HWU

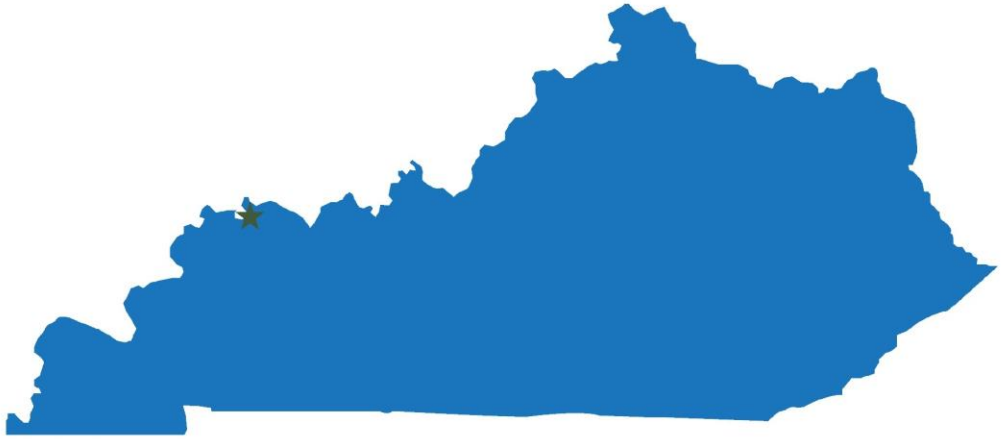
Henderson Water Utility

WATER • WASTEWATER • STORMWATER

Using Hach WIMS to Manage Utilities from a High Level Perspective

See the Forest and the Trees

KENTUCKY
Henderson
Discover your nature.



12th Largest Town in Kentucky with a Population of 28,000 people.

Henderson Notable History

Who Am I Anyway?

Husband and Father of Two

3d Printing and Gaming Enthusiast

<u>21 Years of Experience in the Water Treatment Industry</u>

HWU

Henderson Water Utility

WATER • WASTEWATER • STORMWATER

Drinking Water, Wastewater, Stormwater

81 Employees

2 Drinking Water Treatment Plants

2 Wastewater Treatment Plants

2 Water Quality Labs

479 Miles of Lines

(Drinking Water, Wastewater, and Stormwater)

What am I Responsible For?

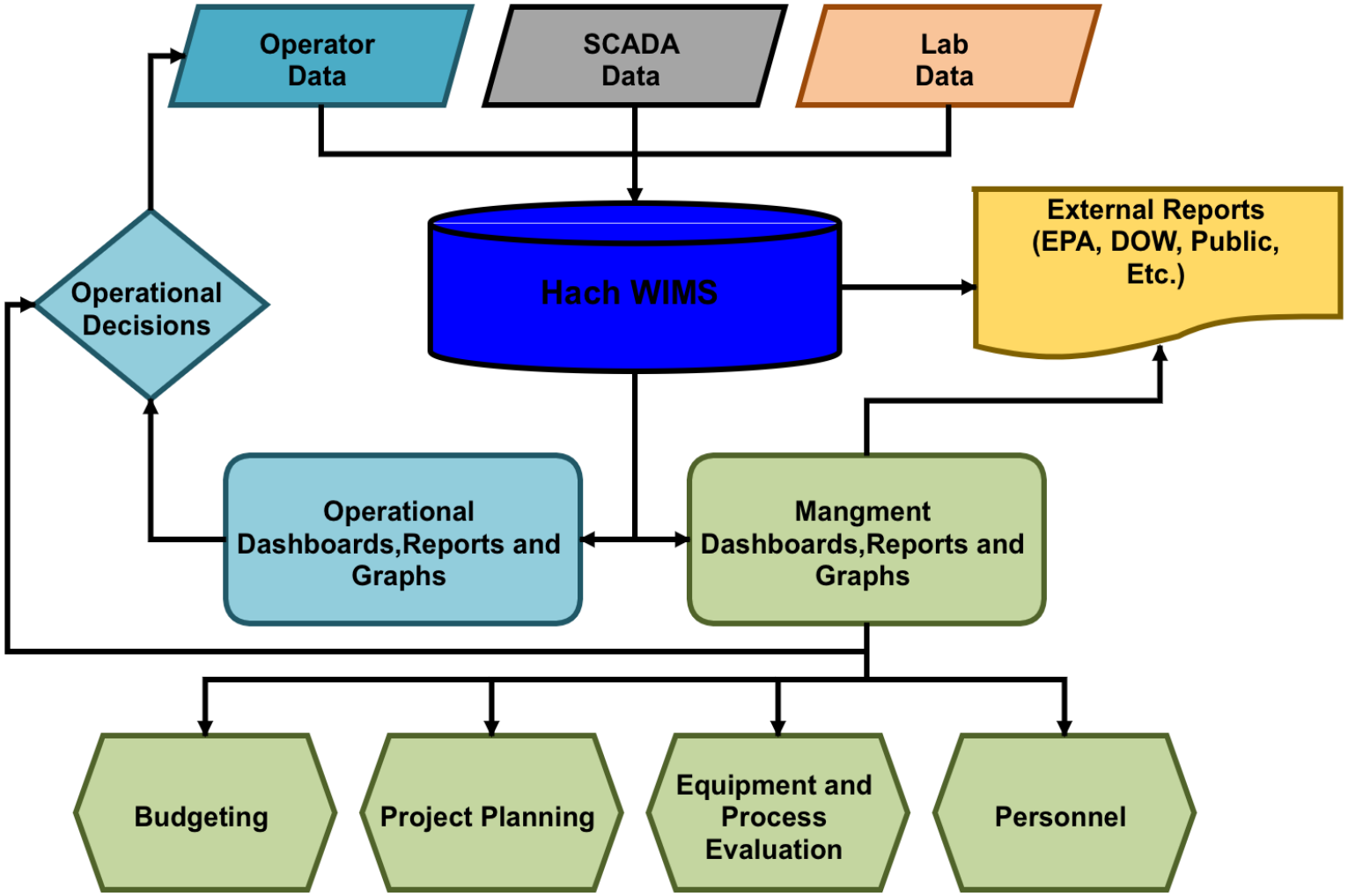
Drinking Water Plants with 12 Employees

Wastewater Treatment Plants with 11 Employees

Water Quality Labs with 2 Employees

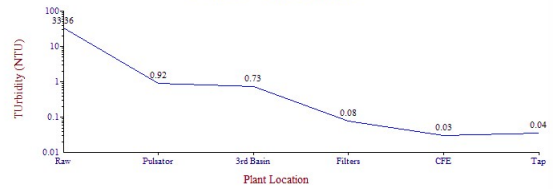
Plant and Pumpstation Maintenance with 10 Employees

Hach WIMS is a Critical Part of all of our Operations!



LabCal | Water Plants | Monthly Operating Reports

NWTP Turbidities

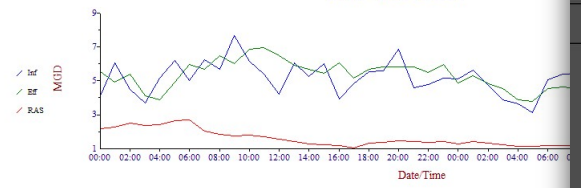


Filter Runtimes

N

Current Flow	Current Turbidity		Filter Runtimes	Current	At Wash
6.59	Raw	33	F1	23	133
	Pulsator	0.922	F2	119	133
System Capacity	3rd Basin	0.732	F3	95	119
69	Filters	0.078	F4	43	119
	CFE	0.031	F5	12	119
MOR Entry and Review	Tap	0.036	F6	105	120

NWWTP Flows



N

Current Inf Flow	
3.54	MGD
Current Eff Flow	
6.00	MGD
Current RAS Flow	
2.62	MGD

MLSS			
Aer #1	Aer #2	Aer #3	WAS #1
08/22/22 1,990		08/22/22 2,820	08/22/22 6,250
UVT 54.07			

SWTP Turbidities

Filter Runtimes

North Wastewater Treatment Plant

DMR Review		DMR Generation	Regulatory Limits (If Applicable) Min	Max
Influent	Flow	11.75		25
	pH	6.79	Report Only	
	TSS	190.00	Report Only	
	5 Day BOD	354.00	Report Only	
Effluent	Flow	12.60		25
	pH	7.46	6	9
	TSS	6.00		30
	5 Day BOD	2.00		30
	NH3-N	0.41		20
	E. Coli	10.00		130
	T.R.C.			
	D.O.	6.00	2.0	
	Total Nitrogen	14.20	Report Only	Report Only
	Total Phosphate	0.41	Report Only	Report Only
Removal	BOD	99.44	85	
	Suspended Solids	96.8	85	

South Wastewater Treatment Plant

DMR Review			Regulatory Limits (If Applicable) Min	Max
Influent	Flow	3.15		4
	pH	6.58	Report Only	
	TSS	274.00	Report Only	
	5 Day BOD	1,480.00	Report Only	
Effluent	Flow	3.22		4
	pH	7.05	6	9
	TSS	3.00		30
	5 Day BOD	2.00		30
	NH3-N	0.27		20
	E. Coli	2.00		130
	T.R.C.	0.0040		0.019
	D.O.	6.80	2.0	
	Total Nitrogen	2.49	Report Only	Report Only
	Total Phosphate	11.80	Report Only	Report Only
Removal	BOD	99.86	85	
	Suspended Solids	98.9	85	

Water Dashboard

Industrial Pretreatment

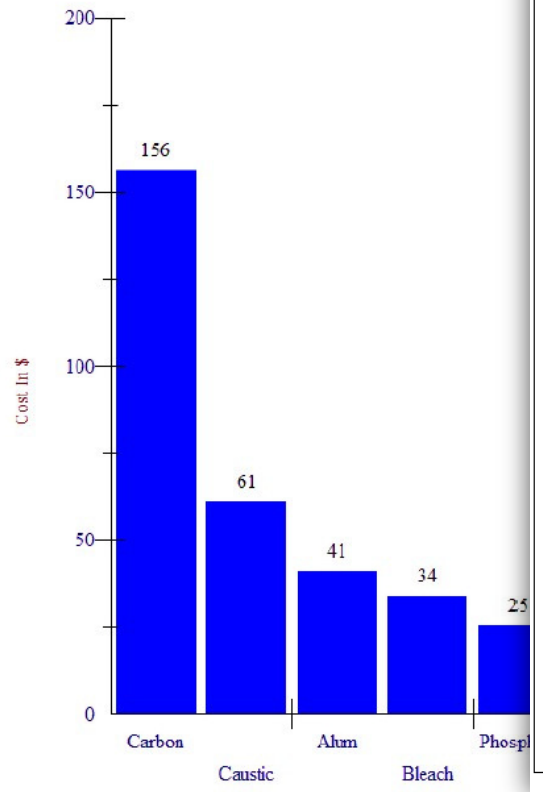
NWTP MG Processed 6.056

Chemical
Caustic
Alum
Cat Floc
Bleach
Fluoride
Carbon
Phosphate
Chlorine
Sodium Chlorite
8181

NWTP Daily Chemical Cost (Total)

Cost

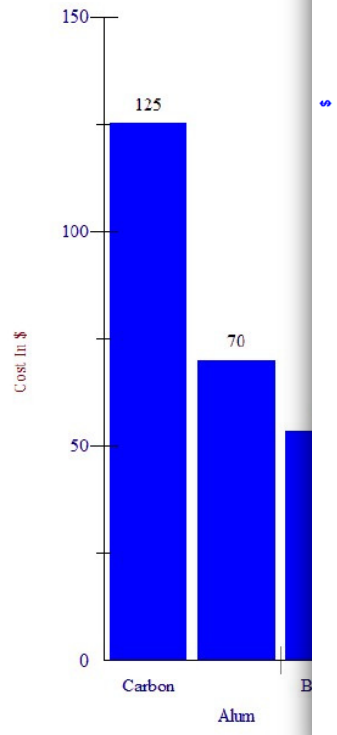
NWTP Chemical Cost to



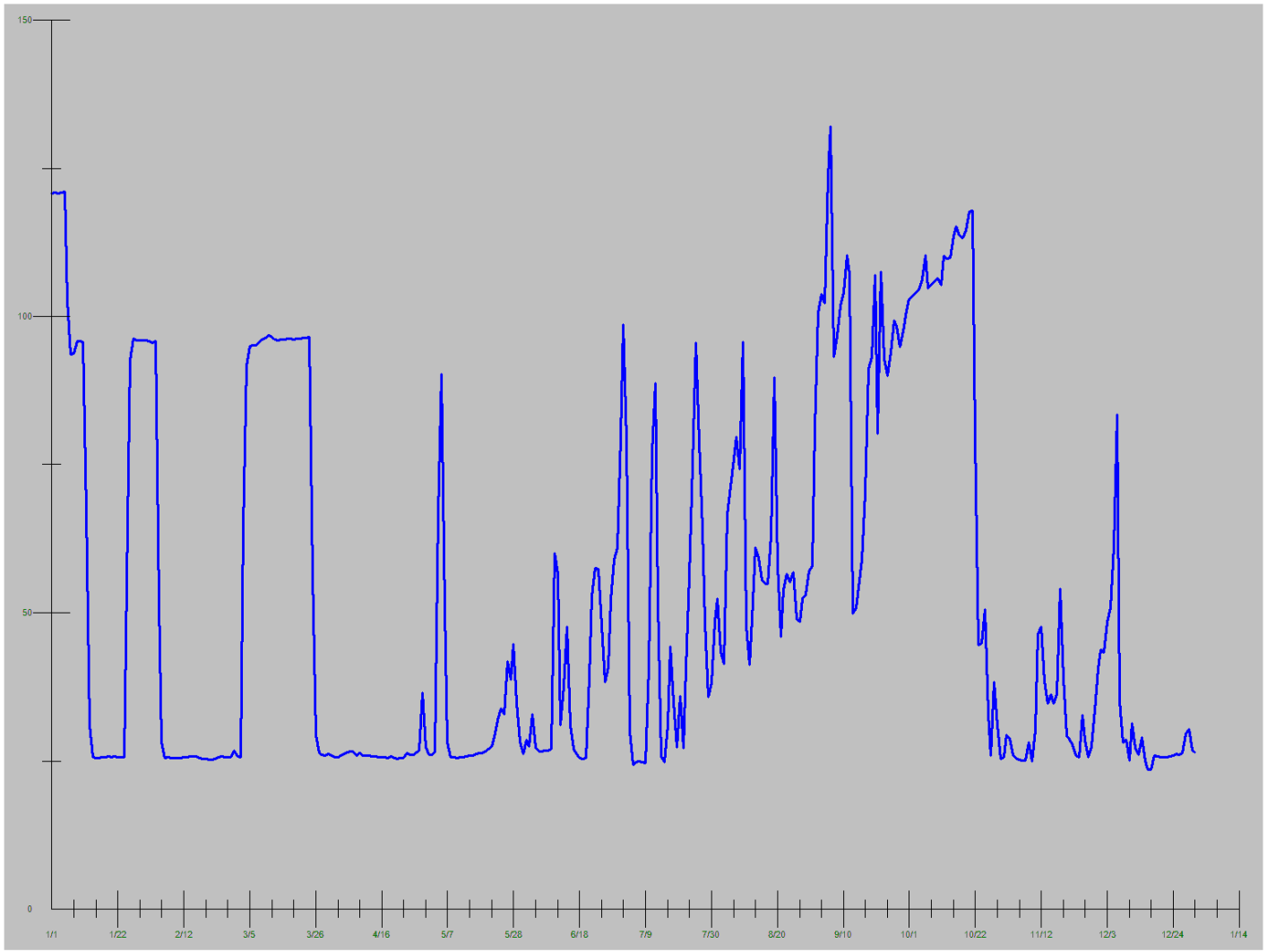
SWTP MG Processed 1.836

SWTP D

SW



NWWTP UV Cost



Date (1/1/2021 to 12/31/2021)

NWWTP UV Power Cost

NWTP Ohio Water Report 2020

Date	N - Raw Flow Gallons (Calculated)	N - Raw Turbidity AVG	N - Raw Phenolphthaline Alkalinity	N - Raw Hardness (CaCO3) avg	N - Raw Alkalinity (CaCO3) avg
1/1/2020	6,660,464	87	0.00	98	70.00
1/2/2020	5,724,707	86	0.00	102	71.00
1/3/2020	5,490,072	92	0.00	106	74.00
1/4/2020	5,476,557	76			
1/5/2020	5,777,970	83			
1/6/2020	6,479,227	110			
1/7/2020	6,253,302	117			
1/8/2020	5,956,109	107			
1/9/2020	5,626,607	91			
1/10/2020	5,646,581	93			
1/11/2020	5,852,074	105			
1/12/2020	5,579,236	123			
1/13/2020	5,623,263	111			
1/14/2020	5,604,316	92			
1/15/2020	6,088,228	77			
1/16/2020	6,341,548	83			
1/17/2020	5,579,691	100			
1/18/2020	5,577,723	79			
1/19/2020	5,601,315	72			
1/20/2020	6,746,334	66			
1/21/2020	6,638,859	93			
1/22/2020	5,259,348	69			
1/23/2020	6,460,154	61			
1/24/2020	5,816,139	59			
1/25/2020	5,841,609	63			
1/26/2020	5,800,819	65			
1/27/2020	5,972,007	59			
1/28/2020	6,140,766	55			
1/29/2020	5,806,680	59			
1/30/2020	5,551,402	65			
1/31/2020	5,823,102	61			
2/1/2020	5,806,195	56			
2/2/2020	6,138,923	66			
2/3/2020	6,324,206	41			
2/4/2020	6,267,377	66			
2/5/2020	5,895,069	75			
2/6/2020	6,001,646	93			
2/7/2020	6,303,222	97			
2/8/2020	6,235,535	84			
2/9/2020	6,289,270	90			
2/10/2020	6,248,894	74			
2/11/2020	6,086,508	78			
2/12/2020	5,731,760	79			
2/13/2020	6,133,335	112			
2/14/2020	6,720,345	105			
2/15/2020	6,284,635	70			
2/16/2020	6,232,912	67			
2/17/2020	6,118,404	68			
2/18/2020	6,200,764	63			
2/19/2020	6,132,774	57			
2/20/2020	6,376,674	53			
2/21/2020	6,898,510	50			

Instantanious		5 Minute Average		15 Minute Average	
N - Inf Daily Flow Max		N - Inf Daily Flow 5 min avg		N - Inf Daily Flow 15 min avg	
4/26/2020	15.60	4/26/2020	15.41	4/26/2020	14.75

NWTP Finished Water Report 2020

Date	N - Total Water Pumped	N - Filt Wat Turbidity	N - Final Phenolphthalein	N - Final Hardness (CaCO3)	N - Final Alkalinity (CaCO3)	N - Final Conductivity	N - Final Phosphate avg	N - Final TOC avg	N - Tap THM Daily Average	N - Final Calcium avg	N - Final Free Chlorine avg	N - Final Total Chlorine avg	N - Final Fluoride avg	N - Final Iron avg	N - Final Manganese avg	N - Final Total Dissolved Solids avg	N - Final pH avg	N - Final Temperature avg
							0.380	2.14	0.0134	68.00	2.22	2.39	1.12	0.000	0.032	0.114	7.52	9.15
							0.460	2.00	0.0130	78.00	2.14	2.31	1.04	0.002	0.016	0.116	7.39	9.35
							0.470	1.93	0.0147	78.00	2.12	2.27	1.08	0.005	0.010	0.116	7.49	9.40
							0.520	1.94	0.0157	82.00	2.19	2.34	1.29	0.000	0.025	0.121	7.63	9.30
							0.490	2.02	0.0161	82.00	2.27	2.44	1.04	0.000	0.017	0.123	7.73	9.30
												2.42	0.80	0.004	0.020	0.120	7.44	9.50
												2.45	1.09	0.003	0.025	0.122	7.38	9.35
												2.43	1.22	0.002	0.018	0.152	7.44	10.05
												2.36	1.15	0.005	0.020	0.156	7.37	10.30
												2.33	1.08	0.002	0.023	0.163	7.26	9.35
												2.23	1.25	0.004	0.020	0.162	7.58	9.25
												2.28	1.00	0.001	0.011	0.160	7.45	9.55
												2.29	1.11	0.004	0.010	0.158	7.42	9.65
												2.28	1.16	0.007	0.018	0.161	7.28	9.15
												2.45	0.98	0.001	0.027	0.163	7.32	9.95
												2.45	1.13	0.000	0.018	0.161	7.44	9.85
												2.32	1.19	0.005	0.017	0.168	7.73	9.50
												2.30	1.17	0.010	0.015	0.168	7.65	9.60
												2.37	1.18	0.000	0.025	0.165	7.66	9.40
												2.42	1.18	0.008	0.021	0.167	7.58	8.60
												2.27	0.95	0.002	0.022	0.169	7.52	8.00
												2.11	1.15	0.013	0.015	0.168	7.61	8.25
												2.42	1.05	0.003	0.015	0.159	7.45	8.50
												2.20	1.02	0.002	0.019	0.164	7.51	7.70
												2.22	0.90	0.004	0.017	0.164	7.42	8.10
												2.34	1.24	0.001	0.018	0.164	7.61	7.95
												2.16	1.09	0.003	0.018	0.162	7.49	7.85
												2.29	1.11	0.004	0.019	0.167	7.73	7.05
												2.20	1.24	0.007	0.026	0.165	7.67	6.95
												2.17	1.11	0.002	0.011	0.165	7.65	7.15
												2.48	1.01	0.004	0.021	0.168	7.51	6.85
												2.41	1.14	0.003	0.022	0.164	7.62	6.80
												2.39	0.95	0.000	0.012	0.161	7.77	8.15
												2.26	1.03	0.011	0.016	0.140	7.39	8.25
												2.25	1.10	0.000	0.018	0.166	7.44	7.75
												2.27	1.06	0.004	0.014	0.162	7.53	7.80
												2.33	1.09	0.000	0.019	0.154	7.62	8.00
												2.35	0.95	0.003	0.021	0.149	7.53	8.00
												2.37	0.88	0.000	0.019	0.145	7.47	8.10
												2.29	1.08	0.002	0.011	0.148	7.47	8.30
												2.34	1.12	0.003	0.013	0.160	7.63	8.55
												2.33	1.08	0.007	0.016	0.170	7.80	8.30
												2.16	1.03	0.012	0.023	0.170	7.58	7.75
												2.35	0.99	0.007	0.020	0.158	7.32	8.10
												2.32	1.01	0.001	0.027	0.152	7.57	7.00
												2.22	1.08	0.000	0.023	0.145	7.37	7.00
												2.22	1.16	0.000	0.021	0.141	7.17	8.35
												2.31	1.14	0.004	0.014	0.139	7.44	8.85
												2.21	1.13	0.001	0.014	0.138	7.58	8.20
												2.43	1.14	0.000	0.017	0.134	7.67	8.35
												2.21	1.07	0.000	0.013	0.129	7.73	8.55

Fairmont Pumpstation Run Time

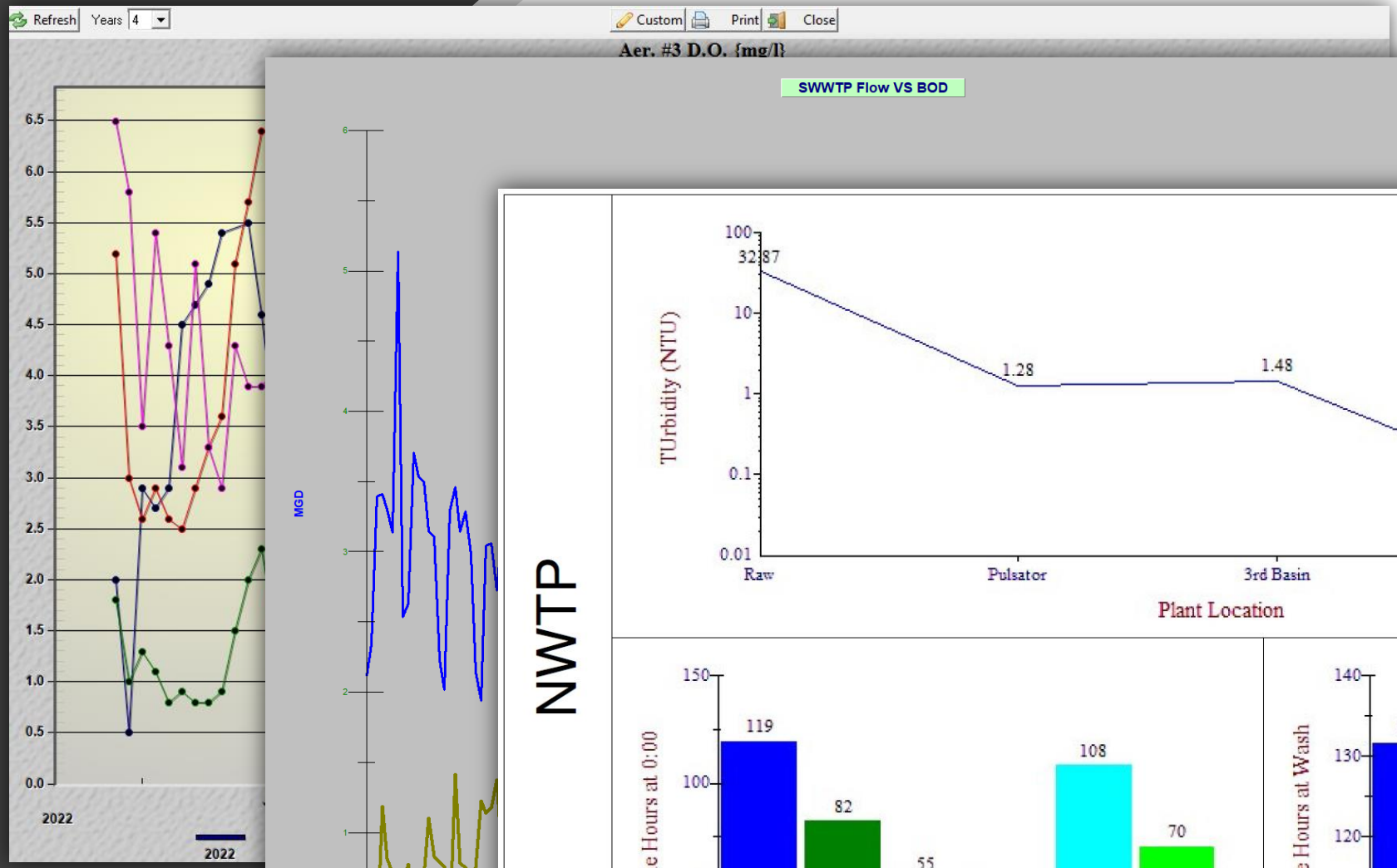
October 2020

	Collections\Fairmont			
Date	N - Pump 1 Runtime	N - Pump 2 Runtime	N - Pump 3 Runtime	Runtime Total
	Minutes	Minutes	Minutes	Minutes
10/1/2020	22.00	32.00	32.00	86.00
10/2/2020	26.00	31.00	46.00	103.00
10/3/2020	20.00	23.00	48.00	91.00
10/4/2020	20.00	61.00	7.00	88.00
10/5/2020	32.00	53.00	0.00	85.00
10/6/2020	25.00	27.00	17.00	69.00
10/7/2020	29.00	27.00	23.00	79.00
10/8/2020	27.00	46.00	26.00	99.00
10/9/2020	23.00	17.00	27.00	67.00
10/10/2020	30.00	18.00	28.00	76.00
10/11/2020	23.00	40.00	33.00	96.00
10/12/2020	35.00	31.00	27.00	93.00
10/13/2020	48.00	23.00	35.00	106.00
10/14/2020	40.00	30.00	30.00	100.00
10/15/2020	43.00	27.00	40.00	110.00
10/16/2020	41.00	23.00	24.00	88.00
10/17/2020	39.00	21.00	22.00	82.00
10/18/2020	29.00	27.00	18.00	74.00
10/19/2020	30.00	20.00	38.00	88.00
10/20/2020	46.00	30.00	35.00	111.00
10/21/2020	36.00	33.00	35.00	104.00
10/22/2020	29.00	24.00	30.00	83.00
10/23/2020	13.00	27.00	22.00	62.00
10/24/2020	24.00	46.00	28.00	98.00
10/25/2020	21.00	31.00	26.00	78.00
10/26/2020	25.00	29.00	33.00	87.00
10/27/2020	30.00	35.00	28.00	93.00
10/28/2020	32.00	29.00	31.00	92.00
10/29/2020	98.00	157.00	118.00	373.00
10/30/2020	49.00	90.00	64.00	203.00
10/31/2020	46.00	52.00	54.00	152.00
Maximum	98.00	157.00	118.00	373.00
Total	1,031.00	1,160.00	1,025.00	3,216.00
Average	33.26	37.42	33.06	103.74

Fairmont Pumpstation Run Time

September 2021

	Collections\Fairmont			
Date	N - Pump 1 Runtime	N - Pump 2 Runtime	N - Pump 3 Runtime	Runtime Total
	Minutes	Minutes	Minutes	Minutes
9/1/2021	46.00	29.00	32.00	107.00
9/2/2021	45.00	26.00	39.00	110.00
9/3/2021	46.00	35.00	34.00	115.00
9/4/2021	40.00	27.00	29.00	96.00
9/5/2021	42.00	33.00	48.00	123.00
9/6/2021	47.00	31.00	48.00	126.00
9/7/2021	38.00	34.00	42.00	114.00
9/8/2021	26.00	40.00	45.00	111.00
9/9/2021	30.00	36.00	44.00	110.00
9/10/2021	36.00	35.00	31.00	102.00
9/11/2021	29.00	30.00	42.00	101.00
9/12/2021	36.00	32.00	42.00	110.00
9/13/2021	33.00	39.00	39.00	111.00
9/14/2021	28.00	37.00	34.00	99.00
9/15/2021	35.00	47.00	38.00	120.00
9/16/2021	34.00	42.00	37.00	113.00
9/17/2021	27.00	38.00	42.00	107.00
9/18/2021	36.00	43.00	54.00	133.00
9/19/2021	31.00	39.00	41.00	111.00
9/20/2021	26.00	43.00	36.00	105.00
9/21/2021	27.00	41.00	50.00	118.00
9/22/2021	38.00	43.00	50.00	131.00
9/23/2021	46.00	20.00	37.00	103.00
9/24/2021	32.00	29.00	39.00	100.00
9/25/2021	29.00	23.00	32.00	84.00
9/26/2021	51.00	8.00	26.00	85.00
9/27/2021	34.00	20.00	33.00	87.00
9/28/2021	23.00	25.00	39.00	87.00
9/29/2021	29.00	26.00	36.00	91.00
9/30/2021	27.00	30.00	46.00	103.00
Maximum	51.00	47.00	54.00	133.00
Total	1,047.00	981.00	1,185.00	3,213.00
Average	34.90	32.70	39.50	107.10


Refresh
Years 4
Custom
Print
Close
Aer. #3 D.O. {mg/l}
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
2022
2022

SWWTP Flow VS BOD
MGD
6
5
4
3
2
1
0
5000
1/1
1/15

NWTP
100
32.87
10
1
0.1
0.01
TUrbidity (NTU)
1.28
1.48
0.07
0.03
Raw
Pulsator
3rd Basin
Filters
CFE
Plant Location
150
100
50
0
Runtime Hours at 0:00
119
82
55
12
108
70
F1
F2
F3
F4
F5
F6
Filter
140
130
120
110
100
Runtime Hours at Wash
132
133
119
115
119
139
F1
F2
F3
F4
F5
F6
Filter

Operator

06:19 AM collected composite samples and restarted
2nd waste to dig 4
3rd waste to dig 4
withdraw completed valve
started transfer from dig 3
septic gate unlocked
smoke alarm in UV buildir
06:02 PM Pump station st
Transfer continues from p
1st wasting complete to #
The tech showed up to wc
while he works on it
Transfer complete, closed
2nd wasting complete to #
Tech is done working on a
actuator is obsolete and y
everything back to where
Removed small turtle from
Jerry collected and sent o
3rd wasting complete to #
Changed yard valves so tl
Shut off blower for #4 DIG
Grit system is getting a plu
needs to be checked perio
different plan but that won
Gates secured
11:21 PM checked ps stat
checked grit system and r
blower readings
1st waste to dig 3
started withdraw from dig

Add | Edit | Del | Search | Sort | Print | spill

	Occured At	Edited By	Logbook	Note
364	6/3/2022 07:08		SWTP	I came in this morning and noticed what looked like water and chemical in the driveway. The chemical building floor looks like Acid Alum had been spilled on the floor.
748	4/3/2022 09:45		SWTP	I picked up some of the tools left in the Chemical building from transferring the Cat Floc to the barrel. I also picked the hose for the AA spare totes and drained it into the spare AA tote. I mopped some that I spilled trying to get that done.
888	3/7/2022 05:51		SWTP	04:00 postponed till 05:15 due to lightening Mopped chemical room again from last night spill
894	3/6/2022 08:12		SWTP	The floor in the chemical building so slippery from the AA spill. I mopped it. I will try to mop on it later once I get things done.
899	3/6/2022 06:20		SWTP	Acid Alum had a small spill i was in the chemical room just opened too many valves at start up... tried to hose, mop & clean that up
902	3/5/2022 10:13		SWTP	I put a Total Reagent kit on the Lab Total CL 17 at 10:10 AM. I have put away the Hach supplies that came in yesterday. I have been working on cleaning up the stuff from the Cat Floc transferring. I am having to soak the floor with simple green and water to get up the spill pads and cat floc that was spilled all over the floor. I will pobably be working on it most of the day.
1067	1/29/2022 05:00		SWTP	Acid Alum spill @03:30...immediately started cleaning up & hosing down chemical room. Approx. 04:15 I noticed new AA pump got shorted out...i tried to dry & unplug to restart...with no result. Called Bill little after 04:00 to inform him...he advised to shut plant down. m I immediately started that process 04:30 & CL-17 machine down at 4:50. We have enough water supply until Daryl arrives in morning & i will continue my clean up
1574	9/15/2021 12:46		SWTP	John Rudolph from the Cabinet for Health and Family Services was here today. He ran a fluoride sample. He also said that we need to put in a containment basin in for the HFS day tank that would hold any leaks or spills. He also said that they are starting a new way to figure how much HFS we can have in the day tank. We have to run the tank down until it loses suction. We make note of the pounds at that point. Then we can zero out the scale or add that amount to the new pounds based on production of the plant that he gave me.
1631	8/31/2021 01:49		SWTP	Had a chemical spill with the Poly E-Z 2706. Cleaning up between rounds. Be very careful in the anionic area!

Operator

8/20/2022 02:16 AM Performing syringe flush on TOC analyzer. Seems to mess up everytime I attempt to run a

ml/min should have
h flouride this morning
nning 28ml/min now

s not been adjusted
one up. The feed side
e been .8 gal/min.
een having issues
f anything has been
to call Sievers Monday
what is wrong and
to work on it. I tried
ar to be working at all

to 32".
working at all now. I
C lines. I have done
toc is not working at all
any sample at all. It
day night. It would run
so I think something

out when changing

Conclusion:

Success in management requires learning as fast as the world is changing.

Warren Bennis

Comments or Questions?

Josh Thompson
Treatment Superintendent
Josh.Thompson@hkywater.org
www.hkywater.org
270.869.6590 – Office
270.860.1186 – Cell