservoir

Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext: _____
Sampplers: WACIK
Total Sampling Time (hours): _____ Bottle Prep by: _____
Laboratory Receipt Temp: 3 Deg C. If Temp Unacceptable, On Ice? Y N
Approved By: RES

=====
Sample No: 13 Desc: BZ-7 Deep
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod_N
Matrix: 0 Date: 6/8/16
Time: 0905
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
=====

13043

Relinquished by: [Signature] Received by: [Signature]
Date: 6/8/16 Time: 11:00
Received for laboratory by: [Signature]
Date: 6/8/16 Time: 1230

Sample entered by: [Signature]

CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.

Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/03/16
 Lab ID: 3157-16-0018953

Date Collected: 07/20/16 10:50
 Collected By: Client

Sample Desc: BZ-1 Surface

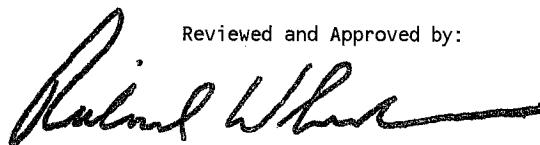
Date Received: 07/20/16 12:55

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	23	/100mL	2	1	SM 9222D	07/20	13:45	TNS
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	07/21	11:20	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/21	07:00	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/21	17:40	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/21	18:10	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/21	12:24	JCL
Nitrogen, Nitrate	0.63	mg/L	.05	1	EPA 353.2	07/20	16:39	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/20	14:44	JCL
Nitrogen, Total Kjeldahl	0.45	mg/L	.25	1	EPA 351.2	07/28	15:28	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/20	13:50	EMW
Total Organic Carbon	1.7	mg/L	1	1	SM5310 C	07/20	21:59	ALD
RESIDUES								
Solids, Total Dissolved	56	mg/L	5	1	SM 2540C	07/22	13:15	TMH
Solids, Total Suspended	102	mg/L	3	1	SM 2540D	07/22	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	53	mg/L	1	1	SM 2320 B	07/25	11:10	AEH

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 08/03/16
Lab ID: 3157-16-0018953

Date Collected: 07/20/16 10:50
Collected By: Client

Sample Desc: BZ-1 Surface

Date Received: 07/20/16 12:55

PWSID: 3130843

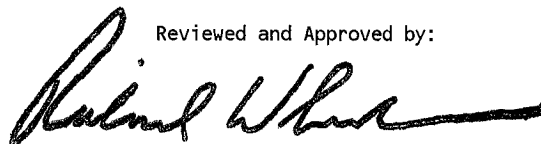
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 07/20/2016 at 17:05.

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


Richard Wheeler

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/03/16
 Lab ID: 3157-16-0018954

Date Collected: 07/20/16 10:30
 Collected By: Client

Sample Desc: BZ-2 Surface

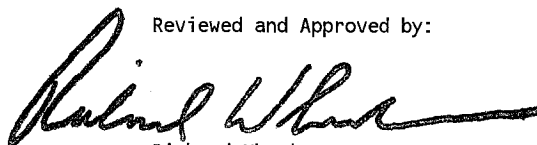
Date Received: 07/20/16 12:55

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	15	/100mL	2	1	SM 9222D	07/20	13:45	TNS
Total Coliform	2000	mpn/100mL	1	1	SM 9223B	07/21	11:20	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.01	mg/L	.01	1	SM 4500P-E	07/21	07:00	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/21	17:40	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/21	18:10	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/21	12:39	JCL
Nitrogen, Nitrate	0.24	mg/L	.05	1	EPA 353.2	07/20	16:44	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/20	14:47	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	07/28	15:29	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/20	13:50	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 c	07/20	21:11	ALD
RESIDUES								
Solids, Total Dissolved	49	mg/L	5	1	SM 2540C	07/22	13:15	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/22	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	51	mg/L	1	1	SM 2320 B	07/25	11:10	AEH

Distribution of Reports:
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Reviewed and Approved by:


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Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 08/03/16
Lab ID: 3157-16-0018954

Date Collected: 07/20/16 10:30
Collected By: Client

Sample Desc: BZ-2 Surface

Date Received: 07/20/16 12:55

PWSID: 3130843

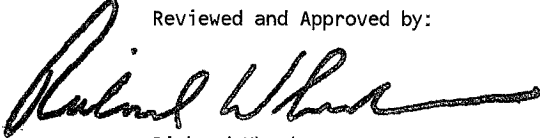
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 07/20/2016 at 17:05.

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 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/03/16
 Lab ID: 3157-16-0018955
 Date Collected: 07/20/16 08:40
 Collected By: Client
 Date Received: 07/20/16 12:55

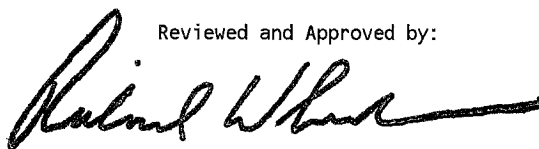
Sample Desc: BZ-3 Surface

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	<2	/100mL	2	1	SM 9222D	07/20	13:45	TNS
Total Coliform	110	mpn/100mL	1	1	SM 9223B	07/21	11:20	TNS
CHEMISTRY								
COLORIMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/21	07:00	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/21	17:40	AEH
Phosphorus as P, Total	0.02	mg/L	.01	1	SM 4500P-E	07/21	18:10	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/21	12:54	JCL
Nitrogen, Nitrate	0.36	mg/L	.05	1	EPA 353.2	07/20	16:45	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/20	14:48	JCL
Nitrogen, Total Kjeldahl	0.40	mg/L	.25	1	EPA 351.2	07/28	15:30	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/20	13:50	EMW
Total Organic Carbon	2.1	mg/L	1	1	SM5310 C	07/20	22:23	ALD
RESIDUES								
Solids, Total Dissolved	54	mg/L	5	1	SM 2540C	07/22	13:15	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/22	13:15	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	45	mg/L	1	1	SM 2320 B	07/25	12:20	AEH

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 08/03/16
Lab ID: 3157-16-0018955

Date Collected: 07/20/16 08:40
Collected By: Client

Sample Desc: BZ-3 Surface

Date Received: 07/20/16 12:55

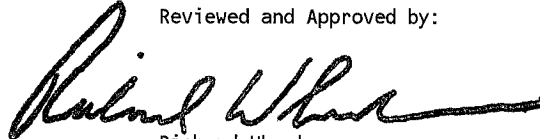
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 07/20/2016 at 17:05.

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Richard Wheeler

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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/03/16
 Lab ID: 3157-16-0018956

Date Collected: 07/20/16 08:40
 Collected By: Client

Sample Desc: BZ-3 Mid-Depth

Date Received: 07/20/16 12:55

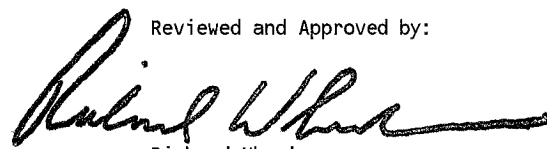
PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/21	07:00	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/21	17:45	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/21	18:15	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/21	13:08	JCL
Nitrogen, Nitrate	0.71	mg/L	.05	1	EPA 353.2	07/20	16:46	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/20	14:49	JCL
Nitrogen, Total Kjeldahl	0.27	mg/L	.25	1	EPA 351.2	07/28	15:35	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/20	13:50	EMW
Total Organic Carbon	1.2	mg/L	1	1	SM5310 C	07/20	22:35	ALD
RESIDUES								
Solids, Total Dissolved	62	mg/L	5	1	SM 2540C	07/25	13:20	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/25	13:20	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	67	mg/L	1	1	SM 2320 B	07/25	12:20	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

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 Richard Wheeler

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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/03/16
 Lab ID: 3157-16-0018957

Date Collected: 07/20/16 08:40
 Collected By: Client

Sample Desc: BZ-3 Deep

Date Received: 07/20/16 12:55

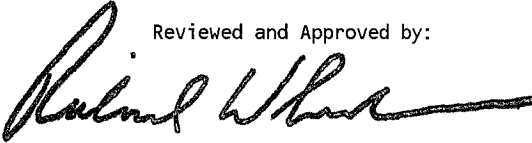
PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/21	07:00	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/21	17:45	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/21	18:15	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/21	13:23	JCL
Nitrogen, Nitrate	0.66	mg/L	.05	1	EPA 353.2	07/20	16:47	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/20	14:50	JCL
Nitrogen, Total Kjeldahl	0.30	mg/L	.25	1	EPA 351.2	07/28	15:36	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/20	13:50	EMW
Total Organic Carbon	1.2	mg/L	1	1	SM5310 c	07/20	23:35	ALD
RESIDUES								
Solids, Total Dissolved	50	mg/L	5	1	SM 2540C	07/25	13:20	TMH
Solids, Total Suspended	4	mg/L	3	1	SM 2540D	07/25	13:20	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	51	mg/L	1	1	SM 2320 B	07/25	12:20	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

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 Gregory Wacik - USACE (Beltzville Dam)

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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/03/16
 Lab ID: 3157-16-0018958

Date Collected: 07/20/16 10:20
 Collected By: Client

Sample Desc: BZ-4 Surface

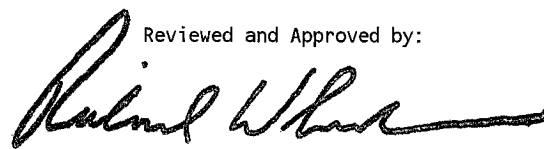
Date Received: 07/20/16 12:55

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	13	/100mL	2	1	SM 9222D	07/20	13:45	TNS
Total Coliform	2400	mpn/100mL	1	1	SM 9223B	07/21	11:20	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/21	07:10	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/21	17:45	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/21	18:15	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/21	13:37	JCL
Nitrogen, Nitrate	0.19	mg/L	.05	1	EPA 353.2	07/20	16:48	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/20	14:51	JCL
Nitrogen, Total Kjeldahl	0.37	mg/L	.25	1	EPA 351.2	07/28	15:37	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/20	13:50	EMW
Total Organic Carbon	1.5	mg/L	1	1	SM5310 C	07/20	23:58	ALD
RESIDUES								
Solids, Total Dissolved	17	mg/L	5	1	SM 2540C	07/25	13:20	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/25	13:20	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	46	mg/L	1	1	SM 2320 B	07/25	12:20	AEH

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:



Richard Wheeler

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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 08/03/16
Lab ID: 3157-16-0018958

Date Collected: 07/20/16 10:20
Collected By: Client

Sample Desc: BZ-4 Surface

Date Received: 07/20/16 12:55

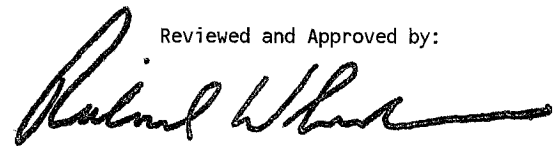
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The total coliform sample was placed in the incubator on 07/20/2016 at 17:05.
- 02 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

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Richard Wheeler

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 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/03/16
 Lab ID: 3157-16-0018959

Date Collected: 07/20/16 10:10
 Collected By: Client

Date Received: 07/20/16 12:55

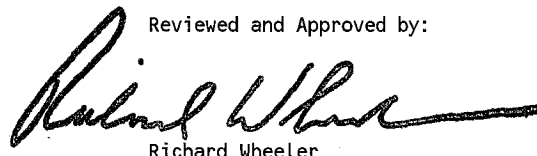
Sample Desc: BZ-5 Surface

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	5	/100mL	2	1	SM 9222D	07/20	13:45	TNS
Total Coliform	120	mpn/100mL	1	1	SM 9223B	07/21	11:20	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.01	mg/L	.01	1	SM 4500P-E	07/21	07:10	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/21	17:45	AEH
Phosphorus as P, Total	0.05	mg/L	.01	1	SM 4500P-E	07/21	18:15	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/21	13:52	JCL
Nitrogen, Nitrate	0.22	mg/L	.05	1	EPA 353.2	07/20	16:49	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/20	14:52	JCL
Nitrogen, Total Kjeldahl	1.68	mg/L	.25	1	EPA 351.2	07/28	15:38	JCL
OTHER								
Biochemical Oxygen Demand	9	mg/L	2	1	SM 5210B	07/20	13:50	EMW
Total Organic Carbon	4.8	mg/L	1	1	SM5310 C	07/21	00:35	ALD
RESIDUES								
Solids, Total Dissolved	60	mg/L	5	1	SM 2540C	07/25	13:20	TMH
Solids, Total Suspended	128	mg/L	3	1	SM 2540D	07/25	13:20	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	41	mg/L	1	1	SM 2320 B	07/25	12:20	AEH

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/03/16
 Lab ID: 3157-16-0018959

Date Collected: 07/20/16 10:10
 Collected By: Client

Sample Desc: BZ-5 Surface

Date Received: 07/20/16 12:55

PWSID: 3130843

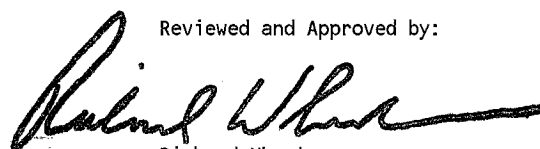
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

- 02 The total coliform sample was placed in the incubator on 07/20/2016 at 17:05.

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Reviewed and Approved by:

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/03/16
 Lab ID: 3157-16-0018960

Date Collected: 07/20/16 07:55
 Collected By: Client

Sample Desc: BZ-6 Surface

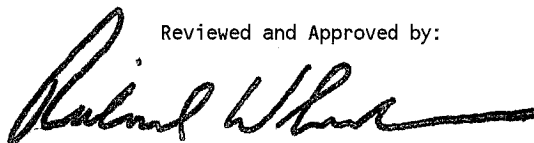
Date Received: 07/20/16 12:55

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	2	/100mL	2	1	SM 9222D	07/20	13:45	TNS
Total Coliform	360	mpn/100mL	1	1	SM 9223B	07/21	11:20	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/21	07:10	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/21	17:45	AEH
Phosphorus as P, Total	0.01	mg/L	.01	1	SM 4500P-E	07/21	18:15	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/21	15:24	JCL
Nitrogen, Nitrate	0.37	mg/L	.05	1	EPA 353.2	07/20	16:49	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/20	14:53	JCL
Nitrogen, Total Kjeldahl	0.35	mg/L	.25	1	EPA 351.2	07/28	15:40	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/20	13:50	EMW
Total Organic Carbon	2.8	mg/L	1	1	SM5310 C	07/21	00:49	ALD
RESIDUES								
Solids, Total Dissolved	49	mg/L	5	1	SM 2540C	07/25	13:20	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/25	13:20	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	45	mg/L	1	1	SM 2320 B	07/25	12:20	AEH

Distribution of Reports:
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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 08/03/16
Lab ID: 3157-16-0018960

Date Collected: 07/20/16 07:55
Collected By: Client

Sample Desc: BZ-6 Surface

Date Received: 07/20/16 12:55

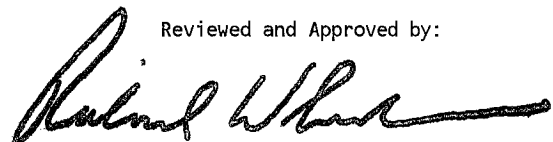
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 07/20/2016 at 17:05.

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Attention: David Wertz
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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/03/16
 Lab ID: 3157-16-0018961

Date Collected: 07/20/16 07:55
 Collected By: Client

Sample Desc: BZ-6 Mid-Depth

Date Received: 07/20/16 12:55

PWSID: 3130843

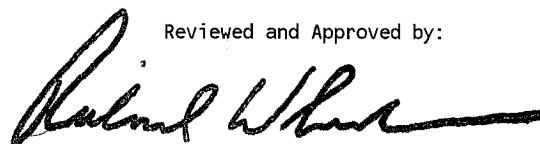
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/21	07:10	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/21	17:45	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/21	18:15	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/21	15:39	JCL
Nitrogen, Nitrate	0.71	mg/L	.05	1	EPA 353.2	07/20	16:50	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/20	14:54	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	07/28	15:41	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/20	13:50	EMW
Total Organic Carbon	1.2	mg/L	1	1	SM5310 C	07/21	01:01	ALD
RESIDUES								
Solids, Total Dissolved	59	mg/L	5	1	SM 2540C	07/25	13:20	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/25	13:20	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	41	mg/L	1	1	SM 2320 B	07/25	12:20	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/03/16
 Lab ID: 3157-16-0018962

Date Collected: 07/20/16 07:55
 Collected By: Client

Sample Desc: BZ-6 Deep

Date Received: 07/20/16 12:55

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/21	07:10	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/21	17:45	AEH
Phosphorus as P, Total	0.01	mg/L	.01	1	SM 4500P-E	07/21	18:20	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/21	15:53	JCL
Nitrogen, Nitrate	0.62	mg/L	.05	1	EPA 353.2	07/20	16:55	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/20	14:59	JCL
Nitrogen, Total Kjeldahl	0.28	mg/L	.25	1	EPA 351.2	07/28	15:42	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/20	13:50	EMW
Total Organic Carbon	1.3	mg/L	1	1	SM5310 C	07/21	01:13	ALD
RESIDUES								
Solids, Total Dissolved	55	mg/L	5	1	SM 2540C	07/25	13:20	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/25	13:20	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	51	mg/L	1	1	SM 2320 B	07/25	12:20	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

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Reviewed and Approved by:

Richard Wheeler

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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/03/16
 Lab ID: 3157-16-0018963

Date Collected: 07/20/16 09:05
 Collected By: Client

Sample Desc: BZ-7 Surface

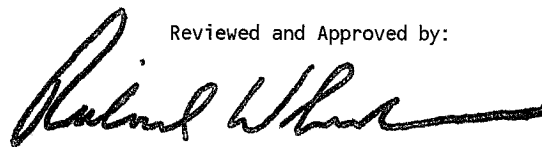
Date Received: 07/20/16 12:55

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	<2	/100mL	2	1	SM 9222D	07/20	13:45	TNS
Total Coliform	440	mpn/100mL	1	1	SM 9223B	07/21	11:20	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/21	07:10	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/21	17:50	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/21	18:20	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/21	16:08	JCL
Nitrogen, Nitrate	0.30	mg/L	.05	1	EPA 353.2	07/20	16:56	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/20	15:00	JCL
Nitrogen, Total Kjeldahl	0.30	mg/L	.25	1	EPA 351.2	07/28	15:43	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/20	13:50	EMW
Total Organic Carbon	2.5	mg/L	1	1	SM5310 C	07/21	01:26	ALD
RESIDUES								
Solids, Total Dissolved	56	mg/L	5	1	SM 2540C	07/25	13:20	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/25	13:20	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	45	mg/L	1	1	SM 2320 B	07/25	12:20	AEH

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Reviewed and Approved by:


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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 08/03/16
Lab ID: 3157-16-0018963

Date Collected: 07/20/16 09:05
Collected By: Client

Sample Desc: BZ-7 Surface

Date Received: 07/20/16 12:55

PWSID: 3130843

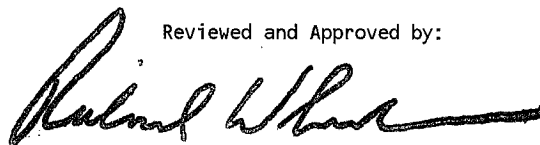
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The total coliform sample was placed in the incubator on 07/20/2016 at 17:05.
- 02 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

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Richard Wheeler

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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/03/16
 Lab ID: 3157-16-0018964

Date Collected: 07/20/16 09:05
 Collected By: Client

Sample Desc: BZ-7 Mid-Depth

Date Received: 07/20/16 12:55

PWSID: 3130843

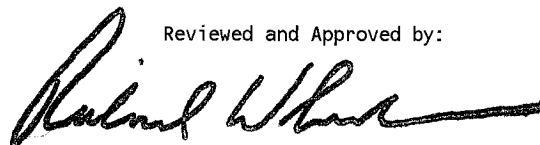
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/21	07:10	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/21	17:50	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/21	18:20	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/21	16:23	JCL
Nitrogen, Nitrate	0.70	mg/L	.05	1	EPA 353.2	07/20	16:57	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/20	15:01	JCL
Nitrogen, Total Kjeldahl	0.27	mg/L	.25	1	EPA 351.2	07/28	15:46	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/20	13:50	EMW
Total Organic Carbon	1.5	mg/L	1	1	SM5310 C	07/22	08:54	ALD
RESIDUES								
Solids, Total Dissolved	66	mg/L	5	1	SM 2540C	07/25	13:20	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	07/25	13:20	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	54	mg/L	1	1	SM 2320 B	07/25	12:20	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

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Reviewed and Approved by:

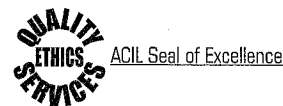

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/03/16
 Lab ID: 3157-16-0018965

Date Collected: 07/20/16 09:05
 Collected By: Client

Sample Desc: BZ-7 Deep

Date Received: 07/20/16 12:55

PWSID: 3130843

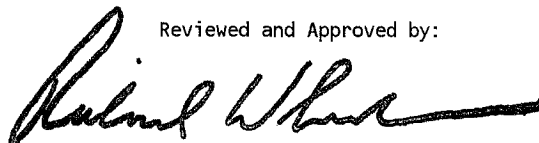
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	07/21	07:10	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	07/21	17:50	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	07/21	18:20	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	07/21	16:37	JCL
Nitrogen, Nitrate	0.68	mg/L	.05	1	EPA 353.2	07/20	16:58	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	07/20	15:01	JCL
Nitrogen, Total Kjeldahl	0.33	mg/L	.25	1	EPA 351.2	07/28	15:47	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	07/20	13:50	EMW
Total Organic Carbon	1.3	mg/L	1	1	SM5310 C	07/21	01:51	ALD
RESIDUES								
Solids, Total Dissolved	59	mg/L	5	1	SM 2540C	07/25	13:20	TMH
Solids, Total Suspended	4	mg/L	3	1	SM 2540D	07/25	13:20	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	46	mg/L	1	1	SM 2320 B	07/25	12:20	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:



Richard Wheeler

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



Chain of Custody

Account: 3157

Work Order: 006226

Project Leader: rxw

No: 275413

Work Order Description: Beltzville Reservoir

Customer: David Wertz

Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516

Ext: WACIK

Remarks:

Total Sampling Time (hours):

Bottle Prep by:

Laboratory Receipt Temp: 6 Deg C. If Temp Unacceptable, On Ice? Y N

Approved By: rxw

18953
Sample No: 1 Desc: BZ-1 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4-p, bod, SW

fc, tc, TNS

Sample No: 2 Desc: BZ-2 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4-p, bod, SW

fc, tc, TNS

Sample No: 3 Desc: BZ-3 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4-p, bod, SW

fc, tc, TNS

Matrix: 0 Date: 7/20/16
Time: 1050
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Matrix: 0 Date: 7/20/16
Time: 1050
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Matrix: 0 Date: 7/20/16
Time: 0840
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Relinquished by: [Signature]

Received by: [Signature]

Received for laboratory by: [Signature]

Date: 7/20/16 Time: 1115

Date: 7/20/16 Time: 1255

Sample entered by: [Signature]

Chain of Custody

Account: 3157 Work Order: 006226
Customer: David Wertz Work Order Description: Beltzville Reservoir
Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

No: 275413

Project Leader: rxw

Remarks:

Total Sampling Time (hours): _____ Bottle Prep by: _____

Phone: 703-387-5516 Ext: _____
Samplers: WACIK

Laboratory Receipt Temp: 6 Deg C. If Temp Unacceptable, On Ice? Y N
Approved By: [Signature]

=====

Sample No: 4 Desc: BZ-3 Mid-Depth
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod, SW

Matrix: o Date: 7/20/16
Time: 0840
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;

Sample No: 5 Desc: BZ-3 Deep
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod, SW

Matrix: o Date: 7/20/16
Time: 0840
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;

Sample No: 6 Desc: BZ-4 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod, SW
fc, tc, TRD

Matrix: o Date: 7/20/16
Time: 1020
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Relinquished by: [Signature] Received by: [Signature]
Date: 7/20/16 Time: 1115

Received for Laboratory by: [Signature]
Date: 7/20/16 Time: 1255

Sample entered by: [Signature]

Chain of Custody

Account: 3157

Work Order: 006226

Project Leader: rxw

No: 275413

Customer: David Wertz

Work Order Description: Beltzville Reservoir

Remarks:

Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext: _____

Total Sampling Time (hours): _____

Bottle Prep by: _____

Sample No: 7 Desc: BZ-5 Surface

Matrix: o

Date: 7/20/16

Time: 10:10

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;
- F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Sample No: 8 Desc: BZ-6 Surface

Matrix: o

Date: 7/20/16

Time: 07:15

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;
- F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Sample No: 9 Desc: BZ-6 Mid-Depth

Matrix: o

Date: 7/20/16

Time: 07:15

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;
- F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Relinquished by: [Signature] Received by: [Signature]

Received for laboratory by: [Signature]

Date: 7/20/16

Date: 7/20/16

Time: 11:15

Time: 10:55

Sample entered by: [Signature]

Chain of Custody

Account: 3157 Work Order: 006226
Customer: David Wertz Work Order Description: Beltzville Reservoir

No: 275413

Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext:

Samplers: WACIK

Total Sampling Time (hours): _____ Bottle Prep by: _____

Laboratory Receipt Temp: 6 Deg C, If Temp Unacceptable, On Ice? Y N
Approved By: RJA

Remarks:

18962 Sample No: 10 Desc: BZ-6 Deep
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod
W AA SW

18963 Sample No: 11 Desc: BZ-7 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod,
fc, tg,
W AA SW

18964 sample No: 12 Desc: BZ-7 Mid-Depth
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod,
W AA SW

Matrix: o Date: 7/20/16
Time: 0715
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;

Matrix: o Date: 7/20/16
Time: 0905
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Matrix: o Date: 7/20/16
Time: 0905
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;

Relinquished by: [Signature] Received by: [Signature]
Date: 7/20/16 Time: 1115

Received for laboratory by: [Signature]
Date: 7/20/16 Time: 1255

Sample entered by: [Signature]

M. J. REIDER ASSOCIATES, INC.

IXW
05/17/16 1:21:48 PM

Chain of Custody

Account: 3157
Work Order: 006226
Project Leader: rxw
No: 275413

Work Order Description: Beltzville Reservoir

Customer: David Wertz

Remarks:

Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Total Sampling Time (hours): _____ Bottle Prep by: _____

Laboratory Receipt Temp: 6 Deg C. If Temp Unacceptable, On Ice? Y N
Approved By: RK

Phone: 703-387-5516 Ext: _____

Samplers: WACIK

Sample No: 13 Desc: BZ-7 Deep
Date: 7/20/16
Time: 0905

nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod,
AM AW

Matrix: 0
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;

Relinquished by: [Signature] Received for laboratory by: [Signature]
Date: 7/20/16 Time: 1115 Date: 7/20/16 Time: 1255

Sample entered by: [Signature]

CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.



Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/30/16
 Lab ID: 3157-16-0023499

Date Collected: 08/18/16 08:20
 Collected By: Client

Sample Desc: BZ-1 Surface

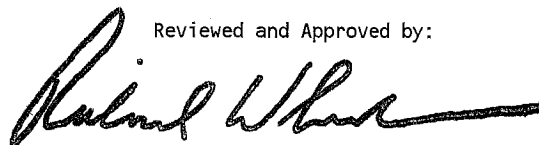
Date Received: 08/18/16 14:10

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	58	/100mL	2	1	SM 9222D	08/18	14:30	TNS
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	08/19	09:30	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/18	14:50	AEH
Phosphorus as P, Dissolved	0.20	mg/L	.05	1	SM 4500P-E	08/19	14:15	AEH
Phosphorus as P, Total	0.20	mg/L	.01	1	SM 4500P-E	08/19	15:00	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/18	21:03	JCL
Nitrogen, Nitrate	0.69	mg/L	.05	1	EPA 353.2	08/18	16:52	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/18	15:19	JCL
Nitrogen, Total Kjeldahl	0.32	mg/L	.25	1	EPA 351.2	08/24	16:42	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/18	15:15	EMW
Total Organic Carbon	1.6	mg/L	1	1	SM5310 C	08/23	19:52	ALD
RESIDUES								
Solids, Total Dissolved	47	mg/L	5	1	SM 2540C	08/24	13:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/24	13:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/L	1	1	SM 2320 B	08/26	14:20	AEH

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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CERTIFICATE OF ANALYSIS
M.J. Reider Associates, Inc.



Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 08/30/16
Lab ID: 3157-16-0023499

Date Collected: 08/18/16 08:20
Collected By: Client

Sample Desc: BZ-1 Surface

Date Received: 08/18/16 14:10

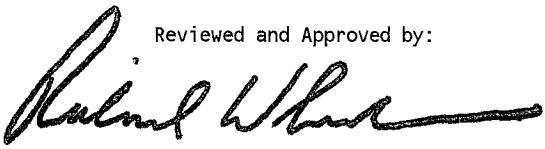
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 08/18/2016 at 14:50.

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/30/16
 Lab ID: 3157-16-0023500

Date Collected: 08/18/16 08:10
 Collected By: Client

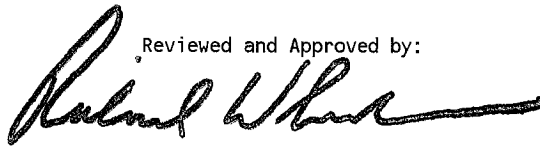
Sample Desc: BZ-2 Surface

Date Received: 08/18/16 14:10

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	210	/100mL	2	1	SM 9222D	08/18	14:30	TNS
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	08/19	09:30	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/18	14:50	AEH
Phosphorus as P, Dissolved	0.37	mg/L	.05	1	SM 4500P-E	08/19	14:15	AEH
Phosphorus as P, Total	0.40	mg/L	.01	1	SM 4500P-E	08/19	15:00	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/18	21:18	JCL
Nitrogen, Nitrate	0.45	mg/L	.05	1	EPA 353.2	08/18	16:57	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/18	15:22	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	08/24	16:45	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/18	15:15	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	08/23	20:03	ALD
RESIDUES								
Solids, Total Dissolved	33	mg/L	5	1	SM 2540C	08/24	13:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/24	13:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	08/26	14:20	AEH

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

 Richard Wheeler

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CERTIFICATE OF ANALYSIS
M.J. Reider Associates, Inc.



Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 08/30/16
Lab ID: 3157-16-0023500

Date Collected: 08/18/16 08:10
Collected By: Client

Sample Desc: BZ-2 Surface

Date Received: 08/18/16 14:10

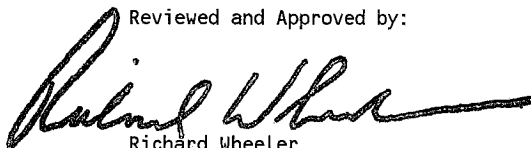
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2S04 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 08/18/2016 at 14:50.

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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CERTIFICATE OF ANALYSIS

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/30/16
 Lab ID: 3157-16-0023501

Date Collected: 08/18/16 09:40
 Collected By: Client

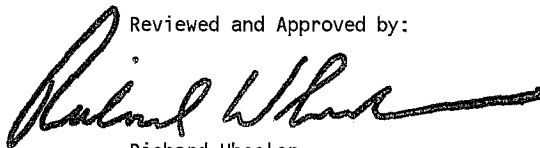
Sample Desc: BZ-3 Surface

Date Received: 08/18/16 14:10

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTERIOLOGY								
MICROBIOLOGY								
Fecal Coliform	2	/100ml	2	1	SM 9222D	08/18	14:30	TNS
Total Coliform	2000	mpn/100ml	1	1	SM 9223B	08/19	09:30	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	08/18	14:50	AEH
Phosphorus as P, Dissolved	0.41	mg/l	.05	1	SM 4500P-E	08/19	14:15	AEH
Phosphorus as P, Total	0.46	mg/l	.01	1	SM 4500P-E	08/19	15:00	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	08/18	21:32	JCL
Nitrogen, Nitrate	0.23	mg/l	.05	1	EPA 353.2	08/18	16:58	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	08/18	15:23	JCL
Nitrogen, Total Kjeldahl	0.37	mg/l	.25	1	EPA 351.2	08/24	16:46	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	08/18	15:15	EMW
Total Organic Carbon	2.0	mg/l	1	1	SM5310 C	08/23	20:15	ALD
RESIDUES								
Solids, Total Dissolved	41	mg/l	5	1	SM 2540C	08/24	13:00	TMH
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	08/24	13:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	15	mg/l	1	1	SM 2320 B	08/26	14:20	AEH

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

 Richard Wheeler

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CERTIFICATE OF ANALYSIS
M.J. Reider Associates, Inc.



Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 08/30/16
Lab ID: 3157-16-0023501

Date Collected: 08/18/16 09:40
Collected By: Client

Sample Desc: BZ-3 Surface

Date Received: 08/18/16 14:10

PWSID: 3130843

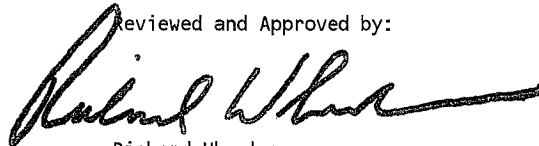
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 08/18/2016 at 14:50.

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


Richard Wheeler

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CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.



Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/30/16
 Lab ID: 3157-16-0023502

Date Collected: 08/18/16 09:40
 Collected By: Client

Sample Desc: BZ-3 Mid-Depth

Date Received: 08/18/16 14:10

PWSID: 3130843

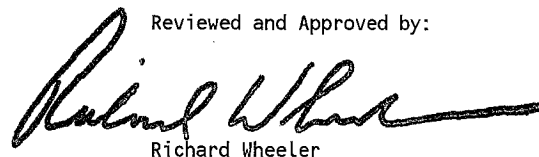
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/l	.01	1	SM 4500P-E	08/18	14:50	AEH
Phosphorus as P, Dissolved	0.40	mg/l	.05	1	SM 4500P-E	08/19	14:15	AEH
Phosphorus as P, Total	0.46	mg/l	.01	1	SM 4500P-E	08/19	15:00	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/l	.05	1	D6919-03	08/18	21:47	JCL
Nitrogen, Nitrate	0.75	mg/l	.05	1	EPA 353.2	08/18	16:59	JCL
Nitrogen, Nitrite	<.05	mg/l	.05	1	EPA 353.2	08/18	15:24	JCL
Nitrogen, Total Kjeldahl	0.28	mg/l	.25	1	EPA 351.2	08/24	14:47	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/l	2	1	SM 5210B	08/18	15:15	EMW
Total Organic Carbon	1.0	mg/l	1	1	SM5310 C	08/23	20:25	ALD
RESIDUES								
Solids, Total Dissolved	30	mg/l	5	1	SM 2540C	08/24	13:00	TMH
Solids, Total Suspended	<3	mg/l	3	1	SM 2540D	08/24	13:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/l	1	1	SM 2320 B	08/26	14:20	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/30/16
 Lab ID: 3157-16-0023503

Date Collected: 08/18/16 09:40
 Collected By: Client

Sample Desc: BZ-3 Deep

Date Received: 08/18/16 14:10

PWSID: 3130843

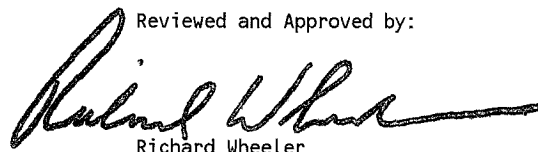
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/18	14:50	AEH
Phosphorus as P, Dissolved	0.48	mg/L	.05	1	SM 4500P-E	08/19	14:20	AEH
Phosphorus as P, Total	0.47	mg/L	.01	1	SM 4500P-E	08/19	15:05	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/18	22:02	JCL
Nitrogen, Nitrate	0.59	mg/L	.05	1	EPA 353.2	08/18	17:00	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/18	15:25	JCL
Nitrogen, Total Kjeldahl	0.33	mg/L	.25	1	EPA 351.2	08/24	16:48	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/18	15:15	EMW
Total Organic Carbon	1.2	mg/L	1	1	SM5310 C	08/23	21:00	ALD
RESIDUES								
Solids, Total Dissolved	43	mg/L	5	1	SM 2540C	08/24	13:00	TMH
Solids, Total Suspended	9	mg/L	3	1	SM 2540D	08/24	13:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	13	mg/L	1	1	SM 2320 B	08/26	14:20	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/30/16
 Lab ID: 3157-16-0023504

Date Collected: 08/18/16 08:00
 Collected By: Client

Sample Desc: BZ-4 Surface

Date Received: 08/18/16 14:10

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTERIOLOGY								
MICROBIOLOGY								
Fecal Coliform	64	/100ml	2	1	SM 9222D	08/18	14:30	TNS
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	08/19	09:30	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/18	14:50	AEH
Phosphorus as P, Dissolved	0.39	mg/L	.05	1	SM 4500P-E	08/19	14:20	AEH
Phosphorus as P, Total	0.40	mg/L	.01	1	SM 4500P-E	08/19	15:05	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/18	22:16	JCL
Nitrogen, Nitrate	0.36	mg/L	.05	1	EPA 353.2	08/18	17:01	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/18	15:26	JCL
Nitrogen, Total Kjeldahl	0.29	mg/L	.25	1	EPA 351.2	08/24	16:49	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/18	15:15	EMW
Total Organic Carbon	1.4	mg/L	1	1	SM5310 C	08/23	21:11	ALD
RESIDUES								
Solids, Total Dissolved	19	mg/L	5	1	SM 2540C	08/24	13:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/24	13:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	8	mg/L	1	1	SM 2320 B	08/26	14:20	AEH

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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 08/30/16
Lab ID: 3157-16-0023504

Date Collected: 08/18/16 08:00
Collected By: Client

Sample Desc: BZ-4 Surface

Date Received: 08/18/16 14:10

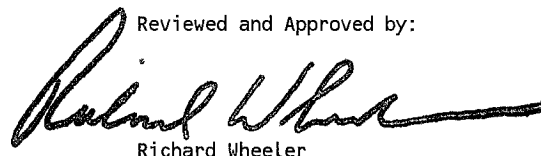
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2S04 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 08/18/2016 at 14:50.

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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/30/16
 Lab ID: 3157-16-0023505

Date Collected: 08/18/16 07:45
 Collected By: Client

Sample Desc: BZ-5 Surface

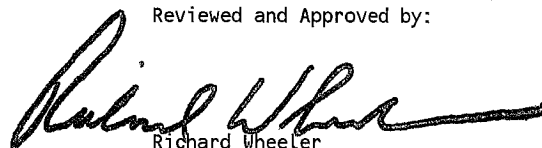
Date Received: 08/18/16 14:10

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	46	/100mL	2	1	SM 9222D	08/18	14:45	TNS
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	08/19	09:30	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/18	14:50	AEH
Phosphorus as P, Dissolved	0.42	mg/L	.05	1	SM 4500P-E	08/19	14:20	AEH
Phosphorus as P, Total	0.42	mg/L	.01	1	SM 4500P-E	08/19	15:05	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/18	23:00	JCL
Nitrogen, Nitrate	0.31	mg/L	.05	1	EPA 353.2	08/18	17:01	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/18	15:27	JCL
Nitrogen, Total Kjeldahl	1.08	mg/L	.25	1	EPA 351.2	08/24	16:50	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/18	15:15	EMW
Total Organic Carbon	3.0	mg/L	1	1	SM5310 C	08/23	21:23	ALD
RESIDUES								
Solids, Total Dissolved	44	mg/L	5	1	SM 2540C	08/24	13:00	TMH
Solids, Total Suspended	4	mg/L	3	1	SM 2540D	08/24	13:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	21	mg/L	1	1	SM 2320 B	08/26	14:20	AEH

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 08/30/16
Lab ID: 3157-16-0023505

Date Collected: 08/18/16 07:45
Collected By: Client

Sample Desc: BZ-5 Surface

Date Received: 08/18/16 14:10

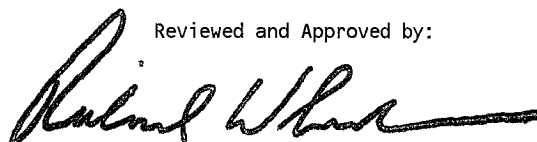
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 08/18/2016 at 14:50.

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/30/16
 Lab ID: 3157-16-0023506

Date Collected: 08/18/16 09:10
 Collected By: Client

Sample Desc: BZ-6 Surface

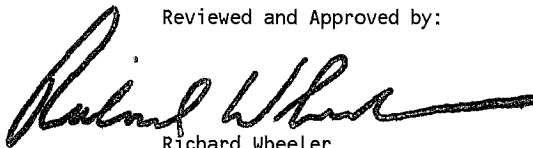
Date Received: 08/18/16 14:10

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	<2	/100ml	2	1	SM 9222D	08/18	14:45	TNS
Total Coliform	1700	mpn/100ml	1	1	SM 9223B	08/19	09:30	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/18	14:50	AEH
Phosphorus as P, Dissolved	0.40	mg/L	.05	1	SM 4500P-E	08/19	14:20	AEH
Phosphorus as P, Total	0.40	mg/L	.01	1	SM 4500P-E	08/19	15:05	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/18	23:15	JCL
Nitrogen, Nitrate	0.25	mg/L	.05	1	EPA 353.2	08/18	17:02	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/18	15:27	JCL
Nitrogen, Total Kjeldahl	0.41	mg/L	.25	1	EPA 351.2	08/24	16:51	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/18	15:15	EMW
Total Organic Carbon	2.0	mg/L	1	1	SM5310 C	08/23	21:35	ALD
RESIDUES								
Solids, Total Dissolved	45	mg/L	5	1	SM 2540C	08/24	13:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/24	13:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	14	mg/L	1	1	SM 2320 B	08/26	14:20	AEH

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/30/16
 Lab ID: 3157-16-0023506

Date Collected: 08/18/16 09:10
 Collected By: Client

Sample Desc: BZ-6 Surface

Date Received: 08/18/16 14:10

PWSID: 3130843

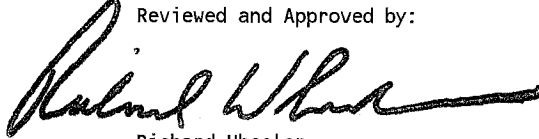
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2S04 to pH <2 after the sample was received at the laboratory.

- 02 The total coliform sample was placed in the incubator on 08/18/2016 at 14:50.

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Attention: David Wertz
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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/30/16
 Lab ID: 3157-16-0023507

Date Collected: 08/18/16 09:10
 Collected By: Client

Sample Desc: BZ-6 Mid-Depth

Date Received: 08/18/16 14:10

PWSID: 3130843

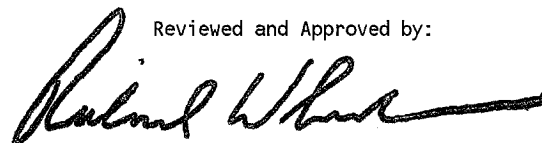
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/18	14:50	AEH
Phosphorus as P, Dissolved	0.34	mg/L	.05	1	SM 4500P-E	08/19	14:20	AEH
Phosphorus as P, Total	0.36	mg/L	.01	1	SM 4500P-E	08/19	15:05	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/18	23:29	JCL
Nitrogen, Nitrate	0.73	mg/L	.05	1	EPA 353.2	08/18	17:03	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/18	15:28	JCL
Nitrogen, Total Kjeldahl	0.27	mg/L	.25	1	EPA 351.2	08/24	16:53	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/18	15:15	EMW
Total Organic Carbon	1.0	mg/L	1	1	SM5310 C	08/23	21:46	ALD
RESIDUES								
Solids, Total Dissolved	50	mg/L	5	1	SM 2540C	08/24	13:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/24	13:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	08/26	15:05	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
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Reviewed and Approved by:


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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/30/16
 Lab ID: 3157-16-0023508

Date Collected: 08/18/16 09:10
 Collected By: Client

Sample Desc: BZ-6 Deep

Date Received: 08/18/16 14:10

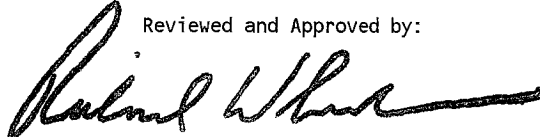
PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/18	14:50	AEH
Phosphorus as P, Dissolved	0.26	mg/L	.05	1	SM 4500P-E	08/19	14:20	AEH
Phosphorus as P, Total	0.25	mg/L	.01	1	SM 4500P-E	08/19	15:05	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/18	23:44	JCL
Nitrogen, Nitrate	0.59	mg/L	.05	1	EPA 353.2	08/18	17:08	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/18	15:33	JCL
Nitrogen, Total Kjeldahl	0.28	mg/L	.25	1	EPA 351.2	08/24	16:54	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/18	15:15	EMW
Total Organic Carbon	1.2	mg/L	1	1	SM5310 C	08/23	21:58	ALD
RESIDUES								
Solids, Total Dissolved	48	mg/L	5	1	SM 2540C	08/24	13:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/24	13:00	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	14	mg/L	1	1	SM 2320 B	08/26	15:05	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

 Richard Wheeler

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CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.



Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/30/16
 Lab ID: 3157-16-0023509

Date Collected: 08/18/16 10:20
 Collected By: Client

Sample Desc: BZ-7 Surface

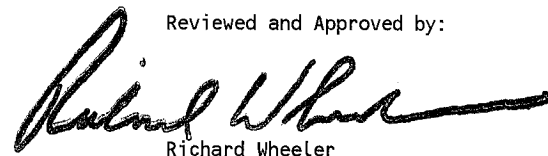
Date Received: 08/18/16 14:10

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	<2	/100ml	2	1	SM 9222D	08/18	14:45	TNS
Total Coliform	2000	mpn/100ml	1	1	SM 9223B	08/19	09:30	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/18	14:50	AEH
Phosphorus as P, Dissolved	0.24	mg/L	.05	1	SM 4500P-E	08/19	14:15	AEH
Phosphorus as P, Total	0.25	mg/L	.01	1	SM 4500P-E	08/19	15:10	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/18	23:59	JCL
Nitrogen, Nitrate	0.19	mg/L	.05	1	EPA 353.2	08/18	17:09	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/18	15:34	JCL
Nitrogen, Total Kjeldahl	0.47	mg/L	.25	1	EPA 351.2	08/24	16:55	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/18	15:15	EMW
Total Organic Carbon	2.1	mg/L	1	1	SM5310 C	08/24	12:29	ALD
RESIDUES								
Solids, Total Dissolved	43	mg/L	5	1	SM 2540C	08/24	13:30	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/24	13:30	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	13	mg/L	1	1	SM 2320 B	08/26	15:05	AEH

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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CERTIFICATE OF ANALYSIS
M.J. Reider Associates, Inc.



Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 08/30/16
Lab ID: 3157-16-0023509

Date Collected: 08/18/16 10:20
Collected By: Client

Sample Desc: BZ-7 Surface

Date Received: 08/18/16 14:10

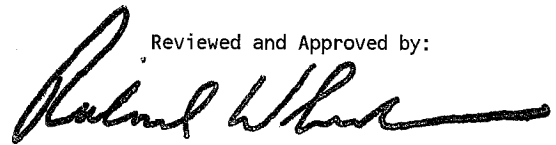
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
--------	------	--------------	------------------	-----------	--------------	--------------	---------

COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 08/18/2016 at 14:50.

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

Richard Wheeler

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CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.



Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/30/16
 Lab ID: 3157-16-0023510

Date Collected: 08/18/16 10:20
 Collected By: Client

Sample Desc: BZ-7 Mid-Depth

Date Received: 08/18/16 14:10

PWSID: 3130843

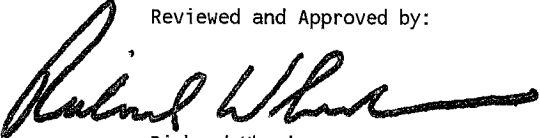
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/18	14:50	AEH
Phosphorus as P, Dissolved	0.19	mg/L	.05	1	SM 4500P-E	08/19	14:25	AEH
Phosphorus as P, Total	0.05	mg/L	.01	1	SM 4500P-E	08/19	15:10	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/19	00:13	JCL
Nitrogen, Nitrate	0.61	mg/L	.05	1	EPA 353.2	08/18	17:10	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/18	15:35	JCL
Nitrogen, Total Kjeldahl	0.38	mg/L	.25	1	EPA 351.2	08/24	16:56	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/18	15:15	EMW
Total Organic Carbon	1.2	mg/L	1	1	SM5310 c	08/24	12:41	ALD
RESIDUES								
Solids, Total Dissolved	53	mg/L	5	1	SM 2540C	08/24	13:30	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	08/24	13:30	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	15	mg/L	1	1	SM 2320 B	08/26	15:05	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.



Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 08/30/16
 Lab ID: 3157-16-0023511

Date Collected: 08/18/16 10:20
 Collected By: Client

Sample Desc: BZ-7 Deep

Date Received: 08/18/16 14:10

PWSID: 3130843

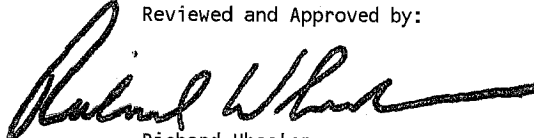
	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	08/18	15:00	AEH
Phosphorus as P, Dissolved	0.50	mg/L	.05	1	SM 4500P-E	08/19	14:25	AEH
Phosphorus as P, Total	0.54	mg/L	.01	1	SM 4500P-E	08/19	15:10	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	08/19	00:28	JCL
Nitrogen, Nitrate	0.58	mg/L	.05	1	EPA 353.2	08/18	17:11	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	08/18	15:36	JCL
Nitrogen, Total Kjeldahl	0.93	mg/L	.25	1	EPA 351.2	08/24	16:57	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	08/18	15:15	EMW
Total Organic Carbon	1.4	mg/L	1	1	SM5310 C	08/24	12:52	ALD
RESIDUES								
Solids, Total Dissolved	55	mg/L	5	1	SM 2540C	08/24	13:30	TMH
Solids, Total Suspended	40	mg/L	3	1	SM 2540D	08/24	13:30	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/L	1	1	SM 2320 B	08/26	15:05	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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Chain of Custody

Account: 3157 Work Order: 006226 Project Leader: rxw No: 276890

Customer: David Wertz Work Order Description: Beltzville Reservoir

Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext: WACIK

Samplers: WACIK

Remarks: _____

Total Sampling Time (hours): _____ Bottle Prep by: _____

Laboratory Receipt Temp: 5 Deg C. If Temp Unacceptable, On Ice? Y N

Approved By: BSW

23499 Sample No: 1 Desc: BZ-1 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod,
fc, tc, WACIK

23500 Sample No: 2 Desc: BZ-2 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod,
fc, tc, WACIK

23501 Sample No: 3 Desc: BZ-3 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod,
fc, tc, WACIK

Matrix: 0 Date: 8/18/16
Time: 0820

A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Matrix: 0 Date: 8/18/16
Time: 0810

A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Matrix: 0 Date: 8/18/16
Time: 0940

A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Relinquished by: [Signature] Received by: [Signature]

Date: 8/18/16 Time: 130

Received for laboratory by: [Signature]

Date: 8-18-16 Time: 1410

Sample entered by: BSW

Account: 3157 Work Order: 006226 Project Leader: rxw No: 276890
Customer: David Wertz Work Order Description: Beltsville Reservoir

Chain of Custody

Address: Tetra Tech (Beltsville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201
Phone: 703-387-5516 Ext: WACIK
Total Sampling Time (hours): _____ Bottle Prep by: _____
Laboratory Receipt Temp: 5 Deg C If Temp Unacceptable, On Ice? Y N
Approved By: BSW

23502 Sample No: 4 Desc: BZ-3 Mid-Depth
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod
ju NA SW

23503 Sample No: 5 Desc: BZ-3 Deep
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod
W NA SW

23504 Sample No: 6 Desc: BZ-4 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod
W NA SW
fc, tc,
TNS

Matrix: 0 Date: 8/18/16
Time: 0740
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;

Matrix: 0 Date: 8/18/16
Time: 0940
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;

Matrix: 0 Date: 8/18/16
Time: 0800
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Relinquished by: [Signature] Received by: [Signature]
Date: 8/18/16 Time: 1130

Received for Laboratory by: [Signature]
Date: 8/18/16 Time: 1410

Sample entered by: [Signature]

Chain of Custody

Account: 3157 Work Order: 006226 Project Leader: rxw No: 276890

Customer: David Wertz Work Order Description: Beltzville Reservoir

Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext: WACIK

Samplers: WACIK

Remarks: _____

Total Sampling Time (hours): _____ Bottle Prep by: _____

Laboratory Receipt Temp: 5 Deg C. If Temp Unacceptable, On Ice? Y N
Approved By: BSW

23505

Sample No: 7 Desc: BZ-5 Surface

nh3-n, tkn, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4-p, o-po4, bod
W *AK* *BSW*

fc, tc,
TNS

Matrix: o Date: 8/18/16
Time: 0745

A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

23506

Sample No: 8 Desc: BZ-6 Surface

nh3-n, tkn, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4-p, o-po4, bod
W *AK* *BSW*

fc, tc,
TNS

Matrix: o Date: 8/18/16
Time: 0710

A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

23507

Sample No: 9 Desc: BZ-6 Mid-Depth

nh3-n, tkn, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4-p, o-po4, bod
W *AK* *BSW*

Matrix: o Date: 8/18/16
Time: 0710

A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;

Relinquished by: [Signature]

Received by: [Signature]

Received for Laboratory by: [Signature]

Date: 8/18/16 Time: 1130

Date: 8-18-16 Time: 740

Date: 1410 BSW
8-18-16 BSW

Sample entered by: BSW

Chain of Custody

Account: 3157

Work Order: 006226

Project Leader: rrw

No: 276890

Customer: David Wertz

Work Order Description: Beltzville Reservoir

Remarks:

Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Total Sampling Time (hours): _____ Bottle Prep by: _____

Phone: 703-387-5516 Ext: _____

Laboratory Receipt Temp: 5 Deg C. If Temp Unacceptable, On Ice? Y N

Samplers: WACIK Approved By: BSW

23508 Sample No: 10 Desc: BZ-6 Deep
nh3-n, tkn, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4-p, o-po4, bod
W W W

23509 Sample No: 11 Desc: BZ-7 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4-p, o-po4, bod
W W W

23510 Sample No: 12 Desc: BZ-7 Mid-Depth
nh3-n, tkn, alk, tds, tss, po4-p, toc,

no2-n, no3-n, d-po4-p, o-po4, bod
W W W

Matrix: o Date: 8/18/16
Time: 0710
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;

Matrix: o Date: 8/18/16
Time: 1020
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Matrix: o Date: 8/18/16
Time: 1020
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;

Relinquished by: [Signature] Received by: [Signature]

Received for laboratory by: [Signature]

Date: 8/18/16 Time: 1130

Date: 8-18-16 Time: 1410

Sample entered by: [Signature]

M. J. REIDER ASSOCIATES, INC.

rxw
06/24/16 10:05:16 AM

Chain of Custody

Account: 3157

Work Order: 006226

Project Leader: rxw

No: 276890

Work Order Description: Beltzville Reservoir

Customer: David Wertz

Remarks:

Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Total Sampling Time (hours): _____ Bottle Prep by: _____

Phone: 703-387-5516 Ext: _____

Laboratory Receipt Temp: 5 Deg C If Temp Unacceptable, On Ice? Y N

Approved By: BSW

Samplers: WACIK

Sample No: 13 Desc: BZ-7 Deep
nh3-n, tkn, alk, tds, tss, po4-p, toc,

Date: 8/18/16
Time: 1020

Matrix: 0

- A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
- B - 1 X 8oz Alk p w/ Cool to 6 C;
- C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
- D - 1 X L bod p w/ Cool to 6 C;
- E - 1 X Pt no3no2 p w/ Cool to 6 C;

no2-n, no3-n, d-po4-p, o-po4, bod
94

Relinquished by: [Signature]

Received by: [Signature]

Received for laboratory by: [Signature]

Date: 8/18/16 Time: 1730

Date: 8-18-16 Time: _____

Time: 1910

Sample entered by: BSW

CERTIFICATE OF ANALYSIS

M.J. Reider Associates, Inc.

Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 09/26/16
 Lab ID: 3157-16-0028568

Date Collected: 09/14/16 08:20
 Collected By: Client

Sample Desc: BZ-1 Surface

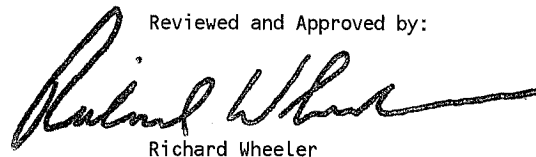
Date Received: 09/14/16 13:20

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	13	/100mL	2	1	SM 9222D	09/14	15:00	TNS
Total Coliform	1200	mpn/100mL	1	1	SM 9223B	09/15	11:10	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/15	14:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/19	15:40	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/19	15:55	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/14	23:55	JCL
Nitrogen, Nitrate	0.66	mg/L	.05	1	EPA 353.2	09/14	17:15	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/14	15:26	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	09/22	18:12	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/14	13:40	EMW
Total Organic Carbon	1.1	mg/L	1	1	SM5310 C	09/15	23:00	ALD
RESIDUES								
Solids, Total Dissolved	36	mg/L	5	1	SM 2540C	09/20	12:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/20	12:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/L	1	1	SM 2320 B	09/20	11:20	AEH

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 09/26/16
Lab ID: 3157-16-0028568

Date Collected: 09/14/16 08:20
Collected By: Client

Sample Desc: BZ-1 Surface

Date Received: 09/14/16 13:20

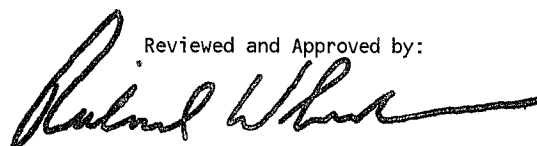
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 09/14/2016 at 16:00.

Distribution of Reports:
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Reviewed and Approved by:

Richard Wheeler

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 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 09/26/16
 Lab ID: 3157-16-0028569

Date Collected: 09/14/16 08:00
 Collected By: Client

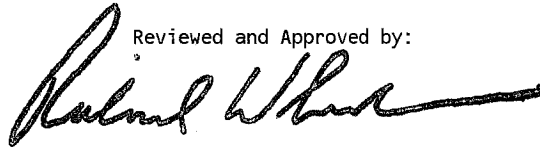
Sample Desc: BZ-2 Surface

Date Received: 09/14/16 13:20

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	50	/100mL	2	1	SM 9222D	09/14	15:00	TNS
Total Coliform	920	mpn/100mL	1	1	SM 9223B	09/15	11:10	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/15	14:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/19	15:40	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/19	15:55	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/15	00:10	JCL
Nitrogen, Nitrate	0.28	mg/L	.05	1	EPA 353.2	09/14	17:20	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/14	15:29	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	09/22	18:13	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/14	13:40	EMW
Total Organic Carbon	<1	mg/L	1	1	SM5310 C	09/15	23:11	ALD
RESIDUES								
Solids, Total Dissolved	30	mg/L	5	1	SM 2540C	09/20	12:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/20	12:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/L	1	1	SM 2320 B	09/20	11:20	AEH

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Reviewed and Approved by:

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Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 09/26/16
Lab ID: 3157-16-0028569

Date Collected: 09/14/16 08:00
Collected By: Client

Sample Desc: BZ-2 Surface

Date Received: 09/14/16 13:20

PWSID: 3130843

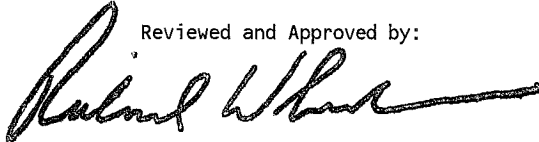
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

- 02 The total coliform sample was placed in the incubator on 09/14/2016 at 16:00.

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 09/26/16
 Lab ID: 3157-16-0028570

Date Collected: 09/14/16 09:50
 Collected By: Client

Sample Desc: BZ-3 Surface

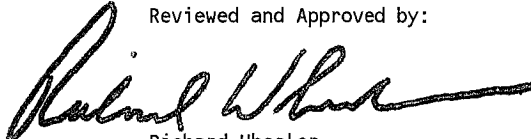
Date Received: 09/14/16 13:20

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	<2	/100mL	2	1	SM 9222D	09/14	15:00	TNS
Total Coliform	820	mpn/100mL	1	1	SM 9223B	09/15	11:10	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/15	14:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/19	15:40	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/19	15:55	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/15	00:25	JCL
Nitrogen, Nitrate	0.19	mg/L	.05	1	EPA 353.2	09/14	17:21	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/14	15:30	JCL
Nitrogen, Total Kjeldahl	0.31	mg/L	.25	1	EPA 351.2	09/22	18:16	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/14	13:40	EMW
Total Organic Carbon	1.8	mg/L	1	1	SM5310 C	09/15	23:23	ALD
RESIDUES								
Solids, Total Dissolved	31	mg/L	5	1	SM 2540C	09/20	12:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/20	12:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	14	mg/L	1	1	SM 2320 B	09/20	11:20	AEH

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1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 09/26/16
Lab ID: 3157-16-0028570

Date Collected: 09/14/16 09:50
Collected By: Client

Sample Desc: BZ-3 Surface

Date Received: 09/14/16 13:20

PWSID: 3130843

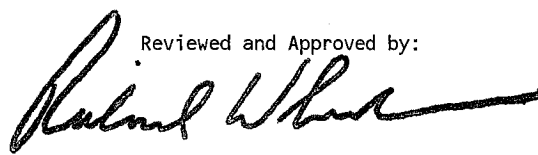
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

- 02 The total coliform sample was placed in the incubator on 09/14/2016 at 16:00.

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 Arlington VA 22201

Date of Report: 09/26/16
 Lab ID: 3157-16-0028571

Date Collected: 09/14/16 09:50
 Collected By: Client

Sample Desc: BZ-3 Mid-Depth

Date Received: 09/14/16 13:20

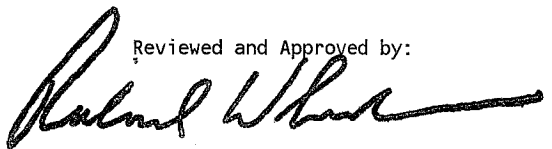
PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/15	14:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/19	15:40	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/19	16:00	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/15	00:39	JCL
Nitrogen, Nitrate	0.62	mg/L	.05	1	EPA 353.2	09/14	17:22	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/14	15:31	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	09/22	18:17	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/14	13:40	EMW
Total Organic Carbon	1.1	mg/L	1	1	SM5310 C	09/15	23:34	ALD
RESIDUES								
Solids, Total Dissolved	43	mg/L	5	1	SM 2540C	09/20	12:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/20	12:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	13	mg/L	1	1	SM 2320 B	09/20	11:20	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

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 Richard Wheeler

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 09/26/16
 Lab ID: 3157-16-0028572
 Date Collected: 09/14/16 09:50
 Collected By: Client
 Date Received: 09/14/16 13:20

Sample Desc: BZ-3 Deep

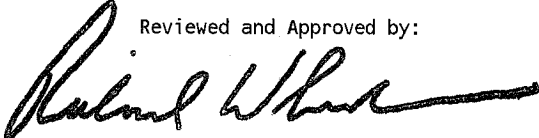
PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.01	mg/L	.01	1	SM 4500P-E	09/15	14:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/19	15:40	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/19	16:00	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/15	00:54	JCL
Nitrogen, Nitrate	0.41	mg/L	.05	1	EPA 353.2	09/14	17:23	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/14	15:32	JCL
Nitrogen, Total Kjeldahl	0.73	mg/L	.25	1	EPA 351.2	09/22	18:18	JCL
OTHER								
Biochemical Oxygen Demand	2	mg/L	2	1	SM 5210B	09/14	13:40	EMW
Total Organic Carbon	1.8	mg/L	1	1	SM5310 C	09/15	23:46	ALD
RESIDUES								
Solids, Total Dissolved	51	mg/L	5	1	SM 2540C	09/20	12:35	TMH
Solids, Total Suspended	77	mg/L	3	1	SM 2540D	09/20	12:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	15	mg/L	1	1	SM 2320 B	09/20	11:20	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

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1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 09/26/16
Lab ID: 3157-16-0028572

Date Collected: 09/14/16 09:50
Collected By: Client

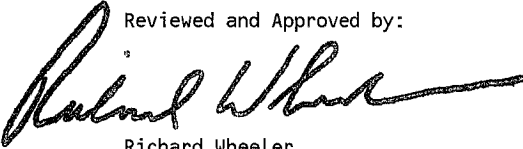
Sample Desc: BZ-3 Deep

Date Received: 09/14/16 13:20

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
02	The SM 5210B sample did not have a DO depletion of at least 2 mg/L.							

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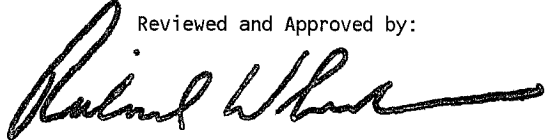
Date of Report: 09/26/16
 Lab ID: 3157-16-0028573
 Date Collected: 09/14/16 07:40
 Collected By: Client
 Date Received: 09/14/16 13:20

Sample Desc: BZ-4 Surface

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	16	/100mL	2	1	SM 9222D	09/14	15:00	TNS
Total Coliform	2400	mpn/100mL	1	1	SM 9223B	09/15	11:10	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/15	14:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/19	15:45	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/19	16:00	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/15	01:08	JCL
Nitrogen, Nitrate	0.08	mg/L	.05	1	EPA 353.2	09/14	15:24	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/14	15:33	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	09/22	18:19	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/14	13:40	EMW
Total Organic Carbon	1.2	mg/L	1	1	SM5310 C	09/15	23:57	ALD
RESIDUES								
Solids, Total Dissolved	18	mg/L	5	1	SM 2540C	09/20	12:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/20	12:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	7	mg/L	1	1	SM 2320 B	09/20	11:20	AEH

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1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 09/26/16
Lab ID: 3157-16-0028573

Date Collected: 09/14/16 07:40
Collected By: Client

Sample Desc: BZ-4 Surface

Date Received: 09/14/16 13:20

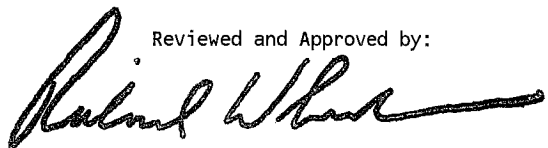
PWSID: 3130843

Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 09/14/2016 at 16:00.

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 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 09/26/16
 Lab ID: 3157-16-0028574

Date Collected: 09/14/16 07:20
 Collected By: Client

Sample Desc: BZ-5 Surface

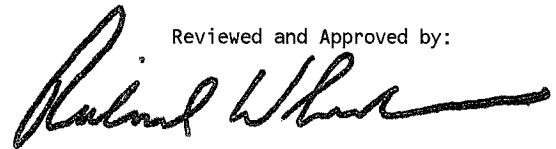
Date Received: 09/14/16 13:20

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	54	/100mL	2	1	SM 9222D	09/14	15:00	TNS
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	09/15	11:10	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	0.01	mg/L	.01	1	SM 4500P-E	09/15	14:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/19	15:45	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/19	16:00	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/15	01:23	JCL
Nitrogen, Nitrate	0.95	mg/L	.05	1	EPA 353.2	09/14	17:25	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/14	15:34	JCL
Nitrogen, Total Kjeldahl	0.32	mg/L	.25	1	EPA 351.2	09/22	18:20	JCL
OTHER								
Biochemical Oxygen Demand	5	mg/L	2	1	SM 5210B	09/14	13:40	EMW
Total Organic Carbon	1.5	mg/L	1	1	SM5310 C	09/21	11:05	ALD
RESIDUES								
Solids, Total Dissolved	58	mg/L	5	1	SM 2540C	09/20	12:35	TMH
Solids, Total Suspended	26	mg/L	3	1	SM 2540D	09/20	12:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	21	mg/L	1	1	SM 2320 B	09/20	11:20	AEH

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:



Richard Wheeler

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M.J. Reider Associates, Inc.



Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 09/26/16
Lab ID: 3157-16-0028574

Date Collected: 09/14/16 07:20
Collected By: Client

Sample Desc: BZ-5 Surface

Date Received: 09/14/16 13:20

PWSID: 3130843

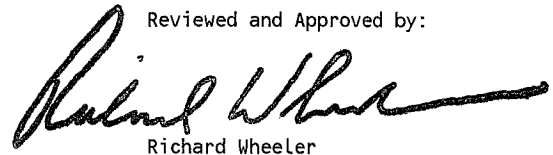
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total colifrom sample was placed in the incubator on 09/14/2016 at 16:00.

Distribution of Reports:
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Reviewed and Approved by:


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M.J. Reider Associates, Inc.

Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 09/26/16
 Lab ID: 3157-16-0028575

Date Collected: 09/14/16 09:00
 Collected By: Client

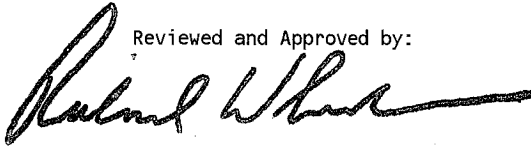
Sample Desc: BZ-6 Surface

Date Received: 09/14/16 13:20

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	<2	/100mL	2	1	SM 9222D	09/14	15:00	TNS
Total Coliform	1600	mpn/100mL	1	1	SM 9223B	09/15	11:10	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/15	14:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/19	15:45	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/19	16:00	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/15	01:38	JCL
Nitrogen, Nitrate	0.19	mg/L	.05	1	EPA 353.2	09/14	17:26	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/14	15:35	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	09/22	18:21	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/14	13:40	EMW
Total Organic Carbon	1.7	mg/L	1	1	SM5310 C	09/21	11:29	ALD
RESIDUES								
Solids, Total Dissolved	35	mg/L	5	1	SM 2540C	09/20	12:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/20	12:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	14	mg/L	1	1	SM 2320 B	09/20	11:20	AEH

Distribution of Reports:
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Reviewed and Approved by:

 Richard Wheeler

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M.J. Reider Associates, Inc.

Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 09/26/16
Lab ID: 3157-16-0028575

Date Collected: 09/14/16 09:00
Collected By: Client

Sample Desc: BZ-6 Surface

Date Received: 09/14/16 13:20

PWSID: 3130843

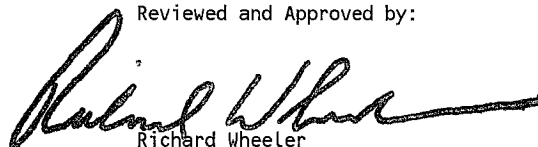
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total colifrom sample was placed in the incubator on 09/14/2016 at 16:00.

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 09/26/16
 Lab ID: 3157-16-0028576

Date Collected: 09/14/16 09:00
 Collected By: Client

Sample Desc: BZ-6 Mid-Depth

Date Received: 09/14/16 13:20

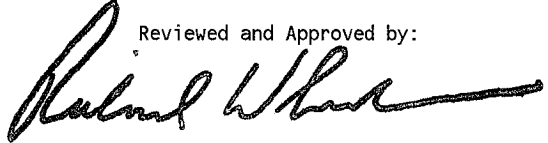
PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/15	14:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/19	15:45	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/19	16:00	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/15	02:21	JCL
Nitrogen, Nitrate	0.67	mg/L	.05	1	EPA 353.2	09/14	17:27	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/14	15:36	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	09/22	18:22	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/14	13:40	EMW
Total Organic Carbon	1.0	mg/L	1	1	SM5310 C	09/21	12:04	ALD
RESIDUES								
Solids, Total Dissolved	46	mg/L	5	1	SM 2540C	09/20	12:35	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/20	12:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	13	mg/L	1	1	SM 2320 B	09/20	11:20	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 09/26/16
 Lab ID: 3157-16-0028577

Date Collected: 09/14/16 09:00
 Collected By: Client

Sample Desc: BZ-6 Deep

Date Received: 09/14/16 13:20

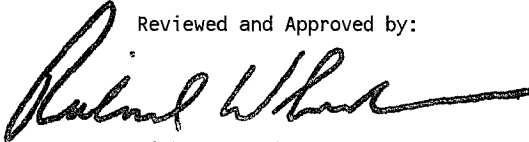
PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/15	14:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/19	15:45	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/19	16:00	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/15	02:36	JCL
Nitrogen, Nitrate	0.47	mg/L	.05	1	EPA 353.2	09/14	17:32	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/14	15:41	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	09/22	18:25	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/14	13:40	EMW
Total Organic Carbon	1.3	mg/L	1	1	SM5310 C	09/21	12:15	ALD
RESIDUES								
Solids, Total Dissolved	60	mg/L	5	1	SM 2540C	09/20	12:35	TMH
Solids, Total Suspended	63	mg/L	3	1	SM 2540D	09/20	12:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	16	mg/L	1	1	SM 2320 B	09/20	11:20	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

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Attention: David Wertz
 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 09/26/16
 Lab ID: 3157-16-0028578

Date Collected: 09/14/16 10:40
 Collected By: Client

Sample Desc: BZ-7 Surface

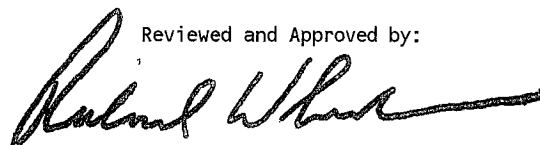
Date Received: 09/14/16 13:20

PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
BACTI								
MICROBIOLOGY								
Fecal Coliform	<2	/100mL	2	1	SM 9222D	09/14	15:09	TNS
Total Coliform	>2400	mpn/100mL	1	1	SM 9223B	09/15	11:10	TNS
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/15	14:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/19	15:45	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/19	16:00	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/15	02:51	JCL
Nitrogen, Nitrate	0.18	mg/L	.05	1	EPA 353.2	09/14	17:33	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/14	15:42	JCL
Nitrogen, Total Kjeldahl	<.25	mg/L	.25	1	EPA 351.2	09/22	18:24	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/14	13:40	EMW
Total Organic Carbon	1.7	mg/L	1	1	SM5310 C	09/21	12:27	ALD
RESIDUES								
Solids, Total Dissolved	43	mg/L	5	1	SM 2540C	09/20	13:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/20	12:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	11	mg/L	1	1	SM 2320 B	09/20	13:10	AEH

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


 Richard Wheeler

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M.J. Reider Associates, Inc.

Attention: David Wertz
Reported To: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Date of Report: 09/26/16
Lab ID: 3157-16-0028578

Date Collected: 09/14/16 10:40
Collected By: Client

Sample Desc: BZ-7 Surface

Date Received: 09/14/16 13:20

PWSID: 3130843

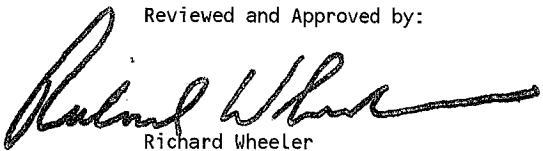
Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
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COMMENTS

- 01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.
- 02 The total coliform sample was placed in the incubator on 09/14/2016 at 16:00.

Distribution of Reports:
Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:


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 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 09/26/16
 Lab ID: 3157-16-0028579

Date Collected: 09/14/16 10:40
 Collected By: Client

Sample Desc: BZ-7 Mid-Depth

Date Received: 09/14/16 13:20

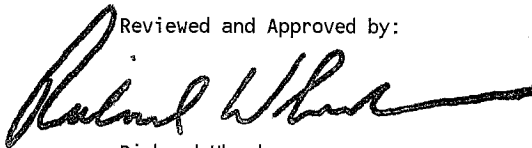
PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/15	14:50	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/19	15:50	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/19	16:05	AEH
NITROGENS								
Nitrogen, Ammonia	<.05	mg/L	.05	1	D6919-03	09/15	03:05	JCL
Nitrogen, Nitrate	0.13	mg/L	.05	1	EPA 353.2	09/14	17:34	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/14	15:43	JCL
Nitrogen, Total Kjeldahl	0.31	mg/L	.25	1	EPA 351.2	09/22	18:24	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/14	13:40	EMW
Total Organic Carbon	1.5	mg/L	1	1	SM5310 C	09/21	12:39	ALD
RESIDUES								
Solids, Total Dissolved	23	mg/L	5	1	SM 2540C	09/20	13:00	TMH
Solids, Total Suspended	<3	mg/L	3	1	SM 2540D	09/20	12:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	12	mg/L	1	1	SM 2320 B	09/20	13:10	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
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Reviewed and Approved by:

 Richard Wheeler

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 Reported To: Tetra Tech (Beltzville Dam)
 1320 North Courthouse Rd., Ste. 600
 Arlington VA 22201

Date of Report: 09/26/16
 Lab ID: 3157-16-0028580

Date Collected: 09/14/16 10:40
 Collected By: Client

Sample Desc: BZ-7 Deep

Date Received: 09/14/16 13:20

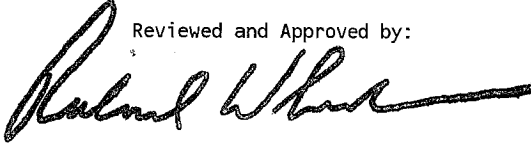
PWSID: 3130843

	Result	Unit	Rep Limit	Dilutn Factor	Procedure	Test Date	Test Time	Analyst
CHEMISTRY								
COLORMETRIC								
Phosphate as P, Ortho	<.01	mg/L	.01	1	SM 4500P-E	09/15	15:00	AEH
Phosphorus as P, Dissolved	<.05	mg/L	.05	1	SM 4500P-E	09/19	15:50	AEH
Phosphorus as P, Total	<.01	mg/L	.01	1	SM 4500P-E	09/19	16:05	AEH
NITROGENS								
Nitrogen, Ammonia	0.12	mg/L	.05	1	D6919-03	09/15	03:20	JCL
Nitrogen, Nitrate	0.21	mg/L	.05	1	EPA 353.2	09/14	17:35	JCL
Nitrogen, Nitrite	<.05	mg/L	.05	1	EPA 353.2	09/14	15:44	JCL
Nitrogen, Total Kjeldahl	0.29	mg/L	.25	1	EPA 351.2	09/22	18:27	JCL
OTHER								
Biochemical Oxygen Demand	<2	mg/L	2	1	SM 5210B	09/14	13:40	EMW
Total Organic Carbon	1.4	mg/L	1	1	SM5310 C	09/21	12:51	ALD
RESIDUES								
Solids, Total Dissolved	48	mg/L	5	1	SM 2540C	09/20	13:00	TMH
Solids, Total Suspended	15	mg/L	3	1	SM 2540D	09/20	12:35	TMH
TITRATIONS								
Alkalinity, Total to pH 4.5	19	mg/L	1	1	SM 2320 B	09/20	13:10	AEH

COMMENTS

01 The Ortho-phosphate was filtered and the dissolved phosphorous was filtered and preserved w/ H2SO4 to pH <2 after the sample was received at the laboratory.

Distribution of Reports:
 Gregory Wacik - USACE (Beltzville Dam)

Reviewed and Approved by:

 Richard Wheeler

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M. J. REIDER ASSOCIATES, INC.

rxw
08/08/16 8:25:17 AM

Chain of Custody

No: 278490

Project Leader: rxw

Work Order: 006226

Work Order Description: Beltzville Reservoir

Account: 3157

Customer: David Wertz
Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext: WACIK

Samplers: WACIK

Remarks:

Total Sampling Time (hours): _____ Bottle Prep by: _____

Laboratory Receipt Temp: 6 Deg C. If Temp Unacceptable, On Ice? Y N

Approved By: B.S.W

=====

Sample No: 1 Desc: BZ-1 Surface

nh3-n, tkn, alk, tds, tss, po4-p, toc,

AA

no2-n, no3-n, d-po4-p, o-po4, bod

BN

fc, tc

TNS

Sample No: 2 Desc: BZ-2 Surface

nh3-n, tkn, alk, tds, tss, po4-p, toc,

AA

no2-n, no3-n, d-po4-p, o-po4, bod

BN

fc, tc

TNS

Sample No: 3 Desc: BZ-3 Surface

nh3-n, tkn, alk, tds, tss, po4-p, toc,

AA

no2-n, no3-n, d-po4-p, o-po4, bod

BN

fc, tc

TNS

Matrix: 0

A - 1 X Pt nh3 p w/ H2SO4 (pH<2);

B - 1 X 8oz Alk p w/ Cool to 6 C;

C - 1 X 2xambervoa g w/ H3PO4/zero headspace;

D - 1 X L bod p w/ Cool to 6 C;

E - 1 X Pt no3no2 p w/ Cool to 6 C;

F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Matrix: 0

A - 1 X Pt nh3 p w/ H2SO4 (pH<2);

B - 1 X 8oz Alk p w/ Cool to 6 C;

C - 1 X 2xambervoa g w/ H3PO4/zero headspace;

D - 1 X L bod p w/ Cool to 6 C;

E - 1 X Pt no3no2 p w/ Cool to 6 C;

F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Matrix: 0

A - 1 X Pt nh3 p w/ H2SO4 (pH<2);

B - 1 X 8oz Alk p w/ Cool to 6 C;

C - 1 X 2xambervoa g w/ H3PO4/zero headspace;

D - 1 X L bod p w/ Cool to 6 C;

E - 1 X Pt no3no2 p w/ Cool to 6 C;

F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Date: 9/14/16
Time: 820

Date: 9/14/16
Time: 800

Date: 9/14/16
Time: 950

Relinquished by: [Signature] Received by: [Signature]

Date: 9/14/16 Time: 1145

Received for laboratory by: [Signature]

Date: 9-14-16 Time: 1320

Sample entered by: [Signature]

M. J. REIDER ASSOCIATES, INC.

08/08/16 8:25:17 AM

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Work Order: 006226

Project Leader: rxw

No: 278490

Customer: David Wertz

Work Order Description: Beltzville Reservoir

Remarks:

Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Total Sampling Time (hours): _____ Bottle Prep by: _____

Phone: 703-387-5516 Ext: _____

Laboratory Receipt Temp: 6 Deg C. If Temp Unacceptable, On Ice? Y N

Samplers: WACK Approved By: B5W

=====

28571 Sample No: 4 Desc: BZ-3 Mid-Depth
nh3-n, tkn, alk, tds, tss, po4-p, toc,
AK
no2-n, no3-n, d-po4-p, o-po4, bod,
AK

Matrix: 0 Date: 9/14/16
Time: 950
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;

28572 Sample No: 5 Desc: BZ-3 Deep
nh3-n, tkn, alk, tds, tss, po4-p, toc,
AK
no2-n, no3-n, d-po4-p, o-po4, bod,
AK

Matrix: 0 Date: 9/14/16
Time: 950
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;

28573 Sample No: 6 Desc: BZ-4 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
M
no2-n, no3-n, d-po4-p, o-po4, bod,
AK
fc, tc, TNS AK

Matrix: 0 Date: 9/14/16
Time: 740
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Relinquished by: [Signature] Received by: [Signature]

Received for laboratory by: [Signature]

Date: 9/14/16 Time: 1145

Date: 9-14-16 Time: 1320

Sample entered by: [Signature]

Chain of Custody

Account: 3157 Work Order: 006226 Project Leader: rxw No: 278490
Customer: David Wertz Work Order Description: Beltzville Reservoir
Address: Terra Tech (Beltzville Dam) 1320 North Courthouse Rd., Ste. 600 Arlington VA 22201

Phone: 703-387-5516 Ext:

Samplers: WACIK

Total Sampling Time (hours): Bottle Prep by:

Laboratory Receipt Temp: 6 Deg C. If Temp Unacceptable, On Ice? Y N
Approved By: BSW

Remarks:

- 28574 Sample No: 7 Desc: BZ-5 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod
fc, tc
28575 Sample No: 8 Desc: BZ-6 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod
fc, tc
28576 Sample No: 9 Desc: BZ-6 Mid-Depth
nh3-n, tkn, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod
fc, tc

- Matrix: O Date: 9/14/16 Time: 720
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;
Matrix: O Date: 9/14/16 Time: 0900
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;
Matrix: O Date: 9/14/16 Time: 0900
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Relinquished by: [Signature] Received by: [Signature]
Date: 7/14/16 Time: 1145

Received for laboratory by: [Signature]
Date: 9-14-16 Time: 1320

Sample entered by: [Signature]

Chain of Custody

Account: 3157

Work Order: 006226

Project Leader: rxw No: 278490

Customer: David Wertz

Work Order Description: Beltzville Reservoir

Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext: WPAK

Total Sampling Time (hours): _____ Bottle Prep by: _____

Laboratory Receipt Temp: 60 Deg C. If Temp Unacceptable, On Ice? Y N
Approved By: BZW

Remarks:

28577 Sample No: 10 Desc: BZ-6 Deep
nh3-n, tkn, alk, tds, tss, po4-p, toc,
AAA
no2-n, no3-n, d-po4-p, o-po4, bod₅
OK

28578 Sample No: 11 Desc: BZ-7 Surface
nh3-n, tkn, alk, tds, tss, po4-p, toc,
AA
no2-n, no3-n, d-po4-p, o-po4, bod₅
OK

28579 Sample No: 12 Desc: BZ-7 Mid-Depth
nh3-n, tkn, alk, tds, tss, po4-p, toc,
AA
no2-n, no3-n, d-po4-p, o-po4, bod₅
OK

Matrix: o Date: 9/14/16
Time: 0900
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;

Matrix: o Date: 9/14/16
Time: 1040
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;
F - 1 X 250mlMicro p w/ Sterile/Na2S2O3;

Matrix: o Date: 9/14/16
Time: 1040
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;

Relinquished by: [Signature] Received by: [Signature]

Received for Laboratory by: [Signature]

Date: 9/14/16 Time: 1145

Date: 9-14-16 Time: 1320

Sample entered by: [Signature]

M. J. REIDER ASSOCIATES, INC.

TXW
08/08/16 8:25:18 AM

Chain of Custody

No: 278490

Project Leader: rxw

Work Order: 006226

Work Order Description: Beltzville Reservoir

Customer: David Wertz

Address: Tetra Tech (Beltzville Dam)
1320 North Courthouse Rd., Ste. 600
Arlington VA 22201

Phone: 703-387-5516 Ext:

WACIK

Remarks:

Total Sampling Time (hours): 6

Bottle Prep by:

Laboratory Receipt Temp: 6 Deg C. If Temp Unacceptable, On Ice? Y N

Approved By: BSW

Sample No: 13 Desc: BZ-7 Deep
nh3-n, tkm, alk, tds, tss, po4-p, toc,
no2-n, no3-n, d-po4-p, o-po4, bod
M
BW

Matrix: 0
Date: 9/14/16
Time: 1040
A - 1 X Pt nh3 p w/ H2SO4 (pH<2);
B - 1 X 8oz Alk p w/ Cool to 6 C;
C - 1 X 2xambervoa g w/ H3PO4/zero headspace;
D - 1 X L bod p w/ Cool to 6 C;
E - 1 X Pt no3no2 p w/ Cool to 6 C;

Relinquished by: [Signature]
Date: 9/14/16 Time: 1145

Received by: [Signature]

Received for laboratory by: [Signature]
Date: 9-14-16 Time: 1320

Sample entered by: [Signature]