State of Washington Department of Ecology

WASTEWATER TREATMENT PLANT COMPLIANCE INSPECTION REPORT

Northwest Regional Office
3190160th Ave SE
Bellevue, WA 98008
(425) 649-7000 ph
(425) 649-7098 fax
(last update 6-11-07)

Section A: General Information

Report Version	PERMIT #	mo/day/yr	Inspection Type	Inspector Code	Facility Type
☒New ☐	WA0032247 and ST0045498	06/25/2019	S	S	☒ 1 Municipal ☒

Remarks

Inspection work days	Facility Self-Monitoring	Photos Taken	Samples Taken	BI	QA
4.0	5	☒Yes	☐Yes	N	N

Lead Ecology Inspector(s)
Amy Jankowiak and Shawn McKone

Section B: Facility Data

Name, Location, and Phone of Facility Inspected
King County – Brightwater Wastewater Treatment Plant and Brightwater Reclaimed Water Facilities
22505 SR 9 SE
Woodinville, WA 98072

Entry Time: 8:40 AM
Exit Time: 12:24 PM
Permit Effective Date: 3/1/2018 (WWTP) 5/1/2019 (Reclaim)
Permit Expiration Date: 2/28/2023 (WWTP) 4/30/2024 (Reclaim)

Name(s)/Title(s) of On-Site Representative(s)
- Andy Strehler, P.E., Operations Supervisor, King County Brightwater
- Jeff Ezzy, Senior Operator-in-Charge, King County Brightwater
- Jacque Klug, Recycled Water Project Manager, King County WTD
- Karla Guevarra, Process Analyst II, King County Brightwater

Ecology and other agency Staff On-Site
Shawn McKone (NWRO)
Amy Jankowiak (NWRO)
Stephen Deem (DOH)

Name, Address, Title, Phone, and Email of Responsible Official
Mr. Robert Waddle, Division Operations Manager
King County Wastewater Treatment Division
1200 Monster Rd, SW, Renton WA 98057
Robert.waddle@kingcounty.gov
Phone Number 206-263-9481 ☒

Other Facility Data
Inspection announced to Andy Strehler on June 20, 2019.

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

A Regional Class II Inspection was conducted at the King County Brightwater Wastewater Treatment Plant and Reclaim Water Facility (WWTP) on June 25, 2019. Shawn McKone, P.E., Ecology's Northwest Regional Office Water Quality (NWRO WQ) Municipal Permit Manager, Amy Jankowiak, NWRO WQ Compliance Specialist, and Stephen Deem, P.E., Regional Engineer / Distribution Specialist, Department of Health conducted the inspection with assistance from King County's Andy Strehler, P.E., Operations Supervisor, Jeff Ezzy, Senior Operator-in-Charge, Jacque Klug, Recycled Water Project Manager, and Karla Guevarra, Process Analyst. This was an announced inspection.

King County's Department of Natural Resources and Parks – Wastewater Treatment Division (DNRP-WTD) owns and operates this membrane bioreactor treatment (MBR) facility. The facility is regulated for the wastewater discharge to Puget Sound by NPDES Permit No. WA0032247, issued March 1, 2018, expiring February 28, 2023. The facility began operation in 2011 with discharges initially directed to King County's South WWTP for disposal. Discharges to Puget Sound began in 2012. The WWTP has a maximum month design treatment capacity of 40.9 MGD.

A separate State Reclaimed Water permit, No. ST0045498 – issued May 1, 2019 and expiring April 30, 2024 – regulates the production, distribution, and use of Class A reclaimed water produced at the Brightwater facility. The facility produces Class A reclaimed water for irrigation, industrial and commercial uses and indoor uses. The reclaimed water permit limits the annual production volume 7,665 MG per year and limits production flow rates based on the capacity of the two reclaimed

water disinfection systems. The permit limits production for the main high pressure distribution system to 12 MGD and it limits production for regulated uses in the vicinity of the treatment plant (demonstration system) to 14,400 gpd. The County initial began producing reclaimed water for the demonstration system in June 2011. Production and distribution for the high pressure distribution system began in 2013.

The Brightwater facility is part of the East Section of King County's regional wastewater service area. The 67 square mile Brightwater service area in the northeast portion of the regional wastewater service area stretches from the north end of Lake Sammamish to the City Mill Creek in Snohomish County. It includes portions of 10 sewer or utility districts and treats domestic sewage from residential, commercial, and industrial sources. The facility does not receive sewage from combined sewers, although high inflow and infiltration (I&I) in some areas contributes to high peak flows during wet weather. The plant provides preliminary, primary, and secondary treatment of domestic wastewater prior to disinfection and discharge to Puget Sound. A diversion structure directs a portion of the treated effluent to dedicated disinfection systems for reclaimed water production. During wet weather events, when flows exceed capacity of the secondary process, a portion of the flow receives chemically enhanced primary treatment and bypasses the secondary (aeration basins and membrane) steps. The chemically enhanced primary effluent blends with membrane effluent prior to discharge.

The purpose of this inspection was to fulfill the regional Class II inspection requirements by conducting a site inspection, records review, assessment of the permittee's self-monitoring, and splitting samples with the permittee to determine the comparability of sampling methods and laboratory result for permit-limited parameters. Ecology uses the inspection findings to assess overall permit compliance and to determine whether new or modified conditions are warranted when renewing the facility's NPDES and State Reclaimed Water permits.

II. RESULTS AND DISCUSSION

Collection System:
Local sewer utilities own, operate and maintain the pipelines and other conveyance facilities within their service areas. Flows from the local systems discharge into King County's regional collection system through a variety of connection points. The County's regional system consolidates flow into two major trunk lines that connect to the Brightwater Influent Pump Station (IPS), located approximately 2.5 miles from the treatment plant. The control center located at King County's South treatment plant remotely monitors operations of all collection system facilities in the East Section, including those areas tributary to the Brightwater facility. Operations of the IPS can be monitored and controlled through a control node located at the IPS facility (photo #1) or through terminals at the Brightwater control center.

The IPS acts as the main hub for water flowing into and out of the treatment plant. Raw sewage enters the station through the North Creek and Swamp Creek trunk line connections. A surge tank at the IPS helps to attenuate flow before it enters the pump station's wet well and two raw sewage force mains convey flow from the pump station to the headworks at the Brightwater facility (photo #2). The conveyance tunnel containing the raw sewage force mains also house separate pipelines that convey reclaimed water for distribution in the Sammamish Valley (photo #3) as well as the effluent pipeline that discharges to Puget Sound (photo #4). Both the reclaimed water and effluent pipelines between the Brightwater facility and the IPS provide the necessary contact time for disinfection. As such, the IPS is the compliance point for fecal coliform bacteria and residual chlorine (for discharges to Puget Sound) and for total coliform (for reclaimed water distribution) (photos #5 through #8). The County also collects effluent composite samples at the IPS for BOD_5, TSS, Ammonia, TKN, and Nitrate/Nitrite monitoring (photo #9).

King County is working with regional wastewater utilities to control I&I in their collection systems. The County's Industrial Waste Program manages a delegated pretreatment program throughout the County's regional wastewater service area. The Industrial Waste Program writes and manages pretreatment permits for significant and categorical industrial dischargers and issues minor discharge authorizations to regulate certain commercial and industrial activities. This inspection did not review the County's pretreatment program – Ecology conducts a separate annual audit to review the County's compliance with pretreatment conditions in their various NPDES permits.

The IPS operates with two stage pumping to achieve the high head needed to convey the influent from the IPS to the headworks at the Brightwater facility. Four sets of pumps (2 large sets and 2 small sets) provide adequate redundancy for flow to the treatment plant (photo #10). Primary power feed for the IPS is supplied by Puget Sound Energy and a stand by generator is capable of providing full power to the facility during power outages. The County's staff of engine mechanics perform monthly preventive maintenance on the generator, which includes testing under full load.

Treatment Process:
A complete description of the treatment processes at the Brightwater facility can be found in the fact sheets that accompany the permits referenced on the first page of this report. The following discusses observations made during the site tour.

Influent flow enters the facility at the headworks where a distribution channel routes flow from the two influent force mains (photo #11) to four 10 mm perforated plate screens. Magnetic flow meters on each influent force mains (photo #12) monitor the influent flow rate for compliance and process monitoring purposes. Screened influent moves through grit chambers (photos #13 and #14) before entering the primary treatment area. While the primary clarifiers are capable of operating in a "chemically-enhanced primary" (CEPC) mode, they were operating in standard mode during the visit. Use of the CEPC mode is limited to wet weather periods when influent flow rates can exceed the operating capacity of the membrane system. The primary clarifiers (photo #15) appeared to be operating normally with no obvious signs of maintenance neglect.

Primary effluent flows from the clarifiers to 2 mm fine screens before entering the aeration basins (photos #16 and #17). The facility has three separate trains of aeration basins, each consisting of one anoxic zone and four aerobic zones. Activated sludge returned from the downstream membrane basins (return activated sludge, or "RAS") enters the aeration basins in the first aerobic zone. A separate mixed liquor recycle stream returns activated sludge from the last aerobic zone to the anoxic zone. At the time of the site visit the facility was operating with a total combined recycle flow rate equal to approximately four times the flow rate of influent entering the facility (Q). Return flow from the membranes accounted for approximately three-quarters of the return flow (3Q) and the mixed liquor return to the anoxic zone accounted for approximately one-quarter of the recycle flow (1Q). The County recently added variable frequency drives to the recycle pumps to help keep the internal recycle flow rates at a consistent 4Q rate.

Dissolved oxygen (DO) probes in each aerated zone monitor oxygen levels for process control (photo #18). Although monitoring data is available for each zone, operators use the levels in zone 2 to control the aeration blowers. The field interfaces for the DO probes showed predictable changes in oxygen demand from one basin to the next. Observed DO concentrations were:

- Zone 1: 0.50 mg/L
- Zone 2: 0.72 mg/L
- Zone 3: 1.15 mg/L
- Zone 4: 3.20 mg/L

Separate probes continuously monitor solids concentrations in the aeration basins for process control purposes. The observed concentration during the site visit was 7,240 mg/L of TSS, based on the probe's local panel display. This is slightly low, but generally consistent with the process targets for the facility. Operators manage the system to maintain an average mixed liquor solids concentration of between 8,000 and 9,000 mg/L. The average sludge age is 30 days.

The facility has historically struggled with the filterability of the mixed liquor produced at the facility. This has led to reductions in membrane capacity, especially during cold weather periods. Plant staff have worked in the past with GE/Zenon (now SUEZ Water Technologies) to test strategies to improve performance. This testing led to a change in how operators waste activated sludge from the system (WAS). The original plant design specified diverting a portion of the RAS flow as WAS that is sent to the solids building for biosolids processing. Based on pilot testing results, operators have switched to diverting WAS from the surface of the aeration basins using the scum and foam weirs located at the end of the basins.

Pumps located at the end of the aeration basins (photo #19) transfer mixed liquor to the membrane basins (photo #20) for solids-liquid separation. The facility was constructed with 10 membrane basins, although only 8 basins currently contain membranes. The County can expand treatment capacity by adding membranes to the two empty basins. Two additional basins are in place for expansion, but will require addition of support equipment. Each basin contains 20 cassettes of 48 membrane modules (photo #21). The existing membrane configuration can treat up to approximately 36 MGD, however the actual flow capacity can vary based on the filterability characteristics of the mixed liquor.

Coarse bubble aeration in the membrane basins provides agitation to scour solids for the surface of the membranes. The facility initially operated with cyclic aeration on a frequency of 10 minutes on and then 10 minutes off. At the time of the visit the County was in the process of converting the aeration to "leap air" aeration. Leap Air uses a proprietary air diffuser that contains a cavity in which air accumulates and then is released once a specific amount of air is available. The County is making the change as a means to conserve energy used by the aeration blowers and to help reduce the amount of DO returned to the aeration basins in the RAS.

Plant operators follow a clear schedule for routine membrane maintenance. The control system automatically initiates maintenance cleaning on a weekly basis and operators perform recovery cleaning twice per year. Maintenance cleaning takes membrane modules out of service for approximately 1-4 hours as plant water with a low dose of sodium hypochlorite is back-pulsed into the membranes. Recovery cleaning is a longer process that takes a basin offline for a longer period of time. The basins are drained and flushed before plant water with a high concentration of sodium hypochlorite is back-pulsed through the membranes until the basin tank is nearly full. In addition to these clean-in-place maintenance activities, operators remove membrane modules on an annual basis for inspections for physical damage, fouling, and other debris build up.

Filtrate from the membranes collect in a network of membrane effluent headers that ultimately discharge to the membrane effluent box (MEB) located at the disinfection building. Pumps draw membrane effluent from the MEB for use on site as "C3"

or utility water (photo #22). Metering pumps inject sodium hypochlorite into the utility water distribution system to provide appropriate disinfection (photo #23). A separate feed pump pulls water from the C3 water intake header for use as Class A reclaimed water in the facility's "Demonstration" distribution system (photo #24). This reclaimed water system uses a dedicated sodium hypochlorite injection pump and a serpentine pipe network (photo #25) to achieve adequate disinfection for use as reclaimed water.

Weirs in the MEB (photos #26 and #27) regulate flow between reclaimed water production for the high-pressure distribution system and for discharge to Puget Sound. A sodium hypochlorite diffuser header in the reclaimed water chamber provides a chlorine dose appropriate for disinfection to Class A reclaimed water standards. Membrane effluent that passes over the weir for Puget Sound discharge is directed to the Effluent Collection Box, which is located near the primary clarifiers. An induction mixer adds sodium hypochlorite for disinfection. If the plant were operating in CEPC mode, the enhanced primary effluent would mix with the membrane effluent at this point.

As was noted earlier, the Brightwater Effluent pipeline and high-pressure reclaimed water pipelines between the Brightwater facility and the IPS provide the required contact time for disinfection. Continuous chlorine meters at the Brightwater facility monitor pre-disinfection residual chlorine concentrations at the facility and separate monitors at the IPS monitor post-disinfection residual concentrations. Additional chlorine residual meters monitor chlorine concentrations in the Brightwater Effluent at a location near Point Wells, prior to the pipeline's entry into Puget Sound. Monitors at the York Pump Station in Redmond track the residual concentration in the reclaimed water distribution system. Chlorine dosing pumps at the IPS and North Creek pump stations can add chlorine to the reclaimed water distribution system as needed to maintain the required chlorine residual of 0.5 mg/L.

Residual solids: The Brightwater facility uses anaerobic digesters (photo #28) to stabilize scum, primary sludge, and waste activated sludge into Class B biosolids for beneficial use. Scum, sludge and WAS collect in the raw sludge blend tank where the polymer is added to the mixture before thickening. Raw sludge containing about 1.5% solids is then pumped (photo #29) to gravity belt thickeners (GBTs) that thicken the blended sludge before digestion (photo #30). Thickened sludge from the GBTs collect first in the thickened sludge blend tank before being pumped to the anaerobic digesters. The mesophilic digesters hold the solids for 24 days at temperatures between 98°F and 100°F to ensure adequate stabilization. A circulation system (photo #31) keeps the sludge in the digesters distributed and consistently heated. Digested solids then transfer to a storage tank for up to 5 days, then routed though centrifuges for final dewatering before loading into trucks for transport off-site (photo #32).

Plant staff noted during the site visit that they were experiencing problems in two areas of solids processing. The GBTs were not operating efficiently. They were designed to thicken the blended sludge to approximately 6% solids, but were only thickening to about 3%. Operators were working to resolve the issue. In addition, the plant has experienced issues with the buildup of struvite in the centrate line from the centrifuges. The buildup has required frequent maintenance, with cleanings every 6-9 months. A pilot study is underway to examine ways of removing the struvite and, therefore, reduce the maintenance frequency.

Operations and maintenance:
Staffing: The Brightwater WWTP is staffed 24/7 with eight operators working rotating 12-hour shifts. Three operators are on duty during the 12-hour weekday shifts and a single operator is on duty in main control during each 12-hour weeknight shift. Two operators cover weekend and holiday shifts. The weekday shifts assign one operator to manage the liquid treatment processes and the IPS; one operator manages solids treatment and odor control; one operator oversees plant operations in the main control center. In addition, two senior operators working 10-hour weekday shifts provide floating coverage where needed and work on special projects. The plant currently has three (3) Group IV operators and seven (7) group III operators overseeing plant operations. The facility also has two certified operators on staff as process analysts – one Group IV operator and one Group II operator. The plant's manager, assistant manager, and operations supervisor each hold Group IV operator certification. Plant staffing also includes thirteen (13) staff working as mechanics, instrument technicians and electricians.

Maintenance: The Brightwater WWTP uses an electronic O&M manual that is stored in the County's network. Although Ecology delegated review and approval authority of the O&M manual to King County, it submitted an electronic version of the current manual in July 2018, in compliance with the current NPDES permit. A computerized maintenance management system (Mainsaver) tracks all maintenance activity at the facility. As a follow up to our site visit, Mr. Strehler provided work order records from Mainsaver that documented calibration of continuous monitoring sensors and for recovery cleaning performed on the membranes over the last three years. Mr. Strehler also submitted a copy of the electronic log book for May 2019, which documented a number of maintenance activities and responses to equipment faults.

Control Systems: King County is in the final process of converting control systems at all of its treatment and collection facilities to Emerson's Ovation distributed control system. While the County has experienced some challenges during the conversion, Brightwater operators did not report any problems during the site visit.

Back-up Power: The facility receives dual power feeds from Snohomish PUD. A 750 kW generator is also available to provide back-up power to essential systems, such as the main control systems and process alarms. Projects by Snohomish PUD over the last few years have limited resulted in periodic limitations in power redundancy as the work required limiting power access to one grid. During the inspection Mr. Strehler noted that Snohomish PUD would soon complete their upgrade projects, which would end the periodic redundancy limitations. In addition to the dual grid power redundancy, King County has the ability to divert all flow away from the Brightwater facility and route it to the South treatment plant.

Laboratory and Records Review:
Ecology visited the South Plant laboratory to drop off the samples and meet with Teresa Allen, Chief Process Analyst, to review and compare bench sheets. Brightwater sends their samples to South Plant for analysis via early morning courier. The King County South Plant Process Control Lab is accredited with Ecology (#R687-19). Discharge Monitoring reports (DMRs) submitted to Ecology were reviewed and compared with paper and electronic laboratory bench sheets for a few parameters. A minor inconsistencies was found with a reminder to have multiple reviewers of data prior to submission.

Ecology also requested a number of documents during the inspection and by follow-up email which were provided for review.

1. Calibration records for chlorine and turbidity permit compliance locations with on-line analyzers for the past three years were requested, provided, and reviewed. The records appear to be consistent with the O&M Manual and Electronic Operations and Maintenance manual (EOM) and permit frequency of analysis. King County's Mainsaver computerized maintenance management system (CMMS) automatically generates the preventative maintenance (PM) weekly work orders for instrumentation staff and the work is logged in the system.
2. Maintenance records for membrane recovery cleans for the last three years were requested, provided, and reviewed. The recovery cleans are performed based on the manufacturer's guidelines and plant experience. In consultation with the manufacture, the frequency was adjusted to less frequent because of the lack of calcium scaling. The records show cleanings done approximately every six months.
3. A list of all certified operators with certification levels and other operations related staff for the WWTP was requested, provided and reviewed.
4. A copy of the daily logbook for the month of May 2019 was requested, provided and reviewed. The logbook is done electronically and provided appropriate inputs which are logged with the person's name making the entry.

Sampling:
Sample locations for Brightwater's WWTP include:

- Influent at the Headworks (Flow, BOD, TSS)
- Effluent at the Influent Pumps Station (IPS) (Flow, BOD, TSS, Total Residual Chlorine, Fecal Coliform, pH, Total Ammonia, Nitrate plus Nitrite Nitrogen, Total Phosphorus, Soluble Reactive Phosphorus, and TKN)
- Any wet weather bypasses using chemically enhanced treatment is at the Chemically-Enhanced Primary Clarifier Effluent Channel (not currently used); additional monitoring is required for priority pollutant testing, permit renewal application requirements and whole effluent toxicity testing.

Sample locations for Brightwater Reclaim include:

- Effluent at the Membrane Effluent Box (BOD, TSS, pH, DO, Turbidity)
- Effluent at the Disinfection Building for the Demo system (Flow, Total Coliform, Total Chlorine Residual)
- Effluent at the Influent Pump Station (IPS) for reclaim distribution (Flow, Total Coliform, Total Chlorine Residual)
- Effluent at the York Pump Station (Total Chlorine Residual and excursion duration)
- Additional monitoring is required at the Membrane Effluent Box for permit renewal application requirements

Flow-proportional composite samplers are used at the Headworks (photo #33), the IPS (photo #9) and the MEB (photo #34). The refrigerated samplers showed temperatures of 3.0 ° C at the Headworks, 2.5° C at the IPS, and 3.5 ° C at the MEB. All temperature values meet the Standard Methods requirement for BOD (SM5210-B) and TSS (SM2540-D) analyses, which is sample storage and preservation below 6 °C. Permit required effluent grab samples are taken at a sample point near the composite sampler and after disinfection.

Ecology contacted the Brightwater WWTP the week prior to the inspection to set up samplers to split. The samplers were set up properly and provided a good amount of sample as requested.

Samples were collected and split for analysis. Ecology sent their samples to the Manchester Environmental laboratory and met required holding times, with the exception of the coliform samples which were analyzed at about 27 hours and qualified as estimates. Ecology transported Brightwater's samples to South Plant Process Lab Chief Analyst Teresa Allen for analysis

within the holding times. The purpose of the split sampling is to compare their laboratory analysis with Ecology's Manchester Lab's analysis. Results were in very close agreement for all effluent parameters and influent BOD, however, the influent TSS results were far apart. While there is inherent variability with influent splitting of samples, the results are far enough apart to warrant a re-split the next time an inspection is done. Brightwater did not analyze total coliform at the IPS which should also be re-split. Results are shown in the table below.

Parameter/Location	Ecology Manchester Lab		Brightwater (South Plant Lab)	
	Influent	Effluent	Influent	Effluent
Brightwater WWTP Headworks & IPS				
Total Suspended Solids, mg/L	162	<1	368	<2
Biochemical Oxygen Demand, mg/L	338	<2	362	1.1
Fecal Coliform, #/100 mL		E1		<1
Total Ammonia, mg/L as N		0.045		<0.1
Nitrate + Nitrite Nitrogen, mg/L as N		35.8		37.8
Reclaim – Membrane Effluent Box				
Total Suspended Solids, mg/L		<1		<2
Biochemical Oxygen Demand, mg/L		<2		1.2
Reclaim – Disinfection Bldg Demo				
Total Coliform, #/100 mL		E1		<1
Reclaim – IPS				
Total Coliform, #/100 mL		E1		<1

*The analyte was not detected at or above the reported result; E=estimated

III. CONCLUSION

Ecology did not find any areas of concern during this inspection. Although there are significant differences in the results of influent TSS samples tested by Ecology and King County, the results reported by King County are consistent with historical results and are at a level consistent with TSS concentrations reported by other facilities in the region at the time.

Copies to: Andy Strehler, Brightwater Operations Supervisor, King County DNRP-WTD
Jeff Lafer, NPDES Permit Administrator, King County DNRP-WTD
Kristina Westbrook, Recycled Water Program Lead, King County DNRP-WTD
Jacque Klug, Recycled Water Program Lead, King County DNRP-WTD
Mamdouh El-Aarag, Reclaimed Water Engineer, DOH
Steve Deem, Regional Engineer - Distribution, DOH
PARIS Database: King County Brightwater WWTP, WA0032247
PARIS Database: King County Brightwater Reclaimed Water Facility, ST0045498
Shawn McKone, NWRO Permit Manager
Amy Jankowiak, NWRO Municipal Compliance Specialist

Name(s) and Signatures of Inspector(s)	Agency/Office/Telephone	Date
Shawn McKone	WA Dept. of Ecology, NWRO, (425)649-7037	8-27-19
Amy Jankowiak	WA Dept. of Ecology, NWRO, (425)649-7195	8/27/19
Name and Signature of Management QA Reviewer	**Agency/Office/Telephone**	**Date**
Laura Fricke	WA Dept. of Ecology, NWRO, (425)649-7103	8/29/19

ANNOUNCED Inspection

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:
https://fortress.wa.gov/ecy/publications/SummaryPages/0410020.html
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:
https://ecology.wa.gov/Water-Shorelines/Water-quality/Reclaimed-water

Ecology's Operator Certification website:
https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Wastewater-operator-certification

Ecology's Laboratory Accreditation website:
https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Laboratory-Accreditation

Ecology's Biosolids website:
https://ecology.wa.gov/Waste-Toxics/Reducing-recycling-waste/Organic-materials/Biosolids

Ecology's Operator Outreach: Carl Jones (360) 407-6431; cjon461@ecy.wa.gov
Ecology's Municipal Compliance Specialist (Northwest Regional Office): Amy Jankowiak (425) 649-7195;
ajan461@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)" Amber Corfman (360) 255-4406 amber.corfman@ecy.wa.gov

Reporting Spills/Overflows/Upsets/Bypasses/Loss of Disinfection IMMEDIATELY:
Ecology's 24-hour number: (425) 649-7000 to report a spill
Department of Health – Shellfish Program 24-hour number: (360) 236-3330

PHOTO ADDENDUM – KING COUNTY BRIGHTWATER WASTEWATER TREATMENT FACILITY, PERMIT NOS. WA0032247 AND ST0045498

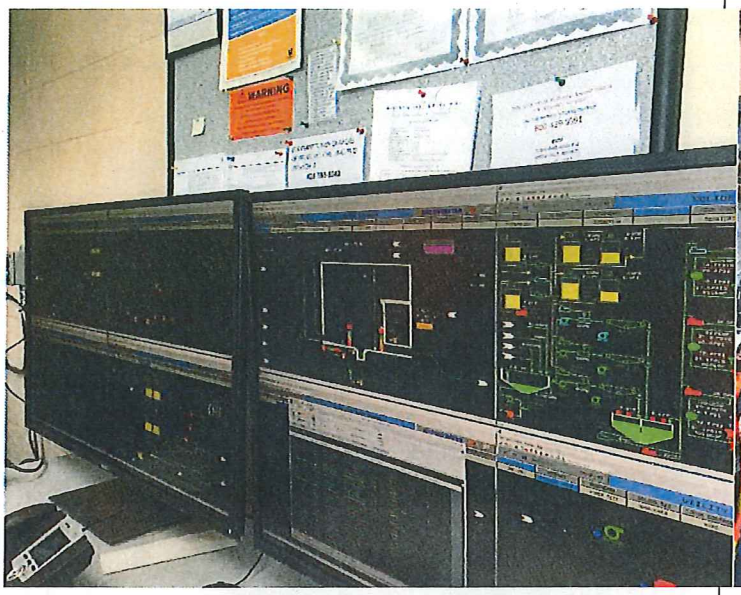

Photo # 1 Image: IMG_0266 Date: 6/25/2019
Taken by: Amy Jankowiak
Description: Ovation control terminals at the Brightwater IPS.

Photo # 2 Image: IMG_0107 Date: 6/25/2019
Taken by: Shawn McKone
Description: Raw sewage force mains to Brightwater facility at IPS.

Photo # 3 Image: IMG_0108 Date: 6/25/2019
Taken by: Shawn McKone
Description: Section of reclaimed water high pressure distribution pipeline at IPS.

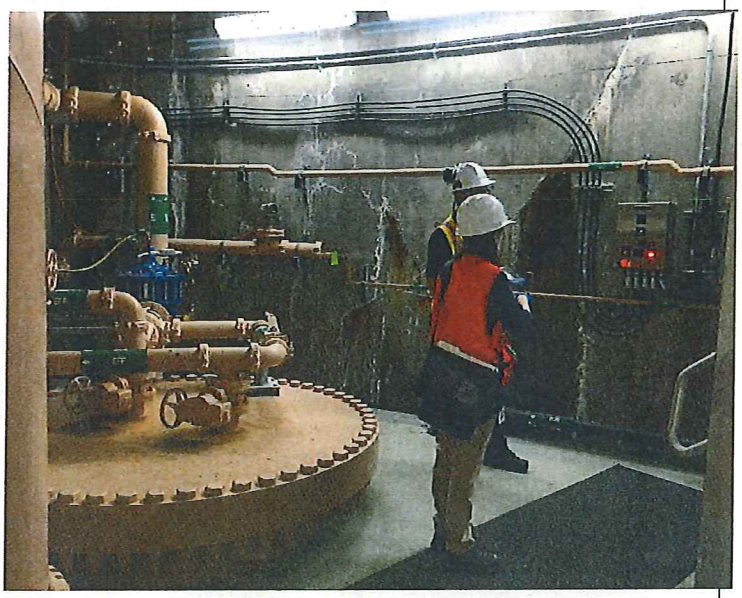

Photo # 4 Image: IMG_0112 Date: 6/25/2019
Taken by: Shawn McKone
Description: Access riser for 72" effluent pipeline at IPS.

PHOTO ADDENDUM – KING COUNTY BRIGHTWATER WASTEWATER TREATMENT FACILITY, PERMIT NOS. WA0032247 AND ST0045498

Photo # 5 Image: IMG_0110 Date: 6/25/2019
Taken by: Shawn McKone
Description: Effluent continuous chlorine monitoring at IPS

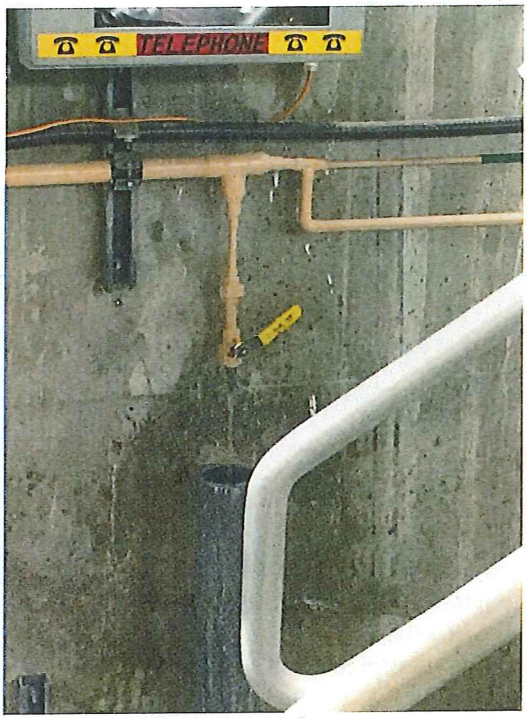

Photo # 6 Image: IMG_0113 Date: 6/25/2019
Taken by: Shawn McKone
Description: Effluent fecal coliform grab sample location at IPS.

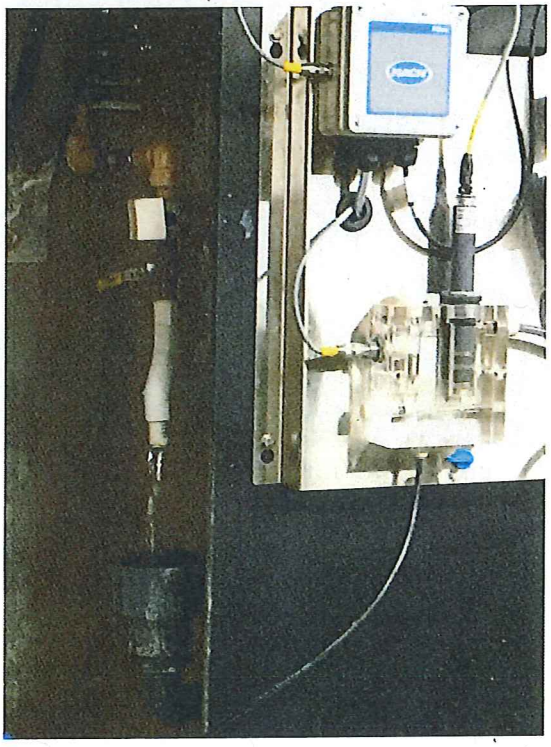

Photo # 7 Image: IMG_0116 Date: 6/25/2019
Taken by: Shawn McKone
Description: Brightwater reclaimed water total coliform grab sample location at IPS.

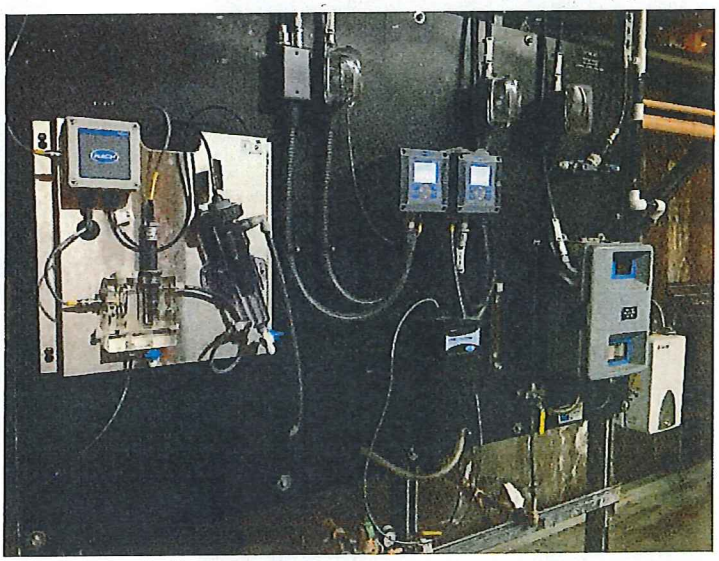

Photo # 8 Image: IMG_0118 Date: 6/25/2019
Taken by: Shawn McKone
Description: Reclaimed post-disinfection continuous chlorine, pH and turbidity monitoring at IPS.

PHOTO ADDENDUM – KING COUNTY BRIGHTWATER WASTEWATER TREATMENT FACILITY, PERMIT NOS. WA0032247 AND ST0045498

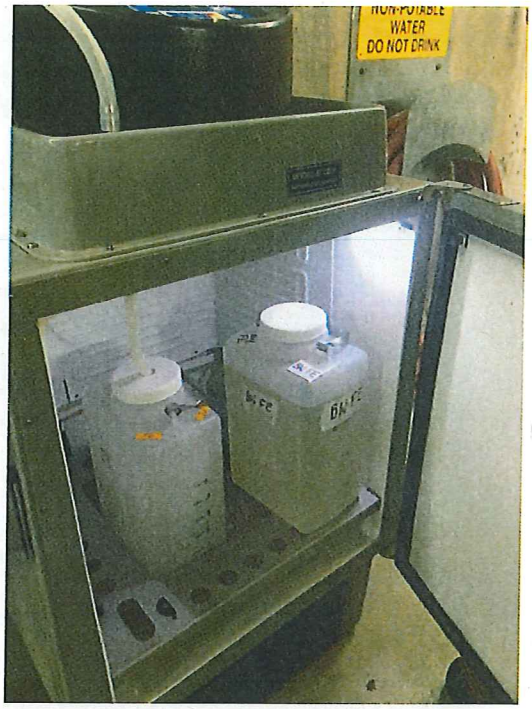

Photo # 9 Image: IMG_0275 Date: 6/25/2019
Taken by: Amy Jankowiak
Description: Final effluent composite sampler at IPS.

Photo # 10 Image: IMG_0104 Date: 6/25/2019
Taken by: Shawn McKone
Description: Raw sewage pumps at IPS.

Photo # 11 Image: IMG_0149 Date: 6/25/2019
Taken by: Shawn McKone
Description: Raw sewage influent force mains at Brightwater facility – distribution channel to screens located one level above.

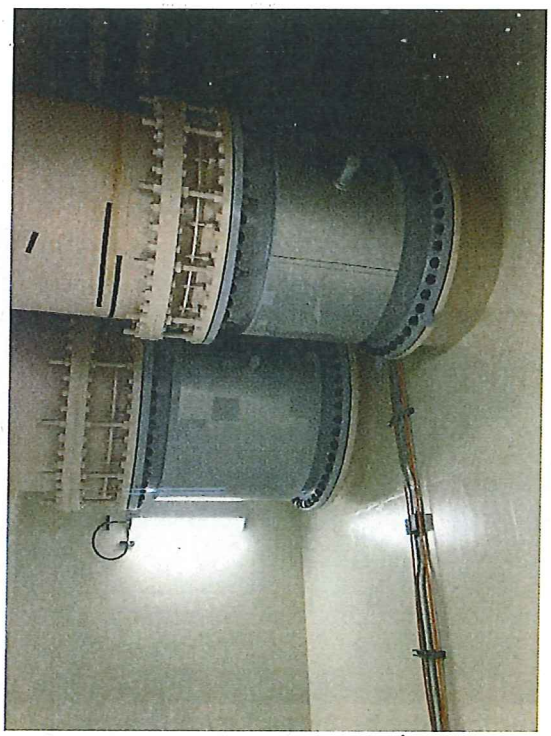

Photo # 12 Image: IMG_0150 Date: 6/25/2019
Taken by: Shawn McKone
Description: Magnetic flow meters in raw sewage influent force mains at Brightwater headworks.

PHOTO ADDENDUM – KING COUNTY BRIGHTWATER WASTEWATER TREATMENT FACILITY, PERMIT NOS. WA0032247 AND ST0045498

Photo # 13 Image: IMG_0154 Date: 6/25/2019
Taken by: Shawn McKone
Description: Exterior of grit basins.

Photo # 14 Image: IMG_0152 Date: 6/25/2019
Taken by: Shawn McKone
Description: Grit classifier pump located below the grit basins.

Photo # 15 Image: IMG_0156 Date: 6/25/2019
Taken by: Shawn McKone
Description: Scum skimmer and effluent launders in primary clarifier.

Photo # 16 Image: IMG_0159 Date: 6/25/2019
Taken by: Shawn McKone
Description: Exterior of aeration basins.

PHOTO ADDENDUM – KING COUNTY BRIGHTWATER WASTEWATER TREATMENT FACILITY, PERMIT NOS. WA0032247 AND ST0045498

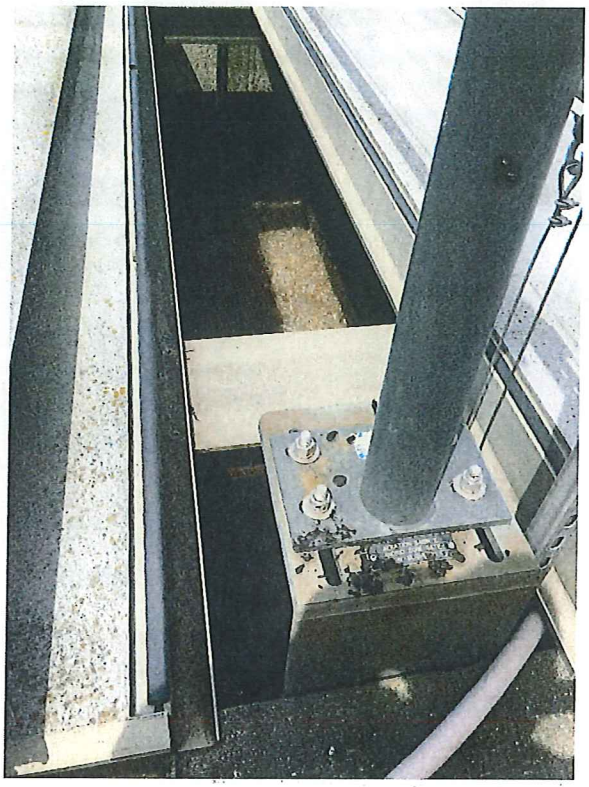

Photo # 17 Image: IMG_0160 Date: 6/25/2019
Taken by: Shawn McKone
Description: Interior of aeration basin through access cover.

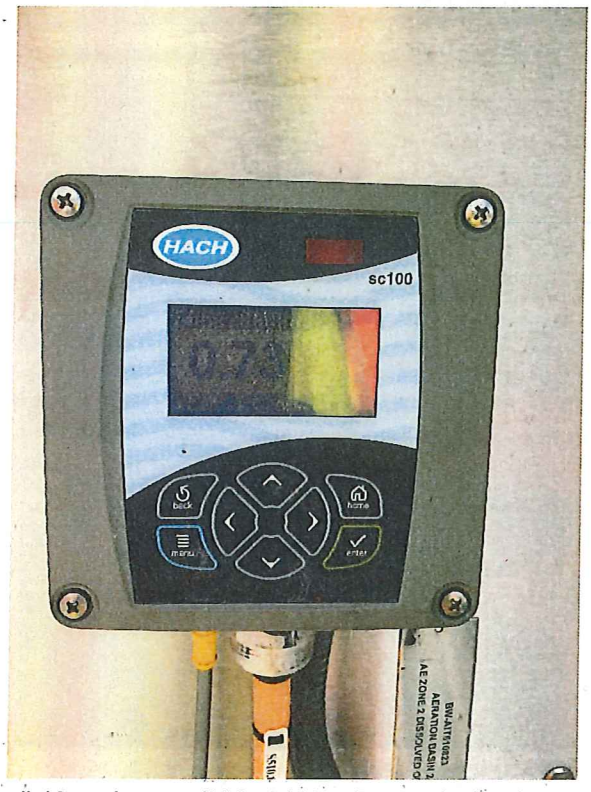

Photo # 18 Image: IMG_0163 Date: 6/25/2019
Taken by: Shawn McKone
Description: Dissolved oxygen reading on local panel for DO probe in zone 2 of aeration basin 2.

Photo # 19 Image: IMG_0166 Date: 6/25/2019
Taken by: Shawn McKone
Description: Mixed liquor feed pumps (behind group) from aeration basins to membrane basins.

Photo # 20 Image: IMG_0168 Date: 6/25/2019
Taken by: Shawn McKone
Description: Process air (top 2 lines) and membrane effluent suction (bottom line) headers for membrane basin 3.

PHOTO ADDENDUM – KING COUNTY BRIGHTWATER WASTEWATER TREATMENT FACILITY, PERMIT NOS. WA0032247 AND ST0045498

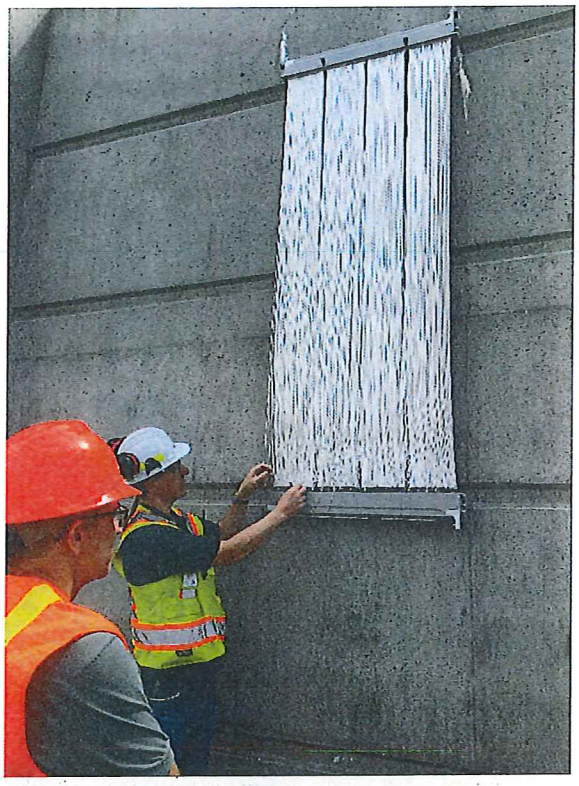

Photo # 21 Image: IMG_0169 Date: 6/25/2019
Taken by: Shawn McKone
Description: Sample membrane module displayed outside of the membrane basins.

Photo # 22 Image: IMG_0132 Date: 6/25/2019
Taken by: Shawn McKone
Description: High-pressure "C3" utility water pumps inside disinfection building. Wall to MEB is behind the pumps, supporting the C3 water pipes.

Photo # 23 Image: IMG_0284 Date: 6/25/2019
Taken by: Amy Jankowiak
Description: Sodium hypochlorite dosing pumps and chemical day tanks (background). Pumps supply hypochlorite to C3 water system, both reclaimed water systems, and effluent disinfection system.

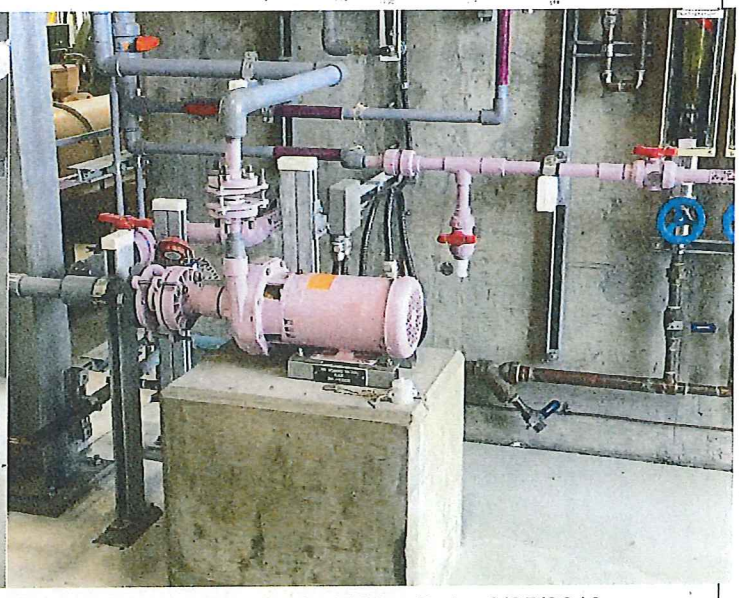

Photo # 24 Image: IMG_0129 Date: 6/25/2019
Taken by: Shawn McKone
Description: Water feed pump for reclaimed water demonstration system

PHOTO ADDENDUM – KING COUNTY BRIGHTWATER WASTEWATER TREATMENT FACILITY, PERMIT NOS. WA0032247 AND ST0045498

Photo # 25 Image: IMG_0281 Date: 6/25/2019
Taken by: Amy Jankowiak
Description: Disinfection contact pipe network for reclaimed water distribution system.

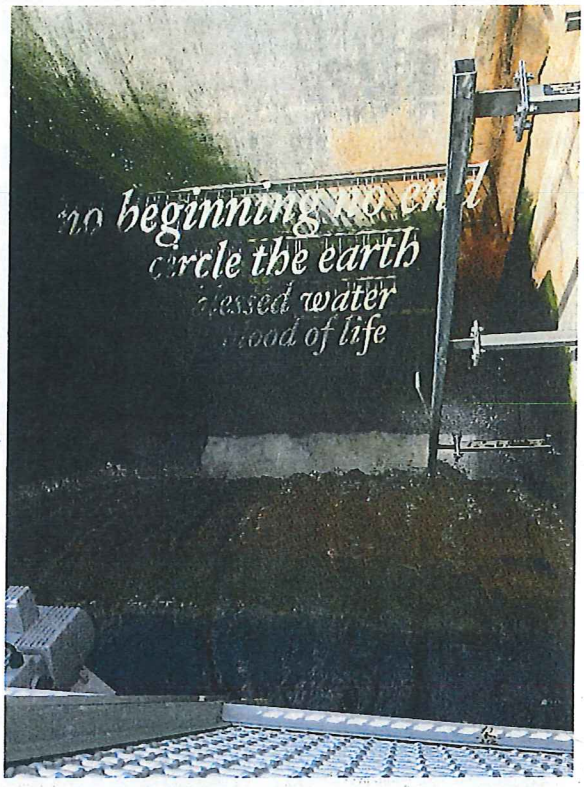

Photo # 26 Image: IMG_0171 Date: 6/25/2019
Taken by: Shawn McKone
Description: Weir in MEB to effluent disposal line.

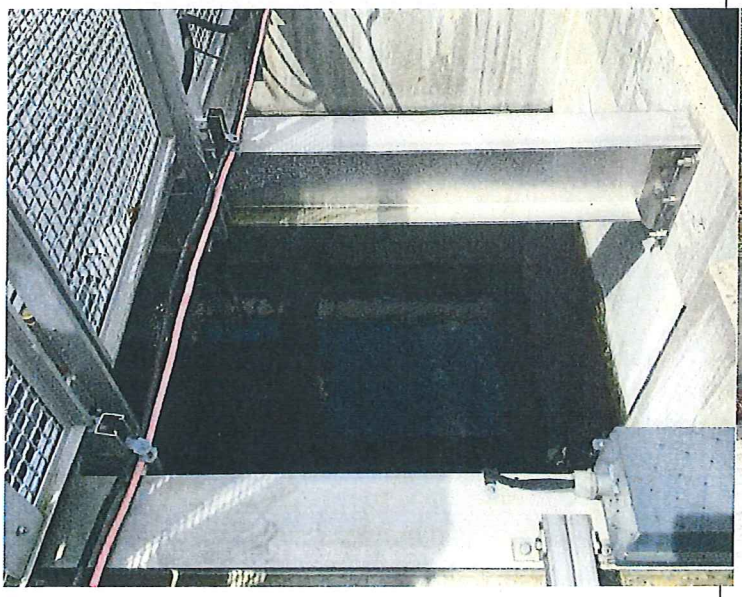

Photo # 27 Image: IMG_0174 Date: 6/25/2019
Taken by: Shawn McKone
Description: Membrane effluent near reclaimed water weir in MEB.

Photo # 28 Image: IMG_0153 Date: 6/25/2019
Taken by: Shawn McKone
Description: Solids handling building (foreground) and anaerobic digesters (background).

PHOTO ADDENDUM – KING COUNTY BRIGHTWATER WASTEWATER TREATMENT FACILITY, PERMIT NOS. WA0032247 AND ST0045498

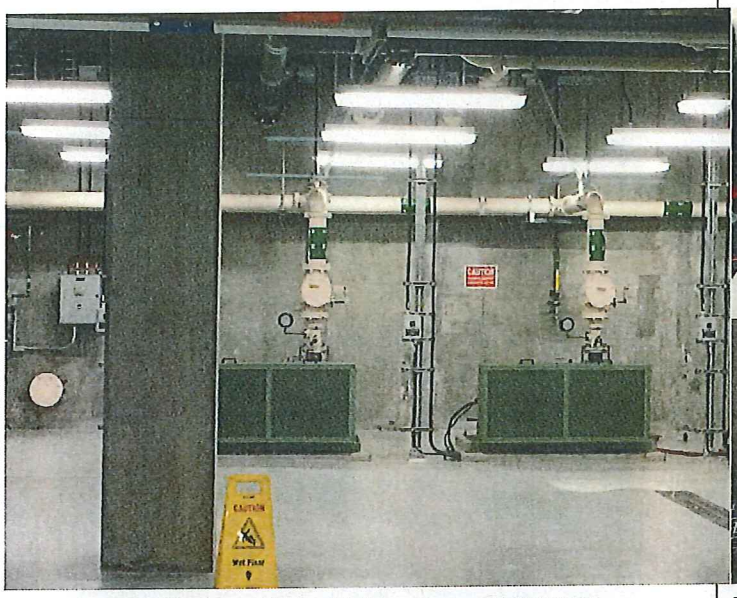

Photo # 29 Image: IMG_0147 Date: 6/25/2019
Taken by: Shawn McKone
Description: GBT feed pumps

Photo # 30 Image: IMG_0143 Date: 6/25/2019
Taken by: Shawn McKone
Description: Discharge end of GBT

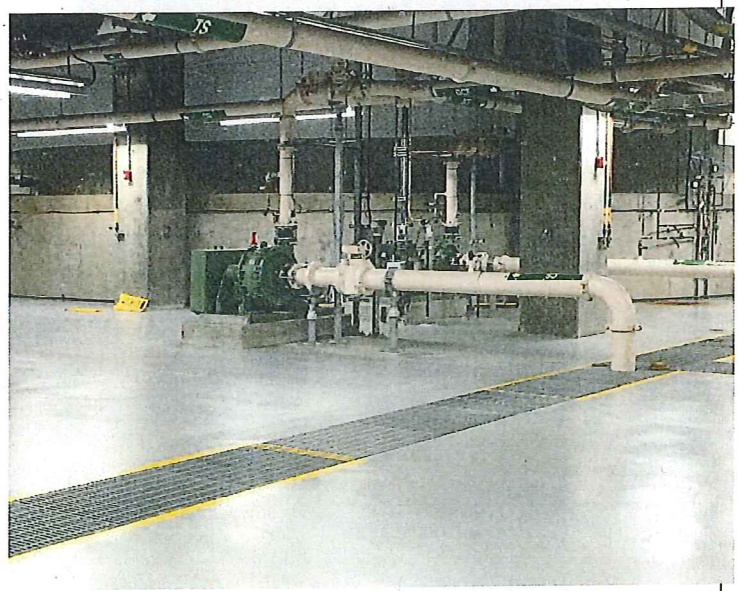

Photo # 31 Image: IMG_0148 Date: 6/25/2019
Taken by: Shawn McKone
Description: Digester circulation system pumps.

Photo # 32 Image: IMG_0139 Date: 6/25/2019
Taken by: Shawn McKone
Description: Biosolids truck loadout bay.

PHOTO ADDENDUM – KING COUNTY BRIGHTWATER WASTEWATER TREATMENT FACILITY, PERMIT NOS. WA0032247 AND ST0045498

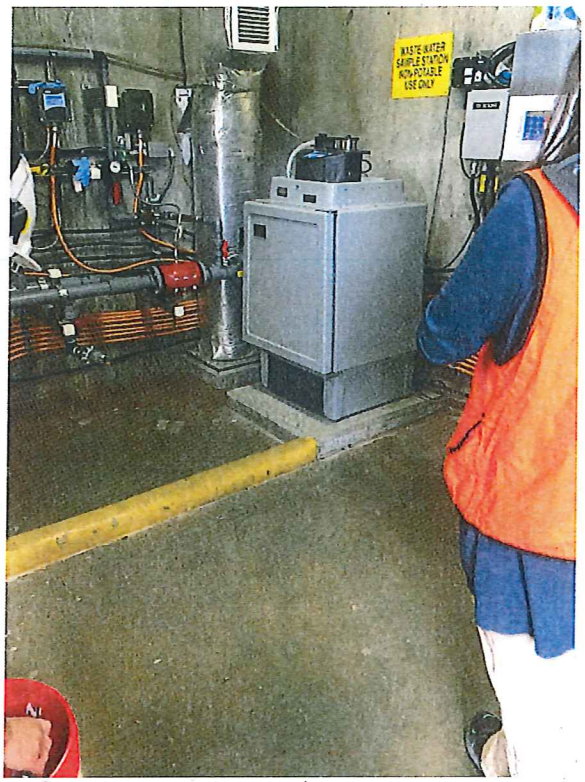

Photo # 33 Image: IMG_0133 Date: 6/25/2019
Taken by: Shawn McKone
Description: Influent composite sampler at headworks.

Photo # 34 Image: IMG_0124 Date: 6/25/2019
Taken by: Shawn McKone
Description: Membrane effluent composite sampler at MEB.