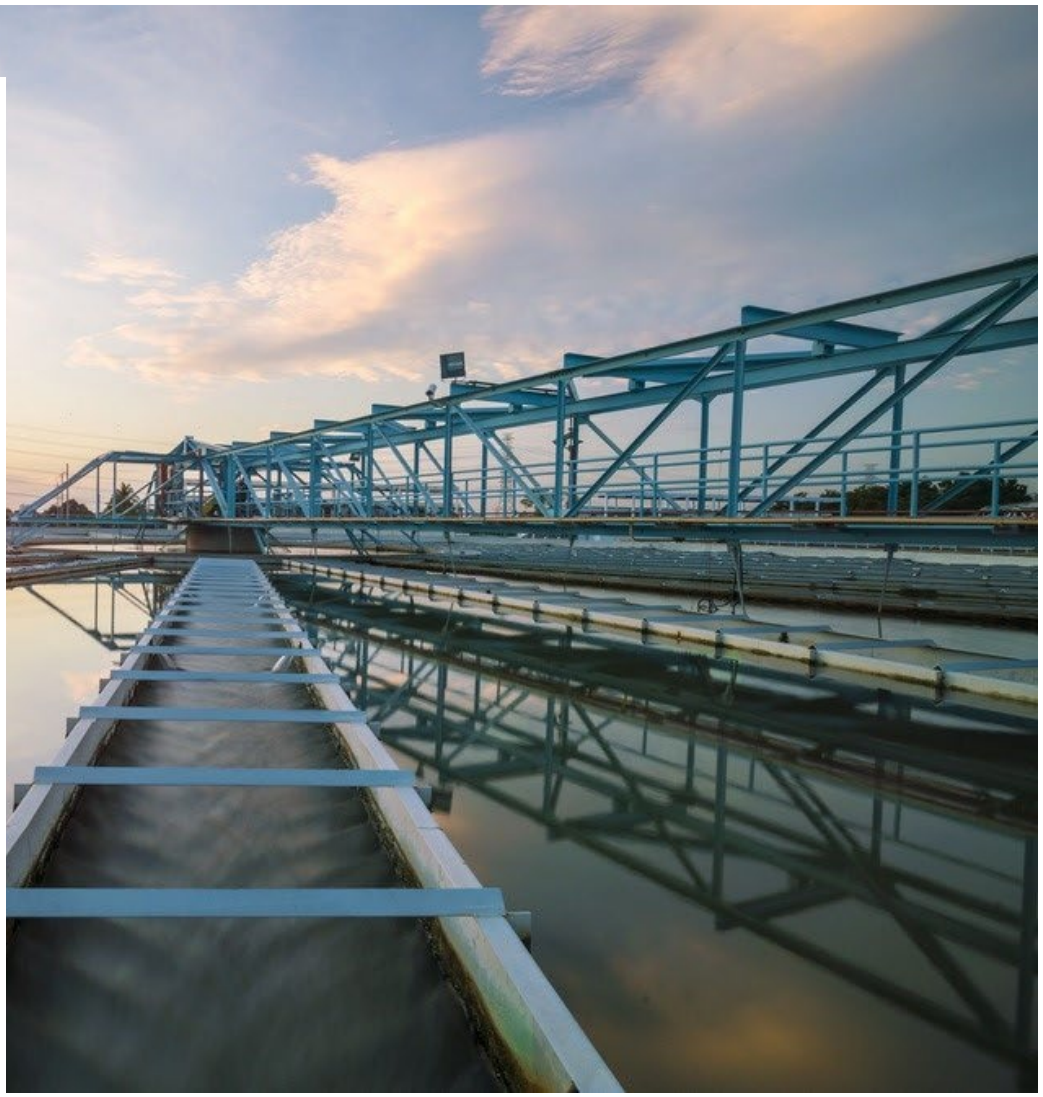
UTILITY REPORT



OCTOBER 2023
NOVEMBER 2023

King George County Service Authority

Authored by:
Inboden Environmental Services, Inc.

INTRODUCTION

This Utility Report provides information on operations, facility performance, equipment issues, and regulatory compliance for the two months prior. Information includes items related to water facility productions and wastewater effluent discharge volumes, laboratory analytical data, operations notes, and compliance auditing.

WATER

Operational Notes:

October:

- KG maintenance drained water tower on Monmouth water system to prepare for tank cleaning and inspection.
- Replaced chemical dosing pump at Bumbrey due to reliability concerns and to standardize all chemical dosing pumps.
- IES met with KG and DEQ at Potomac, Cleydael, and Saft (proposed well corner of 218 and 301).
- Fully switched to Brenn Tag for chemical orders. Sodium Hypochlorite seems easy to acquire for now.
- Continuing to backwash greensand filters to maximize Iron and Manganese capture.
- IES operations staff noticed that Circle 1 flow was reducing and then stopped flowing and notified KG maintenance. A pressure switch was replaced, and hour meter installed by KG maintenance.

November:

- Collected all Presence Absence tests for the month. All passed.
- Contracted company has begun work on the water tower.
- Canterbury well system malfunctioned and allowed chlorine dosing pump to run; flushed system and prevented a chlorine spike. King George maintenance made the necessary repair to run efficiently.
- Further increased efficiency of Fairview water plant backwash operations to use minimal water and still achieve an effective backwash.
- Working with Bren Tag to increase responsiveness and proper chemical drop offs for more effective operations.
- Continuing to backwash greensand filters to maximize Iron and manganese capture and keep water use/loss down.
- Continuing to effectively dose sodium hypochlorite to well sites as required.
- IES hired Alison Henry who is dual Licensed Class 1 in Water and Wastewater to assist in managing operations of King George's facilities and operations.
- VDH inspection performed at Fairview water plant Well 2, Well 3, and Potomac Landing.

Canterbury Subdivision – PWSID 6099085

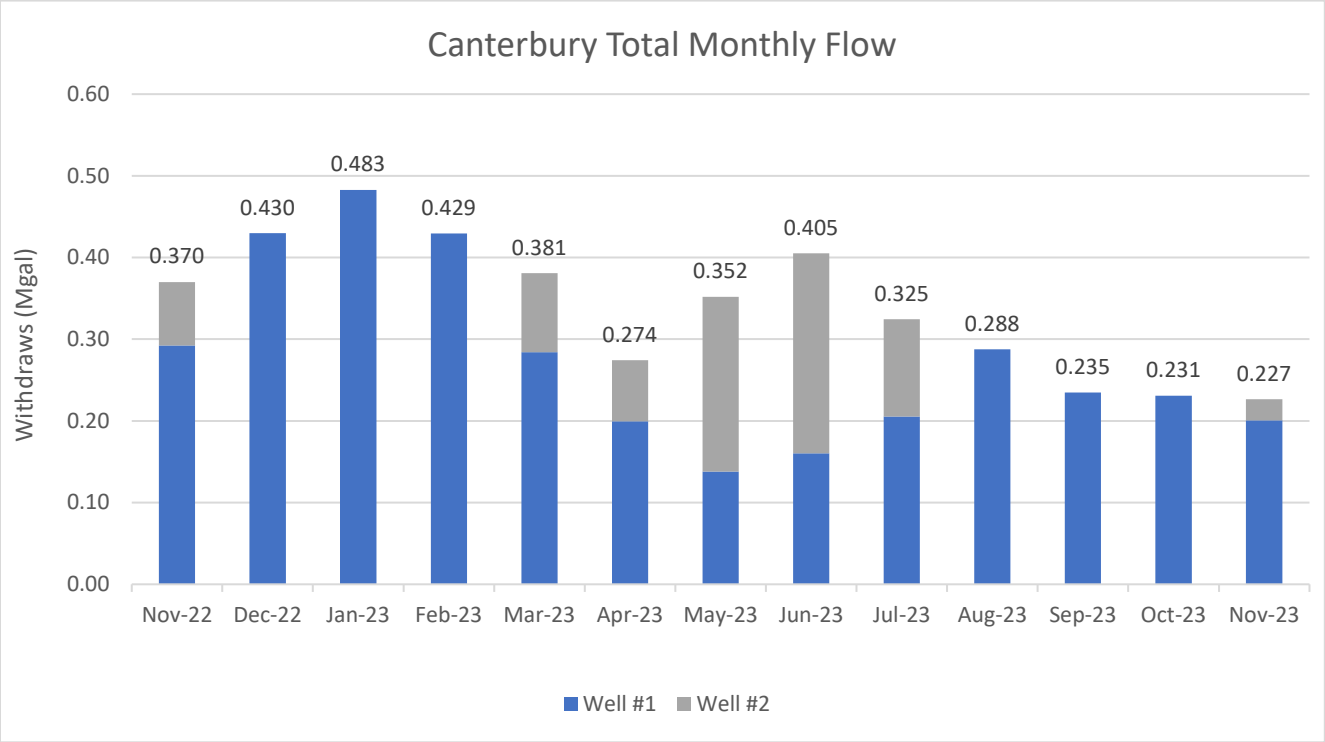
Water Quality:

The Water Treatment facility and distribution system maintained compliance with all required sampling. Routine bacteriological sample results are shown in the table below.

Bacteriological Analysis:

Location Code	Location Address	Date	Result
020	12343 Kent Road	10/25/2023	Absent
030	12135 Canterbury Ct.	11/27/2023	Absent

System Production:



Circle – PWSID 6099100

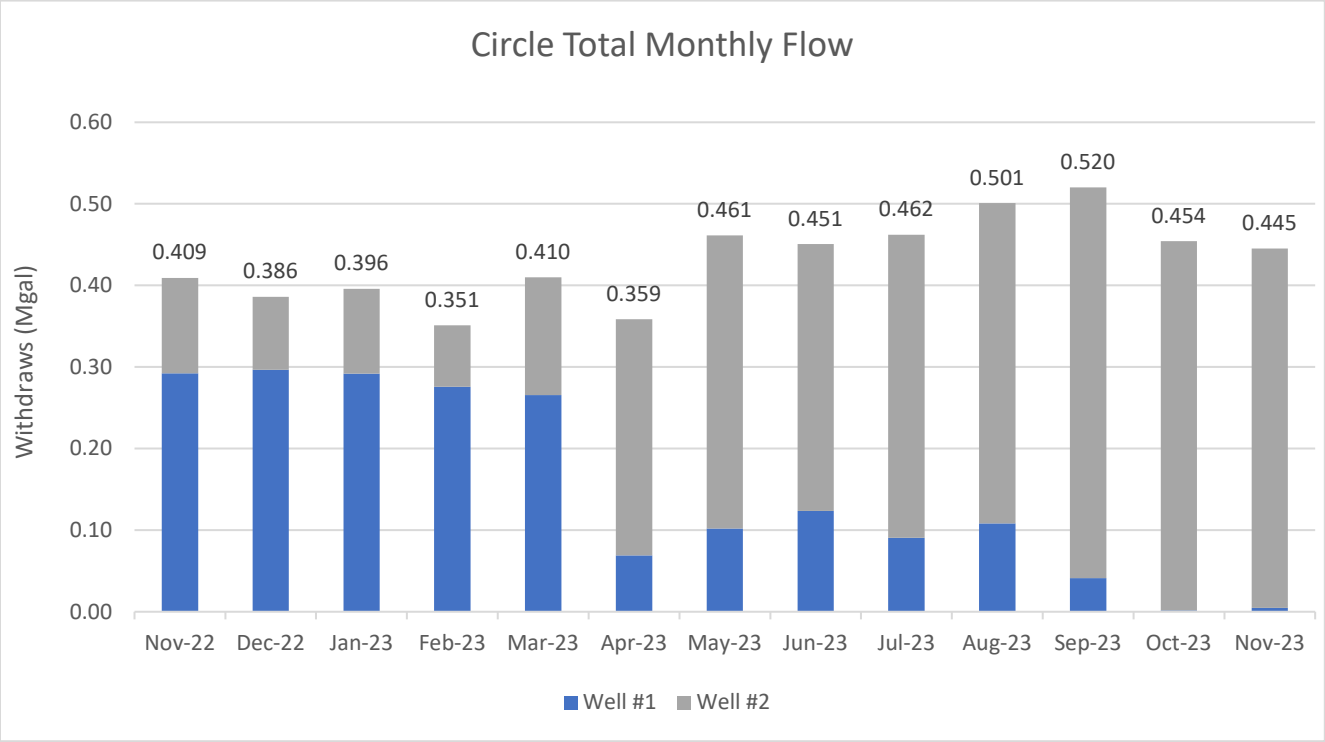
Water Quality:

The Water Treatment facility and distribution system maintained compliance with all required sampling. Routine bacteriological sample results are shown in the table below.

Bacteriological Analysis:

Location Code	Location Address	Date	Result
020	12013 Ridge Road	10/25/2023	Absent
010	11393 Ridge Road	11/27/2023	Absent

System Production:



KGC Courthouse – PWSID 6099050

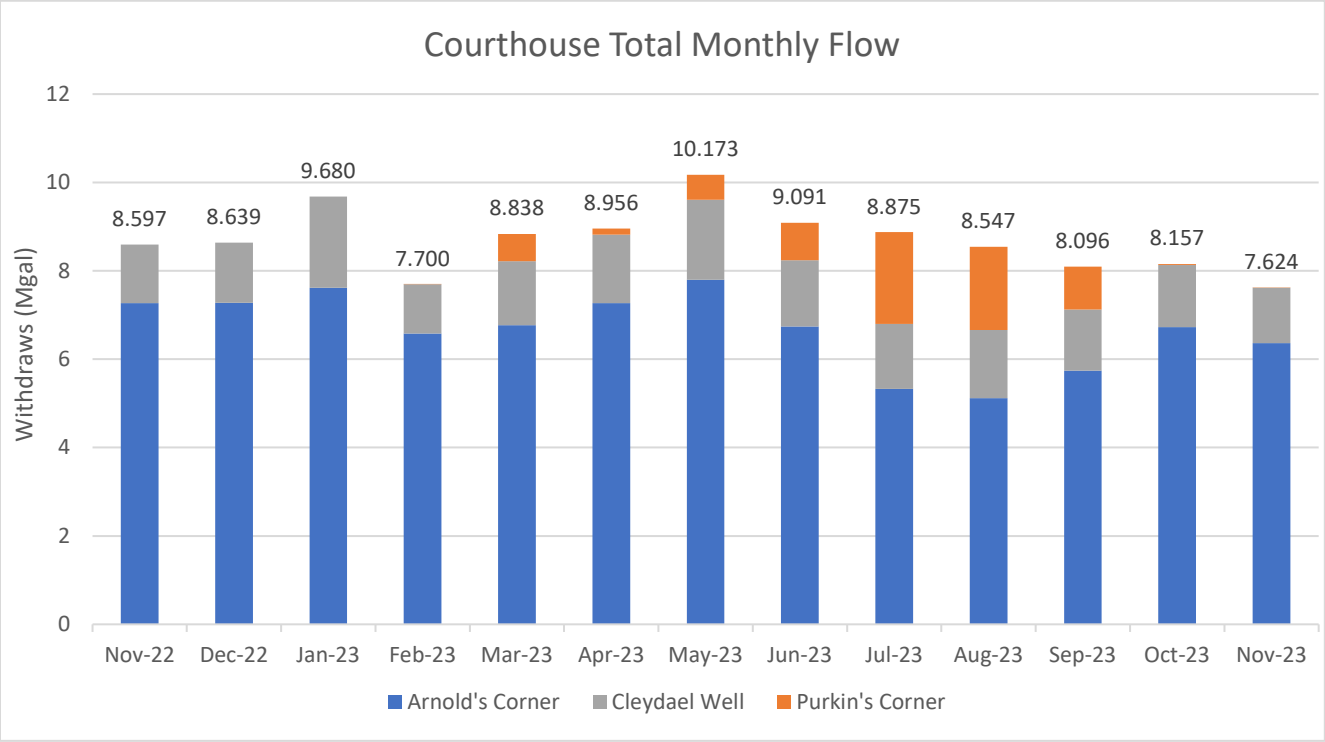
Water Quality:

The Water Treatment facility and distribution system maintained compliance with all required sampling. Routine bacteriological sample results are shown in the table below.

Bacteriological Analysis:

Location Code	Location Address	Date	Result
02	8181 Kings Highway	10/25/2023	Absent
010	10404 Eisenhower Dr.	10/25/2023	Absent
013	8095 Washington Dr.	10/25/2023	Absent
03	9239 Kings Highway	10/25/2023	Absent
07	12131 Cleydael Blvd	10/23/2023	Absent
01	10459 Courthouse Drive	11/24/2023	Absent
04	8428 Eden Drive	11/24/2023	Absent
05	10111 King's Highway	11/24/2023	Absent
08	12382 Richard's Ride	11/24/2023	Absent
09	7323 Jackson Drive	11/24/2023	Absent

System Production:



Dahlgren – PWSID 6099295

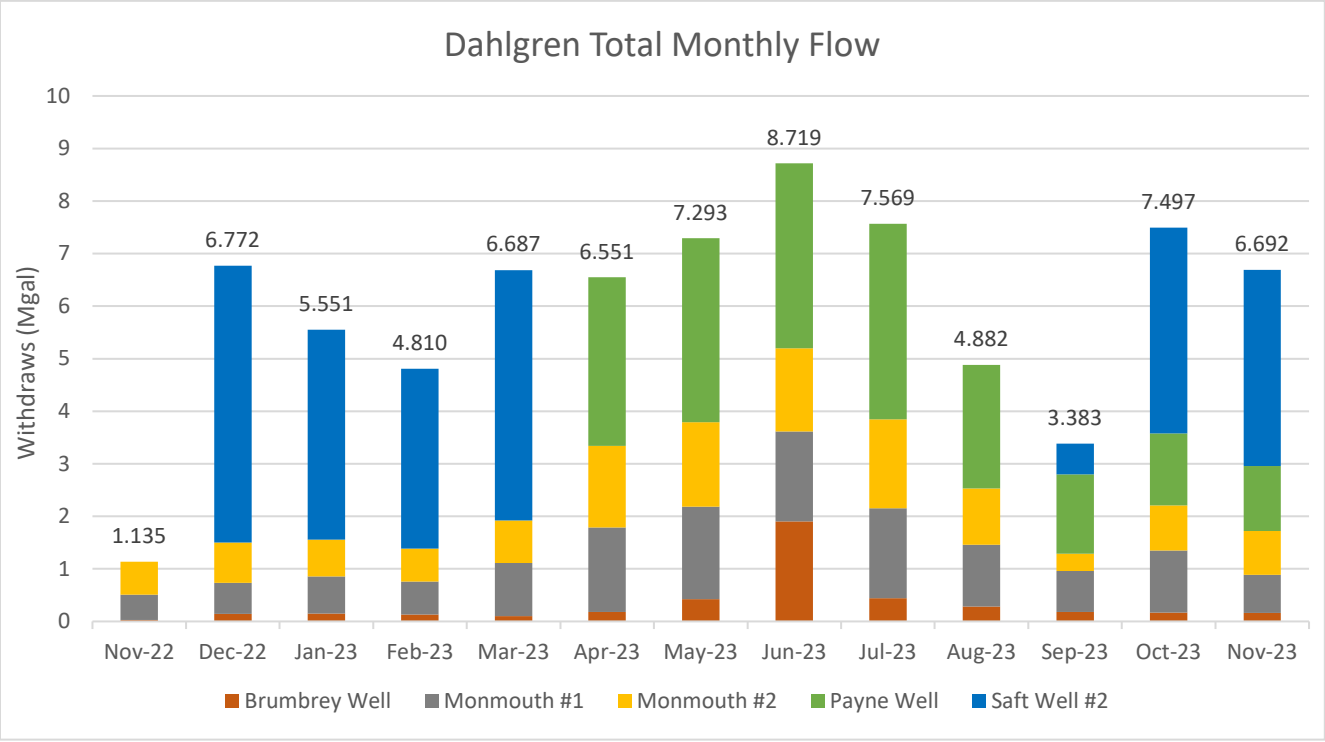
Water Quality:

The Water Treatment facility and distribution system maintained compliance with all required sampling. Routine bacteriological sample results are shown in the table below.

Bacteriological Analysis:

Location Code	Location Address	Date	Result
01	15375 Dahlgren Rd	10/23/2023	Absent
03	5394 Gordon Dr.	10/25/2023	Absent
04	5454 Rosedale Dr.	10/25/2023	Absent
05	5479 Payne Drive	11/27/2023	Absent
06	4417 Danube Drive	11/27/2023	Absent
07	4378 Savannah Street	11/27/2023	Absent

System Production:



Fairview Beach – PWSID 6099250

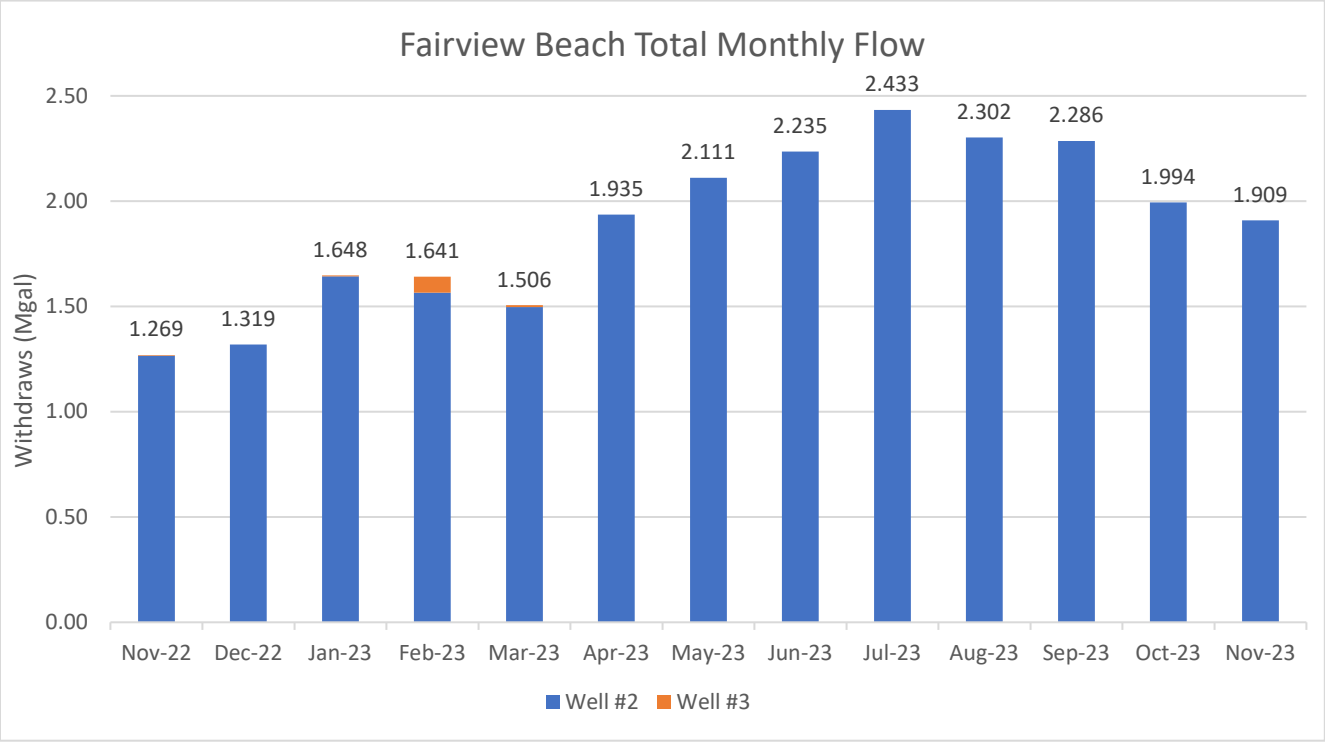
Water Quality:

The Water Treatment facility and distribution system maintained compliance with all required sampling. Routine bacteriological sample results are shown in the table below.

Bacteriological Analysis:

Location Code	Location Address	Date	Result
	6247 Riverview Dr.	10/25/2023	Absent
010	5435 Pavilion Drive	11/24/2023	Absent

System Production:



Hopyard Farm – PWSID 6099283

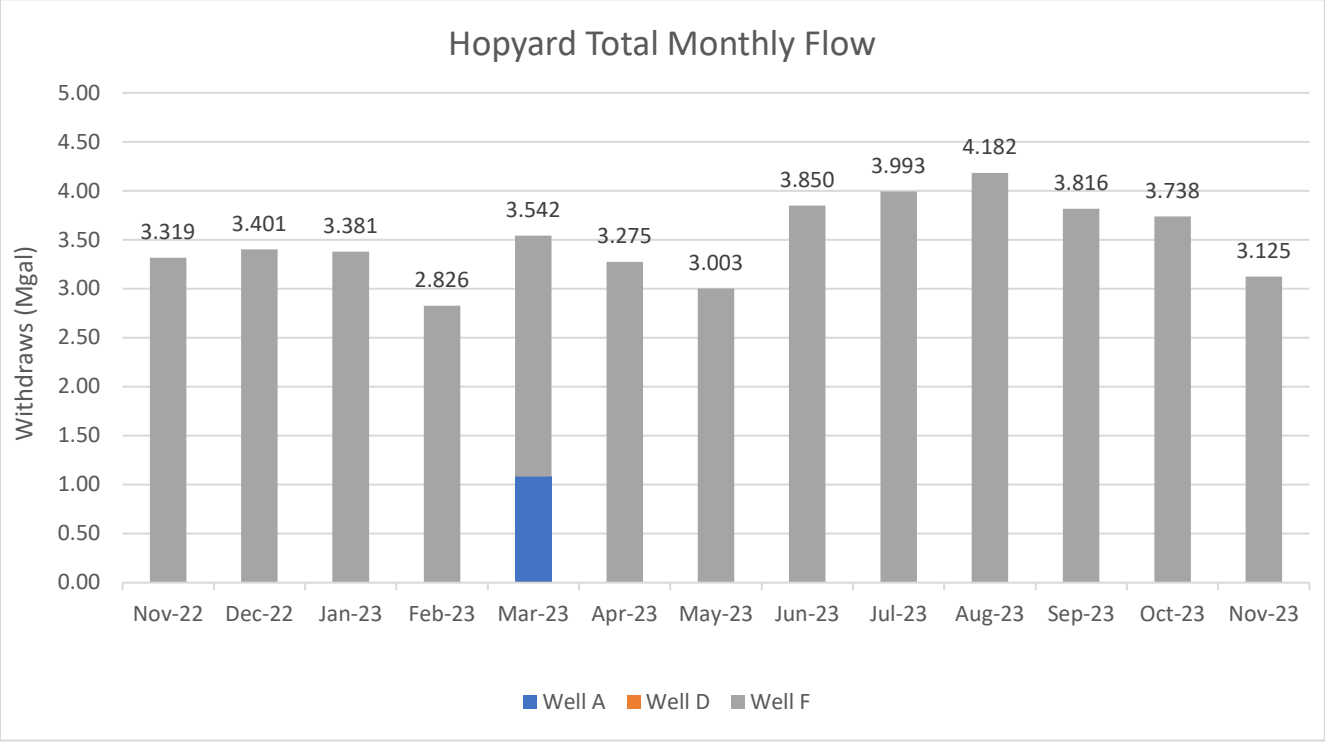
Water Quality:

The Water Treatment facility and distribution system maintained compliance with all required sampling. Routine bacteriological sample results are shown in the table below.

Bacteriological Analysis:

Location Code	Location Address	Date	Result
040	5759 Coakley Dr	10/25/2023	Absent
010	5964 Parsons Ln	10/25/2023	Absent
030	6190 McCarthy Drive	11/22/2023	Absent
06U	5282 Longbow Road	11/22/2023	Absent

System Production:



KGC School Board Office – PWSID 6099296

Water Quality:

The Water Treatment facility and distribution system maintained compliance with all required sampling. Routine bacteriological sample results are shown in the table below.

Bacteriological Analysis:

Location Code	Location Address	Date	Result
020	9100 St. Anthony's Road – Teachers' Bathroom 2nd floor	10/12/2023	Absent
030	9100 St. Anthony's Road – Old Art Room #10	11/27/2023	Absent

System Production:

- Total well yield for October – 66,200 gallons
- Total well yield for November – 18,000 gallons

Ninde's Store – PWSID 6099300

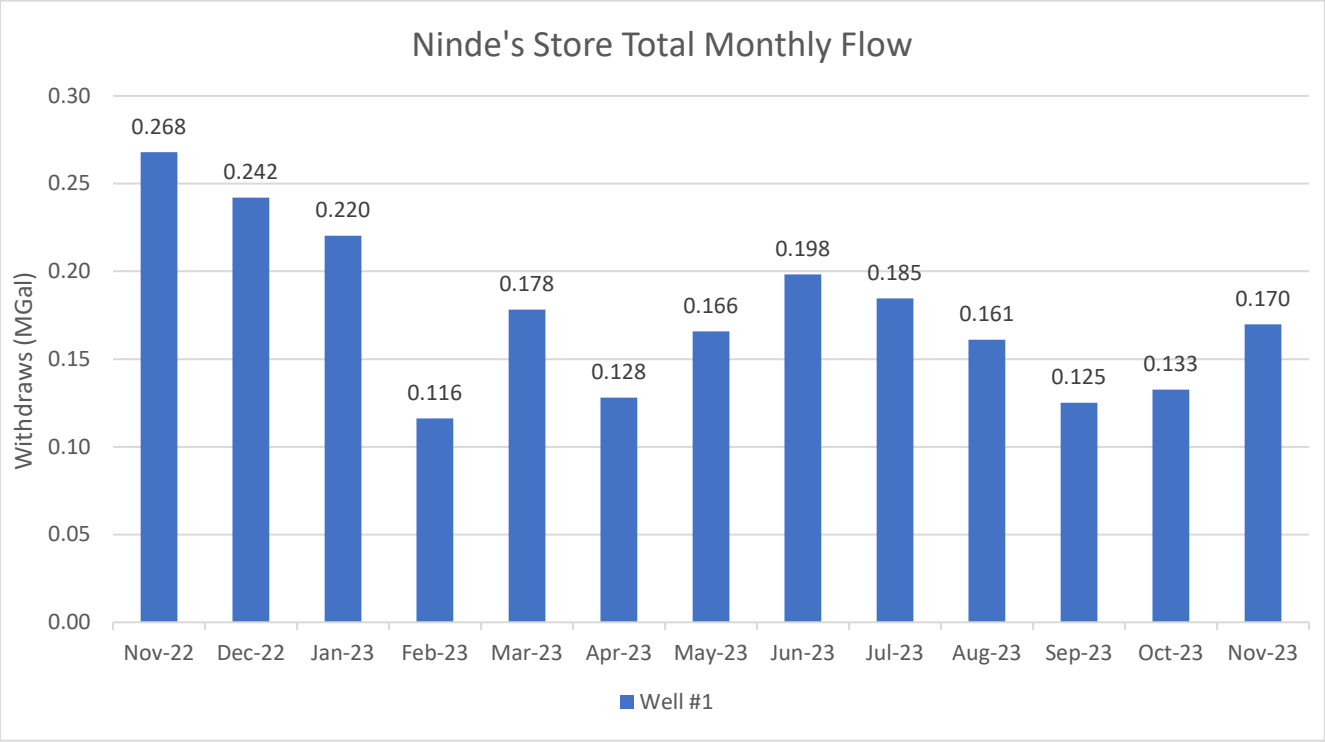
Water Quality:

The Water Treatment facility and distribution system maintained compliance with all required sampling. Routine bacteriological sample results are shown in the table below.

Bacteriological Analysis:

Location Code	Location Address	Date	Result
020	16156 Ridge Road	10/25/2023	Absent
030	16475 Ridge Road	11/27/2023	Absent

System Production:



Oakland Park – PWSID 6099350

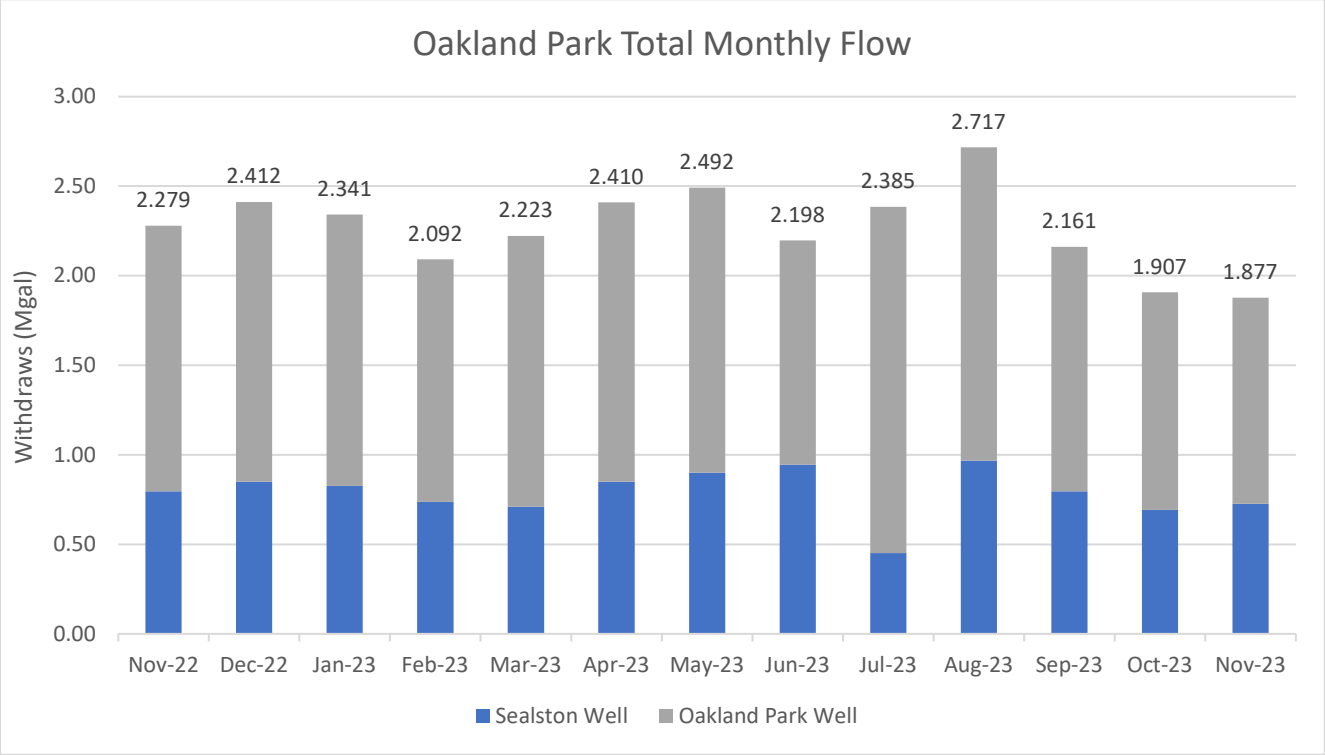
Water Quality:

The Water Treatment facility and distribution system maintained compliance with all required sampling. Routine bacteriological sample results are shown in the table below.

Bacteriological Analysis:

Location Code	Location Address	Date	Result
04	1139 French Court	10/25/2023	Absent
03	9121 Covington Street	10/25/2023	Absent
02	9124 Fletcher's Chapel Road	11/24/2023	Absent
05	10157 Fletcher's Chapel Road	11/27/2023	Absent

System Production:



St. Paul's/Owens – PWSID 6099550

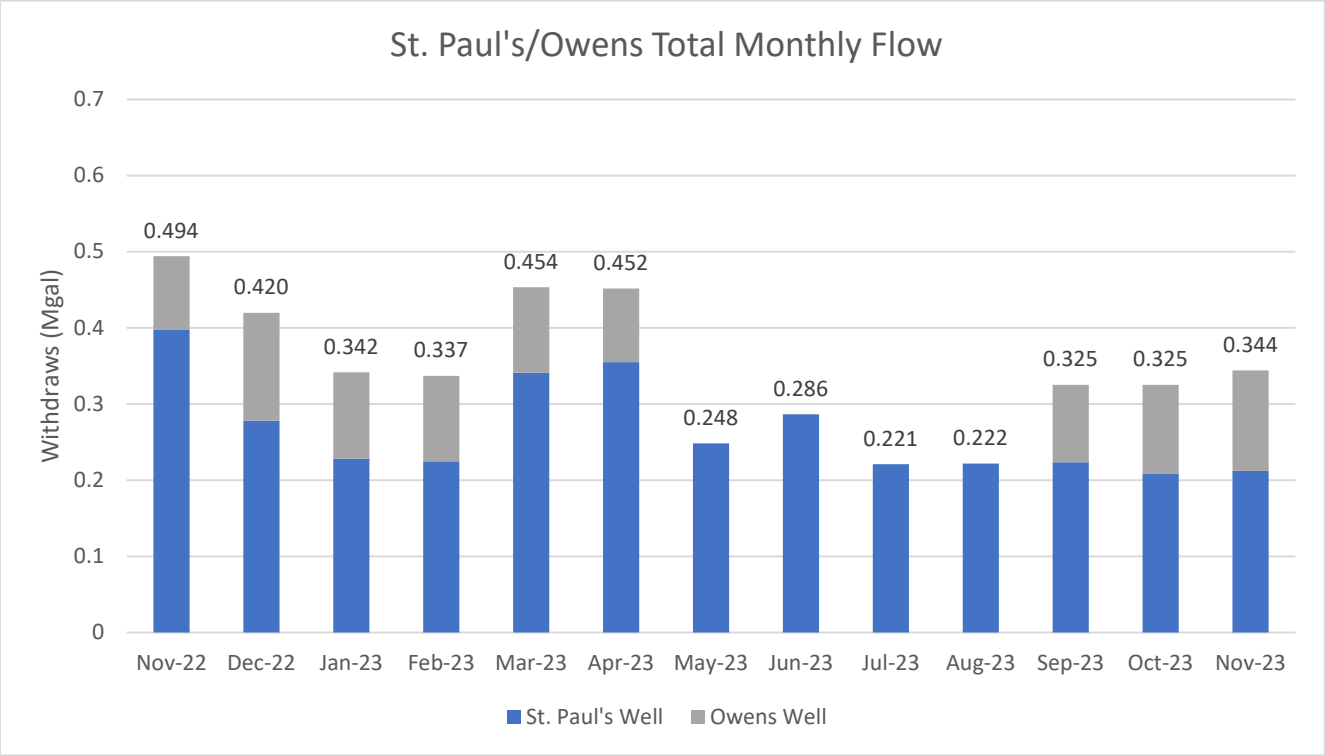
Water Quality:

The Water Treatment facility and distribution system maintained compliance with all required sampling. Routine bacteriological sample results are shown in the table below.

Bacteriological Analysis:

Location Code	Location Address	Date	Result
010	5486 St. Paul's Rd	10/23/2023	Absent
030	5109 Rose Avenue	11/27/2023	Absent

System Production:



WASTEWATER

Overview:

Chemical supplier change has proven to be very difficult due to supplier not having stock ready for King George. IES staff remained diligent in communicating the needs of the County to remain in compliance. Communication is improving, hopefully so will chemical supply stock.

Dahlgren WWTP

Effluent Quality:

The wastewater treatment facility operated well and maintained compliance with all permit-required sampling.

Wastewater Treatment:

The Dahlgren WWTP met the sewer service area's sanitation demand with an average daily discharge of 0.193 MGD in October and 0.206 MGD in November for a total monthly discharge of 5.978 MG in October and 6.185 MG in November.

Operational Notes:

October:

- Performed WET testing as required by permit. All sample results were within range.
- Experienced issues with influent step screen tripping out. KG maintenance replaced bearings and motor to prevent electrical faulting.
- IES staff noticed that the bearings for rotor 2 were loose. KG maintenance performed the repair procedure. This required the rotors to be in the off position for an extended period of time, so IES operations staff stopped flow to allow them to work on the rotor units.
- KG maintenance sent a reuse pump off for repair. In the interim period, IES is utilizing reuse water sparingly due to importance of water use on belt press.

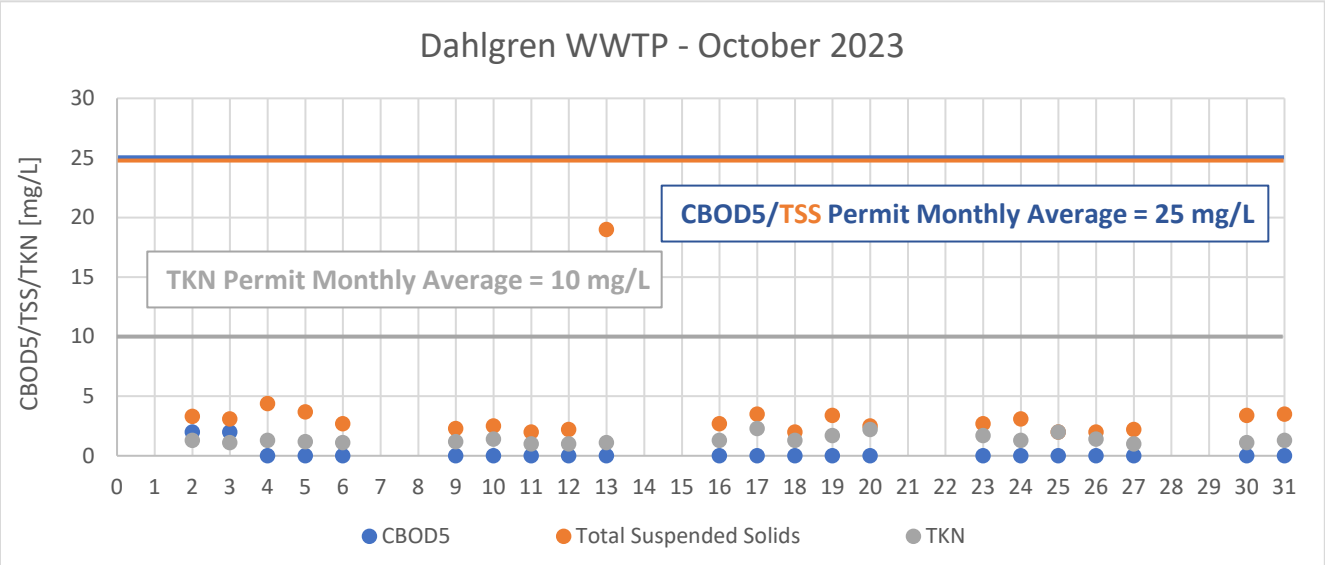
November:

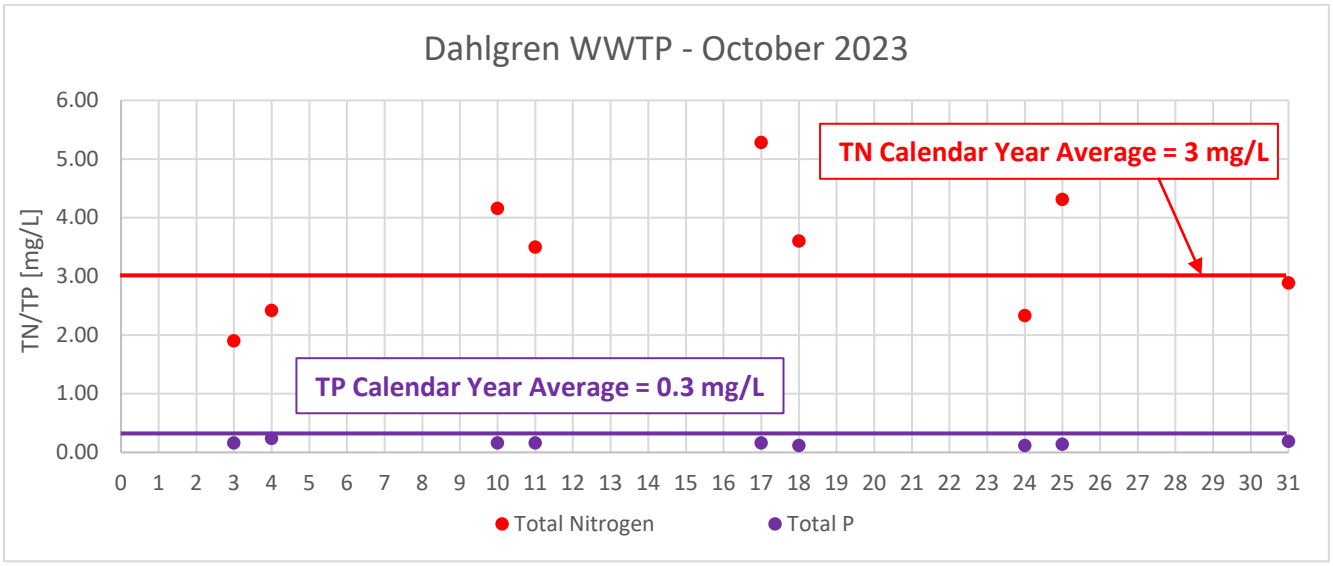
- IES operators took Clarifier #1 out of service to increase efficiency and effectiveness of treatment. Had to put back online temporarily for a rain event and took it back offline after the elevated flow from I&I went away.
- Maintenance installed the mixer that arrived back into the ditch.

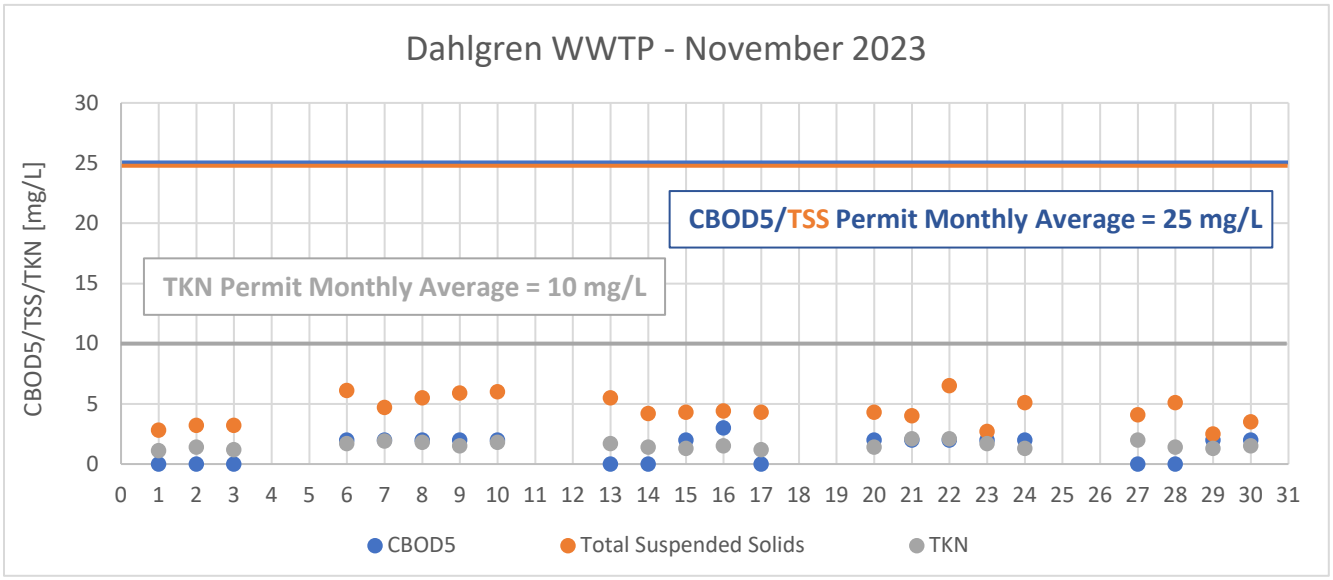
- Reuse water pump started to decline in effective operation, which causes performance issues with sludge press. KG maintenance installed a temporary pump to bring the pressure up; however, the pressure in the system is still not where it should be. KG maintenance is awaiting the arrival of a replacement reuse pump.
- IES modified operations of the digesters to thicken sludge to increase performance and effectiveness of sludge belt press which will also allow for more room in case of any emergencies that may occur.
- Rotor number 2 coupler on oxidation ditch wore out due to bearing plate detaching from the concrete wall, KG maintenance made a temporary fix and replaced the coupler.
- IES requested KG maintenance to fabricate plates to catch rags to ensure that rags and other debris do not make it to downstream pumps and other equipment to prevent damage and clogs.
- IES operators have been pumping out the influent pump vault to help prevent solids build up in the vault stemming from the ineffective pressure of the reuse pump system until the replacement pump has been replaced and effective pressure can be restored.
- KG maintenance pulled all 3 pumps in the influent pump vault to inspect and de-rag the pumps. Each one had rags, and one pump had to be replaced by KG maintenance crew.
- IES staffed the plant around the clock after a rain event that occurred mid-month. Operations ran smoothly and effectively during this period.

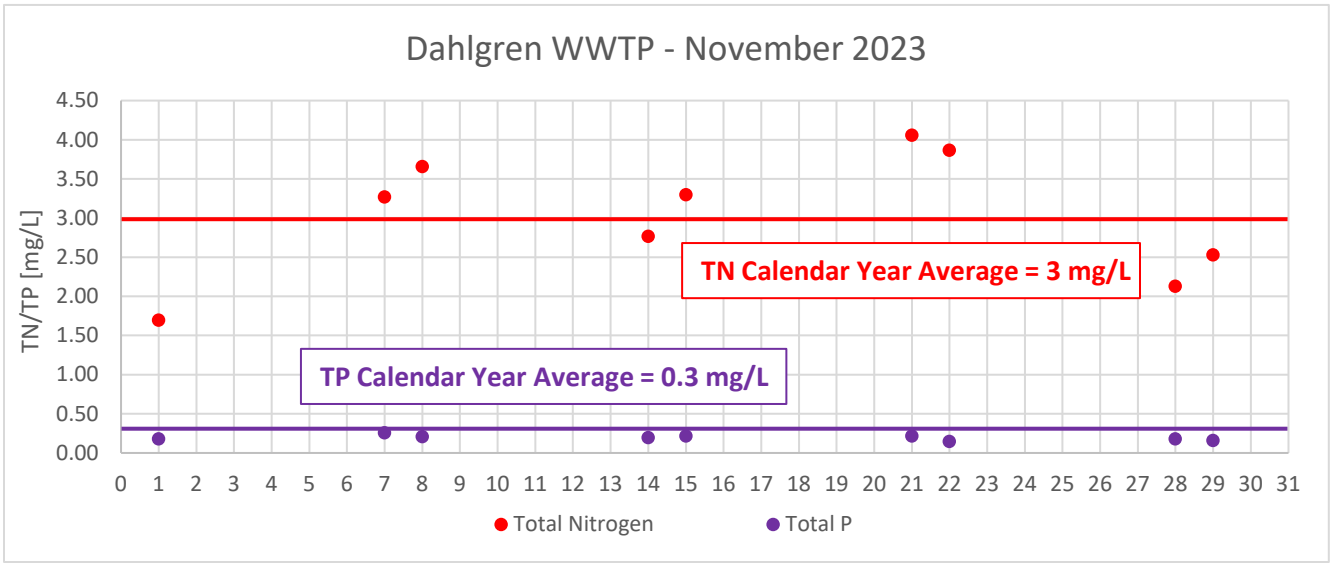
Data Trending:

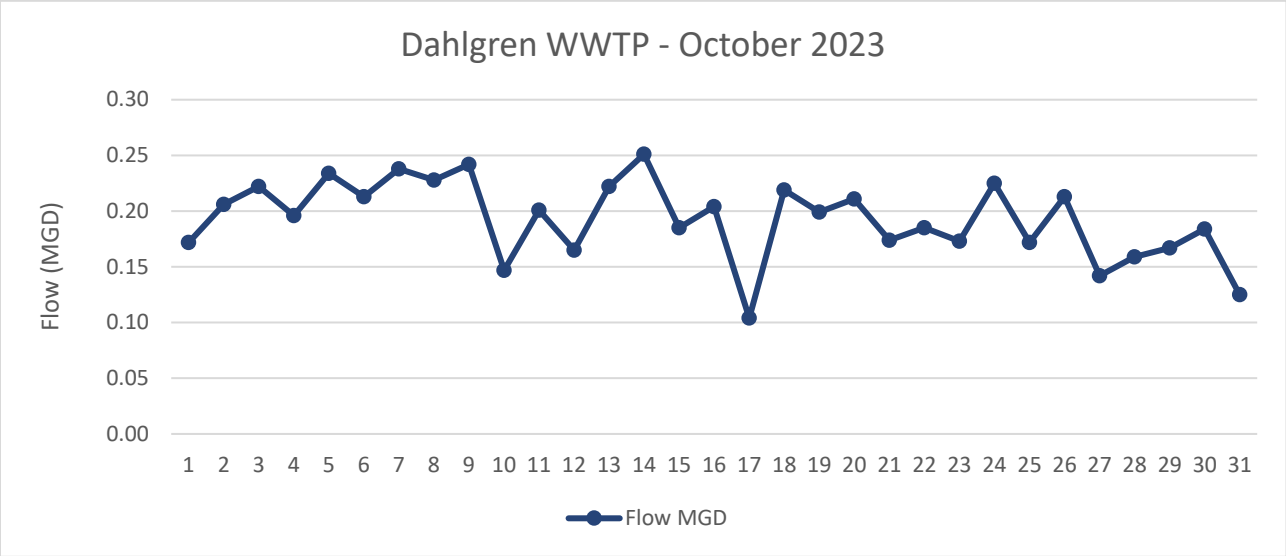
The following charts depict a graphical analysis of effluent quality monitoring and treatment plant daily and total monthly flows.

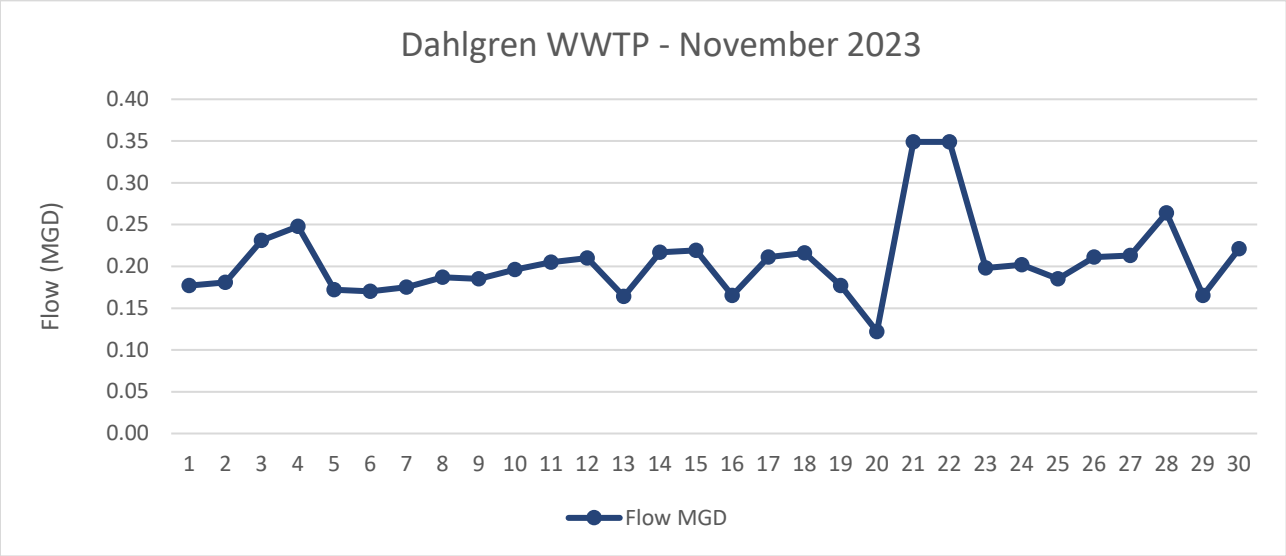


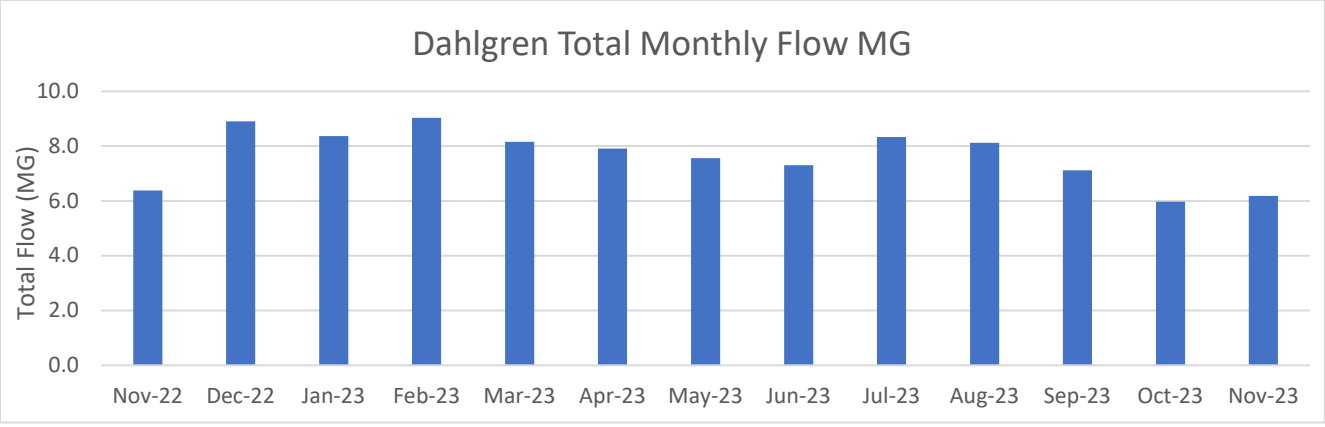

Dahlgren WWTP - October 2023
TN/TP [mg/L]
TN Calendar Year Average = 3 mg/L
TP Calendar Year Average = 0.3 mg/L
Total Nitrogen
Total P


Dahlgren WWTP - November 2023
CBOD5/TSS/TKN [mg/L]
CBOD5/TSS Permit Monthly Average = 25 mg/L
TKN Permit Monthly Average = 10 mg/L
CBOD5
Total Suspended Solids
TKN


Dahlgren WWTP - November 2023
TN/TP [mg/L]
TN Calendar Year Average = 3 mg/L
TP Calendar Year Average = 0.3 mg/L
Total Nitrogen
Total P


Dahlgren WWTP - October 2023
Flow (MGD)
0.30
0.25
0.20
0.15
0.10
0.05
0.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Flow MGD


Dahlgren WWTP - November 2023
Flow (MGD)
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Flow MGD


Dahlgren Total Monthly Flow MG
Total Flow (MG)
10.0
8.0
6.0
4.0
2.0
0.0
Nov-22
Dec-22
Jan-23
Feb-23
Mar-23
Apr-23
May-23
Jun-23
Jul-23
Aug-23
Sep-23
Oct-23
Nov-23

Hopyard Farms WWTP

Effluent Quality:

The wastewater treatment facility operated well and maintained compliance with all permit-required sampling.

Wastewater Treatment:

The Hopyard Farms WWTP met the sewer service area's sanitation demand with an average daily discharge of 0.077 MGD in October and 0.078 MGD in November for a total monthly discharge of 2.395 MG in October and 2.348 MG in November.

Operational Notes:

October:

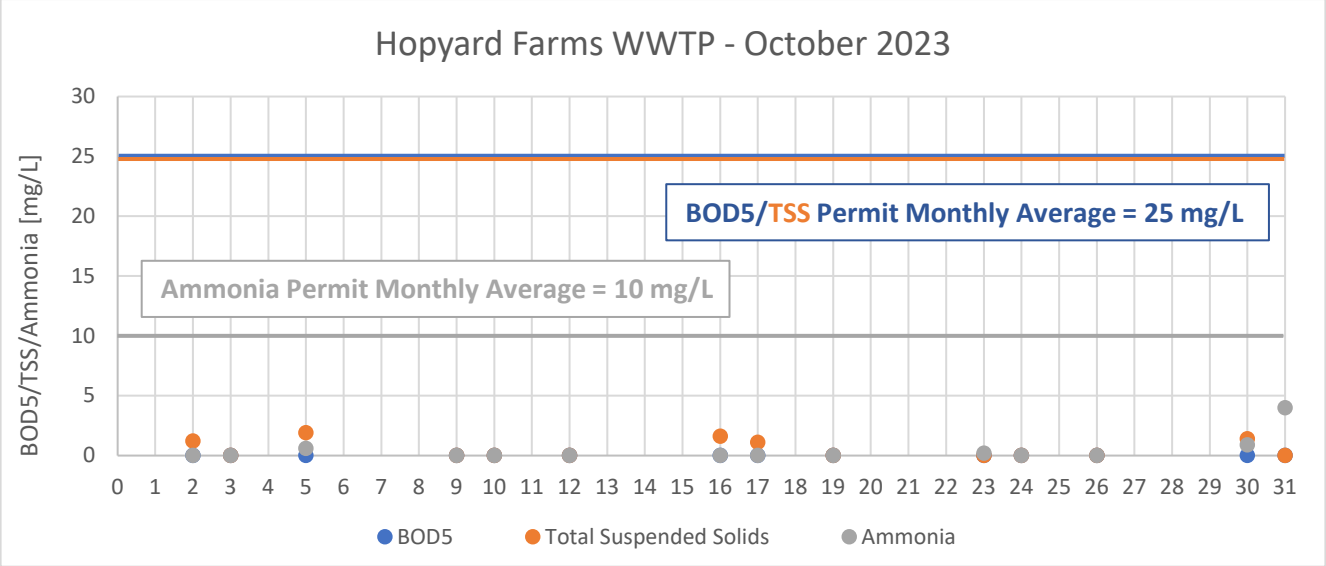
- PLC was upgraded with a new version of software that provides trending for parameters in the past 12 hours that will help dial-in the wastewater plant operations. During the upgrade, equipment was energized and allowed some operational anomalies to occur. This provided challenges for both IES and KG maintenance.
- Air compressor for UV wiping failed; KG maintenance replaced.
- Operations altered due to error caused by Aqua Aerobics causing more blowers to run more frequently for the current time.

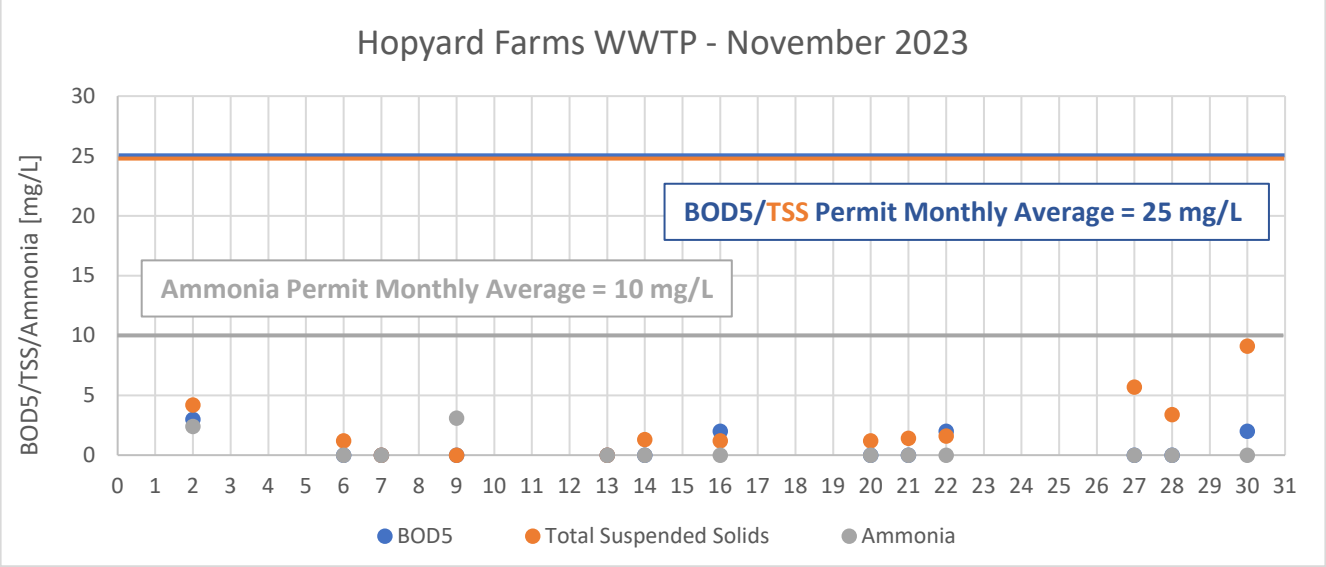
November:

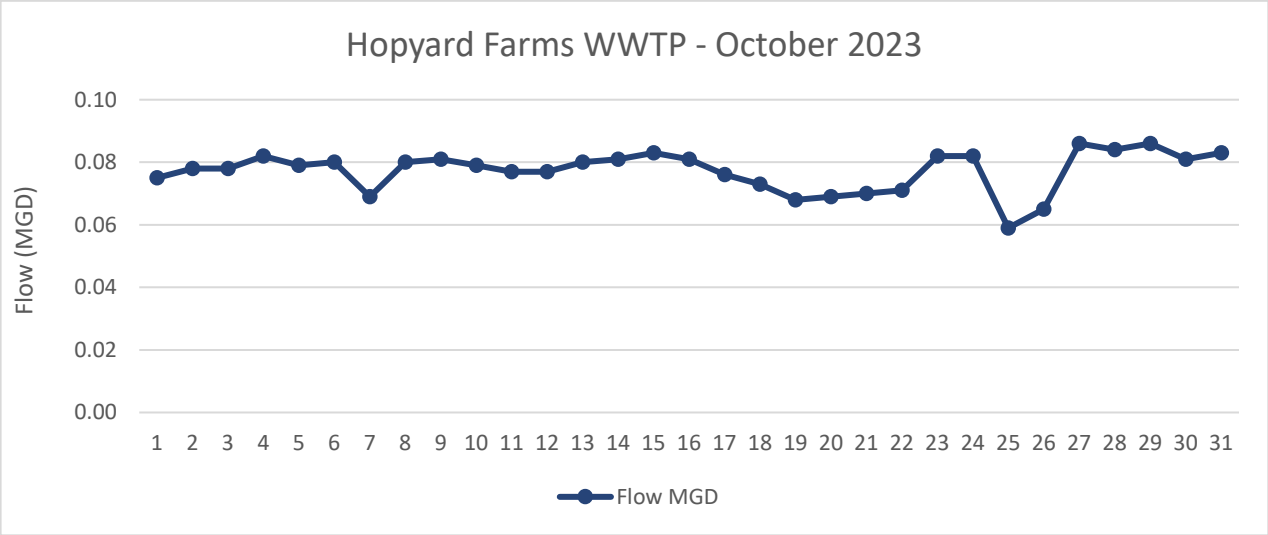
- IES operators and KG maintenance teamed up to pull the mixer out of SBR #1 and KG maintenance replaced the motor on the mixer; however, the mixer still is not operational at this time. KG maintenance ordered a new power supply cable to remedy this problem.
- IES operators and KG maintenance teamed up to pull a diffuser rack from SBR#2. IES operators replaced all diffuser sleeves and clamps which made a huge positive impact on aeration in this tank.
- Solids entered the post EQ tank, which was caused by subtle changes made to the program after PLC upgrade, there were no loss of solids to the receiving streams due to swift action by IES operators.
- Drained, rinsed, and squeegeed post EQ tank.

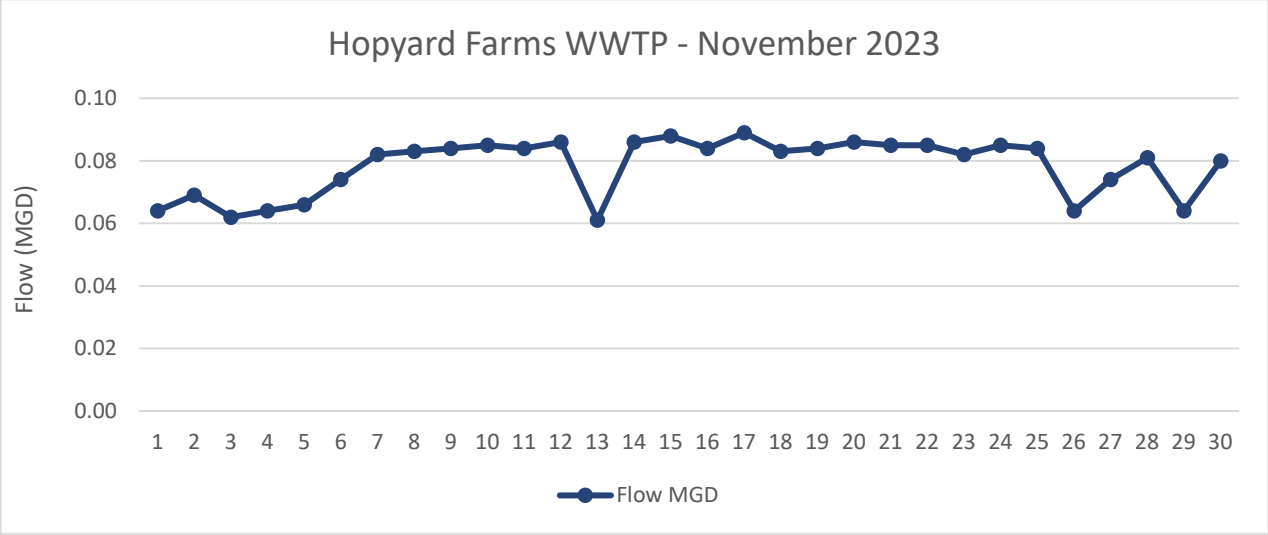
Data Trending:

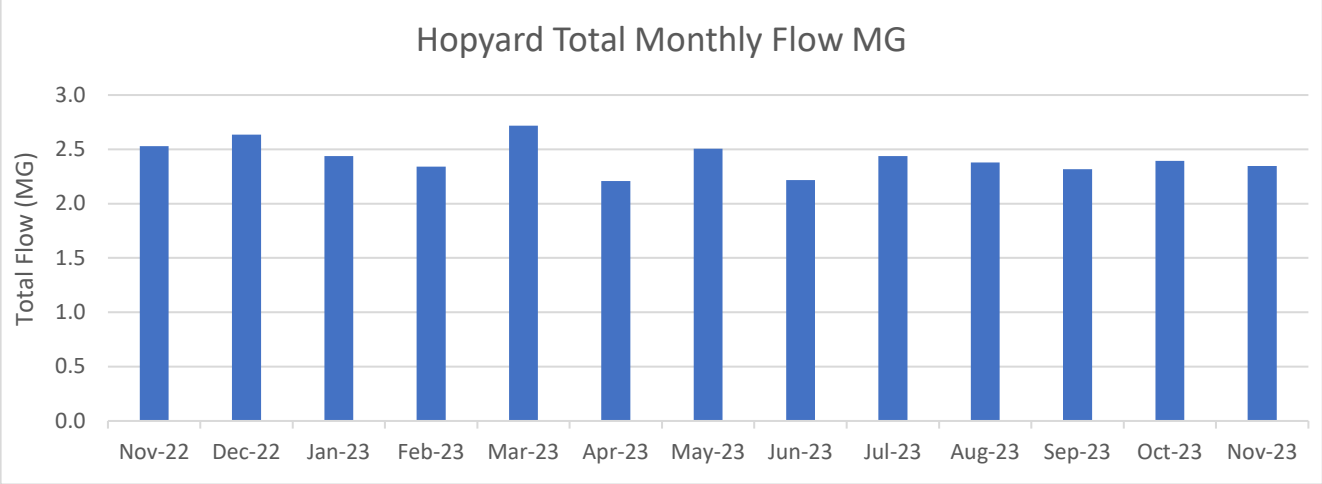
The following charts depict a graphical analysis of effluent quality monitoring and treatment plant daily and total monthly flows.






Hopyard Farms WWTP - October 2023
Flow (MGD)
0.10
0.08
0.06
0.04
0.02
0.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Flow MGD


Hopyard Farms WWTP - November 2023
Flow (MGD)
0.10
0.08
0.06
0.04
0.02
0.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Flow MGD


Hopyard Total Monthly Flow MG
Total Flow (MG)
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Nov-22 Dec-22 Jan-23 Feb-23 Mar-23 Apr-23 May-23 Jun-23 Jul-23 Aug-23 Sep-23 Oct-23 Nov-23

Purkins Corner WWTP

Effluent Quality:

The wastewater treatment facility operated well and maintained compliance with all permit-required sampling.

Wastewater Treatment:

The Purkins Corner WWTP met the sewer service area's sanitation demand with an average daily discharge of 0.064 MGD in October and 0.075 MGD in November for a total monthly discharge of 1.974 MG in October and 2.249 MG in November.

Operational Notes:

October:

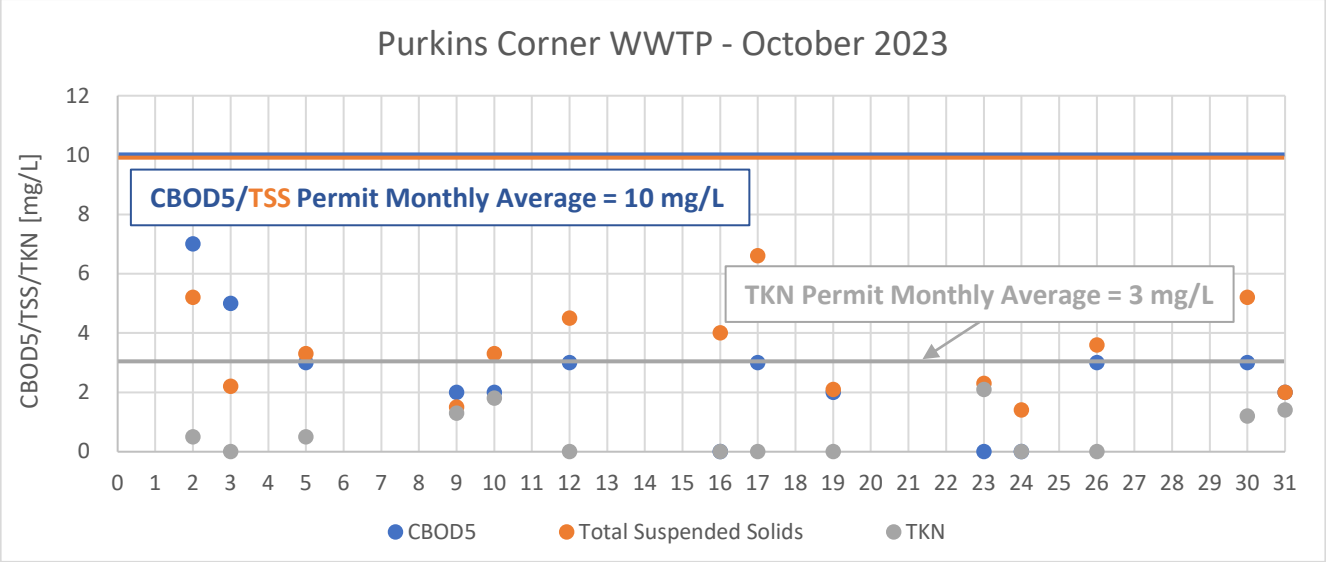
- Overflow caused by nitrate recycle pump line splitting apart through the night and was discovered by IES staff next morning. Area was limed and cleaned as per DEQ requirements. KG maintenance repaired and replaced piping and other hardware to help prevent future events from occurring. Incident was reported to DEQ and County Administration.
- IES and KG maintenance met to discuss alarms and levels of tanks to receive proper notification and to respond to high-level situations. KG maintenance to order proper equipment.
- Disc filter waste/backwash motor repaired/replaced by KG maintenance.
- KG maintenance replaced level transducer in surge tank to help effective operation of surge tank. Old transducer was unresponsive.

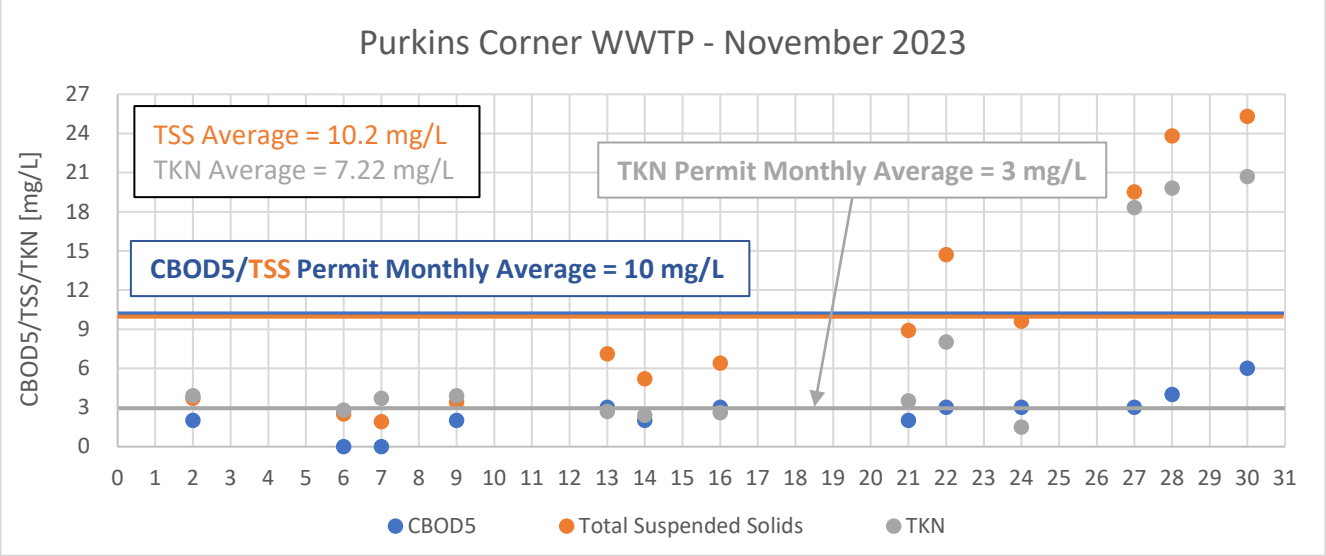
November:

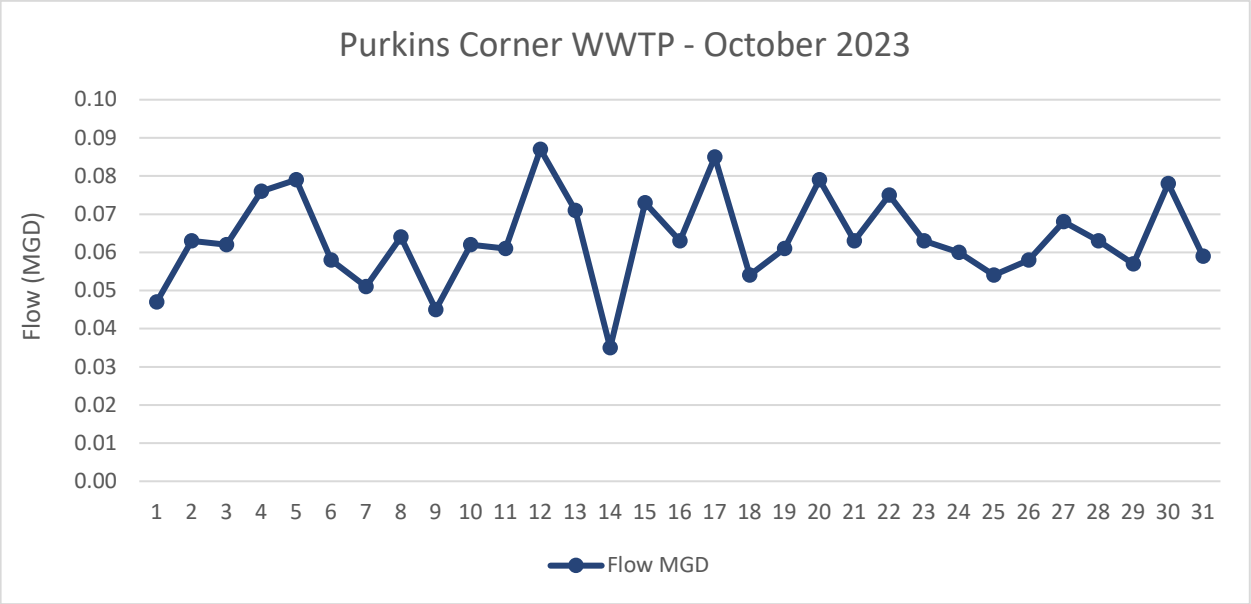
- On the 29th and 30th of November, Purkins experienced higher than normal volumes of influent flow from the collections systems, IES operators had to pump and haul to keep up with incoming flow to prevent an overflow.
- Purkins experiencing higher than average flows for holidays and IES operators have been increasing flow throughput through both basins to keep the EQ and surge tanks at proper levels.
- IES operators noticed an air line had ruptured on digester. KG maintenance made a repair to ensure proper air distribution through digester.
- IES operators have been draining and rinsing disc filter.
- DEQ site visit to follow up on overflow caused by nitrate recycle line busting through the night a few weeks prior.
- Had an elevated TSS due to elevated flow caused by inadequate pump performance which has since been corrected by KG maintenance.

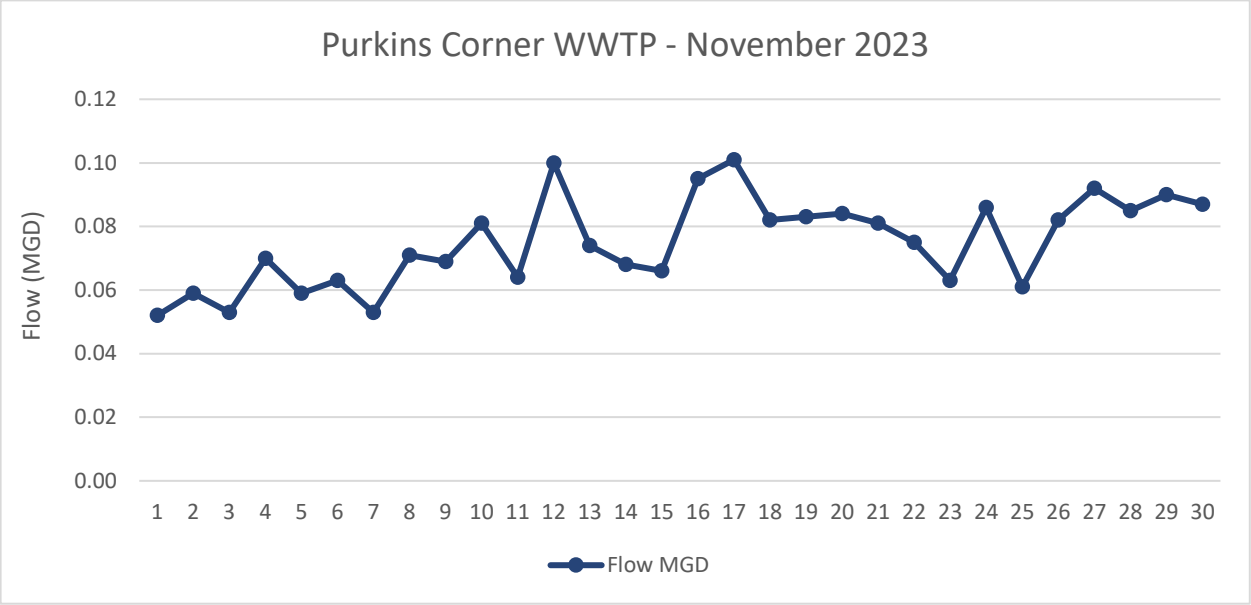
Data Trending:

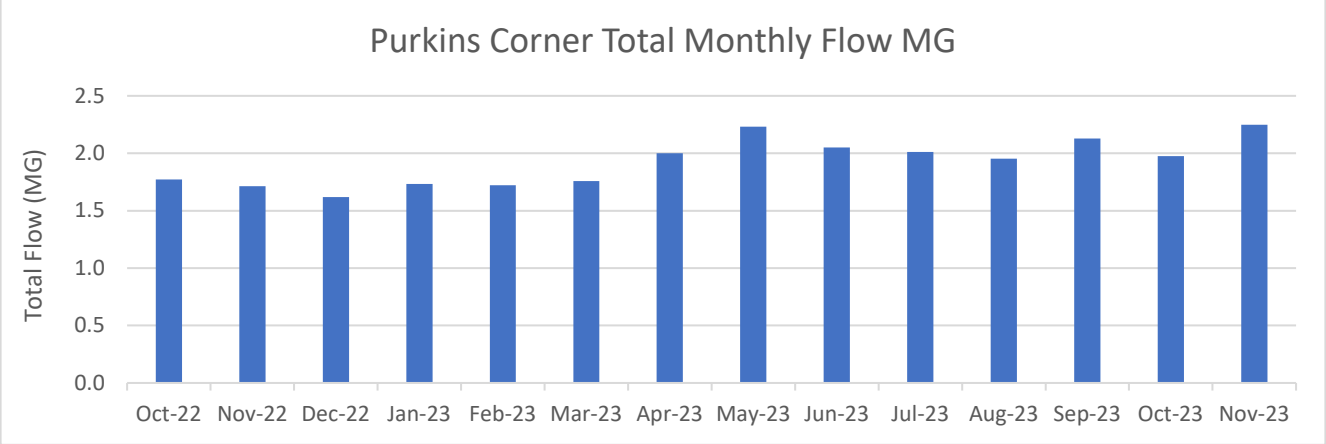
The following charts depict a graphical analysis of effluent quality monitoring and treatment plant daily and total monthly flows.






Purkins Corner WWTP - October 2023
Flow (MGD)
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Flow MGD


Purkins Corner WWTP - November 2023
Flow (MGD)
0.12
0.10
0.08
0.06
0.04
0.02
0.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Flow MGD


Purkins Corner Total Monthly Flow MG
Total Flow (MG)
2.5
2.0
1.5
1.0
0.5
0.0
Oct-22 Nov-22 Dec-22 Jan-23 Feb-23 Mar-23 Apr-23 May-23 Jun-23 Jul-23 Aug-23 Sep-23 Oct-23 Nov-23

Oakland Park WWTP

Effluent Quality:

The wastewater treatment facility operated well and maintained compliance with all permit-required sampling.

Wastewater Treatment:

The Oakland Park WWTP met the sewer service area's sanitation demand with an average daily discharge of 0.040 MGD in both October and November for a total monthly discharge of 1.253 MG in October and 1.189 MG in November.

Operational Notes:

October:

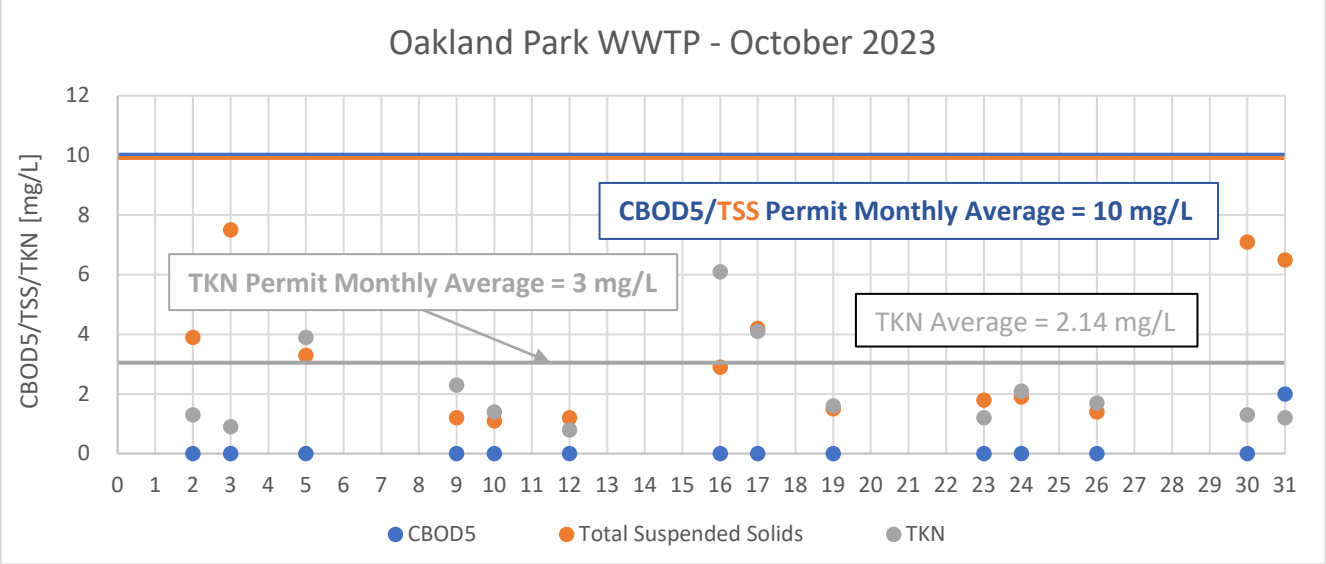
- KG maintenance ordered new impeller for Plant B EQ pump. This new pump should help achieve a more consistent flow rate to Plant B.
- Mixer contactor was discovered to be burnt out completely. Maintenance wired up for temporary operation, after a few days the mixer stopped working. No evidence of physical damage. Warranty investigation has been started.
- Directing more Influent flow to "B" plant while "A" plant is without optimum operation due to no mixer in operation.
- IES and KG maintenance met up to discuss alarms and levels of tanks to receive proper notification to respond to high level situations. KG maintenance to order proper equipment.

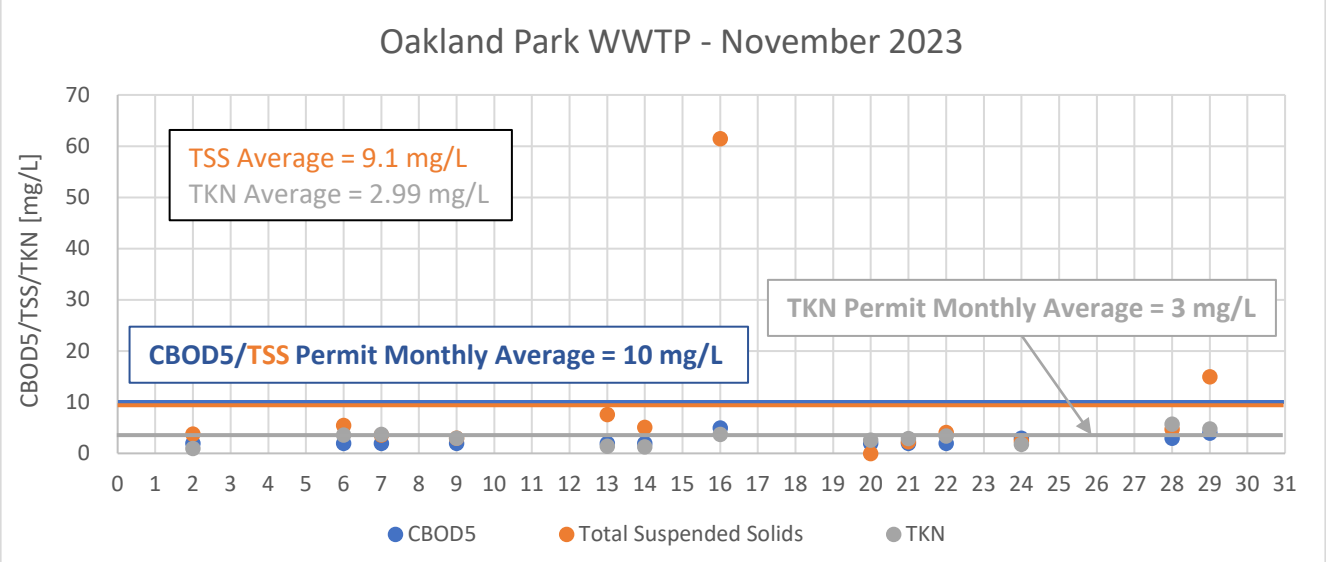
November:

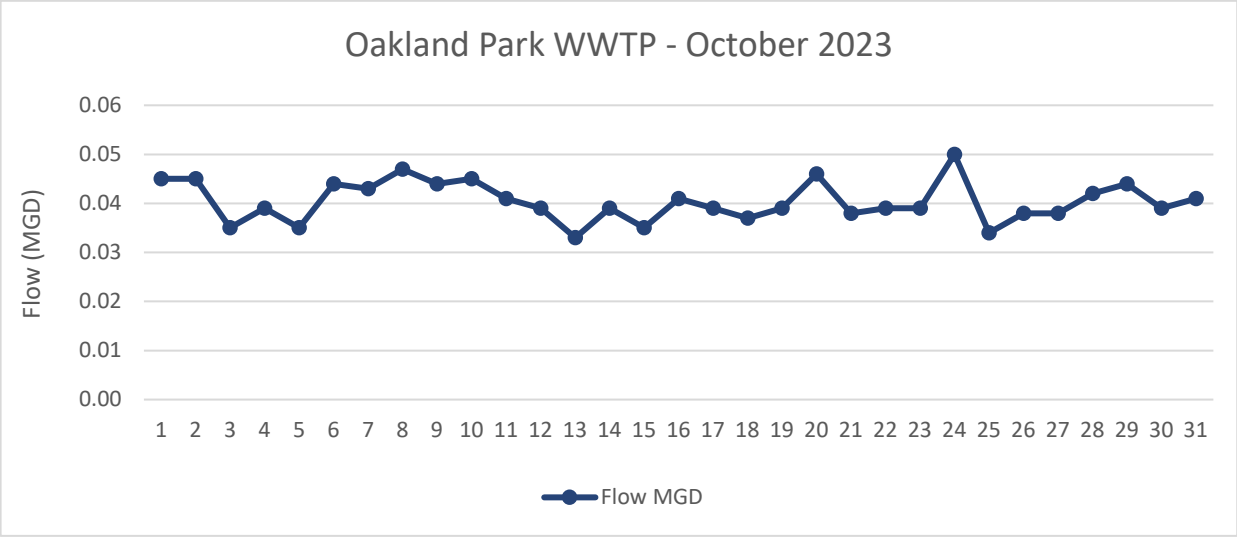
- EQ pump for Plant B lost prime due to impeller wear, IES notified KG maintenance and they ordered impellers. In the meantime, IES changed normal operating depth of EQ basin to help assist pump performance.
- Alum feed line clogged; IES operators ran new line to allow for the effective feed of chemical to properly precipitate phosphorous and settle solids.
- Had a high TKN recorded which was caused by inadequate pump performance which has since been corrected by KG maintenance.

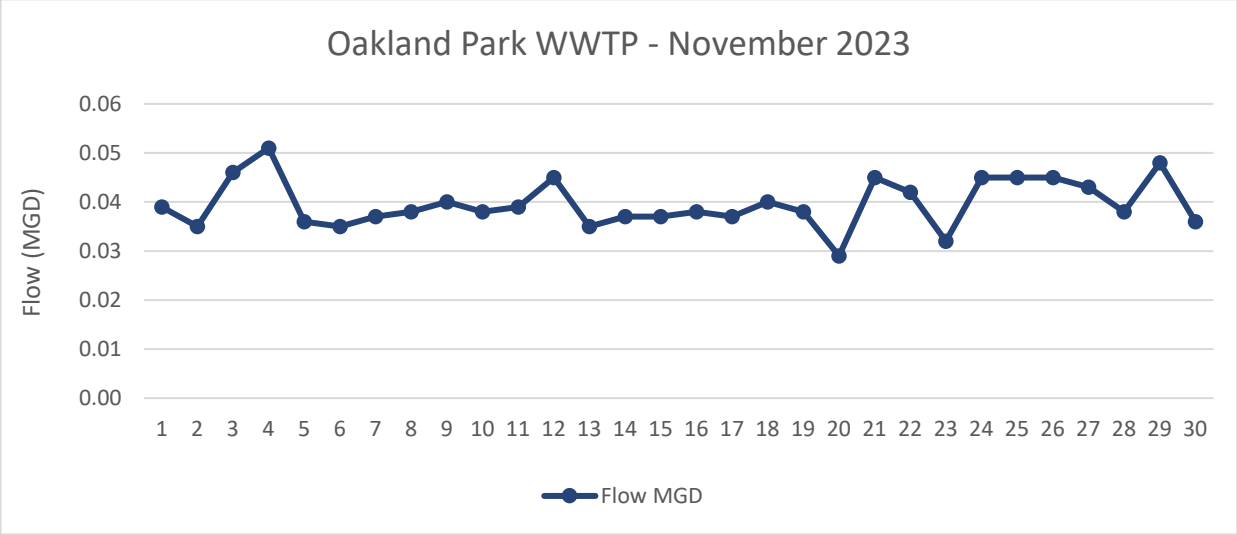
Data Trending:

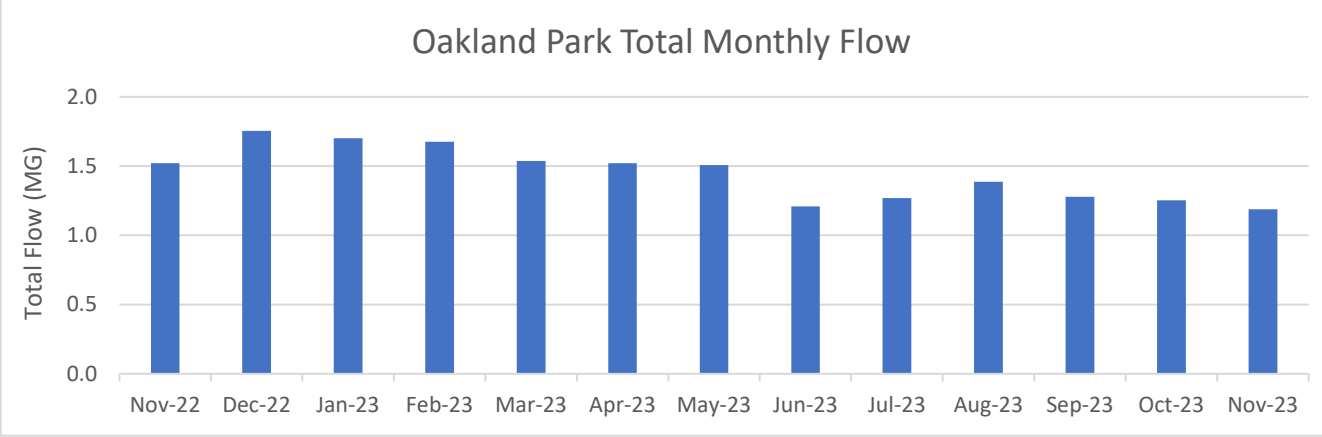
The following charts depict a graphical analysis of effluent quality monitoring and treatment plant daily and total monthly flows.






Oakland Park WWTP - October 2023
Flow (MGD)
0.06
0.05
0.04
0.03
0.02
0.01
0.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Flow MGD


Oakland Park WWTP - November 2023
Flow (MGD)
0.06
0.05
0.04
0.03
0.02
0.01
0.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Flow MGD


Oakland Park Total Monthly Flow
Total Flow (MG)
2.0
1.5
1.0
0.5
0.0
Nov-22 Dec-22 Jan-23 Feb-23 Mar-23 Apr-23 May-23 Jun-23 Jul-23 Aug-23 Sep-23 Oct-23 Nov-23

Fairview Beach WWTP

Effluent Quality:

The wastewater treatment facility operated well and maintained compliance with all permit-required sampling.

Wastewater Treatment:

The Fairview Beach WWTP met the sewer service area's sanitation demand with an average daily discharge of 0.083 MGD in October and 0.082 MGD in November for a total monthly discharge of 1.834 MG in October and 1.812 MG in November.

Operational Notes:

October:

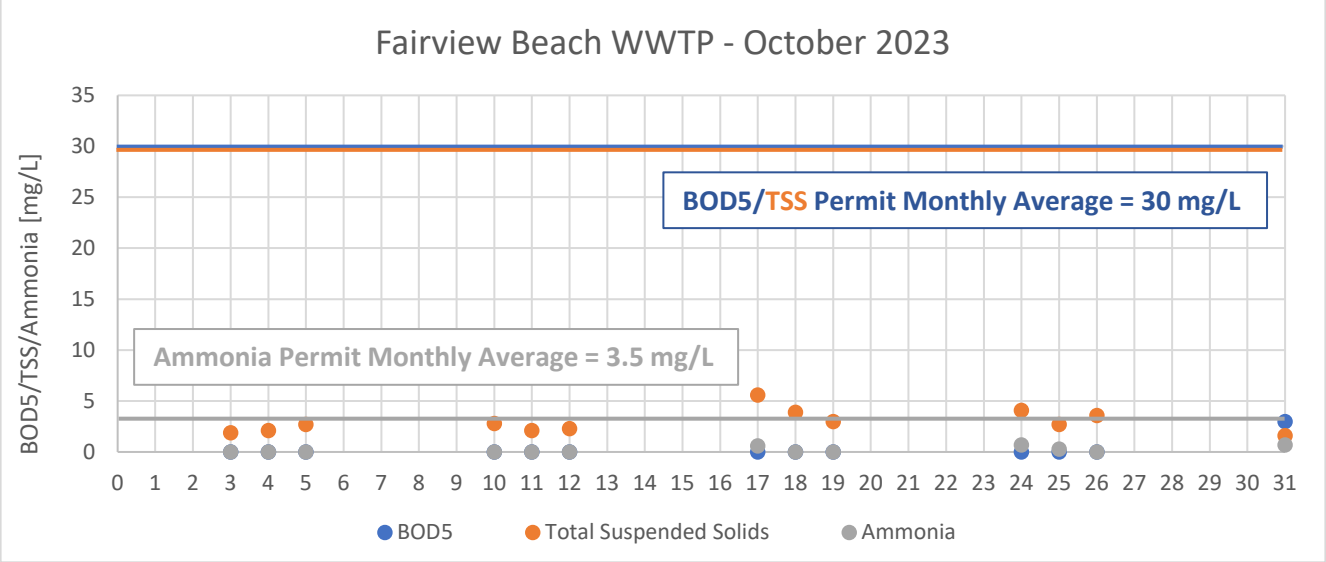
- KG maintenance disassembled decant valve for SBR 2 to check for wear and tear; unfortunately, the valve was not able to be repaired. KG maintenance ordered a new valve and will install it when it arrives.
- IES staff set flow rate by using hand-valves to allow more effective disinfection of effluent flow through UV channel.
- Power blip caused automation to fail. KG maintenance noticed the UPS was not connected correctly and acquired a cord to hook back up which should keep system from losing program in the future.

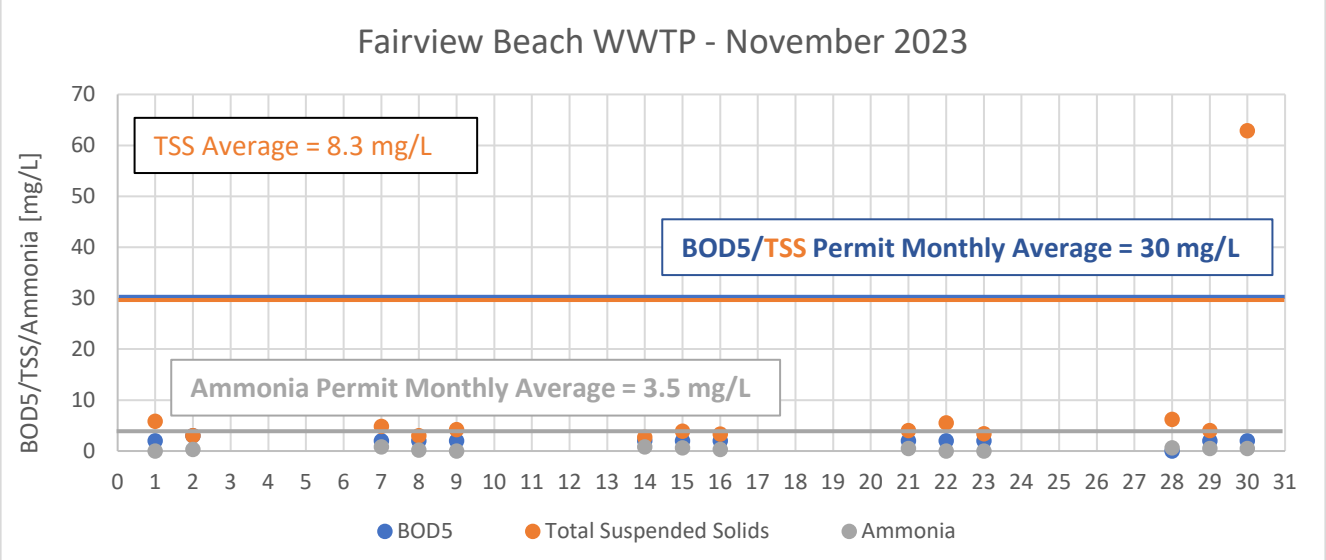
November:

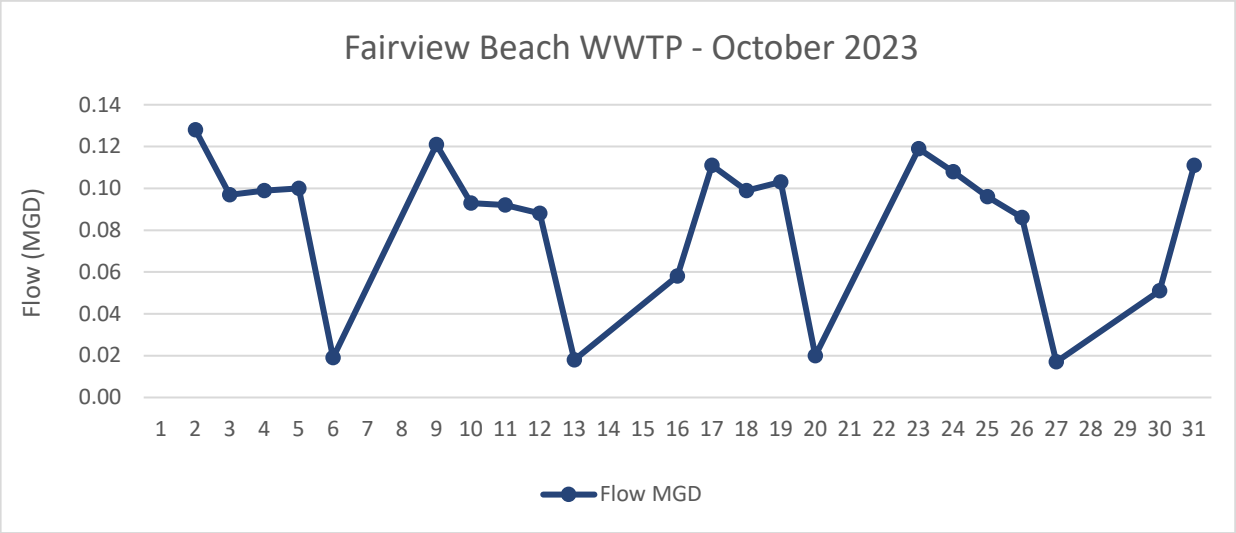
- IES operators diagnosed clogged Alum dosing line. KG maintenance cleared out the entire length of the Alum feed line with jetter machine. IES ran a temporary chemical feed line until maintenance could correct the issue.
- Drain lines throughout the building were clogged and had to be dug up to be fixed correctly. IES ensured the plant site pump station was operating correctly.
- Check valves had jammed causing them to malfunction which caused the UV trough to drain. IES operators notified KG maintenance and inspected and cleared out debris to restore effective operation of check valves allowing the UV channel to stay full between discharges.

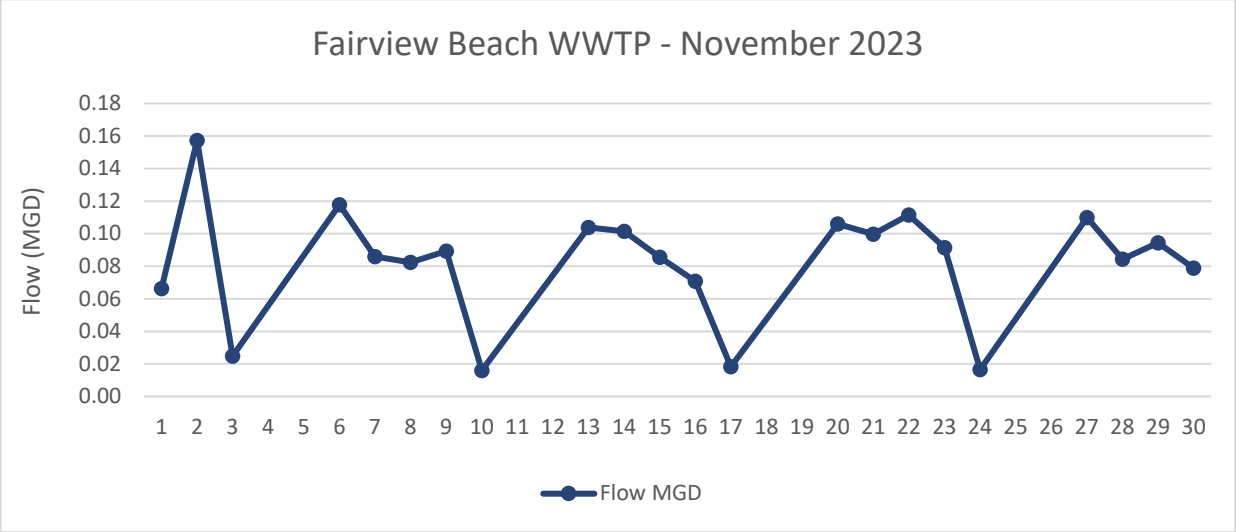
Data Trending:

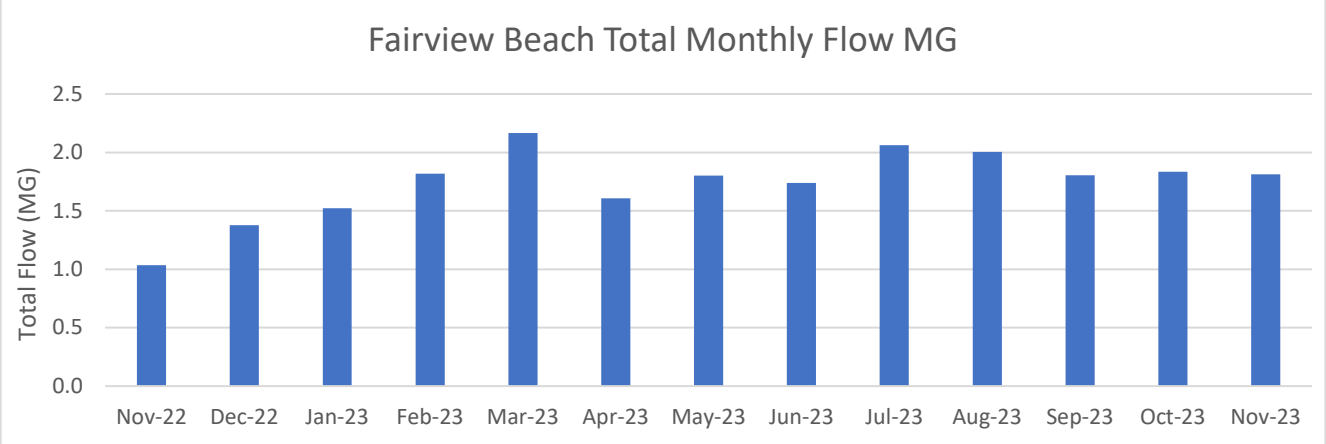
The following charts depict a graphical analysis of effluent quality monitoring and treatment plant daily and total monthly flows.






Fairview Beach WWTP - October 2023
Flow (MGD)
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
Flow MGD


Fairview Beach WWTP - November 2023
Flow (MGD)
0.18
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Flow MGD


Fairview Beach Total Monthly Flow MG
Total Flow (MG)
2.5
2.0
1.5
1.0
0.5
0.0
Nov-22
Dec-22
Jan-23
Feb-23
Mar-23
Apr-23
May-23
Jun-23
Jul-23
Aug-23
Sep-23
Oct-23
Nov-23