6 November 2023

Mr. Scott Sokolowski
Remedial Project Manager
Naval Facilities Engineering Systems Command, Mid-Atlantic
9324 Virginia Avenue, Building Z-144
Norfolk, VA 23511-3095

Subject: **October 2023 Monthly Operating Report**
Full Scale Liquid-Phase Granular Activated Carbon Treatment System
Liberty New York Water, Seamans Neck Road Water Plant
NWIRP Bethpage, New York
Contract No. N40085-16-D-2288, Task Order N4008518F5125

Dear Mr. Sokolowski,

The Full Scale Liquid-Phase Granulated Activated Carbon (GAC) Treatment System is located at the Liberty New York Water (LNYW) Seamans Neck Road Water Plant in Levittown, NY. The GAC System was installed at the effluent of the potable water plant and consists of six GAC vessels operating in parallel to remove low levels of trichloroethene (TCE) from Well No. 3S and Well No. 4S. After processing through the GAC units, the water is treated with sodium hypochlorite and sodium tripolyphosphate before distribution. Startup of the GAC Treatment System occurred on 8 January 2015. KOMAN Government Solutions, LLC (KGS) began operation and maintenance (O&M) activities in March 2015.

In May 2018, production Well No. 3S was decommissioned and has been replaced with a new production well designated as Well No. 3A. Well No. 4S is normally in operation during the entire month, while well No. 3A is operated infrequently, typically during the periods of higher water demand.

On 30 January 2023, the plant was taken off-line by Liberty Utilities to support rehabilitation of the iron filtration plant. The plant remained off-line until 4 May 2023, at which time the plant resumed normal operation.

This report documents the routine operation and maintenance of the GAC System performed during the month of October 2023. **Attachment 1** presents the field logs detailing system operating data as recorded during the month. These readings include flow rate and total flows of the overall GAC System and each GAC unit, pressures across the GAC System, effluent chlorine residual and pH values, chemical usage levels of sodium hypochlorite and sodium tripolyphosphate for each chemical tank, and chemical metering pump settings and pressures.

A summary of the system operating data recorded in October 2023 is presented below in **Table 1**.

KOMAN Government Solutions, LLC
180 Gordon Drive, Suite 110
Exton, Pennsylvania 19341
Phone (610) 363-3000
Fax (610) 363-3001
www.komangs.com

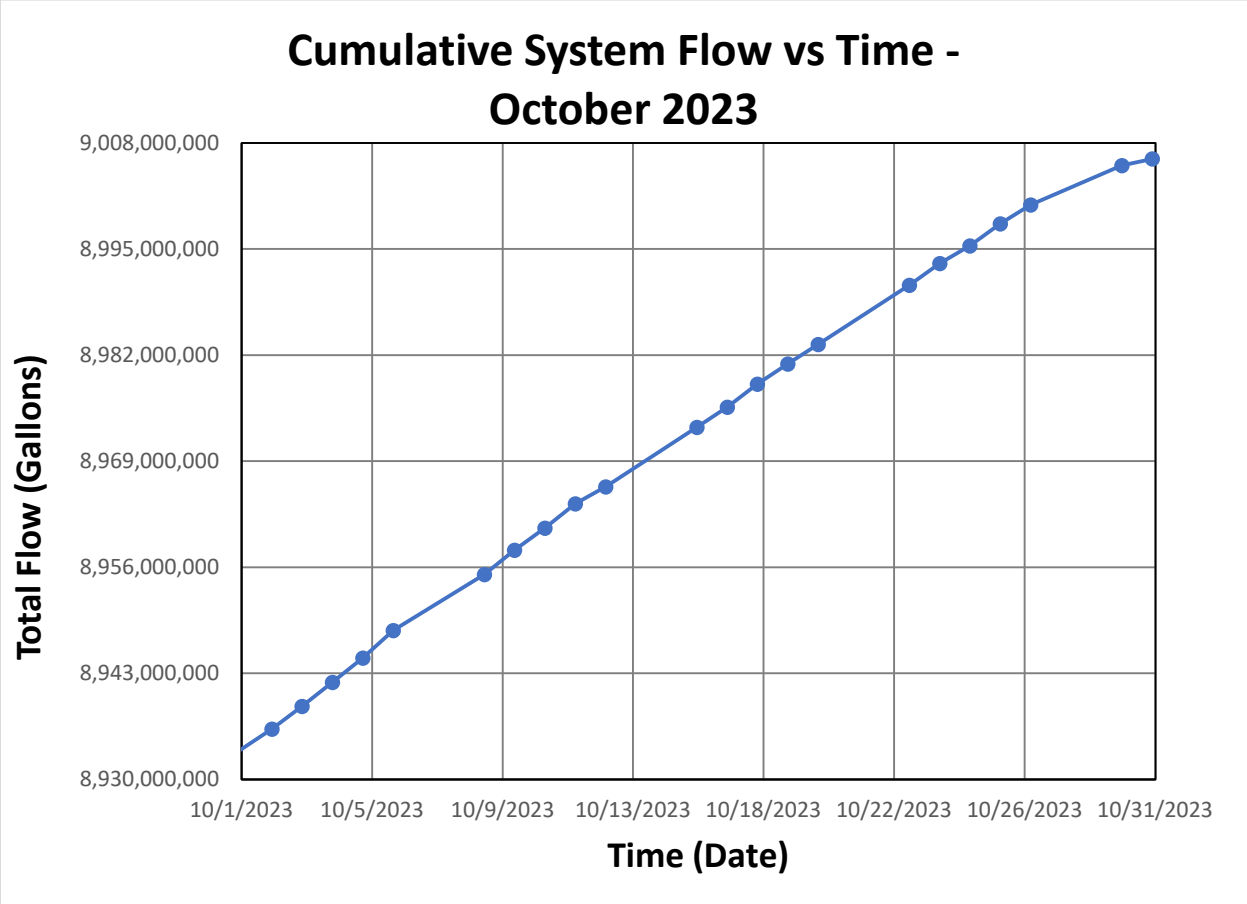
Table 1 - *System Operating Data for October 2023*

Date	Total Flow	Flow Rate	Influent Pressure	Effluent Pressure	Differential Pressure	Effluent Chlorine Residual	Effluent pH
	(Gallons)	(GPM)	(PSI)	(PSI)	(PSI)	(mg/L)[1]	(SU)[1]
10/2/2023	8,936,188,000	1,500	47	45	2.5	1.93 read 1.91 manual	6.78 read
10/3/2023	8,938,974,000	1,500	52	50	2.3	1.91 read 1.89 manual	6.76 read
10/4/2023	8,941,923,000	1,650	59	56	2.4	1.74 read 1.72 manual	6.77 read
10/5/2023	8,944,905,000	1,650	63	60	2.5	1.71 read 1.69 manual	6.78 read
10/6/2023	8,948,245,000	1,700	59	56	3.0	1.74 read 1.75 manual	6.79 read
10/9/2023	8,955,119,000	1,700	55	52	2.4	1.84 read 1.86 manual	6.83 read
10/10/2023	8,958,107,000	1,750	70	68	2.5	1.61 read 1.63 manual	6.76 read
10/11/2023	8,960,832,000	1,500	50	48	2.2	1.71 read 1.70 manual	7.03 read
10/12/2023	8,963,809,000	1,750	63	60	2.6	1.64 read 1.66 manual	7.01 read
10/13/2023	8,965,873,000	1,650	55	52	2.9	1.68 read 1.69 manual	7.04 read
10/16/2023	8,973,178,000	1,600	64	61	2.6	1.69 read 1.71 manual	7.09 read
10/17/2023	8,975,656,000	1,800	62	59	3.2	1.67 read 1.69 manual	1.69 read
10/18/2023	8,978,444,000	1,900	60	57	3.3	1.66 read 1.68 manual	7.20 read
10/19/2023	8,980,922,000	1,850	85	82	3.5	1.73 read 1.75 manual	7.14 read
10/20/2023	8,983,322,000	1,650	59	56	3.0	1.81 read 1.83 manual	7.18 read
10/23/2023	8,990,584,000	1,700	64	61	2.8	1.71 read 1.73 manual	7.10 read
10/24/2023	8,993,233,000	1,700	81	78	2.9	1.76 read 1.75 manual	7.10 read
10/25/2023	8,995,389,000	1,850	80	77	3.3	1.81 read 1.83 manual	7.28 read
10/26/2023	8,998,099,000	1,850	63	60	3.4	1.87 read 1.85 manual	7.26 read
10/27/2023	9,000,441,000	1,800	77	73	3.3	1.88 read 1.86 manual	7.25 read
10/30/2023	9,005,261,000	--	--	--	--	-- read -- manual	7.18 read
10/31/2023	9,006,060,000	--	--	--	--	-- read -- manual	7.45 read

(1) Effluent pH and chlorine residual readings are recorded by the in-line pH meter and chlorine analyzer. Chlorine is also checked with a manual chlorine residual meter for comparison, while manual pH is only checked occasionally. Both in-line and manual readings are presented, if collected, as noted above.

Figure 1 illustrates the volume of water treated by the GAC System since system startup, with the increment for the month of October 2023. Over 72.2 million gallons of water were treated in October 2023, bringing the total cumulative volume of water treated since startup to over 9.00 billion gallons.

Figure 1 - ***Volume of Water Treated through Full Scale GAC System (October 2023)***



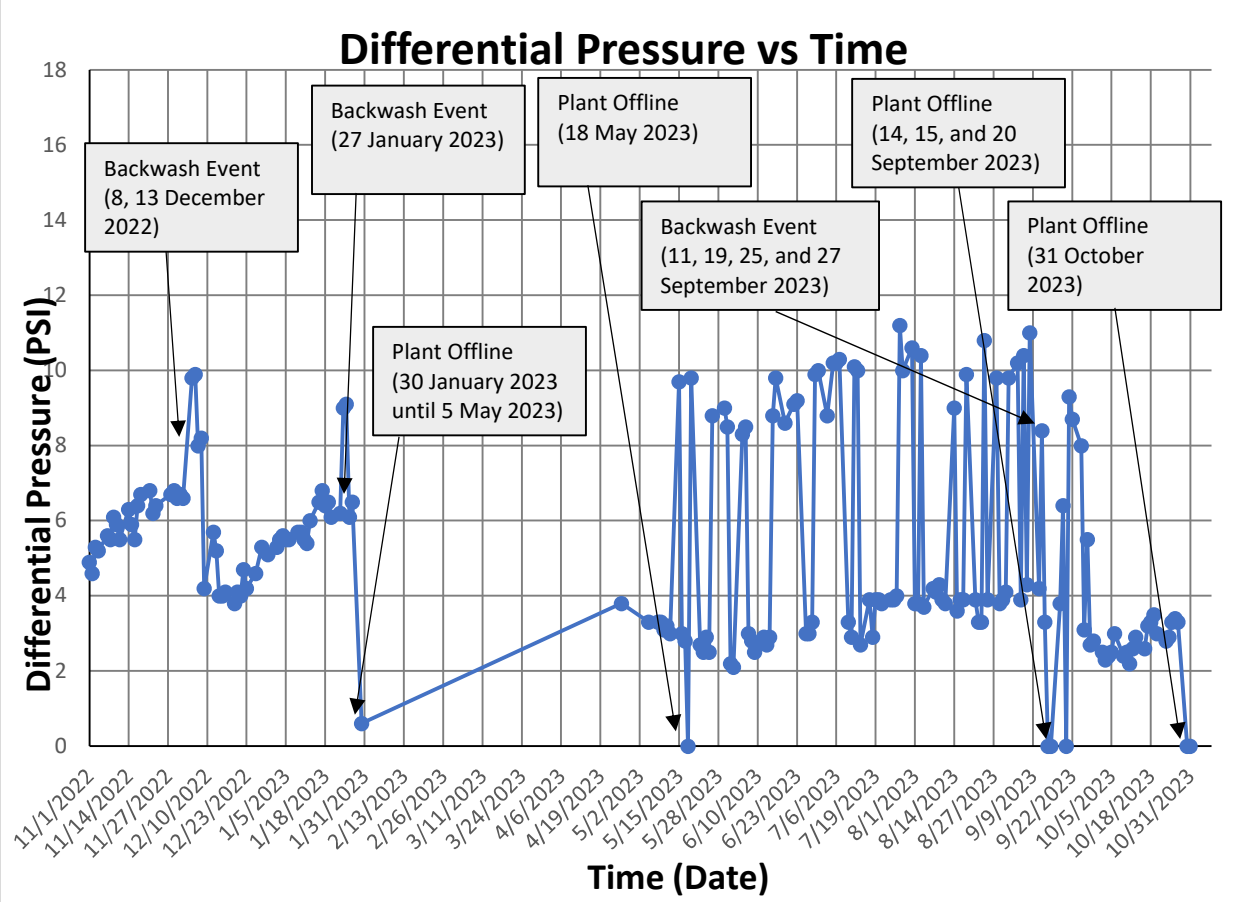
In general, differential pressure increases as the system continues to operate, and decreases after a backwashing event. The increasing trend then continues until the next backwashing event is performed. Also, lower differential pressures are observed during times of low water demand (e.g., typically over the winter months). **Figure 2,** below, depicts the pressure loss across the GAC System and subsequent backwashing dates, from November 2022 through the current reporting period.

Backwashing events during the summer and fall are performed more often because of the higher demand during that time of year. The exchange of carbon in each of the six GAC vessels with virgin coconut shell carbon was most recently completed in August 2020 and the Seamans Neck Road plant is able to operate at full capacity.

Previously identified high iron loading in the GAC vessels has been alleviated by the completed (May 2023) rehabilitation of the Liberty Utilities iron filtration plant at the Seamans Neck Road plant.

The facility is operating at full design capacity and pressure loss across the overall GAC System is monitored regularly, and it is expected that backwashing events will occur on a periodic basis as needed. In addition, it is expected that backwashing of each vessel will be conducted following each quarterly bacteria sampling event to address potential colored water issues and to ensure the timely return to service for each vessel.

Figure 2 - S*ystem Differential Pressure vs. Time*



System Maintenance

Routine maintenance of the GAC System during this reporting period consisted of:

- General monitoring of the system flow rates, totalized flows, influent and effluent pressures, differential pressure, chlorine residual, and pH readings.

- Changing paper for the chlorine/pH chart recorder and flow/differential pressure chart recorder on a weekly basis.
- Calibration of the pH meter on a weekly basis.
- Periodic operation of Well 3A in place of or concurrently with Well 4S occurs on an irregular schedule; Well 3A did not operate during the reporting period.

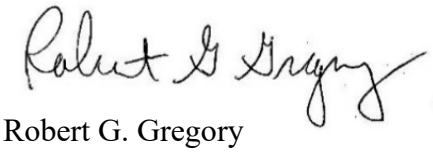
In addition, the following non-routine activities or operation issues occurred during the October 2023 reporting period:

- On 28 October, Liberty Utilities placed the plant in offline status to facilitate testing and integration of the AOP unit. Flow through the plant will occur periodically as part of the testing program; all resultant effluent will go to waste.

Please contact me at 610-400-0636 or rgregory@komangs.com with any questions or concerns regarding this report.

Sincerely,

KOMAN Government Solutions, LLC



Robert G. Gregory
Project Manager

Cc: C. Shukis - NAVFAC
V. Varricchio - NWIRP Bethpage Facilities Management
R. Kern - LNYW
N. Niola – LNYW
J. Palmer - LNYW
P. Schauble - KGS
R. Hoffmaster – KGS
D. Brayack - Tetra Tech
R. Moore - Tetra Tech
J. Pelton – NYSDEC
K. Granzen – NYSDEC
M. Travis – NYSDEC

ATTACHMENT 1

O&M LOGS – OCTOBER 2023

Daily Readings
Granular Activated Carbon Treatment System

Description	Data	9.29.2023	10.2.2023	10.3.2023	10.4.2023	10.5.2023	10.6.2023
System Flow Rate	GPM	1650	1500	1500	1650	1650	1700
Total System Flow	Gallons	9012630	9020060	9022846	9025795	9028777	9032117
Well 3 Status	ON OR OFF	OFF	OFF	OFF	OFF	OFF	OFF
Well 4 Status	ON OR OFF	ON	ON	ON	ON	ON	ON
Tank 100 Flow Rate	GPM	250	250	250	250	250	250
Tank 200 Flow Rate	GPM	250	250	250	250	250	250
Tank 300 Flow Rate	GPM	250	250	250	250	250	250
Tank 400 Flow Rate	GPM	250	250	250	250	250	250
Tank 500 Flow Rate	GPM	250	250	225	250	250	250
Tank 600 Flow Rate	GPM	250	200	225	225	225	250
Tank 100 Total Flow	Gallons	35,465,000	36,490,000	36,885,000	37,308,000	37,734,000	38,114,000
Tank 200 Total Flow	Gallons	87,285,000	88,364,000	88,769,000	89,214,000	89,635,000	90,078,000
Tank 300 Total Flow	Gallons	93,098,000	94,318,000	94,783,000	95,293,000	95,777,000	96,171,000
Tank 400 Total Flow	Gallons	29,931,000	31,150,000	31,600,000	32,095,000	32,568,000	32,937,000
Tank 500 Total Flow	Gallons	22,594,000	23,802,000	24,268,000	24,741,000	25,258,000	25,616,000
Tank 600 Total Flow	Gallons	44,492,000	45,521,000	45,914,000	46,340,000	46,745,000	47,004,000
System Influent Pressure	PSI	63	47	52	59	68	59
System Effluent Pressure	PSI	61	45	50	56	60	56
System Differential Pressure	PSI	2.5	2.5	2.3	2.4	2.5	3.0
Chlorine Analyser: Free Chlorine Residual - Inline	PPM	1.66	1.93	1.91	1.74	1.71	1.74
Effluent Water pH - Inline	Units	6.82	6.78	6.76	6.77	6.78	6.79
Manual Chlorine Reading (ex: Hach Kit)	PPM	1.68	1.91	1.89	1.72	1.69	1.75
Manual pH check (ex: Hanna)	Units	—					

Daily Readings
Granular Activated Carbon Treatment System

Description	Units	9292023	10.2.2023	10.3.2023	10.4.2023	10.5.2023	10.6.2023
Tank 5104A Hexadecane Level	Gallons	121	137	150	130	155	133
Tank 5104B Hexadecane Level	Gallons	150	73	152	103	153	140
Tank 5104C Hexadecane Level	Gallons	156	102	155	155	155	155
Tank 5105A Polyethyleneimine Level	Gallons	136	88	71	149	126	96
Tank 5105B Polyethyleneimine Level	Gallons	141	140	140	140	140	140
Metering Pump 5102A: Hexadecane Output Pressure	PSI						
Metering Pump 5102B: Hexadecane Output Pressure	PSI						
Metering Pump 5103A: Phosphate Output Pressure	PSI						
Metering Pump 5103B: Phosphate Output Pressure	PSI						
Metering Pump 5102A: Stroke/Speed	Units						
Metering Pump 5102B: Stroke/Speed	Units						
Metering Pump 5103A: Stroke/Speed	Units						
Metering Pump 5103B: Stroke/Speed	Units						
Generator Operating Hours	Hours	o/c	o/c	o/c	o/c	o/c	o/c
Main Facility Electric Meter Reading							
Comments (additional tasks performed, maintenance needed, contractors on site, etc.)		Change flow / PH Charts		CL Delv.	Phos. Delv.	Monthly Sampling CL Delv.	

Daily Readings
Granular Activated Carbon Treatment System

Description	Date	10.9.2023	10.10.2023	10.11.2023	10.12.2023	10.13.2023	10.16.2023
System Flow Rate	GPM	1700	1750	1500	1750	1650	1600
Total System Flow	Gallons	9038991	9041979	9044704	9047681	9049745	9057050
Well 3 Status	ON OR OFF	OFF	OFF	OFF	OFF	OFF	OFF
Well 4 Status	ON OR OFF	ON	ON	ON	ON	ON	ON
Tank 100 Flow Rate	GPM	250	250	200	250	250	250
Tank 200 Flow Rate	GPM	250	250	225	250	250	250
Tank 300 Flow Rate	GPM	250	250	250	250	250	250
Tank 400 Flow Rate	GPM	250	250	250	250	250	250
Tank 500 Flow Rate	GPM	250	300	250	300	250	250
Tank 600 Flow Rate	GPM	250	250	200	225	200	200
Tank 100 Total Flow	Gallons	39,178,000	39,605,000	40,002,000	40,425,000	40,707,000	41,702,000
Tank 200 Total Flow	Gallons	91,114,000	91,546,000	91,943,000	92,379,000	92,671,000	93,730,000
Tank 300 Total Flow	Gallons	97,471,000	97,979,000	98,428,000	98,925,000	99,260,000	00,451,000
Tank 400 Total Flow	Gallons	34,230,000	34,715,000	35,157,000	35,640,000	35,976,000	37,173,000
Tank 500 Total Flow	Gallons	26,945,000	27,495,000	27,901,000	28,356,000	28,727,000	29,903,000
Tank 600 Total Flow	Gallons	48,174,000	48,595,000	48,978,000	49,398,000	49,683,000	50,695,000
System Influent Pressure	PSI	55	70	50	63	55	64
System Effluent Pressure	PSI	52	68	48	60	52	61
System Differential Pressure	PSI	2.4	25	2.2	2.6	2.9	2.6
Chlorine Analyzer: Free Chlorine Residual - Inline	PPM	1.84	1.61	1.71	1.64	1.68	1.69
Effluent Water pH - Inline	Units	6.83	6.76	7.03	7.01	7.04	7.09
Manual Chlorine Reading (ex: Hach Kit)	PPM	1.86	1.63	1.70	1.66	1.69	1.71
Manual pH check (ex: Hanna)	Units	—				—	—

Daily Readings
Granular Activated Carbon Treatment System

Description	Date	10.9.2023	10.10.2023	10.11.2023	10.12.2023	10.13.2023	10.16.2023
Tank 900A Hypochlorite Level	Gallons	121	153	140	153	153	155
Tank 900B Hypochlorite Level	Gallons	118	153	120	152	121	155
Tank 900C Hypochlorite Level	Gallons	61	155	155	155	155	155
Tank 900A Polyphosphate Level	Gallons	64	44	30	156	136	86
Tank 900B Polyphosphate Level	Gallons	131	129	125	121	121	121
Metering Pump 900A: Hypochlorite Output Pressure	PSI						
Metering Pump 900B: Hypochlorite Output Pressure	PSI						
Metering Pump 900A: Phosphate Output Pressure	PSI						
Metering Pump 900B: Phosphate Output Pressure	PSI						
Metering Pump 900A: Stroke/Speed	Units						
Metering Pump 900B: Stroke/Speed	Units						
Metering Pump 900A: Stroke/Speed	Units						
Metering Pump 900B: Stroke/Speed	Units						
Generator Operating Hours	Hours	—	—	—	—	—	—
Main Facility Electric Meter Reading							
Comments (additional tasks performed, maintenance needed, contractors on site, etc.)					CL Delv Phos. Delv	Contractor on Site (Carbon Change Out) NICHEM (LV)	CL Delv

Daily Readings
Granular Activated Carbon Treatment System

Description	Date	10.17.2023	10.18.2023	10.19.2023	10.20.2023	10.23.2023	10.24.2023
System Flow Rate	GPM	1800	1900	1850	1650	1700	1700
Total System Flow	Gallons	9059528	9062316	9064794	9067194	9074456	9077105
Well 3 Status	ON OR OFF	OFF	OFF	OFF	OFF	OFF	OFF
Well 4 Status	ON OR OFF	ON	ON	ON	ON	ON	ON
Tank 100 Flow Rate	GPM	300	300	250	250	250	250
Tank 200 Flow Rate	GPM	300	300	250	225	250	250
Tank 300 Flow Rate	GPM	300	350	300	250	250	250
Tank 400 Flow Rate	GPM	300	300	350	225	250	250
Tank 500 Flow Rate	GPM	300	350	350	250	300	300
Tank 600 Flow Rate	GPM	225	250	250	225	250	250
Tank 100 Total Flow	Gallons	42,042,000	42,437,000	42,773,000	43,103,000	44,073,000	44,431,000
Tank 200 Total Flow	Gallons	94,090,000	94,495,000	94,855,000	95,203,000	96,261,000	96,647,000
Tank 300 Total Flow	Gallons	00,861,000	01,325,000	01,731,000	02,125,000	03,314,000	03,745,000
Tank 400 Total Flow	Gallons	37,582,000	38,044,000	38,451,000	38,847,000	40,035,000	40,463,000
Tank 500 Total Flow	Gallons	30,310,000	30,775,000	31,171,000	31,560,000	32,123,000	33,148,000
Tank 600 Total Flow	Gallons	51,045,000	51,437,000	51,785,000	52,118,000	53128,000	53,456,000
System Influent Pressure	PSI	62	60	85	59	64	81
System Effluent Pressure	PSI	59	57	82	52	61	78
System Differential Pressure	PSI	3.2	3.3	3.5	3.0	2.8	2.9
Chlorine Analyzer: Free Chlorine Residual - Inline	PPM	1.67	1.66	1.73	1.81	1.71	1.76
Effluent Water pH - Inline	Units	7.15	7.20	7.14	7.18	710	710
Manual Chlorine Reading (ex: Hach Kit)	PPM	1.69	1.68	1.75	1.83	1.73	1.75
Manual pH check (ex: Henna)	Units	—	—				

Daily Readings
Granular Activated Carbon Treatment System

Description	Date	10.17.2023	10.18.2023	10.19.2023	10.20.2023	10.23.2023	10.24.2023
Tank 909A Hypochlorite Level	Gallons	150	89	153	153	153	150
Tank 909B Hypochlorite Level	Gallons	141	140	154	119	155	114
Tank 909C Hypochlorite Level	Gallons	152	152	156	156	156	156
Tank 909A Polyphosphate Level	Gallons	82	82	68	52	50	137
Tank 909B Polyphosphate Level	Gallons	116	102	102	102	86	149
Metering Pump 909A: Hypochlorite Output Pressure	PSI						
Metering Pump 909B: Hypochlorite Output Pressure	PSI						
Metering Pump 909A: Phosphate Output Pressure	PSI						
Metering Pump 909B: Phosphate Output Pressure	PSI						
Metering Pump 909A: Stroke/Speed	Units						
Metering Pump 909B: Stroke/Speed	Units						
Metering Pump 909A: Stroke/Speed	Units						
Metering Pump 909B: Stroke/Speed	Units						
Generator Operating Hours	Hours	o/c	o/c	o/c	o/c	o/c	o/c
Main Facility Electric Meter Reading		-					
Comments (additional tasks performed, maintenance needed, contractors on site, etc.)		Philp Ross employee Doing Bact. sampling on GAC's	Philp Ross employee Sampling GAC's	Philp Ross employee Sampling GAC's			Phos. Dolly

Daily Readings
Granular Activated Carbon Treatment System

Description	Date	10.25.2023	10.26.2023	10.27.2023	10.30.2023	10.31.2023	
System Flow Rate	GPM	1850	1850	1800	o/c	o/c	
Total System Flow	Gallons	9079261	9081971	9084313	9089133	9089832	
Well 3 Status	ON OR OFF	OFF	OFF	OFF	OFF	OFF	
Well 4 Status	ON OR OFF	ON	ON	ON	OFF	OFF	
Tank 100 Flow Rate	GPM	250	300	300		-	
Tank 200 Flow Rate	GPM	250	300	300		-	
Tank 300 Flow Rate	GPM	300	300	300		-	
Tank 400 Flow Rate	GPM	300	300	250		-	
Tank 500 Flow Rate	GPM	350	300	300		-	
Tank 600 Flow Rate	GPM	250	225	225		-	
Tank 100 Total Flow	Gallons	44,718,000	45,100,000	45,435,000	46,067,000	46,072,000	
Tank 200 Total Flow	Gallons	96,960,000	97,358,000	97,704,000	98,307,000	98,317,000	
Tank 300 Total Flow	Gallons	04,095,000	04,543,000	04,930,000	05,607,000	05,649,000	
Tank 400 Total Flow	Gallons	40,815,000	41,264,000	41,648,000	42,321,000	42,361,000	
Tank 500 Total Flow	Gallons	33,493,000	33,938,000	34,317,000	34,987,000	35,027,000	
Tank 600 Total Flow	Gallons	53,795,000	54,179,000	54,501,000	55,087,000	55,122,000	
System Influent Pressure	PSI	80	63	77	-	-	
System Effluent Pressure	PSI	77	60	73	-	-	
System Differential Pressure	PSI	3.3	3.4	3.3	-	-	
Chlorine Analyzer: Free Chlorine Residual - Inline	PPM	1.81	1.87	1.88	-	-	
Effluent Water pH - Inline	Units	7.28	7.26	7.25	7.18	7.45	
Manual Chlorine Reading (ex: Hach Kit)	PPM	1.83	1.85	1.86	-	-	
Manual pH check (ex: Henna)	Units	-					

Daily Readings
Granular Activated Carbon Treatment System

Description	Date	10.25.2023	10.26.2023	10.27.2023	10.30.2023	10.31.2023	
Tank 900A Hypochlorite Level	Gallons	120	80	150	150	153	
Tank 900B Hypochlorite Level	Gallons	115	109	153	111	153	
Tank 900C Hypochlorite Level	Gallons	156	156	156	108	155	
Tank 900A Polyphosphate Level	Gallons	133	130	121	117	137	
Tank 900B Polyphosphate Level	Gallons	140	119	115	100	99	
Metering Pump 900A: Hypochlorite Output Pressure	PSI						
Metering Pump 900B: Hypochlorite Output Pressure	PSI						
Metering Pump 900A: Phosphate Output Pressure	PSI						
Metering Pump 900B: Phosphate Output Pressure	PSI						
Metering Pump 900A: Stroke/Speed	Units						
Metering Pump 900B: Stroke/Speed	Units						
Metering Pump 900A: Stroke/Speed	Units						
Metering Pump 900B: Stroke/Speed	Units						
Generator Operating Hours	Hours	O/C	O/C	O/C	O/C	O/C	
Main Facility Electric Meter Reading							
Comments (additional tasks performed, maintenance needed, contractors on site, etc.)			Contractor on Site Putting new fire sensor in / light bulb.	Change charts Flow / PH	System off / OFF About 10.28.2023 around 6pm !!	System off Ran for 1 hr. Over nite phos. Deliv.	