State of Washington Department of Ecology

# WASTEWATER TREATMENT PLANT COMPLIANCE INSPECTION REPORT

Northwest Regional Office
15700 Dayton Ave N
Shoreline, WA 98133
206-594-0000 ph
206-366-7810 fax
(last update 7-6-2021)

## Section A: General Information

| Report Version | PERMIT # | mo/day/yr | Inspection Type | Inspector Code | Facility Type |
|---|---|---|---|---|---|
| ☒New ☐Changed ☐Delete | **WA0029581 & ST007445** | **01/24/2023** | **C** | **S** | ☒ 1 Municipal ☐Public ☐Private |

Remarks

| Inspection workdays | Facility Self-Monitoring | Photos Taken | Samples Taken | BI | QA |
|---|---|---|---|---|---|
| **2.0** | **4** | ☒Yes ☐No | ☒Yes ☐No | **N** | **N** |

Lead Ecology Inspector(s)
Sean Wilson and Greg Lipnickey

## Section B: Facility Data

| Name, Location, and Phone of Facility Inspected | Entry Time | Permit Effective Date |
|---|---|---|
| King County – South Treatment Plant & Water Reclamation Facility<br>1200 Monster Road SW, Renton WA 98055 | 9:00 AM | 07/01/2015 |
| | Exit Time | Permit Expiration Date |
| | 3:30 PM | 07/31/2020 (extended) |

| Name(s)/Title(s) of On-Site Representative(s) | Ecology Staff On-Site |
|---|---|
| Chapin Brackett (WTD Manager – Process & Environmental Compliance)<br>Rachel Dyda (Process Supervisor/Chief Process Analyst)<br>Jeff Lafer (NPDES Permit Administrator)<br>Mike Wohlfert (Plant Manager)<br>Curtis Steinke (Process Engineer II) | Sean Wilson, Greg Lipnickey, Shawn McKone |
| Name, Address, Title, Phone, and Fax Number of Responsible Official<br>Robert Waddle, WTD Operations and Maintenance Manager<br>201 S Jackson St<br>KSC-NR-0700<br>Seattle, WA 98104<br>Phone Number (206) 263-1810 Fax Contacted? ☐Yes ☒No | Other Facility Data |

## Section C: Areas Evaluated During Inspection (Check only those areas evaluated)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| ☒ | Permit | ☒ | Flow Measurement | ☒ | Operations & Maintenance | ☐ | CSO/SSO (Sewer Overflow) |
| ☐ | Records/Reports | ☒ | Effluent ☐Receiving Water | ☒ | Sludge Handling/Disposal | ☐ | Pollution Prevention |
| ☒ | Facility Site Review | ☐ | Compliance Schedules | ☐ | Pretreatment | ☐ | Multimedia |
| ☒ | Self-Monitoring Program | ☒ | Laboratory | ☒ | Storm Water | ☐ | Other |

## Section D: Summary of Findings/Comments

### I. INTRODUCTION

The Department of Ecology conducted a compliance inspection with sampling at King County's South Treatment Plant (STP) on January 24, 2023. Sean Wilson (the current King County Permit Manager for Ecology) led the inspection with support from Shawn McKone (Municipal Unit Supervisor and previous King County Permit Manager for Ecology) and Greg Lipnickey (NWRO Municipal Water Quality Enforcement Lead). King County employees Curtis Steinke, Rachel Dyda, Mike Wohlfert, Jeff Lafer, and Chapin Brackett assisted with the inspection. The purpose of this announced inspection was to familiarize new personnel with the facility to help with permit development, to assess the permittee's self-monitoring procedures, and to evaluate compliance with permit requirements.

The South Treatment Plant facility occupies 94 acres in Renton and is a critical part of King County's regional system that treats wastewater from homes, businesses, and industries. In 1965, the original plant was constructed and had the capacity to treat 24 million gallons per day (MGD) of wastewater to secondary treatment levels using an activated sludge process. The latest facility expansion, completed in 2000, increased the plant's secondary capacity to 144 MGD maximum month flow.

The STP is regulated by NPDES permit #WA0029581, the Puget Sound Nutrient General Permit WAG994573, and the reclamation facility is regulated by State Reclaimed Water permit #ST007445. Both permits were issued July 1, 2015, expired July 31, 2020, and have been administratively extended. Ecology is planning to issue new permits in 2023. The NPDES permit authorizes the South Plant to utilize its deep marine outfall in central Puget Sound as well as from an outfall in the

Green River for occasional pre-approved maintenance (e.g., diffuser maintenance) or during an emergency. The reclaimed water permit authorizes the County to distribute reclaimed water for irrigation, industrial, and commercial uses.

## II. RESULTS AND DISCUSSION

Collection System: There have been no major changes to the collection system since the last inspection. The plant receives wastewater from three main interceptors (Tukwila, Eastside, and South Interceptors) which themselves receive flows from a variety of local sewer districts. The facility also receives wastewater from vactor trucks whose loads are typically from septic system clean-out. These truck clean-outs represent ~5% of the plants flow. Another ~5-10% of the flow to the plant comes from industrial users, the most significant of which is SeaTac Airport. In the winter, flows from SeaTac Airport can include deicer, which introduces significant nutrient loading.

Control System/Alarms: All critical plant operations and alarms are monitored and/or controlled from a central control room using a supervisory control and data acquisition (SCADA) system which can also be viewed (but not operated) remotely by authorized users. Pump stations within the collection system communicate (typically via third party cable network) to the control room at South Plant. The collection systems are monitored 24/7 via the displays and alarms in the control room. Due to security concerns, operators in the STP control room are not able to remotely change settings, restart equipment, etc. at pump stations or other satellite structures. Instead, two operators are on standby at all times during the wet season to respond in case of an alarm or if an issue is identified by the control room.

Liquid Stream: The general design philosophy of the facility is to have parallel versions of each process step, which then recombine/mix before and after each process step. This reduces the risk to total system failure and impacts of small fluctuations in any given system.

At the headworks, received flows are directed through one to two of the four conduits to the screening process with the remaining conduits either in maintenance or available on standby. Each of the four conduits directs flow to two bar screens and thus there are a total of eight bar screens. These bar screens have a variety of spacings from 3/8” up to 7/8". During normal operation flow goes through the four 3/8” bar screens (#1-4). Flow only goes through the larger bar screens (5/8” and 7/8”) during high flows, and when work is being performed on the 3/8” bar screen sets.

After screening wastewater is lifted via six raw sewage pumps which, allow the rest of the plant to rely on gravity to generate flow. Three of these raw sewage pumps have been upgraded within the last five years. All six pumps use variable frequency drives to reduce electrical consumption. In the channel immediately after the raw sewage pumps, air is added to help settle out grit before flows are sent to the sedimentation tanks (a.k.a. primary clarifiers). The County indicated that they have anecdotally seen that a portion of fats, oils, and greases (FOG) attaches to this grit and is removed during this step. Influent samples are collected from flows in this channel prior to primary sedimentation. In the 12 primary sedimentation tanks, surface water sprays are used to collect scum/FOG while settled solids are collected via scrappers on the bottom of the tanks. In contrast to other facilities, solids from primary treatment are not thinned before being sent to the solids digesters.

In the case of extreme flows or an emergency, partially treated effluent can be discharge prior to entering the rest for the process. A sampling station is set up in this area in case of such a diversion. At the time of inspection, the diversion valve was in the closed position and was locked. The NPDES and reclaimed water permits do not authorize these diversions and require reporting occurrences to Ecology following the bypass procedures in the permits.

After primary sedimentation, wastewater flows to one of the four aeration basin trains. Each aeration basin train consists of four passes. The first half of first pass is unaerated and can be operated as an anaerobic, anoxic, or a combination of anaerobic/anoxic. The remaining three passes are aerobic. The County representatives indicated that they have found that nitrification starts at roughly 3 mg/L dissolved oxygen in these activated sludge basins and can be slowed by reducing the dissolved oxygen levels down to ~1.3 mg/L. Return activated sludge (RAS) is fed into the systems at the head of first pass. Due to sludge volume index (SVI) issues, roughly 25% of the wastewater from primary sedimentation was being fed in at the third pass. According to one of the County employees, the RAS pumps are “old and failing”. The County is planning a project ~2-3 years out to replace the aging system. During the inspection, odors at the aeration basin were mild and generally earthen (not sweet or sour). According to one of the experienced Ecology staff on the inspection, this odor is indicative of a productive and healthy biome within the wastewater treatment process.

Unlike the other process, effluent from each of the aeration basins is not mixed before flowing to the secondary clarifiers. South Plant’s 24 secondary clarifiers are grouped into six pods (with four clarifiers in each pod). Some of the clarifiers are side fed while others are center fed. Effluent from all clarifiers is collected by an inlet structure that is approximately 30 inches below the surface. This allows the clarifiers to provide additional removal of not just solids but floating oils and greases as well. The County measures the total suspended solids (TSS) in the clarifier effluent weekly to assess their performance; this TSS value is not report to Ecology as it is not required by their permit and is only used for operational optimization/monitoring.

Secondary clarifier effluent is mixed and send to one of two chlorine contact channels. Sodium hypochlorite at 12.5% is added to the wastewater via a PLC-controlled system and then mixed via an impeller. An air wand is also installed along the chlorine contact channel as a back-up mixing system in case of the impeller's failure.

Following disinfection with sodium hypochlorite, effluent flows over a weir to increase dissolved oxygen levels before entering the final effluent structure. In the effluent building, samples are collected and final effluent either flows by gravity or is pumped to through South Plant's 12-mile-long effluent tunnel to their outfall offshore of West Seattle. Pumping of effluent is typically required in winter when tides are higher and during high flow events (>40 MGD).

Solids Stream: Solid waste recovered from the screening and grit removal steps are dewatered and offloaded to trucks that transport the material to a landfill for disposal.

Waste sludges collected in the primary and secondary clarifiers are processed into biosolids. The process begins with thickening in the Dissolved Air Flotation (DAF) system. The goal of the DAF is to get to greater than 6% solids in the stream before sending the sludge over to the digesters. South Plant's DAFs are designed to allow treated flow to exit at the top. Effluent from the top of the DAF then proceeds to the one of four digestors which have a residence time of 25-35 days. Digested materials are pumped over to the Digested Blend Storage tank where polymer is added at a rate of 42-45 pounds per ton. Finally, the biosolids are dewatered further using centrifuges until the biosolids are cake dryness of ~21% solids. In total, the South Plant generates roughly eight truckloads of biosolids each day, which equates to ~840,000 pounds per day. The Class B biosolids are beneficially used as nutrient-rich organic soil amendment on agriculture and forest lands.

Reclaimed Water: The reclaimed water plant at the South Plant is a separate process unit that receives effluent from the wastewater treatment process shortly after chlorination and generates Class A reclaimed water for use primarily in landscaping. Up to 95% of the water generated by South Plant's reclaimed water system is used by the facility itself for exempt uses.

The treatment process for reclaimed water is a three-step process. The first step is the addition of a coagulant which is mixed via an in-line mixer. Next, the water with coagulant passes through a continuous backwash counter-current up-flow sand filter. The South Plant has three identical sand filter vessels but typically one vessel has sufficient capacity to meet demand. Turbidity is measured at the outlet of the sand filters and the PLC will automatically recirculate any water that does not meet the standard of a maximum of 5 NTU. In the final step, sodium hypochlorite is added to provide disinfection and the water flows through a series of detention tanks. Reclaimed water is stored in a 550,000-gallon storage tank for distribution. Chlorine residuals are measured at the discharge from this main storage tank.

Stormwater: Rainwater that falls on the site is captured with a dedicated stormwater conveyance system. The outlet of the stormwater system is a series of retention ponds on the north side of the facility called the "Waterwork Gardens". In the case of a spill or construction within a portion of the facility that could impact the stormwater quality, flows can be divert to the wastewater influent structure.

Flow Measurement: The devices and location of flow monitoring devices were not inspected as part of this visit. Records related to the reported monthly flows and calculation methodology were reviewed (see the Records Review section below).

Laboratory: The South Plant laboratory processes nearly all of its own routine influent and effluent samples as well as many other internal parameter samples and samples collected at Carnation, Brightwater, and Vashon Wastewater Treatment Plants. Composite samples are collected via an automated system that is typically set to collect forty-eight 100 mL samples per 24-hour period (roughly 30 minutes apart) for a total volume of almost five liters. Sample aliquots are stored in a refrigerator within the laboratory until staff arrive to process them. Refrigerator temperatures are record daily to ensure that the unit is working properly and that all aliquots remain within their required holding temperature. This was verified during the inspection (see Photo 22). Laboratory personnel interviewed during the inspection were familiar with chain of custody and quality assurance procedures.

Back-up Power: Power to the South Plant comes from two independent distribution-level grids operated by Puget Sound Energy (PSE). This meets the plant's power redundancy requirement because either distribution level grid can supply power to the entire plant. Plant operators stated that the South Plant very rarely experiences power failure due to its proximity to the main distribution lines for the Seattle area. The County did express the that they occasionally experience voltage sags/dips that cause equipment to trip but to date this has not had an adverse impact on the facility's compliance or performance.

Gas captured from the digestion process is combusted in a cogeneration facility located onsite which has two 3.2 megawatt (MW) gas-powered turbines and a 1.6 MW steam-powered generator. Thus, the facility has a total power generation capacity of 8 MW. There is also a boiler onsite that provides most of the heating for the entire facility by burning digester gas. The

County is planning on installing three smaller boilers to replace the single large boiler to improve efficiency during low heat demand.

Staffing: The South Plant is staffed 24/7 by a minimum of six operators/mechanics working 12-hour shifts. Additional maintenance and supervisory staff are also onsite predominately during day shift and Monday through Friday.

Since 2020, the facility has lost roughly 325 years of operational experience in the form of retirements and resignations. The County does not expect the pace of operator loss to slow significantly in the next 5 years. Similar to many other facilities, the County has struggled to hire qualified and experienced staff to replace those lost. Currently, the County is relying heavily on its own "Operator-in-Training" (OIT) program to hire and train new operators. The County's OIT program hires and trains prospective operators and moves the candidates around amongst their various treatment plants. County staff stated that this training regime provides the new operators with a breadth of experience and ensure that they are prepared and successful in obtaining an operator's certificate. OIT classes include roughly 15 candidates annually.

In addition to the OIT program, the County has prioritized procedural review by senior employees as a way of capturing their knowledge prior to their departure.

Records Review: During the inspection, data from five Discharge Monitoring Reports (DMRs) were reviewed and compared to the available lab and process information stored/used on site. Three of the DMRs reviewed were for the South Plant's wastewater permit: July 2021, December 2021, and September 2022. Two of the DMRs reviewed were from the South Plant's reclaimed water permit: July 2021 and September 2022.

The County uses two data systems to store and calculate values reported in the DMR. Sampling results from the onsite laboratory are stored in a piece of software managed by the laboratory staff: ThermoFischer Scientific SampleManager LIMS Software (LIMS). Relevant sampling results (e.g., daily influent BOD) are imported into an environmental compliance/management system software which is managed by compliance personnel, Hach Water Information Management Solution (HachWIMS). HachWIMS also connects to operational data (e.g., flow meters) which it can use to created calculated values required with the DMR (e.g., total effluent flow).

When comparing values from the submitted DMRs to the County's internal system, a few small discrepancies were found. First, effluent flow (in MGD) for all reported values in July and December 2021 were different than those in the internal system. The raw data from flow meters at the facility is included within the HACHWIMS but reported effluent volumes are calculated based upon a combination of several flow meter readings. The exact difference between the DMR values and HACHWIMS varied by day but was approximately 1-2% of the report value, which is close to the uncertainty of the flow meters used. The County indicated that the difference was likely due to an improvement to their effluent flow calculations that was executed in March 2022. The improved calculation was applied retroactively in HachWIMS but DMRs were not resubmitted.

The second discrepancy noted was between LIMS and HachWIMS. For reclaimed water effluent ammonia on 09/07/2022 and 09/14/2022 as well as wastewater effluent total Kjeldahl nitrogen on 09/08/2022, all values reported in the DMR matched those in LIMS but were slightly different than those in HachWIMS. Because the values reported match those in the laboratory's software (which is verified as part of its ISO 14001 certificate), there is no issue with the submitted DMRs. It was difficult to determine exactly what caused the difference between the two internal County systems, but plant staff stated that it is likely because the lab revised the values in their system after finalization/import to HachWIMS.

Split Sampling: Ecology contacted the South Plant several weeks before the inspection to set up their composite samplers to allow for splitting samples with Ecology. The samplers were set up properly but did not provide enough sample volume for Ecology to take split samples of all influent and effluent parameters. Nevertheless, samples were collected and split for analysis for as many constituents as possible. Samples collected by Ecology were sent to Ecology's Manchester Environmental Laboratory and met all required holding times.

The purpose of the split sampling is to compare the laboratory analysis at STP with Ecology's Manchester Lab's analysis. Results were in close agreement for all effluent and influent parameters. Results are shown in the table below.

| Parameter/Location | Ecology Manchester Lab | South Plant Lab |
|---|---|---|
| *South Plant Influent:* | | |
| Total Suspended Solids (mg/L) | 200 | 218 |
| Chemical Biochemical Oxygen Demand (mg/L) | 167 | 198 |
| | | |
| *South Plant Effluent:* | | |

| | | |
|---|---|---|
| Total Suspended Solids (mg/L) | 6 | 7 |
| Chemical Biochemical Oxygen Demand (mg/L) | 3 | 4 |
| Fecal Coliform (#/100 mL) | 39 | 14 |

## III. CONCLUSION

In general, the facility appeared to be well maintained and demonstrated strong operational control. No evidence of spills, diversion of flows around treatment, or non-operational equipment was found. Staff interviewed were knowledgeable, helpful, open, and honest. The agreement of samples analyzed by King County and by Ecology's Manchester Lab indicate that proper sample management and testing procedures are being followed at the STP lab. Ecology found No evidence of non-compliance with any permit conditions during the inspection. Ecology did identify one practice that, while not an apparent violation, is not a best practice and could result in a violation.

Ecology reaffirms the importance of all DMR-submitted data being verifiable and that all collected raw data from monitoring devices remains unalterable and unchanged. The County must maintain clear documentation of their calculation methodology and any changes to said methodology. The County must be able to explain discrepancies between the same reported value between its two internal software systems.

| **Name(s) and Signatures of Inspector(s)** | **Agency/Office/Telephone** | **Date** |
|---|---|---|
| Sean Wilson | WA Dept. of Ecology, NWRO, 425-577-4864 | 04/17/2023 |
| Greg Lipnickey | WA Dept. of Ecology, NWRO, 425-449-6560 | 04/17/2023 |
| **Name and Signature of Management QA Reviewer** | **Agency/Office/Telephone** | **Date** |
| Shawn McKone | WA Dept. of Ecology, NWRO, 206-549-0158 | 04/17/2023 |
| | | |

**ANNOUNCED** Inspection

Appendix A — Compliance Inspection Report Form

**INSTRUCTIONS**

**Section A: General Information**

**Report Version: N** for 1st version, **C** for Changed or amended, or **D** for Delete

**NPDES Permit No**.: Enter the facility's NPDES or State permit number.

**Inspection Date:** Insert the date entry was made into the facility. Use the month/day/year format (e.g.,06/30/04 = June 30, 2004).

**Inspection Type:** Use one of the codes listed below to describe the type of inspection:

| | | |
|---|---|---|
| A Performance Audit | L Enforcement Case Support | 2 IU Sampling Inspection |
| B Compliance Biomonitoring | M Multimedia | 3 IU Non-Sampling Inspection |
| C Compliance Evaluation (non-sampling) | P Pretreatment Compliance Inspection | 4 IU Toxics Inspection |
| D Diagnostic | R Reconnaissance | 5 IU Sampling Inspection with Pretreatment |
| E Corps of Engineers Inspection | S Compliance Sampling | 6 IU Non-Sampling Inspection with pretreatment |
| F Pretreatment Follow-up | U IU Inspection with Pretreatment Audit | 7 IU Toxics with Pretreatment |
| G Pretreatment Audit | X Toxics Inspection | |
| I Industrial User (IU) Inspection | Z Sludge | |

**Inspector Code**: Use one of the codes listed below to describe the *lead agency* in the inspection:

| | |
|---|---|
| C - Contractor or Other Inspectors (Specify in Remarks Columns) | N - NEIC Inspectors |
| E - Corps of Engineers | R - EPA Regional Inspector |
| J - Joint EPA/State Inspectors - EPA Lead | S - State Inspector |
| | T - Joint State/EPA Inspectors - State Lead |

**Facility Type**: Use of one of the choices below to describe the facility.
1 - Municipal. Publicly Owned Treatment Works (POTWs) with 1987 Standard Industrial Code (SIC) 4952.
2 - Industrial. Other than municipal, agricultural, and Federal facilities.
3 - Agricultural. Facilities classified with 1987 SIC 0111 to 0971.
4 - Federal. Facilities identified as Federal by the EPA Regional Office

**Remarks**: These columns are reserved for remarks.

**Inspection Work Days**.: Estimate the total work effort (to the nearest 0.1 work day), up to 99.9 days, that were used to complete the inspection. This estimate includes the accumulative effort of all participating inspectors; any effort for laboratory analyses, testing, travel time and preparation time. This estimate does not require detailed documentation.

**Facility Evaluation Rating**: Use information gathered during the inspection (regardless of inspection type) to evaluate the quality of the facility self-monitoring program. Grade the program using a scale of 1 to 5 with a score of 5 being used for very reliable self-monitoring programs, 3 being satisfactory, and 1 being used for very unreliable programs.

**Biomonitoring Information**. Enter D for static testing. Enter F for flow through testing. Enter N for no biomonitoring.

**Quality Assurance Data Inspection**. Enter Q if the inspection was conducted as follow-up on quality assurance sample results. Enter N otherwise.

**Photos Taken**: Yes or No

**Samples Taken**: Yes or No

**Lead Ecology Inspector:** Enter lead inspector's name

**Section B: Facility Data**

This section is self-explanatory except for: "Other Facility Data," which may include new information not in the permit or PCS (e.g., new outfalls, names of receiving waters, new ownership, and other updates to the record), e-mail addresses…; and "Ecology Staff On-Site", which may include staff names, titles, phone numbers, or e-mail addresses.

**Section C: Areas Evaluated During Inspection**

Check only those areas evaluated by marking the appropriate box. Use Section D and additional sheets as necessary.

**Section D: Summary of Findings/Comments**

Support the findings, as necessary, in a narrative report. Use the headings given on the report form (staffing, back-up power) as appropriate. Reference a list of attachments, such as completed checklists, photos, lab reports, etc. Use extra sheets as necessary.

LINKS AND INFORMATION:

"Informational Manual for Treatment Plant Operators"; February 2004; by the Department of Ecology
Publication Number 04-10-020:
http://www.ecy.wa.gov/pubs/0410020.pdf
The manual was prepared to help wastewater treatment plant operators complete and submit their Discharge Monitoring Reports (DMRs) and other annual reports to the Department of Ecology. The manual is available in hard copy. To request a copy, contact the Department of Ecology, Publications Distribution Center at P.O. Box 47600, Olympia, WA 98504-7600 or by Telephone: (360) 407-7472. Updates to the manual are included on the website version.

Ecology's Wastewater and Reuse website:
http://www.ecy.wa.gov/programs/wq/wastewater/index.html

Ecology's Operator Certification website:
http://www.ecy.wa.gov/programs/wq/wastewater/op_cert/index.html

Ecology's Laboratory Accreditation website:
http://www.ecy.wa.gov/programs/eap/labs/labs_main.html

Ecology's Biosolids website:
http://www.ecy.wa.gov/programs/swfa/biosolids/

Ecology's Operator Outreach: Andy O'Neill, (509) 710-3676; aone461@ecy.wa.gov
Ecology's Municipal Compliance Specialist (Northwest Regional Office): Greg Lipnickey, QEP (425) 449-6560; greg.lipnickey@ecy.wa.gov
Ecology's Wastewater Operator Certification Coordinator: Poppy Carre; (360) 407-6449; 1-800-633-6193 (within the state); poca461@ecy.wa.gov
Ecology's Biosolids Coordinator (Northwest Regional Office): Marietta Sharp; (206) 594-0049; mars461@ecy.wa.gov

Reporting Spills/Overflows/Upsets/Bypasses/Loss of Disinfection IMMEDIATELY:
Ecology's 24-hour number: (206) 594-0000 to report a spill
Department of Health – Shellfish Program 24-hour number: (360) 236-3330

# Inspection Photos

## PHOTO NO. 1

**Date:** 01/24/2023
**Taken by:** Shawn McKone
**Witness:** Sean Wilson

**Description:**
Headworks pumps

## PHOTO NO. 2

**Date:** 01/24/2023
**Taken by:** Greg Lipnickey
**Witness:** Sean Wilson

**Description:**
Control room displays including alarm panel and satellite facilities monitored from South Plant

## PHOTO NO. 3

**Date:** 01/24/2023
**Taken by:** Greg Lipnickey
**Witness:** Sean Wilson

**Description:**
The upper half of the bar screens which remove debris before the raw sewage pumps

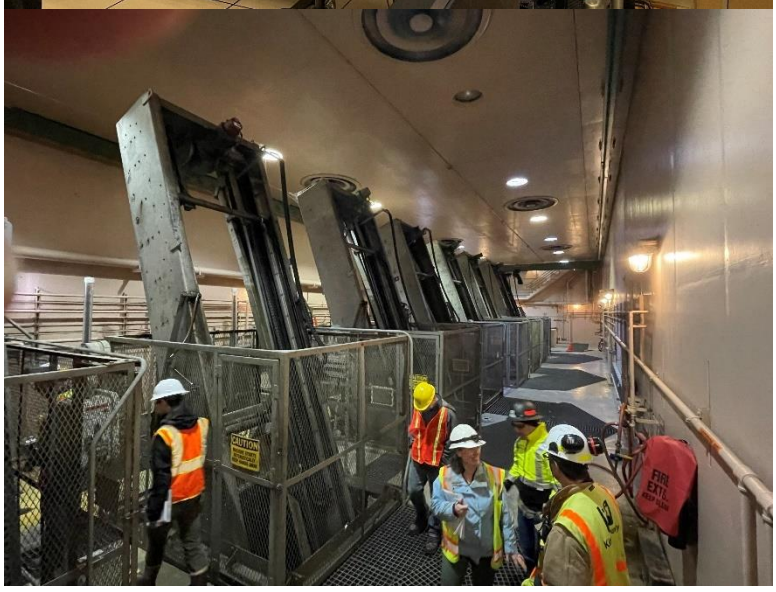


**PHOTO NO. 4**

**Date:** **01/24/2023**
**Taken by:** **Greg Lipnickey**
**Witness:** **Sean Wilson**

**Description:**
Raw sewage pumps that provide the majority of the lift for the rest of the operation as seen from above

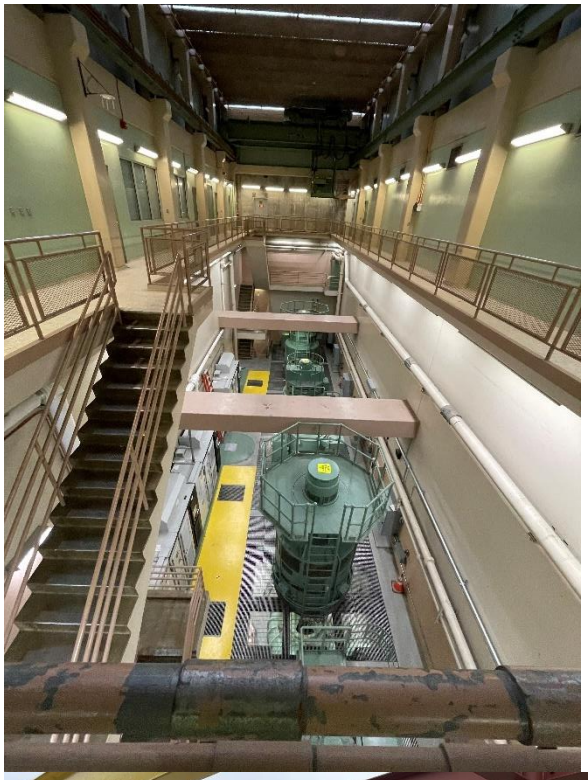


**PHOTO NO. 5**

**Date:** **01/24/2023**
**Taken by:** **Greg Lipnickey**
**Witness:** **Sean Wilson**

**Description:**
Primary sedimentation tanks with odor reducing covers in place

**PHOTO NO. 6**

**Date:** **01/24/2023**
**Taken by:** **Greg Lipnickey**
**Witness:** **Sean Wilson**

**Description:**
Primary sedimentation tank floatable material collectors

**PHOTO NO. 7**

**Date:** **01/24/2023**
**Taken by:** **Greg Lipnickey**
**Witness:** **Sean Wilson**

**Description:**
Collected floating materials in the primary sedimentation tank

## PHOTO NO. 8

**Date:** **01/24/2023**
**Taken by:** **Greg Lipnickey**
**Witness:** **Sean Wilson**

**Description:**
Sawtooth overflow weir from primary sedimentation to diversion channel

## PHOTO NO. 9

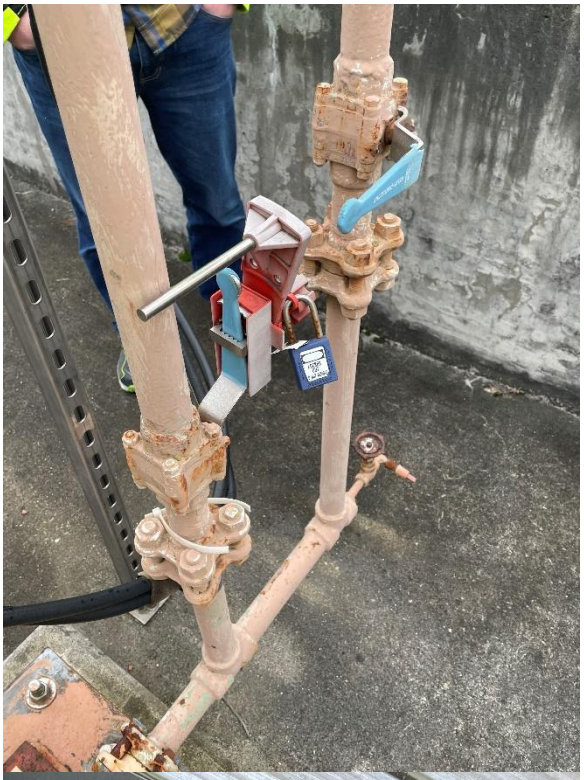
**Date:** **01/24/2023**
**Taken by:** **Shawn McKone**
**Witness:** **Sean Wilson**

**Description:**
Diversion sampling cabinet located after primary sedimentation

## PHOTO NO. 10

**Date:** 01/24/2023
**Taken by:** Greg Lipnickey
**Witness:** Sean Wilson

**Description:**
Locked diversion valve prior to aeration basins



## PHOTO NO. 11

**Date:** 01/24/2023
**Taken by:** Greg Lipnickey
**Witness:** Sean Wilson

**Description:**
The first pass of one of the aeration basins operated as anaerobic digestion environment

## PHOTO NO. 12

**Date:** 01/24/2023
**Taken by:** Greg Lipnickey
**Witness:** Sean Wilson

**Description:**
The second and third passes within one of the four aeration basins

## PHOTO NO. 13

**Date:** 01/24/2023
**Taken by:** Greg Lipnickey
**Witness:** Sean Wilson

**Description:**
TSS monitoring station within the West dechlorination station

## PHOTO NO. 14

**Date:** 01/24/2023
**Taken by:** Greg Lipnickey
**Witness:** Sean Wilson

**Description:**
Disinfection channel.

## PHOTO NO. 15

**Date:** 01/24/2023
**Taken by:** Greg Lipnickey
**Witness:** Sean Wilson

**Description:**
Aeration prior to effluent discharge structure.

## PHOTO NO. 16

**Date:** 01/24/2023
**Taken by:** Greg Lipnickey
**Witness:** Sean Wilson

**Description:**
Digestor tanks on left and right and digestor gas scrubbers located in the center of the photo

## PHOTO NO. 17

**Date:** 01/24/2023
**Taken by:** Shawn McKone
**Witness:** Sean Wilson

**Description:**
Centrifuges used to dewater biosolid prior to offloading into trucks

**PHOTO NO. 18**

**Date:** **01/24/2023**
**Taken by:** **Greg Lipnickey**
**Witness:** **Sean Wilson**

**Description:**
Biosolids in the screw conveyor as they are offloaded

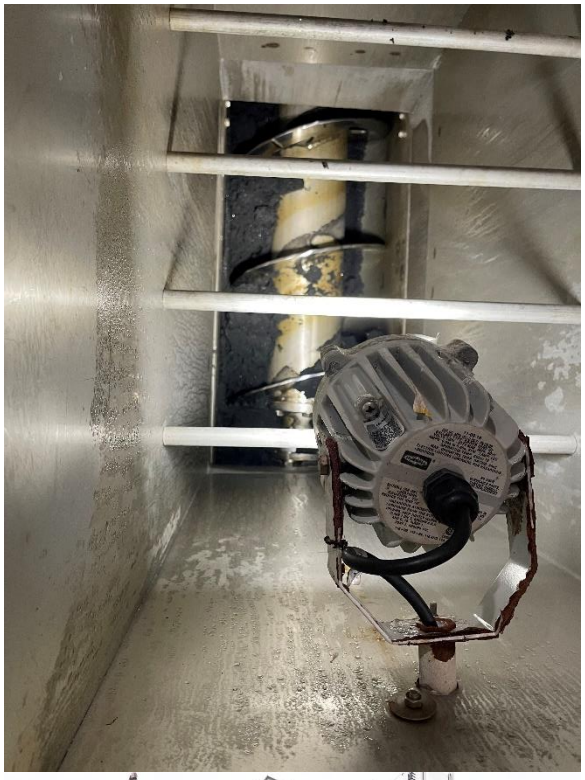


**PHOTO NO. 19**

**Date:** **01/24/2023**
**Taken by:** **Greg Lipnickey**
**Witness:** **Sean Wilson**

**Description:**
Reclaimed water treatment equipment

**PHOTO NO. 20**

**Date:** **01/24/2023**
**Taken by:** **Greg Lipnickey**
**Witness:** **Sean Wilson**

**Description:**
South Plant lab space

**PHOTO NO. 21**

**Date:** **01/24/2023**
**Taken by:** **Greg Lipnickey**
**Witness:** **Sean Wilson**

**Description:**
Influent and effluent aliquots as found in the holding refrigerator

**PHOTO NO. 22**

**Date:** **01/24/2023**
**Taken by:** **Greg Lipnickey**
**Witness:** **Sean Wilson**

**Description:**
Daily temperature monitoring log sheet found on the sample holding refrigerator

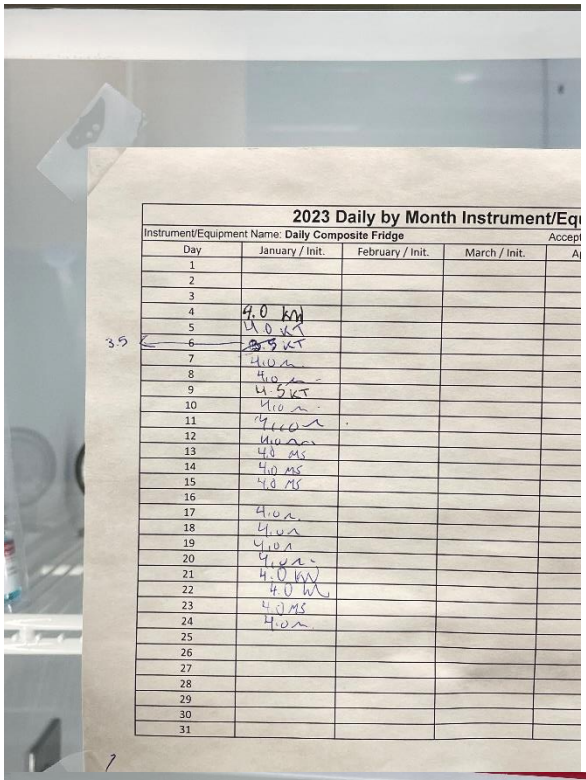



**PHOTO NO. 23**

**Date:** **01/24/2023**
**Taken by:** **Greg Lipnickey**
**Witness:** **Sean Wilson**

**Description:**
Ecology's collected samples in the ice chest used to transfer them to Manchester Lab