PUMP STATION 196

Oct-21		PS 196	
		METER READING	24 HOUR FLOW
FRI	1	79249460	0.116320
SAT	2	79365780	0.118040
SUN	3	79483820	0.132210
MON	4	79616030	0.121550
TUE	5	79737580	0.119520
WED	6	79857100	0.117410
THU	7	79974510	0.114550
FRI	8	80089060	0.120040
SAT	9	80209100	0.123360
SUN	10	80332460	0.131400
MON	11	80463860	0.128770
TUE	12	80592630	0.120100
WED	13	80712730	0.121610
THU	14	80834340	0.120160
FRI	15	80954500	0.121880
SAT	16	81076380	0.128000
SUN	17	81204380	0.128400
MON	18	81332780	0.123610
TUE	19	81456390	0.117660
WED	20	81574050	0.158330
THU	21	81732380	0.115070
FRI	22	81847450	0.111750
SAT	23	81959200	0.125180
SUN	24	82084380	0.127690
MON	25	82212070	0.137330
TUE	26	82349400	0.122330
WED	27	82471730	0.118030
THU	28	82589760	0.117310
FRI	29	82707070	0.139510
SAT	30	82846580	0.127110
SUN	31	82973690	0.131840
		83105530	
TOTAL			3.856070
COUNT			31
AVERAGE			0.124389
MINIMUM			0.111750
MAXIMUM			0.158330

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

PERMITTEE NAME/ADDRESS (include Facility Name/Location if different):

NAME	Howard Seymour Water Reclamation Plant
ADDRESS	116 American Legion Road, Lewes, DE 19958 US
FACILITY	Howard Seymour Water Reclamation Plant
LOCATION	116 American Legion Road, Lewes, DE 19958 US

PERMIT NUMBER	DE0021512
DISCHARGE NUMBER	001
MONITORING PERIOD	FROM 2021 09 01 TO 2021 09 30
REPORT DESIGNATOR	A
DATA ENTRY COMPLETE	10/28/2021
REPORT SUBMITTED BY	richardplack
STATUS OF SUBMISSION	Submitted for Signature

#	PARAMETER		NDI	QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX.	FREQUENCY OF ANALYSIS	SAMPLE TYPE
				AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
1/1	Flow	SAMPLE MEASUREMENT		0.68	0.863	Mil Gal/Day				--	0	99/99	RCOTOT
	Gross Effluent (50050)	PERMIT REQUIREMENT	-	No Limit | Monitoring Reqd	No Limit | Monitoring Reqd	Mil Gal/Day	No Monitoring Required	No Monitoring Required	No Monitoring Required	--	--	99/99	RCOTOT
1/2	Dissolved oxygen (DO)	SAMPLE MEASUREMENT				--	5.81		9.05	mg/l	0	99/99	Imersion
	Gross Effluent (00300)	PERMIT REQUIREMENT	-	No Monitoring Required	No Monitoring Required	--	No Limit | Monitoring Reqd	No Monitoring Required	No Limit | Monitoring Reqd	mg/l	--	99/99	Imersion
1/3	pH	SAMPLE MEASUREMENT				--	7.3		7.6	Std pH Units	0	01/01	Grab
	Gross Effluent (00400)	PERMIT REQUIREMENT	-	No Monitoring Required	No Monitoring Required	--	6	No Monitoring Required	9	Std pH Units	--	01/01	Grab
1/4	Enterococcus	SAMPLE MEASUREMENT				--		<1	1	CFU/100 ML	0	01/07	Grab
	Gross Effluent (31639)	PERMIT REQUIREMENT	-	No Monitoring Required	No Monitoring Required	--	No Monitoring Required	10	104	CFU/100 ML	--	01/07	Grab
1/5	BOD5	SAMPLE MEASUREMENT		<13	<16	lbs/Day		<2.4	<2.4	mg/l	0	01/07	Composite 24
	Gross Effluent (00310)	PERMIT REQUIREMENT	-	188	288	lbs/Day	No Monitoring Required	15	23	mg/l	--	01/07	Composite 24
1/6	BOD5	SAMPLE MEASUREMENT				--		203	203	mg/l	0	01/30	Composite 24
	Raw Sewage (00310)	PERMIT REQUIREMENT	-	No Monitoring Required	No Monitoring Required	--	No Monitoring Required	No Limit | Monitoring Reqd	No Limit | Monitoring Reqd	mg/l	--	01/30	Composite 24
1/7	TSS	SAMPLE MEASUREMENT		<3	<6	lbs/Day		<0.6	<1	mg/l	0	01/07	Composite 24
	Gross Effluent (00530)	PERMIT REQUIREMENT	-	188	288	lbs/Day	No Monitoring Required	15	23	mg/l	--	01/07	Composite 24

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

Richard Plack Project manager

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHER AND EVALUATE THE INFORMATION SUBMITTED. BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGE THE SYSTEM, OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS.

[ATTACH DIGITAL SIGNATURE RECEIPT FROM CROMERR]

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE 3022601794

DATE 10 / 28 / 2021 (YEAR / MO / DAY)

NDI (No Data Indicator) Reasons: 8 - No Sample (Other); 9 - No Sample (Monitoring Not Required this Monitoring Period); B - Not Detected; C - No Sample (No Discharge)

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

PERMITTEE NAME/ADDRESS (include Facility Name/Location if different):

NAME Howard Seymour Water Reclamation Plant

ADDRESS 116 American Legion Road, Lewes, DE 19958 US

FACILITY Howard Seymour Water Reclamation Plant

LOCATION 116 American Legion Road, Lewes, DE 19958 US

PERMIT NUMBER DE0021512

DISCHARGE NUMBER 001

MONITORING PERIOD FROM 2021 09 01 TO 2021 09 30

REPORT DESIGNATOR A

DATA ENTRY COMPLETE 10/28/2021

REPORT SUBMITTED BY richardplack

STATUS OF SUBMISSION Submitted for Signature

#	PARAMETER		NDI	QUANTITY OR LOADING			QUALITY OR CONCENTRATION				NO. EX.	FREQUENCY OF ANALYSIS	SAMPLE TYPE
				AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
2/1	TSS	SAMPLE MEASUREMENT				--		96	96	mg/l	0	01/30	Composite 24
	Raw Sewage (00530)	PERMIT REQUIREMENT	-	No Monitoring Required	No Monitoring Required	--	No Monitoring Required	No Limit | Monitoring Reqd	No Limit | Monitoring Reqd	mg/l	--	01/30	Composite 24
2/2	Total Nitrogen	SAMPLE MEASUREMENT		25.1	25.1	lbs/Day		3.87	3.87	mg/l	0	01/30	Composite 24
	Gross Effluent (00600)	PERMIT REQUIREMENT	-	100	No Limit | Monitoring Reqd	lbs/Day	No Monitoring Required	8	No Limit | Monitoring Reqd	mg/l	--	01/30	Composite 24
2/3	Phosphorus, Total	SAMPLE MEASUREMENT		0.3	0.3	lbs/Day		0.05	0.05	mg/l	0	01/30	Composite 24
	Gross Effluent (00665)	PERMIT REQUIREMENT	-	25	No Limit | Monitoring Reqd	lbs/Day	No Monitoring Required	2	No Limit | Monitoring Reqd	mg/l	--	01/30	Composite 24

COMMENTS AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHER AND EVALUATE THE INFORMATION SUBMITTED. BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGE THE SYSTEM, OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS.

[ATTACH DIGITAL SIGNATURE RECEIPT FROM CROMERR]

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE

DATE YEAR MO DAY

NDI (No Data Indicator) Reasons: 8 - No Sample (Other); 9 - No Sample (Monitoring Not Required this Monitoring Period); B - Not Detected; C - No Sample (No Discharge)

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

Name: City of Lewes Board of Public Works
Address: 1047 Franklin Ave. P.O. Box 518
Lewes, De 19958

Facility: Howard Seymour Water Reclamation Facility
Location: 116 American Legion Road
Lewes, Sussex County, Delaware

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

DE 0021512	001
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM / TO	21	10	01		21	10	31

COMBINED TREATED PROCESS
(SUBR M5)
F- FINAL
MAJOR
MUNICIPAL, NO PRE-TREATMENT
*** NO DISCHARGE [ ] ***

Form Approved.
OMB No.
Approval expires

NOTE: Read instructions before completing this form

PARAMETER		(3 Card Only) QUANTITY OR LOADING			(4 Card Only) QUALITY OR CONCENTRATION				NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
		AVERAGE	MAXIMUM	UNITS	MINIMUM	AVERAGE	MAXIMUM	UNITS			
FLOW, IN CONDUIT OR THRU TREATMENT PLANT 50050 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	0.713	0.971	MGD	******	******	******	****	N/A	07/07	Received/ Totlz
	PERMIT REQUIREMENT	REPORT DAILY AVG	REPORT DAILY MX		******	******	******	****		1/DAY	Received/ Totlz
OXYGEN, DISSOLVED (DO) 00300 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	******	******	****	4.74	******	8.85	MG/L	N/A	07/07	Mem/ Probe
	PERMIT REQUIREMENT	******	******		REPORT DAILY MN	******	REPORT DAILY MX			1/DAY	Mem/ Probe
PH 00400 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	******	******	****	7.1	******	7.6	SU	0	07/07	Grab
	PERMIT REQUIREMENT	******	******		6.0 DAILY MN	******	9.0 DAILY MX			1/DAY	Grab
ENTEROCOCCUS GENERAL 31639 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	******	******	****	******	<1	<1	col/ 100 mL	0	01/07	Grab
	PERMIT REQUIREMENT	******	******		******	10 MO GEOMEAN	104 DAILY MX			1/WEEK	Grab
BOD, 5-DAY (20 DEG. C) 00310 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	<14	<15	LBS/DAY	******	<2.4	<2.4	MG/L	0	01/07	Composite
	PERMIT REQUIREMENT	188 DAILY AVG	288 DAILY MX		******	15.0 DAILY AVG	23.0 DAILY MX			1/WEEK	Composite
BOD, 5-DAY (20 DEG. C) 00310 1 0 0 INFLUENT GROSS VALUE	SAMPLE MEASUREMENT	******	******	****	******	272.0	272.0	MG/L	N/A	01/30	Composite
	PERMIT REQUIREMENT	******	******		******	REPORT DAILY AVG	REPORT DAILY MX			1/MONTH	Composite
SOLIDS, TOTAL SUSPENDED 00530 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	<5	10	LBS/DAY	******	<0.8	1.6	MG/L	0	01/07	Composite
	PERMIT REQUIREMENT	188 DAILY AVG	288 DAILY MX		******	15.0 DAILY AVG	23.0 DAILY MX			1/WEEK	Composite

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER		TELEPHONE		DATE		
~~Darrin Gordon~~ Austin Calaman General Manager LBPW	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN: AND BASED ON MY INQUIRY OF THOSE INDIVIDULES IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATIOIN, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. SEE 18 U.S.C. SS1001 AND 33 U.S.C. SS 1319. (PENALTIES UNDER THESE STATUTES MAY INCLUDE FINES UP TO $10,000 AND OR MAXIMUM IMPRISONMENT OF BETWEEN 6 MONTHS AND 5 YEARS.)	302	260 1794	24	11	28
TYPED OR PRINTED	SIGNATURE OF PRICIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MONTH	DAY

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

Name: City of Lewes Board of Public Works
Address: 1047 Franklin Ave. P.O. Box 518
Lewes, De 19958

Facility: Howard Seymour Water Reclamation Facility
Location: 116 American Legion Road
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NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

DE 0021512	001
PERMIT NUMBER	DISCHARGE NUMBER

MONITORING PERIOD	YEAR	MO	DAY		YEAR	MO	DAY
FROM	21	10	01	TO	21	10	31

COMBINED TREATED PROCESS
(SUBR M5)
F- FINAL
MAJOR
MUNICIPAL, NO PRE-TREATMENT

Form Approved.
OMB No.
Approval expires

*** NO DISCHARGE [ ] ***

NOTE: Read instructions before completing this form

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING AVERAGE	MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION MINIMUM	AVERAGE	MAXIMUM	UNITS	NO. EX	FREQUENCY OF ANALYSIS	SAMPLE TYPE
SOLIDS, TOTAL SUSPENDED 00530 1 0 0 INFLUENT GROSS VALUE	SAMPLE MEASUREMENT	******	******	****	******	254.0	254.0	MG/L	N/A	01/30	Composite
	PERMIT REQUIREMENT	******	******		******	REPORT DAILY AVG	REPORT DAILY MX			1/MONTH	Composite
NITROGEN, TOTAL (AS N) 00600 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	17.8	17.8	LBS/DAY	******	3.16	3.16	MG/L	0	01/30	Composite
	PERMIT REQUIREMENT	100.0 DAILY AVG	REPORT DAILY MX		******	8.0 DAILY AVG	REPORT DAILY MX			1/MONTH	Composite
PHOSPHORUS, TOTAL (AS P) 00665 1 0 0 EFFLUENT GROSS VALUE	SAMPLE MEASUREMENT	<0.3	<0.3	LBS/DAY	******	<0.05	<0.05	MG/L	0	01/30	Composite
	PERMIT REQUIREMENT	25.0 DAILY AVG	REPORT DAILY MX		******	2.0 DAILY AVG	REPORT DAILY MX			1/MONTH	Composite
BOD, 5-DAY PERCENT REMOVAL 81010 K 0 0 PERCENT REMOVAL	SAMPLE MEASUREMENT	******	******	****	******	99.1	******	%	0	01/30	Calc
	PERMIT REQUIREMENT	******	******		******	92.5 MINIMUM	******			1/MONTH	Calc
SOLIDS, SUSPENDED PERCENT REMOVAL 81011 K 0 0 PERCENT REMOVAL	SAMPLE MEASUREMENT	******	******	****	******	99.7	******	%	0	01/30	Calc
	PERMIT REQUIREMENT	******	******		******	92.5 MINIMUM	******			1/MONTH	Calc

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER			TELEPHONE		DATE		
~~Darrin Gordon~~ Austin Calaman General Manager LBPW	I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN: AND BASED ON MY INQUIRY OF THOSE INDIVIDULES IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION, I BELIEVE THE SUBMITTED INFORMATION IS TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATIOIN, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT. SEE 18 U.S.C. SS1001 AND 33 U.S.C. SS 1319. (PENALTIES UNDER THESE STATUTES MAY INCLUDE FINES UP TO $10,000 AND OR MAXIMUM IMPRISONMENT OF BETWEEN 6 MONTHS AND 5 YEARS.)		302	2617944	21	11	28
TYPED OR PRINTED		SIGNATURE OF PRICIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT	AREA CODE	NUMBER	YEAR	MONTH	DAY

COMMENT AND EXPANATION OF ANY VIOLATIONS (Reference all attachments here)

LEWES BPW WWTP Biweekly InSight Report

Date: 11/3/2021

From: Erin Horocholyn - Suez Water Technologies & Solutions
To: Austin Calaman BPW, Inframark
cc: Matt Stapleford - Suez Water Technologies & Solutions

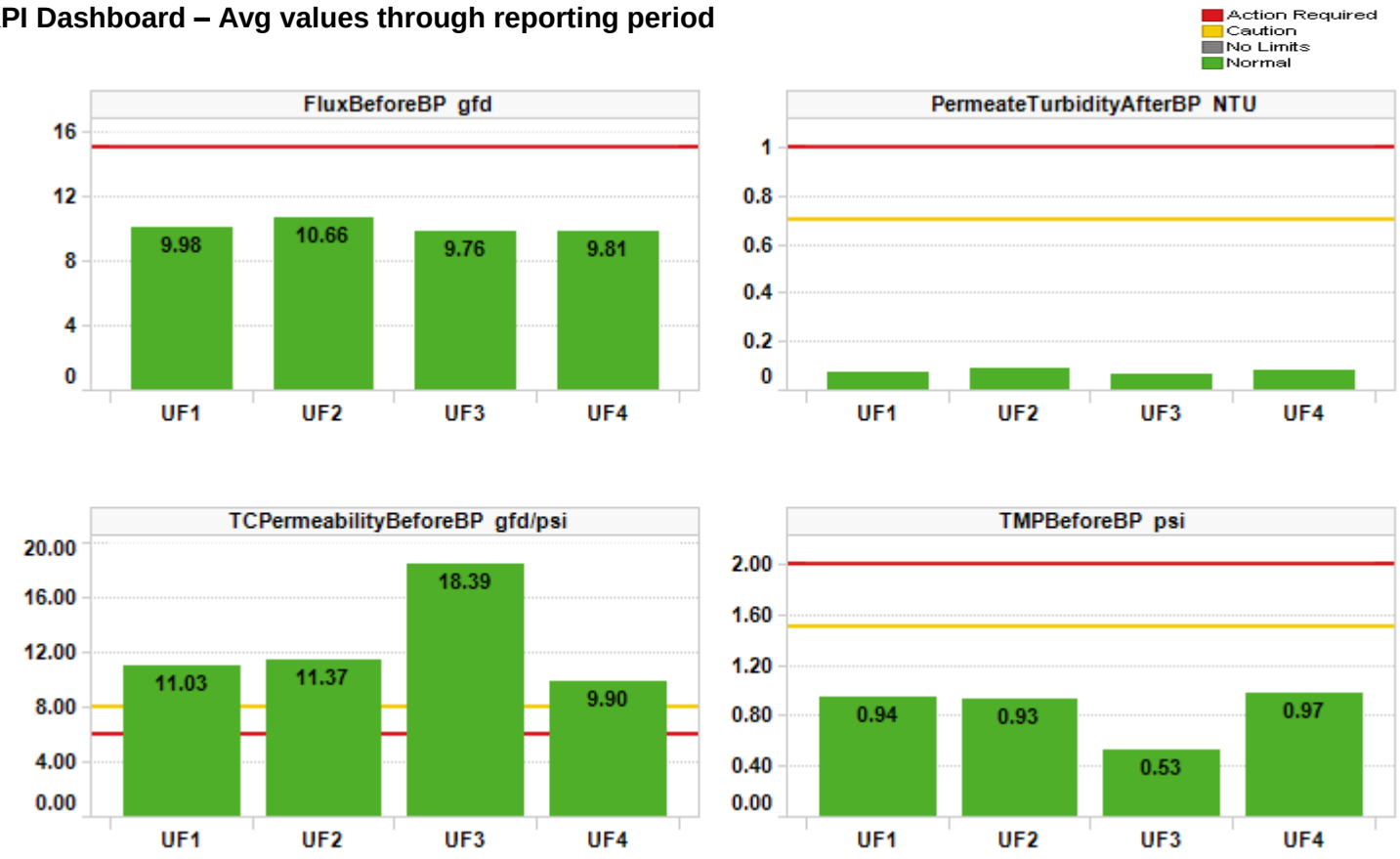
System Equipment

4 × ZW trains, each train consists of 4 - 500D cassettes, 120 modules x 370 sq. ft. per train (surface area 44,400 sq. ft. per train)
Replacement membranes installed Q1 2020 on trains UF3 and UF4

Cleaning Strategy

Recovery cleaning - 2 NaOCl @ 2000 ppm dose/1000 ppm soak per year, 1 Citric acid @ 2000 ppm per year
Maintenance cleaning - 1 NaOCl per week @ 200 ppm, 1 Citric acid per week @ 2000 ppm

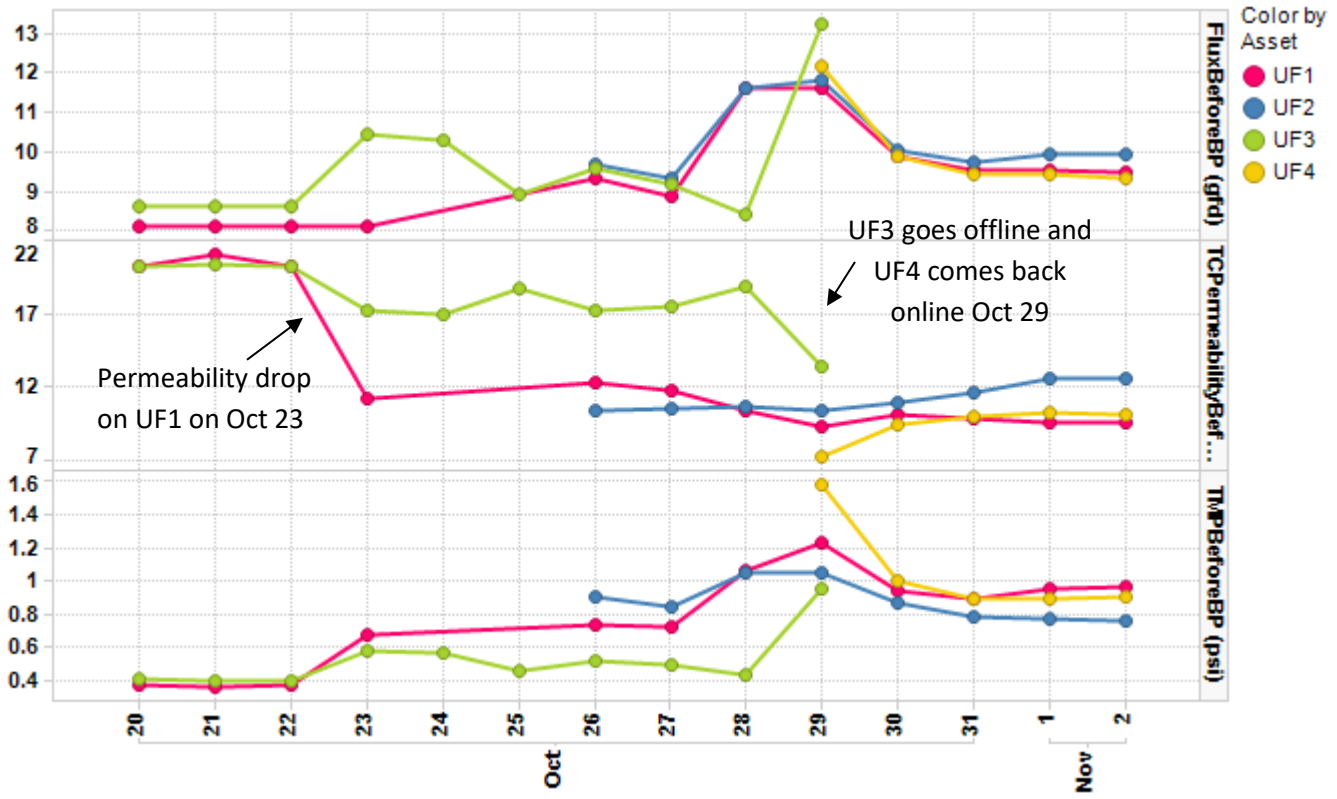
KPI Dashboard – Avg values through reporting period



Plant Summary

All trains had good KPI levels for permeability, TMP, and turbidity. All online trains are <1.0 psi for TMP and >8.0 gfd/psi for permeability which is excellent. UF1's performance did decrease in t his report compared to last, averaging 11 versus 23 gfd/psi for permeability and with average TMP at 0.94 instead of 0.35 psi. This increase happened on Oct 23 without a correlation to an increase in flux on that train, which may indicate fouling.

- Daily permeate production averaged 0.82 MGD. Permeate temperature averaged 72°F (-4°F). All online trains are in Backpulse with constant LEAP Hi aeration
- UF4 came back online by Oct 30, when UF3 went offline. UF1 was offline from Oct 23 - 26
- TMP BBP was excellent, averaging <1.0 psi on all trains. Averages ranged 0.53 – 0.97 psi, rising during periods of high flux. Averages are higher in this report, especially for UF1 which increased from 0.35 psi to 0.94 psi
- TC permeability BBP averages were excellent and >8 gfd/psi. UF1 averaged 11 gfd/psi (down from 23 gfd/psi). UF2 and UF4 averaged 11 and 10 gfd respectively, while UF3 trended higher at 18 gfd/psi

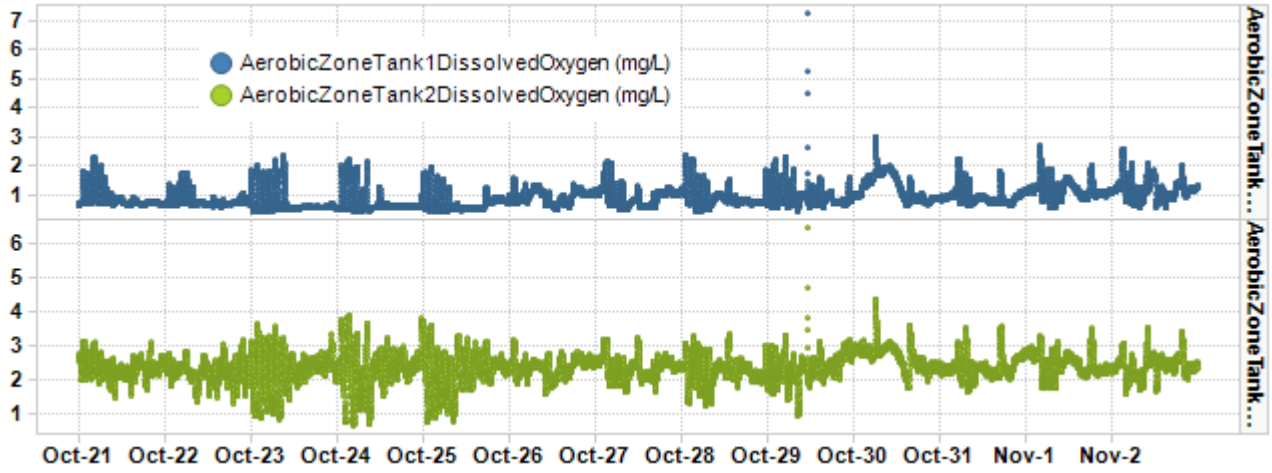


- Permeate turbidity ABP averages ranged from 0.07 – 0.09 NTU on all online trains
- Maintenance cleans were run on UF2 and UF4 in this report

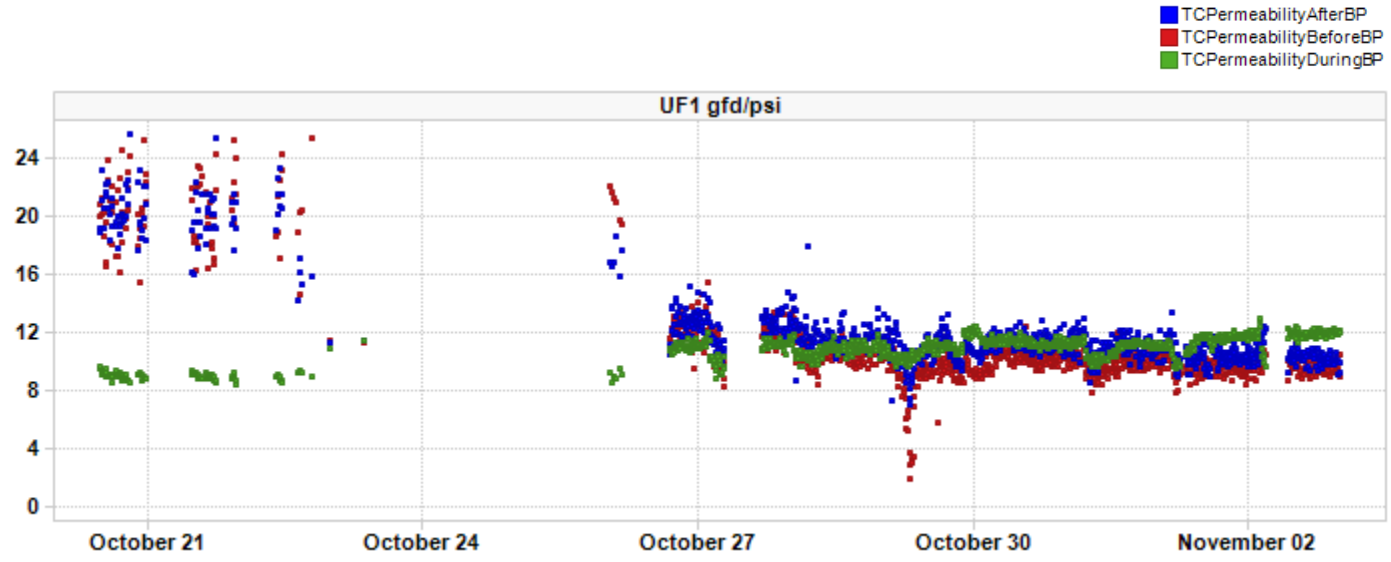
Table 1. Record of maintenance cleans (MCs) run.

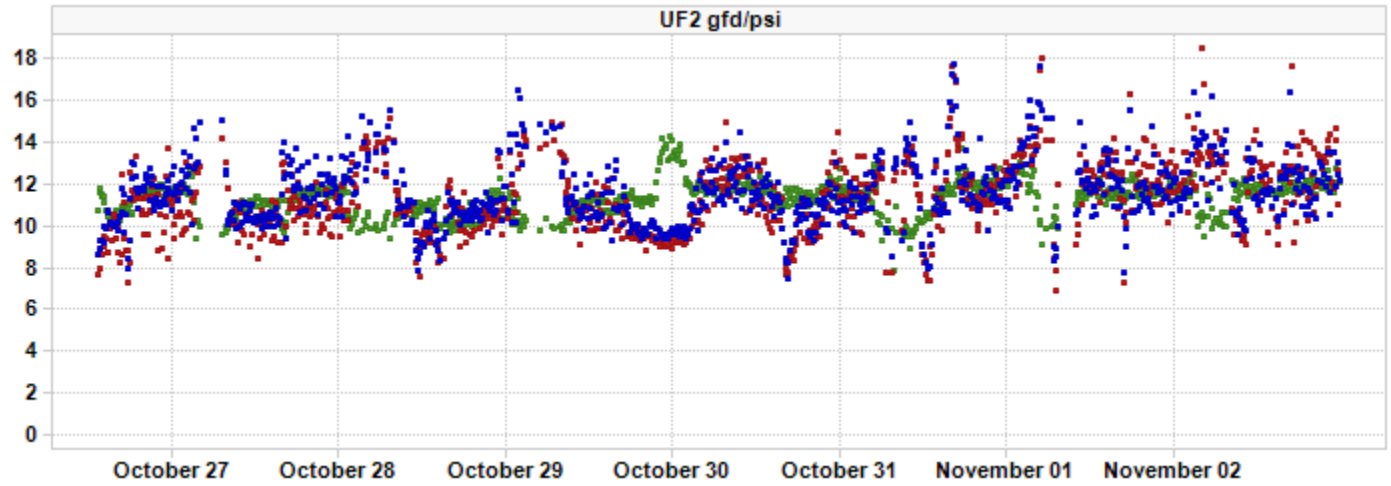
Train	UF1	UF2	UF3	UF4
# of Hypochlorite MCs	0	1	0	1
# of Citric Acid MCs	0	1	0	1

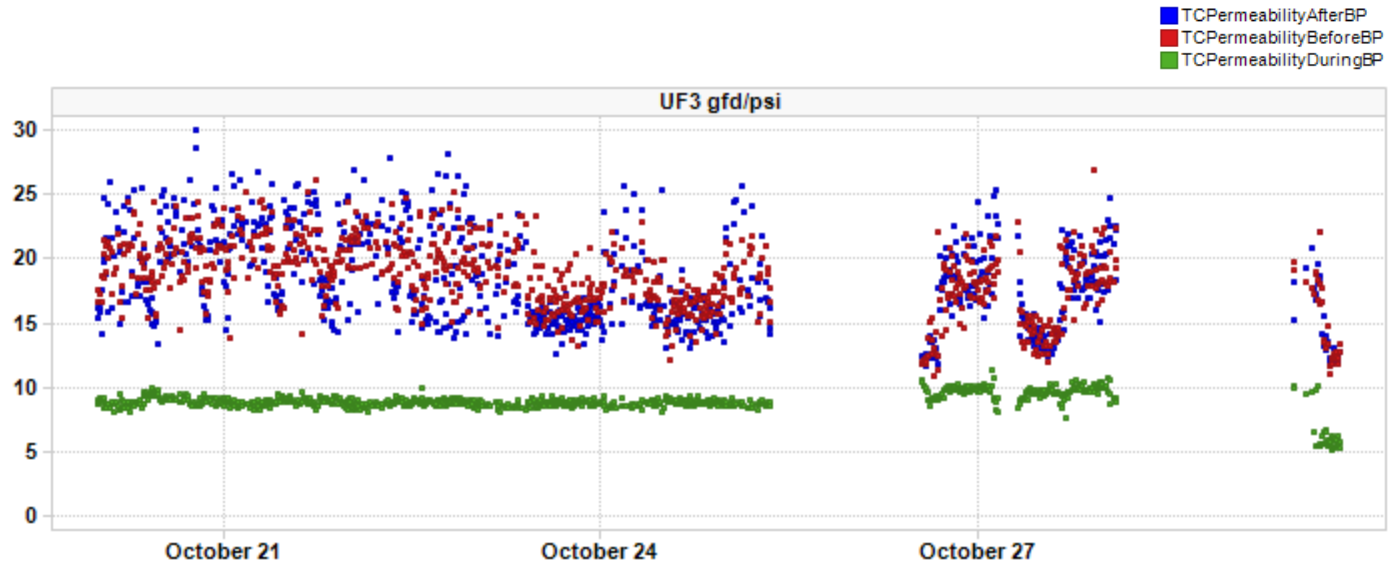
- Aerobic zone 1 dissolved oxygen averaged 0.95 ppm, while tank 2 averaged 2.37 mg/L. The pre-anoxic zone's DO averages were 0.64 mg/L in tank 1, and 1.22 mg/L in tank 2 which is high for feeding anoxic zones (ideally <0.5 mg/L for denitrification)

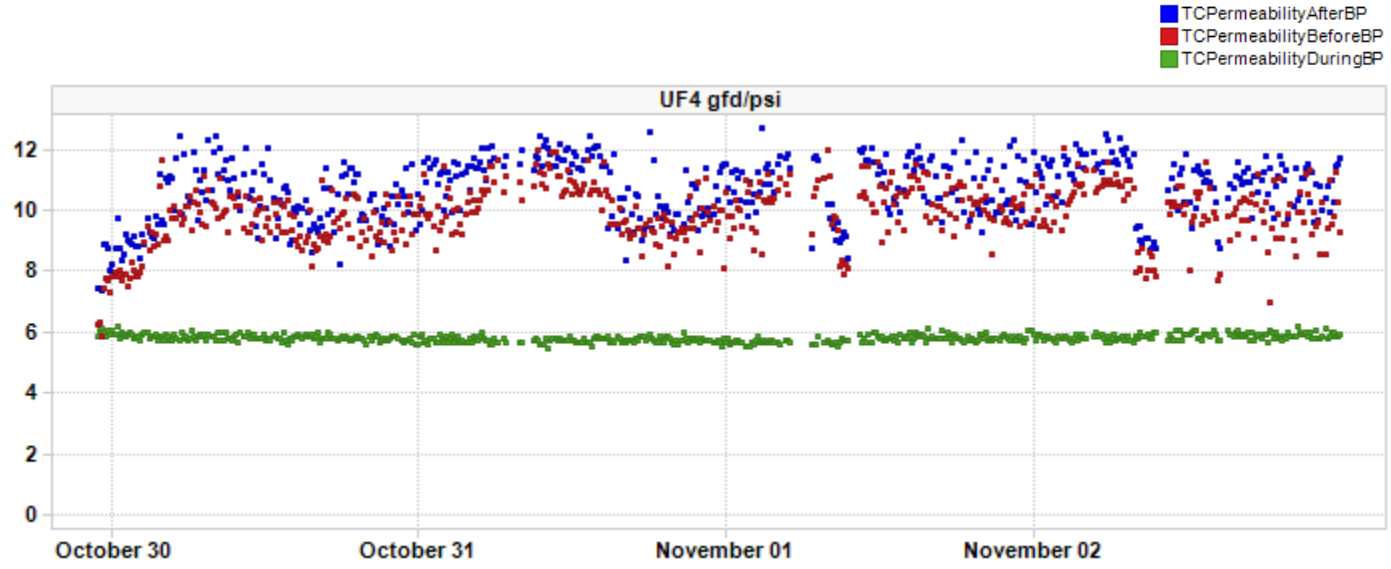


TC Permeability Trends By Train

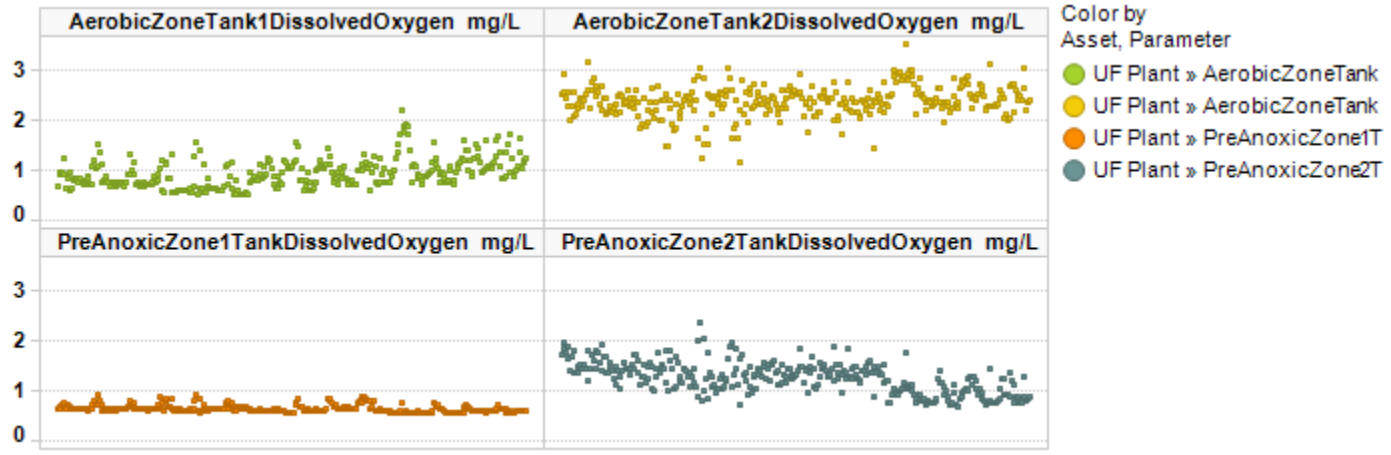




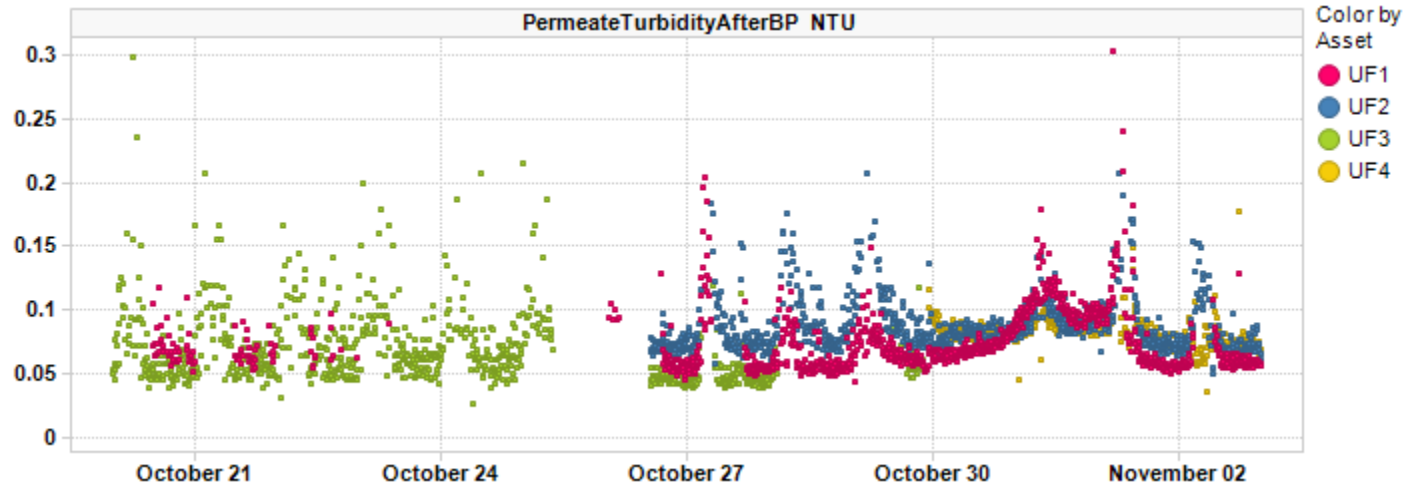




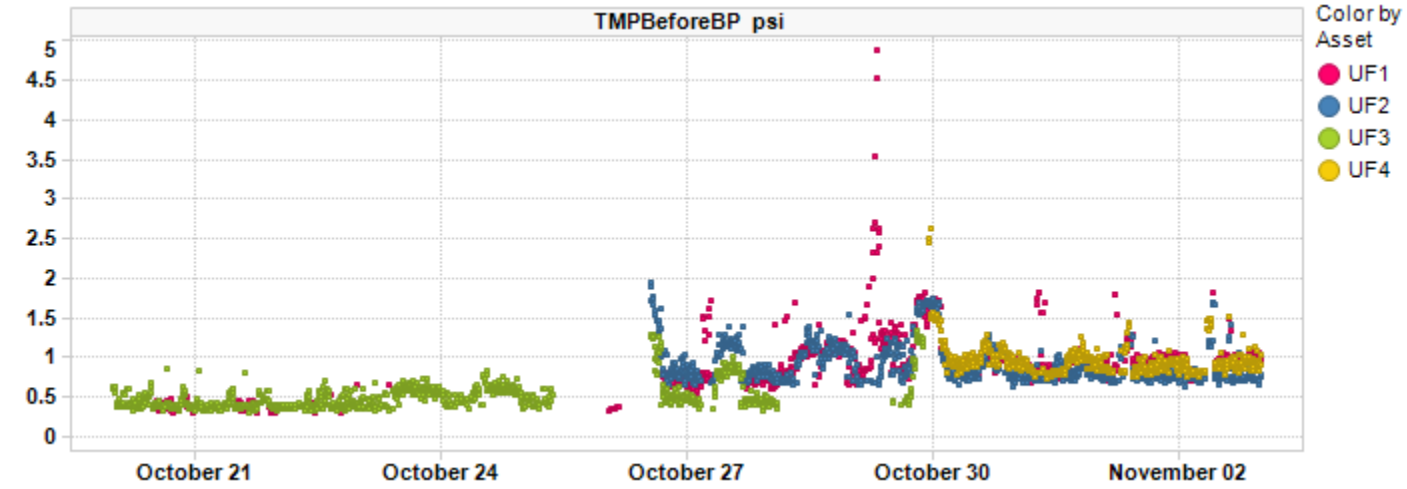
Bioreactor Dissolved Oxygen



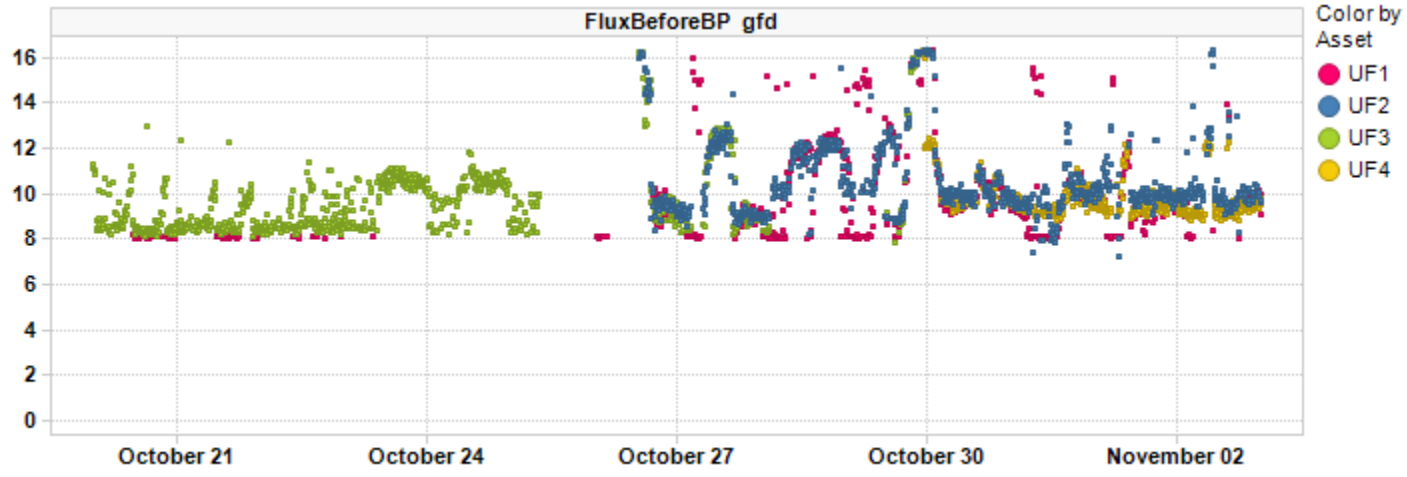
Permeate Turbidity Trend



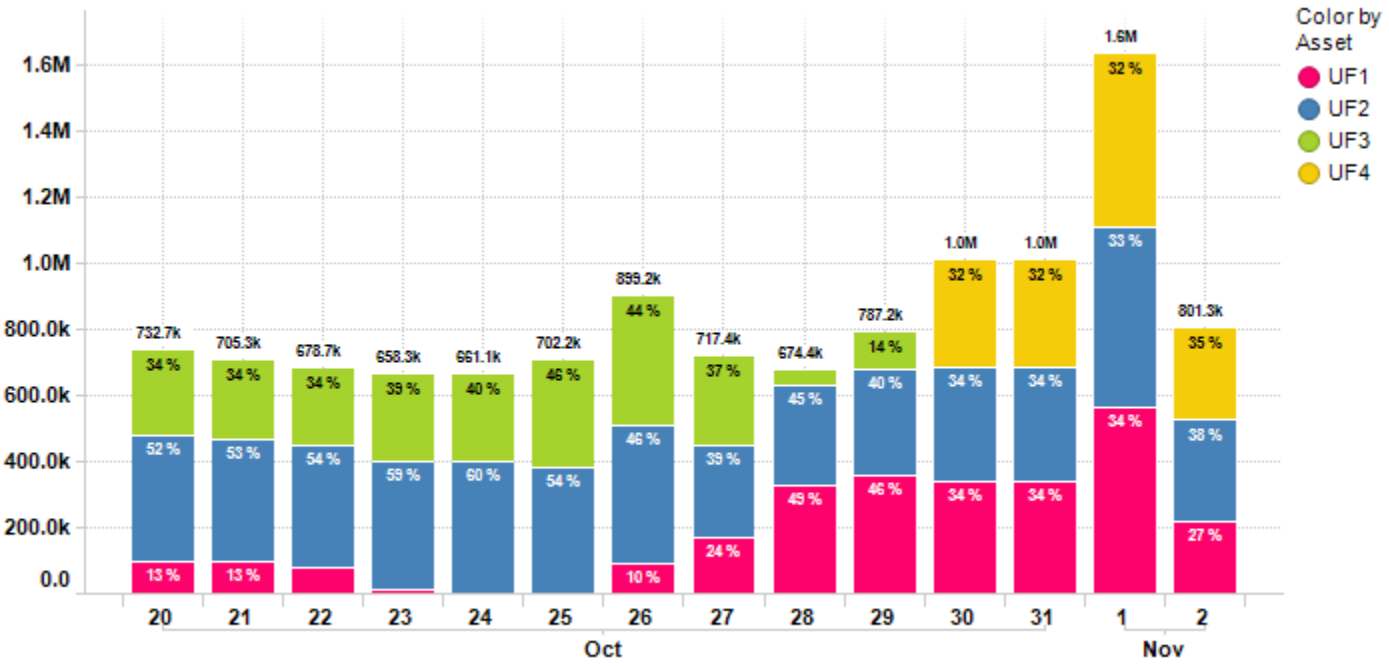
Before BPTMP Trend



Before BP Flux Trend



Daily Permeate Flow



Average Daily permeate flow from 10/20/2021 to 11/2/2021 is 819.2k gal with a maximum daily flow of 1.6M gal.

Asset Summary

KPI Parameters	Value/Change	UF1	UF2	UF3	UF4
FluxBeforeBP gfd	Value	9.98	10.66	9.76	9.81
	Change	10.86 %	10.76 %	1.90 %	
FluxDuringBP gfd	Value	18.80	18.45	18.38	18.77
	Change	0.03 %	-0.52 %	-1.07 %	
PermeateTurbidityAfterBP NTU	Value	0.07	0.09	0.07	0.08
	Change	15.92 %	-34.82 %	-9.14 %	
TCPermeabilityBeforeBP gfd/psi	Value	11.03	11.37	18.39	9.90
	Change	-112.94 %	-5.80 %	-9.72 %	
TMPBeforeBP psi	Value	0.94	0.93	0.53	0.97
	Change	62.69 %	22.56 %	14.31 %	
TotalPermeateFlowDaily gal	Value	192.77k	367.01k	198.49k	110.30k
	Change	57.88 %	1.54 %	-41.05 %	100.00 %

Plant Summary

KPI Parameters	Value/Change	UF Plant
PermeateTemperature °F	Value	71.83
	Change	-5.27 %
TotalPermeateFlowDaily gal	Value	857.74k
	Change	14.54 %

Contract Expiry Date : **08/11/2021**
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LEWES BPW WWTP Biweekly InSight Report

Date: 11/17/2021

From: Erin Horocholyn - Suez Water Technologies & Solutions
To: Austin Calaman BPW, Inframark
cc: Matt Stapleford - Suez Water Technologies & Solutions

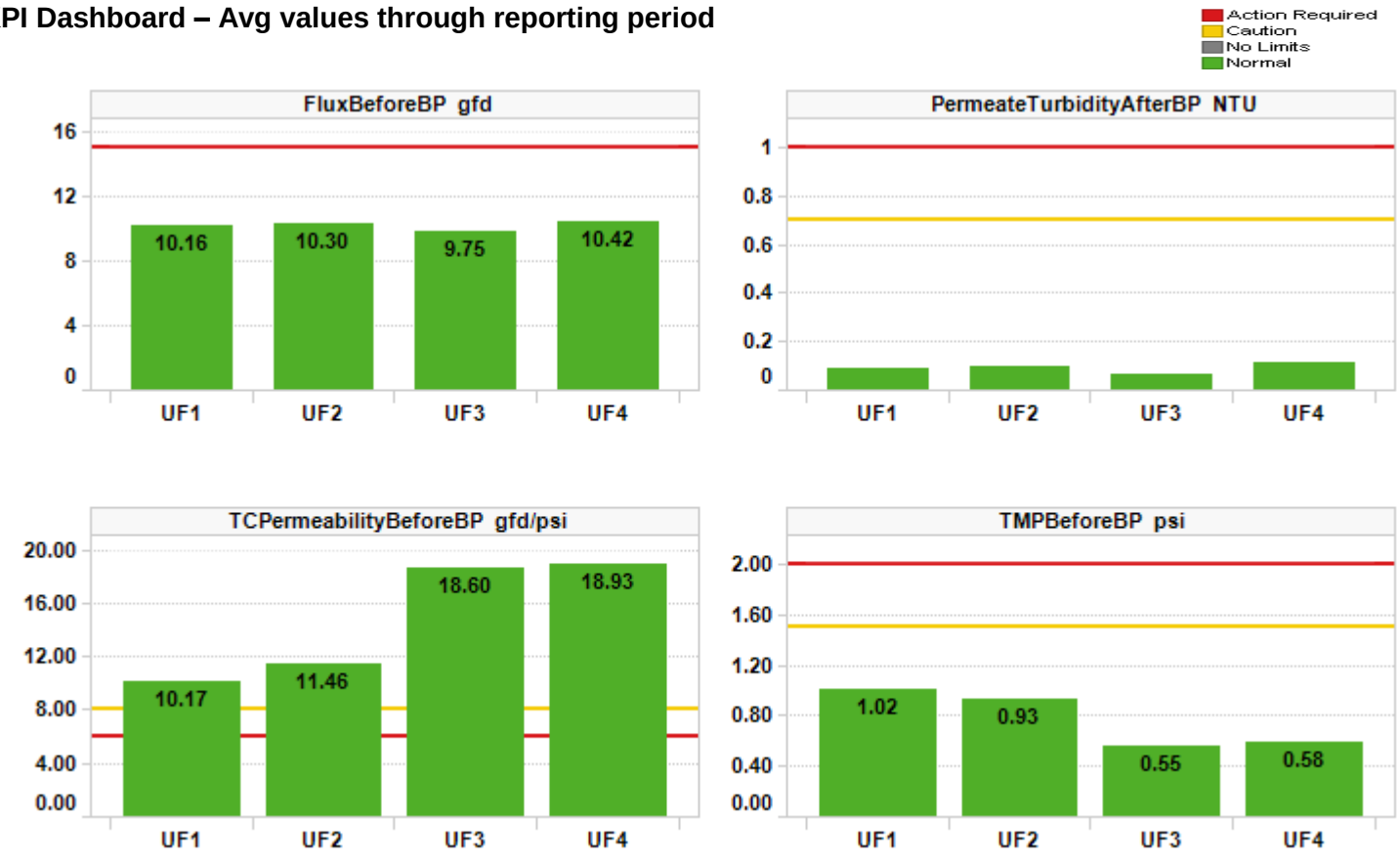
System Equipment

4 × ZW trains, each train consists of 4 - 500D cassettes, 120 modules x 370 sq. ft. per train (surface area 44,400 sq. ft. per train)
Replacement membranes installed Q1 2020 on trains UF3 and UF4

Cleaning Strategy

Recovery cleaning - 2 NaOCl @ 2000 ppm dose/1000 ppm soak per year, 1 Citric acid @ 2000 ppm per year
Maintenance cleaning - 1 NaOCl per week @ 200 ppm, 1 Citric acid per week @ 2000 ppm

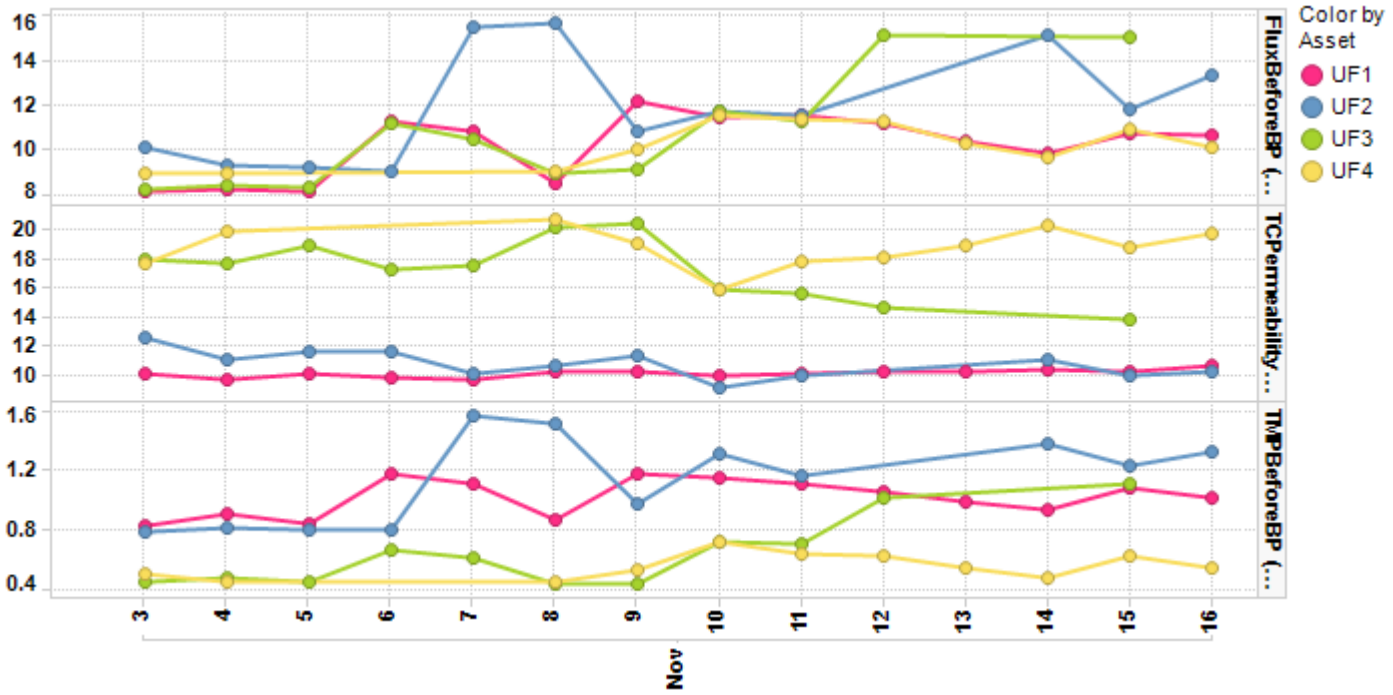
KPI Dashboard – Avg values through reporting period



Plant Summary

All trains had good KPI levels for permeability, TMP, and turbidity. All online trains are ≤1.0 psi for TMP and >8.0 gfd/psi for permeability which is excellent.

- Daily permeate production averaged 0.62 MGD. Permeate temperature averaged 67°F (-5°F). All online trains are in Backpulse with constant LEAP Hi aeration
- TMP BBP was excellent, averaging around or < 1.0 psi on all trains. Averages ranged 0.55 – 1.02 psi, rising during periods of high flux. UF1's TMP remains elevated from a process event in late October
- TC permeability BBP averages were excellent and >8 gfd/psi. UF1, UF2, and UF3 averaged 10, 11, and 19 gfd/psi respectively. UF4's average increased to 19 gfd/psi from its previous average of 10 gfd/psi. Daily median values shown in the plot below

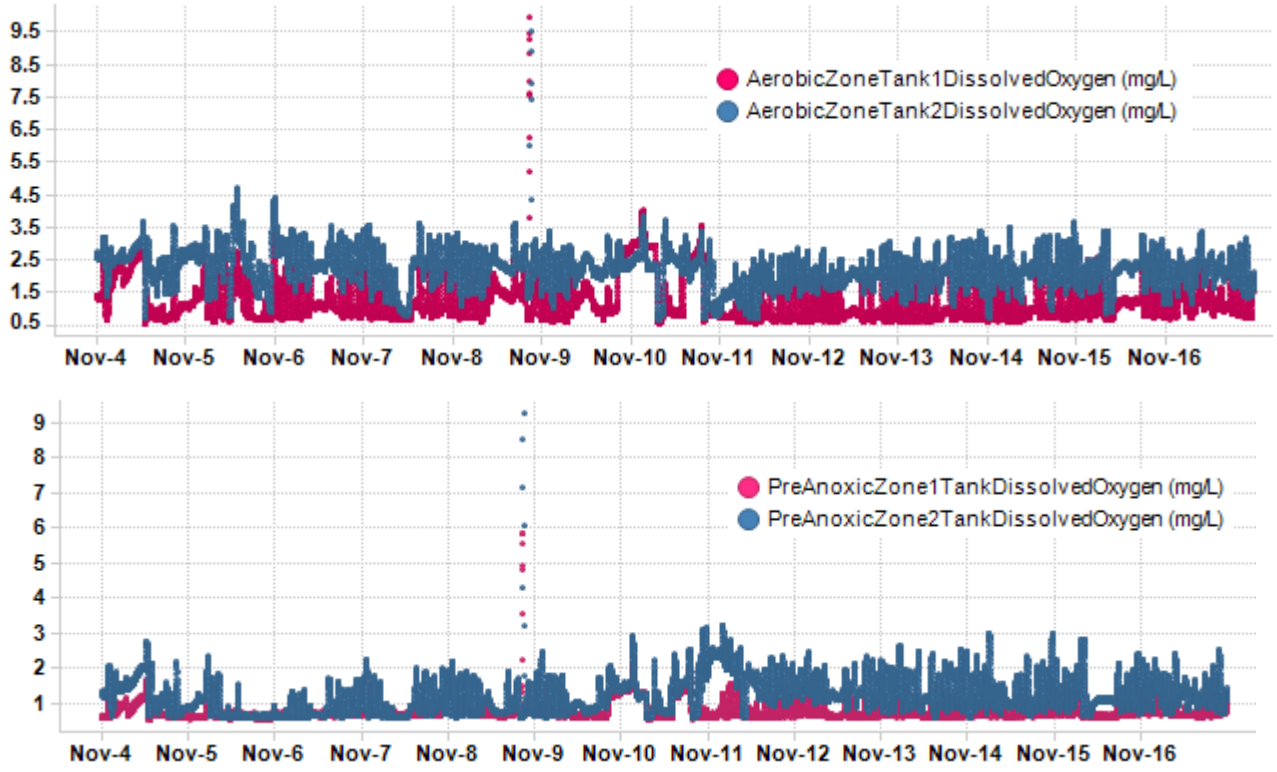


- Permeate turbidity ABP averages ranged from 0.06 – 0.11 NTU on all online trains. There was a spike on UF1's permeate turbidity on Nov 9, peaking at 2 – 3 NTU

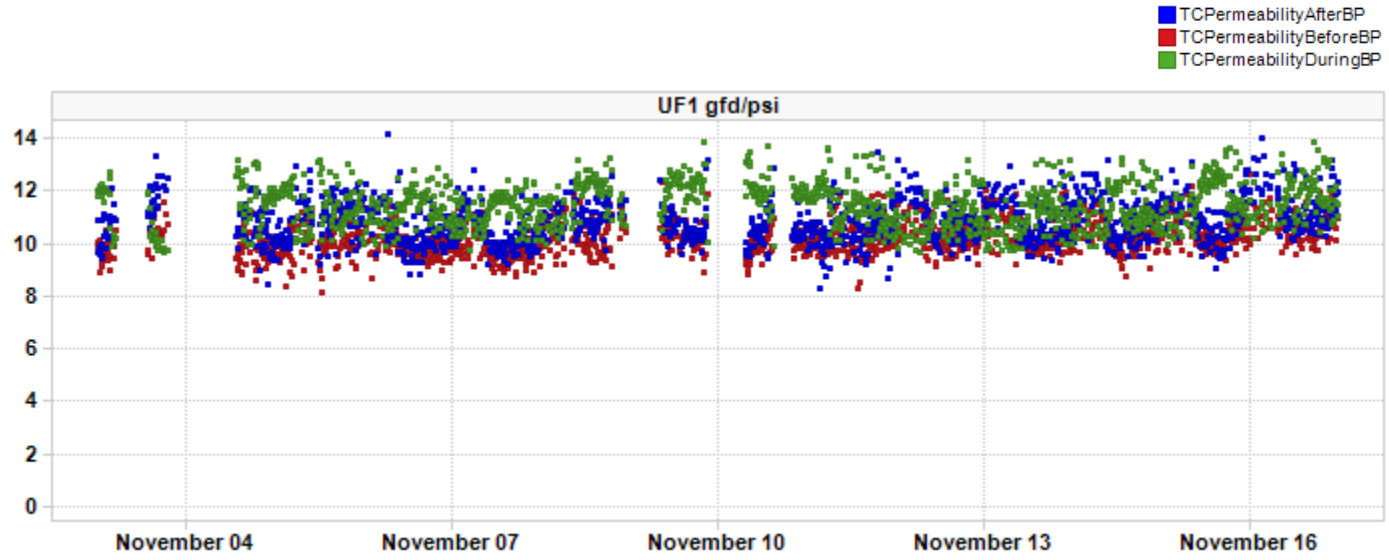
Table 1. Record of maintenance cleans (MCs) run.

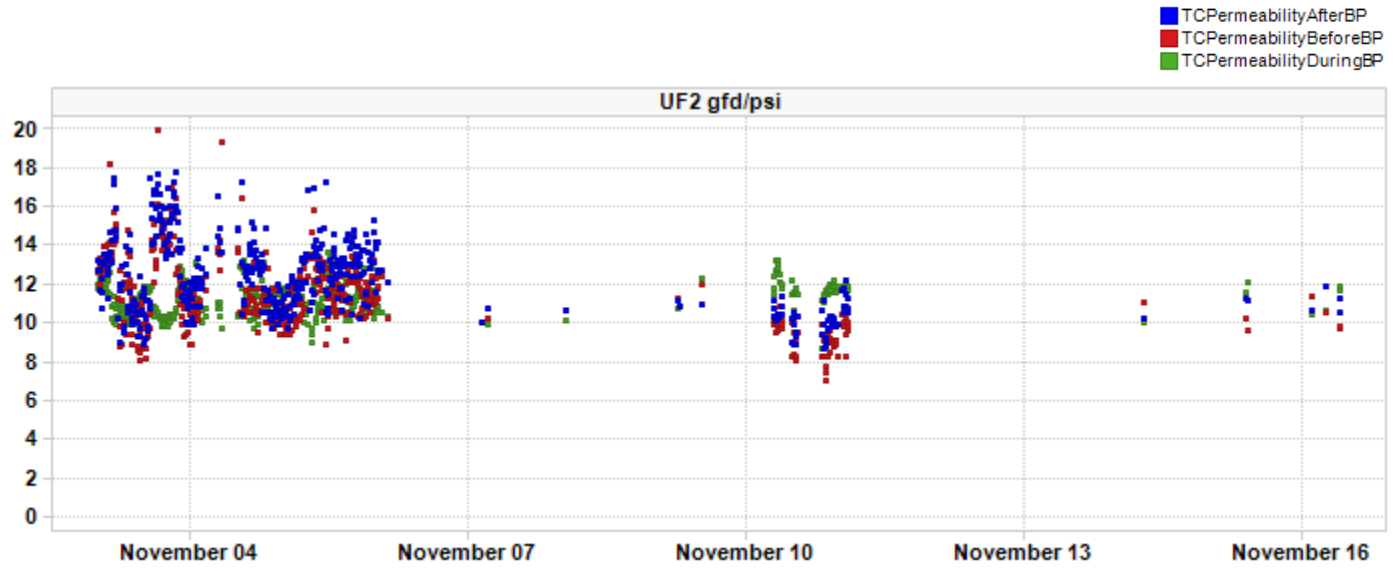
Train	UF1	UF2	UF3	UF4
# of Hypochlorite MCs	1	1	1	2
# of Citric Acid MCs	0	2	1	2

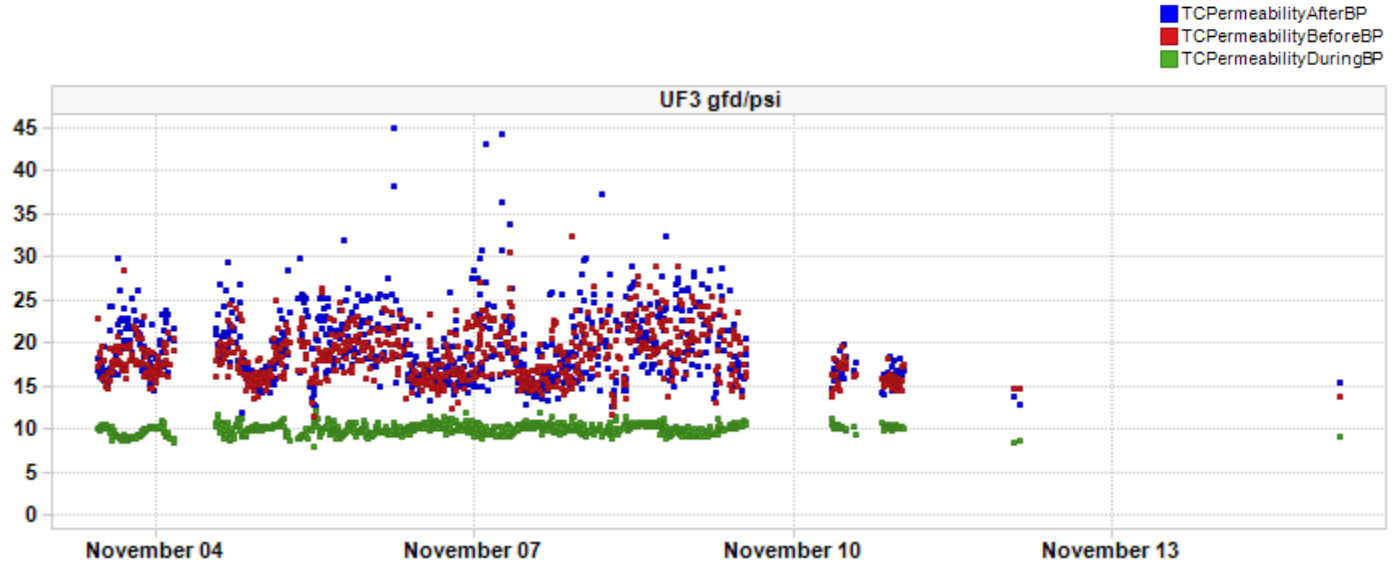
- Aerobic tank 1 dissolved oxygen averaged 1.32 ppm (up from 0.95 ppm), tank 2 averaged 2.22 ppm. The pre-anoxic zone's DO averages were 0.79 ppm in tank 1, and 1.21 ppm in tank 2

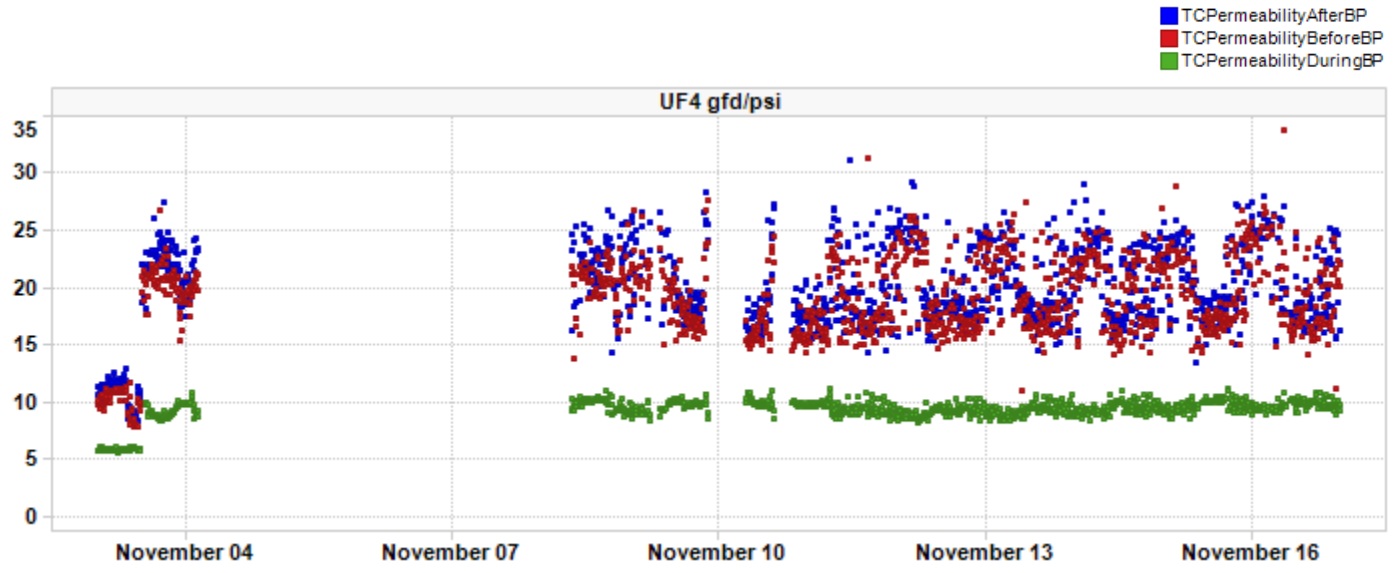


TC Permeability Trends By Train

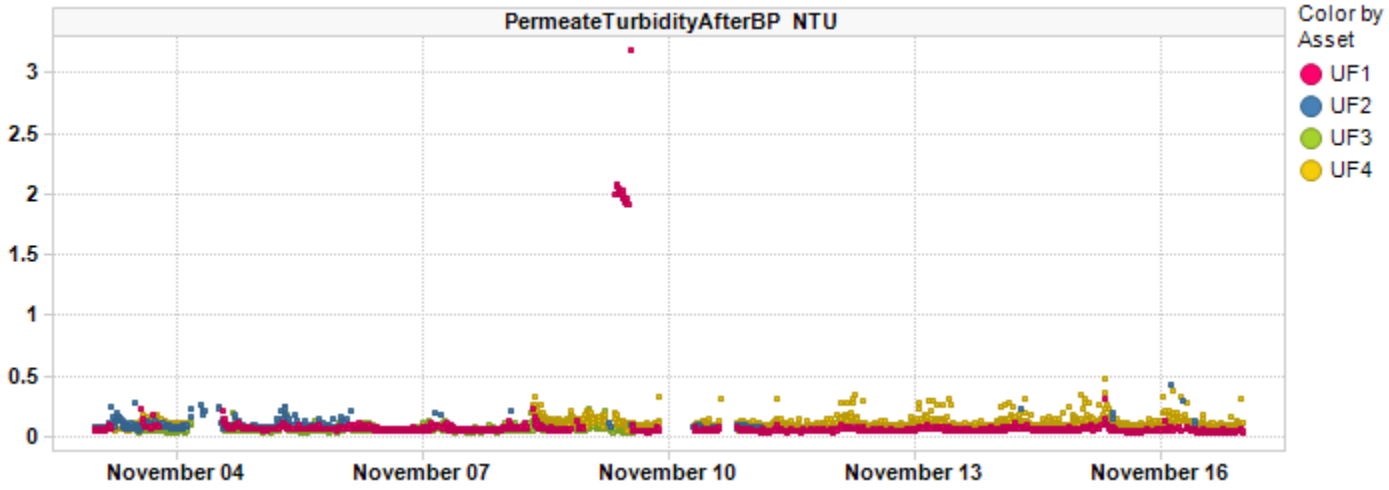



TCPermeabilityAfterBP
TCPermeabilityBeforeBP
TCPermeabilityDuringBP
UF2 gfd/psi
20
18
16
14
12
10
8
6
4
2
0
November 04
November 07
November 10
November 13
November 16

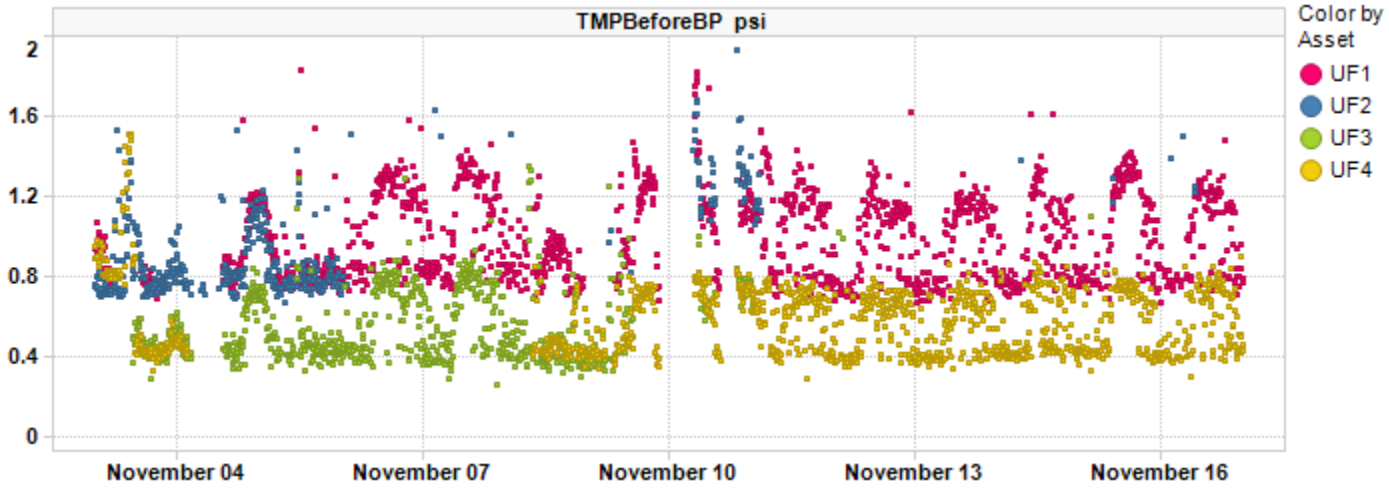

TCPermeabilityAfterBP
TCPermeabilityBeforeBP
TCPermeabilityDuringBP
UF3 gfd/psi
45
40
35
30
25
20
15
10
5
0
November 04
November 07
November 10
November 13


TCPermeabilityAfterBP
TCPermeabilityBeforeBP
TCPermeabilityDuringBP
UF4 gfd/psi
35
30
25
20
15
10
5
0
November 04
November 07
November 10
November 13
November 16

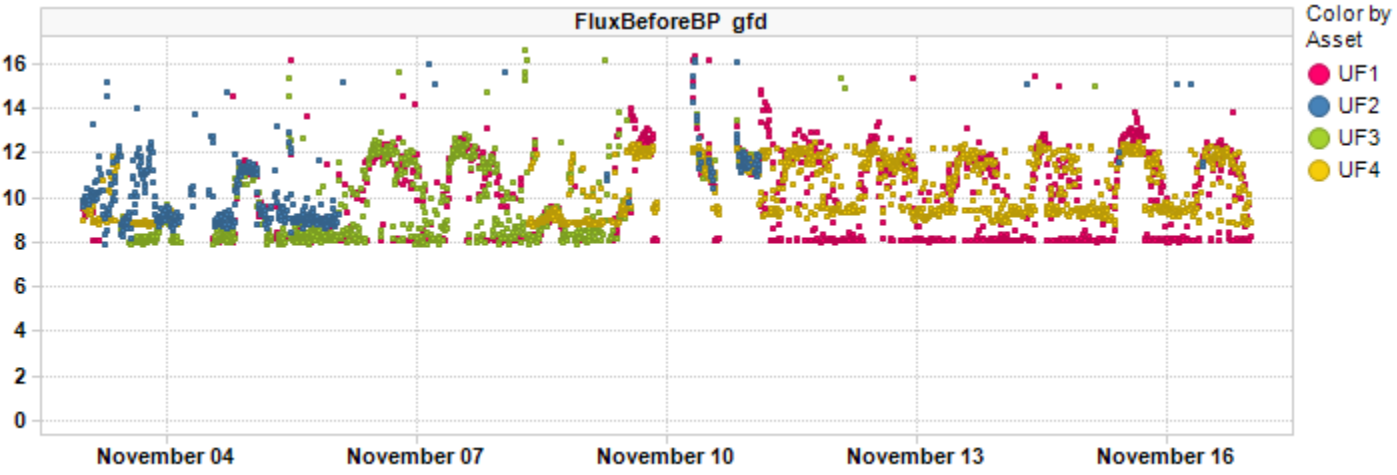
Permeate Turbidity Trend



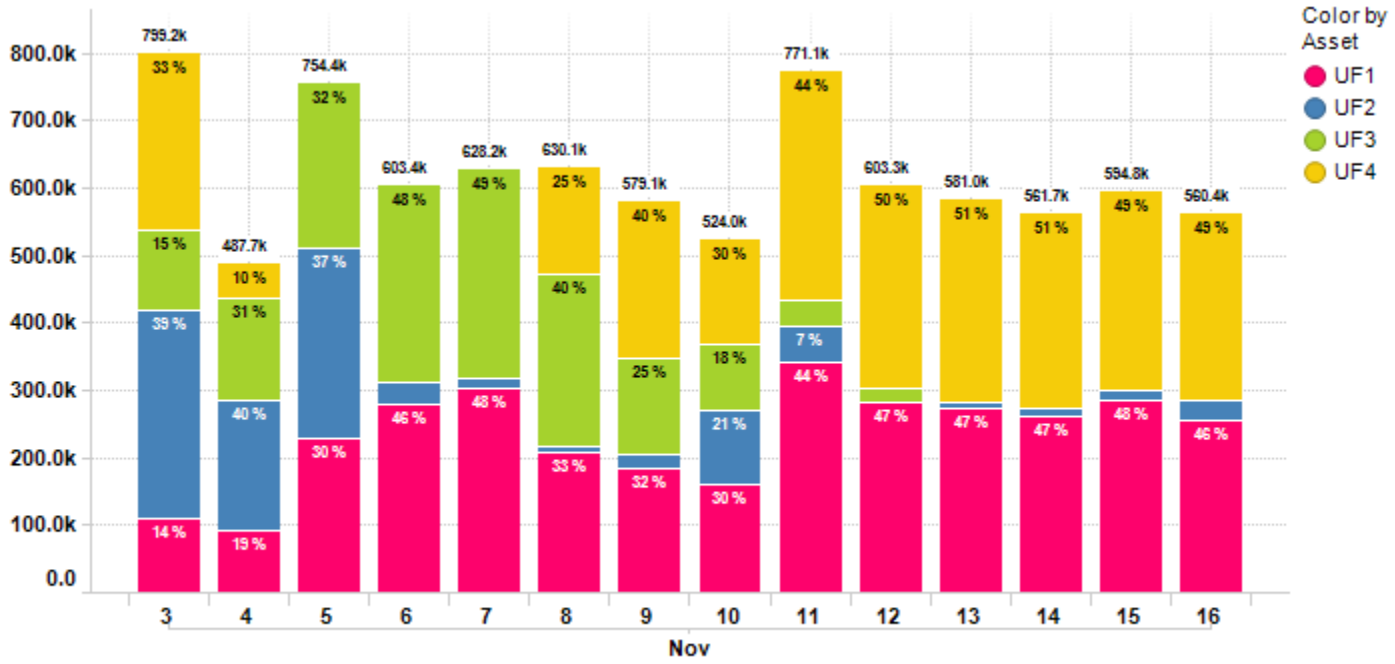
Before BPTMP Trend



Before BP Flux Trend



Daily Permeate Flow



Average Daily permeate flow from 11/3/2021 to 11/16/2021 is 619.9k gal with a maximum daily flow of 799.2k gal.

Asset Summary

KPI Parameters	Value/Change	UF1	UF2	UF3	UF4
FluxBeforeBP gfd	Value	10.16	10.30	9.75	10.42
	Change	1.72 %	-3.45 %	-0.09 %	5.87 %
FluxDuringBP gfd	Value	18.82	18.44	18.62	18.74
	Change	0.11 %	-0.07 %	1.29 %	-0.18 %
PermeateTurbidityAfterBP NTU	Value	0.09	0.10	0.06	0.11
	Change	17.53 %	10.43 %	-8.61 %	26.84 %
TCPermeabilityBeforeBP gfd/psi	Value	10.17	11.46	18.60	18.93
	Change	-8.47 %	0.82 %	1.10 %	47.73 %
TMPBeforeBP psi	Value	1.02	0.93	0.55	0.58
	Change	7.04 %	-0.20 %	5.25 %	-66.43 %
TotalPermeateFlowDaily gal	Value	233.48k	77.63k	128.52k	203.99k
	Change	17.44 %	-372.76 %	-54.44 %	45.93 %

Plant Summary

KPI Parameters	Value/Change	UF Plant
PermeateTemperature °F	Value	67.48
	Change	-6.44 %
TotalPermeateFlowDaily gal	Value	703.11k
	Change	-21.99 %

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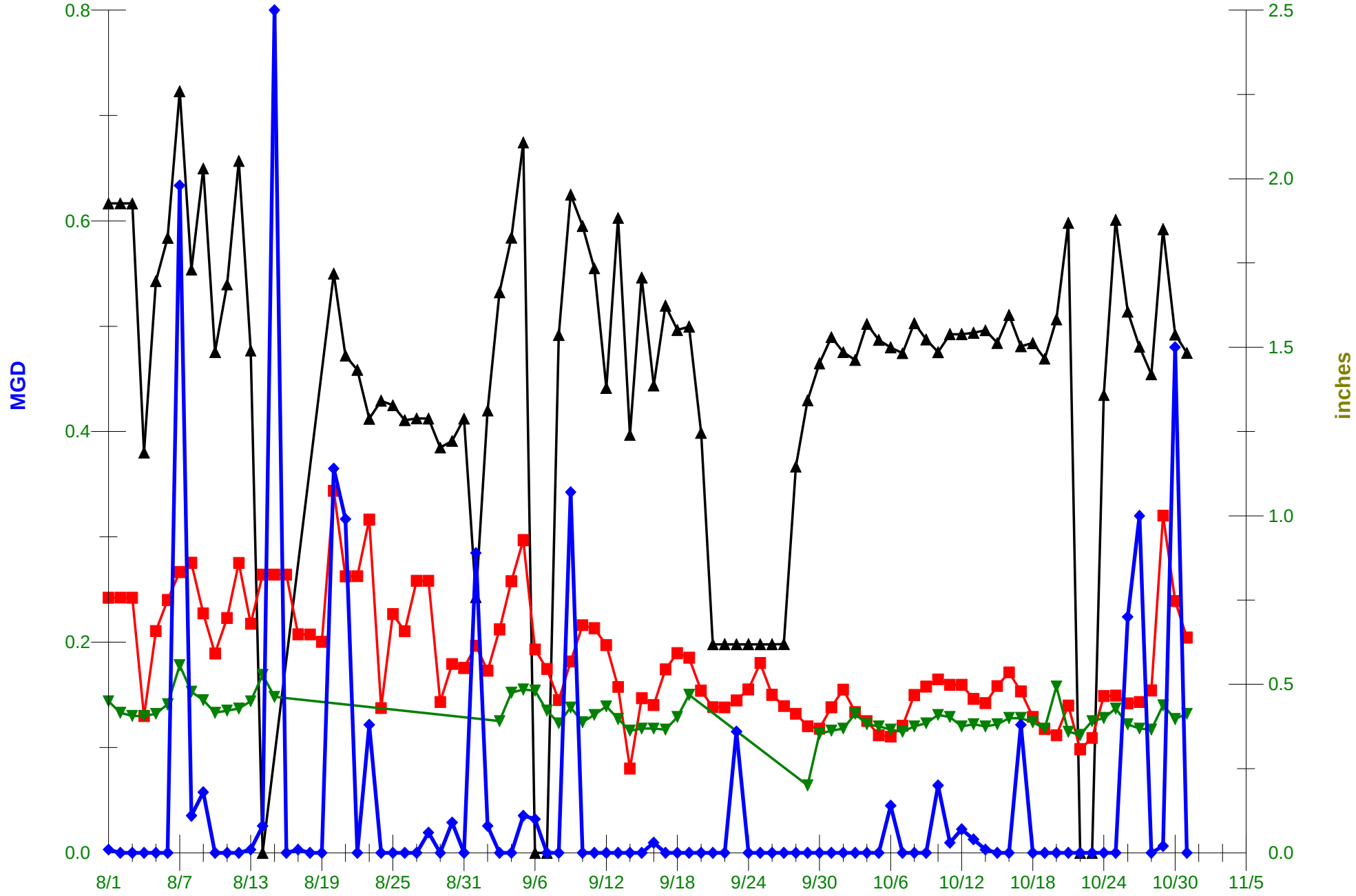
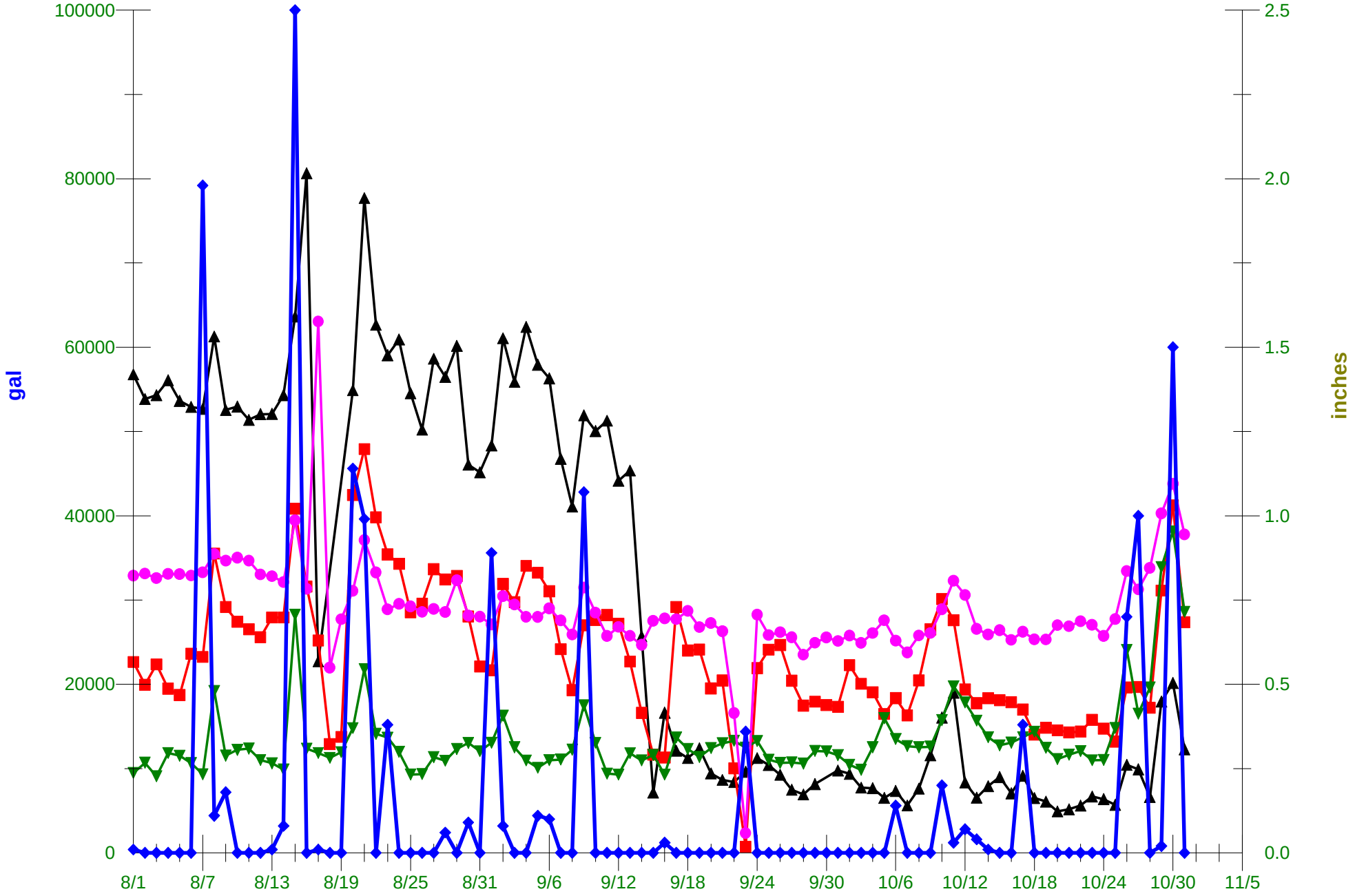
Data Over Time



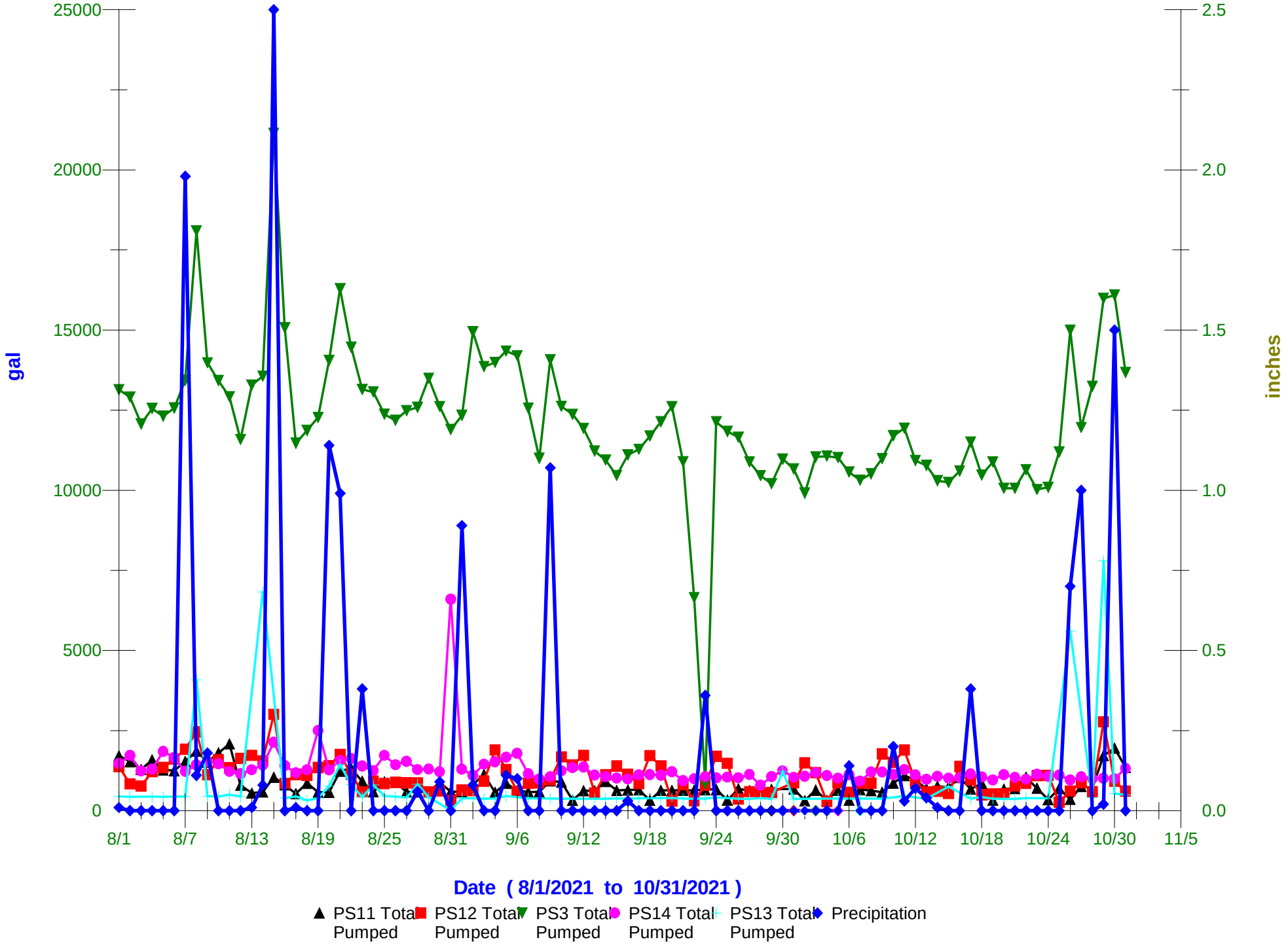
PS4,8 +County

Data Over Time



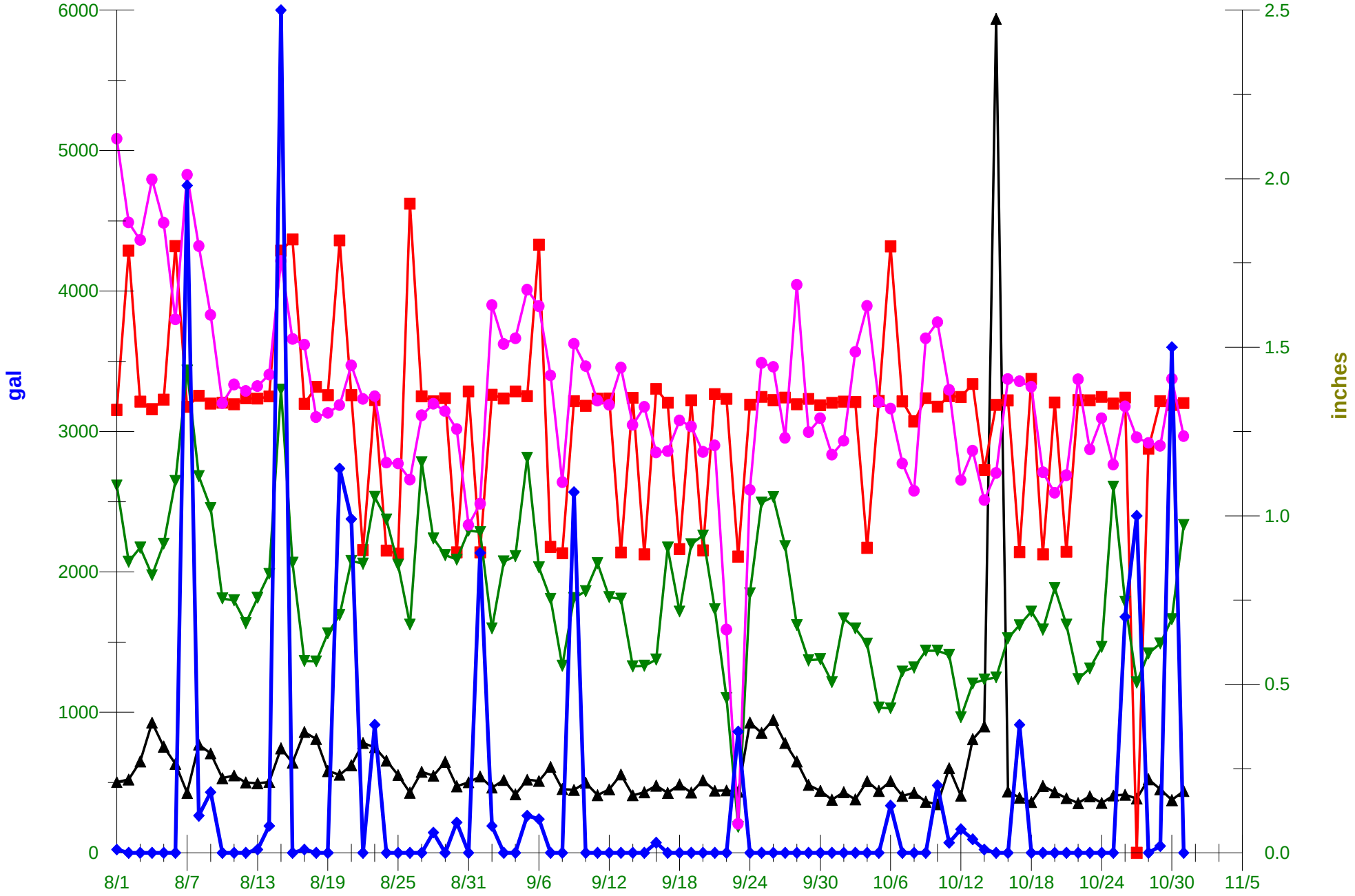
PS1,2,5,6

Data Over Time



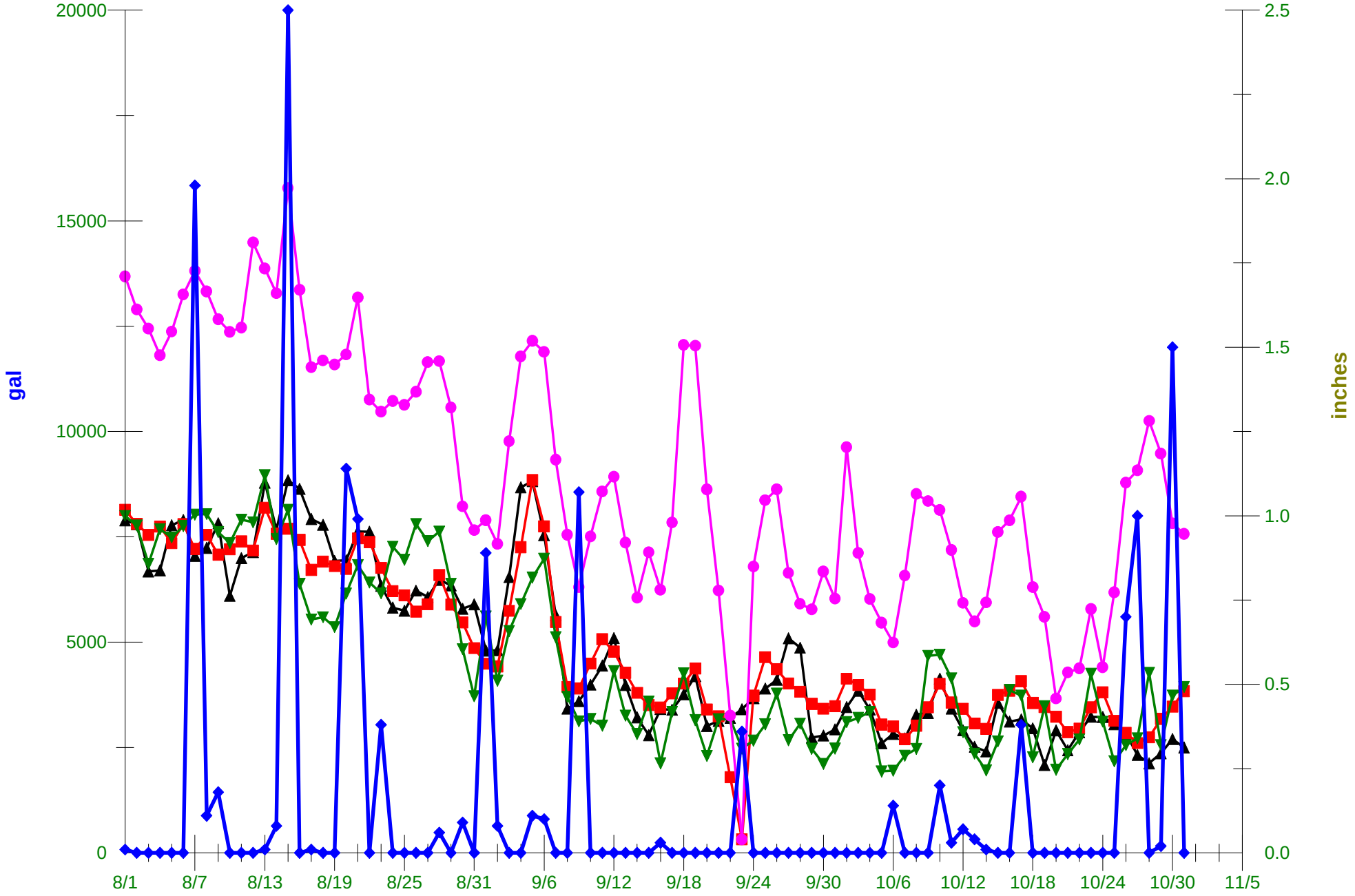
PS3,11,12,13,14

Data Over Time



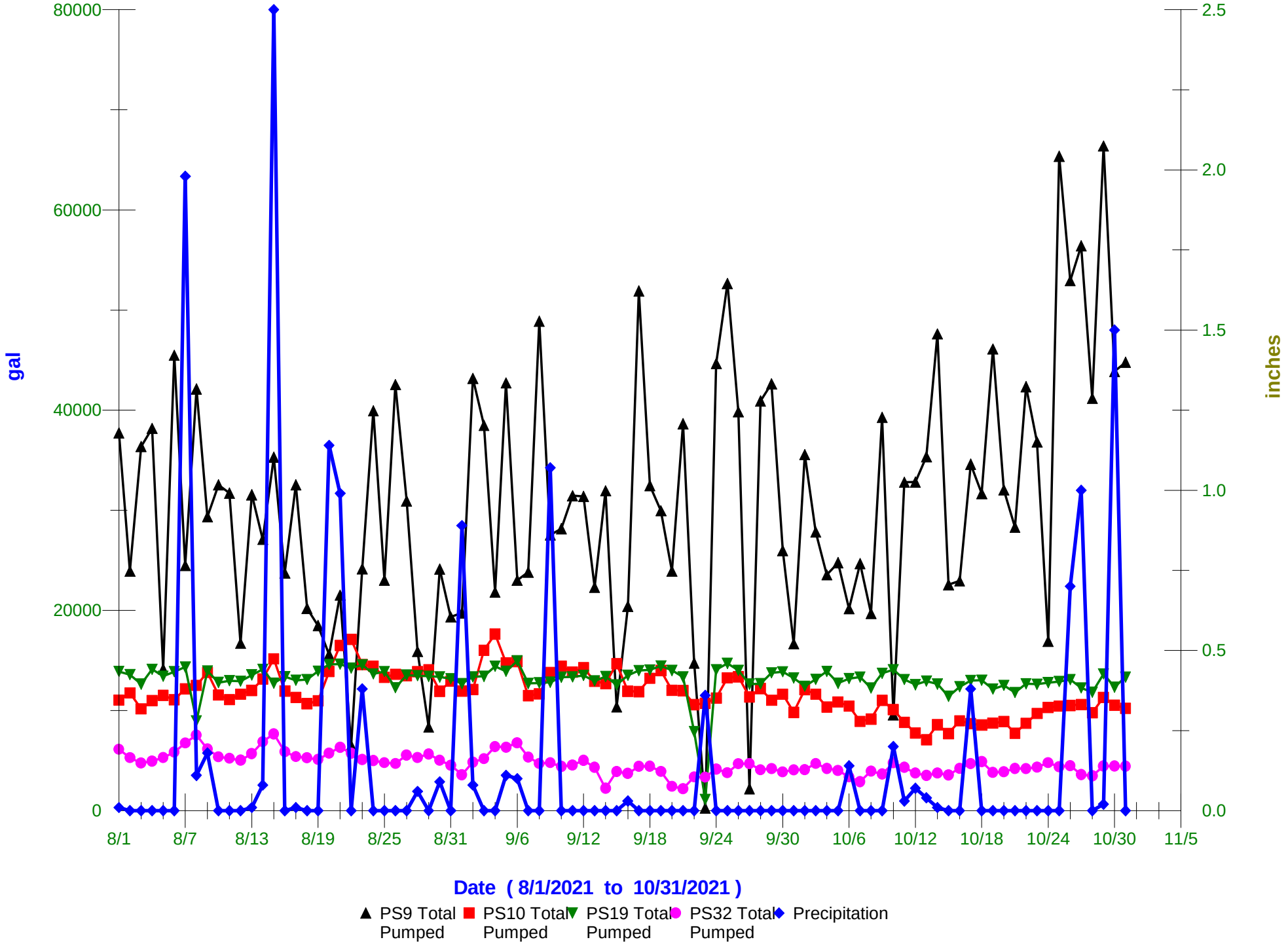
PS16,17,17b,18

Data Over Time



PS7.15,83,74

Data Over Time



PS9,10,19,32