



Maryland Department of Environment
Water and Science Administration
Compliance Program
1800 Washington Blvd, Suite 420
Baltimore, MD 21230-1719
410- 537-3510, 1-800-633-6101

Inspector: Kari Hanson
AI ID: 8449

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

Start Date/Time: July 20, 2023 09:00 AM
End Date /Time: August 11, 2023 09:20 AM

Media Type(s): NPDES Municipal Major Surface Water

Contact(s): Andrea Buie-Branam - Chief of ERCS, Baltimore City DPW
Betty Jacobs - Back River WWTP
Chris Kroen – Back River WWTP
Rayford McEachern - Back River WWTP
Sarah Megg – ECS, MDE/WSA/Compliance
Ronald Turner - Back River WWTP
Timothy Simmons - Back River WWTP

NPDES Municipal Major Surface Water

Permit / Approval Numbers: 15DP0581

NPDES Numbers: MD0021555

Inspection Reason: Follow-up (Non-Compliance), Initial Quarterly, Initial Yearly

Site Status: Active

Compliance Status: Noncompliance

Recommended Action: Additional Investigation Required

Evidence Collected: Photos or Videos Taken, Record Review, Visual Observation

Delivery Method: Email

Weather: sunny, 80°F-90°F

Inspection Findings:

On this date, a follow-up inspection was conducted at the Back River Wastewater Treatment Plant (WWTP). The facility is authorized to discharge treated effluent through outfalls 001 and 002. The current permit has been administratively extended since it expired on April 30, 2023. A revised permit renewal application (2DP0581) was received by MDE on May 26, 2023.

The WWTP is operated by Baltimore City DPW. Parts of the WWTP are operated by ProStart. These include the Headworks, the Denitrification building and the centrifuges. The design capacity of the plant is 180 mgd.

The 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.

Inspection Date: July 20, 2023
Site Name: Back River WWTP
Facility Address: 8201 Eastern Ave, Baltimore, MD 21224

The flow is split at a junction box and the larger portion of the flow (up to 130.0 MGD) goes to Outfall 001 via a step cascading aeration system and the remaining portion (up to 50.0 MGD) goes to Outfall 002.

Outfall 001 discharges to Back River, a Use II waterway. Use II waterways support estuarine and aquatic life and shellfish harvesting. Outfall 002 is discharged to Tradepoint Atlantic who then discharged it through three outfalls under their industrial discharge permit (#05DP0064) to Bear Creek and the Patapsco River also designated as Use II waterways.

I was accompanied on site by Sarah Megee, another Environmental Compliance Specialist with the MDE/WSA/Compliance Program. We met with the individuals listed above for an opening conference followed by a site walk and closing conference.

OPENING CONFERENCE

- Status of various plans
 - Assets Management Plan – still in progress
 - Wasting & Sludge Management Plan – still in progress
 - Centrifuge Maintenance Plan – still in progress
 - Operations & Maintenance Manual – still in progress
 - Staffing Plan – still in progress
 - PCB Minimization Plan – Submitted to MDE on February 17, 2023.
- Headworks
 - Operated by ProStart
 - No current problems
- Primary Settling Tanks (PSTs)
 - Eleven total – PSTs 1, 7, 8 & 11 working (sufficient for current flow)
 - PSTs 5 & 10 act as flow throughs
 - PST 9 – finishing rehab on center drive, catwalk & weir
 - PST 2- have patched the floor
 - PST 7 – skimmer arm has to be adjusted by MES. It is bent and off balance
 - Mr. Turner stated that the tentative plan is to bring PSTs 2, 9, 10, 5 & 6 back on-line in this order.
 - PST 3 – concrete repairs are scheduled to be completed September 2023. Parts & equipment repairs are scheduled for completion in November of 2023.
 - PST#4 – Concrete repairs to be completed in September 2023. Estimated to be operational in January 2024.
- Activated Sludge Plants (ASP) 2, 3 & 4
 - ASP 2 – reactors 6 & 9 are out of service due to inoperable RAS pumps which they are currently working on. Clarifier 5B is out of service because they are installing a new RAS pump. Clarifier 10B is off-line and being used to backwash filters. The vegetation observed around a mixer at reactor 8A PASS during the June 14, 2023 MDE inspection has yet to be removed. According to Mr. Simmons, the contractor is having difficulties getting to the area with vegetation. They are working on a contingency plan to remove the vegetation.
 - ASP3 – Reactor 11 is out of service a problem with bent rake arm in clarifiers. The same issue is present in clarifier 12B. Reactor 13 is off-line because two mixers are broken and the rake arm in clarifier 13A is bent. In clarifier 14A the skimmer is missing. Reactor 16 is down due to the issue with the rake arms in the clarifiers (16A & 16B).
 - ASP 4 – all reactors and clarifiers are on-line
- Denitrification (DNF) Building

Inspection Date: July 20, 2023
Site Name: Back River WWTP
Facility Address: 8201 Eastern Ave, Baltimore, MD 21224

- Under the control of ProStart
- All equipment is on-line

- Sand Filtration Building
 - Thirty-three sand filters are in operation. These include filters 1-6, 8-14, 16-21, 23, 25-30, 32, 38-39, 41, 43, 45 and 48.

- Chlorination/Dechlorination/outfalls
 - A new refrigerator for the composite sampler was installed at outfall 002.

- Gravity Sludge Thickeners (GSTs)
 - GSTs 1, 3 and 5 are in service today.
 - GSTs 2 & 4 are holding tanks
 - GST 6 has a pump issue.
 - GST 7 has a drive issue.
 - GST 8 needs a pump installed.

- Gravity Belt Thickeners (GBTs)
 - GBTs 3, 4, 7 & 8 are in service.
 - GBT 1 – thickener sludge not pumping to capacity. Work order has been submitted.
 - GBT 2 – requires a rebuild
 - GBT 5 – has a gear box issue
 - GBT 6- A misaligned belt tore and needs to be replaced.

- Centrifuges
 - WWTP four centrifuges in building
 - #1 has issues with the polymer pumps
 - #4 has to be rebuilt because they scavenged it for parts for #2 & #3 which are functional.
 - Three portable centrifuges in place and working.

SITE WALK

After the opening conference, Ms. Megee and I toured the site with Timothy Simmons, Andrea Buie-Branam, and Chris Kroen. We began at the Headworks.

Sewage enters the plant at the mechanical screen building where there are four Coarse Screening Units, and each unit can treat flows up to 200 million gallons per day (MGD). Unit #2 was in use during this inspection. During normal flows one coarse screening unit is sufficient to treat the average daily flow. Some debris was observed on the floor next to the screening unit.

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 Headworks Influent Pumping Station has 8 lift pumps. The lift pumps are used to pump the screened sewage from the wet wells to the Fine Screening System.

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. Fine screening units 1-4 are functioning while units 5 & 6 are in stand-by. No issues were observed with the fine screening units.

The fine screened sewage then travels to the Grit Removal System. Eight travelling bridge remove grit from the waste stream. Bridges 1-3 are in service, and bridges 6-8 are in standby. Bridges 4 & 5 are out of service. They are waiting on parts for the horizontal grit pumps. Each traveling bridge has an 80 MGD capacity. Under normal flow conditions, two bridges are required for satisfactory grit removal.

Inspection Date: July 20, 2023
Site Name: Back River WWTP
Facility Address: 8201 Eastern Ave, Baltimore, MD 21224

The bridges travel back and forth using submersible pump/suction plate systems, that continuously remove 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. No issues were observed at the grit removal system.

The centrifuge building was viewed next. No centrifuges were running during this inspection because the solids inventory is down. They are wasting what they are supposed to. Three centrifuges are operational, but there are only two polymer pumps. They are breaking down centrifuge 1 and installing new parts.

The sewage flows from the Grit Removal System to a junction box and then to the Primary Settling Tanks (PSTs). 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 (BOD5) of the wastewater.

In the working PSTs, the following observations were noted:

- PST 1 – scum trough is full. The skimmer looked good. There is little vegetation present.
- PST 7 – Scum trough is full. The skimmer arm is bent. There is little vegetation present.
- PST 8 – The scum trough is empty. The skimmer arm looked good. No vegetation is present.
- PST #11 - The scum trough is empty. The skimmer arm looked good. No vegetation is present.

Mr. Simmons stated that the scum pumps were down for PSTs 1 & 7 which would explain the full scum troughs. PSTs 5 & 10 act as flow through tanks. PST 6 requires rehab work. PSTs 3 & 4 are currently undergoing rehab work.

After primary settling, the wastewater flows to the flow distribution building and from there the wastewater flows to Activated Sludge Plants #2, #3 and #4 which contain 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. There are a total of thirty-six secondary clarifiers. Each Activated Sludge Plant has twelve secondary clarifiers.

Only ASP #4 was observed during this inspection. Small amounts of debris were observed floating in reactors 21A, 21B, 20B, 20A, 19A, 19B, 18B, 18A, 17B. Vegetation was observed growing in the scum trough of reactor 21B. Evidence of solids were observed in the influent channel entering reactor 20B.

All twelve secondary clarifiers (#17A/B-#22A/B) were observed during this inspection. The scum troughs at secondary clarifiers 21B, 22A, 22B were full. Duck weed was observed in secondary clarifier 19A. Algal growth was present at clarifiers 17A, 17B, 18A, 18B, 19A, 19B, 20B 21A and 21B. There was excessive vegetative growth between the weirs at 22B. At 22A vegetation was growing on the inner weir and mixer ring.

The next stop was at the DNF building. There are four filter quads, and each quad contains 13 Tetra Denitrification Filters with 52 total filters. 50 units are needed for designed capacity and 39 for current flow conditions. Minor amounts of trash were observed in quads one and three. On July 27, 2023, Ms. Buie-Branam emailed me Total Suspended Solids (TSS) data for the DNF influent and effluent between June 1, 2023 and July 18, 2023. All DNF effluent data showed TSS less than 10 mg/l.

We then traveled to the Sand Filters. The functioning sand filters are used to polish the wastewater coming from the DNF. No issues were observed at this location.

We proceeded to the chlorination/dichlorination facility and outfall area. The final effluent at outfall 001 was running clear at the step aeration system. No foam, solids or odor were observed. The composite sampler and hosing were clear. The thermometer inside the sampler read 4°C. At outfall 002, a new refrigerator for the composite sampler was in place. The thermometer inside the sampler read 5°C.

The floating booms were still in place on the upstream side of the chlorine contact chambers final overflow. No floating scum or solids were observed at this location.

Inspection Date: July 20, 2023
Site Name: Back River WWTP
Facility Address: 8201 Eastern Ave, Baltimore, MD 21224

We went into the lab. All pH buffers were current. I reviewed pH and DO calibration records. I observed the use of white out on entries dated June 25 & 26 of 2023. I also observed numbers written over original numbers in the DO calibration record dated July 5, 2023 and blacked out numbers in the July 6, 2023 DO calibration record. **As a reminder, any mistakes should have one line drawn through them and initialed and the correct number written next to the line.**

CLOSING CONFERENCE

After the site review, we went back to the administration building for an exit conference.

RECORDS REVIEW

The June 2023 DMR for outfalls 001 and 002 were reviewed. No effluent violations occurred. The DMRs were submitted on time. The BOD values for the days of June 12 -June 18 were not used in the weekly and monthly calculations due to a laboratory error. The samples were collected and sent to ALS Laboratory, but the lab's incubator temperature exceeded the allowable 21°C temperature.

MDE received a letter dated July 13, 2023 from the City of Baltimore Department of Public Works regarding a spill event on July 8, 2023. The letter signed by Rayford F. McEachern, Jr. stated that 50 gallons of sludge left the Acid Phase Reactor (APR) room and spilled out onto a grassy area. This event occurred due to a packing failure for the #1 APR recirculation pump. The packing has been repaired and the pump placed on stand-by. The spill was cleaned up, and the grassy area was limed. No sludge entered any storm drain, manhole or waterway.

VIOLATIONS

With respect to the above authorization, the following violations of Environment Article Title 9 by Baltimore City DPW were observed on this date with corrections needed immediately:

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. 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:
 - a. Facilities shall be operated efficiently to minimize upsets and discharges of excessive pollutants.
 - b. The permittee shall provide an adequate operating staff qualified to carry out operation, maintenance and testing functions required to ensure compliance with this permit.

CORRECTION: The Back River WWTP should immediately comply with the requirements under General Condition B3 of the NPDES permit and adequately operate and maintain the treatment works.

2. 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. CORRECTION: The Back River WWTP should immediately submit to the Department a comprehensive staffing plan. The plan should 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.
3. The DO monitoring probes used to continuously monitor the DO in the biological reactors are not functional. The DO monitoring probes and other associated equipment have been ordered and Back River WWTP staff are waiting for parts. CORRECTION: The Back River WWTP should 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 should be kept in satisfactory condition in order to comply with the requirements of General Condition B3 of the NPDES permit.

Inspection Date: July 20, 2023
Site Name: Back River WWTP
Facility Address: 8201 Eastern Ave, Baltimore, MD 21224

4. The scum trough on PSTs #1 & #7 are clogged with scum and the scum pumps require maintenance. This is a violation of General Condition B3 of the NPDES permit. **CORRECTION: The Back River WWTP should maintain the PSTs as required to keep them functioning properly to comply with the requirements under General Condition B3 of the NPDES permit. The scum troughs should be pumped out and the pumps repaired or replaced.**

5. The scum troughs on secondary clarifiers 21B, 22A, 22B are full. This is a violation of General Condition B3 of the NPDES permit. **CORRECTION: The Back River WWTP should maintain the secondary clarifiers as required to keep them functioning properly to comply with the requirements under General Condition B3 of the NPDES permit. The scum pits should be pumped out as necessary and the scum troughs should be cleaned.**


6. An independent contractor has cleared vegetation and algae from some of the secondary clarifiers, but the vegetation has not been removed from all the clarifiers and weirs. Therefore, not all the secondary clarifiers are functioning as designed for optimal and efficient wastewater treatment. Additionally, varying grass and other vegetation growth was observed. This is a violation of General Condition B3 of the NPDES permit.
 - a. Of the 12 secondary clarifiers observed today, vegetation was growing in 21A, 21B, 22A & 22B.

CORRECTION: All vegetation should be removed from the secondary clarifiers and routine maintenance should 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.

A reinspection will occur to verify compliance.

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

Inspector: Kari Hanson 8/11/2023
Kari Hanson /Date
kari.hanson@maryland.gov
410-537-3510

Received by:  11/7/23
Signature/Date
Michael Hallmen
Print Name