Maryland Department of Environment
Water and Science Administration
Compliance Program
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Inspector: Ronald Wicks
AI ID: 8449

Site Name: Back River WWTP
Facility Address: 8201 Eastern Ave, Baltimore, MD 21224
County: Baltimore County

Start Date/Time: January 26, 2023 08:45 AM
End Date /Time: February 10, 2023 04:41 PM

Complaint Number:
Media Type(s): NPDES Municipal Major Surface Water

Contact(s):

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Betty Jacobs
Mahmudul Hasan
Timothy Simmons
Dan Latova
Rayford McEachern
Andrea Buie
Samantha Coffman
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NPDES Municipal Major Surface Water

Permit / Approval Numbers: 15DP0581
NPDES Numbers: MD0021555
Inspection Reason: Follow-up (Non-Compliance)
Site Status: Active
Compliance Status: Noncompliance
Site Condition: Noncompliance
Recommended Action: Additional Investigation Required
Evidence Collected: Photos or Videos Taken, Record Review, Visual Observation
Delivery Method: Email
Weather: Clear Average

Inspection Findings:

The Back River Wastewater Treatment Plant (WWTP) is an activated sludge process sewage treatment plant with biological nutrient removal by Modified Ludzack-Ettinger process, ferric chloride for phosphorus removal, denitrification filters for enhance nutrient removal (ENR), polishing sand filters, chlorination, and dechlorination. The flow is split at a junction box and the larger portion of the flow (up to 130.0 MGD) goes to Outfall 001 to the Back River via a step

cascading aeration system and the remaining portion (up to 50.0 MGD) goes to Outfall 002, and sent to Tradepoint Atlantic. The effluent from Outfall 002 is further chlorinated and sent to a storage reservoir known as the High Head Reservoir. The water was once used by International Steel Group (ISG), formerly Bethlehem Steel Corp., for industrial cooling water. The steel mill is closed and Tradepoint Atlantic purchased the steel mill property and portions of this water discharges through 3 outfalls on the Tradepoint Atlantic property. Tradepoint Atlantic discharges the wastewater from High Head Lake through outfalls 012, 013 and 014, under the authorization of their NPDES permit.

Coordinates and receiving waters for the Tradepoint Atlantic outfalls:

Outfall Number	Receiving Water Name	Latitude	Longitude
012	Patapsco River	39.00° 12.00' 48.00''	76.00° 29.00' 39.00''
013	Patapsco River	39.00° 13.00' 12.53''	76.00° 29.00' 43.32''
014	Bear Creek	39.00° 13.00' 39.00''	76.00° 29.00' 29.00''

The facility's activity code or standard industrial classification (SIC) is 4952 and the North American Industry Classification System (NAICS) is 2213. The receiving water is the Back River for Outfall 001, which is protected for Use II, water contact recreation and the protection of aquatic life and Outfall 002 discharges to the Bear Creek and the Patapsco River also protected for Use II waters.

On January 26, 2023, I conducted a follow up compliance evaluation inspection at the Back River WWTP. I was accompanied by Kari Hanson and Samantha Coffman, Environmental Compliance Specialists with the Compliance Program, Water and Science Administration at the Maryland Department of the Environment (MDE/Department).

On-site we met Ronald Turner, Betty Jacobs, Rayford McEachern, Dan Latova, Mahmudul Hasan, Timothy Simmons and Andrea Buie representing the Back River WWTP. In addition, we met Vel Subramonian and Herbert Bell consultants from Atkins Engineering. I began the inspection with an opening conference where I outlined my plans for this inspection and discussed follow-up items from previous evaluations. specific details regarding the treatment processes and plant operations listed below:

- Headworks (fine and coarse screening and grit removal system)
- Primary settling tanks (PST)
- Activated Sludge Plants
- Secondary clarifiers
- Denitrification filters (DNF)
- Sand filters
- Solids Management
- Operations and Maintenance (O&M)

Below is a brief summary of the discussions that occurred during the opening conference and information that I gathered during the progression of the inspection.:

Headworks

There have been complications with ventilation and the biological wet odor scrubber system in the headworks building that prevented satisfactory control and removal of hydrogen sulfide (H_2S) in the headworks building, The H_2S corroded the silver and copper circuit parts. The ambient concentration of H2S in the headworks building affected electrical conductors and current carrying parts. An independent contractor, ProStart, is currently operating and maintaining the headworks.

The headworks has 3 biological odor control systems designated A, B and C. Systems A and B were seeded and placed online during the fall of 2022. During my conversation today with ProStart staff, I learned that they are fully seeded, activated and operational. Today, according to ProStart, Odor Control System C was seeded approximately 3 weeks ago (early January 2023) and not yet fully activated. It is still going through the acclimation phase. In addition, according to the ProStart operator, the programmable logic controller (PLC) cards need to be replaced on Odor Control System C in order for it to function as designed. Parts are on order however there are supply chain issue delays. In addition, I learned from ProStart that there have been false readings on the sensors especially after rainfall due to higher solids concentrations in the flushing water clogging sensors in the fine screen area of the headworks.

Main concerns:

- **The Back River WWTP must ensure that the TSS concentration of the flushing water is maintained at an acceptable concentration.**

- **The Back River WWTP must ensure that the H_2S sensors are operative and reliable by checking the accuracy through routine frequent calibration checks.**

During the 12/14/2022I inspection, I requested that the Back River WWTP provide to the Department the results for ambient air monitoring at the headworks for lower explosive limits (LEL), oxygen (O_2) and H_2S for the 4^{th} quarters of 2022. The Department received the requested data on 1/30/23 and it is currently under review.

PSTs

During the opening conference, Turner informed us that 4 of the 11 PSTs are functioning. During the last inspection on 12/14/22 only PSTs # 1, 8 and 11 were online. According to the Back River January status report, PST #7 was put online on 12/28/2022. Now, the PSTs capable of treatment are PSTs # 1, 7, 8 and 11. PSTs # 5 and 9 are being used as flow through tanks as necessary during hydraulic overloads due to rain but these PSTs are not functional. Before the site review, Turner told me that the scum troughs on PSTs # 7 and 8 are clogged and they are scheduled for

maintenance. In addition, some adjustments are needed for PST #7 which the contractor GMH will be completing in February 2023.

Activated Sludge Plants

During previous inspection, I observed that some of the mixers in the biological reactors and clarifiers were either not functioning or barely turning at Activated Sludge Plants #2 and #3. The mixers in these areas require maintenance. Some of the mixers in the reactors were not functioning as designed because rags were wound around the mixer shafts impeding operation and the many of the reactor basins need to be cleaned of solids and vegetation. During my discussion with Turner, he informed me that Badger, an independent contractor, is scheduled to remove the vegetation from the reactors. During previous inspections, I observed that many of the mixers were not functioning due to various reasons. As of January 23, 2023, the status of the mixers are as follows:

- Activated Sludge Plant 2- There are 17 mixers that are out of service.
- Activated Sludge Plant 3- There are 31 mixers that are out of service.
- Activated Sludge Plant 4- All mixers are online. The 10 mixers that were reported as out of service during the 12/14/22 inspection are now back online.

The Back River WWTP shall continue to keep the Department informed on the status of the mixers.

Secondary Clarifiers

Inspections have revealed that routine maintenance has not been carried out at the level necessary for satisfactory performance of crucial treatment equipment. During the 9/27/22 inspection only 2 of the 17 secondary clarifiers evaluated had no visible issues. The skimmer arms on several of the clarifiers were missing skimming blades. The scum troughs on many of the clarifiers in operation were clogged, requiring routine maintenance. Because of the blockage, the skimming systems are ineffective in performing their designated function of removing FOG and other floating scum and solids. In addition, phragmites, algae and other types of vegetation were growing around and, on the weirs, blocking flow causing short circuiting of the weirs. This problem has been reported during previous inspections. Therefore, some of the secondary clarifiers were not functioning as designed.

I asked Turner about the status of the repairs made to the secondary clarifiers. during the opening conference. Today according to Turner, Badger has cleared vegetation and algae from most of the secondary clarifiers and according to Turner, there are 6 secondary clarifiers that still have to be cleared of algae and vegetation.

Turner further stated that it has been a difficult task in removing the vegetation. The root systems and above ground growth of the vegetation are intertwined in the equipment making it difficult to remove without damaging the equipment. According to Turner, they are investigating the use of an ultrasonic algae control device to control algae growth. The Back River WWTP shall continue to

keep the Department informed on the status of the vegetation removal and cleaning of the scum troughs.

DNF

The DNFs are also managed by ProStart. There is an electrical issue with Quad 2 and now Quad 2 is functioning on a temporary power system. During the December 14, 2022 inspection, I asked Bill Farrell, ProStart Manager, when permanent power would be installed to Quad 2. Farrell informed me that Quad 2 is functioning satisfactorily using the temporary power supply, and it is up to Baltimore DPW to make the decision to connect a permanent power supply to Quad 2.

Equipment Maintenance Projects

Next, I discussed the status of various operations and maintenance projects requiring attention.

- *Work Orders*

  Previous inspection reports noted that operating conditions in many process areas require improvements due to unsatisfactory preventative maintenance (PM) program and unsatisfactory process controls. These conditions have led to failing treatment process due to poorly functioning equipment. To address this problem, the Department requested that the Back River WWTP prepare and implement an O&M program to initiate and track PM. According to Turner all work orders are now managed by ELKE Corp software, where work orders are prioritized, tracked, and filed with the current ELKE MIMS system. A coordination manager and operations supervisors review and check the status of all work orders.

- *Assets Management*

  The Department determined that there was insufficient accountability for inventory and specified that inventory control must be included in the revised O&M program. According to Turner, both Atkins Inc. and Hazen and Sawyer are conducting plant-wide assets evaluations. He further stated that DPW has been working on an assets management plan since October of 2022 but he is unsure when the plan will be complete.

- *Wasting and Sludge Management Plan*

  According to Turner, they are currently working on a wasting and sludge management plan.

- *Gravity Sludge Thickener (GST)*

  There are 6 GSTs and three are available for use. There are drive and gear box issues with the other 3 GSTs. Two units are need for designed capacity and one for current flow conditions.

- *Gravity Belt Thickener (GBT)*

There are 8 GBTs and currently there are 4 online (#3, 4, 7, and 8). Six GBTs are needed for current flows and seven for design capacity. GBT #1 has problems with the roller, #2 requires a complete rehabilitation, #5 has a torn belt and #6 has a problem with the pump. There is no redundancy. The Back River WWTP shall keep the Department informed on the status of the repairs for the 3 GBTs that require repairs in the monthly status reports.

- *Dissolved Air Flotation (DAF) Tanks*

There are 4 DAF tanks on site. There are mechanical issues with DAF Tank #3 and #4 is missing
the screw auger. According to Turner, #1 and #2 are normally used, however, there is an issue with the flushing water due to a break in the line. Therefore, during this inspection none are working.

- *Centrifuge Maintenance Plan*

Centrifuges #1 and #3 have been in use. The shaft feed recently failed on #1 and parts are now on order for #2 and #4. During our discussions on the status of the Centrifuge Maintenance Plan, Turner told me that Jacobs Engineering, will be taking over all biosolids operations. He further stated that Jacobs Engineering will be responsible for preparing the Centrifuge Maintenance Plan.

- *Updated Written Operations and Maintenance (O&M) Manual.*

According to Turner DPW has hired a contractor to conduct a GAP analysis and prepare a plan. The timeframe for the completion of the plan is 3 months.

- *Evaluation of Current Staffing and Staffing Plan*

I questioned Turner on the status of the above plan. He stated that DW has hired 9 operators since December of 2022. However, he could not provide information on the status of the staffing plan.

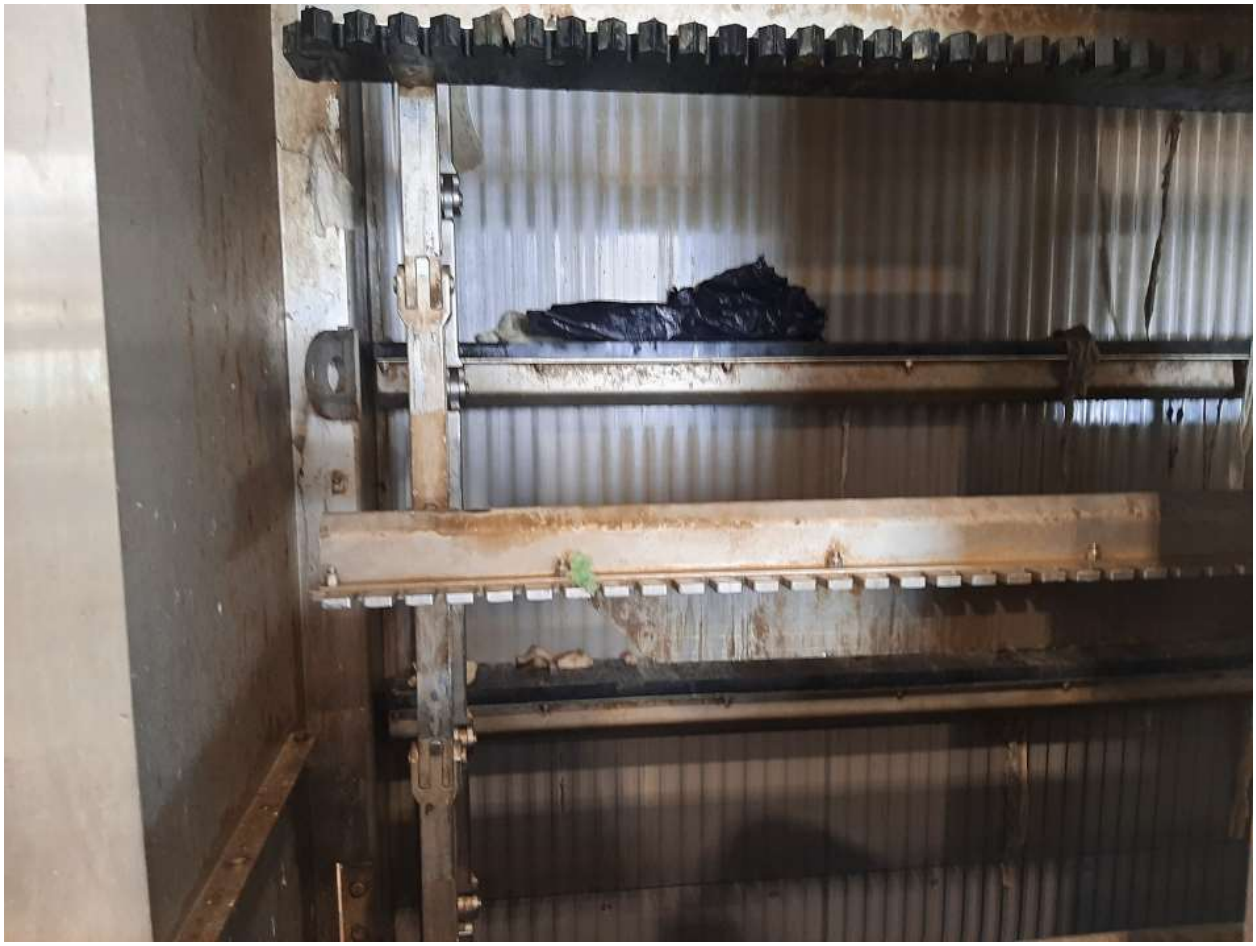
Site Review

After the opening conference, I conducted a site review beginning at the headworks. I was accompanied by Hansen, Coffman, Simmons, Buie, Subramonian and Bell. The first stop was at the control room, where we discussed operations with ProStart staff.

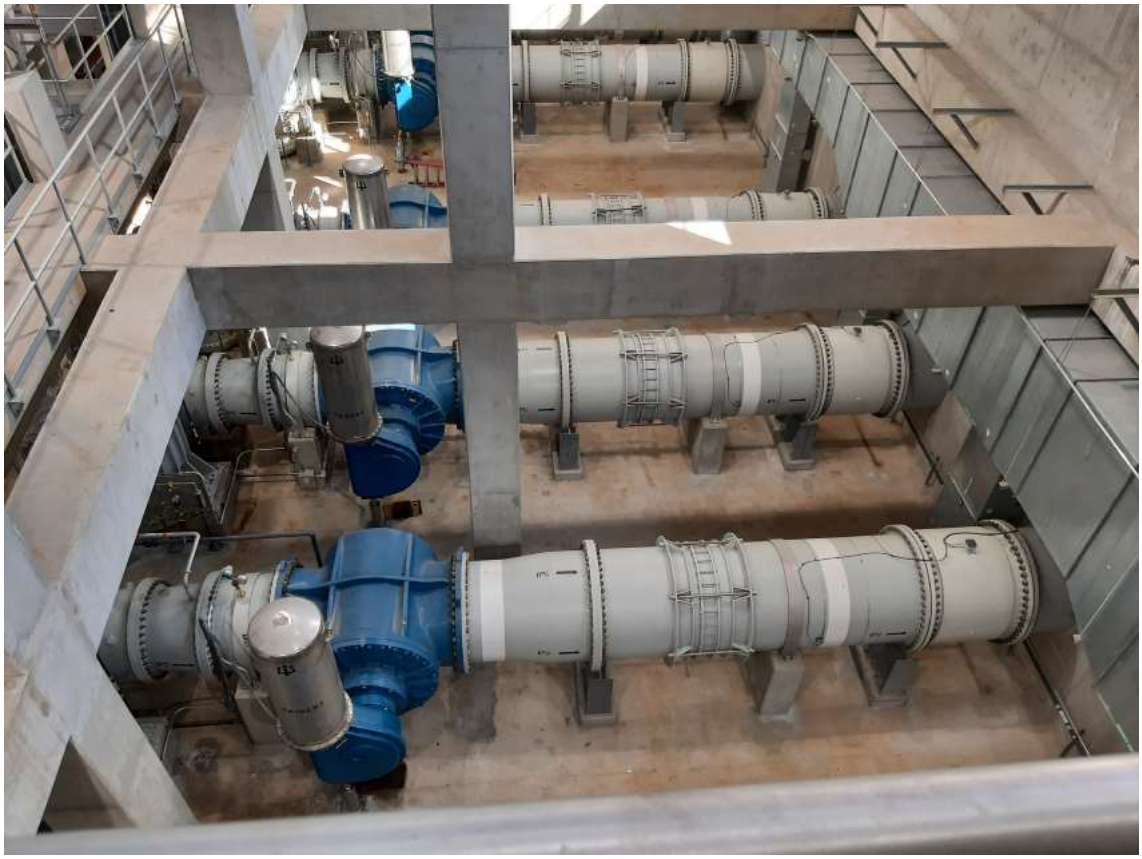
Sewage enters the plant at the mechanical screen building where there are four course screening units, and each unit can treat flows up to 200 million gallons per day (MGD). Therefore, during normal flows one coarse screening unit is sufficient to treat the average daily flow. There was one coarse screening unit online during this inspection. After coarse screening the sewage flows to the deep wet wells. There are two deep wet wells that are over 50 feet deep that receive wastewater

from the Coarse Screening units. Wastewater travels from the deep wet wells through suction pipes that draw water into the Headworks Influent Pumping Station. The influent headworks pump station has 8 lift pumps. The lift pumps are used to pump the screened sewage from the wet wells to the fine screening system. During this inspection, two of the lift pumps were being used.

During this inspection, no problems were observed with the active coarse screening unit.

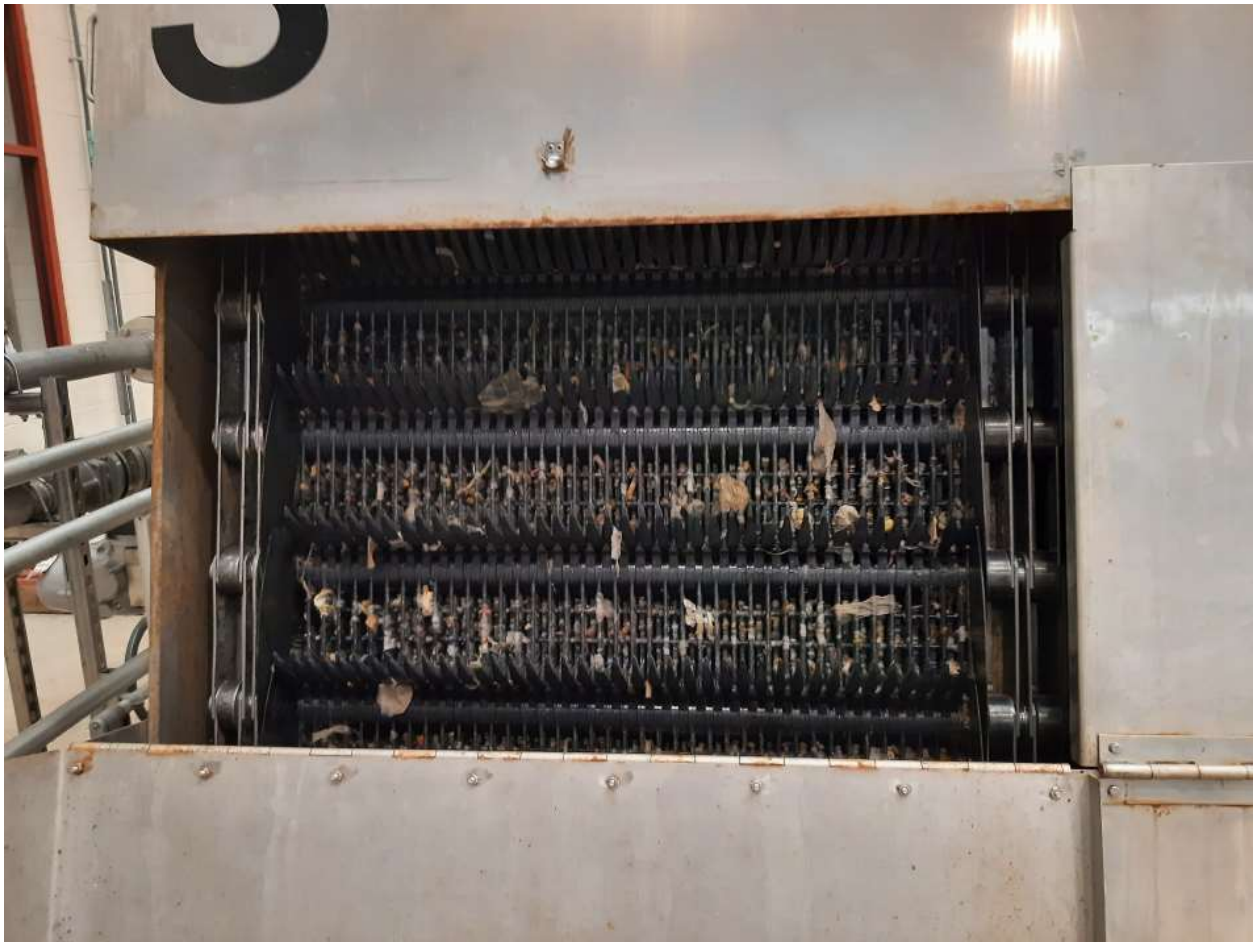


1/26/23 Active coarse screening unit



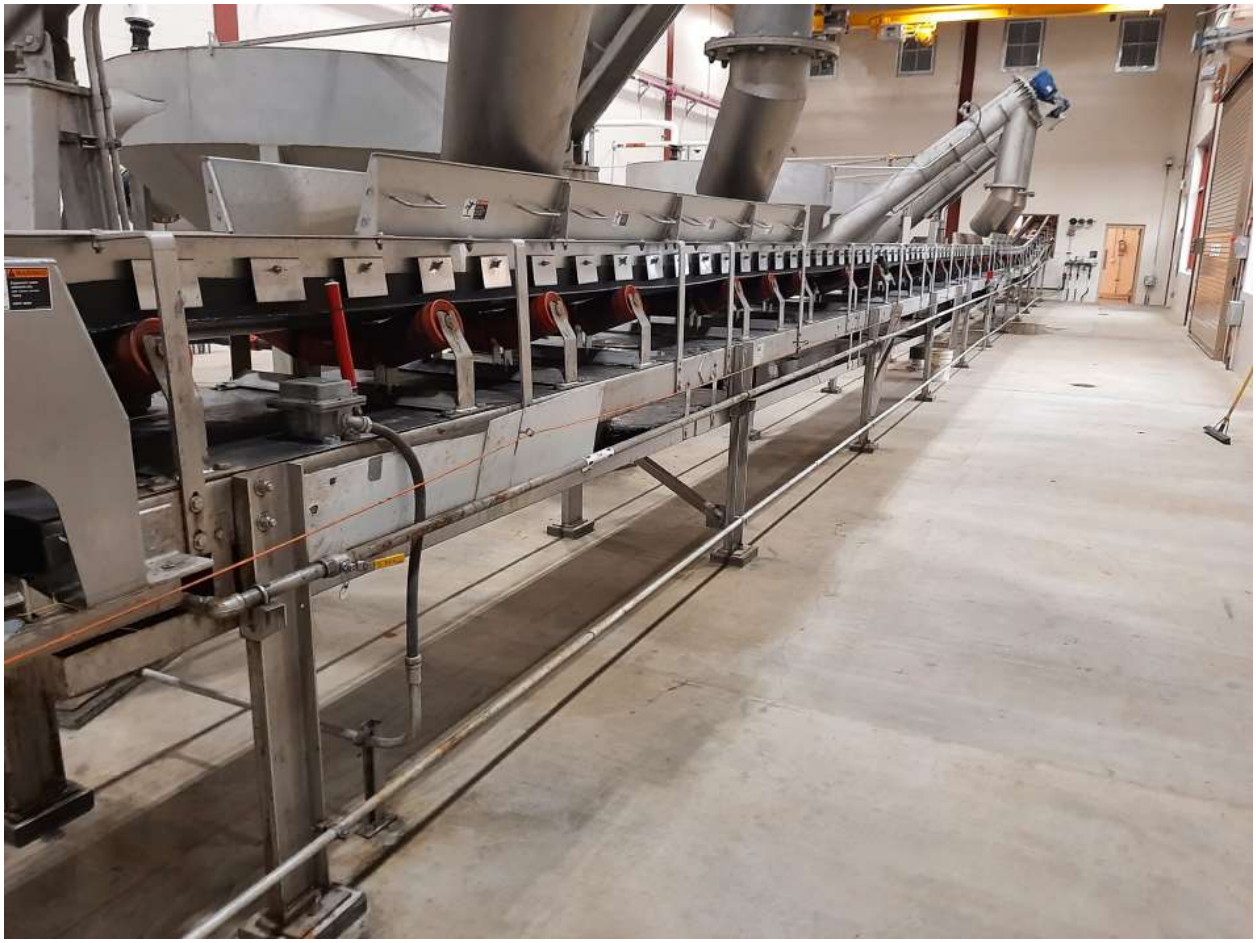
1/26/23 Picture shows Pumps #1-4. Today, 2 were being used for the headworks operation. Pumps #1- #4 have pumping capacities of 100 MGD each and pumps #5 - #8 (not shown) have pumping capacities of 120 MGD each.

The next stop was at the fine screening building. The headworks is equipped with six fine screening units with a processing flow rate of up to 100 MGD each. The fine screened sewage then travels to the grit removal system. There were two fine screening units online at this time and no problems were observed during an inspection of the screening units.



1/26/23 Fine screening unit in service.

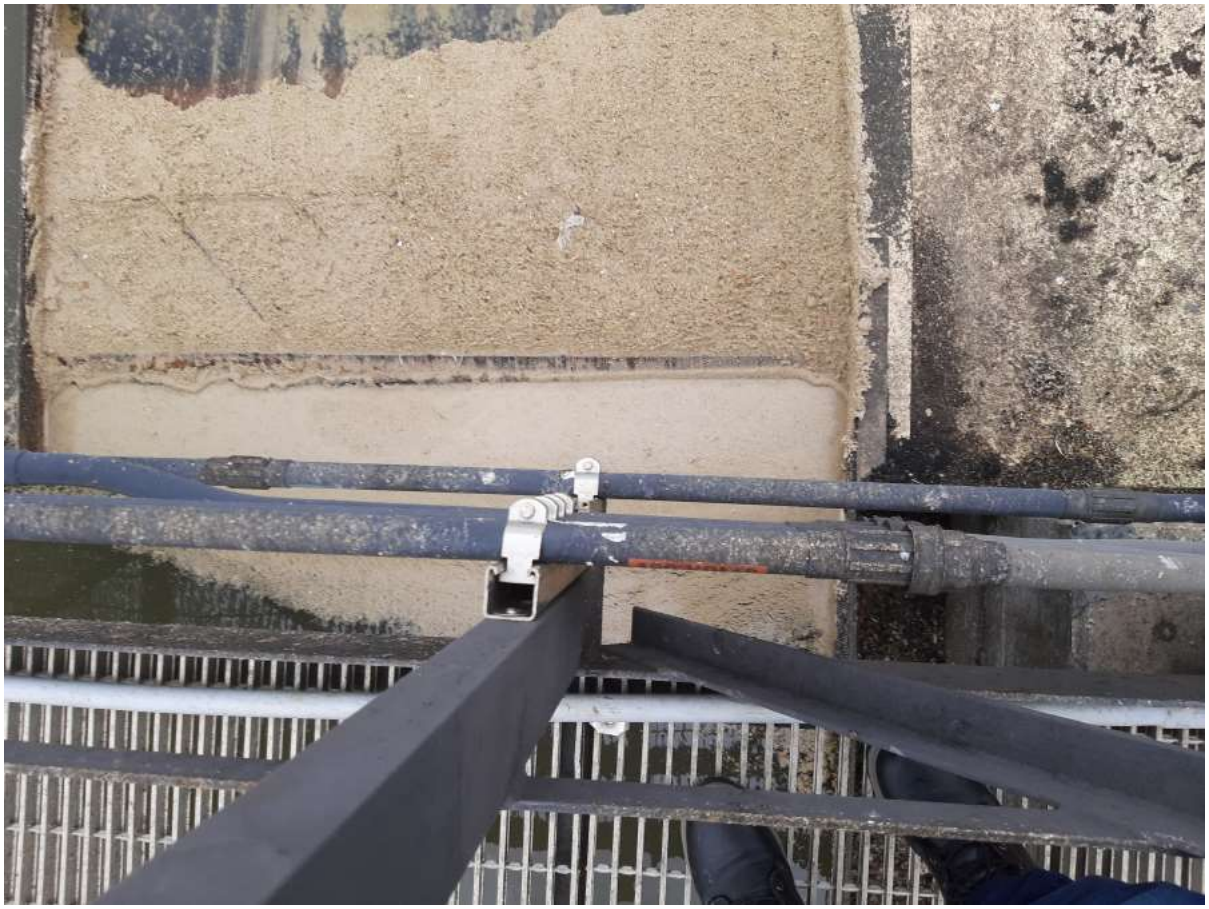
Travelling bridges remove grit from the waste stream, and this is done at the rectangular tanks. Each traveling bridge has an 80 MDG capacity and under current flow conditions 2 bridges are required for satisfactory grit removal. There are 8 traveling bridges and each is connected to a grit unit. Currently traveling bridges #2 and #5 are offline for maintenance and parts necessary for the repairs are now on order. The bridges travel back and forth using submersible pump/suction plate systems, that continuously removes settled grit from the tanks and transfers the grit to the grit dewatering processes consisting of spinning classifiers. The classified grit is dried and then sent off-site for disposal. The sewage flows from the grit removal system to a junction box and then to the PSTs.



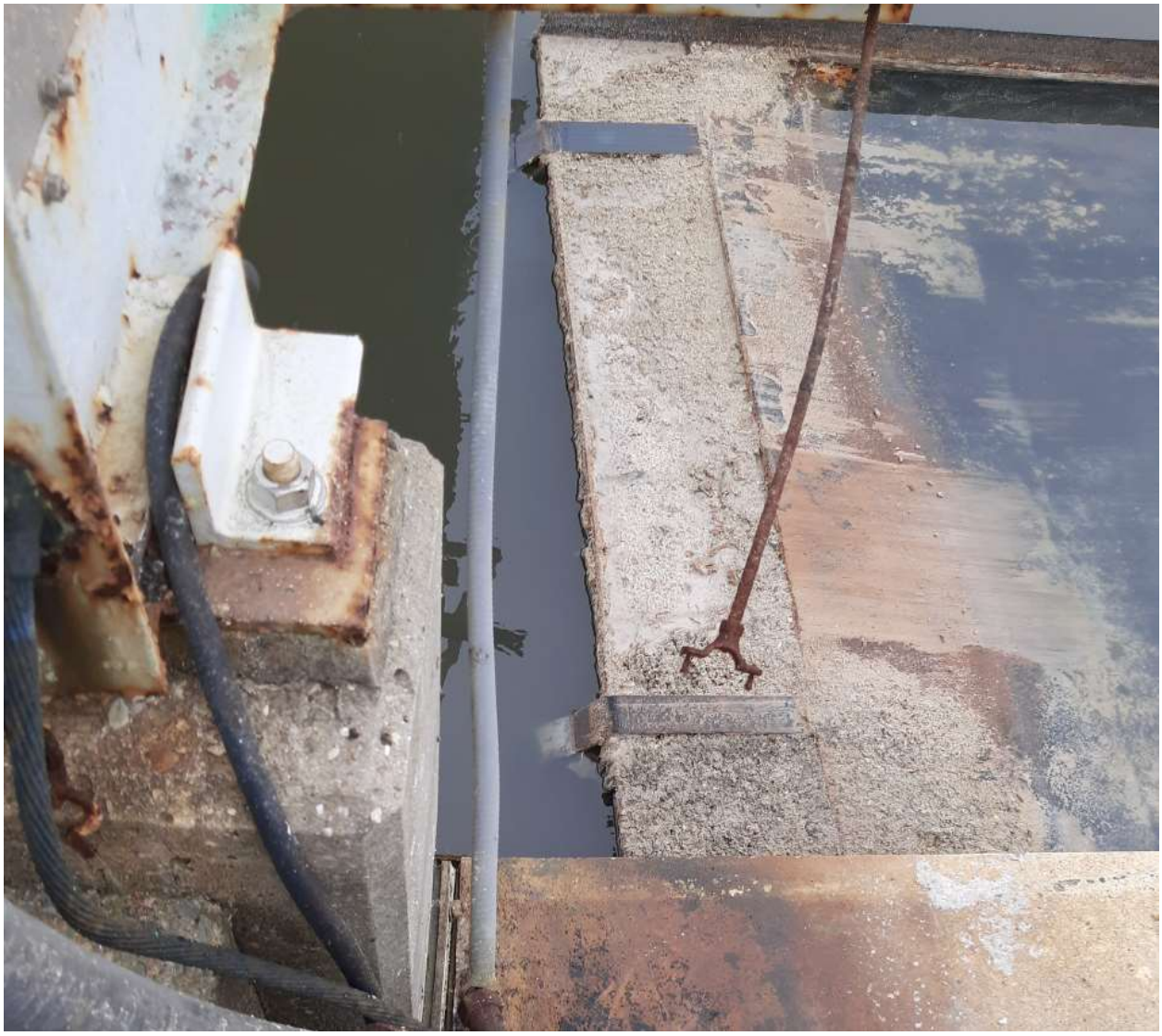
1/26/23 Grit removal area

The next, area of evaluation was at the PSTs. Today, there were 4 PSTs being used for primary settling and scum removal (#1, #7, #8 and #11) out of the 11 PSTs at the site. PST# 7 has been refurbished by GMH contractors and came online on 12/28/22. The issues with PST #7 are detailed above in the opening conference. During my evaluation of PSTs #1, #7, #8 and #11, I found problems with the skimming systems. The scum collection troughs on all PSTs were clogged with FOG and floating scum. The scum troughs and the collection pits must be cleaned out to prevent possible issues due to clogging of pipes and equipment downstream. As previously mentioned above Turner informed me that the scum troughs on PSTs # 7 and #8 require cleaning. However, the scum troughs on all 4 PSTs need to be cleaned.

The primary settling is the first stage of treatment after the removal of trash and grit in the headworks building. The PSTs are designed to settle and remove the solids or sewage sludge from the wastewater by gravity and remove the floating scum and fats oil and grease (FOG). Typically, PSTs are designed to remove a large percentage of the total suspended solids (TSS) and reduce the biochemical oxygen demand (BOD_5) of the wastewater. Therefore, it is important to maintain the PSTs in good condition at all times.



1/26/23 PST # 11 scum trough clogged with floating FOG and scum. The scum trough should be cleaned out and scum pit pumped out as necessary.



1/26/23 PST #8 scum trough clogged with FOG and scum. The scum trough should be cleaned out and scum pit pumped out as necessary.

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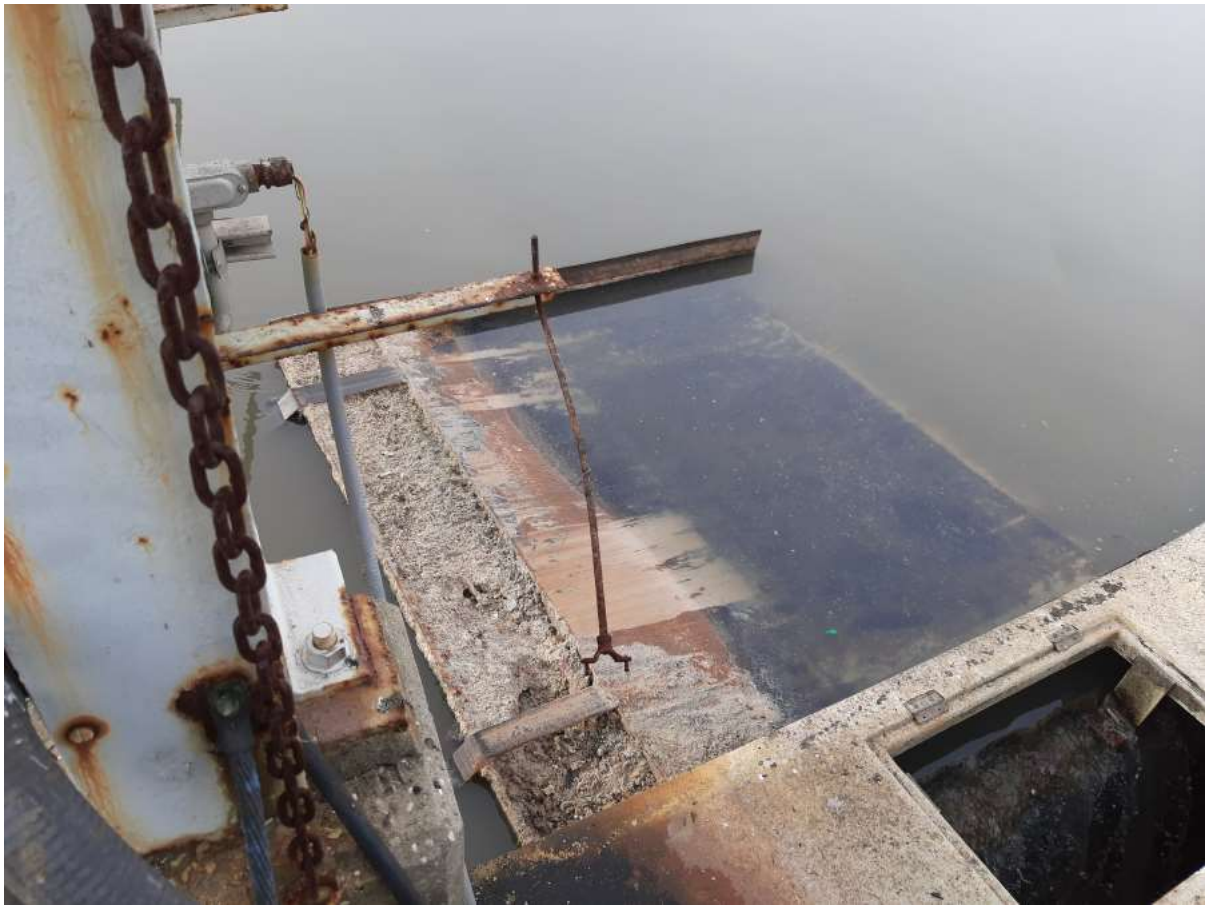
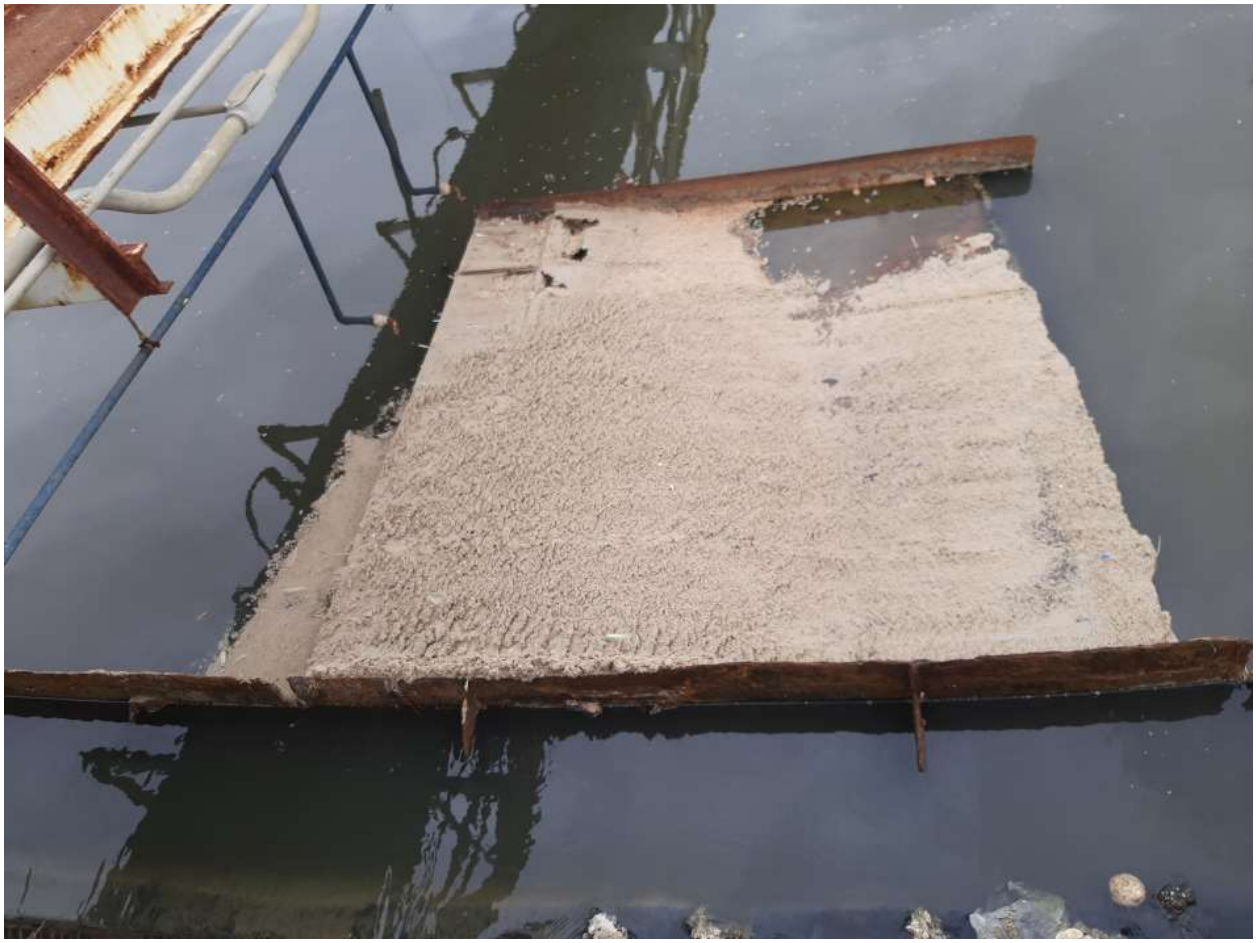
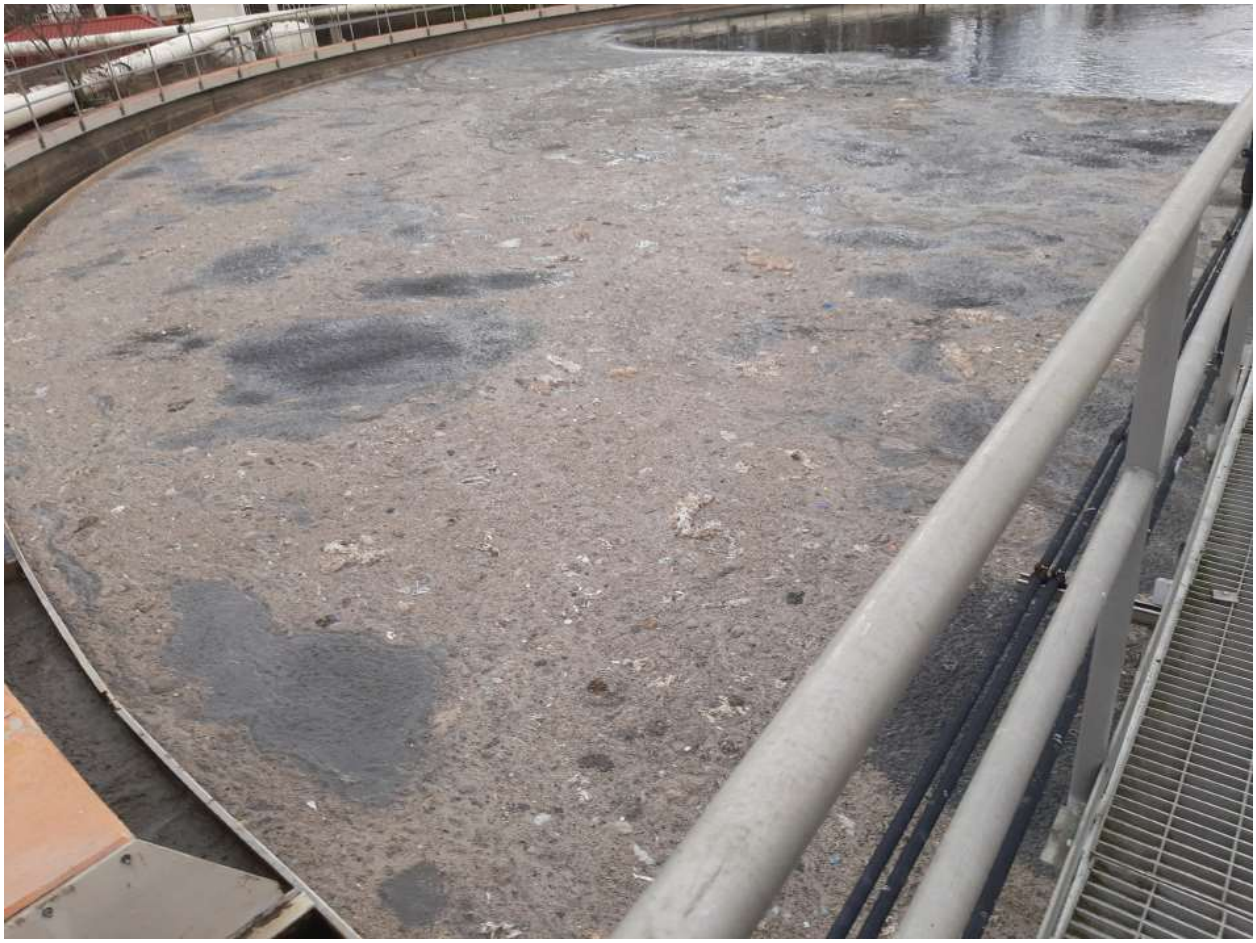


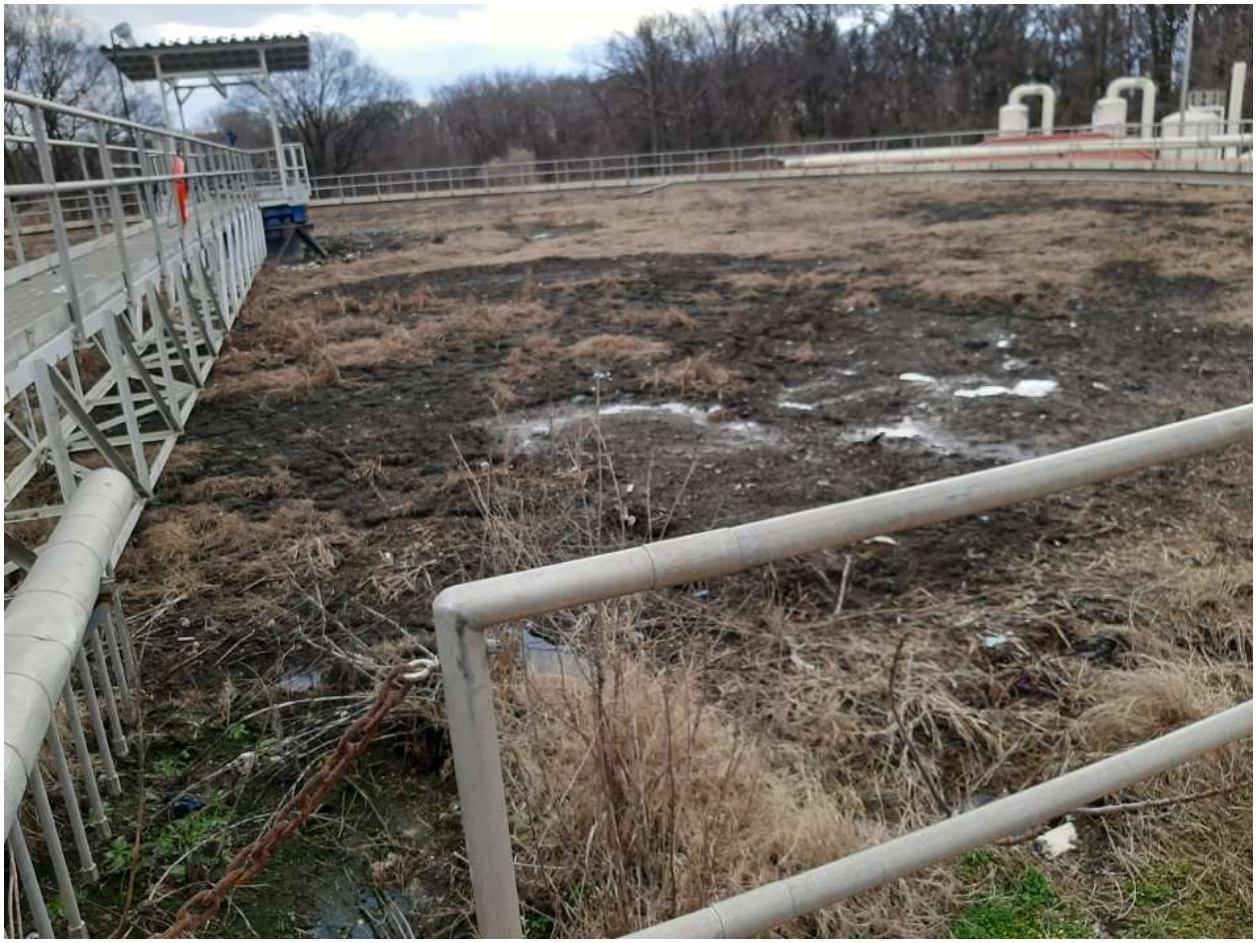
Picture of PST #8's clogged scum trough during 12/14/22 inspection. Clogged scum troughs are a persistent problem.



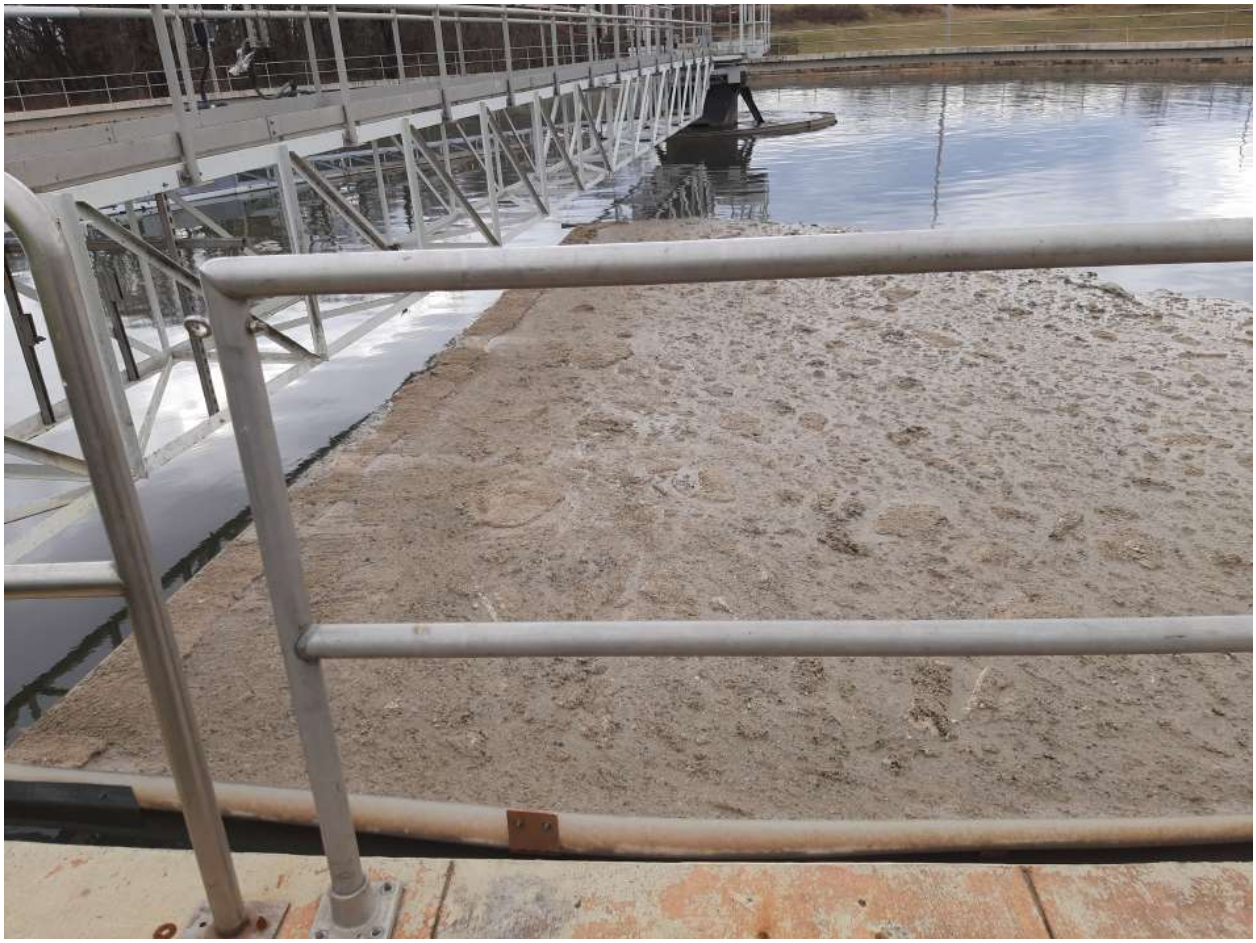
1/26/23 PST#1 scum trough clogged with FOG and scum. The scum trough should be cleaned out and scum pit pumped out as necessary.



1/26/23 PST #5 – This PST is being used as a flow through unit. It is nonfunctional so no treatment is provided to the wastewater entering this PST. This PST is scheduled to be put back into service by the fall of 2023.

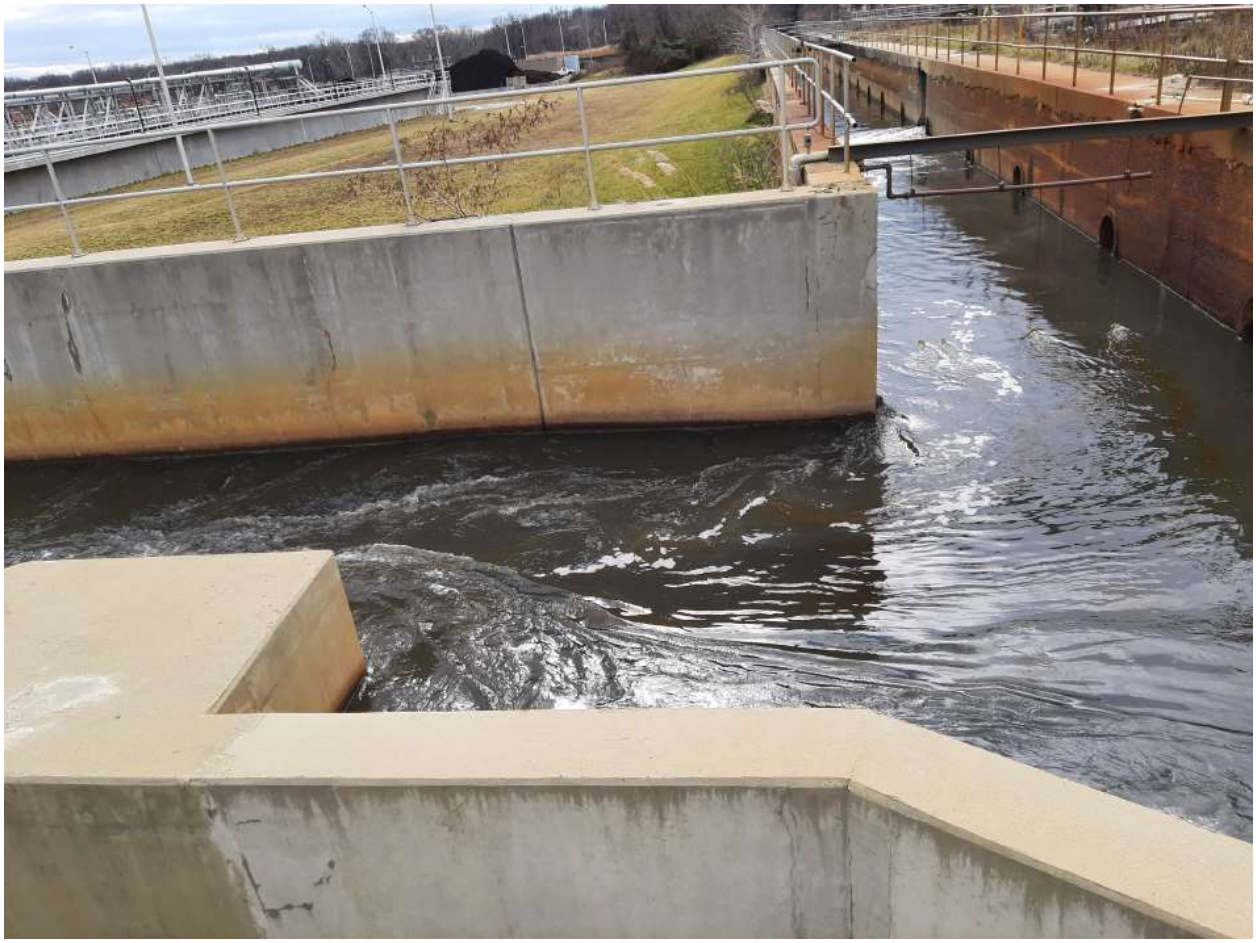


1/26/23 PST #6 needs to be cleaned then assessed. Baltimore City DPW is awaiting odor control device installation before proceeding with cleaning and repairs.



1/26/23 PST#7 showing a heavy layer of scum and clogged scum trough. In addition, the stilling well is not level, and the scraper arm requires adjustments to function properly.

After primary settling, the wastewater flows to the flow distribution building and from there the wastewater flows to the Activated Sludge Plants #2, #3 and #4 containing a series of biological reactors for nitrogen removal. Each Activated Sludge plant has six reactors. Activated Sludge Plants #2 and #3 have a three-pass train designated A, B and C for each reactor and #4 is a two-pass system. Activated Sludge Plant # 4 is a newly constructed addition to the secondary biological treatment. Construction was initiated during the ENR upgrades to the Back River WWTP covered under Contract 882 of the previous consent agreement. There are a total of 36 secondary clarifiers. Each Activated Sludge Plant has 12 secondary clarifiers. During this inspection 9 of the secondary clarifiers were down for repairs.



1/26/23 Effluent from the PSTs flowing to the activated sludge plants. Ferric chloride is added at this point for the treatment of phosphorous.

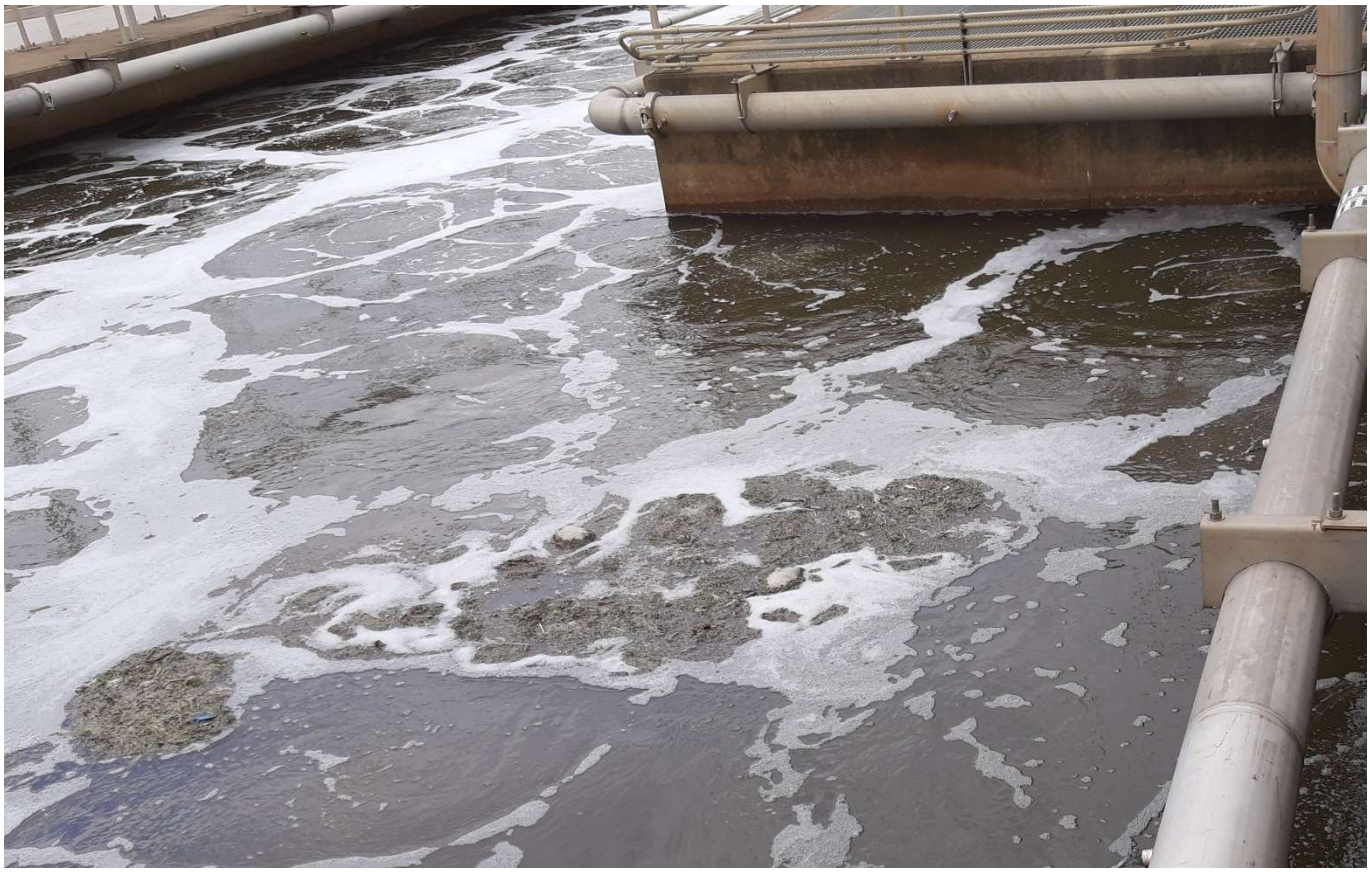
During the next phase of this evaluation, we inspected the Activated Sludge Plant #2 and #3. Two of the 18 reactors are down for repairs. The problems previously observed and reported are still an issue. The reactors tanks require maintenance. Some of the mixers in the reactors were not functioning as designed because rags were wound around the mixer shafts impeding operation and some require various types of maintenance or replacement. In addition, many of the reactor basins need to be cleaned of solids. Below is a summary of the major problems that I observed:

1. Some of the mixers were either not functioning or barely turning causing a buildup of floating solids. Mixing raises the dissolved oxygen (DO) and increases the activity of the microorganisms and keeps the organic materials thoroughly mixed within the reactors improving efficiency.

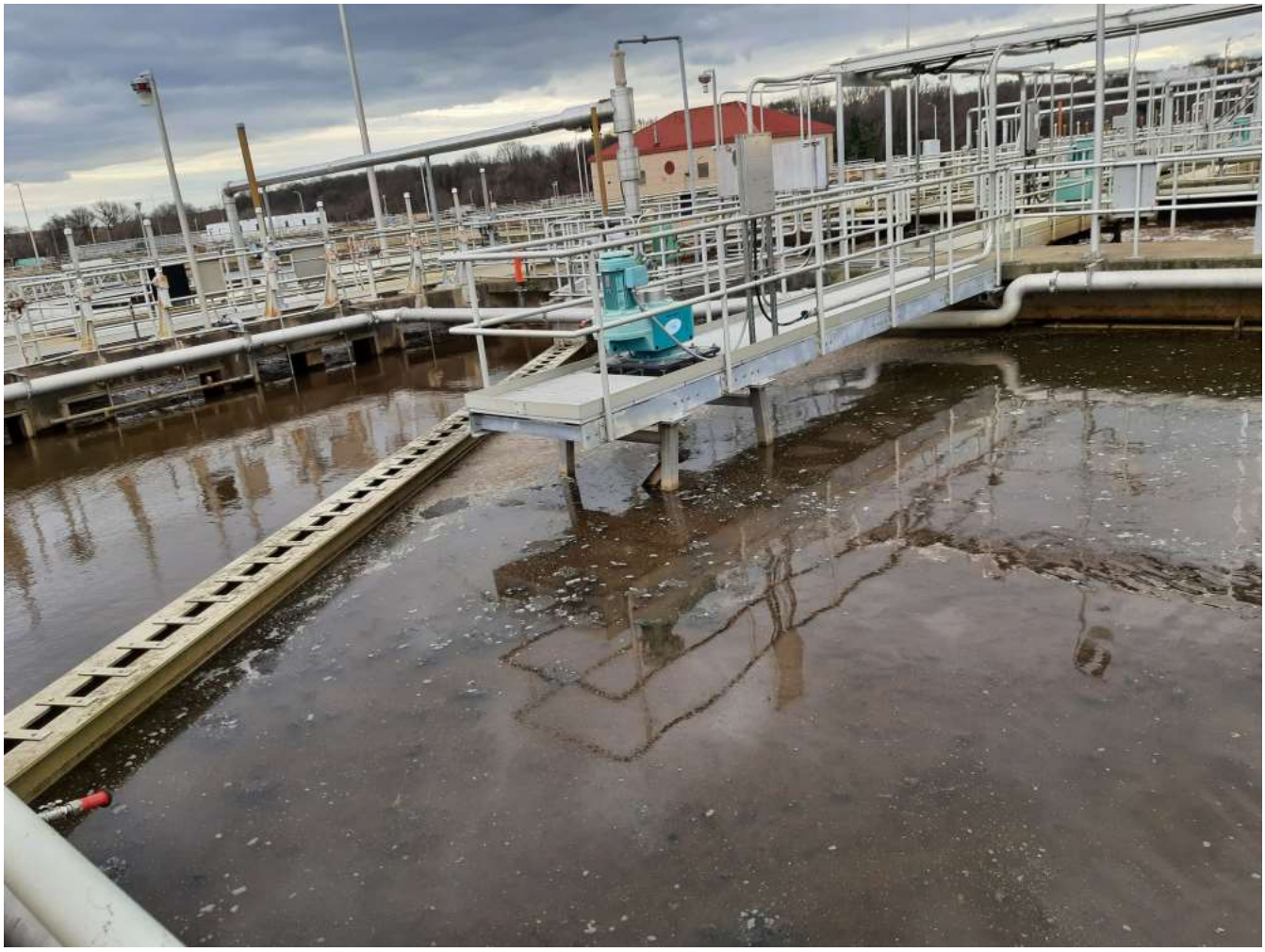
2. Maintaining optimal dissolved oxygen levels in the activated sludge plants is necessary for biological treatment of organic material and ammonia as N. The (DO) monitoring probes used to continuously monitor the DO are not functional, so the DO is being measured manually and aeration adjustments in the reactors are conducted manually. Currently, these manual measurements are not conducted at the frequency necessary to ensure optimal DO concentrations in all reactor treatment zones. During this inspection LaTova informed me

that there is a DPW purchase request for 60 ChemScan stainless steel DO probes, controllers, and converters/expansion boxes and associated equipment to automatically control the DO at the activated sludge plants.

3. Vegetation growing in certain areas of the reactors due to high solids levels.

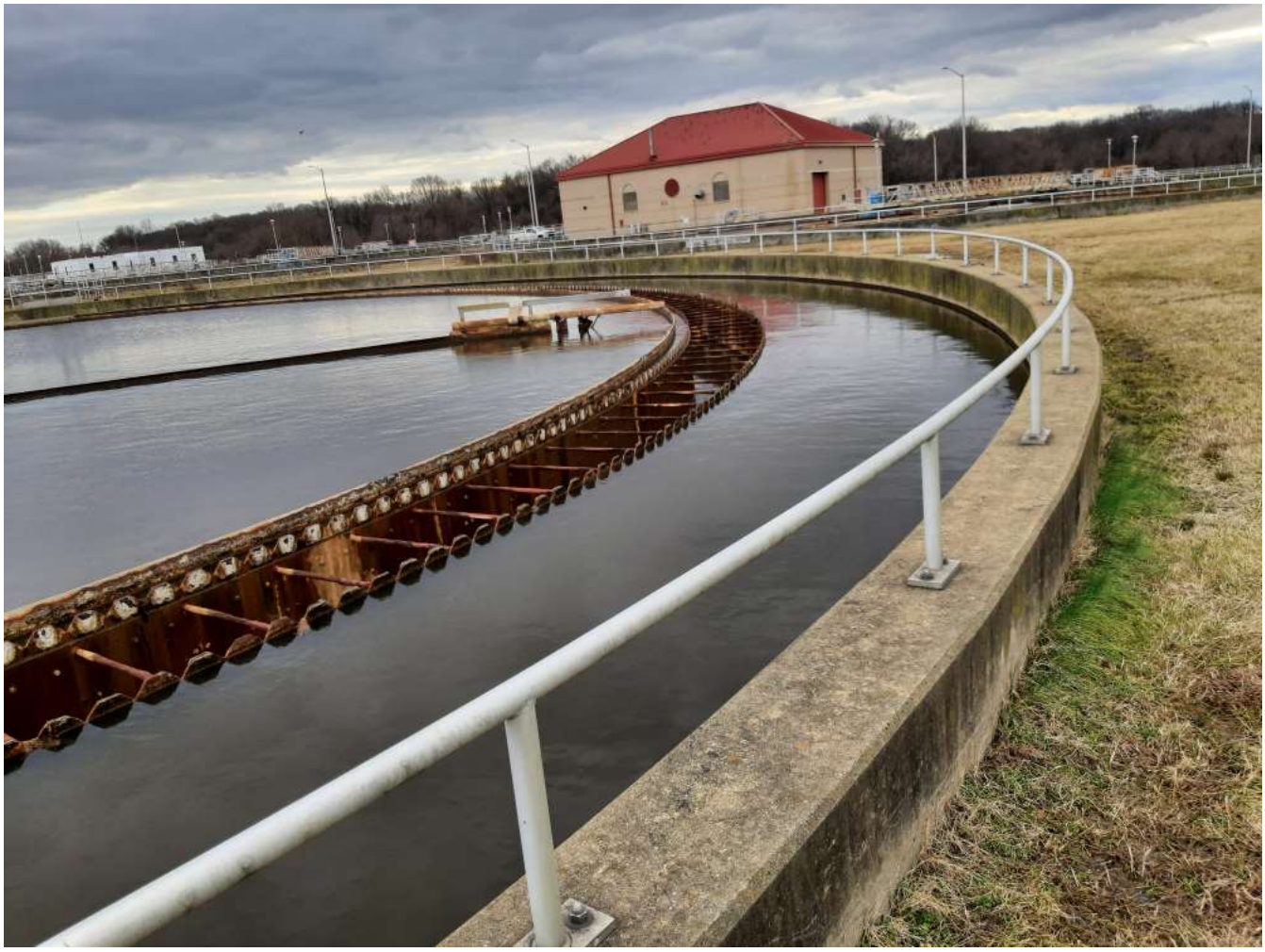


1/26/23 Reactor in the Activated Sludge Plant #3.



1/26/23 Activated Sludge Plant #3. Mixer problems in this reactor.

During an evaluation of the secondary clarifiers a few maintenance problems were observed. The skimming arm on secondary clarifier #14 A was missing the skimming flap and the weir on secondary clarifier # 9 was bent. I observed that the vegetation and algae had been removed from the clarifiers in service that I inspected. At this point, routine maintenance, is required to prevent regrowth.



1/26/23 Secondary clarifier 14A – Missing skimmer flap.

Denitrification Filters (DNF)

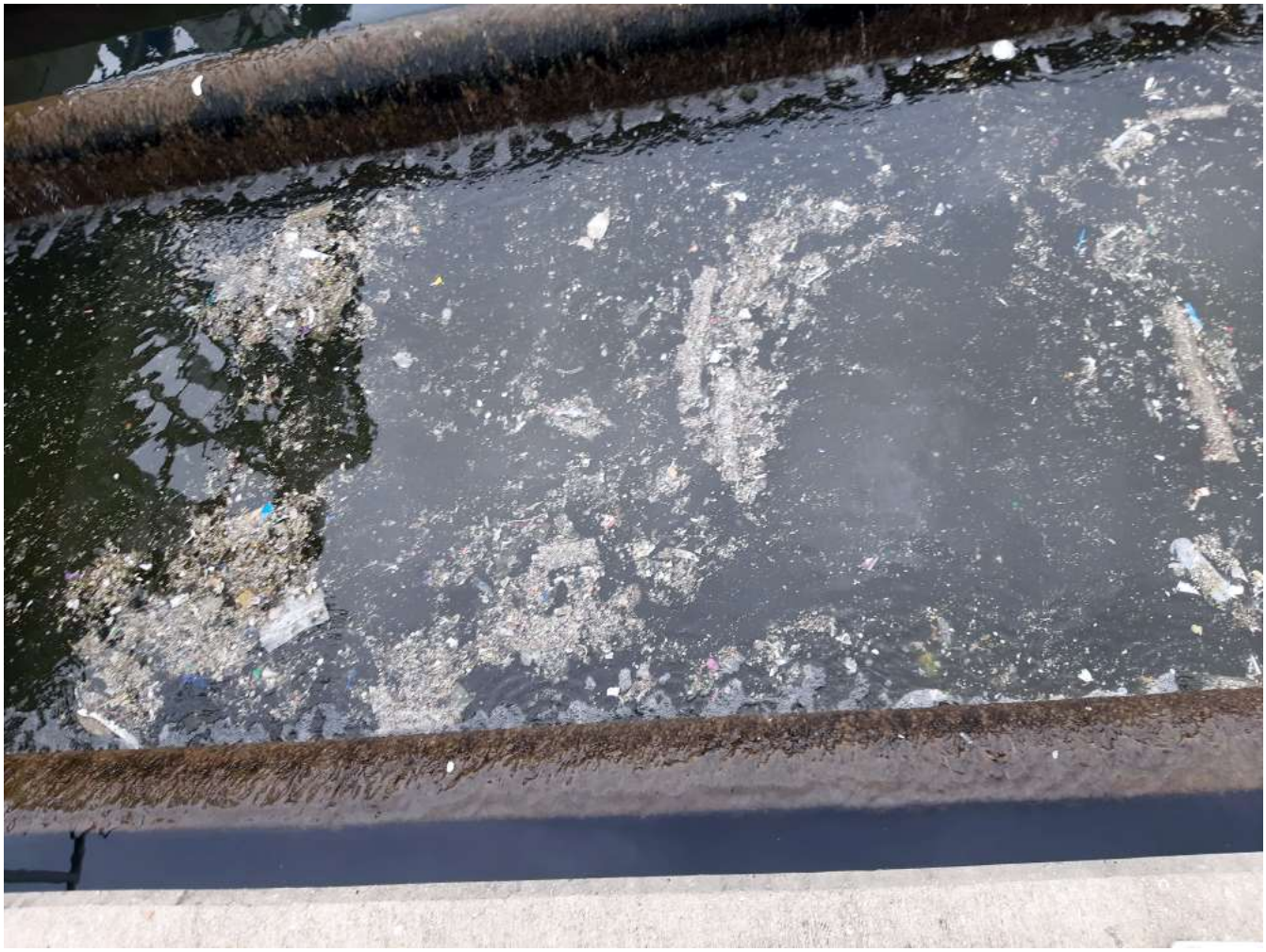
The next stop was at the DNF building. There are four filter quads, and each quad contains 13 Tetra Dentification Filters with 52 total filters. Baltimore City has a contract with ProStart to operate and maintain the DNF treatment process. When we arrived, I went to the control room to discuss the operation with the ProStart operator, Arch Foreman. Mr. Foreman told me that 51 of the 52 filters were online. He told me that filter #11 on Quad 3 was not functioning due to a control issue with the air valves for the filter. He stated that the air valve was not functioning when ProStart took over in April of 2021. He further stated that ProStart ordered parts to repair the air valve. I checked the system control panel to verify, and then went to filter quads #1 and #2.

During an inspection of the filters in quads #1 and #2, I observed floating solids in some of filters and entering the filters from the incoming flow. There was a considerable amount of floating solids in the filter at the end of the quad. I asked Foreman, to accompany me to the filters at the end of the quad. After viewing the filter, Foreman told me that the solids in these filters were remnants from three recent events during this month where the incoming solid concentrations (TSS) coming from the effluents from secondary clarifiers were over 200 mg/L. According to Foreman, the DNF

are not designed to handle TSS concentrations above 10 mg/L and they have been conducting extra backwashing to try to remove the excess solids in the DNFs. Later, when I spoke to the Turner, he stated that there was a problem with one of the secondary clarifiers that caused the solids spike to the DNFs that Foreman described.

During a review of the most recent available process control data taken from the MOR for the fourth quarter of 2022, I did not see any TSS concentrations greater than 38 mg/L going into the filters. The average TSS concentration going into the DNF for 12/2022 was 10 mg/L. However, for December 2022 there were 10 days out of 31 where the TSS concentration exceeded the DNF maximum design capacity of 10 mg/L TSS. The permittee should be cognizant of these exceedances and optimize the settling capacity of solids at the secondary clarifiers and at the PSTs so that incoming TSS concentrations stay below 10 mg/L. No data is available at this time for January 2023 when the 200 mg/L TSS concentrations occurred.

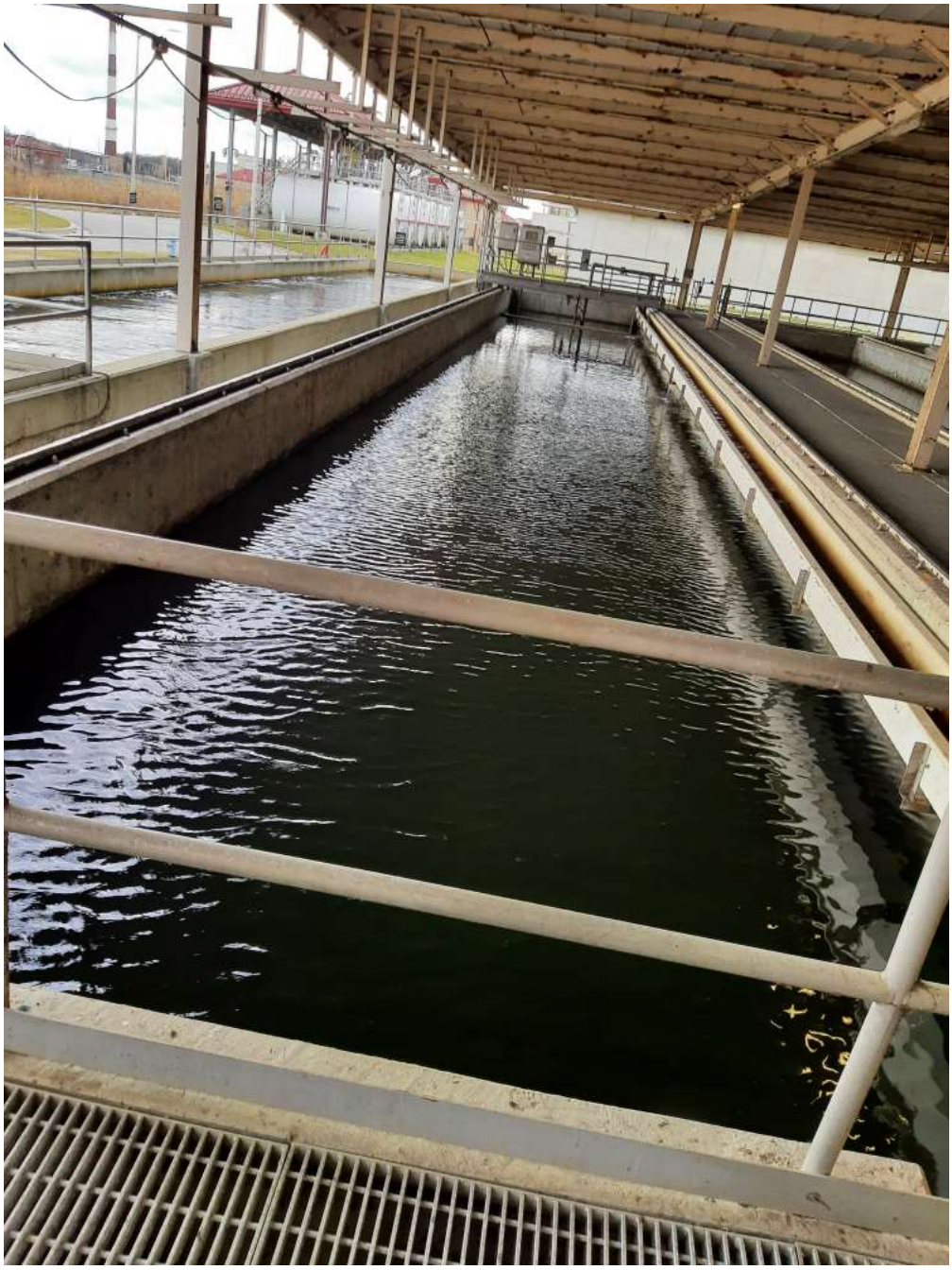
The trend from October 2022 through December 2022 shows a steady increase in solids going into the DNF. The average TSS concentrations for October, November and December 2022 were 7.8 mg/L, 8.8 mg/L and 10 mg/L respectively. In addition, I talked to Mr. Foreman on 2/10/23 and he informed me that the incoming solid concentrations to the DNFs was very high and in the range of 200 mg/L during the week of 1/30 starting at 6 PM and lasting for approximately 12 hours and twice during the week of 2/6/23.



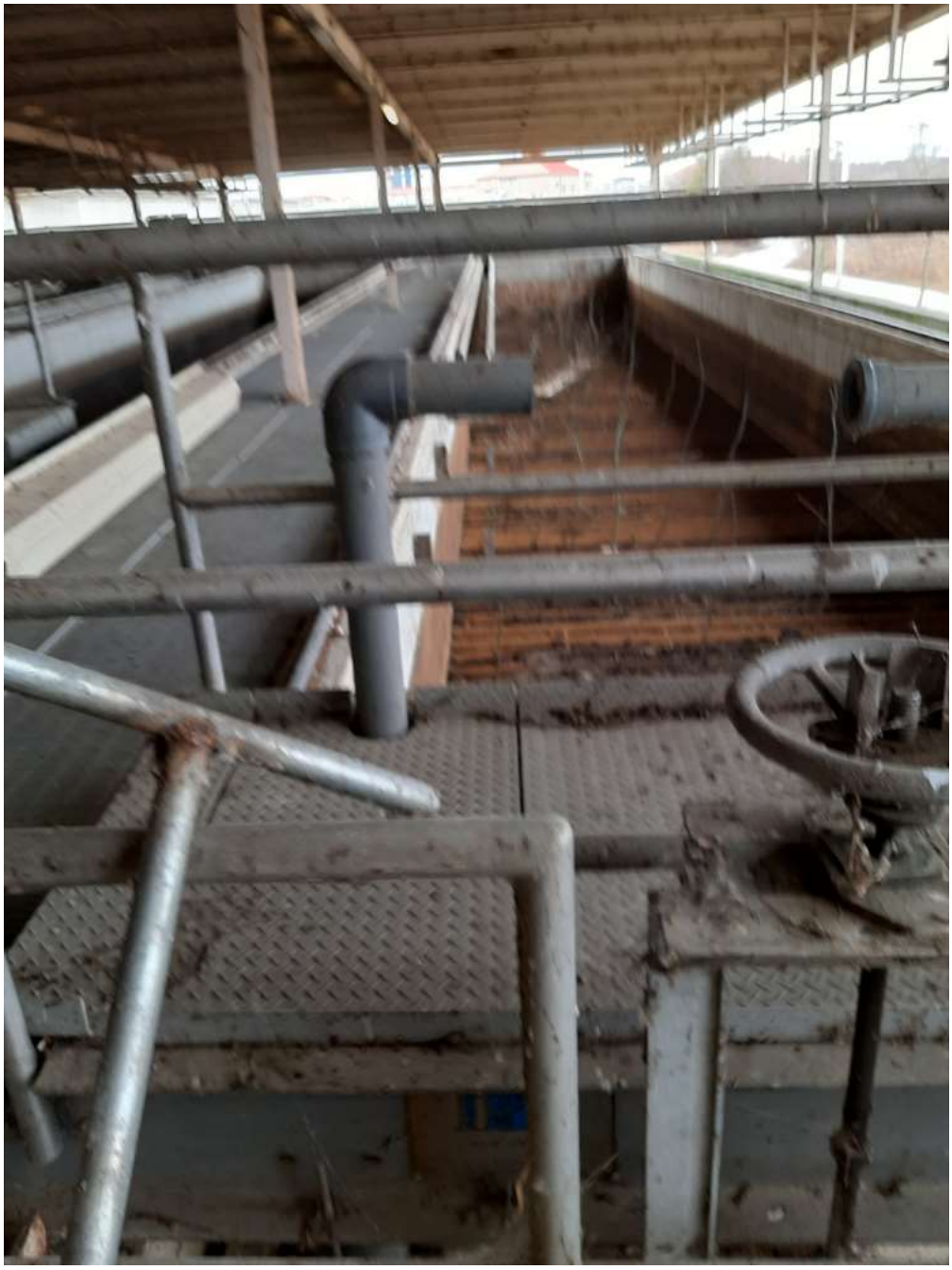
1/26/23 Solids and trash floating on water surface in the DNFs.

Chlorine Contact Chambers (CCC)

After leaving the DNF building, we traveled to the sand filters. The functioning sand filters are used to polish the wastewater coming from the DNF. Currently, 32 of the 48 sand filters are online and functioning and according to Baltimore City DPW 11 of the remaining 16 that require repairs are scheduled to be back online by 4/23. I observed no problems during an inspection of the functioning sand filters.



1/26/23 Sand Filter

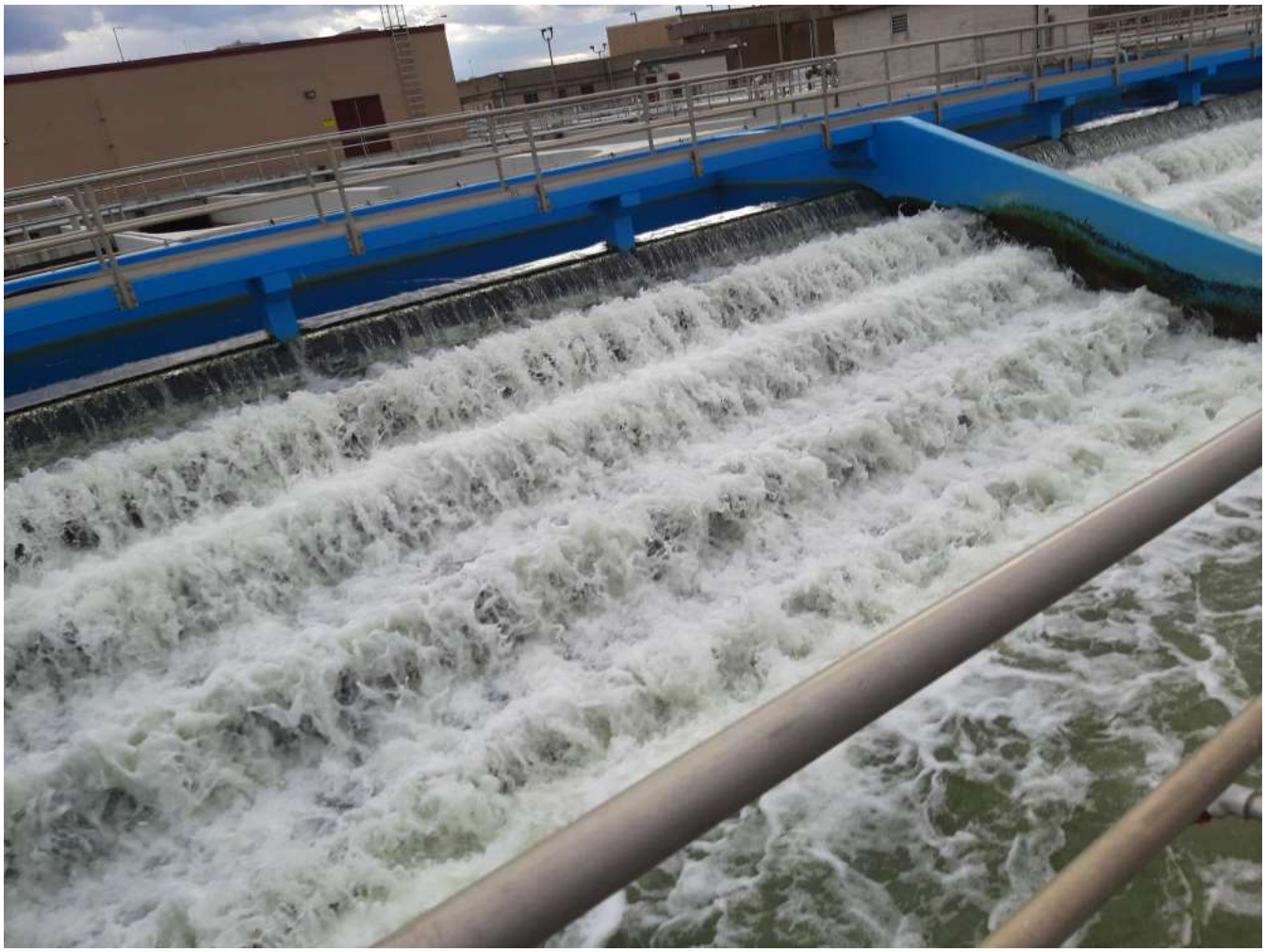


1/26/23 Sand filter down and needing repairs.

Next, I inspected the final effluent at the step aeration system and at the sampling station. During an evaluation of the final effluent, I observed that the effluent was clear with no visible particulates.

The facility is collecting 24-hr, flow-proportional composite samples at Outfall 001 in accordance with the requirements of the permit. I inspected the primary refrigerated, automatic composite sampler and found that the temperature was satisfactory. The permittee has installed upgraded automatic samplers at the monitoring station for Outfall 001. Grab samples for microbiological testing and field measurements are collected at the actual cascading discharge at Outfall 001.

During an inspection of the chlorine contact chambers, I observed no problems. At the request of the Department, the Back River WWTP installed floating booms upstream of the final overflow to preventing floating scum and solids observed during previous inspections from discharging to the surface waters of the State. These booms were in place and functioning satisfactorily. There was no evidence of floating material breaching the final booms during this evaluation.



1/26/23 Final Effluent at the step aeration system

1/26/23 The floating boom at the left channel CCC used to prevent floating solids from entering the final discharge canal.

Next, I inspected the monitoring point for Outfall 002 and checked the automatic sampler. Tradepoint Atlantic had problems with pumps and starting 1/10/23 ceased accepting wastewater from the WWTP until the problem was resolved. They began accepting wastewater again on 1/25/23.

Next, I inspected the quality assurance data for the routine field measurements (DO, pH, total residual chlorine (TRC) conducted at each shift at the Outfalls.

During the review, I observed that there are insufficient quality assurance (QA) records available for the measurement of DO, SM 4500 O G. The operator that I interviewed informed me that he is not conducting specific QA measures specified by Standard Methods. The Back River WWTP must comply with the EPA requirements under 40 CFR Part 136.7 https://www.ecfr.gov/current/title-40/chapter-I/subchapter-D/part-136/section-136.7 and follow the QA requirements for DO found in Standard Methods 4020I and perform and document QA measures listed below:

- Duplicate analysis must be performed to assess precision.
- A zero-oxygen sample must be run.

- There are no records evaluating the condition of the probe for the electrochemical DO sensor.

According to EPA's QA bulletin, the DO probe's oxygen-permeable membrane can be compromised by being punctured or by a coating adhering to it which may not be visible upon inspection. These situations result in high DO measurements when the probe is placed in waters with low DO levels. This problem cannot be detected when the DO meter is calibrated only at the 100 percent saturated air level. Initially, the Department specified that a zero oxygen must be conducted at a rate of 20%. However, to ensure consistently accurate DO measurements a zero-oxygen sample must be used for DO meter calibrations for each use.

Records in the facility's quality assurance logbook state that QA checks were performed for the Amperometric Titration Procedure SM 4500 Cl D for total residual chlorine (TRC) monitoring. However, no records for these checks were available. This was also noted on the June 2, 2022, inspection report.

After the site review, we went back to the administration building for an exit conference to discuss my findings with Turner, Jacobs, and Latova. Below is a list of the main concerns from today's observations. The required corrective actions are detailed below.

1. Scum troughs on PSTs #1, #7, #8 and #11 clogged.
2. PST #7 requires modification to recent repairs in order to operate as designed.
3. Further investigations must be conducted to verify the accuracy of the H_2S monitoring sensors.
4. The secondary clarifier are not functioning as designed and discharging wastewater with TSS concentrations above what the DNF is designed to handle.
5. Secondary Clarifiers require maintenance.
6. Quality assurance records for DO, and TRC
7. Maintenance is required on specific equipment to ensure redundancy and plant resiliency.
8. Staffing Plan

Only well-trained, dedicated plant operators can be expected to perform adequate physical inspections, repairs, and preventive maintenance. The Back River WWTP should ensure that **all** staff is adequately trained and committed to the satisfactory operations of the treatment plant. Optimal maintenance activities at the Back River WWTP can be multifaceted and requires a variety of operator skills to be effective. Therefore, adequate staff and ongoing staff training are necessary. There has not been adequate long-term planning for staff replacement and system upgrades and changes at the Back River WWTP. Many of the skills necessary for routine and preventive maintenance at the site are not readily available and goes beyond the routine wastewater apprenticeship training programs. The Back River WWTP should develop a plan to ensure that there are sufficient staff that are qualified for assigned tasks. A staffing plan must be developed to access current staffing levels, required staffing needs and a projection of future staffing requirements in order to evaluate and identify staffing needs at the WWTP. This must be done to ensure that the WWTP function efficiently and complies with General Condition B3a and b of the NPDES permit.

The following violations were observed under Environment Article Title 9 for the Back River WWTP:

1. Crucial equipment maintenance and repairs are not being performed by the Back River WWTP at the level necessary to efficiently operate and maintain the treatment works as detailed in this report. In addition, there is a list of equipment requiring maintenance listed under **Equipment and Maintenance Projects** in this report. The Back River WWTP has failed to provide enough qualified staff to adequately operate and maintain the WWTP. This is a violation of General Condition B3a and b of the NPDES permit, which specifies the following:
    - *Facilities shall be operated efficiently to minimize upsets and discharges of excessive pollutants.*
    - *The permittee shall provide an adequate operating staff qualified to carry out operation, maintenance and testing functions required to ensure compliance with this permit.*

2. The scum troughs on PST #1, #7, #8 and #11 are clogged with scum and require routine maintenance. This is a violation of General Condition B3 of the NPDES permit. This condition has been observed and reported routinely during previous inspections.

3. An independent contractor has cleared vegetation and algae from some of the secondary clarifiers, but the vegetation has not been removed from all of the clarifiers and weirs. Therefore, not all of the secondary clarifiers are functioning as designed for optimal and efficient wastewater treatment. This is a violation of General Condition B3 of the NPDES permit.

4. There has not been adequate long-term planning for staff replacement and system upgrades and changes at the Back River WWTP. A staffing plan is necessary to determine the gap between current staffing levels and required levels to comply with General Condition B3a and b of the NPDES permit.

5. Specific quality assurance measures are not being performed to verify accuracy and precision of the field testing for TRC and DO.

6. GBTs #1, 2, 5 and 6 are not online and need specific repairs to function as designed.

7. The DAF tanks are not online for various reasons listed above.

8. The DO monitoring probes used to continuously monitor the DO in the biological reactors are not functional. According to Back River WWTP staff, there is a DPW purchase request for 60 ChemScan stainless steel DO probes, controllers, and converters/expansion boxes and associated equipment to automatically monitor and control the DO at the activated sludge plants.

9. The Back River WWTP has exceeded the waste load allocation for polychlorinated biphenyls (PCB) staring in 2021 and must prepare and submit a PCB Minimization Plan

(PMP) to the Department for approval. This plan is overdue, which is a violation of Special Condition 2a of the permit. According to the Baltimore City DPW January 2023 Progress Report, the PMP will be submitted with the February 2023 Progress Report.

To bring this site into compliance with Environment Article Title 9, the Back River WWTP shall make the following corrections:

A. With respect to item #1 above, the Back River WWTP shall immediately comply with the requirements under General Condition B3 of the NPDES permit and adequately operate and maintain the treatment works.

B. With respect to item #2 above, the Back River WWTP shall immediately maintain the PSTs as required to keep them functioning properly to comply with the requirements under General Condition B3 of the NPDES permit. Within 5 days of the receipt of this report, the scum pits shall be pumped out as necessary and the scum troughs shall be cleaned. Going forward, the scum troughs on the PST shall be routinely inspected and the scum pits pumped out as necessary to keep the scum trough openings clear.

C. With respect to item #3 above, all vegetation shall be removed from the secondary clarifiers and routine maintenance shall be performed to prevent the recurrence of the problem to minimize upsets and discharges of excessive pollutants as required under General Condition B3 a and b of the permit. The Back River WWTP shall continue to provide 30-day updates on the progress in achieving the goal of removing all vegetation from the secondary clarifiers and reactors.

D. With respect to item #4 above, within 30 days of the receipt of this report, the Back River WWTP shall submit to the Department a comprehensive staffing plan. The plan shall be implemented by the date of submission to the Department to ensure that there is sufficient staff to comply with the requirements of General Condition B3b of the NPDES permit.

E. With respect to item #5 above, the Back River WWTP shall ensure that the QA measures specified in Standard Methods 4020I are followed to comply with General Condition A3 of the permit.

F. With respect to item #6 above, the Back River WWTP shall comply with General Condition B3 of the NPDES permit and immediately make plans to perform the necessary repairs to the 4 GBTs. In addition, the Back River WWTP shall keep the Department informed on the status of the repairs to the 4 GBTs, starting in the next monthly status report to be submitted to the Department.

G. With respect to item #7 above, the Back River WWTP shall comply with General Condition B3 of the NPDES permit and immediately make plans to perform the necessary repairs to the DAF tanks. In addition, the Back River WWTP shall the keep the Department informed on the status of the repairs, starting in the next monthly status report to be submitted to the Department.

H. With respect to item #8 above, the Back River WWTP shall keep the Department informed monthly on the status of the replacement of the DO sensors and associated equipment necessary to automatically monitor and control the DO in the reactors at the activated sludge plants. All equipment necessary for treatment must be kept in satisfactory condition in order to comply with the requirements of General Condition B3 of the NPDES permit.

I. With respect to item #9 above, the Back River WWTP must submit a PMP to the Department for approval with the Back River WWTP February 2023 Progress Report.

STATE LAW PROVIDES FOR PENALTIES FOR VIOLATIONS OF MARYLAND ENVIRONMENT ARTICLE TITLE 9 FOR EACH DAY THE VIOLATION CONTINUES. THE DEPARTMENT MAY SEEK PENALTIES FOR THE AFOREMENTIONED VIOLATIONS OF TITLE 9 ON THIS SITE FOR EACH DAY THE VIOLATION CONTINUES.

NPDES Municipal Major Surface Water - Inspection Checklist

Inspection Item	**Status**	**Comments**
Does the facility have a discharge permit?	No Violations Observed	
Is the discharge permit current?	No Violations Observed	
If the permit is not current, has facility applied for renewal?	No Violations Observed	
Does the facility operate as authorized bytheir current permit?	Out of Compliance	See Narrative
Has the Permitee exceeded the permitted capacity of the WWTP?	No Violations Observed	
Is the number and location of discharge points as described in the discharge permit?	No Violations Observed	
Has permittee submitted correct name and address of receiving waters?	No Violations Observed	
Is the permittee meeting the compliance schedule per permit requirements?	Not Applicable	
Are adequate records being maintained for the analytical methods/techniques used?	No Violations Observed	
Does the permittee retained a minimum of 3 years worth of monitoring records including raw data and original strip chart recordings; calibration and maintenance records; and reports?	No Violations Observed	
Do lab records reflect that lab and monitoring equipment are being	4 - Not Evaluated	Contract Lab not

NPDES Municipal Major Surface Water - Inspection Checklist

Inspection Item	Status	Comments
properly calibrated and maintained?		evaluated
Does the permittee/laboratory use suitable QA/QC procedures and operate a formal quality assurance (QA) program using appropriate controls?	4 - Not Evaluated	Contract Lab not evaluated
Has the permittee submitted the monitoring results on the proper Discharge Monitoring Report form?	No Violations Observed	
Do the Discharge Monitoring Reports reflect permit conditions?	No Violations Observed	
Has the permittee submitted these results within the allotted time electronically?	No Violations Observed	
Is the facility being properly operated and maintained including:(a) stand-by power or equivalent provisions available, (b) adequate alarm system for power or equipment failure available, (c) all treatments units are in service, .	Out of Compliance	See narrative
If a non-complying discharge occurred since the last inspection, was the regulatory agency notified within the allotted time?	No Violations Observed	
If applicable, has the permitee complied with all special conditions of their permit?	Out of Compliance	This includes General Conditions as well
Are discharge monitoring points adequate for representative sampling?	No Violations Observed	
Do parameters and sampling frequency meet the minimum requirements?	No Violations Observed	
Does the permittee use the method of sample collection required by the permit?	No Violations Observed	
Are analytical testing procedures used approved by EPA?	4 - Not Evaluated	Contract laboratory not evaluated
If alternate analytical procedures are being used, has proper approval been obtained?	No Violations Observed	
Has the permittee notified the Department of the name and address of the commercial laboratory?	No Violations Observed	
Were discharges observed at the authorized outfalls?	No Violations Observed	
If discharges were observed, do the discharges or receiving waters have any visible pollutants observed?	No Violations Observed	
Does this facility have coverage under a a NPDES stormwater discharge permit?	No Violations Observed	
Are the permit conditions being met?	Out of Compliance	See narrative

Inspector: Ronald Wicks 2/10/23
Ron Wicks /Date
ron.wicks@maryland.gov
410-537-3510

Received by: _____
Signature/Date

_____
Print Name

Inspection Date: January 26, 2023
Site Name: Back River WWTP
Facility Address: 8201 Eastern Ave, Baltimore, MD 21224

NPDES Municipal Major Surface Water - Inspection Checklist

Inspection Item	Status	Comments
properly calibrated and maintained?		evaluated
Does the permittee/laboratory use suitable QA/QC procedures and operate a formal quality assurance (QA) program using appropriate controls?	4 - Not Evaluated	Contract Lab not evaluated
Has the permittee submitted the monitoring results on the proper Discharge Monitoring Report form?	No Violations Observed	
Do the Discharge Monitoring Reports reflect permit conditions?	No Violations Observed	
Has the permittee submitted these results within the allotted time electronically?	No Violations Observed	
Is the facility being properly operated and maintained including:(a) stand-by power or equivalent provisions available, (b) adequate alarm system for power or equipment failure available, (c) all treatments units are in service, .	Out of Compliance	See narrative
If a non-complying discharge occurred since the last inspection, was the regulatory agency notified within the allotted time?	No Violations Observed	
If applicable, has the permitee complied with all special conditions of their permit?	Out of Compliance	This includes General Conditions as well
Are discharge monitoring points adequate for representative sampling?	No Violations Observed	
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Does the permittee use the method of sample collection required by the permit?	No Violations Observed	
Are analytical testing procedures used approved by EPA?	4 - Not Evaluated	Contract laboratory not evaluated
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If discharges were observed, do the discharges or receiving waters have any visible pollutants observed?	No Violations Observed	
Does this facility have coverage under a a NPDES stormwater discharge permit?	No Violations Observed	
Are the permit conditions being met?	Out of Compliance	See narrative

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