



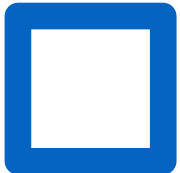
**Environmental
Protection
Agency**

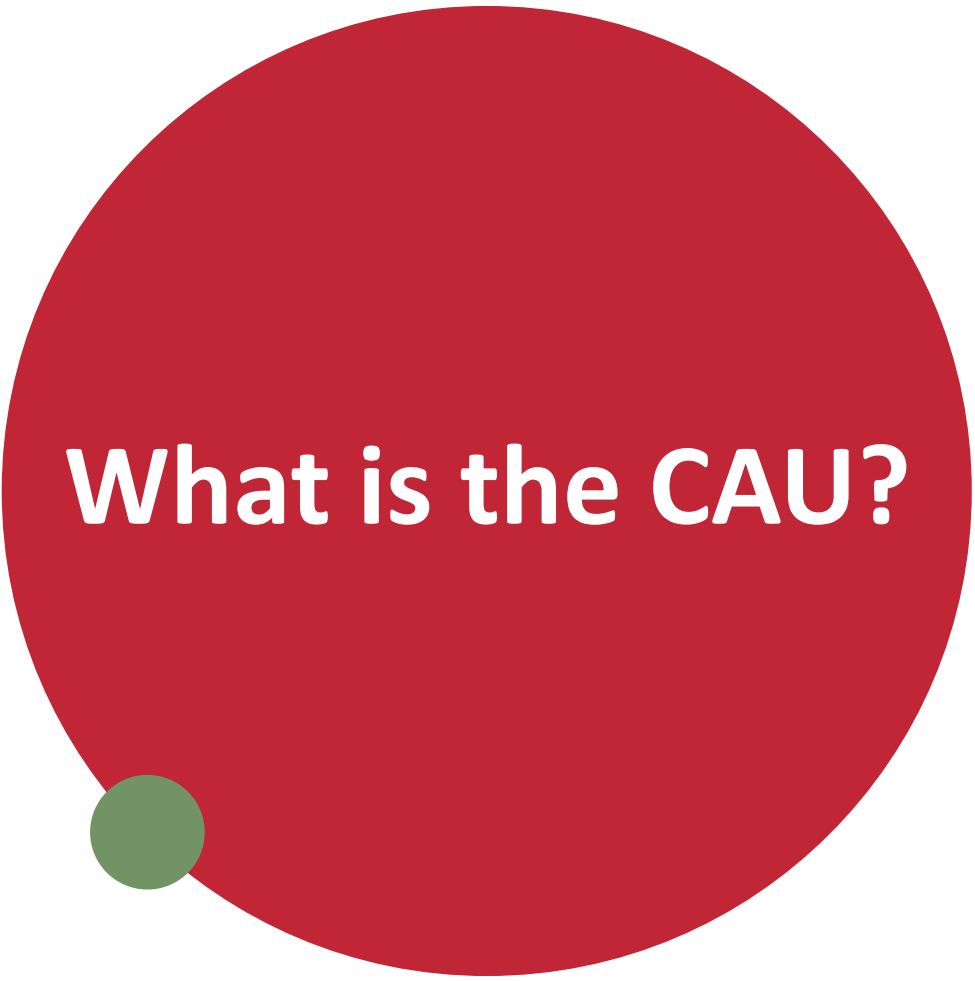
Lessons from the Field with Ohio EPA's Compliance Assistance Unit

U.S. EPA Technical Assistance Webinar
August 26, 2026

Agenda

- Introduction to Ohio EPA's Wastewater Compliance Assistance Unit
- What can we help with?
- Case studies





What is the CAU?

- Wastewater Compliance Assistance Unit
- We provide FREE on-site technical assistance to WWTPs
- We are a non-regulatory program within the Division of Surface Water (DSW) at Ohio EPA
- Provide hands-on training for operators and staff
- Measure physical characteristics, visual clues, and chemical trails the bacteria leave behind to troubleshoot non-compliance

CAU Staff



Andy Gall, Northwest Ohio



Nick Hammer, Southeast Ohio

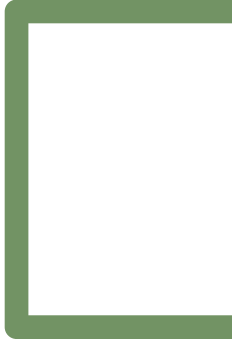
THE COMPLIANCE ASSISTANCE UNIT

Division of Environmental & Financial Assistance



We travel across Ohio helping WWTPs identify their performance limiting factors and create cost-effective solutions to bring them back into compliance.

We are committed to helping small communities that need assistance in achieving compliance with their NPDES permit requirements.



Troubleshoot Plant Problems



Innovative Solutions

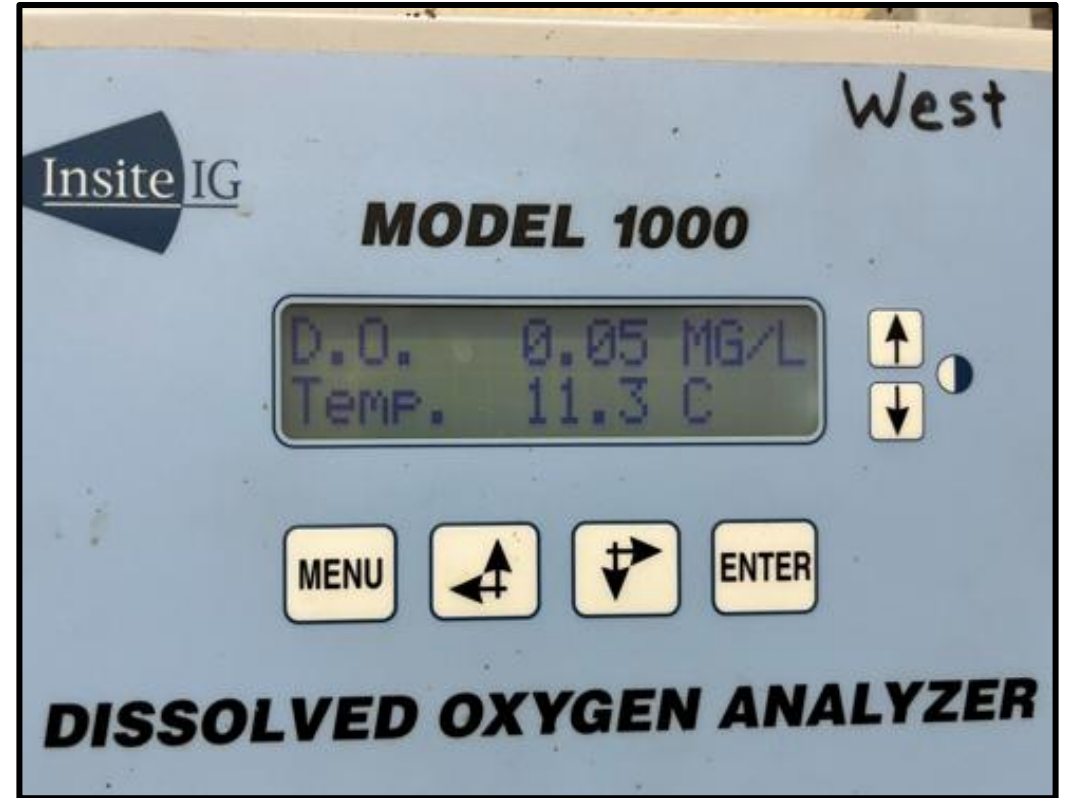
- Constructed diffusers out of PVC pipe and installed in the RBC tanks
- Repurposed an existing blower to provide air to the new diffusers



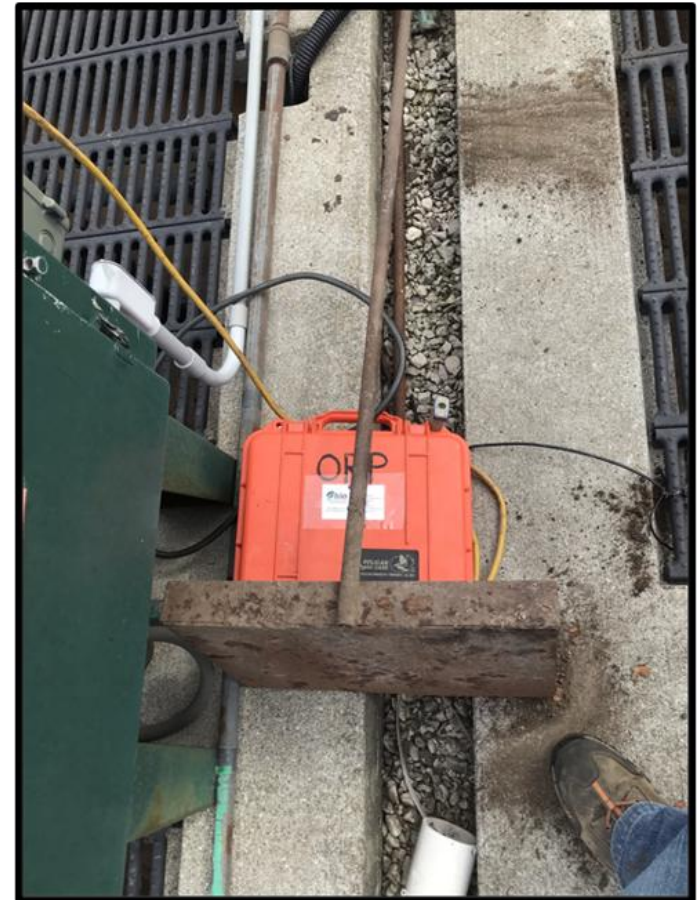
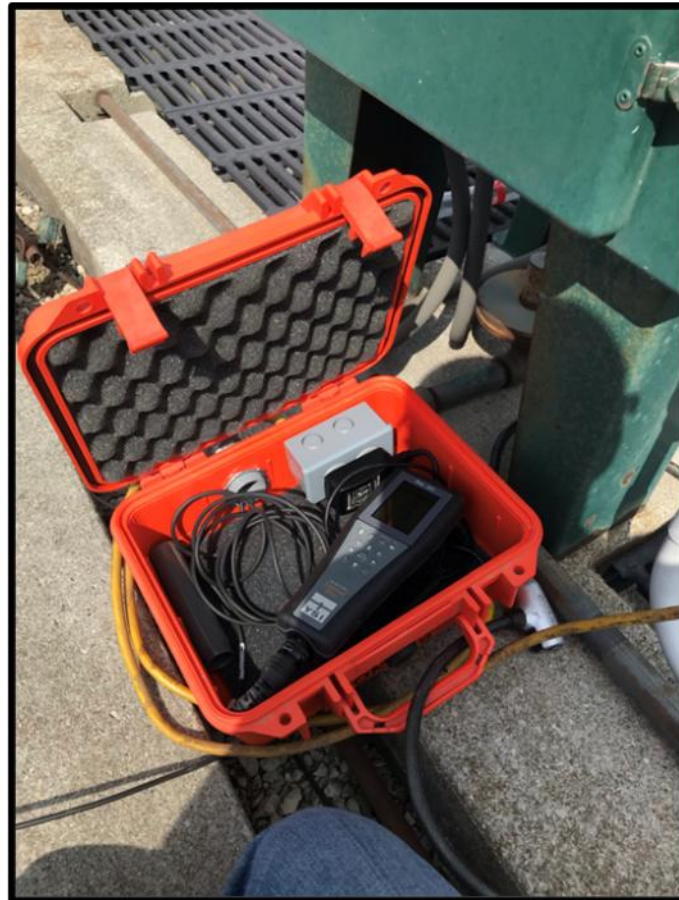
Troubleshoot DO Problems



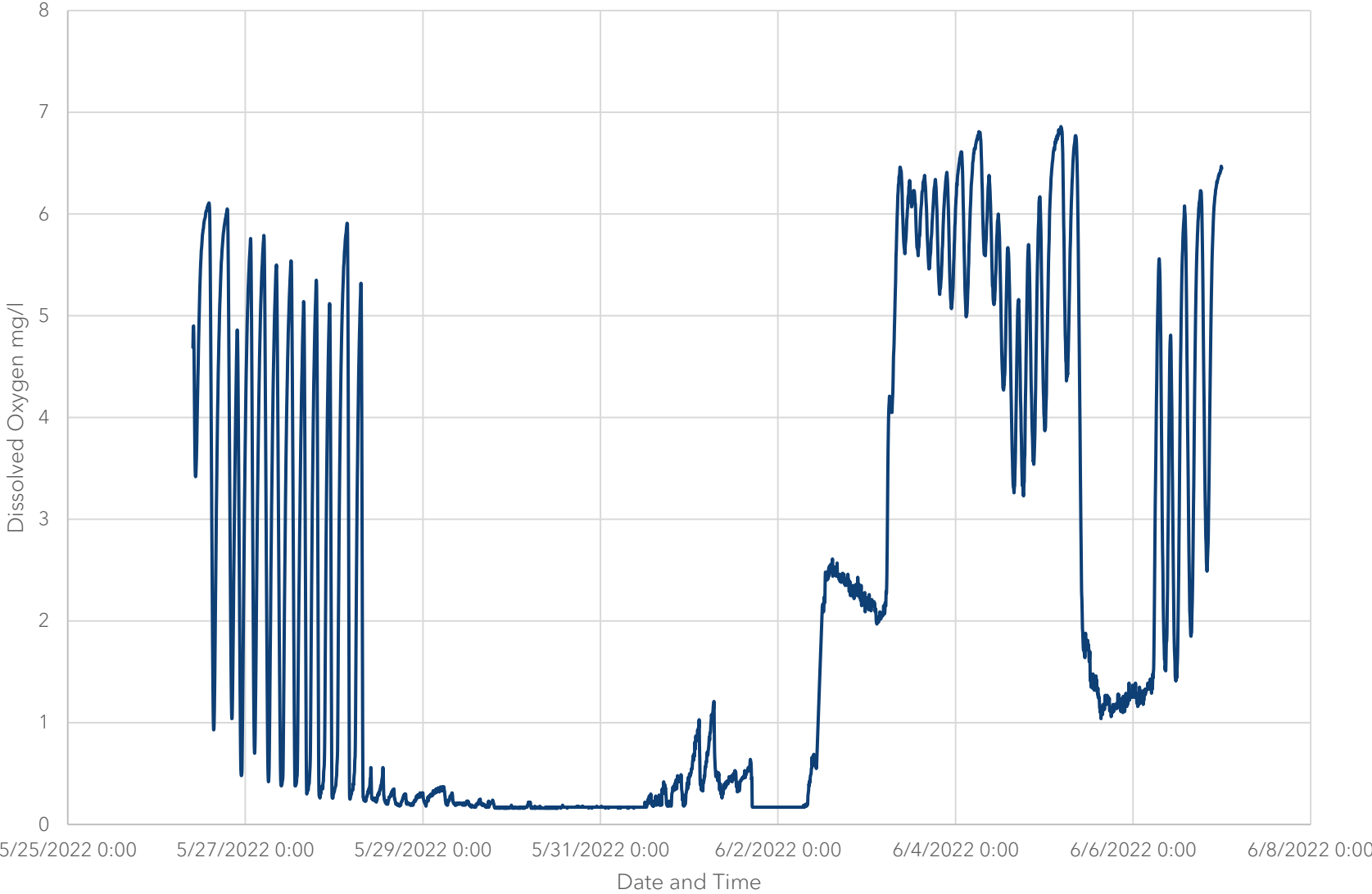
Search for Missing DO



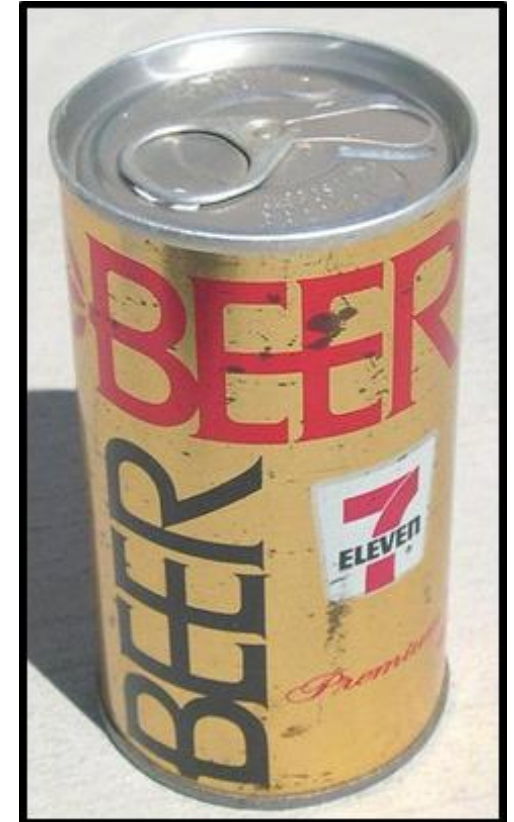
Troubleshoot DO Problems



Clays Park Aeration Tank 4 North Dissolved Oxygen (mg/L) Before and After Memorial Day Weekend 2022



A Perfect Storm Drops the DO



Troubleshoot Plant Problems



Innovative Solutions



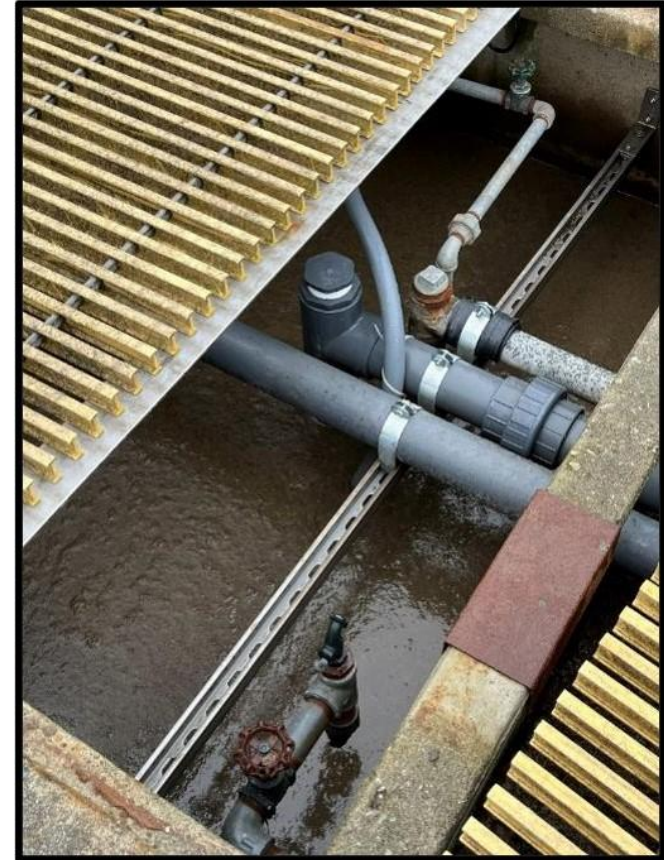
Innovative Solutions



Connect People



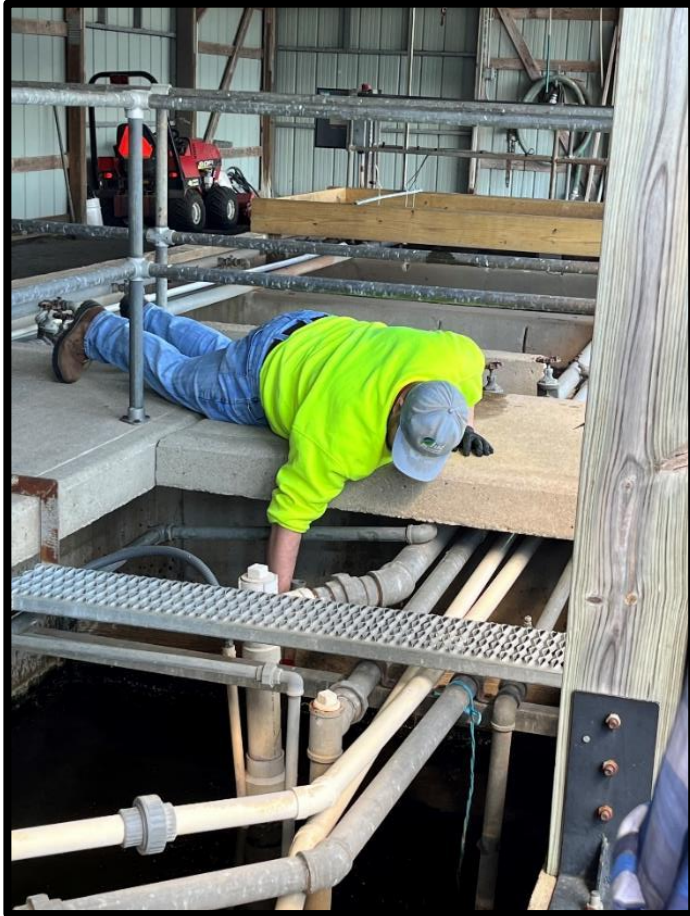
Create Cost-effective Solutions to Improve Plant Performance

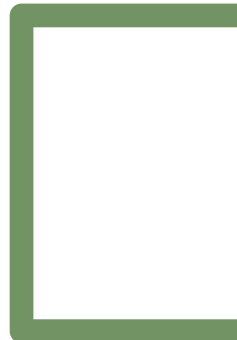


Create Cost-effective Solutions to Improve Plant Performance



Onsite Training - Easy Effective Process Control Procedures





Determine Plant Loadings and Capacity



Determine Plant Loadings and Capacity

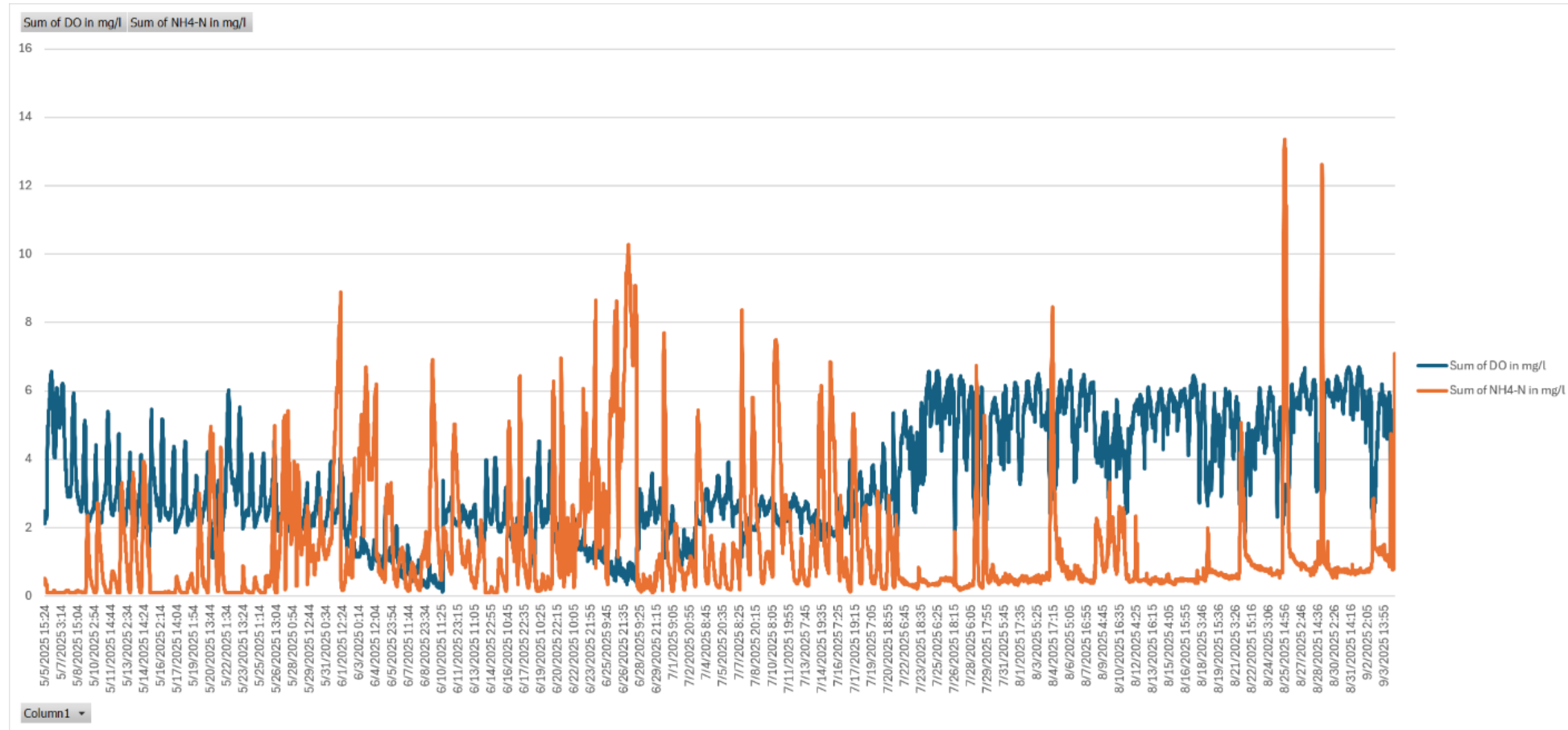


MAY

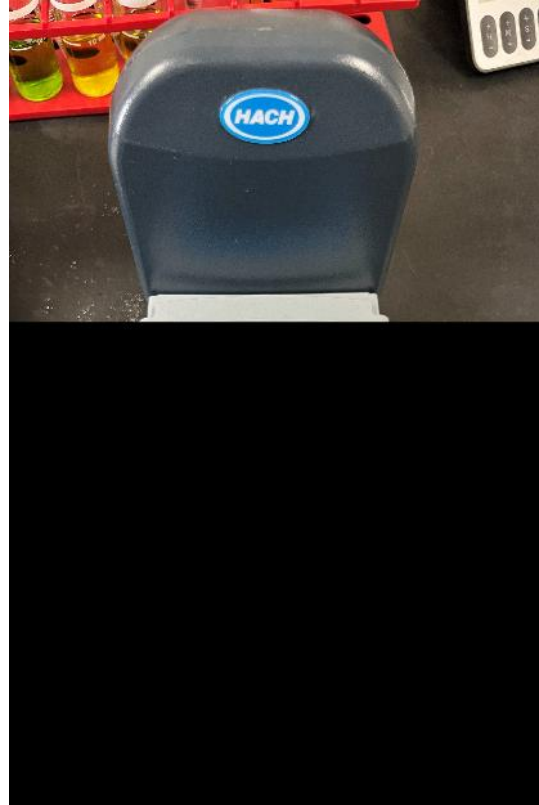
City of Eastoria 2025
Leachate Hauler Daily Log

Date	Time	Ticket Number	Hauler	Driver	Truck Number	Gallons	Source	Source Ticket Number	Sample ID
5-1	7:00	916088	BHC	R Coppus	259	6192	Sunny Farms		
5-1	9:20	916094	BHC	R Coppus	259	6180	Sunny Farms		
5-1	11:05	916104	BHC	R Coppus	259	6132	Sunny Farms		
5-1	12:45	916117	BHC	R Coppus	259	6144	Sunny Farms		
5-2	06:40	916180	BHC	M. Hunt	237	6137	Sunny Farms		
5-2	7:10	916184	BHC	R Coppus	259	6197	Sunny Farms		
5-2	08:10	916181	BHC	M. Hunt	237	6116	Sunny Farms		
5-9	07:45	916344	BHC	R Coppus	107	6204	Sunny Farms		
5-9	9:25	916354	BHC	R Coppus	107	6139	Sunny Farms		
5-9	9:35	916351	BHC	M. Hunt	237	6120	Sunny Farms		
5-9	11:10	916371	BHC	M. Hunt	237	6089	Sunny Farms		
5-10	06:30	916372	BHC	M. Hunt	237	6084	Sunny Farms		
5-10	07:40	916370	BHC	M. Hunt	237	6132	Sunny Farms		
5-10	6:40	916396	BHC	Tyler S.	107	6,086	Sunny Farms		
5-10	8:07	916371	BHC	Tyler S.	107	6132	Sunny Farms		
5-10	9:00	916372	BHC	M. Hunt	237	6125	Sunny Farms		
5-10	9:30	916396	BHC	Tyler S.	107	6089	Sunny Farms		
5-10	9:30	916396	BHC	M. Hunt	237	6110	Sunny Farms		
5-12	7:15	916400	BHC	M. Hunt	237	6155	Sunny Farms		
5-12	8:05	916403	BHC	R Coppus	259	6204	Sunny Farms		
5-12	9:05	916408	BHC	M. Hunt	237	6118	Sunny Farms		
5-12	9:55	916412	BHC	R Coppus	259	6178	Sunny Farms		

Determine Plant Loadings and Capacity



Determine Plant Loadings and Capacity



Evaluate Poor Settling



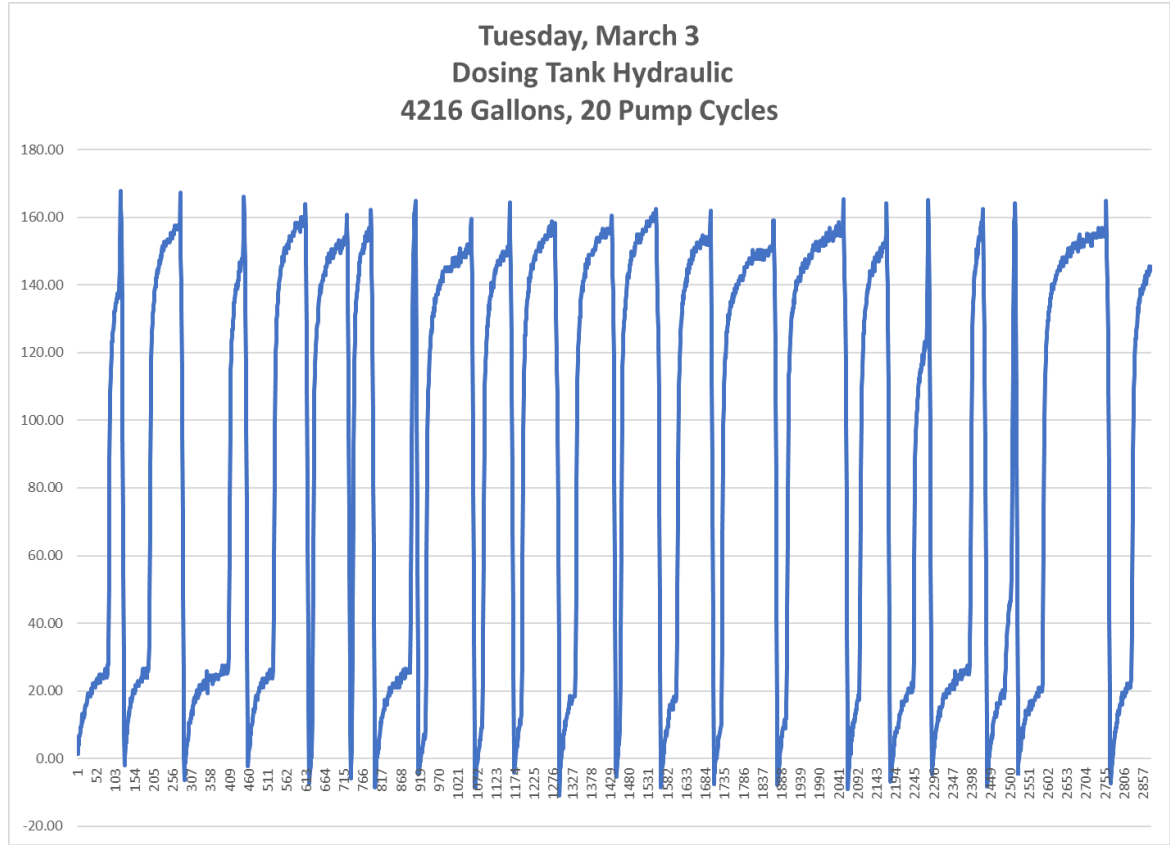
Excessive Loss of Solids



Dataloggers: Onset “HOBO”

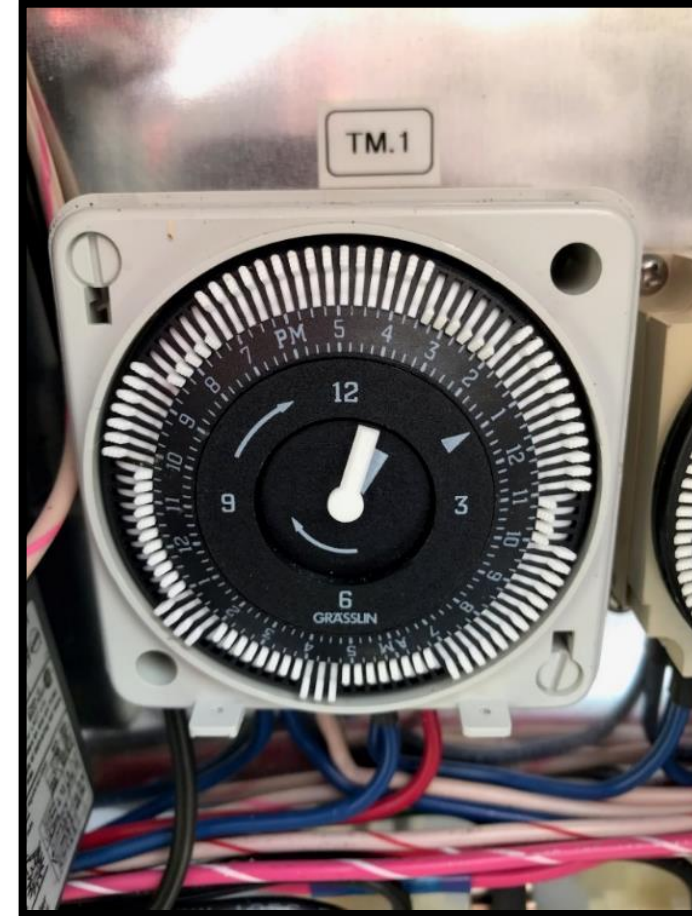


Hobo Dataloggers



Day	Fill	Draw
Tuesday	4216.08	-4071.12
Wednesday	3738.24	-3857.76
Thursday	3664.56	-3662.16
Friday	3503.52	-3494.88
Saturday	3838.08	-3843.84
Sunday	3386.64	-3389.76
Total	22347.12	-22319.5
Average	3724.52	-3719.92

Solids Loss Solution



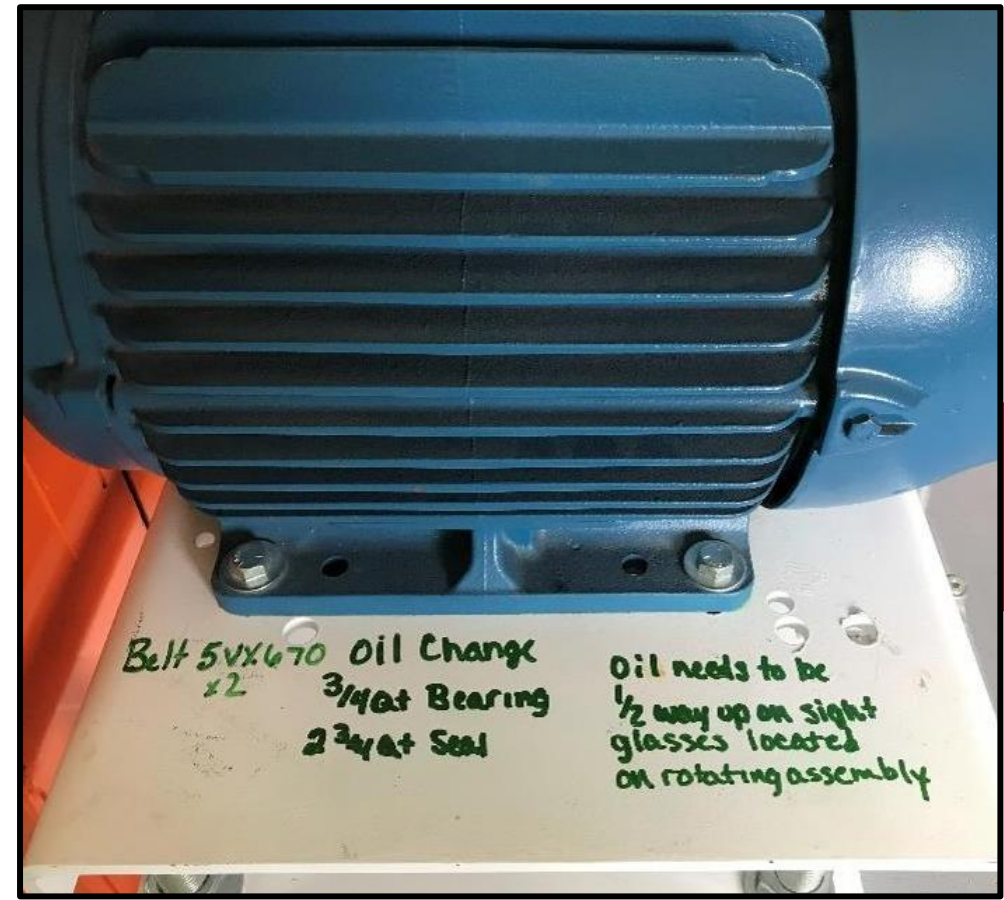
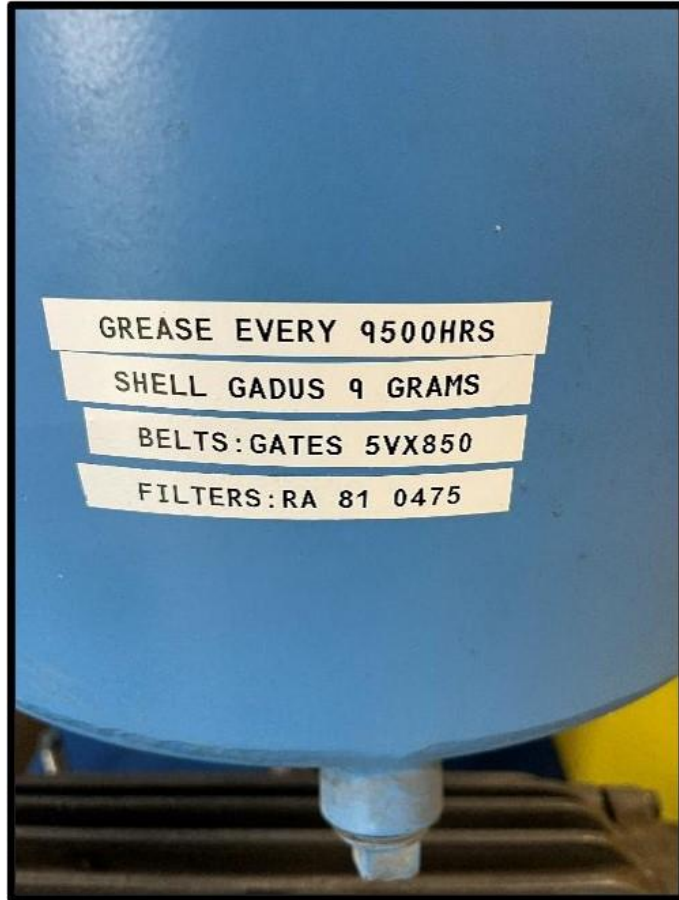
Identify Maintenance Issues and Needed Repairs



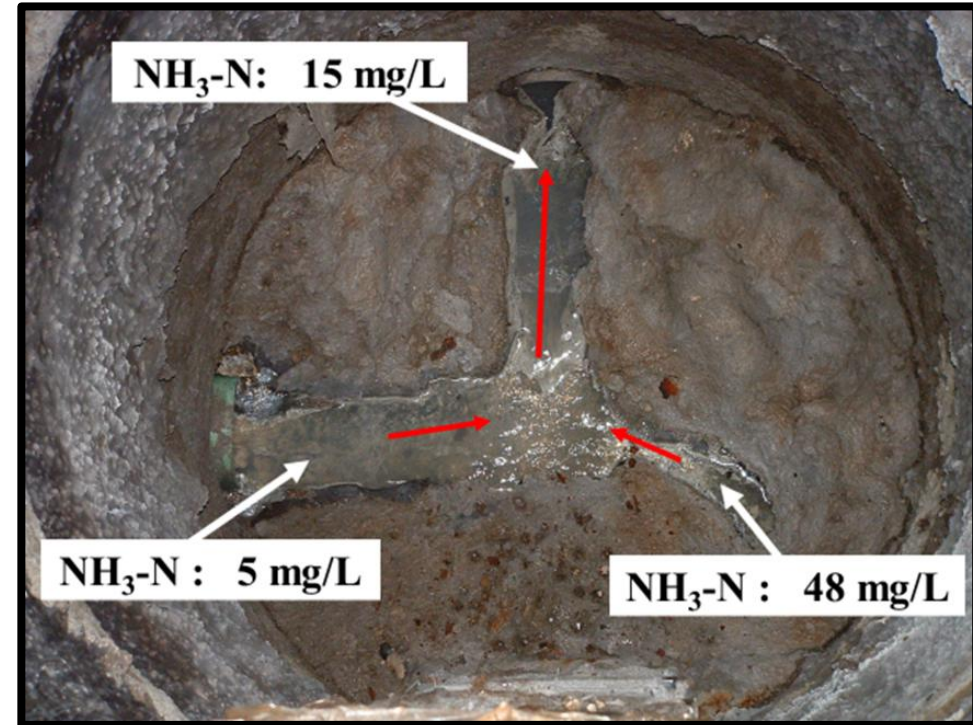
Identify Maintenance Issues and Needed Repairs



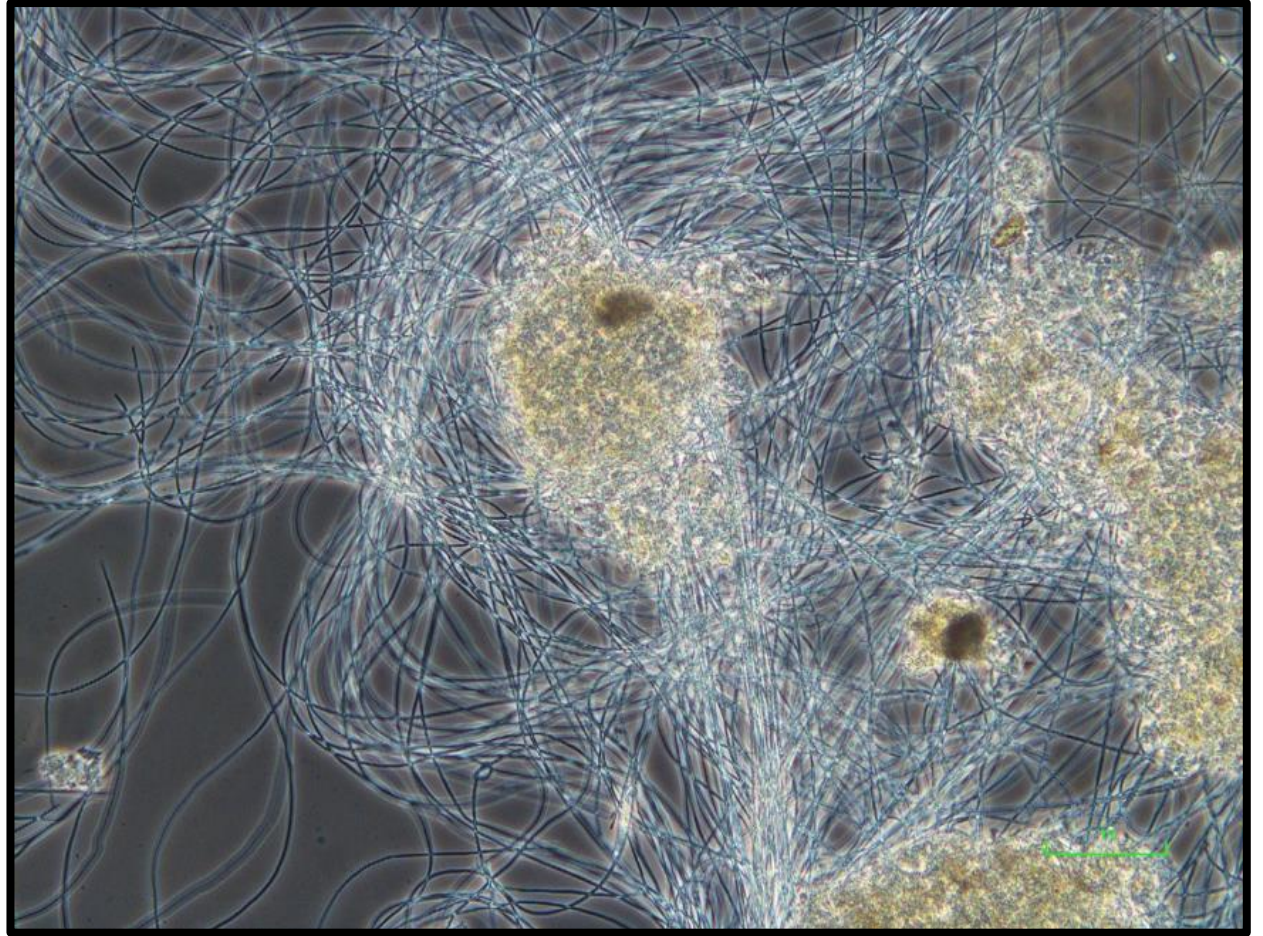
Formulate and Implement Preventive Maintenance Program



Evaluate Sewer System Inflow & Infiltration



Microscope Evaluations



Improve Sludge Handling Procedures

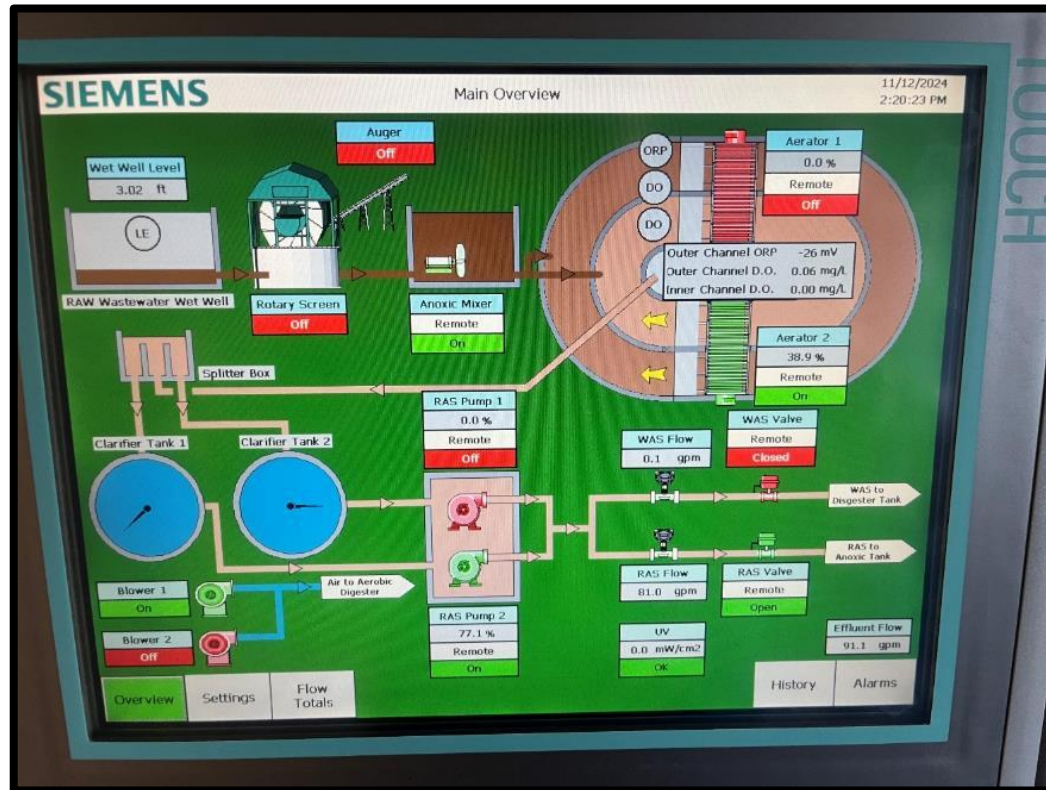


Village WWTP in NW Ohio



- Small village in Van Wert County
- 0.2 MGD ADF design flow
- Orbal system constructed in 2010
- Asked CAU to assist with meeting final effluent total phosphorus limit of 1.0 mg/l

Village WWTP



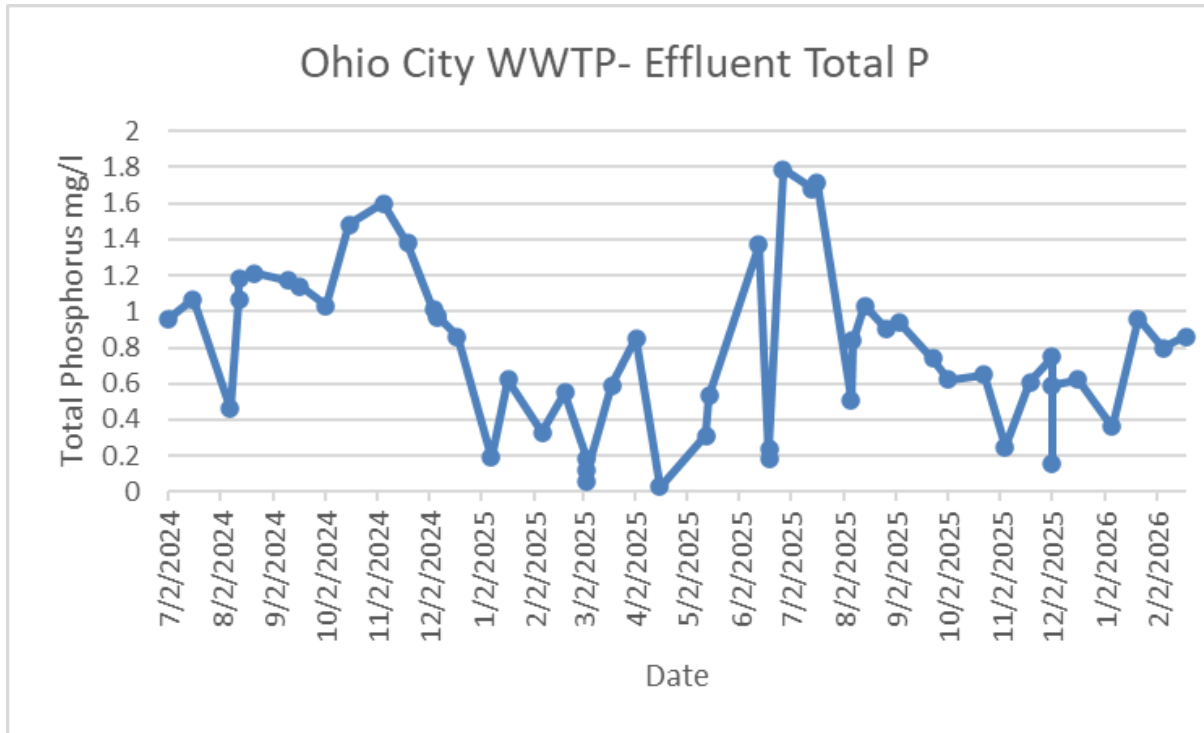
- Initial visit measured ammonia, nitrate, orthophosphate, and DO across the plant
- Influent orthophosphate 1.9 mg/l
- Effluent orthophosphate 1.6 mg/l
- Plant controls set to maintain 2.0 mg/l of DO in inner ring
- Portable DO meter = 5.8 mg/l

Village WWTP



- Facility installed new DO and ORP probes
- Good data enabled adjustments to plant operation
- Adjusted rotor and mixer operation to create anaerobic and anoxic conditions
- BPR success in late 2024

Village WWTP



- Spike in June 2025
- Rotors running slower and shutting off for periods of time, saving \$\$\$\$ on electrical costs
- Operator does process control testing for ammonia and orthophosphate and watches DO and ORP trends, strategizes decant and sludge wasting to not overload the plant

WWTPs CAU has Assisted with Phosphorus Removal

- 1) Bradford (2018) BNR WWTP (SWDO)
- 2) Niles (2020) BNR WWTP (NEDO)
- 3) Walnut Creek (2020) SBR WWTP (NEDO)
- 4) Mt Hope WWTP (2021) Package WWTP (NEDO)
- 5) Versailles WWTP (2021) BNR WWTP (SWDO)
- 6) Akron #26 WWTP (2021) BNR WWTP (NEDO)
- 7) Sabina WWTP (2021) Oxidation ditch (S2EBPR system) (SWDO)
- 8) Archbold WWTP (2022) Diffused aeration (NWDO)
- 9) Summit County #36 Fishcreek WWTP Orbal system (2022) (NEDO)
- 10) Jamestown WWTP Orbal system (2022) (SWDO)
- 11) Liberty Township WWTP Orbal system (2021) (CDO)
- 12) Mercer County West Jefferson WWTP (package plant near Celina) (2022) (NWDO)
- 13) Perrysburg WWTP (2022) (NWDO)
- 14) Village of Ohio City WWTP (2024) (NWDO)

Poll Question #1

Choose the answer below that best describes your role/position:

- a) Certified/Licensed Operator
- b) WWTP staff (no license)
- c) Professional Engineer
- d) Regulator (State or Federal)
- e) Other

Village WWTP in SW Ohio

- Population of 1,600
- No industry
- Design Flow 0.4 MGD
- Requested assistance for effluent violations: TSS, Ammonia, & pH



Final Clarifiers

Oxidation
Ditches

Influent Pump
Station

Digester

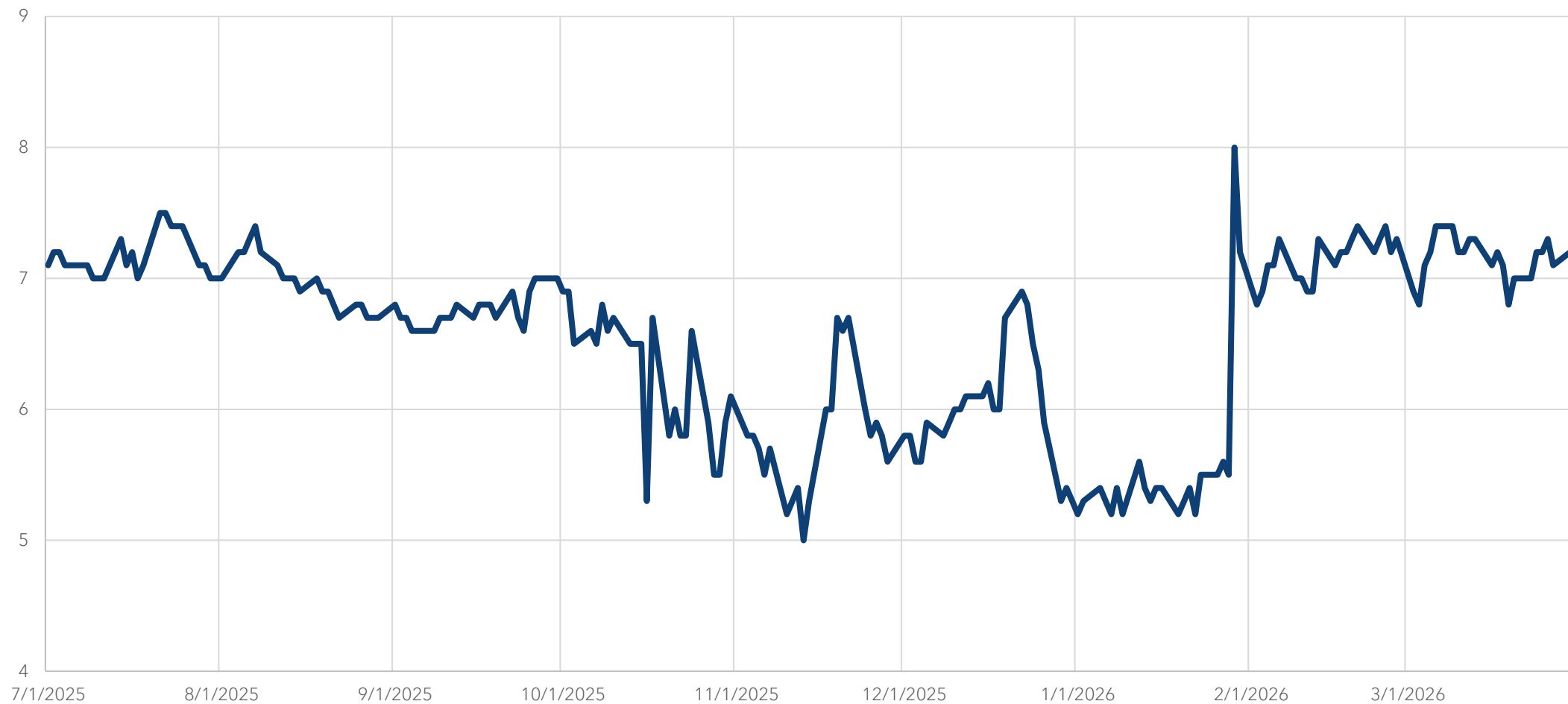
UV
Disinfection

Influent
Screening

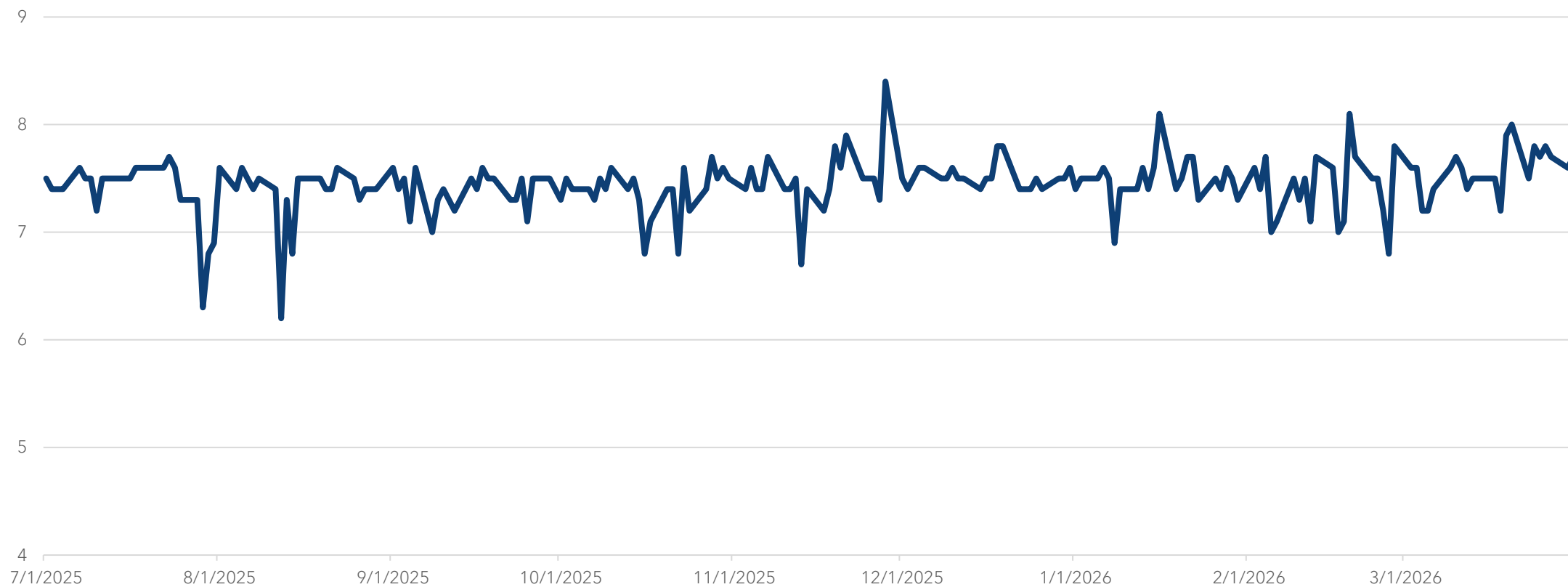
Outfall to the
Ohio River



Effluent pH Results



Influent pH Results



Process Control Data

CAU on-site January 28

- Influent alkalinity = 180 mg/L
- Influent ammonia = 35.5 mg/L
- Oxidation ditch alkalinity = <20 mg/L (pH 5.9)
- Oxidation ditch ammonia = 8 mg/L

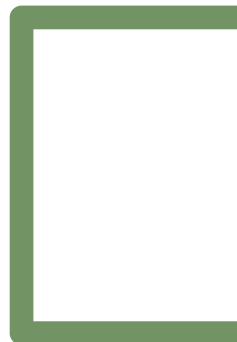
$35.5\text{mg/L} \times 7.14 = 253\text{ mg/L alkalinity needed}$



Effluent pH



What changed?



Source Water



Source: Shutterstock

- Connected to Brown County Rural Water early August 2025
- Alkalinity in new source water = 70 mg/L

Alkalinity Addressed



- Addition of hydrated lime to increase alkalinity
- Why not sodium bicarbonate?
- pH on January 29 = 8.0
- Alkalinity = 140 mg/L

Problem solved?

- pH & ammonia violations resolved
- TSS & fecal coliform violations persisted
- Minimal improvement in settleometer



February 2026

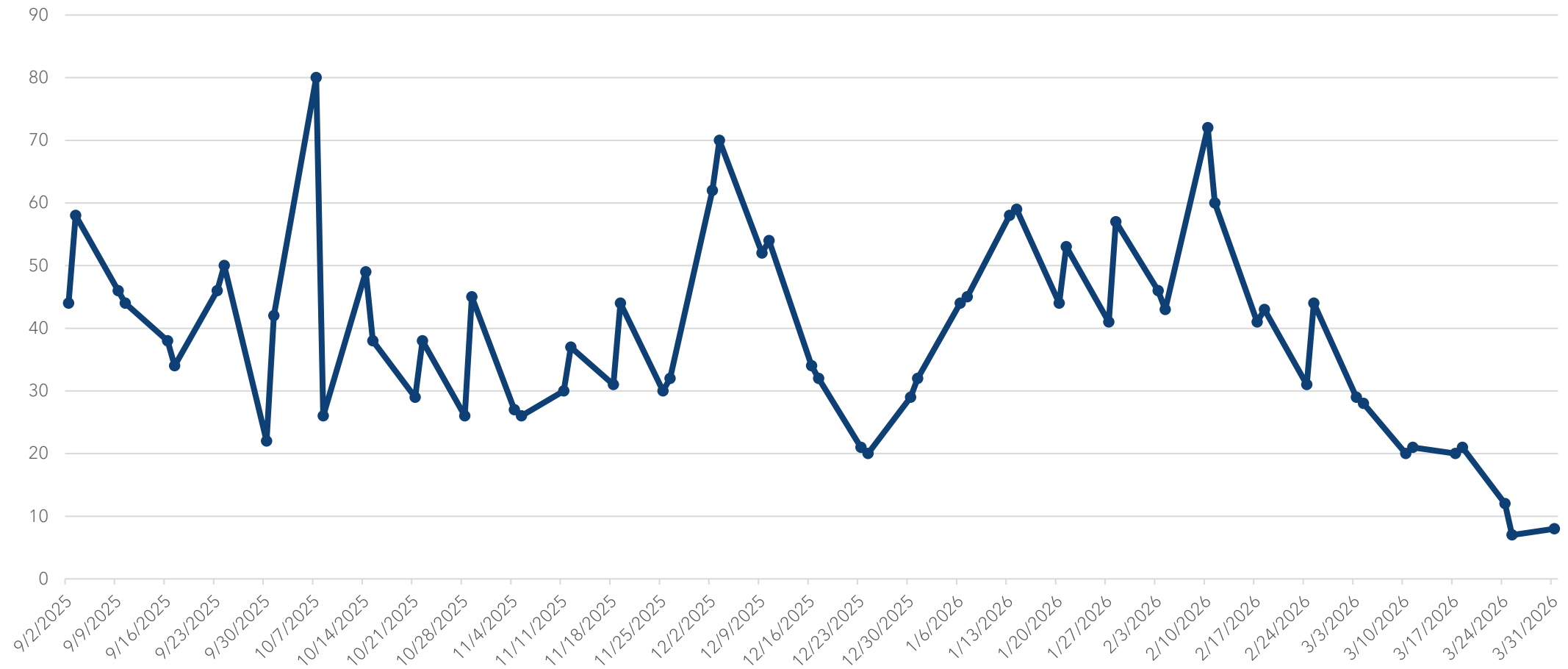


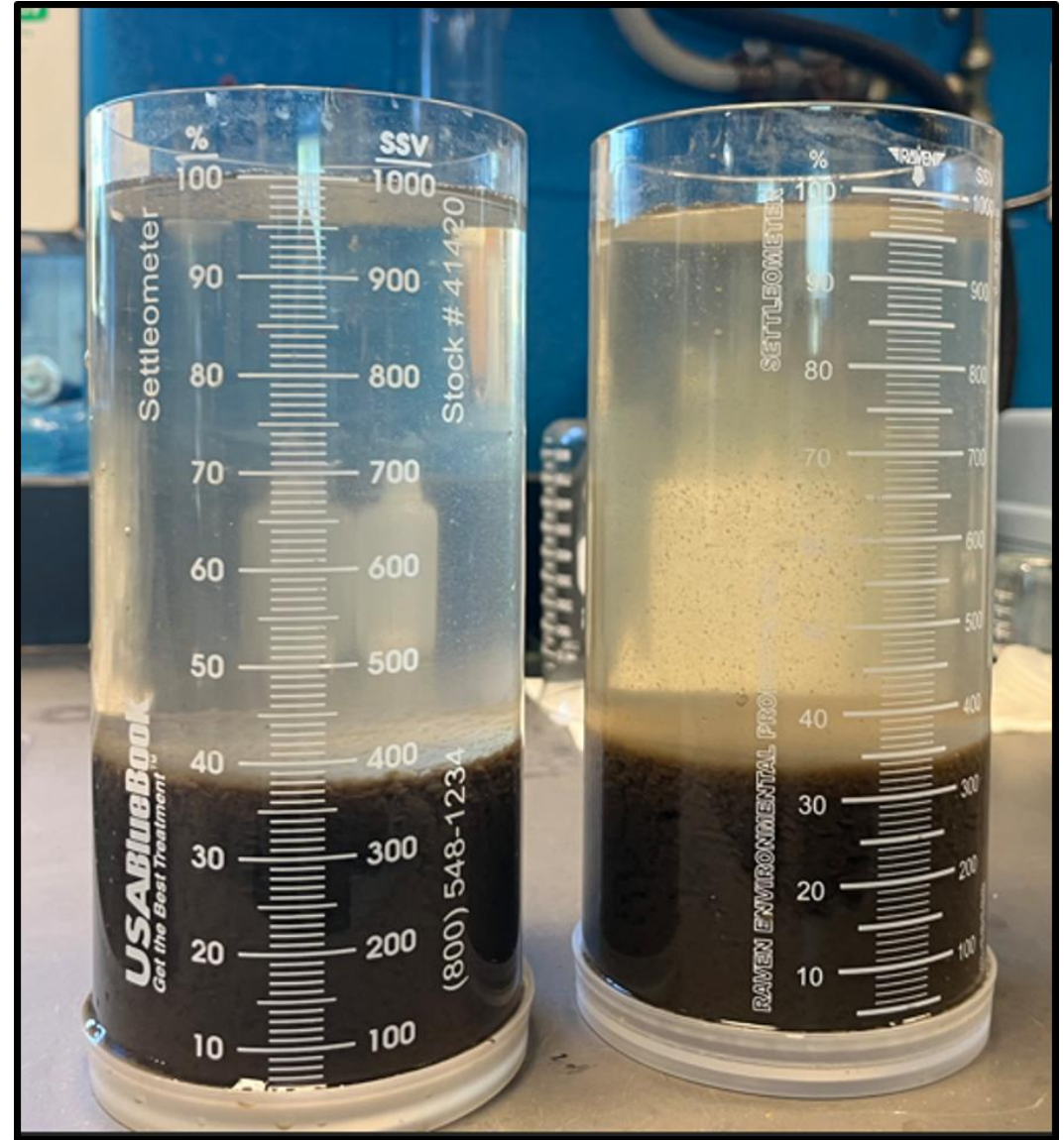
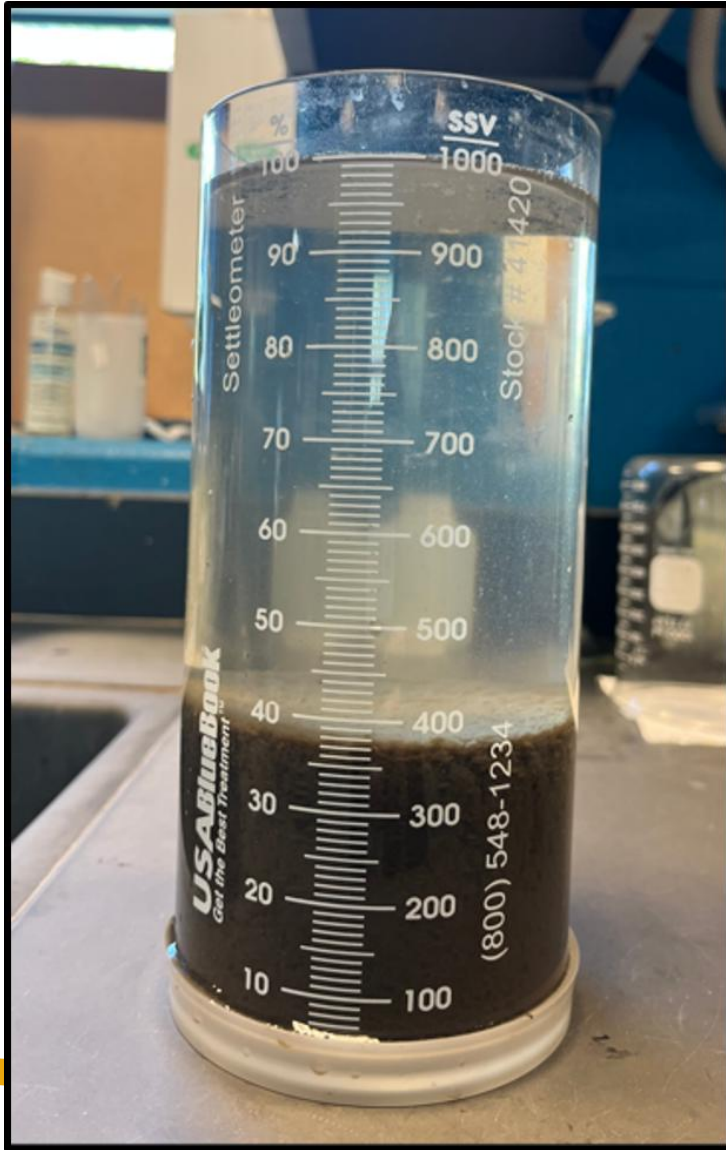




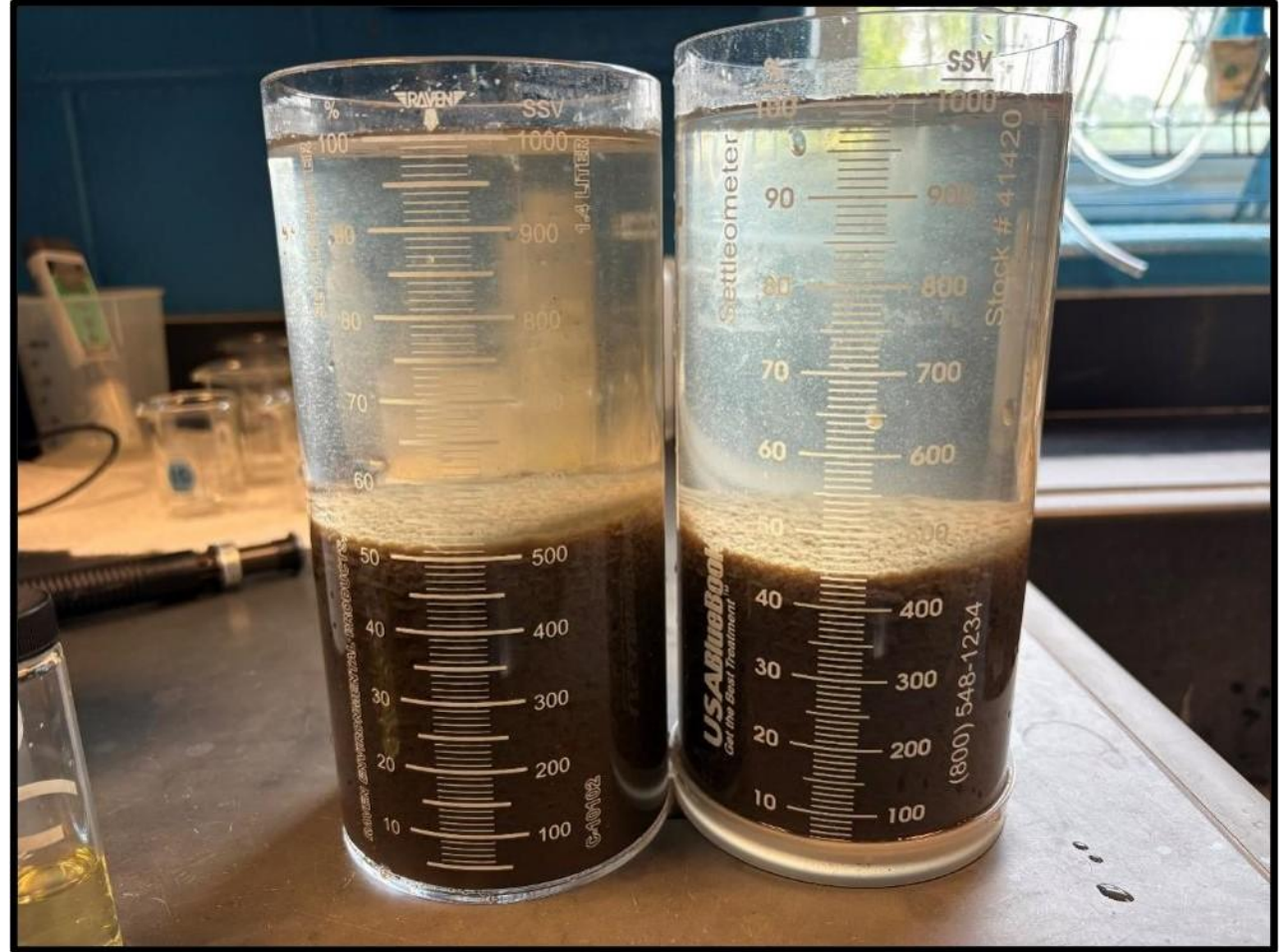
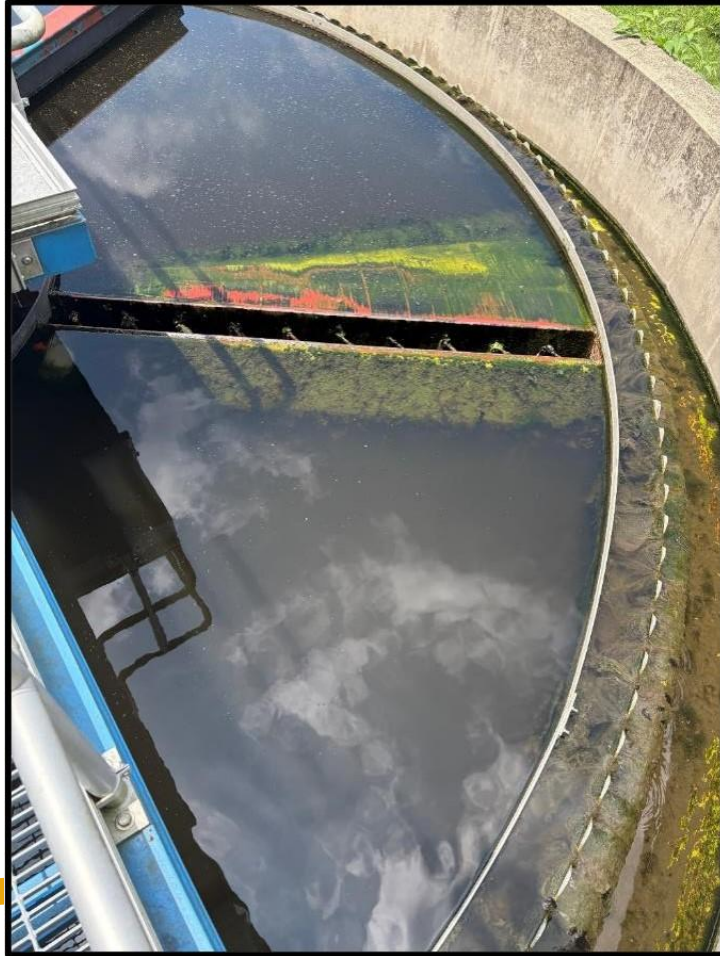


TSS Results

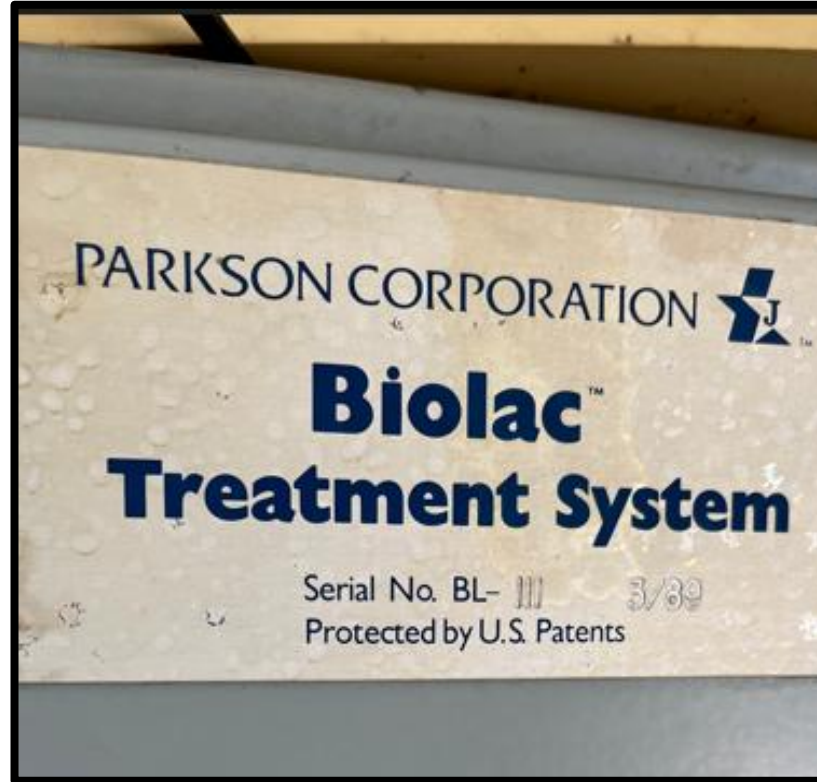




June 2026



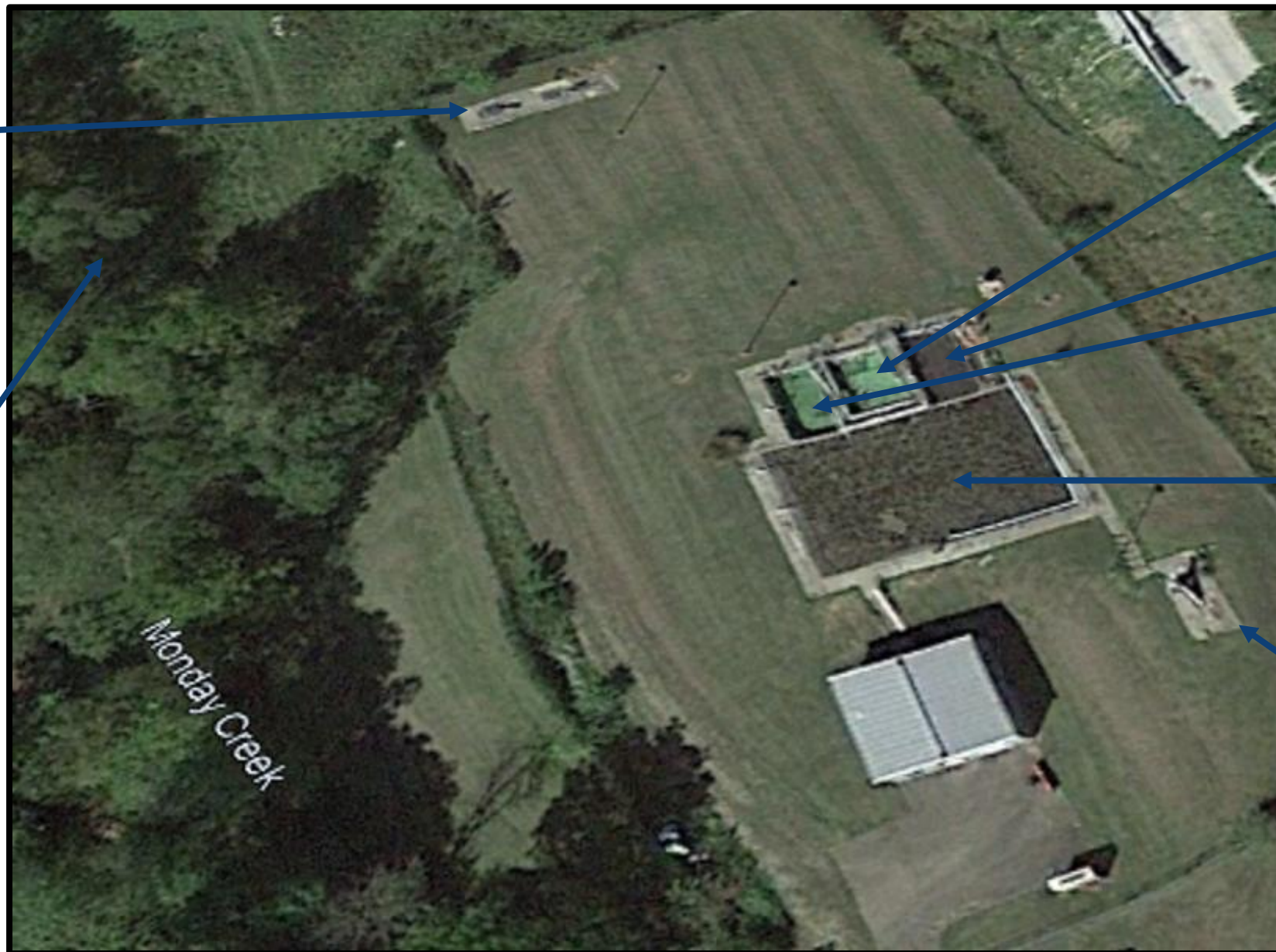
Small Village in SE Ohio



- Population of 500
- No industry
- Parkson Biolac installed in 2002
- Design flow 93,000 gpd

UV &
Post
Air

Outfall

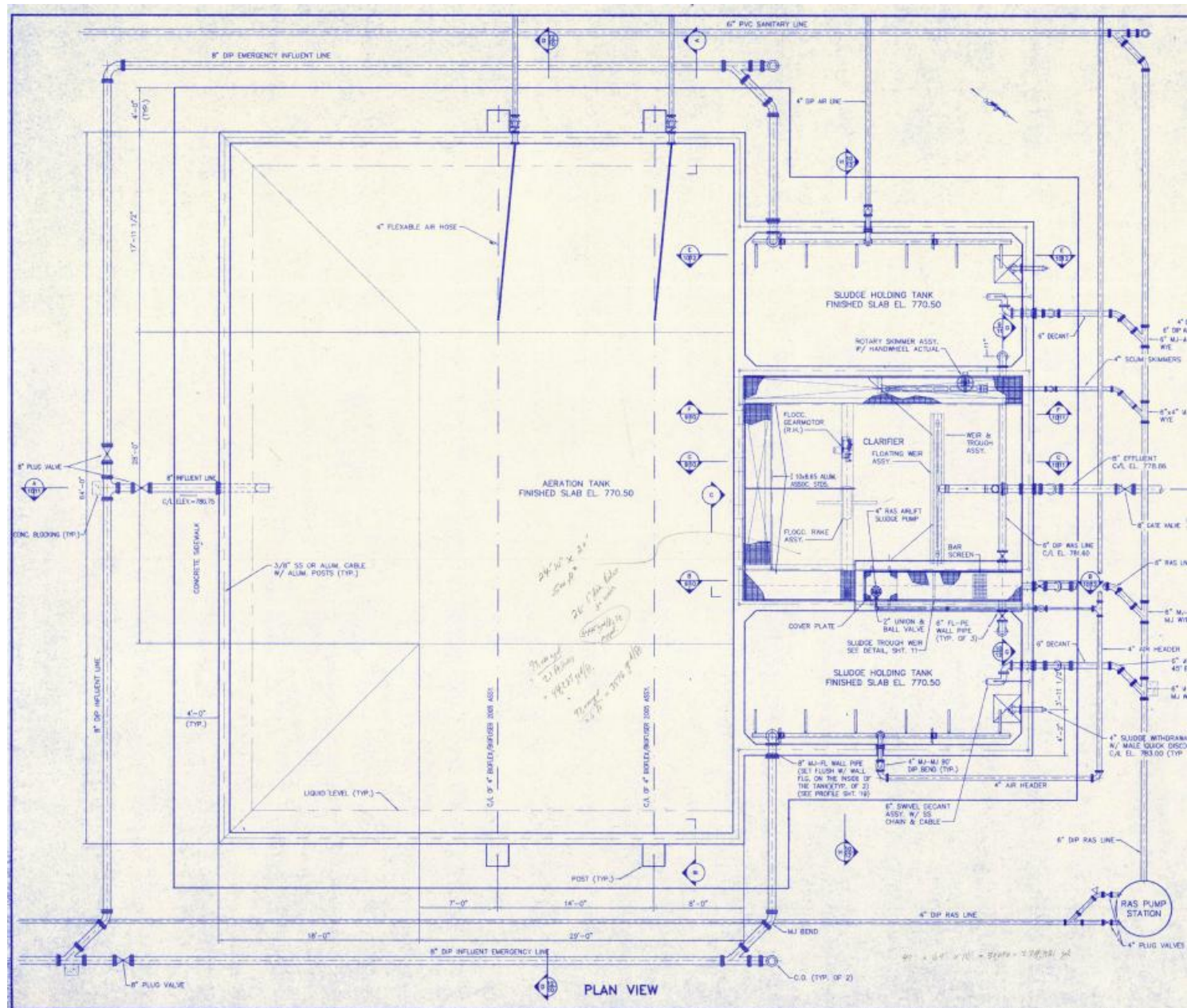


Clarifier

Digesters
(2)

Aeration

Influent
Screening

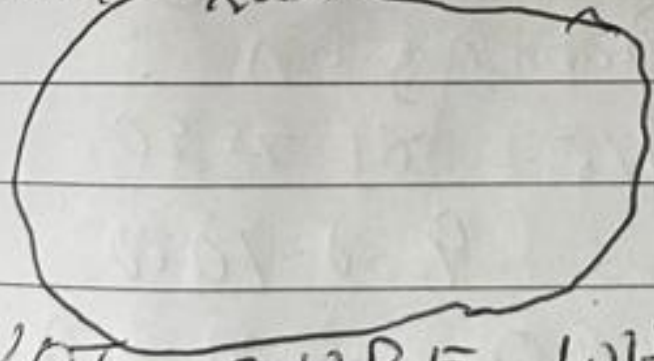


~~SAT~~ SUNDAY 11/30/25 (11:50-12:20) - 30min

- CHECK ON PLANT

- DAILY CHECKS + Log Flow, TEMP - 12.5°C, TURB-3, Flow, O₂ level

- MY LAST DAY HERE @ PLANT PICKED
UP PAPER WORK FOR NOV. SO I CAN FILE MY
LAST MONTH OF REPORTS + DROPE OFF KEYS



KEYS TO GATES
+ BUILDING

NOT SURE WHO IS TAKING OVER BUT
PLANT IS HERE ~~FOR~~







Clean up

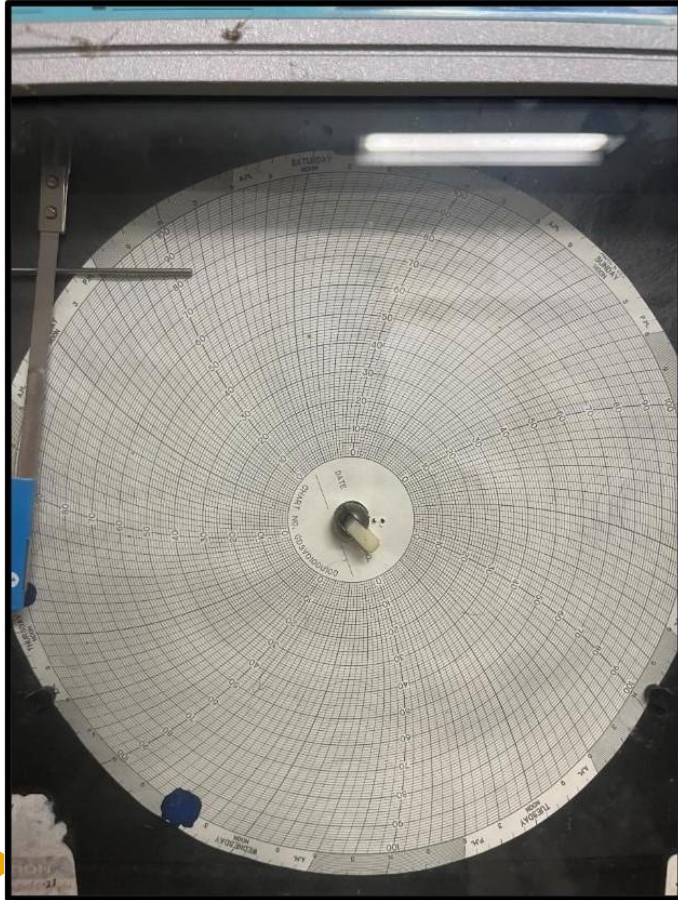






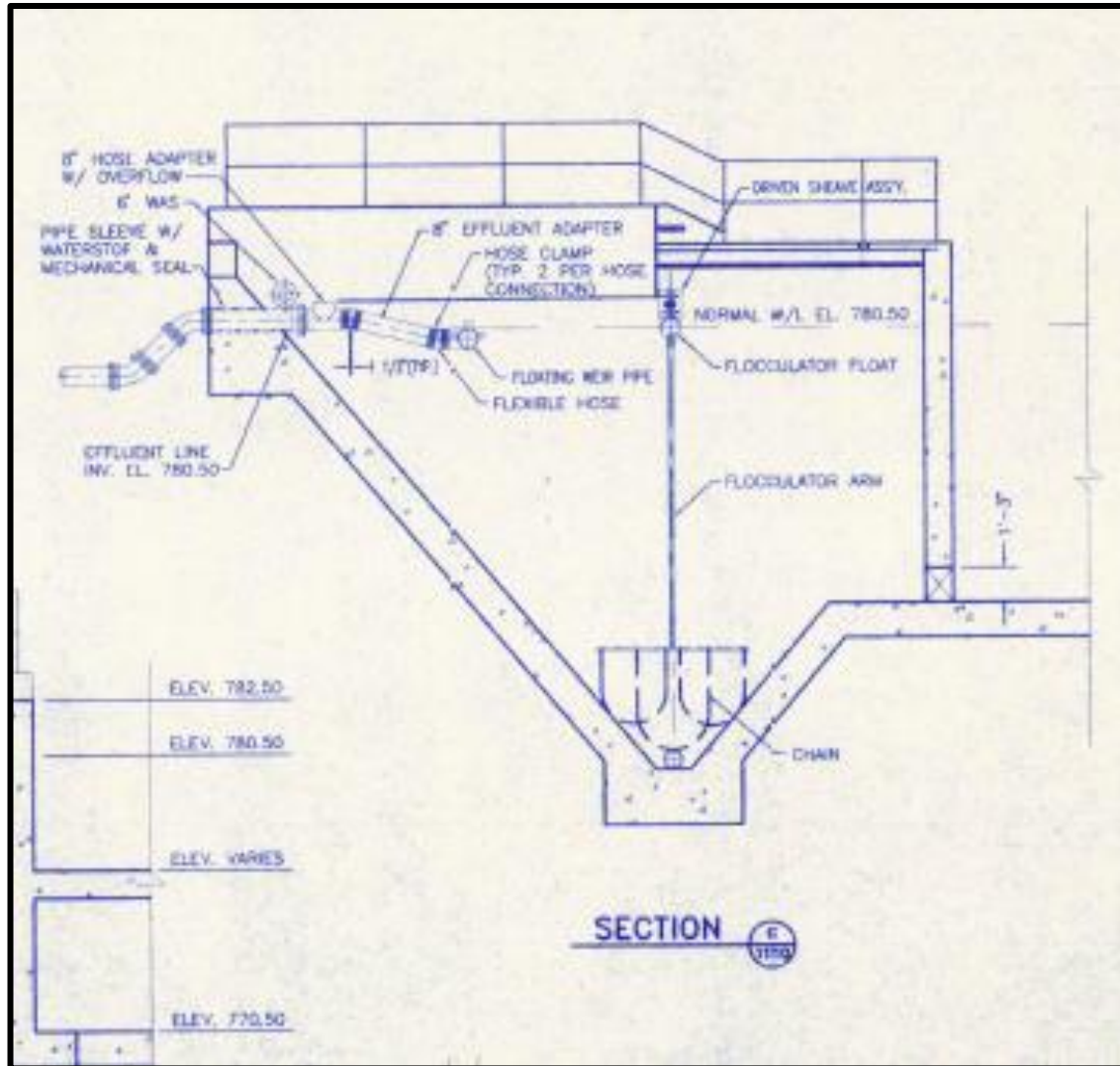


Outstanding Issues



- No working flow meter
- Rake not in operation
- Waste valve replacement

Clarifier



- Float and chain gear drive not operational
- Poor RAS efficiency
- Denitrification



City WWTP in SE Ohio

- Population of 5,600
- Several industrial users
- 1.44 MGD design flow
- Three vertical loop reactors
- Landfill leachate hauled in Monday-Friday
- Leachate is introduced into old sludge drying beds



**Vertical
Loop
Reactors**

**Sludge
Press**

**Influent
Wet Well**

Digesters



**Final
Clarifiers**

**Leachate
Receiving
Location**

**UV & Post
Aeration**

**Old
Sludge
Drying
Beds**

VLR Operations



Leachate Receiving Station



History

Pre-drought

- Up to 30,000 GPD of leachate
- Average concentration = 800-1200 mg/L of NH₃



Late Summer/Fall

- Up to 30,000 GPD of leachate
- Ammonia concentration gradually increasing – in both Leachate and WWTP
- Ammonia effluent violations
- November 2024, ammonia was approximately 3,000 mg/L in leachate

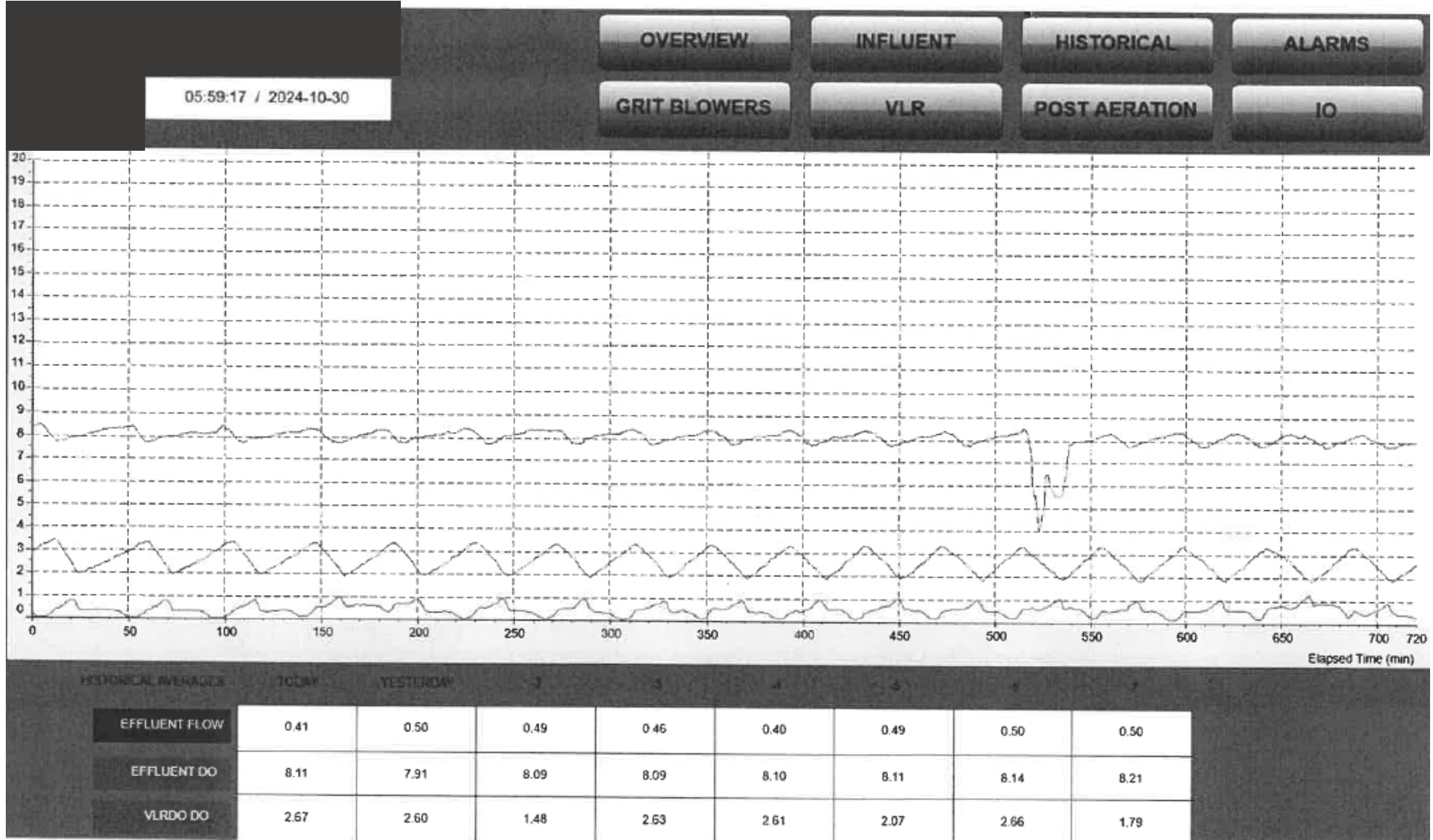
Ammonia Process Control Data, November 2024

9:00 AM

Sample Location	Ammonia (mg/L)
Influent (town only)	29.5
Influent (with internal flows)	42
Leachate (2nd) load	~3,000
Belt Press Effluent	23
VLR #2 Effluent	22.75
VLR #3 Effluent	0
Final Clarifier Effluent	0.5

12:30 PM

Sample Location	Ammonia (mg/L)
VLR #3 Effluent	4.8



06:03:27 / 2024-10-08

OVERVIEW

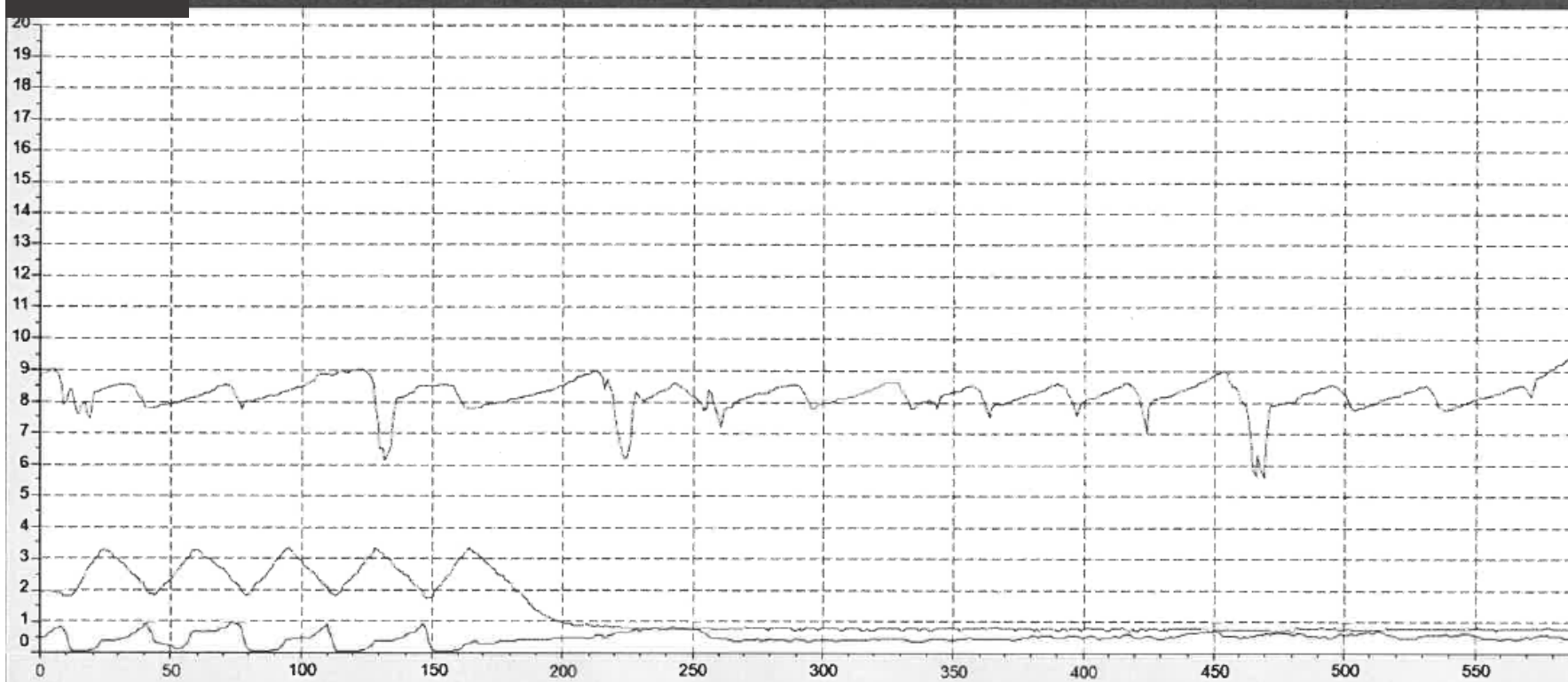
INFLUENT

HISTORICAL

GRIT BLOWERS

VLR

POST AERATION



HISTORICAL AVERAGES

TODAY

YESTERDAY

-2

-3

-4

-5

-6

-7

EFFLUENT FLOW

0.45

0.49

0.51

0.44

0.85

0.55

0.54

0.74

EFFLUENT DO

8.24

8.27

8.14

8.16

8.15

8.18

7.22

8.11

VLRDO DO

1.68

1.58

2.64

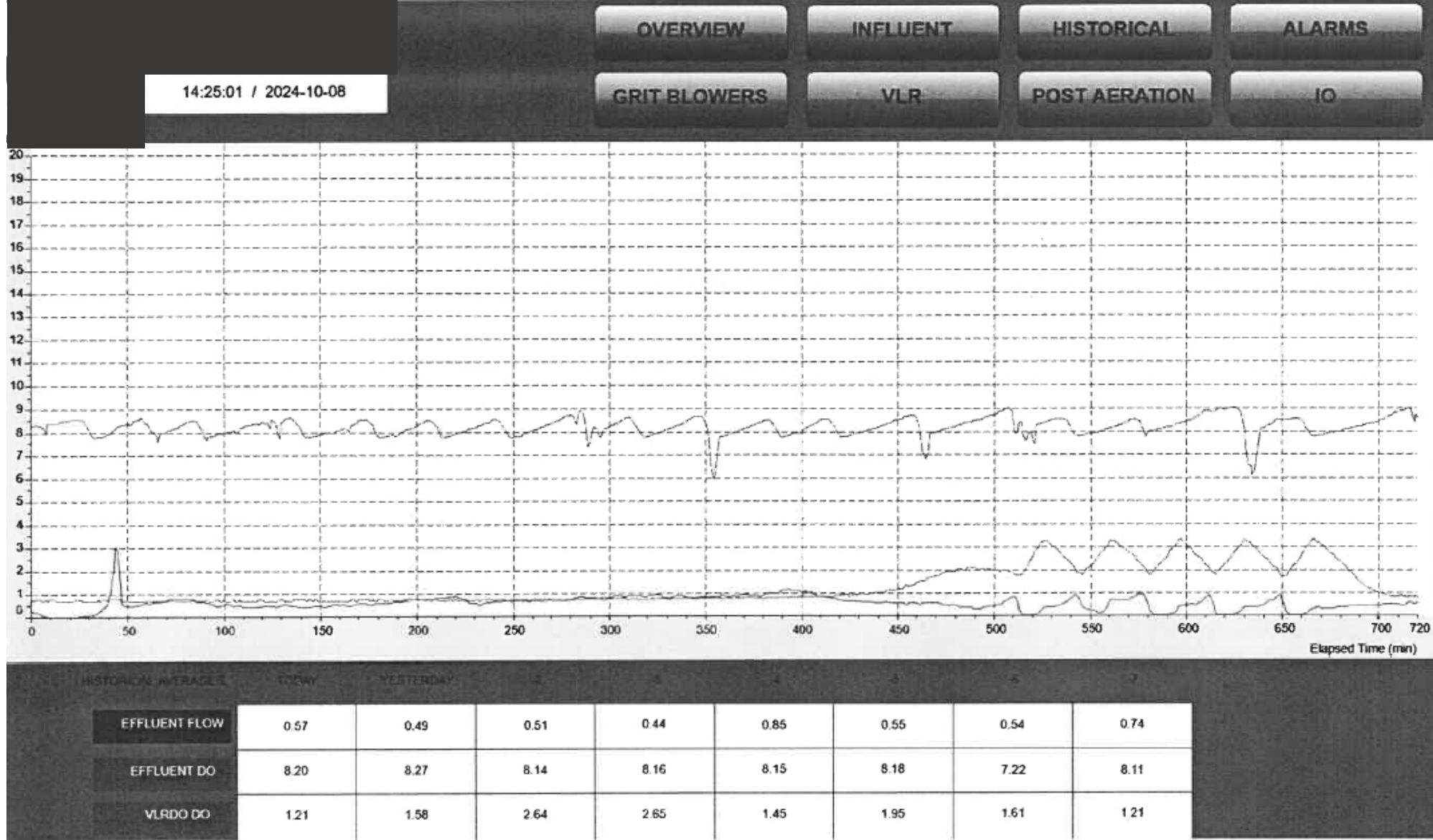
2.65

1.45

1.95

1.61

1.21



06:05:42 / 2024-10-29

OVERVIEW

INFLUENT

HISTORICAL

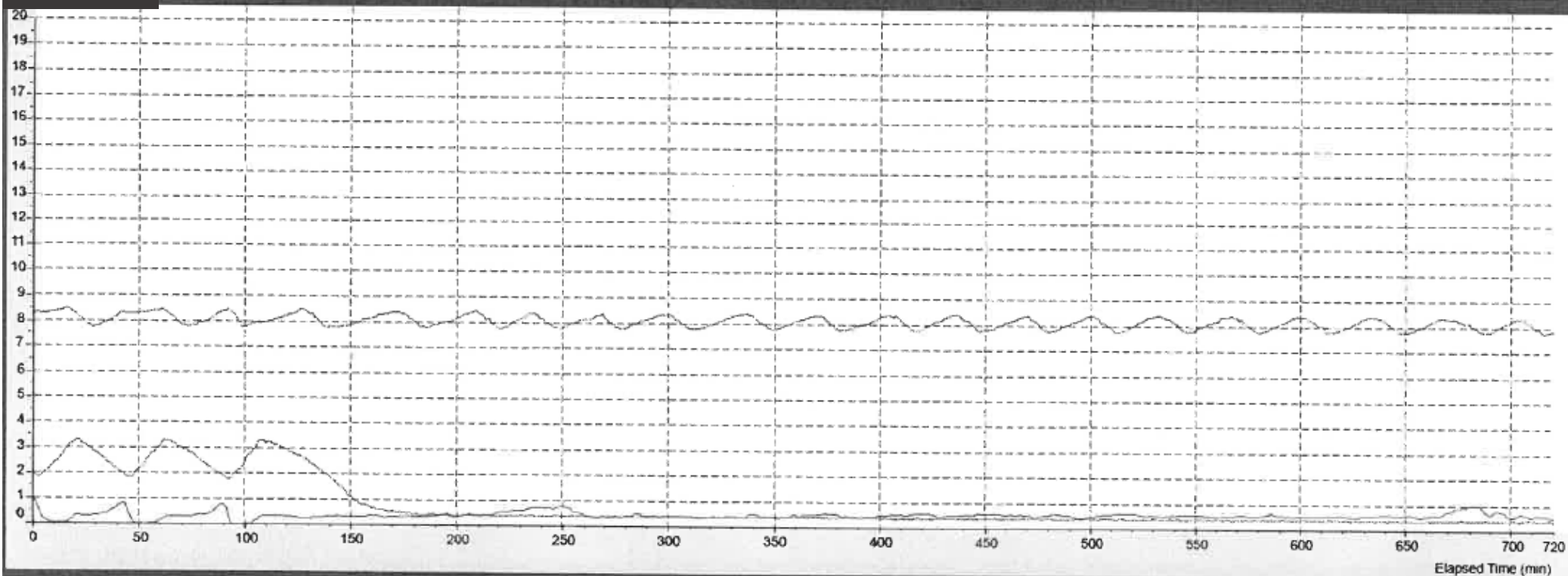
ALARMS

GRIT BLOWERS

VLR

POST AERATION

IO



HISTORICAL AVERAGES

TODAY

YESTERDAY

1

2

3

4

5

6

EFFLUENT FLOW

0.38

0.49

0.46

0.40

0.49

0.50

0.50

0.49

EFFLUENT DO

8.09

8.09

8.09

8.10

8.11

8.14

8.21

8.17

VLRDO DO

1.28

1.48

2.63

2.61

2.07

2.66

1.79

2.48

14:07:42 / 2024-10-29

OVERVIEW

INFLUENT

HISTORICAL

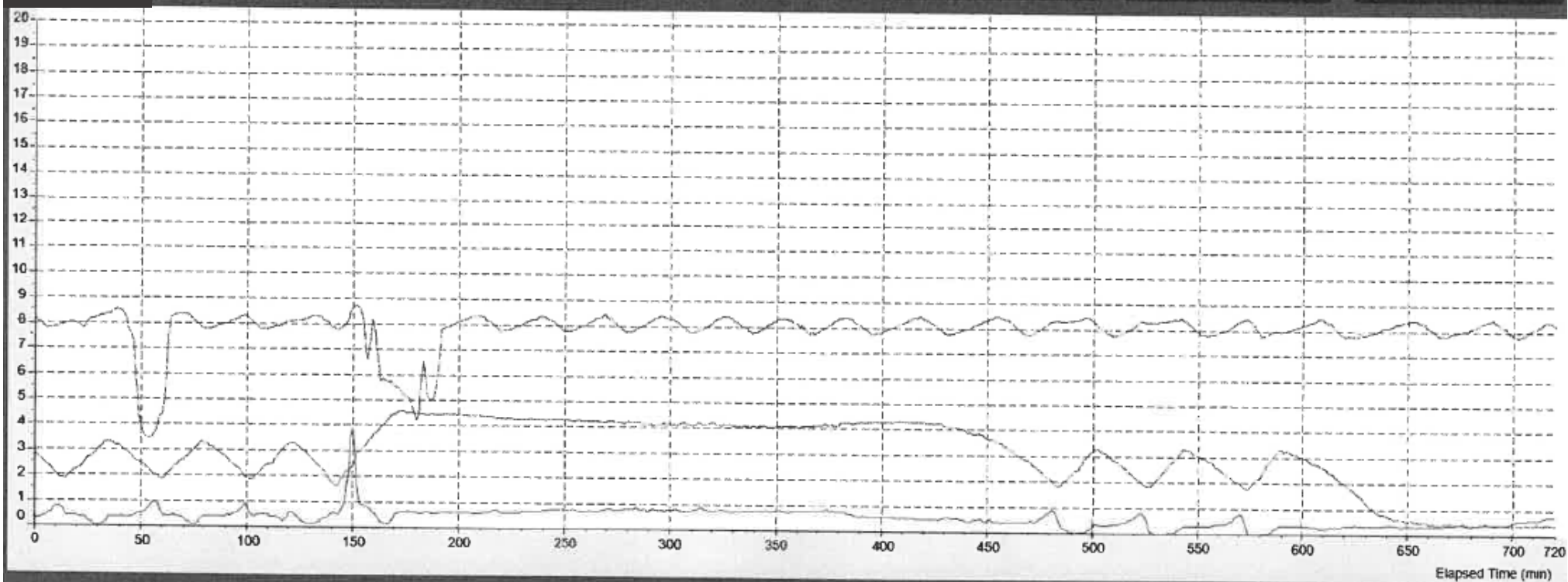
ALARMS

GRIT BLOWERS

VLR

POST AERATION

IO



HISTORICAL AVERAGES

TODAY

YESTERDAY

-2

-3

-4

-5

-6

-7

EFFLUENT FLOW

0.51

0.49

0.46

0.40

0.49

0.50

0.50

0.49

EFFLUENT DO

7.92

8.09

8.09

8.10

8.11

8.14

8.21

8.17

VLRDO DO

2.59

1.48

2.63

2.61

2.07

2.66

1.79

2.48

Elapsed Time (min)

Options

- Reduce volume
- Stop receiving leachate
- Equalize the flow
- Utilize 3rd VLR
 - One anoxic & two aerobic
- Increase DO
- Reduce concentration ???



15:57:35 / 2025-02-18

OVERVIEW

INFLUENT

HISTORICAL

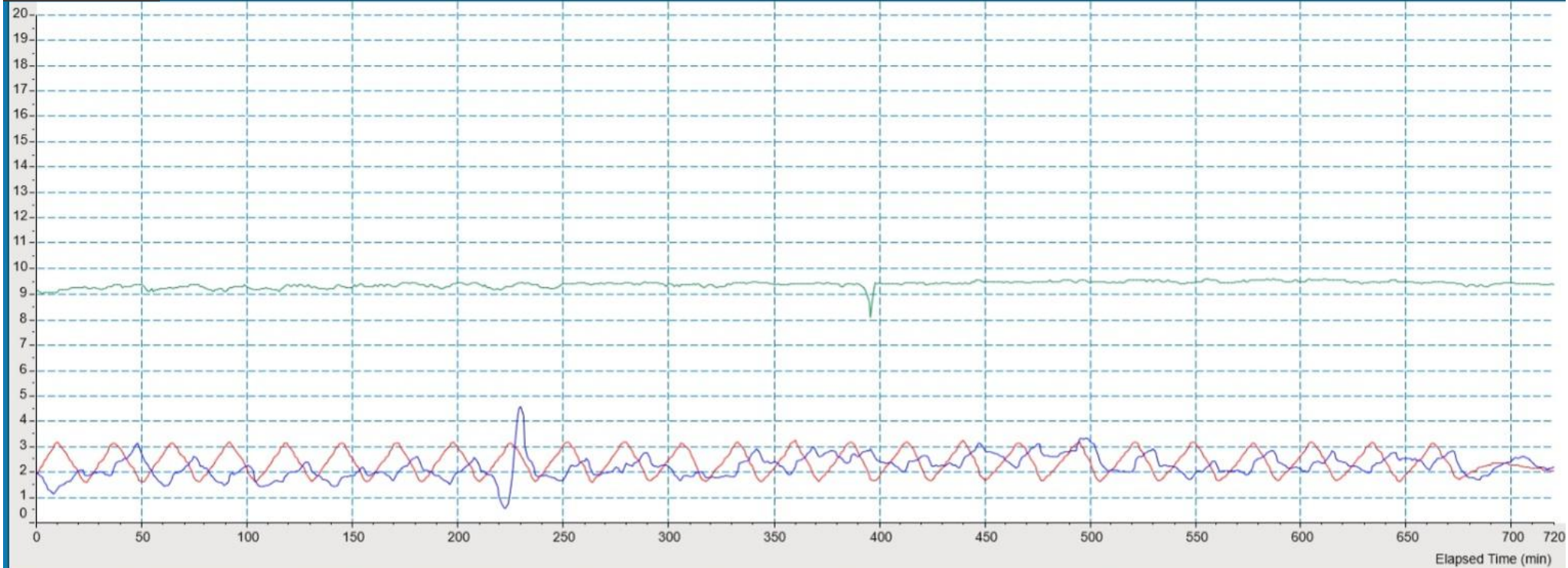
ALARMS

GRIT BLOWERS

VLR

POST AERATION

IO



HISTORICAL AVERAGES	TODAY	YESTERDAY	-2	-3	-4	-5	-6	-7
EFFLUENT FLOW	2.28	3.39	4.60	3.02	1.78	3.07	1.71	1.39
EFFLUENT DO	9.37	10.12	10.80	10.02	10.20	8.33	8.16	8.33
VLRDO DO	2.37	2.86	6.64	3.41	3.49	2.37	2.61	3.40



In Conclusion



Effective process control will alert you when your WWTP begins to move toward noncompliance and gives you the data needed to make operational decisions that will help you stay in compliance.

Give us a call, we'd love to set up a time to visit your facility!

Poll Question #2

What is the design flow for the WWTP you work at?

- a) <100,000 gpd
- b) 100,000 gpd – 1 MGD
- c) 1 MGD – 5 MGD
- d) > 5 MGD
- e) N/A, I don't work at a WWTP

Thank You

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