



Wastewater

The 2025 Greater Vancouver Sewerage and Drainage District
Environmental Management and Quality Control Annual Report

The 2025 Greater Vancouver Sewerage and Drainage District Environmental Management and Quality Control Annual Report

Prepared by

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TABLE OF ACRONYMS

AEM	Ambient Environment Monitoring
AIWWTP	Annacis Island Wastewater Treatment Plant
AVS/SEM	Acid Volatile Sulfide / Simultaneously Extracted Metals
AST	Activated Sludge Tank
BCEDQA	British Columbia Environmental Data Quality Assurance
BIAMP	Burrard Inlet Ambient Monitoring Program
BOD or BOD ₅ *	Biochemical Oxygen Demand
CALA	Canadian Association for Laboratory Accreditation
CBOD or CBOD ₅ *	Carbonaceous Biochemical Oxygen Demand
CDOM	Colored Dissolved Organic Matter
CEPA	Canadian Environmental Protection Act
CEPT	Chemically Enhanced Primary Treatment
CSO	Combined Sewer Overflow
CTD	Conductivity, Temperature, Depth
CWS-MMWE	Canada-Wide Strategy for the Management of Municipal Wastewater Effluent
DDD	Dichlorodiphenyldichloroethane
DDE	Dichlorodiphenyldichloroethylene
DDT	Dichlorodiphenyltrichloroethane
DO	Dissolved Oxygen
DOC	Dissolved Organic Carbon
ECCC	Environment and Climate Change Canada
EMS	Environmental Management System
ENV	Ministry of Environment and Parks
EPH	Extractable Petroleum Hydrocarbons
EQOs	Environmental Quality Objectives
EROD	Ethoxyresorufin-O-deethylase
ERRIS	Effluent Regulatory Reporting Information System
FREMP	Fraser River Environmental Monitoring Program
FTV	Flow Through Vessel
GVS&DD	Greater Vancouver Sewerage and Drainage District
HAI	Health Assessment Index
HBCCD	Hexabromocyclododecane
HRT	Hydraulic Retention Time
IDZ	Initial Dilution Zone
IIWWTP	Iona Island Wastewater Treatment Plant
ILWRMP	Integrated Liquid Waste and Resource Management Plan
ISO/IEC	International Organization for Standardization/International Electrotechnical Commission
LGWWTP	Lions Gate Wastewater Treatment Plant
LIWWTP	Lulu Island Wastewater Treatment Plant

* Both acronyms are used in this report for the purpose of consistency with nomenclature used in the respective authorization

LWS	Liquid Waste Services
LWS-EMQC	Liquid Waste Services – Environmental Management & Quality Control
MCRT	Average Mean Cell Residence Time
MLD	Million (Mega) Litres Per Day
MLSS	Mixed Liquor Suspended Solids
MOECCS	Ministry of Environment and Climate Change Strategy
MPN	Most Probable Number
MRES	Multi-Residue
NWLWWTP	Northwest Langley Wastewater Treatment Plant
OC	Operational Certificate
OCP	Organochlorine Pesticides
OMRR	Organic Matter Recycling Regulation
PAA	Peracetic Acid
PAH	Polycyclic Aromatic Hydrocarbons
PBDE	Polybrominated Diphenylethers
PBT	Persistent, Bioaccumulative or Toxic
PCB	Polychlorinated Biphenyls
PCDD/Fs	Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans
PFAS	Per- and polyfluoroalkyl substances
PFC	Perfluorinated Compounds
PPCP	Pharmaceuticals and Personal Care Products
PRV	Pressure Release Valve
PT	Proficiency Testing
QA/QC	Quality Assurance / Quality Control
REM	Receiving Environment Monitoring
SBS	Sodium Bisulphite Solution
SCBOD ₅	Soluble Carbonaceous Biochemical Oxygen Demand
SHS	Sodium Hypochlorite Solution
SOPC	Substances of Potential Concern
SES	Sediment Effect Survey
SS	Suspended Solids
SSO	Sanitary Sewer Overflow
SVOC	Semi-Volatile Organic Carbons
TA	Transitional Authorization
TBBPA	Tetrabromobisphenol A
TBS	Thickened Bottom Sludge
TIE	Toxicity Identification Evaluation
TF	Trickling Filter
TOC	Total Organic Carbon
TPS	Thickened Primary Sludge
TSPS	Thickened Screened Primary Sludge
TSS or SS	Total Suspended Solids
TWSS	Thickened Waste Secondary Sludge

VOC	Volatile Organic Carbons
WQG	Water Quality Guideline
WQI	Water Quality Index
WQO	Water Quality Objective
WSER	Wastewater Systems Effluent Regulation
WWTP	Wastewater Treatment Plant

PREFACE

The Environmental Management and Quality Control Division (the Division) of the Liquid Waste Services Department is responsible for monitoring and reporting on the influent, effluent, and process streams quality of the region's five wastewater treatment plants (WWTPs). In addition, monitoring and reporting includes the operations of the collection system and environmental health of the water bodies that receive discharges from the liquid waste management system for the Greater Vancouver Sewerage and Drainage District (GVS&DD).

This Annual Report summarizes the information gathered through the various GVS&DD monitoring programs carried out by the Division in 2025 and provides an evaluation of the operational effectiveness of the WWTPs. Some of the information in the report is the result of joint efforts of the Environmental Management and Quality Control Division and the Operations and Maintenance Division.

The report is posted on Metro Vancouver's website at the following location:

<https://metrovancover.org/services/liquid-waste/reports-and-resources>

and a hard copy is available in the Metro Vancouver library.

EXECUTIVE SUMMARY

INTRODUCTION

Background and Purpose

The purpose of this report is to document the performance of the wastewater treatment plants (WWTPs) in 2025 and to summarize the findings of numerous environmental management initiatives in the Metro Vancouver region.

The Greater Vancouver Sewerage and Drainage District (GVS&DD, or the District) operates five WWTPs in the region. Three of the five plants provide secondary treatment (Annacis Island, Lulu Island and Northwest Langley) and discharge treated effluent into the lower Fraser River. The other two WWTPs (Iona Island and Lions Gate) provide primary and chemically enhanced primary treatment and discharge treated effluent into the Strait of Georgia and the First Narrows of Burrard Inlet, respectively.

This report includes an overview of the information collected as a result of Environmental Management & Quality Control's environmental monitoring, modeling and assessment programs, including monitoring of WWTP influent, effluent and biosolids quality, and environmental health of regional water bodies. Other programs and projects discussed in this report are in support of ongoing commitments under the Integrated Liquid Waste and Resource Management Plan (ILWRMP, or the Plan) or compliance with federal or provincial regulatory requirements.

Overview of the Liquid Waste Management Regulatory Framework and Monitoring Process

Under the provisions of the Environmental Management Act, the BC Ministry of Environment and Parks (ENV) approved Metro Vancouver's ILWRMP in May 2011. The Plan has three goals: to protect public health and the environment; to use liquid waste as a resource; and to ensure effective, affordable and collaborative management. Metro Vancouver manages its liquid waste in accordance with the ILWRMP and WWTP-specific Operational Certificates (OCs). These certificates outline wastewater treatment and performance criteria and effluent quality. Treatment residuals are managed in accordance with Organic Matter Recycling Regulations (OMRR).

The federal Wastewater Systems Effluent Regulations (WSER) under the Fisheries Act is a primary regulation that governs the deposit of treated wastewater into Canadian waters. They establish a system for temporary and transitional authorizations and require regulated wastewater systems, including GVS&DD, to meet national performance standards and to monitor and report effluent quality quarterly.

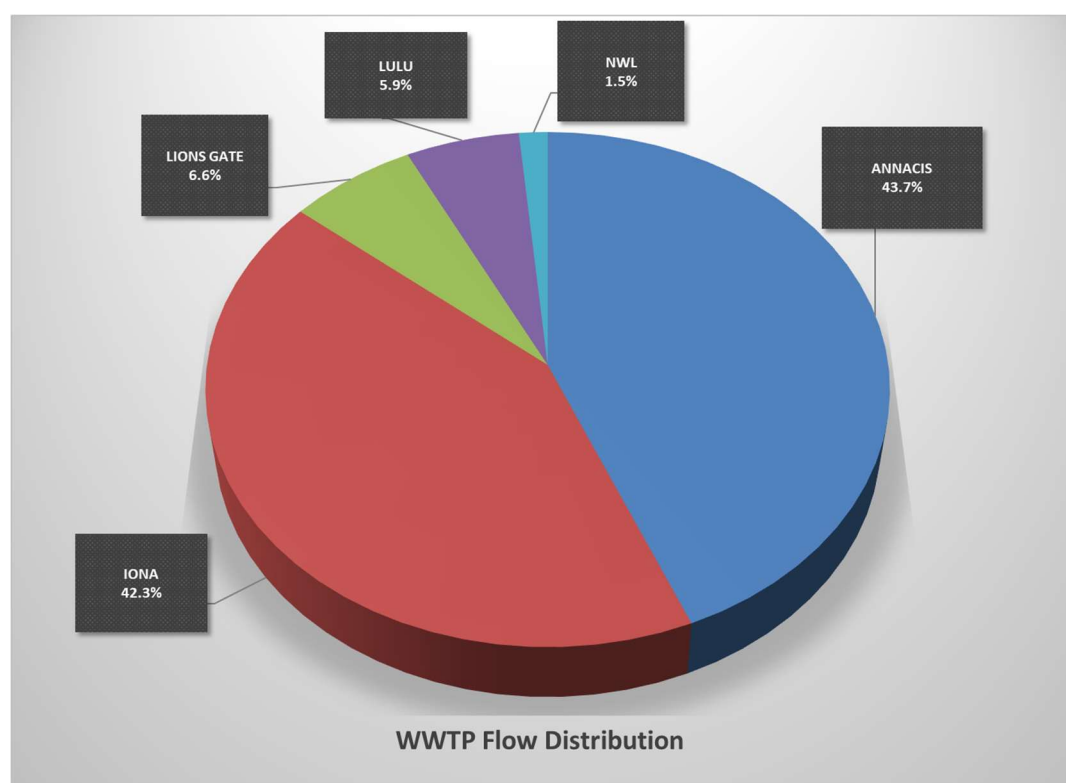
The District's objective is to maintain ongoing compliance with the ILWRMP, OCs, WSER and other applicable regulatory requirements, and by doing so, to continue to protect human health and the environment.

Most of the monitoring, laboratory analytical services and data analyses used to assess WWTP performance were provided by the Environmental Management & Quality Control Division of Metro Vancouver Liquid Waste Services.

WASTEWATER TREATMENT PLANTS PERFORMANCE

In 2025, over 444 billion litres of wastewater were treated at the GVS&DD's five WWTPs. Of this total, 217 billion litres received primary or enhanced primary treatment at Iona Island and Lions Gate WWTPs, with the remaining 227 billion litres treated at the three secondary WWTPs located at Annacis Island, Lulu Island and Northwest Langley, as shown in the graph below.

Distribution of Wastewater Treated in Metro Vancouver in 2025.



Wastewater Treatment Plant Performance Review

Metro Vancouver WWTP performance is assessed annually to ensure:

- Plant operation is in accordance with design objectives and specifications; and
- All applicable regulatory and reporting requirements are met.

During 2025, the overall performance of the District's five WWTPs exceeded design performance expectations. Individual treated effluent flows for each WWTP and quantities of Biochemical Oxygen Demand (BOD₅) and Total Suspended Solids (TSS) removed in 2025 are summarized in the table below.

Individual treated effluent flows for each WWTP and quantities of BOD₅ and TSS removed in 2025

Total for 2025	Annacis Island WWTP	Iona Island WWTP	Lions Gate WWTP	Lulu Island WWTP	Northwest Langley WWTP	Total
Effluent Flow, ML	194,080	187,747	29,416	26,146	6,585	443,974
BOD ₅ , Tonnes Removed	39,274	13,769	2,036	8,388	1,790	65,257
TSS, Tonnes Removed	35,149	18,347	3,739	6,914	1,628	65,778

Wastewater Treatment Plant Operational Certificates

The OCs issued by the ENV under the provisions of the Environmental Management Act include daily authorization levels for flow and daily levels for BOD₅ or Carbonaceous Biochemical Oxygen Demand (CBOD₅, where applicable) and TSS. The Annacis WWTP OC, issued on May 13, 2025, now includes limits for Unionized Ammonia (UNH₃).

The 2025 Annacis Island Operating Certificate (OC) requires effluent disinfection to achieve fecal coliform, enterococci, and *E. coli* water quality objectives at the edge of the Initial Dilution Zone (IDZ), as defined by the BC Water Quality Guidelines. Although enterococci and *E. coli* are measured in Northwest Langley, Lions Gate, and Lulu Island, only fecal coliform is required under their respective OCs, and must meet the water quality objectives at the edge of the IDZ as defined in the Municipal Wastewater Regulation (MWR). When chlorine is used for disinfection, dechlorination is required prior to discharge.

OCs require Metro Vancouver to report all treatment process interruptions to the ENV. Reported events can be generally grouped into three categories: Category 1 includes instances of disinfection or dechlorination system interruptions, plant bypasses and other unauthorized discharges. Category 2 events were the results of daily discharge loadings for TSS or CBOD₅ above the maximum load limits, as well as a daily rate of effluent discharge above the maximum limits. These events typically have no significant environmental impact. Category 3 events are instances reported to the ENV that do not fall under Category 1 or 2 and include digester gas venting events. In 2025, the OC requirements for maximum concentration of BOD₅ and TSS in effluent were met, and the GVS&DD submitted two Category 1, six Category 2 and eight Category 3 reports.

Each event is carefully reviewed, and a probable cause, mitigation measures and potential environmental effects are assessed based on dilution dispersion modeling of effluent plume transport and predicted downstream concentrations, or on field observations.

Integrated Liquid Waste and Resource Management Plan (ILWRMP)

The ILWRMP commits GVS&DD to operate the secondary WWTPs to meet the National Performance Standards for effluent specified by the Canada-wide Strategy for the Management of Municipal Wastewater Effluent (CWS-MMWE). These National Performance Standards for effluent quality are also included in the Wastewater Systems Effluent Regulation (WSER). The concentrations of CBOD₅ and TSS at all secondary WWTPs remained below the maximum average of ≤25 mg/L as specified by the National Performance Standards. The averaging periods are monthly for Annacis Island, Lulu Island and Northwest Langley WWTPs.

Wastewater Systems Effluent Regulations (WSER)

Quarterly monitoring reports were submitted through Environment and Climate Change Canada's (ECCC's) Effluent Regulatory Reporting Information System (ERRIS) in 2025. As required by WSER, the effluent monitoring data reported were: number of days that effluent was deposited; total volume of effluent deposited in m³; average effluent CBOD₅ in mg/L; the average effluent concentration of suspended solids (SS) in mg/L; and effluent acute lethality for secondary treatment plants.

In 2025, all District secondary WWTPs met the WSER requirements for TSS, CBOD₅, and total residual chlorine. Non-acute effluent lethality requirement was consistently met at the Northwest Langley WWTP, Lulu Island WWTP and Annacis Island WWTP. Unionized ammonia levels were consistently met at all secondary plants.

GVS&DD's primary treatment plants (Iona Island and Lions Gate WWTPs) received Transitional Authorizations (TA) under WSER on September 5, 2014. In 2025, the Iona Island WWTP met the applicable WSER requirements for regulated parameters: TSS, CBOD₅ and un-ionized ammonia.

The Lions Gate TA expired on December 30, 2020, with monthly average limits of 115 mg/L CBOD₅ and 76 mg/L TSS applicable through 2020 only. Starting in January 2021, the WSER limits of 25 mg/L CBOD₅ and 25 mg/L TSS became effective. Due to delays in constructing the North Shore WWTP, the Lions Gate WWTP could not meet the CBOD₅ and TSS limits in 2025, although it did meet the limits for total residual chlorine and unionized ammonia. The non-acute effluent lethality requirement was not consistently met throughout 2025.

Effluent Toxicity Monitoring

In 2025, all effluent samples from all WWTPs passed the OC required Rainbow Trout acute lethality test using ECCC test protocols with the following exceptions: four Iona Island WWTP samples, and three Lions Gate WWTP samples. The Iona Island samples and two of the Lions Gate samples required oxygen in excess of that specified by the ECCC method. For the remaining Lions Gate sample, the cause was undetermined with dissolved oxygen demand potentially a contributing factor.

Although not a regulatory requirement, acute toxicity testing with *Daphnia magna* was also conducted monthly (or quarterly for Northwest Langley WWTP) as recommended by the CWS-MMWE. Samples from all the WWTPs passed the *Daphnia magna* acute toxicity test.

Biosolids Monitoring Program

Process Requirements and Biosolids Management

The Organic Matter Recycling Regulation (OMRR) governs the management of biosolids intended for land application in British Columbia. Sampling frequencies and classification criteria for Class A and Class B biosolids are determined by treatment processes, dry solids production rates, and intended use. The GVS&DD's biosolids management program ensures that biosolids not meeting class specifications are identified and managed appropriately.

Biosolids Quality

Approximately 16,000 tests were performed on biosolids in 2025. Metal concentrations and fecal coliform levels met the Class A criteria for the Annacis Island WWTP and the Class B criteria for the Iona Island, Lions Gate, and Lulu Island WWTPs. Thickened waste secondary sludge from the Northwest Langley WWTP was transported to Annacis Island, Iona Island, or Lulu Island WWTPs for processing into biosolids.

ENVIRONMENTAL MANAGEMENT PROGRAMS

Environmental management programs form a major part of Metro Vancouver's integrated approach to managing liquid waste. The purpose of these programs is to characterize the environmental conditions of relevant water bodies in the region in order to understand the relative contribution and significance of discharge from the regional and municipal systems, determine if the applicable regulatory requirements are being met, and to warn of possible environmental issues. Environmental management programs include environmental monitoring, human health and ecological risk assessments, and environmental simulation and forecasting.

Overflow Quality Monitoring and Environmental Risk Assessments

Municipal wastewater in the region is conveyed and treated in the District's WWTPs. However, discharges of untreated wastewater into regional water bodies are sometimes unavoidable mostly due to insufficient system capacity during wet weather, power outages, and the legacy of combined sewer systems.

Combined Sewer Overflows

In 2025, the Combined Sewer Overflow (CSO) Monitoring Program characterized the overflow water quality at four selected CSO locations: Borden, Heather, Glenbrook, and South Hill.

Sanitary Sewer Overflows

Metro Vancouver continued monitoring the receiving environment water quality after each sanitary sewer overflow and provided results to regulatory agencies and health authorities.

Environmental Monitoring in the Regional Water Bodies

Metro Vancouver monitors the environmental health of regional water bodies it discharges into. The various water body monitoring programs may include monitoring the water, sediment or biota. A summary of the monitoring program findings for each of the regional water bodies is provided below.

Strait of Georgia

In 2025, a multi-year collaboration with the University of British Columbia (UBC) on the Strait of Georgia Ambient Monitoring Program continued. The 2025 field program included Iona Island WWTP Initial Dilution Zone (IDZ) boundary monitoring and sediment effects survey. The findings of the 2025 Iona Island IDZ and 2025 Iona Island Sediment Effects Survey receiving environment monitoring field work were reviewed and compiled into the report.

The assessment of the IDZ boundary water quality monitoring results indicated that the applicable objectives or guidelines were met at the IDZ boundary, except for boron and dissolved oxygen. Measured boron concentrations are consistent with previous years and with concentrations found in Canadian coastal waters. The observed dissolved oxygen concentrations are not directly attributable to the Iona Island WWTP effluent but largely reflect regional conditions of the southern Strait of Georgia. Concentrations of measured persistent, bioaccumulative and toxic substances were within the ranges observed in the past. The results of the sediment effects survey indicated that overall, the footprint of Iona Island WWTP effluent influence and the conditions of the influenced area are similar to previous years. The weight of evidence framework for the marine demersal biota monitoring program concluded that there was not a consistent Iona Island WWTP driven gradient across the program's lines of evidence.

Burrard Inlet

In 2025, the Burrard Inlet Environment Monitoring Program included water, sediment quality and benthic infaunal community monitoring.

The Burrard Inlet Water Column Monitoring program included field work in the fall of 2025 and results reporting for 2022-2025 program. This program includes *in situ* CTD profile monitoring and collection of water column grab samples at stations across the basins of Burrard Inlet and at the Lions Gate WWTP IDZ in concert with effluent sample collections. Overall, the Lions Gate WWTP discharge is meeting Water Quality Guidelines (WQGs) and Water Quality Objectives (WGOs) at the IDZ boundary for the majority of constituents. There have been some changes in water chemistry in the effluent, at the IDZ, and in ambient environment over the years of the program. Although some changes do not have a clear explanation, some are likely linked to regulatory restrictions or bans of chemical substances, changes in treatment, or to larger scale changes in the receiving environment.

The Burrard Inlet Sediment Effects Survey field work took place in the spring of 2025. The summary data report compared results to sediment quality guidelines and objectives, spatially and to historical threshold values. Several stations spread across the basins of Burrard Inlet exceeded a number of analyte guidelines and objectives; suggesting that sediment quality is reflective of regional conditions and is not tied to specific point sources within the waterbody. The infaunal community structure differed across the stations; however, enrichment indicators were not distinctly associated with the Lions Gate WWTP outfall. The results from the 2023 Burrard Inlet Marine Biota Monitoring weight of evidence framework concluded that there was no consistent Lions Gate WWTP driven gradient across the lines of evidence assessed, and that contaminant distributions in English sole and Dungeness crab tissues likely reflect a combination of legacy, industrial and urban sources rather than a dominant influence from a single source.

Fraser River

In 2025, field activities for the Fraser River Environmental Monitoring Program focused on water quality. Monitoring was completed for the new Annacis Island WWTP Stage V outfall and diffuser that was commissioned in January 2025. Most water quality parameters at the IDZ boundary, as well as at the mid-field and far-sites in the Fraser River met their respective WQOs or approved British Columbia WQGs. Exceptions were within the range of analytical variability or reflective of regional conditions such as upstream geology, downstream sediment transport and saltwater intrusion. Spatial patterns observed in 2025 were consistent with those seen in previous years.

In 2025, reporting for the 2024 Fraser River Environmental Monitoring Program water quality was also completed. The results indicated that all parameters met their respective WQOs or approved British Columbia WQGs with the exception of total suspended solids, and several metals. A review of the results indicated that observed exceedances were generally more attributable to downstream sediment transport than to plant effluent.

In 2025, findings of 2023 fish health monitoring in the Fraser River were summarized into a report. The low number of fish of target size and species captured precluded statistical data analysis. Intended sample numbers were not reached for either of the targeted sentinel species: Peamouth Chub or Northern Pikeminnow. The results indicate that, aside from slight differences between estuarine and more upstream sites, fish community composition differs more temporally than spatially. Fin erosion and parasites were observed across all sampled sites, no lesions indicative of contaminant exposure were observed, and overall observed fish health conditions were variable.

In 2025, findings of pre-discharge sediment monitoring in the vicinity of the Annacis Island WWTP Stage V outfall completed in 2023 and 2024 were summarized into reports. Due to challenges in obtaining subtidal sediments in 2023, intertidal sediment monitoring was also completed. Results of the 2023 sediment sampling indicate that there is a low likelihood of wastewater influence at the subtidal area sampled and a negligible likelihood of wastewater influence at the intertidal sites.

Sediment monitoring in 2024 was informed by the Annacis Island WWTP effluent settling velocity study and modeling of particle transport from the effluent. Based on indicators of wastewater exposure, it was concluded that the likelihood of wastewater influence was low at three areas and one site close to the AIWWTP, while a site farther away demonstrated a moderate level of wastewater exposure.

Recreational Water Quality Monitoring Program

Metro Vancouver monitors the bacteriological quality of local recreational waters on a weekly basis throughout the beach season from April to September. In 2025, the local health authorities issued swimming advisories for 10 of the 35 swimming beach locations for a total of 52 days. Recreational water quality in 2025 was comparable with the water quality of the last ten years.

1.0 WASTEWATER TREATMENT MONITORING PROGRAM

1.1 LABORATORY PROGRAMS

In 2025, the Environmental Management & Quality Control (EMQC) Division carried out all routine monitoring programs as required by the Ministry of Environment and Parks (ENV) and Environment and Climate Change Canada (ECCC) relating to the discharge of treated effluent from the Greater Vancouver Sewerage & Drainage District's (GVS&DD) wastewater treatment plants (WWTPs).

As specified in the Operational Certificates (OCs) issued by the ENV for each treatment plant, the GVS&DD is required to monitor and report data for effluent quality and treated sludge.

Wastewater Systems Effluent Regulations (WSER) under the Fisheries Act came into effect on July 18, 2012. The GVS&DD is required to monitor and report effluent monitoring data. The effluent quality standards and limits as specified in WSER for the Annacis Island, Lulu Island, Lions Gate and Northwest Langley WWTPs and in the transitional authorization for the Iona Island WWTP were in place throughout the year.

EMQC Laboratory staff conducted analyses of samples collected at various stages of treatment for process control at each WWTP; they also provided analytical services for Residuals Management and Regulation & Enforcement purposes. In addition, the EMQC Laboratory maintained a high level of analytical and technical support for special projects at all WWTPs.

The total number of results issued by the laboratory sections for all GVS&DD programs was 205,217 analyses in 2025.

Monitoring programs carried out in 2025 provided a comprehensive set of influent and effluent characteristics for each WWTP and included all the monitoring requirements specified in the WWTP OCs and WSER. The full set of parameters for influent and effluent monitoring programs are presented in Table 1.1. Parameters indicated with a "C" are specific authorized discharge parameters listed in the OC for each WWTP, whereas parameters indicated with an "M" are required by OCs for monitoring of effluent characteristics. Parameters indicated with a "W" are required for WSER reporting. Parameters designated "R" are monitored on a routine basis for wastewater characterization.

TABLE 1.1 WWTP MONITORING PARAMETERS FOR INFLUENT AND EFFLUENT

Monitoring Requirements							
Parameter	Sample Type	Testing Frequency	ANNACIS	IONA	LIONS GATE	LULU	NW Langley
TKN	Composite	1/mo	R	R	R	R	R
NO3/NO2 N	Grab	1/mo	R	R	R	R	R
Total Ammonia N*	Grab	1/wk	M(1/wk)	M(2/mo)	M(2/mo)	M(1/wk)	M(1/mo)
Total Ammonia N**	Composite	3/wk	W	W	W	W	W(1/wk)
Un-ionized Ammonia	Composite	3/wk	W	W	W	W	W(1/wk)
Un-ionized Ammonia	Grab	1/wk	C	-	-	-	-
pH at 15°C**	Composite	3/wk	W	W	W	W	W(1/wk)
MBAS	Grab	1/mo	R	R	R	R	R
SO4	Composite	1/mo	R	R	R	M	M
Alkalinity	Composite	1/mo	R	R	R	R	R
Hardness (Total)	Composite	1/mo	M	M	M	M	M
Total Phosphorous	Composite	1/mo	R	R	R	R	R
Dissolved Phosphorous	Composite	1/mo	R	R	R	R	R
96 hour LC50	Grab		M(1/mo) W(1/mo)	M(1/mo)	M(1/mo) W(1/mo)	M(1/mo) W(1/mo)	M(1/quarter) W(1/year)
Oil and Grease	Grab	1/mo	R	R	R	R	R
Phenol	Grab	1/mo	M	M	R	M	M
Total Cyanide	Grab	1/mo	R	R	R	R	R
Total Aluminum	Composite	1/mo	M	M	M	M	M
Total Arsenic	Composite	1/mo	M	M	M	R	M
Total Barium	Composite	1/mo	M	M	M	M	M
Total Boron	Composite	1/mo	M	M	M	M	M
Total Cadmium	Composite	1/mo	M	M	M	M	R
Total Cobalt	Composite	1/mo	M	R	R	R	M
Total Chromium	Composite	1/mo	R	R	R	R	R
Total Copper	Composite	1/mo	M	M	M	M	M
Total Iron	Composite	1/mo	M	M	M	M	M
Total Lead	Composite	1/mo	M	M	M	M	M
Total Manganese	Composite	1/mo	M	M	R	M	M
Total Mercury	Composite	1/mo	M	M	R	M	M
Total Molybdenum	Composite	1/mo	M	M	M	M	M
Total Nickel	Composite	1/mo	M	M	M	M	M
Total Selenium	Composite	1/mo	M	M	M	R	R
Total Silver	Composite	1/mo	M	M	M	M	M
Total Zinc	Composite	1/mo	M	R	M	M	M
Dissolved Aluminum	Composite	1/mo	R	R	R	R	R
Dissolved Barium	Composite	1/mo	R	R	R	R	R
Dissolved Boron	Composite	1/mo	R	R	R	R	R
Dissolved Cadmium	Composite	1/mo	R	R	R	R	R
Dissolved Cobalt	Composite	1/mo	R	R	R	R	R
Dissolved Chromium	Composite	1/mo	R	R	R	R	R
Dissolved Copper	Composite	1/mo	R	R	R	R	R
Dissolved Iron	Composite	1/mo	R	R	R	R	R
Dissolved Lead	Composite	1/mo	R	R	R	R	R
Dissolved Manganese	Composite	1/mo	R	R	R	R	R
Dissolved Molybdenum	Composite	1/mo	R	R	R	R	R
Dissolved Nickel	Composite	1/mo	R	R	R	R	R
Dissolved Selenium	Composite	1/mo	R	R	R	R	R
Dissolved Silver	Composite	1/mo	R	R	R	R	R
Dissolved Zinc	Composite	1/mo	R	R	R	R	R
pH	Grab	1 to 5/wk	M	M	M	M	M
BOD5***	Composite	2 to 3/wk	-	C***	C***	-	-
CBOD5***	Composite	3/wk	C***/W	W	W	C***/W	C(1/wk) W(1/wk)
Suspended Solids	Composite	7/wk	C(5/wk) W(3/wk)	C(5/wk) W(3/wk)	C(5/wk) W(3/wk)	C(5/wk) W(3/wk)	C(1/wk) W(1/wk)
Volatile Suspended Solids	Composite	7/wk	R	R	R	R	R
COD***	Composite	5/wk	M***	M***	M***	M***	R
Conductivity	Composite	5 to 7/wk	R	R	R	R	R
Chloride	Composite	1/wk	R	R	R	R	R
Residual Chlorine****	Grab	7/wk	C/W	-	C/W	C/W	C/W
Dissolved Oxygen	Grab	1/mo to 5/wk	R	R	R	R	R
Temperature	Grab	1/mo to 5/wk	M	M	M	M	M
Fecal Coliform (effluent)****	Grab	M (1 to 5/wk)	M(1/wk)	-	M(1/wk)	M(1/wk)	M(1/mo)
E. Coli (effluent)****	Grab	M (1 to 5/wk)	M(1/wk)	-	M(1/wk)	M(1/wk)	M(1/mo)
Enterococci (effluent)****	Grab	M (1 to 5/wk)	M(1/wk)	-	M(1/wk)	M(1/wk)	M(1/mo)

Composite samples are collected over a 24-hour period
* Ammonia and pH are done on weekly grabs for all WWTP for Canadian Environmental Protection Act monitoring.
** Data used to calculate un-ionized ammonia
*** COD is reported five times per week with BOD₅ once per week
**** During chlorination season only.

C = Operational Certificate authorized discharge parameter

W = Wastewater System Effluent Regulations (WSER)

M = Operational Certificate Effluent Monitoring Requirement

R = Routine Monitoring, Influent and Effluent

() = Reporting Requirement Frequency

1.2 OVERVIEW OF THE WASTEWATER TREATMENT PLANT REPORTING PROCESS

ANNUAL REPORTING

The 2025 GVS&DD Environmental Management and Quality Control Annual Report presents a detailed summary of the performance of each of the region's five WWTPs.

Sections 3.0 to 7.0 of this Annual Report provide the following information about each WWTP:

- An overview of the authorized discharge monitoring parameters that the WWTP adheres to as a requirement of its OC and of WSER;
- A detailed review of instances where those parameters were not met, including probable cause and mitigation measures;
- Data describing the WWTP's overall performance during 2025, including the amount of wastewater treated, average daily flows, quality of effluent, and reduction in levels of Biochemical Oxygen Demand (BOD₅) and TSS;
- A performance review of solids treatment and secondary processes, if applicable;
- Trucked liquid waste records, if applicable; and
- Summary of trends and graphs for 2021-2025.

MONTHLY REPORTING FOR OPERATIONAL CERTIFICATES

In accordance with OC requirements, all routine data reports for each WWTP are posted on Metro Vancouver's website and updated monthly at the following location:

[Wastewater Treatment Plants and Processes | Metro Vancouver](#)

OCs require Metro Vancouver to report all treatment process interruptions to the ENV. Reported events can be generally grouped into three categories: Category 1 includes instances of disinfection or dechlorination system interruptions, plant bypasses and other unauthorized discharges. Category 2 events were the results of daily discharge loadings for TSS or Carbonaceous Biochemical Oxygen Demand (CBOD₅) above the maximum load limits, as well as a daily rate of effluent discharge above the maximum limits. These events typically have no significant environmental impact. Category 3 events are instances reported to the ENV that do not fall into Category 1 or 2 and include digester gas-venting events. In 2025, the OC requirements for maximum concentration of BOD₅ and TSS in effluent were met, and GVS&DD submitted two Category 1, six Category 2 and eight Category 3 reports.

QUARTERLY REPORTING FOR WASTEWATER SYSTEMS EFFLUENT REGULATIONS (WSER)

WSER reporting provisions include: number of days that effluent was deposited; total volume of effluent deposited; average effluent CBOD₅ average effluent concentration of suspended solids (SS); and effluent acute lethality for secondary treatment plants.

Quarterly monitoring reports associated with WSER were submitted to ENV electronically through Effluent Regulatory Reporting Information System (ERRIS) within 45 days after the end of each quarter.

2.0 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

The mission of the Metro Vancouver Laboratory (the Laboratory) is to provide high-quality analytical services to Metro Vancouver and its member municipalities. Analytical services currently include chromatography, spectroscopy, flow injection colorimetry, gravimetry, and titrimetry. The Laboratory performs routine tests and quality control tests on a wide range of environmental samples, including water, wastewater, receiving water and solids. In addition, the Laboratory provides full analytical reporting for process control.

To fulfill this commitment, the Laboratory is accredited by the Canadian Association for Laboratory Accreditation (CALA). The International Standard to which the Laboratory is accredited is ISO/IEC 17025 (General Requirements for the Competence of Testing and Calibration Laboratories). The accreditation program is based on satisfactory participation in a site assessment plus satisfactory compliance with the CALA Proficiency Testing Requirements for accreditation. Accreditation under ISO/IEC 17025 is a demonstration of confidence in the Laboratory's technical competence.

The Liquid Waste Services – Environmental Management & Quality Control (LWS-EMQC) Laboratory is made up of the Chemistry and WWTP Process Control Laboratory sections. The Chemistry Laboratory section, located at the Annacis Island WWTP, performs chemical and physical tests. The WWTP Process Control Laboratory section maintains a laboratory facility at each WWTP. These laboratory facilities carry out analyses for regulatory and process control requirements for the five WWTPs.

In 2025, over 292,000 analytical results were produced by the LWS-EMQC Laboratory. These results encompass all analytical programs, including the Quality Assurance/Quality Control program carried out by the Liquid Waste Services Laboratory sections. The Laboratory conducted 80,621 quality control analyses, representing 28.2% of the total analytical workload. These quality control analyses were part of an ongoing QA/QC program to fulfill requirements for laboratory accreditation and demonstrate Metro Vancouver's commitment to quality.

In order to maintain laboratory accreditation, the Metro Vancouver Laboratory is required to undergo a site reassessment every two years to assess conformance to the ISO/IEC 17025 standard. An assessment based on ISO/IEC 17025 covers the overall Quality Management System of the Laboratory and assesses the technical competence of the Laboratory to conduct specific accredited tests. Following a successful site audit, the CALA Accreditation Council grants accreditation to the Laboratory. In September 2025, a team of CALA auditors conducted a site assessment of the LWS-EMQC Laboratory. The auditors concluded that the EMQC Laboratory had met the requirements of ISO/IEC 17025 for conducting tests specified in the laboratory's scope of accreditation. As a result, a panel of the CALA Accreditation Council gave approval to the LWS-EMQC Laboratory for the 2025–2027 maintenance of laboratory accreditation.

In 2025, the LWS-EMQC Laboratory participated in the following inter-laboratory analytical performance evaluation/certification programs:

- The British Columbia Environmental Data Quality Assurance (BCEDQA) Program. The LWS-EMQC Laboratory has been participating in this program since May 1991.
- The CALA Proficiency Testing Program. The LWS-EMQC Laboratory has been participating in this program since June 1996.

The goal of participating in proficiency testing (PT) studies is to demonstrate ongoing technical competence and to provide an assessment of reliability. In 2025, the LWS-EMQC Laboratory achieved an average PT score of 93, and 95% of the PT scores fell within the range of 79 to 99. The PT score is normalized to a scale from 1 to 100. A PT score of 100 implies a perfect result. Acceptable composite PT scores are equal to or exceed 70.

3.0 ANNACIS ISLAND WWTP



3.0 ANNACIS ISLAND WWTP

3.1 EFFLUENT QUALITY

The quality of effluent from the Annacis Island WWTP in 2025, along with the discharge monitoring parameters listed in Operational Certificate 387, is summarized in Table 3.1.

TABLE 3.1 ANNACIS ISLAND WWTP – 2025 PERFORMANCE SUMMARY

Parameters	Testing Frequency	OC Limits	Max. Value for the Year	Number of Times Criteria Not Met											
				Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total Discharge Flow (MLD)	Daily	1,632 ¹	926	0	0	0	0	0	0	0	0	0	0	0	0
CBOD ₅ (mg/L)*	3/week	45	36	0	0	0	0	0	0	0	0	0	0	0	0
Suspended Solids (mg/L)	5/week	45	40	0	0	0	0	0	0	0	0	0	0	0	0
Un-ionized NH ₃ (mg/L)**	1/week	1.25	0.58					0	0	0	0	0	0	0	0
Chlorine Residual (mg/L)***	Daily	<0.1	<0.02	0	0	0	0	0	0	0	0	0	0	0	0
Disinfection	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
Plant Bypass	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
Secondary Bypass	-	2ADW	-	0	0	0	0	0	0	0	0	0	0	0	0

¹ 1,050 MLD prior to May 13, 2025

* CBOD₅ reported 1/week when COD are reported 5/week

** Un-ionized Ammonia added to the Operational Certificate effective May 13, 2025.

*** Effluent disinfected between April 1 and October 31

No Instances of non-compliance were identified in 2025.

3.2 PERFORMANCE REVIEW AND OPERATIONAL SUMMARY

The ENV, under the provisions of the Environmental Management Act and in accordance with Metro Vancouver's Integrated Liquid Waste and Resource Management Plan (ILWRMP), issued OC 387 on May 13, 2025. The OC specifies the authorized discharge levels shown in Table 3.2.

TABLE 3.2 ANNACIS ISLAND WWTP – OPERATIONAL CERTIFICATE AUTHORIZED LEVELS

Daily authorized rate of discharge	1,632,000 cubic meters/day, maximum
5-day CBOD ₅	45 mg/L, maximum
Total Suspended Solids (non-filterable residue) (TSS)	45 mg/L, maximum
Un-ionized Ammonia	1.25 mg/L maximum ¹

¹ expressed as nitrogen (N), at 15°C ±1°C

3.2.1. PERFORMANCE REVIEW

A comprehensive review of 2025 routine monitoring results and performance summary is provided in Table 3.10 at the end of Section 3. A comprehensive summary of influent and effluent concentrations is provided in Tables 3.11 and 3.12, respectively at the end of Section 3.

EFFLUENT BYPASSES

There was no bypassing of the secondary treatment process in 2025.

PLANT BYPASSES

There were no plant bypasses in 2025.

DISINFECTION

The effluent from the Annacis Island WWTP was disinfected between April 1 and October 31 using Sodium Hypochlorite Solution (SHS) and dechlorinated using Sodium Bisulphite Solution (SBS). The average SHS dosage as chlorine was 2.6 mg/L and the average SBS dosage as SO₂ was 1.6 mg/L. There were no interruptions of the disinfection system in 2025.

The Fraser River Water Quality Objectives (WQO) for bacterial indicators are established at 200 MPN/100 mL for fecal coliform, 77 MPN/100 mL for Escherichia coli (E. Coli) and 20 MPN/100mL for Enterococci at the edge of the Initial Dilution Zone (IDZ).

These bacterial indicators were predicted to have been met from April through October as shown in Table 3.3.

TABLE 3.3 ANNACIS ISLAND WWTP – PREDICTED 30-DAY GEOMETRIC MEAN AT IDZ

Fecal Coliforms in Final Effluent

Month	Apr	May	Jun	Jul	Aug	Sept	Oct
Max 30-day Geometric Mean (MPN/100mL)*	209	84	48	45	41	42	45
Dilution Factor**	40	40	40	40	40	40	40
IDZ Result (MPN/100mL)***	5.2	2.1	1.2	1.1	1.0	1.1	1.1
WQO (Met or Not Met)	MET	MET	MET	MET	MET	MET	MET

Escherichia coli in Final Effluent

Month	Apr	May	Jun	Jul	Aug	Sept	Oct
Max 30-day Geometric Mean (MPN/100mL)*	131	63	26	29	30	30	33
Dilution Factor**	40	40	40	40	40	40	40
IDZ Result (MPN/100mL)***	3.3	0.5	0.7	0.7	0.8	0.8	0.8
WQO (Met or Not Met)	Met	Met	Met	Met	Met	Met	Met

Enterococci in Final Effluent

Month	Apr	May	Jun	Jul	Aug	Sept	Oct
Max 30-day Geometric Mean (MPN/100mL)*	489	44	25	13	15	16	22
Dilution Factor**	40	40	40	40	40	40	40
IDZ Result (MPN/100mL)***	12.2	0.7	0.6	0.3	0.4	0.4	0.6
WQO (Met or Not Met)	MET	MET	MET	MET	MET	MET	MET

* Geometric mean (MPN/100mL) over a 30-day period (effluent).

** Lowest seasonal average dilution factor: 25-hour average dilution factor based on peak plant flow and low river flow conditions.

*** IDZ Result – determined by calculation of geometric mean of fecal coliform levels in the receiving water due to discharges of final effluent, for 30-day periods at the edge of the IDZ.

EVENTS REPORTED TO REGULATORY AUTHORITIES

Table 3.4 provides a summary of events identified during the reporting period that were reported to regulators, together with associated probable causes, mitigation measures, and potential environmental effects.

The categories were maintained in the table to ensure consistency with environmental performance reporting across other plants.

In 2025, there was no Category 1 event, two Category 2 events and three Category 3 events which were reported to the regulators. Tables 3.4 and 3.5, respectively, provide detailed summary of the events, including probable causes, mitigation measures, and potential environmental effects.

TABLE 3.4 ANNACIS ISLAND WWTP – CATEGORY 2 EVENTS REPORTED TO ENV

Plant	Date	Description	Quantity Discharged	Duration	Probable Cause	Mitigation Measures	Potential Environmental Effects
Annacis Island	Jul 21	Leak of chlorinated secondary effluent (C3 water) within the bounds of the Annacis Island Wastewater Treatment Plant (AIWWTP), with no discharge to any aquatic or other sensitive receiving environments.	Approx. 1,300 L	0.024 days	Condition of the emergency overflow piping in gravity thickener distribution structure.	Leak test halted and discharge stopped.	No impacts to the receiving environment were observed or expected.
Annacis Island	Nov 13	The secondary treated final effluent from the Chlorine Contact Tank (CCT) remained contained within the boundaries of AIWWTP grounds, with no discharge to any aquatic receiving environments or other sensitive areas.	Approx. 100,000 L	0.0174 days	Shorter bulkheads were installed.	The CCT water level was reduced by lowering the crest gates, after which the discharge was stopped.	No impacts to the receiving environment were observed.

TABLE 3.5 ANNACIS ISLAND WWTP – CATEGORY 3 EVENTS REPORTED TO ENV

Plant	Date	Description	Quantity Discharged	Duration	Probable Cause	Mitigation Measures	Potential Environmental Effects
Annacis Island	Jan 6	Venting of digester gas to the atmosphere at the AIWWTP. Venting occurred via the engineered pressure relief valves located on top of Digester 5, 6, 7 and 8.	Approx. 145 kg	0.0005 days	Gas system pressure increase caused release through pressure relief valves.	Digester gas release stopped.	No adverse impacts were observed.
Annacis Island	Feb 3	Controlled venting of digester gas to the atmosphere at the AIWWTP. Venting occurred via the engineered pressure relief valves located on top of Flow Through Vessel (FTV) 2 and Digester 5, 6, 7 and 8.	Approx. 228 kg	0.0011 days	A procedural error resulting to loss of power which impacted the operation of the digester gas system.	Digester gas release stopped.	No adverse impacts were observed.
Annacis Island	Jul 14	Controlled venting of digester gas to the atmosphere at the AIWWTP. Venting occurred via the engineered pressure relief valves located on top of FTV 2.	Approx. 4,137 kg	0.064 days	Solids deposits blocked FTV 2 condensate drain system which resulted in condensate accumulation.	Digester gas release stopped.	No adverse impacts were observed.

3.3 EFFLUENT MONITORING

3.3.1. FLOWS AND LOADINGS

In 2025, a total of 194,080 ML of wastewater was treated at the Annacis Island WWTP, with an average daily flow of 532 MLD, representing a 2.5% decrease from 2024. This indicates stable influent conditions with a slight reduction in overall loading compared to the previous year.

Peak flow events included a maximum daily flow of 926 MLD recorded on December 17 and a peak instantaneous flow of 1,124 MLD recorded in December 10, reflecting periods of increased hydraulic loading associated with wet weather conditions (Figure 3.1).

FIGURE 3.1 ANNACIS ISLAND WWTP – 2025 EFFLUENT TOTAL DAILY FLOWS

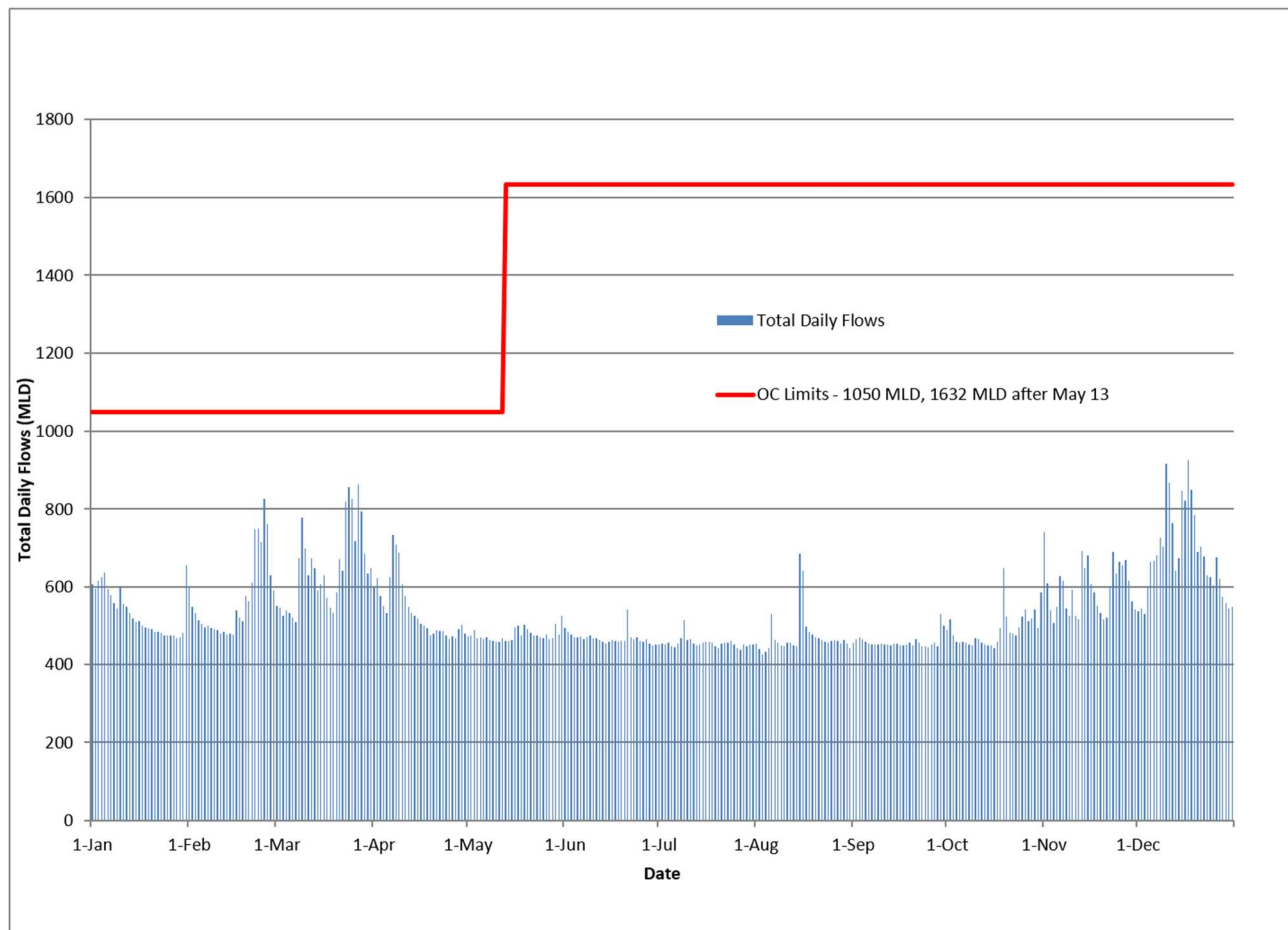


TABLE 3.6 ANNACIS ISLAND WWTP – 2016-2025 ANNUAL AVERAGE DATA FOR FLOW, SS AND BOD₅

ANNACIS WWTP									
YEAR	FLOWS MLD	Suspended Solids mg/L		Suspended Solids Tonnes/year		BOD ₅	CBOD ₅	BOD ₅	CBOD ₅
		INF	EFF	INF	EFF	mg/L		Tonnes/year	
						INF	EFF	INF	EFF
2016	492	182	10	31552	1897	190	8	32016	1437
2017	503	187	17	32850	3093	192	12	33661	2137
2018	511	191	16	33916	3168	210	12	36845	2284
2019	538	205	14	39613	2682	214	11	41557	2208
2020	539	184	13	34663	2614	190	10	35679	1942
2021	537	180	11	33807	2151	197	9	36876	1790
2022	518	194	13	35455	2554	218	10	39741	1972
2023	511	200	17	36188	3119	227	14	41024	2594
2024	556	199	18	38938	3678	229	18	44678	3643
2025	532	203	16	38326	3177	224	14	41933	2659

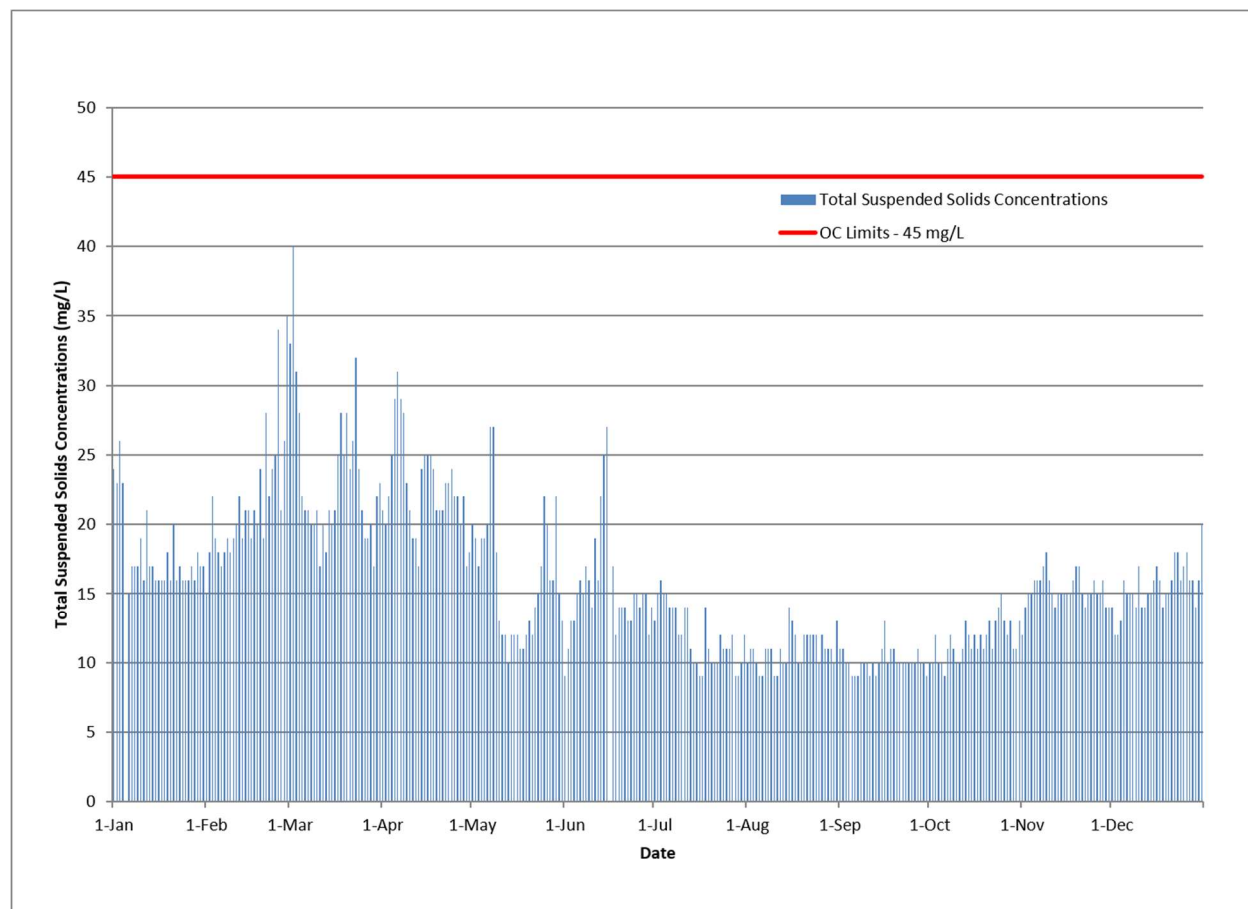
3.3.2. TOTAL SUSPENDED SOLIDS (TSS)

Final effluent suspended solids (SS) concentrations ranged from 9 to 40 mg/L, with an average of 15 mg/L during the reporting period (Figure 3.2).

These results indicate effective solids removal and stable treatment performance, with variability reflecting normal fluctuations in influent loading and operational conditions.

The reduction in annual effluent SS loadings to 3,177 tonnes, representing a 13.6% decrease from 2024, demonstrates an overall improvement in treatment efficiency.

FIGURE 3.2 ANNACIS ISLAND WWTP – 2025 EFFLUENT TSS CONCENTRATIONS



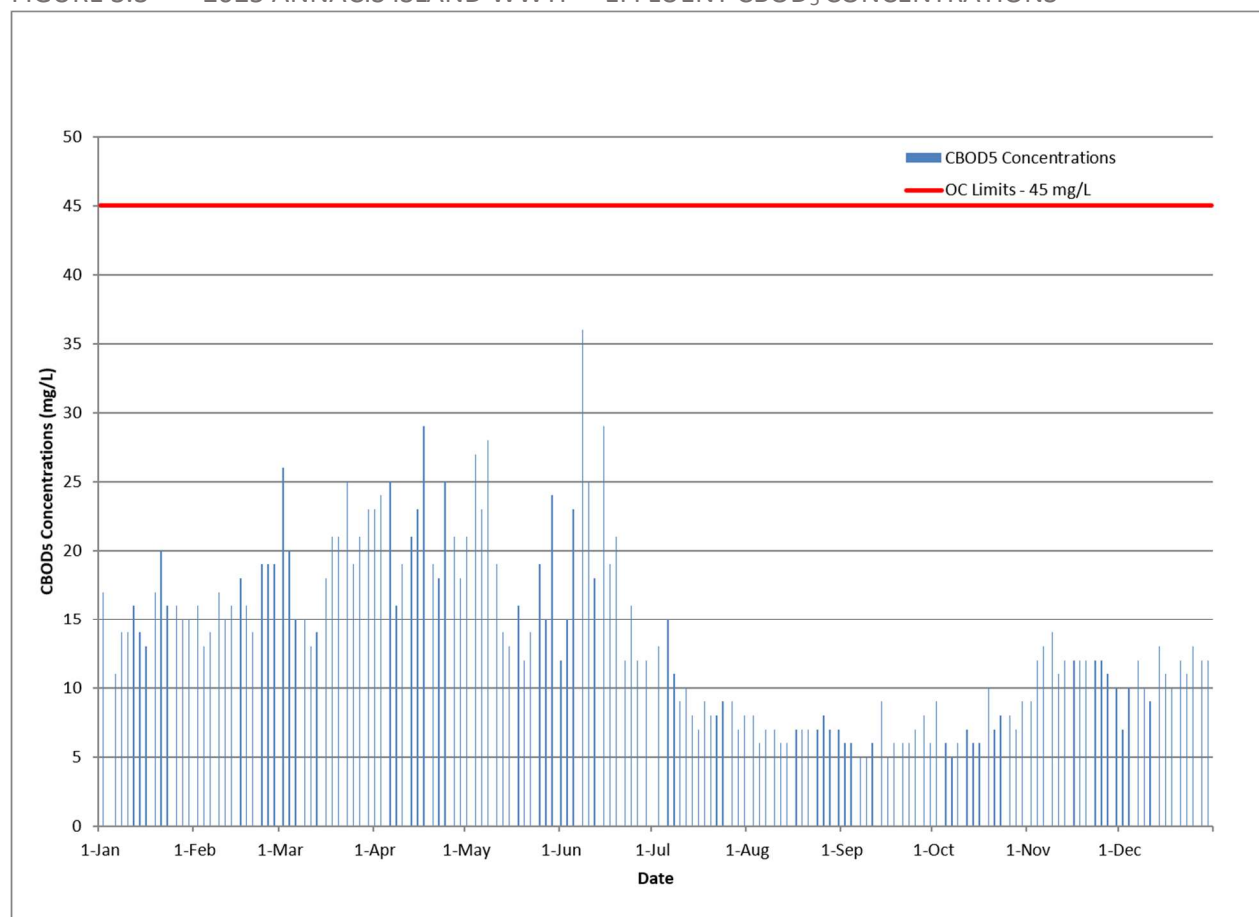
3.3.3. CARBONACEOUS BIOCHEMICAL OXYGEN DEMAND (CBOD₅)

Final effluent CBOD₅ concentrations ranged from 5 to 36 mg/L, with an average of 14 mg/L, consistently remaining below the discharge limit of 45 mg/L during the reporting period (Figure 3.3).

The annual effluent CBOD₅ loading of 2,659 tonnes/year, representing a 27.0% reduction from 2024, indicates an improvement in treatment performance and influent loading conditions.

These results demonstrate consistent compliance with regulatory requirements and indicate effective organic matter removal by the treatment process.

FIGURE 3.3 2025 ANNACIS ISLAND WWTP – EFFLUENT CBOD₅ CONCENTRATIONS



3.4 WASTEWATER SYSTEMS EFFLUENT REGULATIONS (WSER)

The WSER specifies the limits for substances that are authorized to be deposited by any wastewater system. The effluent quality standards and limits for the Annacis Island WWTP are shown in Table 3.7.

TABLE 3.7 ANNACIS ISLAND WWTP – WSER AUTHORIZED LEVELS

Monthly average Carbonaceous Biochemical Oxygen Demand (CBOD)	25 mg/L
Monthly average concentration of Suspended Solids (SS)	25 mg/L
Monthly average concentration of total residual chlorine	0.02 mg/L

Quarterly monitoring reports were submitted through ECCC's Effluent Regulatory Reporting Information System (ERRIS). The effluent monitoring data reported were number of days that effluent was deposited, total volume of effluent deposited in cubic metres, average concentration of CBOD in mg/L, average concentration of SS in mg/L, and acute lethality.

In 2025, WSER effluent quality standards and limits for CBOD and SS were met at the Annacis Island WWTP.

TABLE 3.8 ANNACIS ISLAND WWTP – 2025 WSER MONITORING REPORT

	Number of days that effluent was deposited	Total volume of effluent deposited (m ³)	Average CBOD (mg/L)	Average concentration of suspended solids (mg/L)
January	31	16,533,742	15	18
February	28	15,912,223	16	22
March	31	20,060,482	19	23
April	30	16,209,676	22	23
May	31	14,724,184	19	16
June	30	14,004,022	19	15
July	31	14,063,321	9	12
August	31	14,618,554	7	11
September	30	13,704,224	6	10
October	31	15,148,427	7	12
November	30	17,886,848	12	15
December	31	21,213,847	11	15

Acute Lethality Test Results

Sample Date (YYYY/MM/DD)	EPS 1 / RM / 13	EPS 1 / RM / 50	Was sample acutely lethal?
2025/01/06	Multi-Concentration Test	Yes	No
2025/02/05	Multi-Concentration Test	Yes	No
2025/03/06	Multi-Concentration Test	Yes	No
2025/04/08	Multi-Concentration Test	Yes	No
2025/05/08	Multi-Concentration Test	Yes	No
2025/06/09	Single-Concentration Test	Yes	No
2025/07/10	Single-Concentration Test	Yes	No
2025/08/06	Single-Concentration Test	Yes	No
2025/09/03	Single-Concentration Test	Yes	No
2025/10/02	Single-Concentration Test	Yes	No
2025/11/03	Single-Concentration Test	Yes	No
2025/12/03	Single-Concentration Test	Yes	No

3.5 SECONDARY PROCESS

Secondary process operated with an average of three Trickling Filters (TFs), four aeration tanks in solids contact mode and thirteen secondary clarifiers. The TFs achieved an average soluble CBOD₅ (SCBOD₅) removal of 65%. The remaining SCBOD₅ concentrations of the TF effluent ranged from 12 to 35 mg/L. Average Mean Cell Residence Time (MCRT) for the solids in the aeration tanks was two days and it was adjusted seasonally from 0.8 to 3.9 days. Mixed Liquor Suspended Solids (MLSS) concentrations were between 1,200 and 2,800 mg/L with an average of 1,831 mg/L.

3.6 SOLIDS TREATMENT

Mixed sludge from the Annacis Island WWTP and 13,990 m³ of TWSS from the Northwest Langley WWTP were processed in the Annacis Island WWTP digesters.

Biosolids dewatering achieved an average cake solids content of 26.1% and an average centrate suspended solids concentration of 2,690 mg/L with an average recovery of 86%. The average polymer dosage was 12.1 kg/tonne.

3.7 TRUCKED LIQUID WASTE RECORDS

TABLE 3.9 2025 SUMMARY OF THE TRUCKED WASTES RECORDS FOR THE AIWWTP

	Annual Total
Total domestic discharge volume, m ³	54,263
Total number of domestic generator loads	10,257
Total non-domestic discharge volume, m ³	0
Total number of non-domestic generator loads	0
Total discharge volume, m ³	54,263
Total number of carrier loads	8,692

TABLE 3.10 ANNACIS ISLAND WWTP – 2025 ROUTINE MONITORING RESULTS AND PERFORMANCE SUMMARY

MONTH	Max. Inst.Flow Rate (m3/sec)	Total Daily Effluent Flow (MLD)			Grab pH Average	Grab NH3 Average (mg/L)	96 hr LC50 (%v/v)	Composite Unionized NH3 Maximum (mg/L)
		Max.	Min.	Ave.	FINAL EFF			
JAN	10.3	656	467	533	7.1	35.3	>100	0.99
FEB	10.9	826	475	568	7.1	33.1	>100	1.07
MAR	11.4	863	511	647	7.0	29.1	>100	0.45
APR	10.7	735	465	540	7.1	34.6	>100	0.77
MAY	7.9	528	456	475	7.2	40.1	>100	1.11
JUN	7.5	543	447	467	7.3	38.8	>100	1.19
JUL	7.7	515	437	454	7.3	40.1	>100	1.11
AUG	10.7	685	424	472	7.2	40.8	>100	0.96
SEP	8.1	532	443	457	7.3	41.6	>100	0.99
OCT	11.0	649	441	489	7.2	38.9	>100	0.78
NOV	10.5	742	508	596	7.2	32.6	>100	0.75
DEC	13.0	926	531	684	7.1	29.1	>100	0.51
# Samples	-	-	-	365	249	91	5	156
Maximum-Yr.	13.0	926	-	-	7.6	44.4	>100	1.19
Minimum-Yr.	-	-	424	-	6.7	17.6	>100	0.14
Average-Yr.	-	-	-	532	7.2	36.6	>100	0.62

NOTES:

- (1) Dissolved Oxygen, Temperature, Residual Chlorine (taken before dechlorination) 96-hour LC50 and Coliform are determined on grab samples; all other parameters are determined on 24-hour. flow proportioned composite samples.
- (2) Effluent is disinfected between April 1 and October 31.
- (3) Average values containing one or more results below the detection limit are preceded with a "<" symbol.

MONTH	Ave Temp.	SHS	Ave. Residual Cl2		SBS	SO2	Geometric Mean Fecal Coliform		Geometric Mean E. coli		Geometric Mean Enterococci	
	(°C)	Dosage	Final Effluent		Dosage	mg/L	(MPN/100mL)		(MPN/100mL)		(MPN/100mL)	
	FINAL	mg/L Cl2	(mg/L)		mg/LSO2	FINAL	AT EFFLUENT WEIR		AT EFFLUENT WEIR		AT EFFLUENT WEIR	
	EFF	FINAL EFF	Before SO2	After SO2	FINAL EFF	EFF	Monthly	Max. 30 d Geometric Mean	Monthly	Max. 30 d Geometric Mean	Monthly	Max. 30 d Geometric Mean
JAN	15.5	-	-	-	-	-	-	-	-	-	-	-
FEB	14.1	-	-	-	-	-	-	-	-	-	-	-
MAR	14.4	-	-	-	-	-	-	-	-	-	-	-
APR	16.1	2.0	0.8	<0.02	1.6	1.2	83	209	64	131	69	489
MAY	18.6	2.3	0.9	<0.02	1.6	1.4	24	84	18	63	25	44
JUN	20.2	2.5	0.9	<0.02	1.7	1.3	43	48	25	26	13	25
JUL	21.9	2.7	0.9	<0.02	1.6	1.1	40	45	25	29	11	13
AUG	23.1	3.0	1.0	<0.02	1.6	1.2	31	41	23	30	15	15
SEP	23.0	3.3	1.0	<0.02	1.6	1.0	43	42	30	30	16	16
OCT	20.5	2.7	1.0	<0.02	1.7	1.2	41	45	27	33	15	22
NOV	17.4	-	-	-	-	-	-	-	-	-	-	-
DEC	15.4	-	-	-	-	-	-	-	-	-	-	-
# Samples	59	226	221	221	236	240	62	62	62	-	62	-
Maximum-Yr.	23.7	3.4	1.3	<0.02	5.2	3.9	1,700	209	110	131	489	489
Minimum-Yr.	13.1	0.3	0.4	<0.02	0.1	0.4	<18	21	<18	<18	<10	<10
Average-Yr.	18.2	2.6	0.9	<0.02	1.6	1.2	-	50	-	35	-	42
Geometric Mean	-	-	-	-	-	-	41	-	28	-	19	-

TABLE 3.10 CONTINUED: ANNACIS ISLAND WWTP – 2025 ROUTINE MONITORING RESULTS AND PERFORMANCE SUMMARY

MONTH	Total Suspended Solids (mg/L)						Total Susp. Solids Ave. % Reduction		Ave. Suspended Solids Loadings (Tonnes/day)		Conductivity (umhos/cm)	
	RAW INF			FINAL EFF			Primary	Final	RAW INF	FINAL EFF	RAW INF	FINAL EFF
	Max.	Min.	Ave.	Max.	Min.	Ave.						
JAN	229	132	176	26	15	18	52	90	93.4	9.6	579	656
FEB	227	125	188	35	15	22	59	88	104.0	12.5	621	686
MAR	231	120	173	40	17	23	59	86	109.2	15.0	543	621
APR	254	152	200	31	17	23	66	88	106.8	12.4	566	652
MAY	259	184	221	27	10	16	61	93	104.9	7.6	605	704
JUN	312	176	235	27	9	15	60	93	109.6	7.1	610	704
JUL	256	200	229	16	9	12	65	95	103.9	5.4	593	703
AUG	300	160	240	14	9	11	67	95	112.5	5.2	568	686
SEP	267	152	225	13	9	10	65	95	102.7	4.6	580	697
OCT	276	181	218	15	9	12	59	95	106.2	5.7	565	673
NOV	223	136	176	18	12	15	56	91	104.5	9.1	510	591
DEC	215	100	152	20	12	15	52	89	101.4	10.6	486	560
# Samples	-	-	356	-	-	363	344	354	356	363	356	363
Maximum-Yr.	312	-	-	40	-	-	77	97	148.3	28.1	814	831
Minimum-Yr.	-	100	-	-	9	-	36	76	77.4	4.0	384	431
Average-Yr.	-	-	203	-	-	16	60	92	105.0	8.7	568	661
Total to Date - Suspended Solids Loadings (Tonnes):									38326	3177		

MONTH	BOD ₅ (mg/L)			CBOD ₅ (mg/L)			Average BOD ₅ % Reduction		Ave. BOD ₅ /CBOD ₅ Loadings (Tonnes/day)		Average COD (mg/L)	
	RAW INF			FINAL EFF			Primary	Final	BOD ₅ INF	CBOD ₅ EFF	RAW INF	FINAL EFF
	Max.	Min.	Ave.	Max.	Min.	Ave.						
JAN	281	195	238	20	11	15	38	93	122.5	7.9	500	77
FEB	295	157	230	19	13	16	41	93	125.6	9.4	487	86
MAR	248	120	189	26	13	19	38	90	118.1	12.8	432	89
APR	247	164	212	29	16	22	37	90	116.5	11.7	504	104
MAY	264	208	243	28	12	19	35	93	114.8	8.9	559	95
JUN	281	252	262	36	12	19	36	93	122.1	8.9	599	93
JUL	288	225	245	15	7	9	39	96	111.3	4.2	591	71
AUG	263	215	247	8	6	7	41	97	112.9	3.2	587	65
SEP	281	196	234	9	5	6	40	97	106.9	2.8	580	65
OCT	255	200	236	10	5	7	42	97	112.4	3.6	551	60
NOV	225	155	187	14	9	12	43	94	110.4	7.0	444	65
DEC	185	108	144	13	7	11	35	93	103.1	7.4	403	63

# Samples	-	-	95	-	-	156	90	90	95	156	356	261
Maximum-Yr.	295	-	-	36	-	-	48	98	146.5	20.5	738	126
Minimum-Yr.	-	108	-	-	5	-	29	84	91.7	2.2	253	50
Average-Yr.	-	-	224	-	-	14	39	94	114.9	7.3	519	78
Total to Date - Biochemical Oxygen Demand Loadings (Tonnes):									41933	2659		

NOTES:

- (1) Percent reduction is calculated only for days when both influent and effluent samples are tested.
- (2) Half the detection limit is used for less than values when calculating the monthly CBOD & TSS averages reported to WSER.
- (3) Average values containing one or more results below the detection limit are preceded with a "<" symbol.

TABLE 3.11 ANNACIS ISLAND WWTP – 2025 COMPREHENSIVE PROGRAM INFLUENT CONCENTRATIONS SUMMARY

Parameters	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Max	Min.	Average
Aluminum Dissolved (µg/L)	15	10	37	84	19	10	9	9	11	8	9	12	84	8	20
Aluminum Total (µg/L)	50	47	447	1220	80	38	40	29	27	29	43	34	1220	27	170
Arsenic Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	0.5	0.5	<0.5	0.9	0.6	0.9	<0.5	<0.6
Barium Dissolved (µg/L)	6.8	4.6	4.0	3.6	3.7	2.2	2.8	3.3	2.3	2.9	3.2	4.0	6.8	2.2	3.6
Barium Total (µg/L)	10.3	8.4	7.9	7.4	5.9	3.8	5.4	4.9	4.1	5.1	5.8	6.4	10.3	3.8	6.3
Boron Dissolved (µg/L)	118	151	134	118	150	139	140	106	97	89	80	86	151	80	120
Boron Total (µg/L)	128	158	141	143	153	151	147	109	110	101	85	88	158	85	130
Cadmium Dissolved (µg/L)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium Total (µg/L)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	<0.2	<0.2
Calcium Total (µg/L)	16400	15400	17500	16300	13900	11900	13600	11400	13000	13500	15900	15900	17500	11400	14600
Chromium Dissolved (µg/L)	0.8	<0.5	1.0	<0.5	<0.5	<0.5	0.5	0.5	<0.5	<0.5	0.5	0.6	1.0	<0.5	<0.6
Chromium Total (µg/L)	1.1	0.9	2.2	0.8	0.7	0.6	0.9	0.8	0.8	0.7	0.9	1.1	2.2	0.6	1.0
Cobalt Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Copper Dissolved (µg/L)	2.8	2.7	2.2	6.6	3.3	3.2	3.5	5.1	4.4	4.5	4.7	1.7	6.6	1.7	3.7
Copper Total (µg/L)	10.5	11.4	9.6	16.9	7.8	7.7	10.4	10.4	8.5	7.4	25.5	7.7	25.5	7.4	11.0
Cyanide Total (mg/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.02	<0.01	<0.01
Fluoride (mg/L)	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	0.06	<0.05	0.05	<0.05	<0.05	0.06	<0.05	<0.05
Hardness as CaCO ₃ (mg/L)	56.7	54.5	60.4	56.5	49.8	44.4	48.8	40.7	45.5	46.4	54.1	54.0	60.4	40.7	51.0
Iron Dissolved (µg/L)	134	111	88	109	131	86	91	77	92	92	91	104	134	77	100
Iron Total (µg/L)	500	627	693	465	343	489	605	419	486	490	544	485	693	343	512
Lead Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Lead Total (µg/L)	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5
Magnesium Total (µg/L)	3800	3880	4050	3860	3650	3540	3600	2980	3190	3090	3460	3500	4050	2980	3550
Manganese Dissolved (µg/L)	57.7	52.8	64.8	48.9	41.7	50.7	51.1	46.1	42.7	42.0	42.0	43.8	64.8	41.7	48.7
Manganese Total (µg/L)	66.1	60.9	76.4	59.9	52.6	59.7	62.9	53.4	53.3	50.6	50.1	59.5	76.4	50.1	58.8
Mercury Total (µg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Methylene Blue Active Substance (mg/L)	0.2	0.4	0.3	1.5	0.2	0.3	0.3	0.2	0.2	0.2	0.5	0.2	1.5	0.2	0.4
Molybdenum Dissolved (µg/L)	0.9	0.7	1.0	0.9	1.1	0.9	1.4	1.3	1.2	1.4	1.1	1.2	1.4	0.7	1.0
Molybdenum Total (µg/L)	1.0	0.9	1.1	1.1	1.3	1.1	1.7	1.4	1.4	1.6	1.3	1.2	1.7	0.9	1.0
Nickel Dissolved (µg/L)	1.9	1.5	2.7	1.8	1.7	1.6	1.9	1.8	1.7	1.5	1.6	2.0	2.7	1.5	1.8
Nickel Total (µg/L)	2.1	1.7	3.0	2.2	1.8	2.0	2.3	1.9	2.0	1.7	1.8	2.3	3.0	1.7	2.0
Nitrogen - Ammonia as N (mg/L)	34.0	39.8	33.6	34.6	38.5	37.7	38.2	38.8	42.5	40.7	37.1	34.2	42.5	33.6	37.5
Nitrogen - Nitrate as N (mg/L)	<0.01	0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
Nitrogen - Nitrite as N (mg/L)	0.01	<0.01	<0.01	<0.01	0.02	0.04	0.05	0.05	0.06	0.05	0.03	0.01	0.06	<0.01	<0.03
Nitrogen - Total Kjeldahl (mg/L)	39	46	38	39	45	47	44	42	48	42	37	38	48	37	42
Oil & Grease (mg/L)	3	3	<3	5	<3	<3	3	<3	<3	<3	<3	<3	5	<3	<3
Phenol (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.002	0.002	0.002	<0.002	<0.002	<0.01	<0.01	<0.01
Phosphorus Dissolved (µg/L)	2350	3400	1330	549	2240	2730	3100	3170	3410	2910	2780	2440	3410	549	2530
Phosphorus Total (µg/L)	2730	3940	2090	1340	2780	3250	3340	3600	3990	3340	3230	2830	3990	1340	3040
Selenium Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sulphate (mg/L)	18.7	17.6	28.4	44.4	19.7	18.5	18.6	17.4	19.2	19.5	20.8	17.2	44.4	17.2	21.7
Vanadium Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Vanadium Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Zinc Dissolved (µg/L)	19	18	10	17	17	18	24	23	15	14	11	13	24	10	17
Zinc Total (µg/L)	29	30	22	27	21	23	40	29	22	18	19	20	40	18	25

TABLE 3.12 ANNACIS ISLAND WWTP – 2025 COMPREHENSIVE PROGRAM EFFLUENT CONCENTRATIONS SUMMARY

Parameters	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Max	Min.	Average
Aluminum Dissolved (µg/L)	15	10	37	84	19	10	9	9	11	8	9	12	84	8	20
Aluminum Total (µg/L)	50	47	447	1220	80	38	40	29	27	29	43	34	1220	27	170
Arsenic Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	0.5	0.5	<0.5	0.9	0.6	0.9	<0.5	<0.6
Barium Dissolved (µg/L)	6.8	4.6	4.0	3.6	3.7	2.2	2.8	3.3	2.3	2.9	3.2	4.0	6.8	2.2	3.6
Barium Total (µg/L)	10.3	8.4	7.9	7.4	5.9	3.8	5.4	4.9	4.1	5.1	5.8	6.4	10.3	3.8	6.3
Boron Dissolved (µg/L)	118	151	134	118	150	139	140	106	97	89	80	86	151	80	120
Boron Total (µg/L)	128	158	141	143	153	151	147	109	110	101	85	88	158	85	130
Cadmium Dissolved (µg/L)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium Total (µg/L)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	0.3	<0.2	<0.2
Calcium Total (µg/L)	16400	15400	17500	16300	13900	11900	13600	11400	13000	13500	15900	15900	17500	11400	14600
Chromium Dissolved (µg/L)	0.8	<0.5	1.0	<0.5	<0.5	<0.5	0.5	0.5	<0.5	<0.5	0.5	0.6	1.0	<0.5	<0.6
Chromium Total (µg/L)	1.1	0.9	2.2	0.8	0.7	0.6	0.9	0.8	0.8	0.7	0.9	1.1	2.2	0.6	1.0
Cobalt Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Copper Dissolved (µg/L)	2.8	2.7	2.2	6.6	3.3	3.2	3.5	5.1	4.4	4.5	4.7	1.7	6.6	1.7	3.7
Copper Total (µg/L)	10.5	11.4	9.6	16.9	7.8	7.7	10.4	10.4	8.5	7.4	25.5	7.7	25.5	7.4	11.0
Cyanide Total (mg/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.02	<0.01	<0.01
Fluoride (mg/L)	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	0.06	<0.05	0.05	<0.05	<0.05	0.06	<0.05	<0.05
Hardness as CaCO3 (mg/L)	56.7	54.5	60.4	56.5	49.8	44.4	48.8	40.7	45.5	46.4	54.1	54.0	60.4	40.7	51.0
Iron Dissolved (µg/L)	134	111	88	109	131	86	91	77	92	92	91	104	134	77	100
Iron Total (µg/L)	500	627	693	465	343	489	605	419	486	490	544	485	693	343	512
Lead Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Lead Total (µg/L)	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5
Magnesium Total (µg/L)	3800	3880	4050	3860	3650	3540	3600	2980	3190	3090	3460	3500	4050	2980	3550
Manganese Dissolved (µg/L)	57.7	52.8	64.8	48.9	41.7	50.7	51.1	46.1	42.7	42.0	42.0	43.8	64.8	41.7	48.7
Manganese Total (µg/L)	66.1	60.9	76.4	59.9	52.6	59.7	62.9	53.4	53.3	50.6	50.1	59.5	76.4	50.1	58.8
Mercury Total (µg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Methylene Blue Active Substance (mg/L)	0.2	0.4	0.3	1.5	0.2	0.3	0.3	0.2	0.2	0.2	0.5	0.2	1.5	0.2	0.4
Molybdenum Dissolved (µg/L)	0.9	0.7	1.0	0.9	1.1	0.9	1.4	1.3	1.2	1.4	1.1	1.2	1.4	0.7	1.0
Molybdenum Total (µg/L)	1.0	0.9	1.1	1.1	1.3	1.1	1.7	1.4	1.4	1.6	1.3	1.2	1.7	0.9	1.0
Nickel Dissolved (µg/L)	1.9	1.5	2.7	1.8	1.7	1.6	1.9	1.8	1.7	1.5	1.6	2.0	2.7	1.5	1.8
Nickel Total (µg/L)	2.1	1.7	3.0	2.2	1.8	2.0	2.3	1.9	2.0	1.7	1.8	2.3	3.0	1.7	2.0
Nitrogen - Ammonia as N (mg/L)	34.0	39.8	33.6	34.6	38.5	37.7	38.2	38.8	42.5	40.7	37.1	34.2	42.5	33.6	37.5
Nitrogen - Nitrate as N (mg/L)	<0.01	0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
Nitrogen - Nitrite as N (mg/L)	0.01	<0.01	<0.01	<0.01	0.02	0.04	0.05	0.05	0.06	0.05	0.03	0.01	0.06	<0.01	<0.03
Nitrogen - Total Kjeldahl (mg/L)	39	46	38	39	45	47	44	42	48	42	37	38	48	37	42
Oil & Grease (mg/L)	3	3	<3	5	<3	<3	3	<3	<3	<3	<3	<3	5	<3	<3
Phenol (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.002	0.002	0.002	<0.002	<0.002	<0.01	<0.01	<0.01
Phosphorus Dissolved (µg/L)	2350	3400	1330	549	2240	2730	3100	3170	3410	2910	2780	2440	3410	549	2530
Phosphorus Total (µg/L)	2730	3940	2090	1340	2780	3250	3340	3600	3990	3340	3230	2830	3990	1340	3040
Selenium Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sulphate (mg/L)	18.7	17.6	28.4	44.4	19.7	18.5	18.6	17.4	19.2	19.5	20.8	17.2	44.4	17.2	21.7
Vanadium Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Vanadium Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Zinc Dissolved (µg/L)	19	18	10	17	17	18	24	23	15	14	11	13	24	10	17
Zinc Total (µg/L)	29	30	22	27	21	23	40	29	22	18	19	20	40	18	25

3.8 2021-2025 TRENDS: GRAPHS AND SUMMARY

A review of monitoring data from 2021 through 2025 for the AIWWTP indicates stable and consistent performance across flow, effluent quality, metals, general chemistry, and field parameters.

Annacis Island WWTP complied with authorized flow limits during the assessment period, except on November 15, 2021, and January 12, 2022. Following the May 2025 OC amendment increasing the limit from 1,050 MLD to 1,632 MLD, all recorded flows remained within the authorized limit. Daily flows ranged from 410 MLD to 1,062 MLD (Figure 3.4).

Effluent TSS concentrations from 2021–2025 consistently complied with the 45 mg/L limit, ranging from 5 mg/L to 40 mg/L, with no exceedances (Figure 3.5). Seasonal increases occurred during high flow and wet weather periods, extending into spring. Alum addition was implemented in 2023, 2024, and 2025 to improve settling and flocculation, supporting compliance with the federal regulatory objective of 25 mg/L for TSS.

Effluent CBOD₅ concentrations from 2021–2025 were consistently low, generally below 20 mg/L. Concentrations ranged from <4 mg/L to 36 mg/L (Figure 3.6), indicating effective secondary treatment. Minor seasonal increases occurred during higher flow/wet weather, with no sustained upward trend or deterioration in performance.

Metals monitoring results indicate stable conditions with no significant long-term trends (Figures 3.7 to 3.9). Elevated total aluminum concentrations observed in 2023 through 2025 are attributable to alum addition during foaming events and do not represent changes in influent quality or baseline effluent characteristics.

All other metals, including iron, boron, and trace elements (barium, copper, manganese, zinc, arsenic, cadmium, cobalt, lead, mercury, molybdenum, nickel, selenium and silver), remained low and within expected ranges, with no consistent upward trends identified.

General chemistry and field parameters further support the conclusion of stable plant performance. Hardness exhibited minor seasonal variability consistent with source water conditions, and phenol concentrations remained low with infrequent detections (Figure 3.10). Field measured parameters, including pH and temperature, were maintained within expected operational ranges, with temperature following normal seasonal patterns (Figure 3.11). 2021-2025 trends for parameters associated with effluent disinfection efficiency (bacteriological parameters and total residual chlorine) are shown in Figures 3.12 and 3.13, respectively.

Overall, the five-year trend analysis demonstrates that the Annacis Island WWTP achieved consistent compliance and stable treatment performance. Observed variability is attributable to seasonal conditions and operational responses, with no indication of sustained adverse trends in effluent quality or process performance.

FIGURE 3.4 Annacis Wastewater Treatment Plant Daily Discharge Flow – 2021-2025

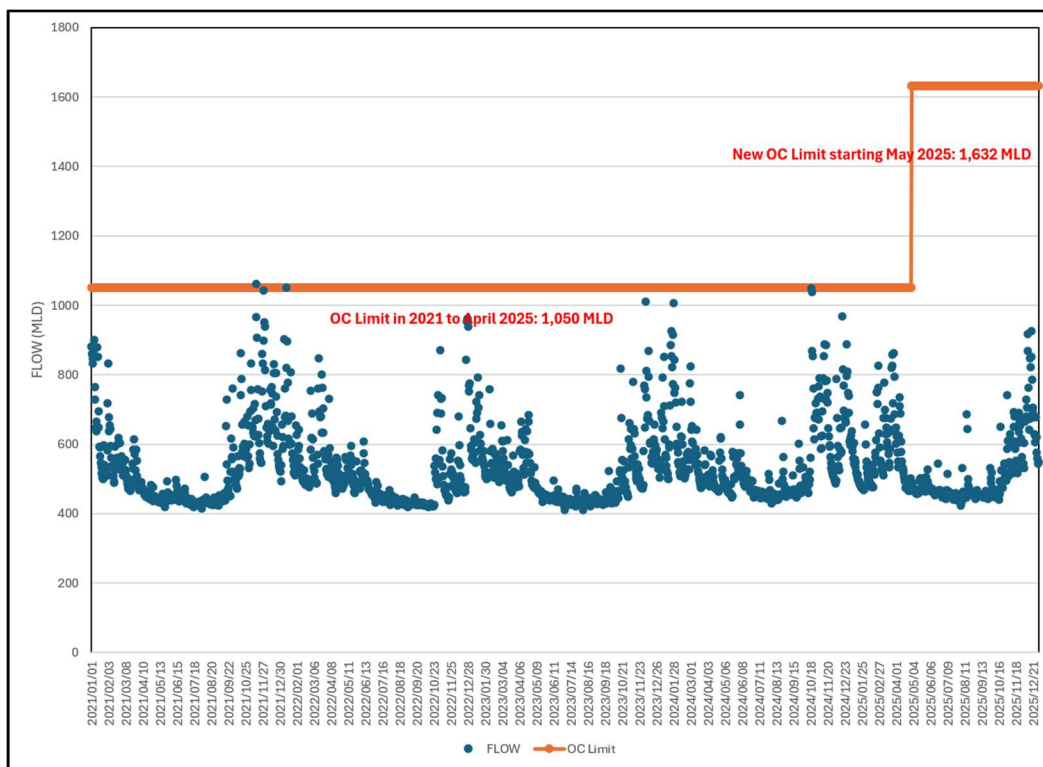


FIGURE 3.5 Annacis Wastewater Treatment Plant Daily TSS Results – 2021-2025

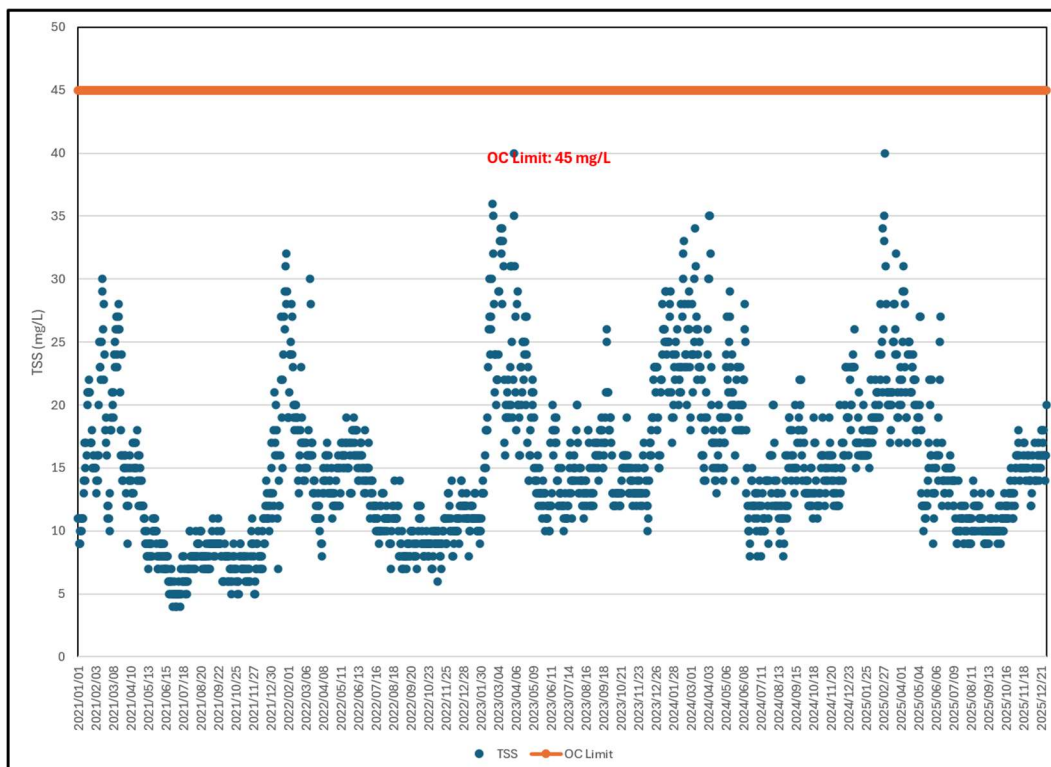


FIGURE 3.6 ANNACIS WASTEWATER TREATMENT PLANT CBOD₅ RESULTS – 2021-2025

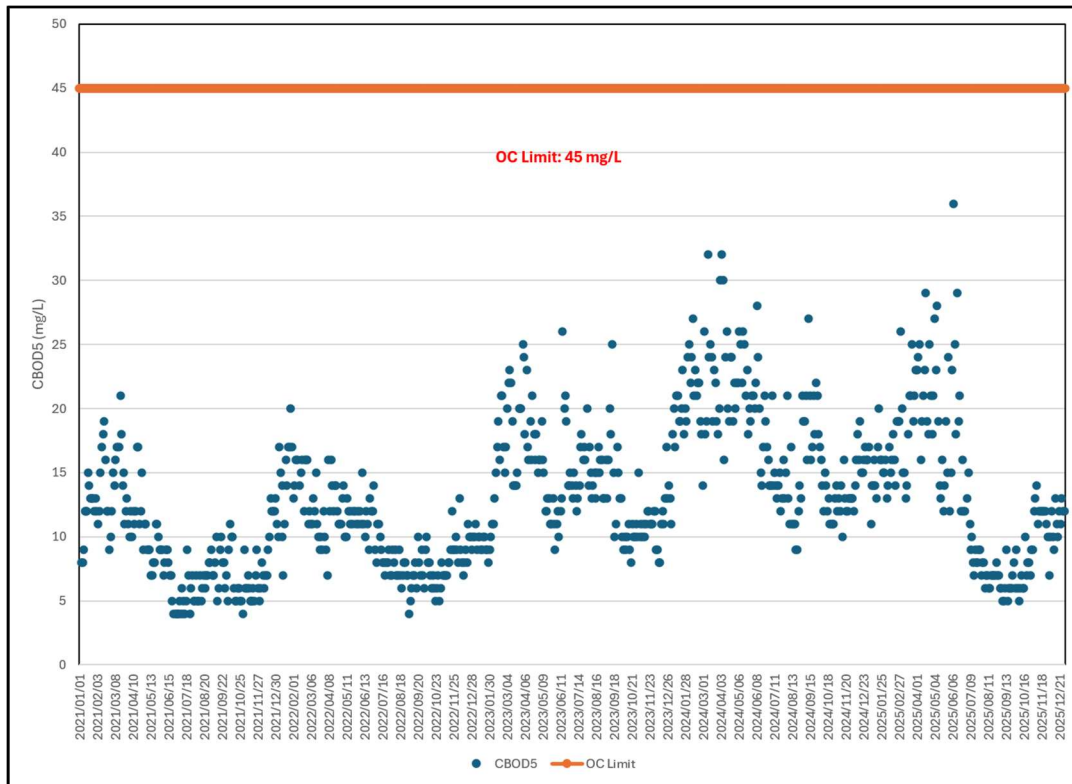
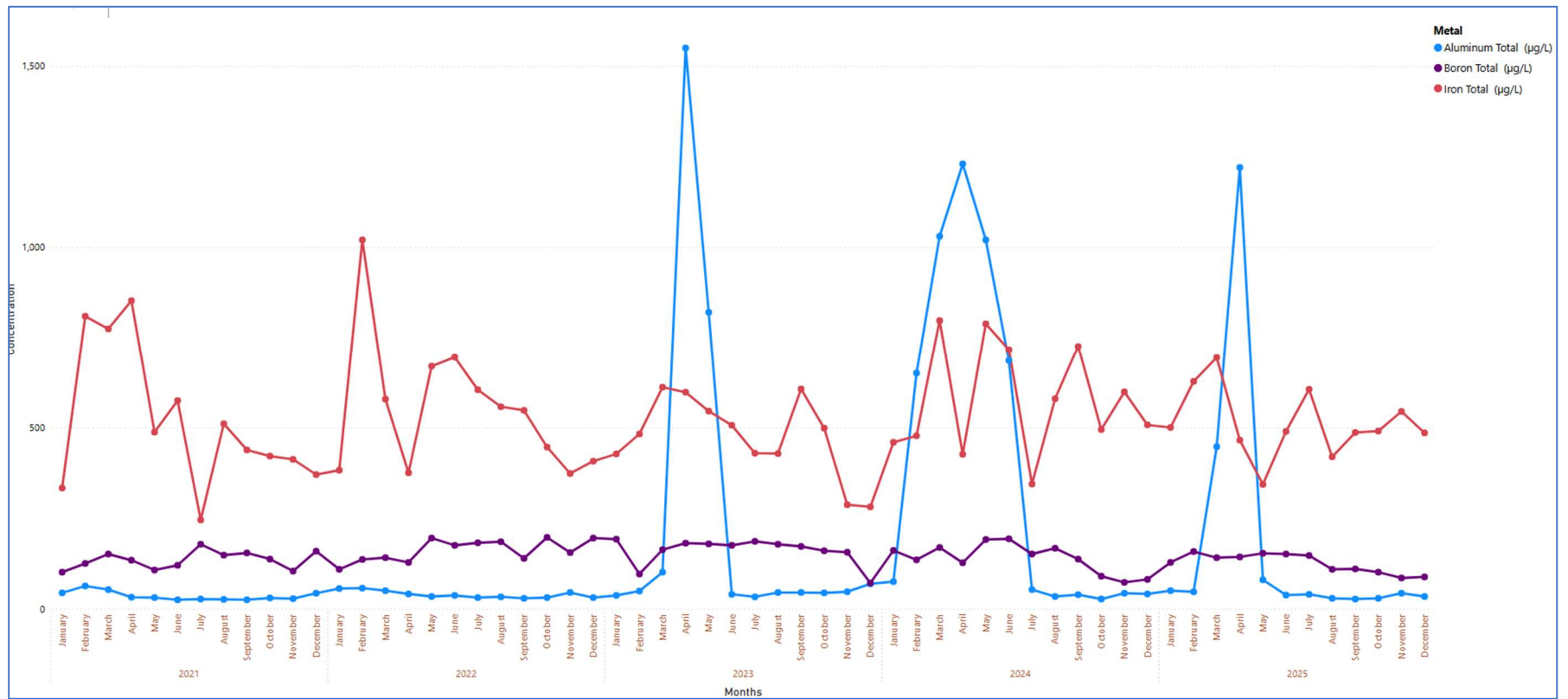


FIGURE 3.7 2021-2025 ANNACIS ISLAND WWTP: TOTAL ALUMINUM, TOTAL BORON, TOTAL IRON



NOTE: TOTAL ALUMINUM SPIKES IN 2023, 2024 AND 2025 ARE FROM THE ADDITION OF ALUM AS A RESULT IN FOAMING EVENTS.

FIGURE 3.8 2021-2025 ANNACIS ISLAND WWTP: TOTAL BARIUM, TOTAL COPPER, TOTAL MANGANESE, TOTAL ZINC

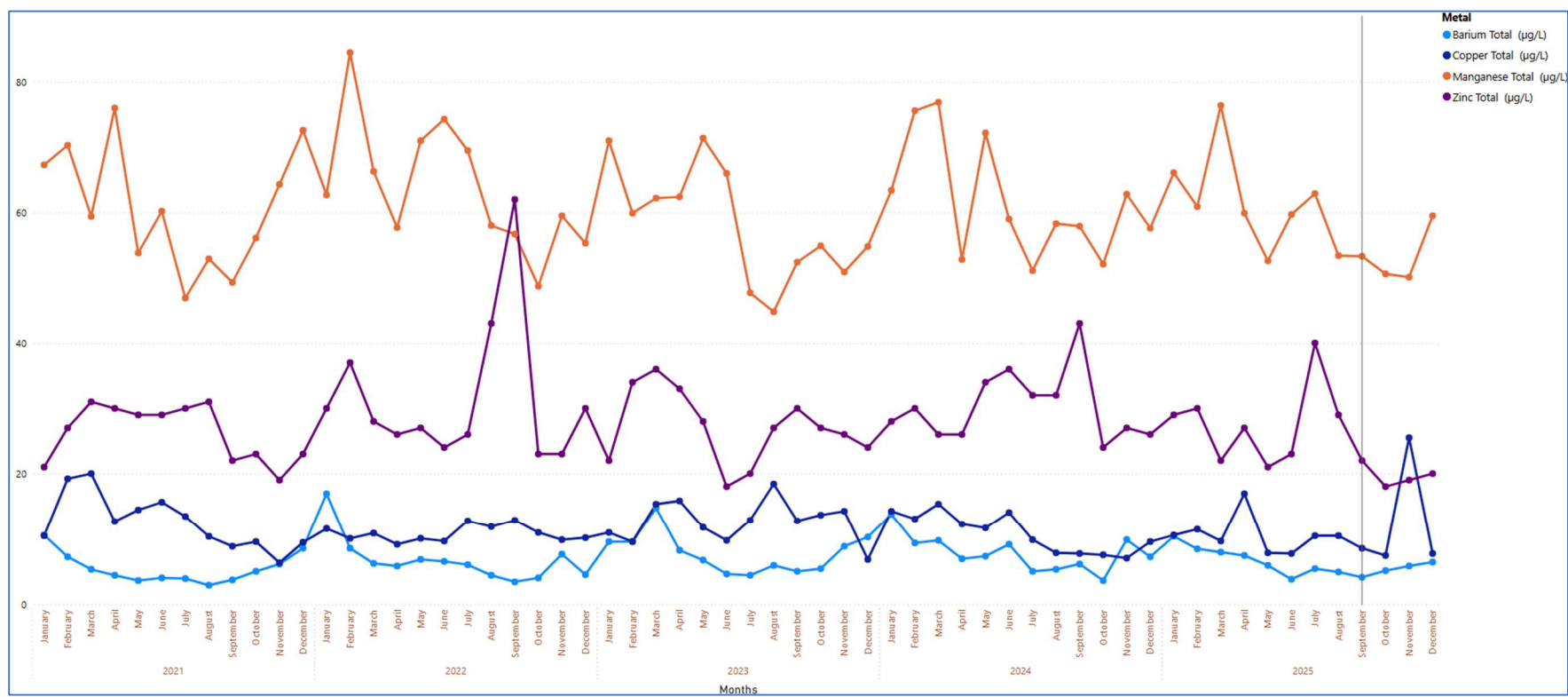


FIGURE 3.9 2021-2025 ANNACIS ISLAND WWTP: TOTAL ARSENIC, TOTAL CADMIUM, TOTAL COBALT, TOTAL LEAD, TOTAL MERCURY, TOTAL MOLYBDENUM, TOTAL NICKEL, TOTAL SELENIUM, TOTAL SILVER

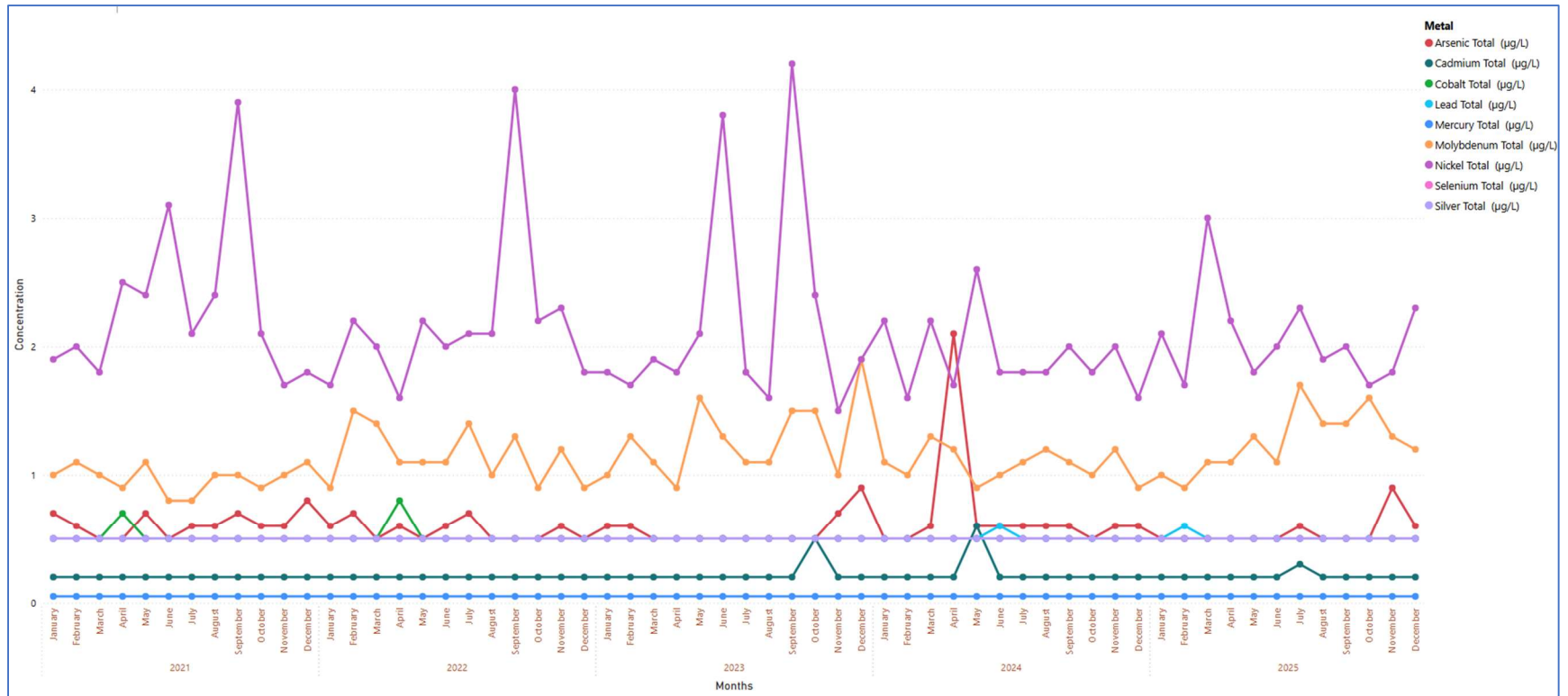


FIGURE 3.10 2021-2025 ANNACIS ISLAND WWTP: HARDNESS, PHENOL

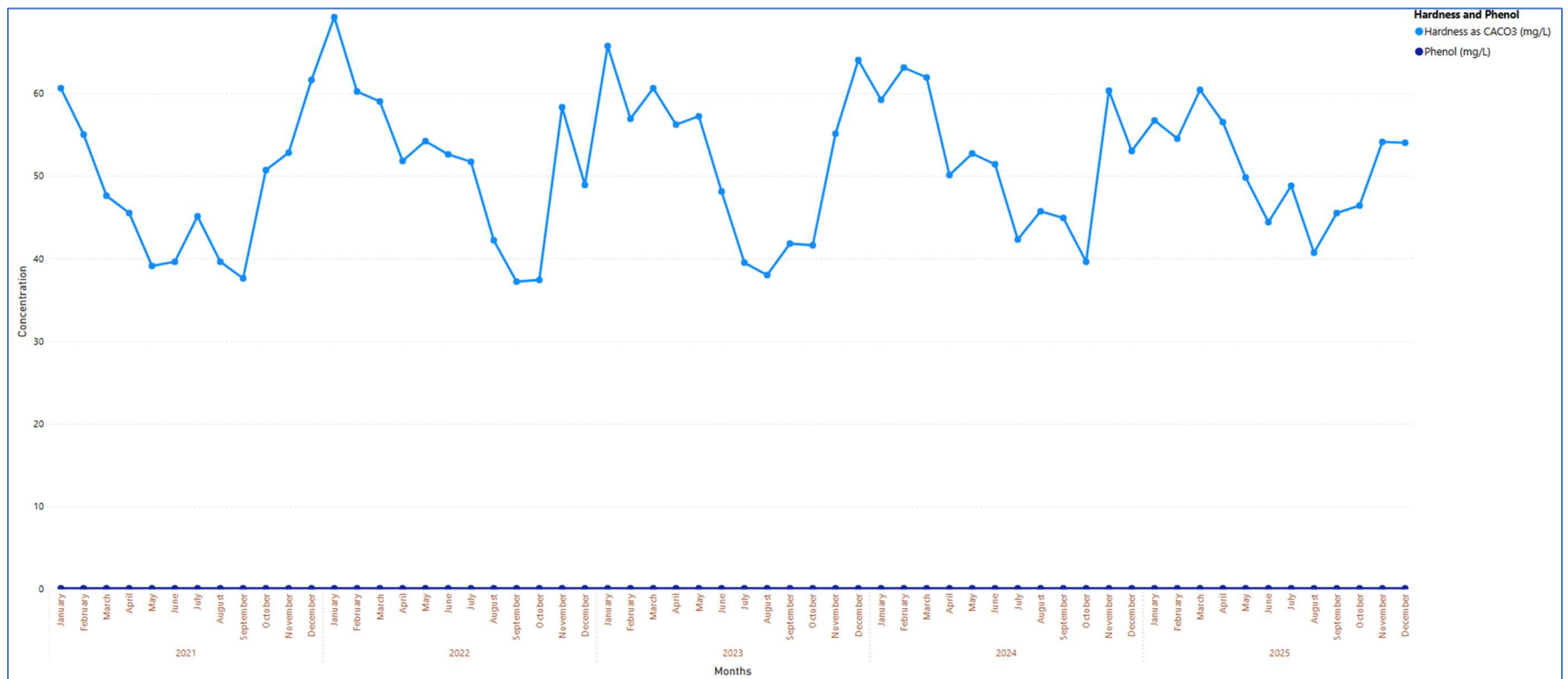


FIGURE 3.11 2021-2025 ANNACIS ISLAND WWTP: PH AND TEMPERATURE

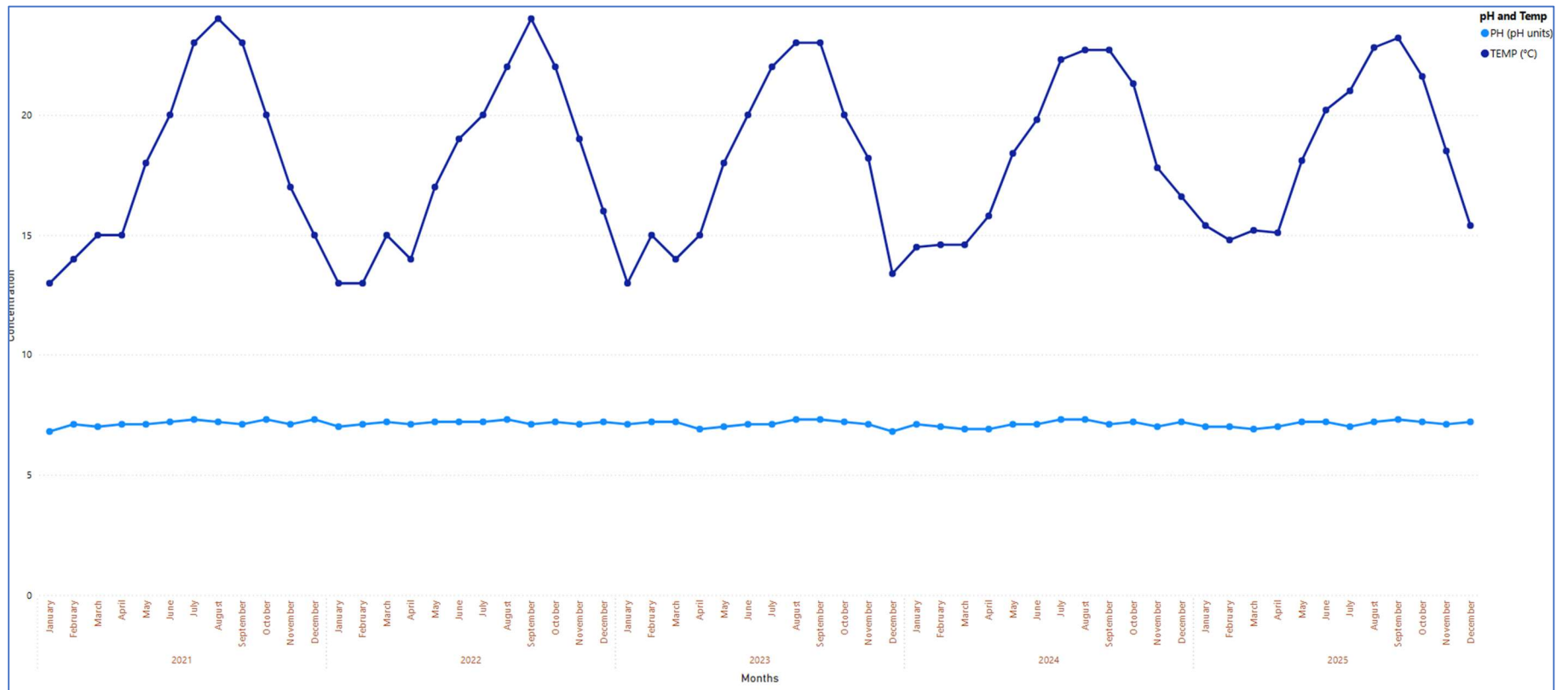


FIGURE 3.12 2021-2025 AIWWTP E.COLI, ENTEROCOCCI, FECAL COLIFORM

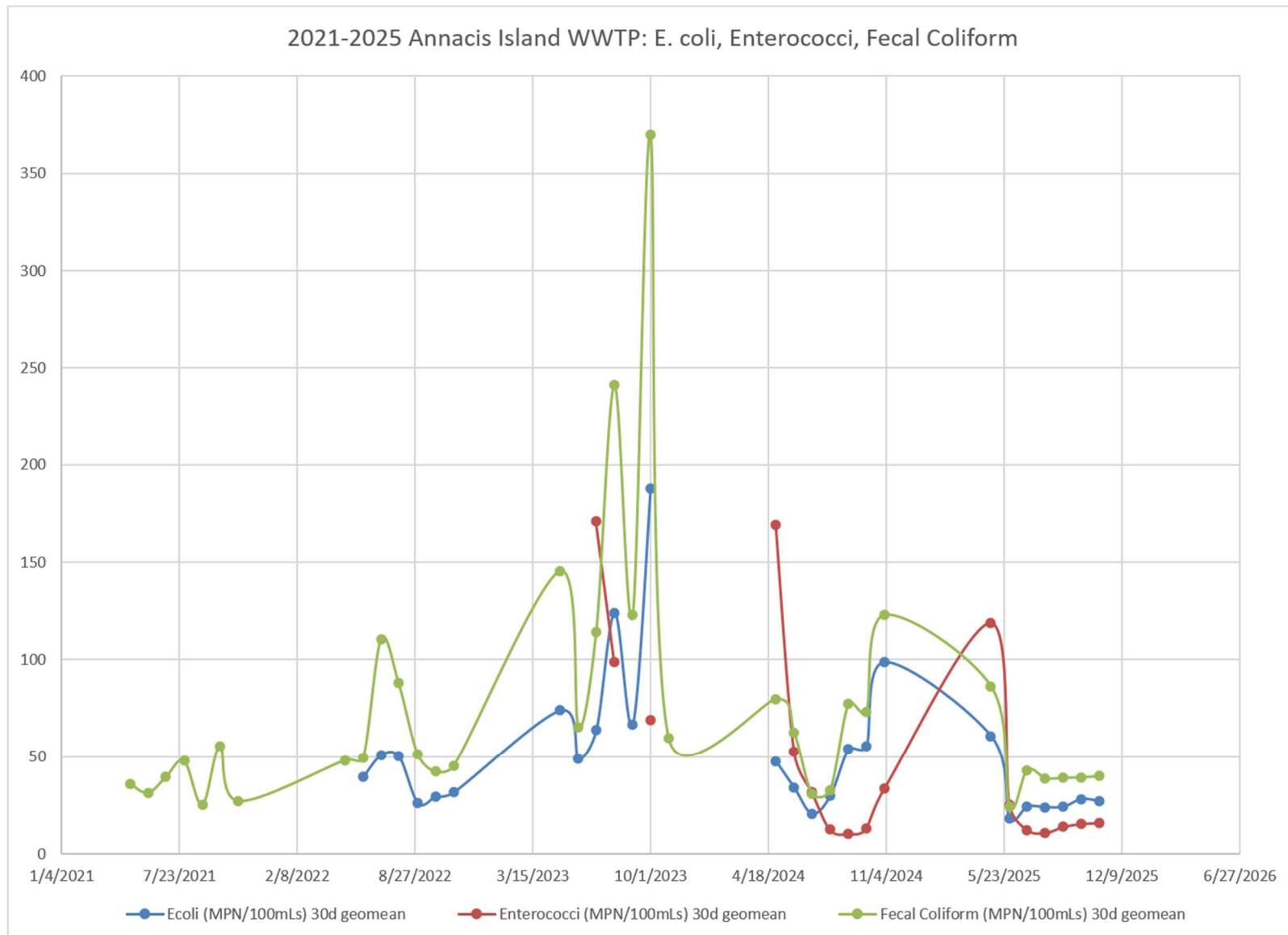
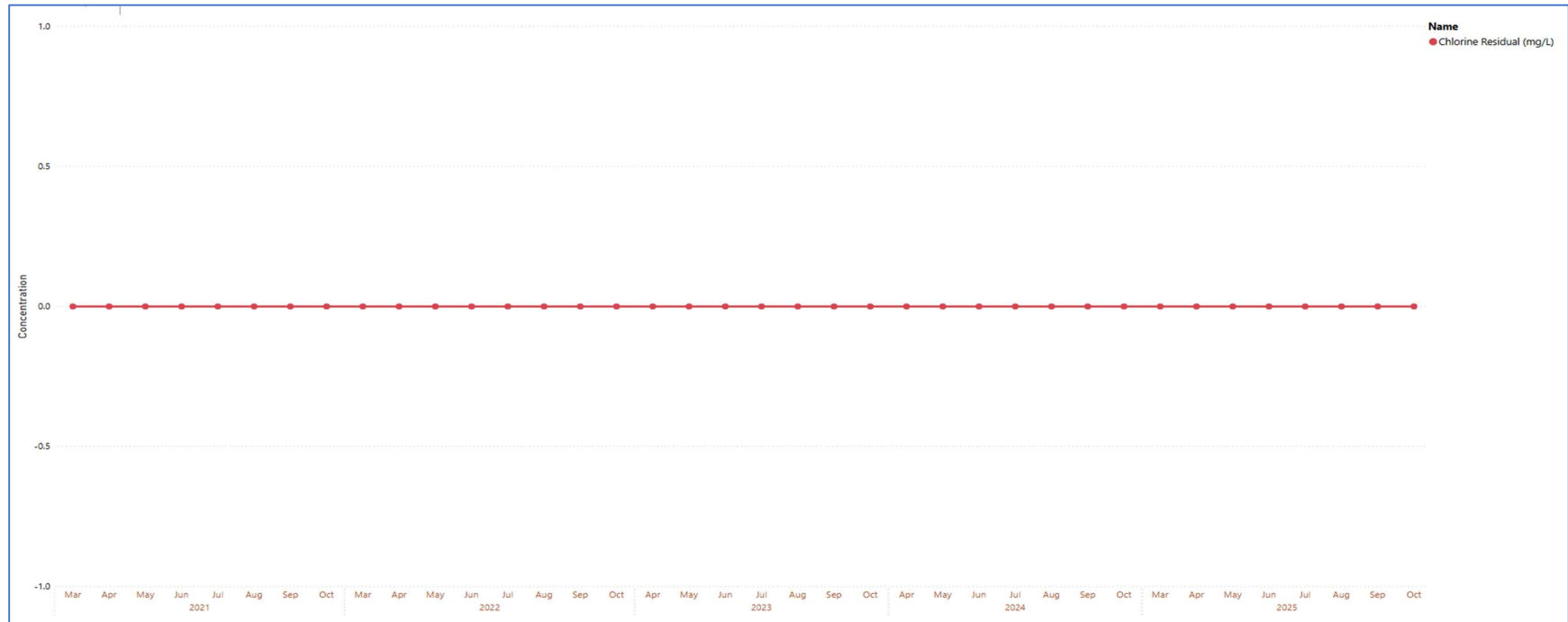


FIGURE 3.13 2021-2025 ANNACIS ISLAND WWTP: TOTAL RESIDUAL CHLORINE



4.0 IONA ISLAND WWTP



4.0 IONA ISLAND WWTP

4.1 EFFLUENT QUALITY

The quality of effluent from the Iona Island WWTP in 2025, along with the discharge monitoring parameters listed in OC 23, is summarized in Table 4.1.

TABLE 4.1 IONA ISLAND WWTP – 2025 PERFORMANCE SUMMARY

Operational Certificate 23, March 03, 2022

Parameters	Testing Frequency	OC Limits	Max. Value for the Year	Number of Times Criteria Not Met											
				Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total Discharge Flow (MLD)	Daily	1,530	1,367	0	0	0	0	0	0	0	0	0	0	0	0
BOD ₅ (mg/L)*	3/week	130	124	0	0	0	0	0	0	0	0	0	0	0	0
Suspended Solids (mg/L)	5/week	100	82	0	0	0	0	0	0	0	0	0	0	0	0
Plant Bypass	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0

* BOD₅ reported 1/week when COD are reported 5/week

No instances of non-compliance were identified in 2025.

4.2 PERFORMANCE REVIEW

The Ministry of Environment and Parks (ENV), under the provisions of the Environmental Management Act and in accordance with Metro Vancouver's Integrated Liquid Waste Resource Management Plan (LWRMP), issued OC 23 on March 3, 2022. The OC specifies the authorized levels shown in Table 4.2.

TABLE 4.2 IONA ISLAND WWTP – OPERATIONAL CERTIFICATE AUTHORIZED LEVELS

Daily authorized rate of discharge	1,530,000 cubic meters/day, maximum
5-day biochemical oxygen demand (BOD ₅)	130 mg/L, maximum
TSS (non-filterable residue)	100 mg/L, maximum

A comprehensive review of 2025 routine monitoring results and performance summary is provided in Table 4.9 at the end of Section 4. A comprehensive summary of influent and effluent concentrations is provided in Tables 4.10 and 4.11, respectively at the end of Section 4.

PLANT BYPASSES

There were no plant bypass events in 2025.

EVENTS REPORTED TO REGULATORY AUTHORITIES

In 2025, there was no Category 1 event. There were three Category 2 events and three Category 3 events that were reported to the regulators in 2025. Tables 4.3 and 4.4, respectively, provide summaries of events during the reporting period that were reported, together with probable causes, mitigation measures, and potential environmental effects.

TABLE 4.3 IONA ISLAND WWTP – CATEGORY 2 EVENTS REPORTED TO THE ENV

Plant	Date	Description	Quantity Discharged	Duration	Probable Cause	Mitigation Measures	Potential Environmental Effects
Iona Island	Apr 12	Discharge of accumulated surface water located within the Iona Island WWTP (IIWWTP) Biosolids Land-Drying Area (BLDA).	Approx. 16,990 L	0.126 days	Pumped volume greater than maintenance hole drainage capacity.	Contractor notified by GVS&DD staff, returned to BLDA site to turn off the pumps.	No impacts to the receiving environment were observed or expected.
Iona Island	May 12	The leak was identified on the IIWWTP outfall pipe, at the concrete wall prior to the pipe being submerged, directly southwest of the public bathroom and approximately 4.66 km (linear length) southwest of the IIWWTP entrance.	Approx. 4,752 L	0.183 days	Crack on land side effluent conduit.	Maintenance crew arrived on-site and repaired leak.	No impacts to the receiving environment were observed or expected.
Iona Island	May 16	Leak of untreated wastewater at the park washroom area within the bounds of IIWWTP.	Approx. 1,029 L	0.034 days	Compromised underground pipeline.	Completed temporary repair of the leaking pipeline. Established a bypass system diverting untreated wastewater to a maintenance hole.	No impacts to the receiving environment were observed or expected.

TABLE 4.4 IONA ISLAND WWTP – CATEGORY 3 EVENTS REPORTED TO THE ENV

Plant	Date	Description	Quantity Discharged	Duration	Probable Cause	Mitigation Measures	Potential Environmental Effects
Iona Island	Mar 11	Controlled venting of digester gas to atmosphere at the IWWTP via the engineered pressure relief valves (PRVs) located on top of the Digester 1.	Approx. 53 kg	0.0012 days	A loss of power to the controller led to communication loss and subsequently caused the Medium Sludge Gas (MSG) blower to trip.	Medium Sludge Gas (MSG) blower was restarted. Venting of digester gas stopped.	No impacts to the receiving environment were observed or expected.
Iona Island	May 3	Controlled venting of digester gas to atmosphere at the IWWTP via the engineered PRVs located on top of Digesters 3 and 4.	Approx. 1,514 kg	0.030 days	Excess gas production caused the Medium Sludge Gas (MSG) blower to exceed capacity and subsequently trip.	Completed corrective actions to address the tripped Medium Sludge Gas (MSG) blower.	No impacts to the receiving environment were observed or expected.
Iona Island	Jul 9	Controlled venting of digester gas to the atmosphere at the IWWTP occurred via the engineered PRVs located on top of Digesters 1, 2, 3, and 4.	Approx. 3,218 kg	0.037 days	Excess gas production caused the Medium Sludge Gas (MSG) blower to exceed its flow capacity.	Troubleshoot and opened the bypass valve around the control valve to increase digester gas flow to the waste gas burner.	No impacts to the receiving environment were observed or expected.

4.3 EFFLUENT MONITORING

4.3.1. FLOWS AND LOADINGS

A total of 187,747 ML of wastewater was treated at the Iona Island WWTP in 2025. The average daily flow of 514 MLD was 13% lower than in 2024. The highest daily average flow of 1,367 MLD occurred on Dec 11 and the highest peak instantaneous flow of 1,624 MLD occurred on Feb 25 (Figure 4.1).

FIGURE 4.1 IONA ISLAND WWTP – 2025 EFFLUENT TOTAL DAILY FLOWS

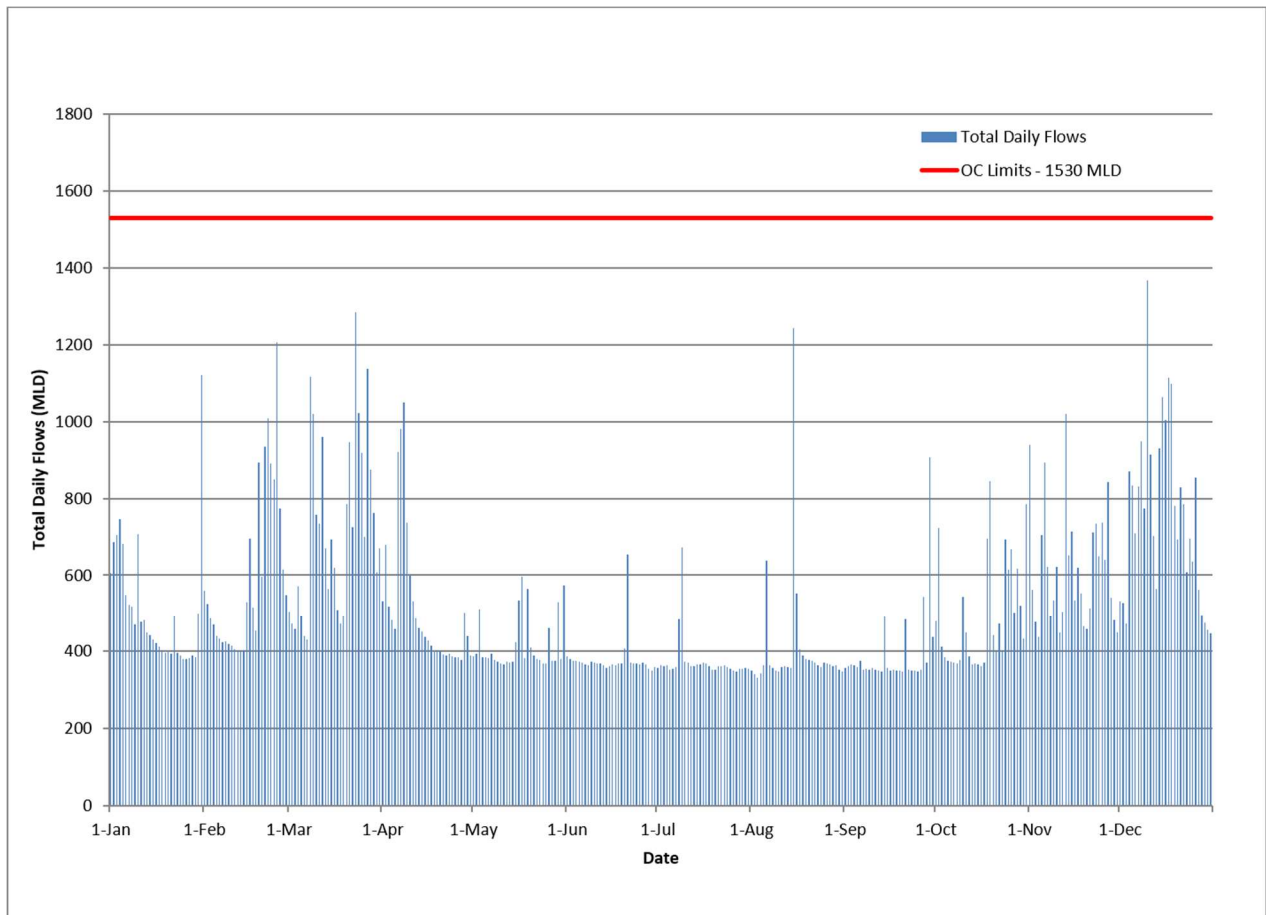


TABLE 4.5 IONA ISLAND WWTP – 2015-2024 ANNUAL AVERAGE DATA FOR FLOW, SS AND BOD₅

IONA WWTP									
YEAR	FLOWS MLD	Suspended Solids mg/L		Suspended Solids Tonnes/year		BOD ₅ mg/L		BOD ₅ Tonnes/year	
		INF	EFF	INF	EFF	INF	EFF	INF	EFF
2016	538	144	53	25212	10368	153	79	25598	14316
2017	562	148	58	26748	11762	150	83	26858	15919
2018	570	153	52	27303	10482	168	85	28936	15530
2019	493	166	54	27716	9635	179	87	29677	14901
2020	544	150	52	26009	10151	147	75	24768	13402
2021	532	143	47	24183	9077	139	70	22769	12212
2022	514	162	52	26662	9652	160	77	25973	13205
2023	499	167	54	27670	9643	165	78	26865	13160
2024	549	160	52	27822	10166	160	75	27219	13398
2025	514	170	56	28705	10358	170	81	27280	13511

Influent SS loadings of 28,705 tonnes/day were 3.2% higher than in 2024 and influent BOD₅ loadings of 27,280 tonnes/day were 0.2% higher than in 2024. Influent SS concentrations were between 48 and 310 mg/L with an average of 170 mg/L. Influent BOD₅ concentrations were between 39 and 292 mg/L with an average of 170 mg/L (Table 4.5).

4.3.2. TOTAL SUSPENDED SOLIDS (TSS)

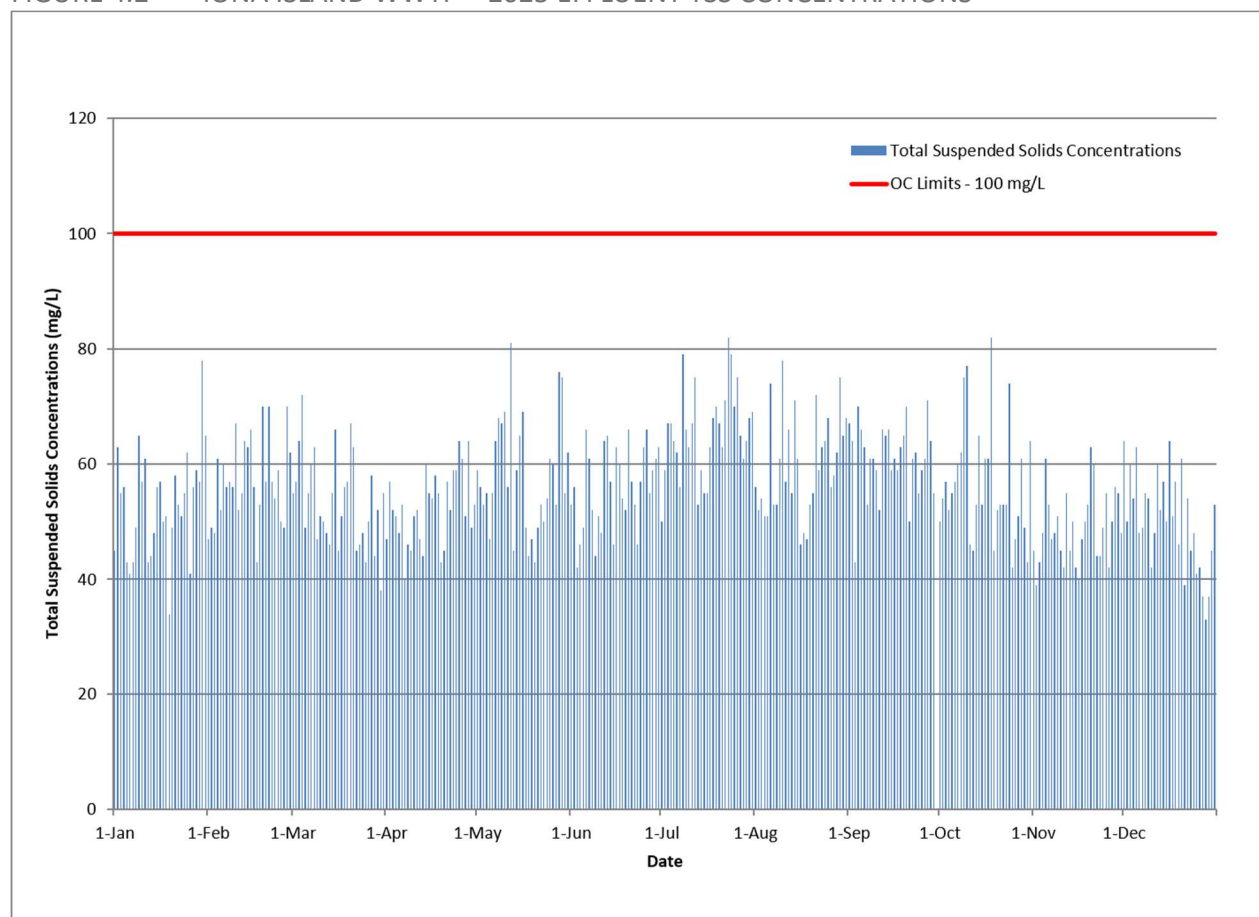
Effluent SS concentrations were between 33 to 82 mg/L with an average of 56 mg/L (Figure 4.2).

Lower and more stable TSS observed during winter reflects improved settling under colder conditions, along with dilution from the combined sanitary and stormwater system.

In contrast, higher and more variable TSS in summer is associated with reduced dilution, increased solids loading, and less favorable settling, with alum and polymer effectively mitigating these impacts. The average reduction of SS was 64%

Overall, plant performance remains stable with predictable seasonal variability, and the slight increase in annual effluent suspended solids loading to 10,358 tonnes (1.9% above 2024) remains within expected ranges for a primary treatment plant.

FIGURE 4.2 IONA ISLAND WWTP – 2025 EFFLUENT TSS CONCENTRATIONS



4.3.3. BIOCHEMICAL OXYGEN DEMAND (BOD)

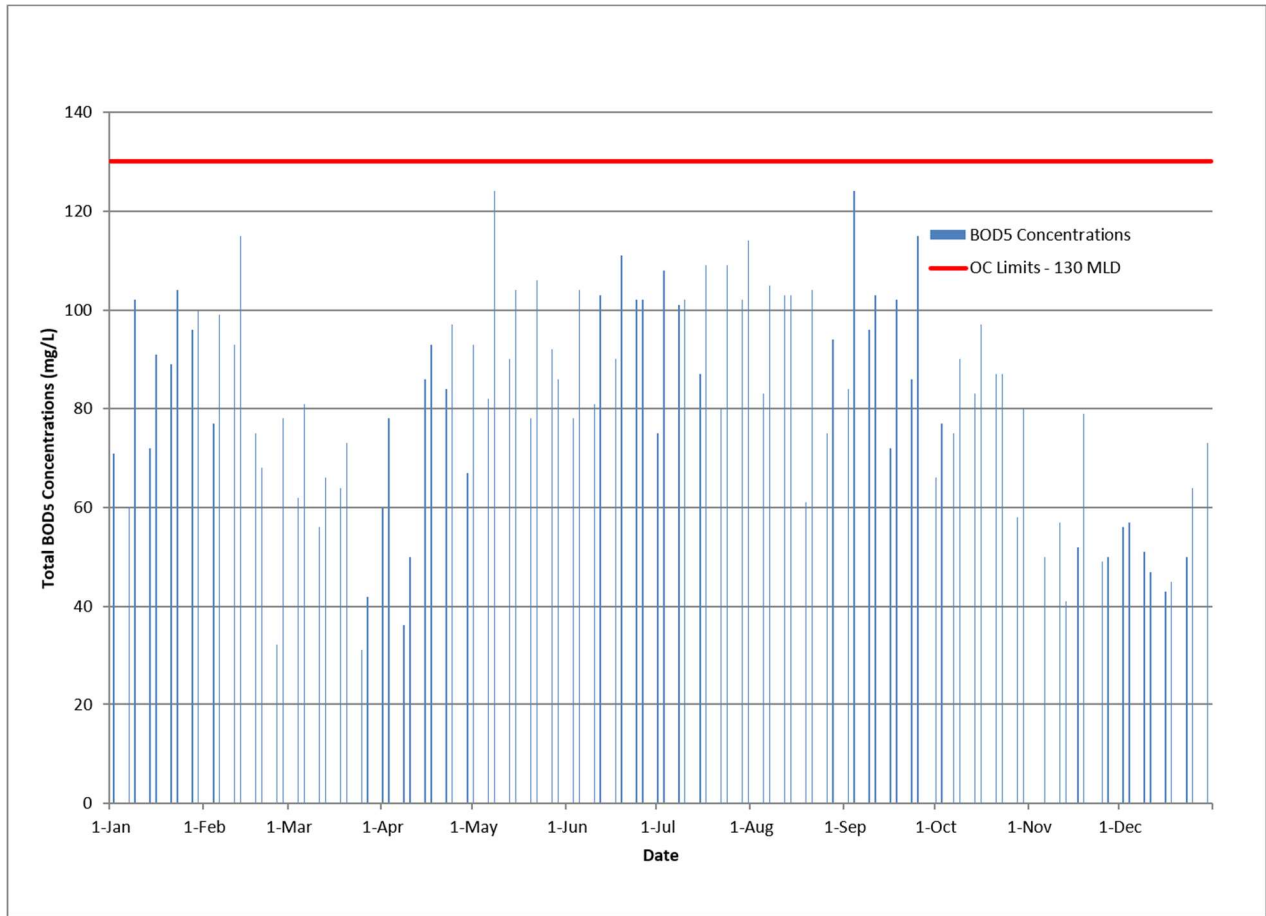
Effluent BOD₅ concentrations were between 31 to 124 mg/L with an average of 81 mg/L (Figure 4.3).

Lower and more stable BOD concentrations observed during winter months are influenced by dilution from the combined sanitary and stormwater system.

Higher and more variable BOD during summer is associated with decreased dilution and increased organic loading, with alum and polymer supporting solids removal and contributing to BOD reduction. The average reduction of BOD₅ was 51%.

Overall, the plant demonstrates stable BOD performance with expected seasonal variability, and the slight increase in annual effluent loading to 13,511 tonnes (0.8% above 2024) remains within the expected range for a primary treatment plant.

FIGURE 4.3 IONA ISLAND WWTP – 2025 EFFLUENT TOTAL BOD₅ CONCENTRATIONS



4.4 WASTEWATER SYSTEMS EFFLUENT REGULATIONS (WSER)

A transitional authorization under WSER was issued to the GVS&DD for the Iona Island WWTP on September 5, 2014. The GVS&DD is authorized as of January 1, 2015, until December 31, 2030, to deposit effluent from the Iona Island WWTP that has characteristics shown in Table 4.6.

TABLE 4.6 IONA ISLAND WWTP – WSER TRANSITIONAL AUTHORIZATION LEVELS

Monthly average CBOD	105 mg/L
Monthly average concentration of SS	71 mg/L

Quarterly monitoring reports were submitted through the ECCC's Effluent Regulatory Reporting Information System (ERRIS). The effluent monitoring data reported number of days that effluent was deposited, total volume of effluent deposited in cubic meters, average concentration of CBOD in mg/L, and average concentration of SS in mg/L.

In 2025, all transitional authorization limits for CBOD and SS were met at the Iona Island WWTP, as summarized in Table 4.7.

TABLE 4.7 IONA ISLAND WWTP – 2025 WSER MONITORING REPORT

	Number of days that effluent was deposited	Total volume of effluent deposited (m ³)	Average CBOD (mg/L)	Average concentration of suspended solids (mg/L)
January	31	15,711,780	79	53
February	28	16,716,010	71	57
March	31	22,419,693	54	53
April	30	15,405,758	68	52
May	31	12,925,329	87	58
June	30	11,358,986	90	56
July	31	11,586,984	92	66
August	31	12,577,677	82	60
September	30	11,748,167	88	61
October	31	15,171,612	72	57
November	30	18,553,331	55	49
December	31	23,571,914	51	50

4.5 CHEMICALLY ENHANCED PRIMARY TREATMENT

Chemically Enhanced Primary Treatment (CEPT) was operated at the Iona Island WWTP. On average, the CEPT system used 69 mg/L of alum and 0.37 mg/L of polymer with run times between one and eleven hours. In 2025, there were a total of 129 daily CEPT treatment runs which occurred mostly from June to October.

4.6 SLUDGE TREATMENT/DIGESTER OPERATIONS

Iona Island WWTP accepted 2,208 m³ of TWSS from Northwest Langley WWTP and this was processed in the Iona Island WWTP digesters.

Biosolids dewatering achieved an average cakes solids content of 26.9% and an average centrate suspended solids concentration of 414 mg/L with an average recovery of 97.9%.

4.7 TRUCKED LIQUID WASTE RECORDS

TABLE 4.8 2025 SUMMARY OF TRUCKED WASTES RECORDS FOR THE IONA ISLAND WWTP

	Annual Total
Total domestic discharge volume, m ³	28,504
Total number of domestic generator loads	7,084
Total non-domestic discharge volume, m ³	5,941
Total number of non-domestic generator loads	2,840
Total discharge volume, m ³	34,442
Total number of carrier loads	9,363

TABLE 4.9 IONA ISLAND WWTP – 2025 ROUTINE MONITORING RESULTS AND PERFORMANCE SUMMARY

MONTH	Max Instant Flow Rate m3/sec	Total Daily Effluent Flow (MLD)			Composite - Max Un-ionized NH3 (mg/L)	Average DO (mg/L)	Grab NH3 Average (mg/L)	Average Grab pH	96 hr LC50 (%v/v)
		Max.	Min.	Ave.					
JAN	18.1	1120	379	507	0.25	8.0	16.3	7.2	>100
FEB	18.8	1206	401	597	0.23	7.0	13.3	7.3	>100
MAR	17.6	1285	432	723	0.24	6.5	10.6	7.2	>100
APR	17.4	1049	377	514	0.28	10.0	13.5	7.2	>100
MAY	16.4	597	367	417	0.33	4.5	22.1	7.1	78.4
JUN	16.6	653	351	379	0.29	4.2	20.4	7.2	94.9
JUL	17.2	673	347	374	0.36	4.2	22.0	7.1	82.2
AUG	17.9	1244	332	406	0.28	8.9	23.0	7.0	>100
SEP	17.2	907	347	392	0.30	3.5	28.2	7.2	64.8
OCT	18.4	844	362	489	0.25	8.5	17.2	7.1	>100
NOV	18.2	1019	438	618	0.23	5.9	12.5	7.2	>100
DEC	18.7	1367	446	760	0.18	5.5	10.9	7.2	>100
# Samples		-	-	365	156	12	61	61	12
Maximum-Yr.	18.8	1367	-	-	0.36	10.0	29.8	7.5	>100
Minimum-Yr.		-	332	-	0.03	3.5	3.2	6.7	64.8
Average-Yr.		-	-	514	0.17	6.4	17.3	7.1	>93.4

MONTH	Average Conductivity (umhos/cm)		Average COD (mg/L)		Average Soluble BOD ₅ (mg/L)		CBOD (mg/L) EFFLUENT		
	INF	EFF	INF	EFF	INF	EFF	Max.	Min.	Ave.
JAN	1212	1229	364	188	43	38	93	56	79
FEB	1295	1298	306	182	40	33	103	27	71
MAR	1019	1021	247	154	27	23	76	35	54
APR	1155	1152	368	189	41	34	89	36	68
MAY	1397	1393	432	222	56	57	107	71	87
JUN	1314	1315	458	232	59	56	107	70	90
JUL	1455	1444	508	238	68	53	104	69	92
AUG	1559	1507	452	218	62	48	97	53	82
SEP	1564	1571	474	228	70	53	102	68	88
OCT	1396	1396	372	187	49	37	97	49	72
NOV	883	887	292	156	25	21	76	37	55
DEC	576	574	234	143	19	17	68	39	51

# Samples	243	247	359	364	95	96	-	-	156
Maximum-Yr.	2480	2430	674	275	97	74	107	-	-
Minimum-Yr.	233	242	97	86	12	9	-	27	-
Average-Yr.	1232	1233	375	195	47	40	-	-	74

NOTES:

- (1) Dissolved Oxygen, 96-hour LC50, pH and NH3 are determined on grab samples; all other parameters are determined on 24-hour. flow proportioned composite samples.
- (2) Average values containing one or more results below the detection limit are preceded with a "<" symbol.

TABLE 4.9 CONTINUED: IONA ISLAND WWTP – 2025 ROUTINE MONITORING RESULTS AND PERFORMANCE SUMMARY

MONTH	Total Suspended Solids (mg/L)						Susp. Solids % Average Reduction	Suspended Solids Average Loadings (Tonnes/day)	
	INFLUENT			EFFLUENT				INF	EFF
	Max.	Min.	Ave.	Max.	Min.	Ave.			
JAN	244	79	164	78	34	53	65	78.6	27.2
FEB	210	72	136	70	43	57	54	74.6	34.3
MAR	194	48	114	72	38	53	49	75.7	38.3
APR	262	63	165	64	40	52	66	77.9	26.5
MAY	254	135	194	81	43	58	70	79.8	24.2
JUN	263	136	210	66	42	56	73	78.8	21.1
JUL	310	155	228	82	50	66	71	84.6	24.5
AUG	266	84	208	78	46	60	70	79.1	24.3
SEP	288	105	212	71	43	61	70	80.1	23.7
OCT	262	64	173	82	42	57	65	80.1	27.8
NOV	203	64	134	63	39	49	62	79.2	30.2
DEC	209	50	106	64	33	50	48	75.0	38.5
# Samples	-	-	359	-	-	364	359	359	364
Maximum-Yr.	310	-	-	82	-	-	80	122	75.9
Minimum-Yr.	-	48	-	-	33	-	3	42.0	13.5
Average-Yr.	-	-	170	-	-	56	64	78.6	28.4
Total to Date - Suspended Solids Loadings (Tonnes):								28705	10358

MONTH	Biochemical Oxygen Demand (mg/L)						BOD ₅ % Average Reduction	BOD ₅ Average Loadings (Tonnes/day)	
	INFLUENT			EFFLUENT				INF	EFF
	Max.	Min.	Ave.	Max.	Min.	Ave.			
JAN	241	116	189	104	60	87	53	86.1	40.2
FEB	217	39	150	115	32	80	44	73.7	40.5
MAR	177	54	110	81	31	59	44	68.2	40.0
APR	239	51	151	97	36	72	51	72.3	35.1
MAY	236	161	192	124	78	95	50	74.7	38.2
JUN	255	178	208	111	78	96	54	77.1	35.6
JUL	267	182	217	114	75	99	54	80.9	36.9
AUG	248	162	196	105	61	91	54	71.6	33.3
SEP	292	167	220	124	72	98	56	78.3	34.6
OCT	214	112	174	97	58	80	54	71.7	33.1
NOV	180	66	116	79	41	54	49	72.1	37.0
DEC	118	58	84	73	43	54	40	65.8	39.8
# Samples	-	-	95	-	-	103	94	95	103
Maximum-Yr.	292	-	-	124	-	-	65	113.0	57.3
Minimum-Yr.	-	39	-	-	31	-	18	47.0	23.2
Average-Yr.	-	-	170	-	-	81	51	74.7	37.0
Total to Date - Biochemical Oxygen Demand Loadings (Tonnes):								27280	13511

NOTES:

- (1) Percent reduction is calculated only for days when both influent and effluent samples are tested.
- (2) Half the detection limit is used for less than values when calculating the monthly CBOD and TSS averages reported to WSER.
- (3) Average values containing one or more results below the detection limits are preceded with a "<" symbol.

TABLE 4.10 IONA ISLAND WWTP – 2025 COMPREHENSIVE PROGRAM INFLUENT CONCENTRATIONS SUMMARY

Parameters	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Max	Min.	Average
Aluminum Dissolved (µg/L)	18	13	17	20	17	24	19	13	17	21	16	19	24	13	18
Aluminum Total (µg/L)	305	611	589	620	1330	1180	1340	772	705	846	977	855	1340	305	844
Arsenic Total (µg/L)	0.8	0.7	0.8	1.4	0.9	1.0	1.1	1.1	0.9	2.0	1.4	1.1	2.0	0.7	1.1
Barium Dissolved (µg/L)	12.3	11.4	12.3	12.6	10.7	10.0	10.2	9.2	8.2	9.4	10.3	11.2	12.6	8.2	10.7
Barium Total (µg/L)	19.1	21.2	20.4	19.8	25.3	22.9	27.9	20.1	19.2	18.0	22.7	22.5	27.9	18.0	21.6
Boron Dissolved (µg/L)	75	100	111	32	85	99	88	107	107	65	63	61	111	32	83
Boron Total (µg/L)	77	105	117	36	89	101	98	111	119	64	77	62	119	36	88
Cadmium Dissolved (µg/L)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium Total (µg/L)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium Total (µg/L)	23500	26300	27300	18800	24000	22700	24600	23400	25400	18900	21800	22700	27300	18800	23300
Chromium Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	0.7	<0.5	<0.5
Chromium Total (µg/L)	1.1	1.8	1.2	1.4	1.9	1.9	1.9	1.5	1.3	2.3	2.0	1.8	2.3	1.1	1.7
Cobalt Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt Total (µg/L)	<0.5	<0.5	<0.5	<0.5	0.7	0.6	0.9	0.6	<0.5	0.6	0.6	0.7	0.9	<0.5	<0.6
Copper Dissolved (µg/L)	3.4	3.7	3.3	4.7	2.8	3.0	3.5	1.3	1.9	4.5	3.3	4.5	4.7	1.3	3.3
Copper Total (µg/L)	26.6	32.7	28.6	17.4	32.3	37.6	42.4	37.3	36.5	28.2	41.9	33.1	42.4	17.4	32.9
Cyanide Total (mg/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.02	<0.01	<0.01
Fluoride (mg/L)	0.05	0.11	0.05	0.08	0.05	<0.05	<0.05	0.11	0.12	0.05	0.07	0.06	0.12	<0.05	<0.07
Hardness as CaCO3 (mg/L)	116	153	174	71.6	136	137	137	143	167	96.6	123	103	174	71.6	130
Iron Dissolved (µg/L)	138	131	148	88	153	171	177	118	117	101	105	147	177	88	133
Iron Total (µg/L)	826	1130	1040	784	1600	1570	1640	1330	1190	1190	1340	1430	1640	784	1260
Lead Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Lead Total (µg/L)	1.5	1.9	2.0	1.9	3.0	3.1	4.1	2.7	2.6	3.3	4.3	3.6	4.3	1.5	2.8
Magnesium Total (µg/L)	13800	21300	25700	5990	18500	19500	18400	20700	25200	12000	16700	11200	25700	5990	17400
Manganese Dissolved (µg/L)	33.2	35.6	38.7	20.2	37.2	35.7	33.9	30.0	27.5	29.2	29.5	34.3	38.7	20.2	32.1
Manganese Total (µg/L)	45.4	53.9	52.8	32.3	64.0	59.0	59.7	52.1	48.3	48.5	56.5	56.4	64.0	32.3	52.4
Mercury Total (µg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.14	<0.05	0.05	<0.05	0.14	<0.05	<0.06
Methylene Blue Active Substance (mg/L)	0.2	0.6	0.6	0.2	0.9	0.7	1.1	1.7	0.9	0.2	0.3	0.7	1.7	0.2	0.7
Molybdenum Dissolved (µg/L)	1.8	1.3	1.5	1.2	1.8	1.8	1.5	1.5	1.3	1.5	1.1	1.3	1.8	1.1	1.5
Molybdenum Total (µg/L)	2.1	1.8	1.9	1.5	2.5	2.4	2.3	2.2	2.1	1.9	1.7	1.8	2.5	1.5	2.0
Nickel Dissolved (µg/L)	1.2	1.2	1.2	0.8	1.1	1.3	1.5	1.7	1.3	1.4	0.9	1.3	1.7	0.8	1.2
Nickel Total (µg/L)	2.0	2.3	2.1	1.5	2.4	2.6	3.0	2.9	2.5	2.5	2.3	3.2	3.2	1.5	2.4
Nitrogen - Ammonia as N (mg/L)	14.1	21.4	18.9	7.2	27.9	25.7	25.9	29.7	31.2	12.8	14.9	21.9	31.2	7.2	21.0
Nitrogen - Nitrate as N (mg/L)	0.51	<0.01	0.08	0.63	<0.01	<0.01	<0.01	<0.01	<0.01	0.38	0.47	0.19	0.63	<0.01	<0.19
Nitrogen - Nitrite as N (mg/L)	0.06	<0.01	0.18	0.04	<0.01	<0.01	<0.01	<0.01	0.18	0.03	0.03	0.06	0.18	<0.01	<0.05
Nitrogen - Total Kjeldahl (mg/L)	27	35	33	13	44	43	44	45	48	22	26	36	48	13	35
Oil & Grease (mg/L)	7	21	10	<3	21	9	17	155	31	<3	5	9	155	<3	<24
Phenol (mg/L)	<0.01	0.01	0.01	<0.01	0.01	0.01	0.03	0.020	0.122	0.003	0.005	0.006	0.12	<0.01	<0.02
Phosphorus Dissolved (µg/L)	1170	1710	1670	580	2350	2190	2140	2350	2220	1010	1040	1720	2350	580	1680
Phosphorus Total (µg/L)	3200	4220	3570	1340	4850	5060	4780	5270	5240	2550	3240	3780	5270	1340	3930
Selenium Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.0	0.7	<0.5	<0.5	<0.5	1.0	<0.5	<0.6
Silver Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sulphate (mg/L)	35.4	54.5	63.7	18.1	46.3	48.9	46.3	51.6	61.2	32.2	40.3	33.0	63.7	18.1	44.3
Vanadium Dissolved (µg/L)	0.5	<0.5	<0.5	0.7	<0.5	<0.5	0.6	<0.5	<0.5	0.7	0.5	0.6	0.7	<0.5	<0.6
Vanadium Total (µg/L)	1.1	1.4	1.3	1.6	2.3	2.1	2.2	1.7	1.4	2.2	2.3	2.1	2.3	1.1	1.8
Zinc Dissolved (µg/L)	24	31	37	21	24	23	25	19	18	33	28	29	37	18	26
Zinc Total (µg/L)	73	90	74	44	86	104	102	112	103	91	93	88	112	44	88

TABLE 4.11 IONA ISLAND WWTP – 2025 COMPREHENSIVE PROGRAM EFFLUENT CONCENTRATIONS SUMMARY

Parameters	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Max	Min.	Average
Aluminum Dissolved (µg/L)	19	16	26	20	72	41	33	28	42	20	16	21	72	16	30
Aluminum Total (µg/L)	119	237	449	403	1000	1070	864	929	1030	410	317	326	1070	119	596
Arsenic Total (µg/L)	0.7	0.6	0.7	1.4	0.7	0.7	0.8	0.9	0.8	1.7	1.2	0.9	1.7	0.6	0.9
Barium Dissolved (µg/L)	12.6	11.1	11.6	12.6	5.2	7.8	7.2	7.0	6.7	9.1	11.1	11.4	12.6	5.2	9.5
Barium Total (µg/L)	15.9	15.5	16.6	17.8	16.4	13.8	14.8	12.6	12.0	13.3	16.1	16.5	17.8	12.0	15.1
Boron Dissolved (µg/L)	75	102	112	35	59	100	91	104	107	65	71	61	112	35	82
Boron Total (µg/L)	76	106	111	36	95	103	95	110	119	64	75	61	119	36	88
Cadmium Dissolved (µg/L)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium Total (µg/L)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium Total (µg/L)	24000	24900	26600	19100	22800	20800	22800	21200	23800	17600	20600	20900	26600	17600	22100
Chromium Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	1.9	<0.5	<0.5	<0.5	<0.5	1.0	<0.5	<0.5	1.9	<0.5	<0.7
Chromium Total (µg/L)	0.5	0.8	0.8	1.1	0.7	0.7	0.7	0.6	0.7	2.5	0.9	0.8	2.5	0.5	0.9
Cobalt Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Copper Dissolved (µg/L)	4.1	4.2	5.2	4.6	12.7	2.8	3.0	1.3	1.9	4.7	3.1	6.7	12.7	1.3	4.5
Copper Total (µg/L)	16.7	22.3	22.9	14.7	19.9	20.9	23.8	21.6	19.6	20.7	19.3	23.1	23.8	14.7	20.5
Cyanide Total (mg/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.02	<0.01	<0.01
Fluoride (mg/L)	0.06	0.12	0.05	0.08	0.05	<0.05	<0.05	0.12	0.11	0.05	0.07	0.06	0.12	<0.05	<0.07
Hardness as CaCO ₃ (mg/L)	119	150	172	73.4	130	132	130	134	160	94.8	118	97.2	172	73.4	126
Iron Dissolved (µg/L)	121	129	126	88	191	106	110	102	104	96	95	147	191	88	118
Iron Total (µg/L)	419	588	621	565	604	563	546	527	487	609	569	640	640	419	562
Lead Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.5	<0.5	<0.6
Lead Total (µg/L)	0.7	0.8	1.0	1.2	1.1	1.0	1.3	1.0	0.9	1.6	1.2	1.1	1.6	0.7	1.1
Magnesium Total (µg/L)	14300	21200	25700	6280	17700	19500	17600	19800	24500	12300	16100	10900	25700	6280	17200
Manganese Dissolved (µg/L)	32.4	35.1	39.6	20.7	27.4	34.9	28.7	31.0	28.3	28.4	31.5	33.7	39.6	20.7	31.0
Manganese Total (µg/L)	39.1	44.5	47.0	29.5	46.9	44.3	41.8	40.3	38.1	37.5	41.9	43.9	47.0	29.5	41.2
Mercury Total (µg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Methylene Blue Active Substance (mg/L)	0.5	1.1	0.9	0.2	1.3	1.2	1.6	1.7	1.9	0.3	0.5	1.2	1.9	0.2	1.0
Molybdenum Dissolved (µg/L)	1.9	1.3	1.5	1.2	1.4	1.6	1.5	1.4	1.2	1.6	1.1	1.3	1.9	1.1	1.4
Molybdenum Total (µg/L)	2.0	1.6	1.8	1.5	2.3	2.0	2.0	1.8	1.8	1.9	1.5	1.5	2.3	1.5	1.8
Nickel Dissolved (µg/L)	1.2	1.2	1.1	1.0	3.1	1.2	1.8	2.5	1.6	2.0	1.0	1.2	3.1	1.0	1.6
Nickel Total (µg/L)	1.5	1.7	1.6	1.5	1.7	1.6	2.5	3.2	2.3	2.6	1.5	1.8	3.2	1.5	2.0
Nitrogen - Ammonia as N (mg/L)	15.7	21.9	17.8	8.0	28.0	25.5	25.9	30.0	29.9	13.4	13.7	20.8	30.0	8.0	20.9
Nitrogen - Nitrate as N (mg/L)	0.44	<0.01	0.47	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	0.38	0.45	0.07	0.47	<0.01	<0.16
Nitrogen - Nitrite as N (mg/L)	0.05	<0.01	0.08	<0.01	<0.01	<0.01	<0.01	<0.01	0.12	0.03	0.04	0.03	0.12	<0.01	<0.03
Nitrogen - Total Kjeldahl (mg/L)	21	31	24	13	39	37	39	41	40	21	21	29	41	13	30
Oil & Grease (mg/L)	6	17	10	<3	16	15	5	29	24	<3	7	12	29	<3	<12
Phenol (mg/L)	<0.01	0.01	0.01	<0.01	0.02	0.02	0.01	0.036	0.039	0.002	0.003	0.008	0.04	<0.01	<0.01
Phosphorus Dissolved (µg/L)	1390	1710	1310	677	3350	1400	1450	1540	1220	963	996	1680	3350	677	1470
Phosphorus Total (µg/L)	2330	3330	2740	1320	3290	3130	3050	3540	3180	2040	2280	2920	3540	1320	2760
Selenium Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	0.6	<0.5	<0.5
Silver Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sulphate (mg/L)	36.5	54.5	65.4	17.5	53.8	59.0	54.2	62.9	72.6	32.9	40.2	33.1	72.6	17.5	48.6
Vanadium Dissolved (µg/L)	0.6	<0.5	<0.5	0.7	<0.5	<0.5	0.5	<0.5	<0.5	0.7	0.7	0.7	0.7	<0.5	<0.6
Vanadium Total (µg/L)	0.7	0.8	0.9	1.3	0.7	0.7	0.7	0.7	0.6	1.3	1.1	1.2	1.3	0.6	0.9
Zinc Dissolved (µg/L)	25	31	36	22	82	28	24	25	18	30	31	31	82	18	32
Zinc Total (µg/L)	45	60	55	39	72	59	53	65	52	56	57	55	72	39	56

4.8 IONA ISLAND WWTP — TREND SUMMARY (2021–2025)

Graphical analysis of results is presented in Figure 4.4.

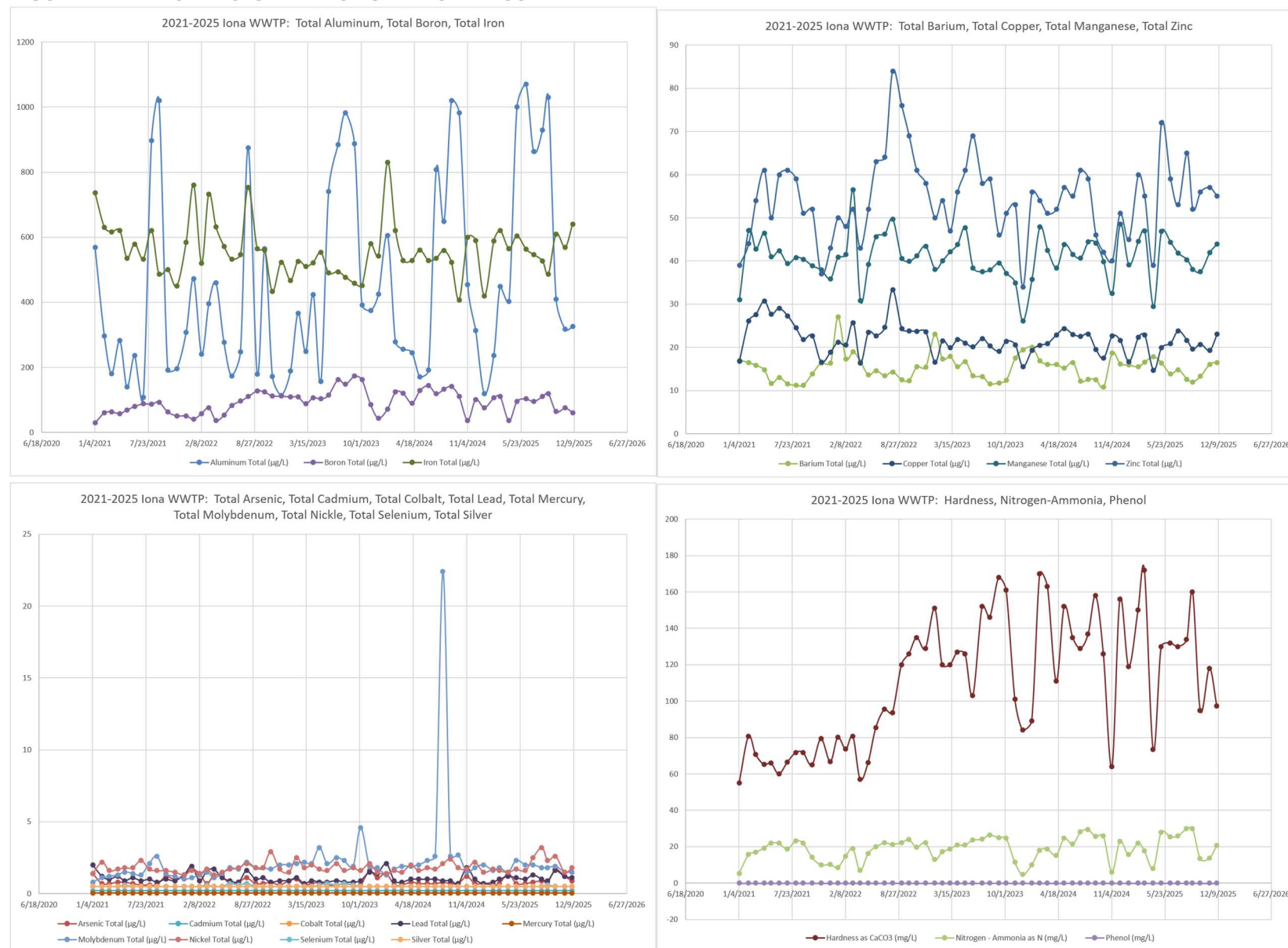
Notable trends

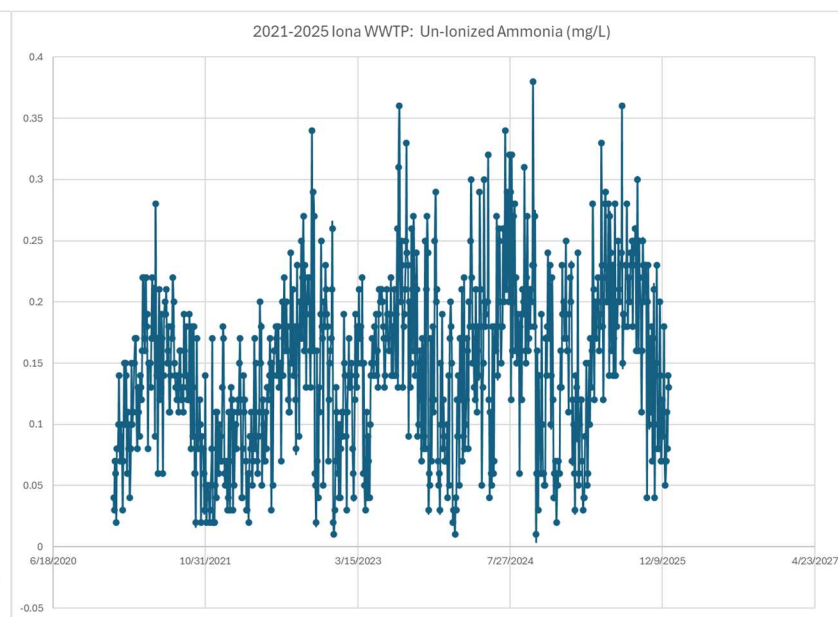
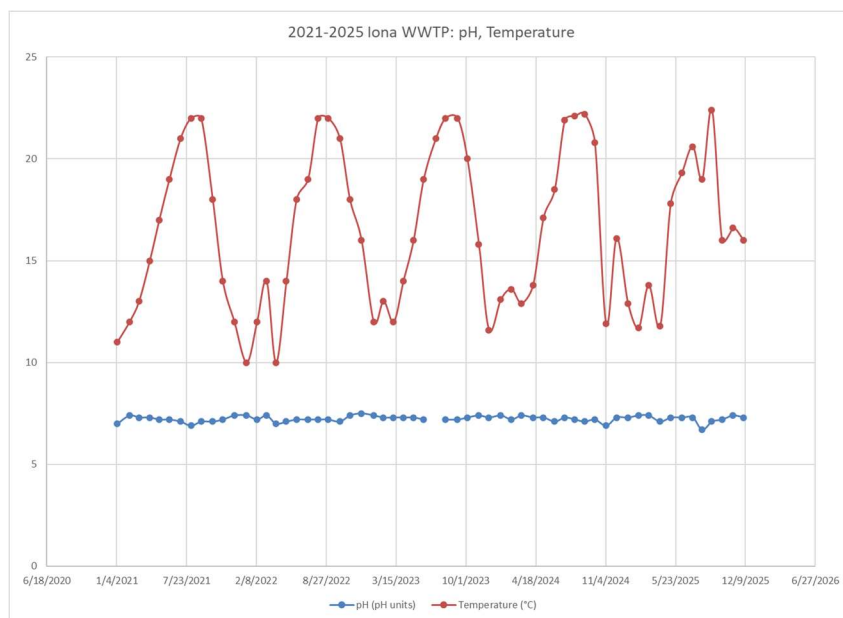
- Overall stability across most parameters, with variability that is seasonal or within routine operational ranges.
- Trace metals remain low with routine short-term variability; observed excursions present as isolated points rather than sustained multi-month increases.
- General chemistry indicators (e.g., hardness) show modest seasonal oscillation consistent with source/ambient conditions rather than process upsets.
- Field parameters: pH is maintained in a tight operational band year-to-year; temperature follows expected seasonal cycles without out-of-season anomalies.

Interpretation and reporting context

The dataset indicates a stable operating environment with no clear multi-year upward trends across the reviewed panels. Observed fluctuations are consistent with seasonality and routine plant variability.

FIGURE 4.4 2021-2025 TRENDS: GRAPHS AND SUMMARY





5.0 LIONS GATE WWTP



5.0 LIONS GATE WWTP

5.1 EFFLUENT QUALITY

The quality of effluent from the Lions Gate WWTP in 2025, along with the discharge monitoring parameters listed in Operational Certificate (OC) 30, is summarized in Table 5.1.

TABLE 5.1 LIONS GATE WWTP – 2025 PERFORMANCE SUMMARY
Operational Certificate 30, March 03, 2022

Parameters	Testing Frequency	OC Limits	Max. Value for the Year	Number of Times Criteria Not Met											
				Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total Discharge Flow (MLD)	Daily	318	184	0	0	0	0	0	0	0	0	0	0	0	0
BOD ₅ (mg/L)*	3/week	130	109	0	0	0	0	0	0	0	0	0	0	0	0
Suspended Solids (mg/L)	5/week	130	74	0	0	0	0	0	0	0	0	0	0	0	0
Chlorine Residual (mg/L)**	Daily	<0.1	<0.02	0	0	0	0	0	0	0	0	0	0	0	0
Disinfection	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0

* BOD₅ reported 1/week when COD are reported 5/week

** Effluent disinfected between May 1 and September 30

No instances of non-compliance were identified in 2025.

5.2 PERFORMANCE REVIEW

The Ministry of Environment and Parks (ENV), under the provisions of the Environmental Management Act and in accordance with Metro Vancouver's Integrated Liquid Waste and Resource Management Plan (ILWRMP), issued OC 30 on March 3, 2022. The OC specifies the authorized discharge levels shown in Table 5.2.

TABLE 5.2 LIONS GATE WWTP – OPERATIONAL CERTIFICATE AUTHORIZED LEVELS

Daily authorized rate of discharge	318,000 m ³ /day, maximum
5-day BOD ₅	130 mg/L, maximum
TSS (non-filterable residue)	130 mg/L, maximum

A comprehensive review of 2025 routine monitoring results and performance summary is provided in Table 5.8 at the end of Section 5. A comprehensive summary of influent and effluent concentrations is provided in Tables 5.9 and 5.10, respectively at the end of Section 5.

PLANT BYPASSES

There were no plant bypass events in 2025.

DISINFECTION

The effluent from the Lions Gate WWTP was disinfected between May 1 and September 30 using SHS and dechlorinated using SBS prior to discharge into Burrard Inlet. The average SHS dosage as chlorine was 9.9 mg/L and the average SBS dosage as SO₂ was 3.1 mg/L.

The Burrard Inlet fecal coliform Water Quality Objective (WQO) of 200 MPN/100 mL at the edge of the IDZ was predicted to have been met from May through September as shown in Table 5.3.

TABLE 5.3 LIONS GATE WWTP – PREDICTED 30-DAY FECAL COLIFORM GEOMETRIC MEAN AT THE IDZ

Month	May	June	July	August	September
Max 30-day Geometric Mean (MPN/100 mL)*	790	139	108	28	129
Dilution Factor**	122	122	122	122	122
IDZ Result (MPN/100 mL)***	6.5	1.1	0.9	0.2	1.1
WQO (Met or Not Met)	Met	Met	Met	Met	Met

* Geometric Mean (MPN/100mL) over a 30-day period (effluent).

** Lowest seasonal average dilution factor: 25-h average dilution factor based on peak plant flow conditions.

*** IDZ Result (MPN/100mL) – determined by calculation of geometric mean of fecal coliforms levels in the receiving water due to discharges of final effluent, for 30-day periods at the edge of the IDZ.

EVENTS REPORTED TO REGULATORY AUTHORITIES

There were no Category 1 or 2 events reported to the regulators in 2025. There was one Category 3 event reported in 2025. Table 5.4 provides a summary of events identified during the reporting period that were reported, together with associated probable causes, mitigation measures, and potential environmental effects.

TABLE 5.4 LIONS GATE WWTP – CATEGORY 3 EVENTS REPORTED TO THE ENV

Plant	Date	Description	Quantity Discharged	Duration	Probable Cause	Mitigation Measures	Potential Environmental Effects
Lions Gate	Apr 5	Venting of digester gas to the atmosphere at the Lions Gate Wastewater Treatment Plant (LGWWTP). This venting occurred via Digester 4 low pressure sludge gas condensate trap valve located on top of Sludge Control Building 3.	Approx. 1,481 kg	0.948 days	The condensate drain valve was inadvertently left open, resulting in the release of digester gas into the atmosphere.	Condensate drain valve was closed and digester gas release stopped.	No impacts to the receiving environment were observed or expected.

5.3 EFFLUENT MONITORING

5.3.1. FLOWS AND LOADINGS

A total of 29,416 ML of wastewater was treated at the Lions Gate WWTP in 2025. The 2025 average daily flow of 81 MLD was 1.2% lower than the 2024 average daily flow. The highest daily flow of 184 MLD was recorded on December 10th and a peak instantaneous flow of 259 MLD was recorded on December 16th (Figure 5.1).

FIGURE 5.1 LIONS GATE WWTP – 2025 EFFLUENT TOTAL DAILY FLOWS

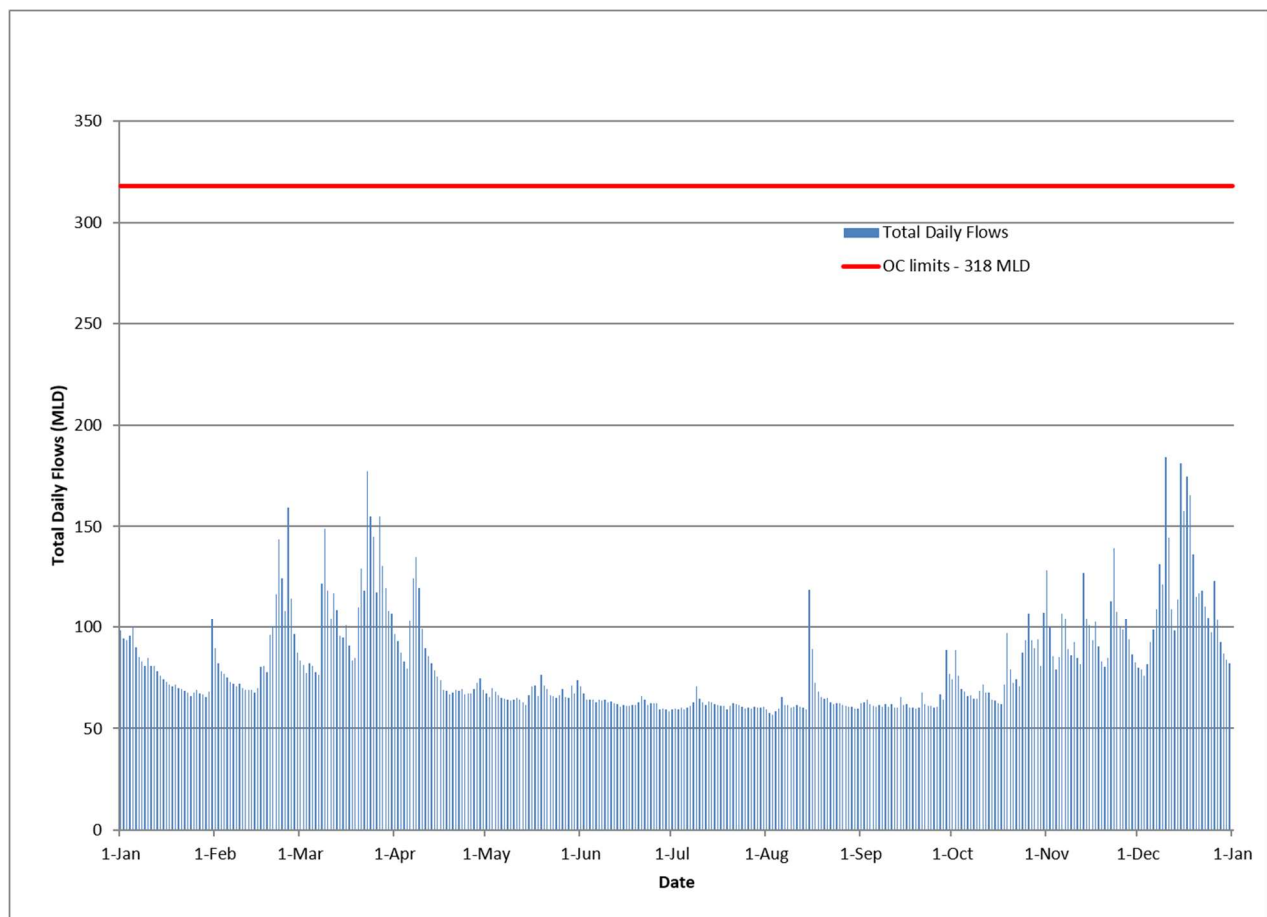


TABLE 5.5 LIONS GATE WWTP – 2016-2025 ANNUAL AVERAGE DATA FOR FLOW, SS AND BOD₅

LIONS GATE WWTP									
YEAR	FLOWS MLD	Suspended Solids mg/L		Suspended Solids Tonnes/year		BOD ₅ mg/L		BOD ₅ Tonnes/year	
		INF	EFF	INF	EFF	INF	EFF	INF	EFF
2016	83	170	53	4852	1587	134	71	3796	2066
2017	83	165	54	4725	1645	132	72	3791	2128
2018	85	167	51	4770	1580	133	77	3781	2228
2019	76	193	54	5101	1488	151	77	4038	2105
2020	85	192	53	5586	1636	143	72	4134	2142
2021	83	193	49	5438	1477	141	73	3942	2090
2022	75	213	50	5490	1392	154	70	3968	1857
2023	76	199	49	5255	1357	156	71	4106	1907
2024	83	188	47	5282	1400	155	63	4349	1828
2025	81	189	51	5218	1478	145	70	3957	1921

Influent SS was 0.5% higher and the BOD₅ was 6.2% lower than in 2024 (Table 5.5). Influent SS concentrations ranged from 68 to 312 mg/L with an average of 189 mg/L. Influent BOD₅ concentrations ranged from 53 to 281 mg/L with an average of 145 mg/L.

5.3.2. TOTAL SUSPENDED SOLIDS (TSS)

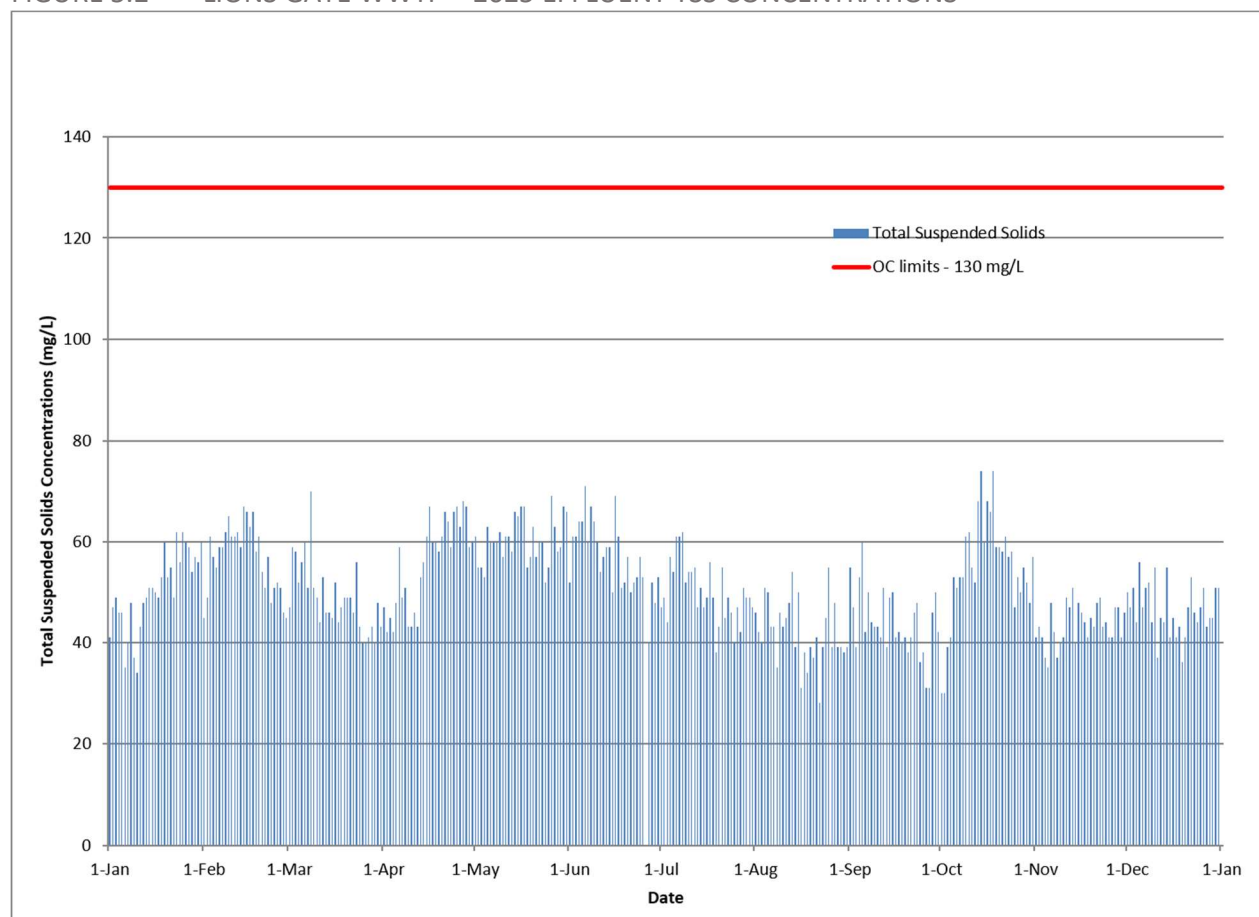
The effluent SS concentrations were between 28 mg/L and 74 mg/L with an average value of 51 mg/L (Figure 5.2).

Lower and more stable TSS values observed during winter months were due to improved settling conditions.

During the summer period, higher and more variable TSS concentrations reflected increased solids loading and less favorable settling; however, the application of alum and polymer effectively enhanced coagulation and flocculation, improving solids removal and limiting TSS carryover. The average SS reduction was 72%.

Overall, the plant demonstrates stable and reliable performance with predictable seasonal variability, with chemical addition supporting optimized solids removal during peak periods. The annual effluent TSS loadings of 1,478 tonnes/year were 5.6% higher and remained within expected ranges for a primary treatment plant.

FIGURE 5.2 LIONS GATE WWTP – 2025 EFFLUENT TSS CONCENTRATIONS



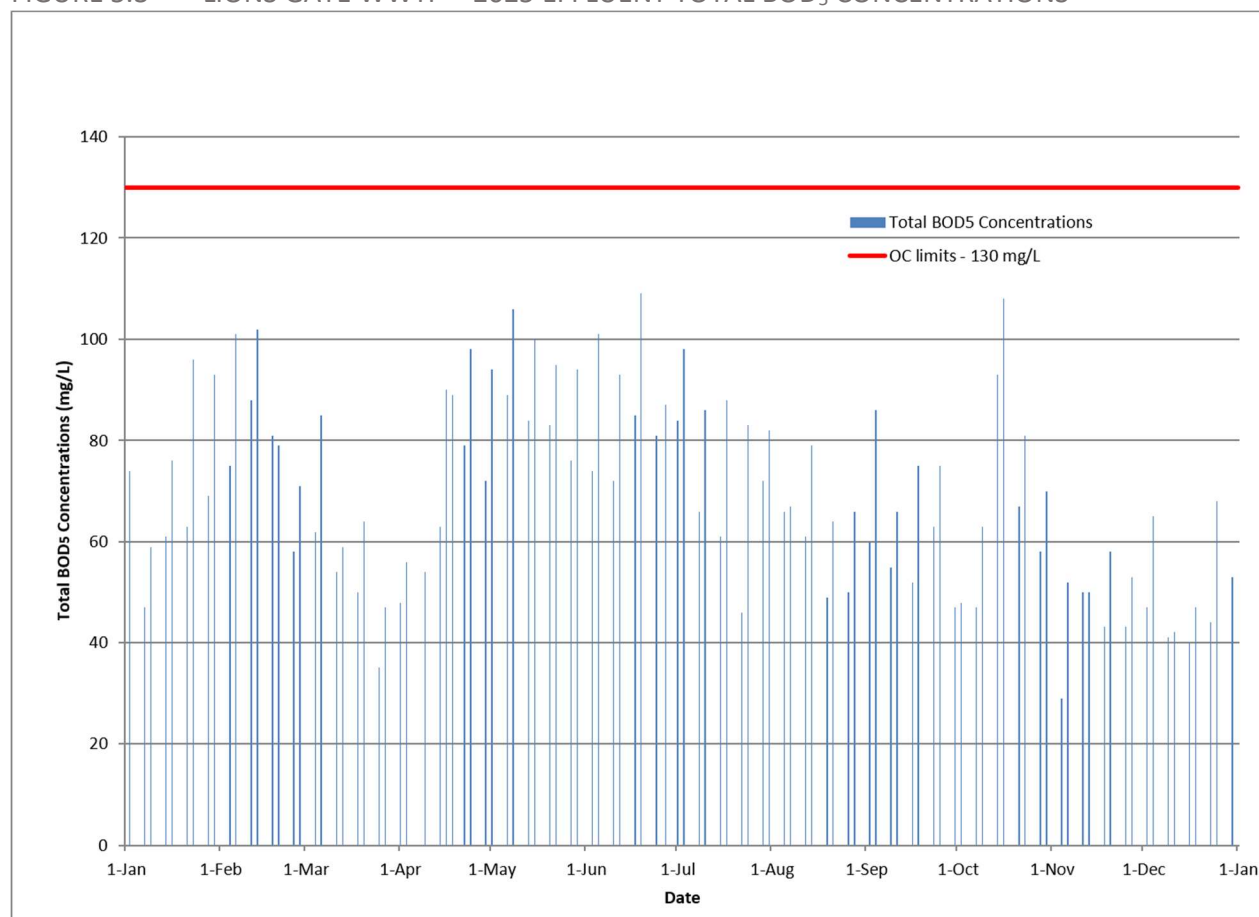
5.3.3. BIOCHEMICAL OXYGEN DEMAND (BOD)

Effluent total BOD₅ concentrations were between 29 mg/L to 109 mg/L with an average value of 70 mg/L (Figure 5.3).

Lower and more stable BOD concentrations during winter reflect improved settling and reduced influent strength, while higher and more variable values in summer are associated with increased organic loading and less favorable settling conditions.

The use of alum and polymer supports solids removal and contributes to overall BOD reduction. The effluent BOD₅ loadings of 1,921 tonnes/year were 5.1% lower than the previous year (Table 5.5).

FIGURE 5.3 LIONS GATE WWTP – 2025 EFFLUENT TOTAL BOD₅ CONCENTRATIONS



5.4 WASTEWATER SYSTEMS EFFLUENT REGULATIONS (WSER)

The WSER specifies the limits for substances that are authorized to be deposited by any wastewater system. The effluent quality standards and limits for the Lions Gate WWTP are shown in Table 5.6.

TABLE 5.6 LIONS GATE WWTP – WSER AUTHORIZED LEVELS

Monthly average CBOD	25 mg/L
Monthly average concentration of SS	25 mg/L
Monthly average concentration of total residual chlorine	0.02 mg/L

Quarterly monitoring reports were submitted through ECCC's ERRIS. The effluent monitoring data reported were number of days that effluent were deposited, total volume of effluent deposited in cubic metres, average concentration of CBOD in mg/L, average concentration SS in mg/L, and acute lethality.

The Lions Gate Transitional Authorization (TA) expired on December 31, 2020. The monthly average limits of 115 mg/L CBOD and 76 mg/L TSS as specified in the TA were only applicable to the end of

2020. Starting January 2021, the applicable monthly average limits as specified in WSER Section 6.1 were 25 mg/L CBOD and 25 mg/L TSS. Due to the delay in bringing the North Shore WWTP online, the Lions Gate WWTP—being a primary treatment facility did not achieve WSER specified CBOD and TSS limits. LGWWTP did meet the WSER limits for total residual chlorine and un-ionized ammonia. There were three instances when Lions Gate WWTP effluent was acutely toxic (Table 5.7) in 2025. Additional information regarding LGWWTP acute effluent toxicity can be found in Section 11 of this report.

TABLE 5.7 LIONS GATE WWTP – 2025 WSER MONITORING REPORT

	Number of days that effluent was deposited	Total volume of effluent deposited (m ³)	Average CBOD (mg/L)	Average concentration of suspended solids (mg/L)
January	31	2,431,331	68	50
February	28	2,489,513	76	57
March	31	3,398,190	56	49
April	30	2,470,310	70	56
May	31	2,078,878	91	60
June	30	1,880,354	88	57
July	31	1,902,558	77	50
August	31	1,998,639	63	42
September	30	1,898,176	67	44
October	31	2,382,454	66	55
November	30	2,915,774	48	44
December	31	3,569,893	49	47

Acute Lethality Test Results

Sample Date (YYYY/MM/DD)	EPS 1 / RM / 13	EPS 1 / RM / 50	Was sample acutely lethal?
2025/01/06	Multi-Concentration Test	Yes	No
2025/02/05	Multi-Concentration Test	Yes	No
2025/03/13	Multi-Concentration Test	Yes	No
2025/04/08	Multi-Concentration Test	Yes	No
2025/05/08	Multi-Concentration Test	Yes	No
2025/06/09	Multi-Concentration Test	Yes	Yes
2025/06/16	Multi-Concentration Test	Yes	Yes
2025/06/23	Multi-Concentration Test	Yes	Yes
2025/07/10	Multi-Concentration Test	Yes	No
2025/07/22	Multi-Concentration Test	Yes	No
2025/08/06	Multi-Concentration Test	Yes	No
2025/09/03	Multi-Concentration Test	Yes	No
2025/10/02	Multi-Concentration Test	Yes	No
2025/11/03	Multi-Concentration Test	Yes	No
2025/12/03	Multi-Concentration Test	Yes	No

5.5 CHEMICALLY ENHANCED PRIMARY TREATMENT

Chemically Enhanced Primary Treatment (CEPT) occurred throughout the year with a total of 250 treatment runs. The chemical dosing system was an average of at 61 mg/L of alum and 0.78 mg/L of polymer with run times between five and fifteen hours.

5.6 SLUDGE TREATMENT/DEWATERING

The average total solids content in dewatered digested sludge (biosolids) was 29.4% and centrate SS concentration was 1,259 mg/L with an average recovery of 92%. The average polymer dosage was 9.8 kg/tonne.

TABLE 5.8 LIONS GATE WWTP – 2025 ROUTINE MONITORING RESULTS AND PERFORMANCE SUMMARY

Lions Gate WWTP - 2025 Routine Monitoring Results and Performance Summary

MONTH	Max. Instant. Flow Rates (m3/sec)	Total Daily Effluent Flow			Average Temp. (°C)	Average DO (mg/L)	Comp.- Max.	Average Grab pH	Grab NH3 Average (mg/L)	96 hr LC50 (%v/v)				
		MLD					Un-ionized NH3							
		Max.	Min.	Ave.			EFF							
JAN	1.6	104	66	78	12.9	4.3	0.20	7.0	23.4	>100				
FEB	2.7	160	68	89	11.1	3.0	0.20	7.0	19.4	>100				
MAR	3.0	177	77	110	11.5	5.7	0.15	6.8	13.9	>100				
APR	1.9	135	67	82	13.2	7.9	0.21	7.1	17.7	>100				
MAY	1.4	76	62	67	16.0	4.4	0.29	7.0	27.4	>100				
JUN	1.1	71	59	63	17.9	3.5	0.32	7.0	25.6	98.6				
JUL	1.2	71	59	61	19.3	4.7	0.28	6.9	25.5	>100				
AUG	2.4	119	57	64	20.3	4.1	0.26	7.0	26.5	>100				
SEP	1.5	89	60	63	19.6	3.1	0.29	7.1	28.1	>100				
OCT	2.2	107	62	77	16.9	5.1	0.21	7.1	20.1	>100				
NOV	2.1	139	79	97	15.0	3.6	0.16	7.1	13.3	>100				
DEC	3.0	184	76	115	13.8	1.8	0.13	7.1	14.7	>100				
# Samples	-	-	-	365	64	16	156	64	64	15				
Maximum-Yr.	3.0	184	-	-	20.9	8.2	0.32	7.2	40.3	>100				
Minimum-Yr.	-	-	57	-	9.9	1.8	0.05	6.6	4.9	88.1				
Average-Yr.	-	-	-	81	15.6	4.3	0.16	7.0	21.3	>98.8				
MONTH	SHS Dose (mg/L Cl ₂) EFF	Residual Chlorine (mg/L) Final Effluent		SBS Dose (mg/L SO ₂) EFF	Res. SO ₂ (mg/L) EFF	Geometric Mean Fecal Coliform (MPN/100mL) AT EFFLUENT WEIR		Geometric Mean E. coli (MPN/100mL) AT EFFLUENT WEIR		Geometric Mean Enterococci (MPN/100mL) AT EFFLUENT WEIR		CBOD EFFLUENT		
		Before SO ₂	After SO ₂			Monthly	Max. 30 d GMean	Monthly	Max. 30 d GMean	Monthly	Max. 30 d GMean	Max.	Min.	Ave.
JAN	-	-	-	-	-	-	-	-	-	-	-	90	45	68
FEB	-	-	-	-	-	-	-	-	-	-	-	102	47	76
MAR	-	-	-	-	-	-	-	-	-	-	-	80	36	56
APR	-	-	-	-	-	-	-	-	-	-	-	106	45	70
MAY	8.1	1.0	<0.02	3.2	1.5	81	790	31	490	1134	9208	113	69	91
JUN	10.0	0.9	<0.02	3.1	1.6	111	139	64	64	302	1383	115	64	88
JUL	13.8	1.0	<0.02	3.5	1.8	28	108	22	64	22	302	111	44	77
AUG	15.1	0.8	<0.02	4.2	2.0	29	28	19	22	21	31	77	43	63
SEP	13.9	0.7	<0.02	4.2	3.0	129	129	57	57	28	226	101	42	67
OCT	-	-	-	-	-	-	-	-	-	-	-	94	42	66
NOV	-	-	-	-	-	-	-	-	-	-	-	71	27	48
DEC	-	-	-	-	-	-	-	-	-	-	-	62	36	49
# Samples	158	157	157	171	170	44	44	44	-	44	-	-	-	156
Maximum-Yr.	19.3	2.0	<0.02	4.7	13.7	4900	790	3330	490	9804	9208	115	-	-
Minimum-Yr.	3.3	0.1	<0.02	0.6	0.1	<18	24	<18	19	<10	16	-	27	-
Average-Yr.	12.0	0.9	<0.02	3.5	2.1	-	100	-	54	-	884	-	-	68
Geometric Mean	-	-	-	-	-	67	-	38	-	91	-	-	-	-

- (1) pH, Dissolved Oxygen, Temperature, Residual Chlorine, 96-hour LC50 and Coliform are determined on grab samples; all other parameters are determined at 24-hour flow proportioned composite samples.
- (2) Effluent is disinfected between May 1 and September 30.
- (3) Average values containing one or more results below the detection limit are preceded by a "<" symbol.

TABLE 5.8 CONTINUED: LIONS GATE WWTP – 2025 ROUTINE MONITORING RESULTS AND PERFORMANCE SUMMARY

MONTH	Total Suspended Solids (mg/L)						Susp. Solids % Average Reduction	Suspended Solids Average Loadings (Tonnes/day)		Average Conductivity (umhos/cm)	
	INFLUENT			EFFLUENT				INF	EFF	INF	EFF
	Max.	Min.	Ave.	Max.	Min.	Ave.					
JAN	312	136	191	62	34	50	73	14.7	3.9	1566	1611
FEB	216	87	164	67	45	57	64	13.9	5.0	1662	1705
MAR	263	84	142	70	40	49	64	14.7	5.3	1261	1300
APR	230	117	178	68	42	56	68	14.2	4.5	1268	1313
MAY	239	178	207	69	52	60	71	13.9	4.1	1728	1815
JUN	264	184	222	71	40	57	74	13.9	3.6	1751	1803
JUL	265	188	214	62	38	50	77	13.1	3.1	2092	2220
AUG	291	127	219	55	28	42	80	13.9	2.7	2165	2278
SEP	300	180	241	60	31	44	82	15.1	2.8	2420	2538
OCT	238	139	194	74	30	55	72	14.7	4.2	2002	2081
NOV	212	103	157	51	35	44	71	14.9	4.2	1472	1528
DEC	202	68	135	56	36	47	63	14.5	5.3	1276	1300

# Samples	-	-	361	-	-	364	360	361	364	246	247
Maximum-Yr.	312	-	-	74	-	-	87	22.2	10.1	2900	2870
Minimum-Yr.	-	68	-	-	28	-	40	10.9	1.8	727	753
Average-Yr.	-	-	189	-	-	51	72	14.3	4.1	1725	1793
<i>Total to Date - Suspended Solids Loadings (Tonnes):</i>								5218	1478		

MONTH	Biochemical Oxygen Demand (mg/L)						BOD ₅ % Average Reduction	BOD ₅ Average Loadings (Tonnes/day)		Average COD (mg/L)	
	INFLUENT			EFFLUENT				INF	EFF	INF	EFF
	Max.	Min.	Ave.	Max.	Min.	Ave.					
JAN	281	133	181	96	47	71	60	13.4	5.3	378	182
FEB	206	84	153	102	58	82	45	12.9	7.1	340	203
MAR	196	53	115	85	35	57	48	11.3	5.9	270	159
APR	168	93	135	98	48	72	49	11.1	5.7	342	195
MAY	181	144	165	106	76	91	45	11.0	6.1	393	239
JUN	181	140	161	109	72	88	48	10.1	5.5	399	235
JUL	191	131	153	98	46	77	50	9.3	4.7	394	214
AUG	162	128	146	79	49	63	57	9.0	3.9	384	187
SEP	189	123	157	86	47	64	60	9.9	4.0	411	199
OCT	187	115	143	108	47	71	52	10.3	5.1	351	188
NOV	138	95	115	58	29	47	58	10.9	4.6	279	144
DEC	129	62	88	68	40	50	47	10.5	5.6	256	151

# Samples	-	-	95	-	-	104	92	95	104	361	364
Maximum-Yr.	281	-	-	109	-	-	76	19.1	9.3	699	269
Minimum-Yr.	-	53	-	-	29	-	31	7.7	2.3	149	105
Average-Yr.	-	-	145	-	-	70	52	10.8	5.3	350	191
<i>Total to Date - Biochemical Oxygen Demand Loadings (Tonnes):</i>								3957	1921		

NOTES:

- (1) Percent reduction is calculated only for days when both influent and effluent samples are tested.
- (2) Half the detection limit is used for less than values when calculating the monthly CBOD and TSS average reported to WSER.
- (3) Average values containing one or more results below the detection limit are preceded with a "<" symbol.

TABLE 5.9 LIONS GATE WWTP – 2025 COMPREHENSIVE PROGRAM INFLUENT CONCENTRATIONS SUMMARY

Parameters	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Max	Min.	Average
Aluminum Dissolved (µg/L)	27	15	17	16	16	41	13	22	75	20	48	35	75	13	29
Aluminum Total (µg/L)	465	292	358	210	363	2520	341	357	5100	481	2770	1510	5100	210	1230
Arsenic Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	<0.5	0.7	<0.5	<0.5	0.8	<0.5	<0.5
Barium Dissolved (µg/L)	10.3	12.3	11.2	10.8	10.4	6.9	12.5	12.6	13.2	13.3	15.2	9.2	15.2	6.9	11.5
Barium Total (µg/L)	20.5	20.5	20.9	33.1	20.7	18.3	22.0	21.7	25.1	19.9	28.3	19.1	33.1	18.3	22.5
Boron Dissolved (µg/L)	98	128	119	67	118	148	151	173	154	140	107	133	173	67	128
Boron Total (µg/L)	103	130	120	70	136	154	174	179	179	147	116	135	179	70	137
Cadmium Dissolved (µg/L)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium Total (µg/L)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium Total (µg/L)	23700	25600	26000	20400	23400	22600	27900	26000	29900	26500	26500	26100	29900	20400	25400
Chromium Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium Total (µg/L)	0.8	1.0	1.0	0.8	1.1	1.0	0.9	1.4	1.4	1.0	1.0	1.0	1.4	0.8	1.0
Cobalt Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	0.7	<0.5	<0.5
Copper Dissolved (µg/L)	5.1	5.1	5.8	6.4	10.4	4.0	7.8	8.2	3.1	13.7	4.7	6.5	13.7	3.1	6.7
Copper Total (µg/L)	28.2	28.2	34.0	24.7	64.3	43.9	55.8	64.2	44.5	71.5	40.6	41.7	71.5	24.7	45.1
Cyanide Total (mg/L)	<0.02	<0.02	<0.02	<0.02	0.24	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.24	<0.01	<0.03
Fluoride (mg/L)	0.10	0.08	0.07	0.11	0.14	0.08	0.21	0.15	0.20	0.13	0.08	0.09	0.21	0.07	0.12
Hardness as CaCO ₃ (mg/L)	129	175	161	89.4	145	152	198	187	215	178	155	176	215	89.4	163
Iron Dissolved (µg/L)	120	126	141	131	133	82	115	100	54	85	41	84	141	41	101
Iron Total (µg/L)	954	750	1160	682	1040	900	971	874	924	769	1080	953	1160	682	921
Lead Dissolved (µg/L)	<0.5	<0.5	<0.5	1.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.4	<0.5	<0.6
Lead Total (µg/L)	1.4	1.6	2.1	9.7	3.0	2.4	2.4	3.0	2.9	2.3	2.3	2.3	9.7	1.4	3.0
Magnesium Total (µg/L)	17100	27000	23300	9360	21100	23100	31100	29500	34100	27000	21600	27000	34100	9360	24300
Manganese Dissolved (µg/L)	46.8	41.5	48.5	34.5	44.4	34.6	37.1	34.4	32.8	50.3	39.8	47.9	50.3	32.8	41.1
Manganese Total (µg/L)	60.2	53.8	63.6	42.3	59.3	49.9	50.9	48.4	49.7	61.9	54.4	59.0	63.6	42.3	54.5
Mercury Total (µg/L)	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	0.08	<0.05	0.36	<0.05	<0.05	<0.05	0.36	<0.05	<0.08
Methylene Blue Active Substance (mg/L)	0.7	0.9	0.6	0.3	0.9	0.9	1.1	1.1	0.9	0.6	0.8	0.7	1.1	0.3	0.8
Molybdenum Dissolved (µg/L)	0.9	1.2	1.3	0.8	0.9	1.0	1.0	1.4	1.0	1.1	0.9	1.0	1.4	0.8	1.0
Molybdenum Total (µg/L)	1.3	1.5	1.7	1.1	1.3	1.6	1.8	2.0	1.6	1.6	1.5	1.5	2.0	1.1	1.5
Nickel Dissolved (µg/L)	0.8	0.9	0.8	0.6	0.9	0.9	1.0	1.3	1.2	1.2	0.8	0.9	1.3	0.6	0.9
Nickel Total (µg/L)	1.3	1.4	1.4	1.0	1.7	1.6	1.8	2.4	2.0	2.1	1.6	1.6	2.4	1.0	1.7
Nitrogen - Ammonia as N (mg/L)	14.1	19.3	17.0	9.6	19.3	19.0	17.2	16.1	19.6	12.8	13.4	17.5	19.6	9.6	16.2
Nitrogen - Nitrate as N (mg/L)	0.43	0.45	0.47	0.62	0.19	0.04	0.03	0.12	<0.01	0.44	0.31	0.48	0.62	<0.01	<0.30
Nitrogen - Nitrite as N (mg/L)	0.07	0.06	0.08	0.06	0.05	0.03	0.08	0.11	0.13	0.06	0.08	0.08	0.13	0.03	0.07
Nitrogen - Total Kjeldahl (mg/L)	24	36	30	17	33	37	32	28	34	24	23	30	37	17	29
Oil & Grease (mg/L)	19	14	11	6	12	22	11	15	16	7	34	20	34	6	16
Phenol (mg/L)	0.01	0.02	0.02	<0.01	0.02	0.01	0.01	0.009	0.019	0.005	0.014	0.009	0.02	<0.01	<0.01
Phosphorus Dissolved (µg/L)	1330	1880	1620	1010	1980	817	1710	2570	223	1290	308	873	2570	223	1300
Phosphorus Total (µg/L)	3510	3790	4010	2150	4390	3780	3900	5000	4430	3450	3360	3830	5000	2150	3800
Selenium Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver Total (µg/L)	0.6	0.8	0.7	<0.5	0.5	0.6	0.8	0.8	0.8	<0.5	0.6	<0.5	0.8	<0.5	<0.6
Sulphate (mg/L)	43.6	65.2	56.1	27.1	49.8	70.3	67.4	68.5	110	67.4	75.2	76.7	110	27.1	64.8
Vanadium Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Vanadium Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	0.7	0.8	0.6	0.7	0.8	<0.5	<0.6
Zinc Dissolved (µg/L)	26	33	35	33	42	28	37	43	31	42	32	29	43	26	34
Zinc Total (µg/L)	66	74	79	68	95	97	87	114	108	88	84	75	114	66	86

TABLE 5.10 LIONS GATE WWTP – 2025 COMPREHENSIVE PROGRAM EFFLUENT CONCENTRATIONS SUMMARY

Parameters	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Max	Min.	Average
Aluminum Dissolved (µg/L)	37	26	16	18	19	43	38	40	58	38	51	35	58	16	35
Aluminum Total (µg/L)	707	467	225	170	252	989	1140	1350	1870	1340	1220	912	1870	170	887
Arsenic Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	0.5	<0.5	<0.5	0.6	<0.5	<0.5
Barium Dissolved (µg/L)	8.6	10.3	9.6	11.5	9.0	6.0	8.2	7.3	8.2	9.4	10.5	8.0	11.5	6.0	8.9
Barium Total (µg/L)	13.0	16.7	16.2	33.0	15.8	12.2	16.0	13.8	14.5	13.3	16.7	14.4	33.0	12.2	16.3
Boron Dissolved (µg/L)	97	125	116	69	134	139	164	150	155	146	106	135	164	69	128
Boron Total (µg/L)	99	132	127	75	138	145	168	172	180	156	115	141	180	75	137
Cadmium Dissolved (µg/L)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium Total (µg/L)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium Total (µg/L)	20600	25100	25000	20700	21900	20700	26100	25500	27000	26500	23300	25900	27000	20600	24000
Chromium Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium Total (µg/L)	<0.5	0.6	0.6	0.7	0.8	0.6	0.5	0.7	0.6	<0.5	<0.5	0.5	0.8	<0.5	<0.6
Cobalt Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Copper Dissolved (µg/L)	3.2	3.5	3.9	5.6	4.1	5.1	5.8	3.1	2.4	6.6	3.8	3.6	6.6	2.4	4.2
Copper Total (µg/L)	16.2	20.4	23.2	18.3	26.8	24.5	25.0	19.6	17.8	15.5	16.8	20.2	26.8	15.5	20.4
Cyanide Total (mg/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.02	<0.01	<0.01
Fluoride (mg/L)	0.11	0.12	0.08	0.13	0.18	0.12	0.10	0.12	0.18	0.11	0.10	0.14	0.18	0.08	0.12
Hardness as CaCO ₃ (mg/L)	117	174	159	92.0	136	146	189	179	202	182	139	176	202	92	158
Iron Dissolved (µg/L)	119	127	163	192	173	97	100	60	64	57	77	114	192	57	112
Iron Total (µg/L)	551	549	746	606	776	513	684	353	351	299	424	591	776	299	537
Lead Dissolved (µg/L)	<0.5	<0.5	<0.5	1.8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.8	<0.5	<0.6
Lead Total (µg/L)	0.6	0.8	0.9	9.0	1.4	1.1	1.1	1.0	0.8	0.6	0.8	1.1	9.0	0.6	1.6
Magnesium Total (µg/L)	15900	27100	23500	9760	19700	22800	30000	28000	32800	28000	19700	26900	32800	9760	23700
Manganese Dissolved (µg/L)	43.3	39.2	45.7	34.9	42.2	33.9	33.5	29.7	28.9	33.2	34.5	42.9	45.7	28.9	36.8
Manganese Total (µg/L)	49.4	48.3	56.9	41.9	51.8	43.3	43.8	39.3	38.6	37.6	41.6	51.0	56.9	37.6	45.3
Mercury Total (µg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Methylene Blue Active Substance (mg/L)	0.9	1.5	1.3	0.4	2.0	1.9	1.6	1.7	2.0	1.2	1.1	1.7	2.0	0.4	1.4
Molybdenum Dissolved (µg/L)	0.9	1.2	1.3	0.9	0.9	0.9	1.1	1.2	1.0	1.3	1.0	1.0	1.3	0.9	1.1
Molybdenum Total (µg/L)	1.1	1.4	1.5	1.1	1.2	1.2	1.6	1.5	1.3	1.5	1.4	1.4	1.6	1.1	1.4
Nickel Dissolved (µg/L)	0.9	0.9	0.8	0.7	1.1	1.1	1.0	1.2	1.4	1.0	0.9	1.0	1.4	0.7	1.0
Nickel Total (µg/L)	1.1	1.4	1.4	1.0	1.5	1.5	1.5	1.8	1.8	1.3	1.2	1.4	1.8	1.0	1.4
Nitrogen - Ammonia as N (mg/L)	22.0	27.3	26.1	14.1	32.0	29.8	28.7	28.7	32.0	23.3	22.9	27.6	32.0	14.1	26.2
Nitrogen - Nitrate as N (mg/L)	0.24	0.17	<0.01	0.52	0.03	0.02	0.05	0.03	0.02	0.25	0.36	0.01	0.52	<0.01	<0.14
Nitrogen - Nitrite as N (mg/L)	0.05	0.04	0.11	0.05	<0.01	0.02	0.01	0.02	0.16	0.04	0.07	0.09	0.16	<0.01	<0.06
Nitrogen - Total Kjeldahl (mg/L)	28	35	37	20	42	43	39	36	40	30	28	36	43	20	35
Oil & Grease (mg/L)	11	16	14	4	19	16	11	9	13	6	7	12	19	4	12
Phenol (mg/L)	<0.01	0.01	0.01	<0.01	0.02	0.02	0.02	0.021	0.033	0.008	0.005	0.008	0.03	<0.01	<0.01
Phosphorus Dissolved (µg/L)	804	1520	1700	1010	2700	1820	1330	1020	872	446	648	1190	2700	446	1260
Phosphorus Total (µg/L)	2030	3060	3300	1930	4320	3270	2790	2530	2600	1520	2000	3000	4320	1520	2700
Selenium Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sulphate (mg/L)	51.0	68.9	55.1	26.6	48.9	61.5	82.6	87.7	104	97.8	64.3	75.4	104	26.6	68.7
Vanadium Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Vanadium Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Zinc Dissolved (µg/L)	19	38	25	30	31	27	28	23	19	28	23	21	38	19	26
Zinc Total (µg/L)	37	49	53	57	55	53	56	53	43	43	41	44	57	37	49

5.7 LIONS GATE WWTP - TREND SUMMARY (2021–2025)

Across the 2021–2025 review period, and within the plant’s seasonal monitoring window (May–September), the supplied trend figures for Lions Gate WWTP indicate overall stable conditions across the monitored parameters (Figure 5.4). Observed variability aligns with expected seasonal patterns rather than sustained directional changes.

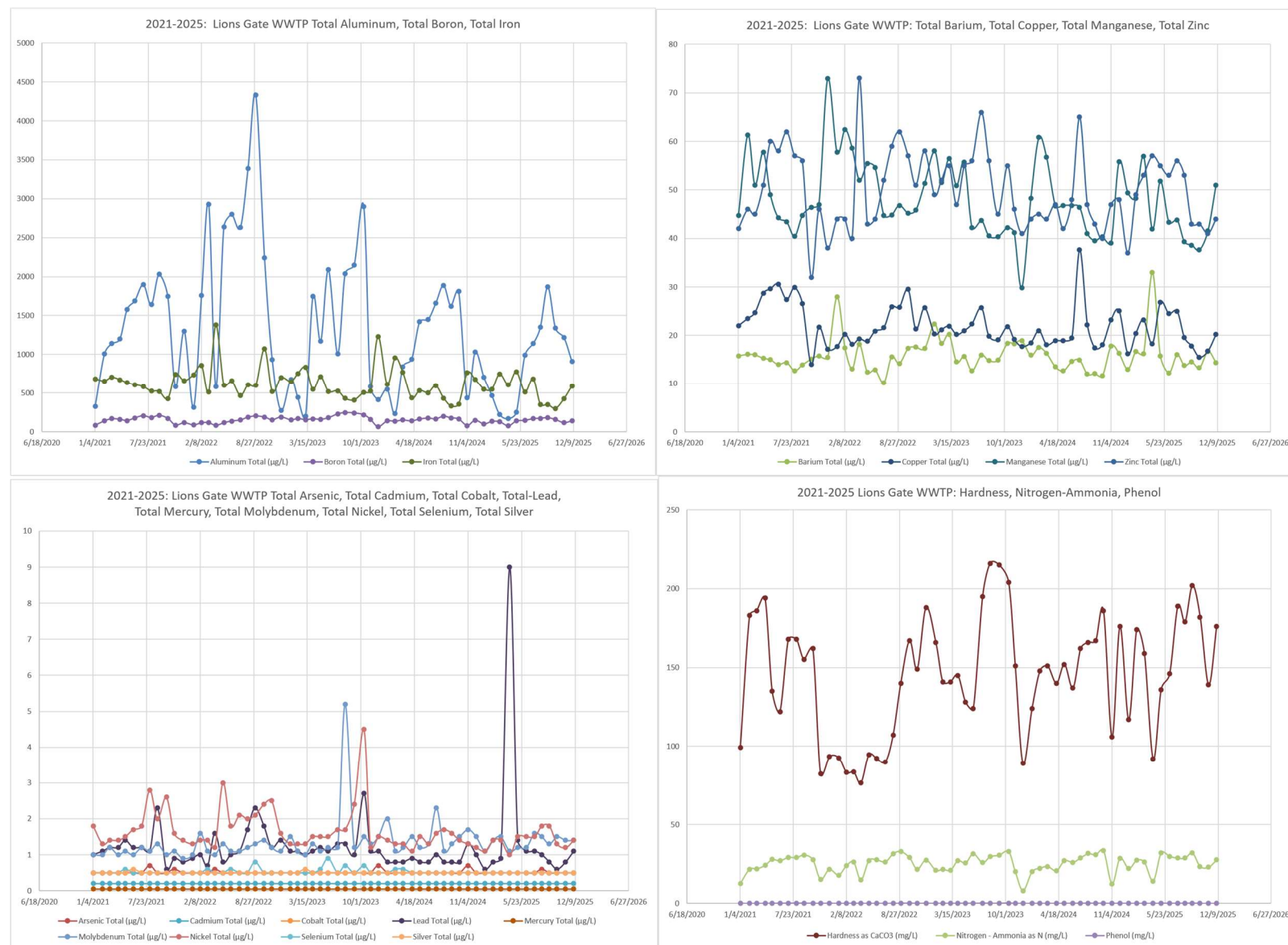
Metals and other trace parameters track low and generally steady over the review period. Where short-term excursions are visible on the plots, they present as isolated points and do not persist across subsequent sampling periods or into following years, suggesting transient rather than systemic drivers.

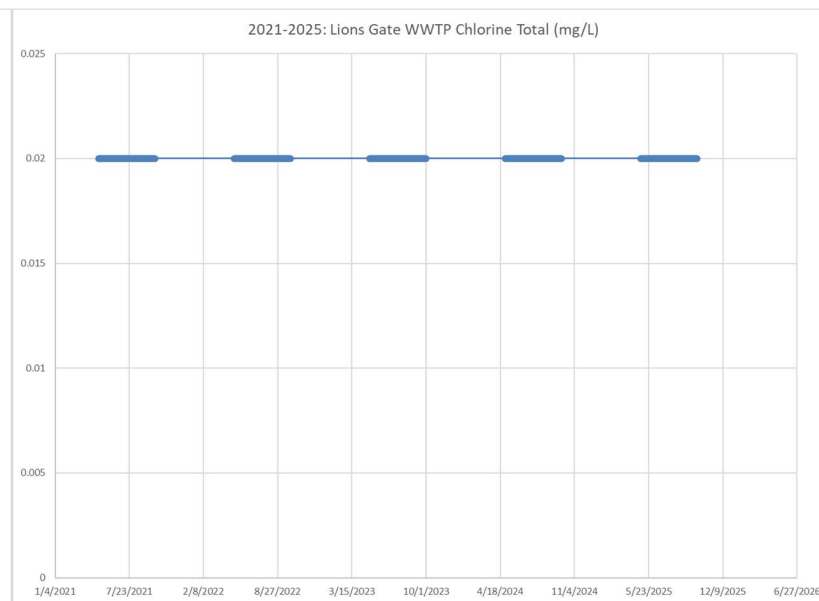
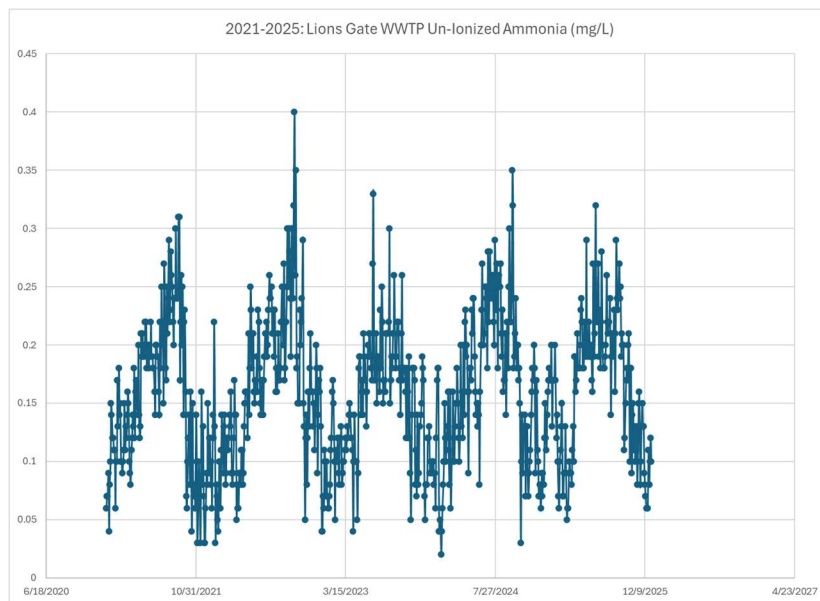
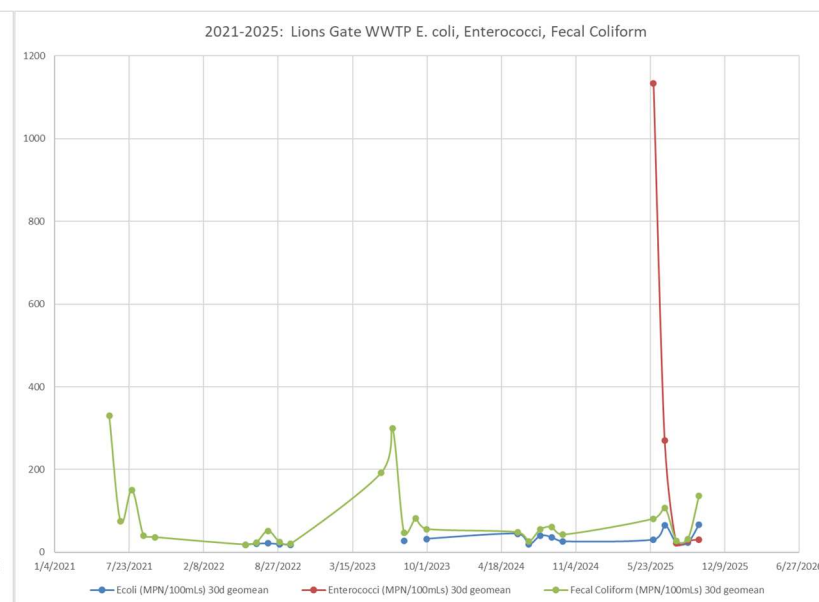
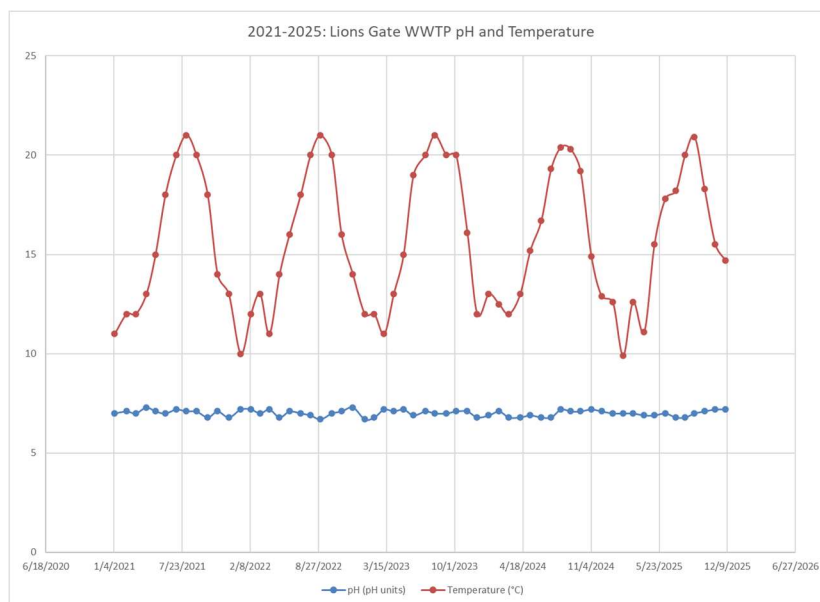
General chemistry indicators exhibit modest, repeating seasonal oscillation consistent with source water and ambient conditions. No step-changes or multi-year drifts are apparent in the figures provided.

Field parameters show stable control: pH remains within a tight operational band year-to-year, and temperature follows the expected seasonal cycle (cooler in spring/early season, warmer in late summer) with no out-of-season anomalies evident on the charts.

Overall, the 2021–2025 dataset depicts a stable operating environment at Lions Gate WWTP with no clear multi-year upward trends.

FIGURE 5.4 2021-2025 TRENDS: GRAPHS AND SUMMARY





6.0 LULU ISLAND WWTP



6.0 LULU ISLAND WWTP

6.1 EFFLUENT QUALITY

The quality of effluent from the Lulu Island WWTP in 2025, along with the discharge monitoring parameters listed in Operational Certificate (OC) 233, is summarized in Table 6.1.

TABLE 6.1 LULU ISLAND WWTP – 2025 PERFORMANCE SUMMARY

Operational Certificate 233, March 04, 2022

Parameters	Testing Frequency	OC Limits	Max. Value for the Year	Number of Times Criteria Not Met											
				Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total Discharge Flow (MLD)	Daily	233	96	0	0	0	0	0	0	0	0	0	0	0	0
CBOD ₅ (mg/L)*	3/week	45	50	0	0	0	0	0	0	0	0	0	0	0	1
Suspended Solids (mg/L)	5/week	45	129	0	0	0	0	0	0	0	0	0	0	0	1
Chlorine Residual (mg/L)**	Daily	<0.1	<0.02	0	0	0	0	0	0	0	0	0	0	0	0
Disinfection	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
Plant Bypass	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0
Secondary Bypass	-	2ADW	-	0	0	0	0	0	0	0	0	0	0	0	1

* CBOD₅ reported 1/week when COD are reported 5/week

** Effluent disinfected between April 1 and October 31

6.2 PERFORMANCE REVIEW AND OPERATIONAL SUMMARY

The Ministry of Environment and Parks (ENV), under the provisions of the Environmental Management Act and in accordance with Metro Vancouver's ILWRMP, issued OC 233 on March 4, 2022. The OC specifies the authorized levels shown in Table 6.2.

TABLE 6.2 LULU ISLAND WWTP – OPERATIONAL CERTIFICATE AUTHORIZED LEVELS

Daily authorized rate of discharge	233,000 m ³ /day, maximum
5-day CBOD ₅	45 mg/L, maximum
TSS (non-filterable residue)	45 mg/L, maximum

6.2.1. PERFORMANCE REVIEW

A comprehensive review of 2025 routine monitoring results and performance summary is provided in Table 6.10 at the end of Section 6. A comprehensive summary of influent and effluent concentrations is provided in Tables 6.11 and 6.12, respectively at the end of Section 6.

EFFLUENT BYPASSES

There was one bypass of the secondary treatment that occurred on December 30, 2025.

PLANT BYPASSES

There were no plant bypasses in 2025.

EVENTS REPORTED TO REGULATORY AUTHORITIES

There was one each of Category 1, 2, and 3 events reported to regulatory authorities in 2025. Tables 6.3, 6.4 and 6.5, respectively provide detailed summaries of the events, including probable causes, mitigation measures and potential environmental effects.

Daily discharge limit was exceeded on December 30.

TABLE 6.3 LULU ISLAND WWTP – CATEGORY 1 EVENT REPORTED TO THE ENV

Plant	Date	Description	Quantity Discharged	Duration	Probable Cause	Mitigation Measures	Potential Environmental Effects
Lulu Island	Dec 30	Incident involving a loss of power from BC Hydro resulting in a bypass of designated treatment works (Trickling Filters) and a secondary treatment bypass.	18.83 million litres	9.33 hours	Loss of power from BC Hydro due to an internal issue at the 25 kV switch kiosk.	BC Hydro power was restored.	The following information is an estimation based on dilution dispersion modelling of the receiving environment. The applicable BC ENV Water Quality Objectives for total TSS and dissolved oxygen were expected to have been met in the Fraser River.

TABLE 6.4 LULU ISLAND WWTP – CATEGORY 2 EVENT REPORTED TO THE ENV

Plant	Date	Description	Quantity Discharged	Duration	Probable Cause	Mitigation Measures	Potential Environmental Effects
Lulu Island	Jun 30	Leak of non-potable water (C2 water) from an irrigation line within the boundary of the Lulu Island Wastewater Treatment Plant (LIWWTP).	Approx. 4,073 litres	0.056 days	Irrigation line was broken.	Attended site. Isolation point found and leak stopped.	No impacts to the receiving environment were observed.

TABLE 6.5 LULU ISLAND WWTP – CATEGORY 3 EVENT REPORTED TO THE ENV

Plant	Date	Description	Quantity Discharged	Duration	Probable Cause	Mitigation Measures	Potential Environmental Effects
Lulu Island WWTP	Jul 24	Venting of digester gas to the atmosphere at the LIWWTP.	Approx. 2,448 kg	3.4 days	Gas circulation compressor No.3 was installed without a mechanical seal, resulting in the release of digester gas.	Mechanical seal was installed in gas circulation compressor No. 3 allowing it to be returned to regular service.	No impacts to the receiving environment were observed.

DISINFECTION

The effluent from the Lulu Island WWTP was disinfected between April 1 and October 31 using SHS and dechlorinated using SBS. The average SHS dosage as chlorine was 1.9 mg/L and the average SBS dosage as SO₂ was 2.1 mg/L.

There were no disinfection interruption events in 2025.

The 30-day geometric means calculated for fecal coliforms levels in final effluent and at the edge of the IDZ are summarized in Table 6.6. In 2025, the calculated results for fecal coliform levels at the edge of the IDZ met the Fraser River fecal coliforms WQO of 200 MPN/100 mL from April through October.

TABLE 6.6 LULU ISLAND WWTP – PREDICTED 30-DAY FECAL COLIFORM GEOMETRIC MEAN AT THE IDZ

Month	Apr	May	Jun	Jul	Aug	Sept	Oct
Max 30-day Geometric Mean (MPN/100 mL)*	1487	212	261	106	141	207	140
Dilution Factor**	30	30	30	30	30	30	30
IDZ Result (MPN/100 mL)***	49.6	7.1	8.7	3.5	4.7	6.9	4.7
WQO (Met or Not Met)	Met	Met	Met	Met	Met	Met	Met

* Geometric mean (MPN/100mL) over a 30-day period (effluent).

** Lowest seasonal average dilution factor: 25-h average dilution factor based on peak plant flow and low river flow conditions.

*** IDZ Result (MPN/100mL) – determined by calculation of geometric mean of fecal coliforms levels in the receiving water due to discharges of final effluent, for 30-day periods at the edge of the IDZ.

DAILY DISCHARGE LIMITS

There were no exceedances of daily discharge limits specified by the OC in 2025.

6.3 EFFLUENT MONITORING

6.3.1. FLOW AND LOADINGS

A total of 26,146 ML of wastewater was treated at the Lulu Island WWTP in 2025. The average daily flow of 76.6 MLD was 0.49% lower than 2024. The highest average daily flow of 96 MLD (Figure 6.1) was recorded on December 10 and a peak instantaneous flow of 140 MLD was recorded on December 16.

FIGURE 6.1 LULU ISLAND WWTP – 2025 EFFLUENT TOTAL DAILY FLOWS

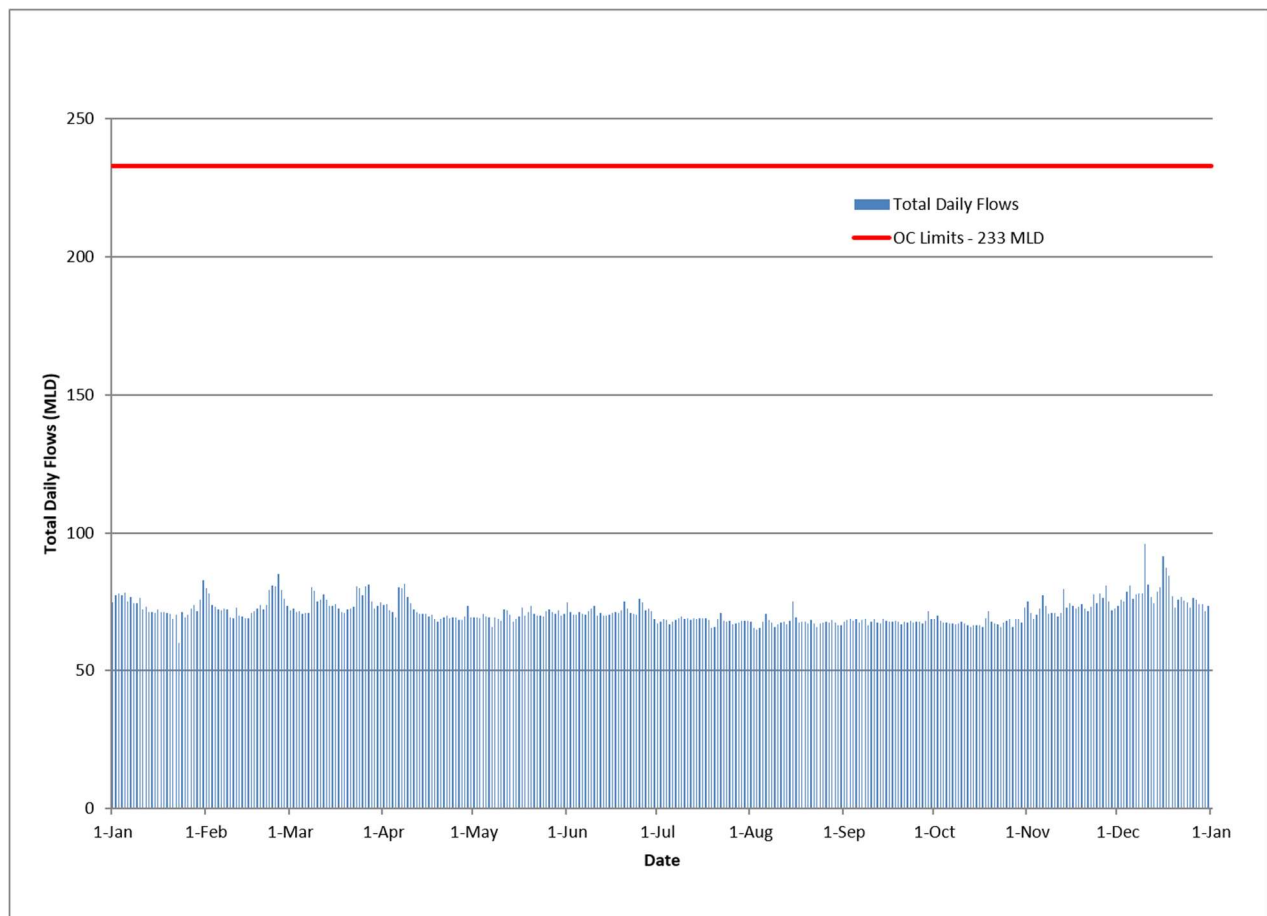


TABLE 6.7 LULU ISLAND WWTP – 2016-2025 ANNUAL AVERAGE DATA FOR FLOW, SS AND BOD₅

LULU WWTP									
YEAR	FLOWS MLD	Suspended Solids mg/L		Suspended Solids Tonnes/year		BOD ₅	CBOD ₅	BOD ₅	CBOD ₅
		INF	EFF	INF	EFF	mg/L		Tonnes/year	
						INF	EFF	INF	EFF
2016	70.0	217	5	5541	132	266	6	6853	149
2017	70.6	213	6	5478	150	266	6	6946	169
2018	69.8	214	7	5439	188	279	8	7146	208
2019	68.9	233	6	5851	139	286	5	7216	148
2020	70.5	222	5	5720	133	270	6	7004	155
2021	69.9	216	5	5482	127	260	6	6616	154
2022	69.0	223	6	5580	149	293	8	7397	194
2023	69.0	247	6	6214	154	325	8	8237	185
2024	72.3	252	8	6617	216	318	9	8361	233
2025	71.6	272	7	7100	185	329	9	8628	239

NOTE: 2024 data does not contain influent data from August 20 to October 26 due to construction which resulted in the Composite sampling location to bypass the influent sampling location and use the primary influent sampling location

The influent SS concentrations were between 156 and 511 mg/L with an average of 272 mg/L. The influent BOD₅ concentrations were between 247 and 470 mg/L with an average of 329 mg/L. Influent SS loadings of 7,100 tonnes/year and influent BOD₅ loadings of 8,628 tonnes/year were 7.3% and 3.3% higher, respectively, than in 2024 (Table 6.7). In 2025, the average percent reduction of SS was 97% and the percent reduction for BOD₅ was 98%.

6.3.2. TOTAL SUSPENDED SOLIDS (TSS)

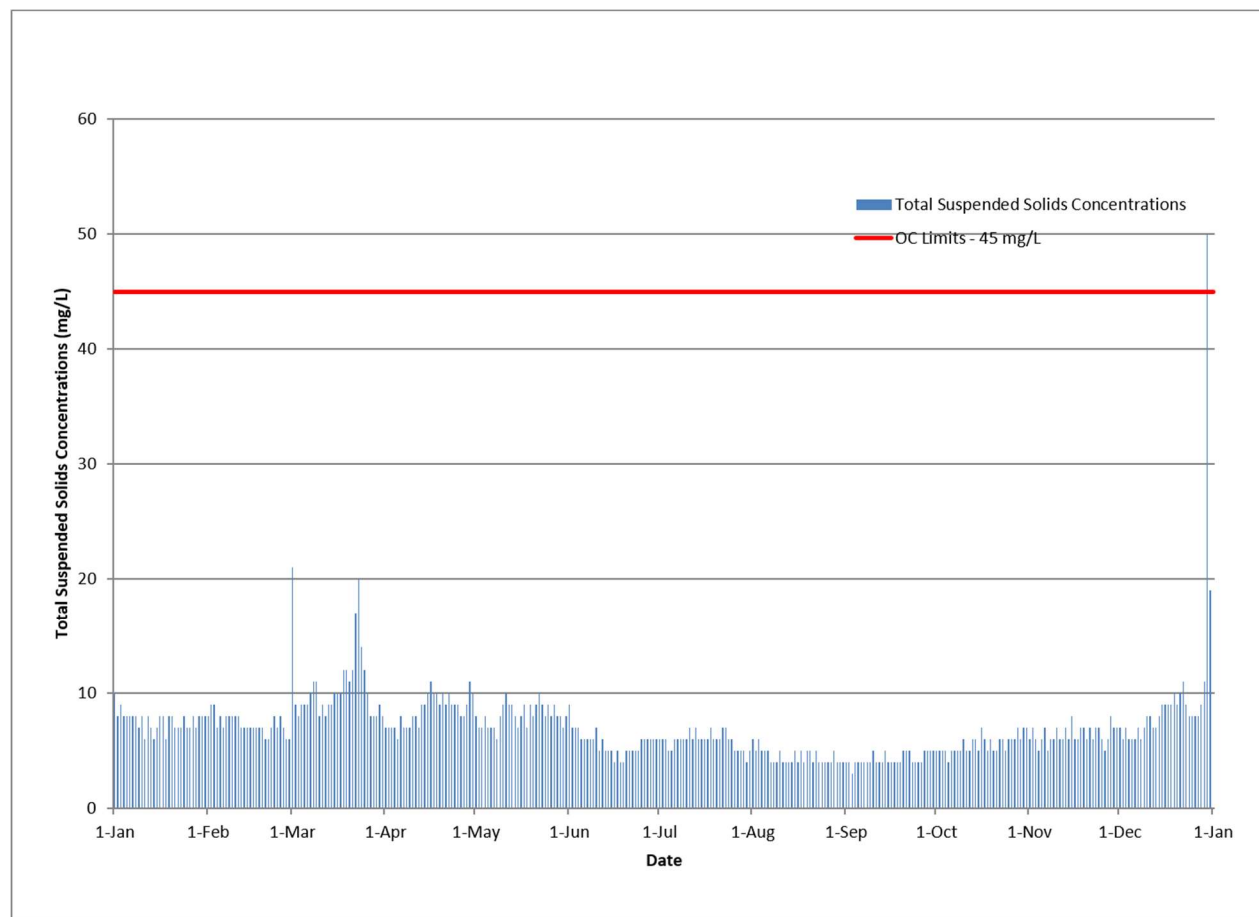
The effluent SS concentrations were between 3 and 50 mg/L with an average of 7 mg/L (Figure 6.2).

The 2025 TSS data shows the trickling filter system with solids contact tank and secondary clarifier achieved consistently low effluent TSS concentration.

Performance remained stable throughout the year, with optimal settling observed during summer and only minor seasonal variation.

A brief high TSS event at the end of December is attributed to a secondary bypass condition, with overall performance remaining strong and within expected secondary treatment standards.

FIGURE 6.2 LULU ISLAND WWTP – 2025 EFFLUENT TSS CONCENTRATIONS



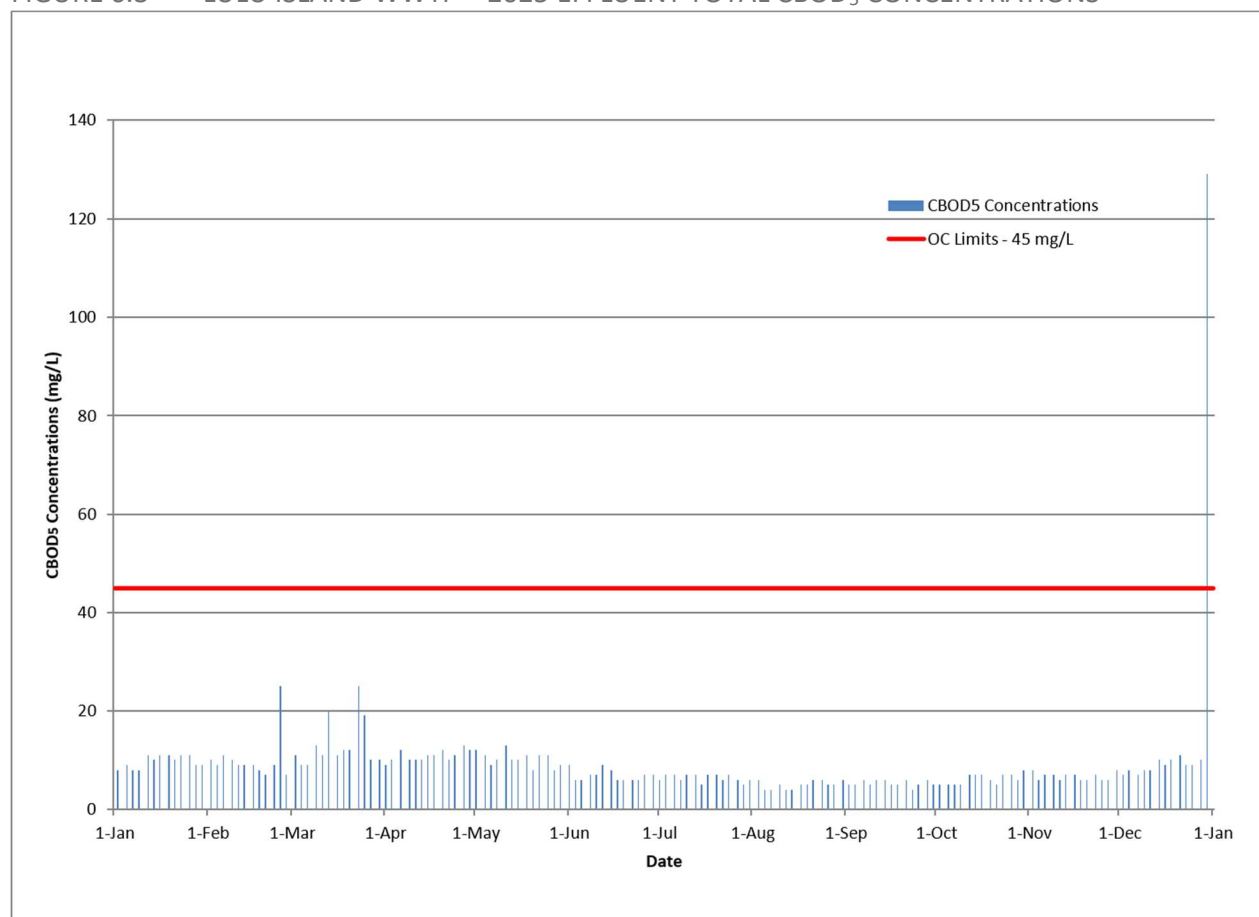
6.3.3. CARBONACEOUS BIOCHEMICAL OXYGEN DEMAND (CBOD₅)

The final effluent CBOD₅ levels were between 4 and 129 mg/L, with an average of 9 mg/L (Figure 6.3). The effluent SS loadings of 185 tonnes/year were 14.3% lower than in 2024. The effluent CBOD₅ loadings of 239 tonnes/year were 2.7% higher than in 2024 (Table 6.7).

The 2025 CBOD₅ data indicates that the trickling filter - solids contact and secondary clarifiers achieved consistently low CBOD₅ effluent concentrations, demonstrating effective biological treatment. Performance was stable throughout the year, with improved removal during summer months indicating strong process efficiency.

A brief spike at the end of December was due to the secondary bypass event, with overall performance remaining within expected limits.

FIGURE 6.3 LULU ISLAND WWTP – 2025 EFFLUENT TOTAL CBOD₅ CONCENTRATIONS



6.4 WASTEWATER SYSTEMS EFFLUENT REGULATIONS (WSER)

The WSER specifies the limits for the substances that are authorized to be deposited by any wastewater system. The effluent quality limits for the Lulu Island WWTP are shown in Table 6.8.

TABLE 6.8 LULU ISLAND WWTP – WSER AUTHORIZED LEVELS

Monthly average CBOD	25 mg/L
Monthly average concentration of SS	25 mg/L
Monthly average concentration of total residual chlorine	0.02 mg/L

Quarterly monitoring reports were submitted through ECCC's ERRIS. The effluent monitoring data reported were number of days that effluent was deposited, total volume of effluent deposited in cubic meters, average concentration of CBOD in mg/L, average concentration of SS in mg/L, and acute lethality.

In 2025, WSER effluent quality standards and limits on CBOD, SS and acute lethality were met at the Lulu Island WWTP (Table 6.9).

TABLE 6.9 LULU ISLAND WWTP – 2025 WSER MONITORING REPORT

	Number of days that effluent was deposited	Total volume of effluent deposited (m ³)	Average CBOD (mg/L)	Average concentration of suspended solids (mg/L)
January	31	2,271,256	10	8
February	28	2,079,219	10	7
March	31	2,320,500	13	11
April	30	2,157,305	11	9
May	31	2,182,960	10	8
June	30	2,155,100	7	6
July	31	2,113,947	6	6
August	31	2,092,633	5	4
September	30	2,039,278	5	4
October	31	2,096,585	6	6
November	30	2,213,701	7	6
December	31	2,423,655	18	10

Acute Lethality Test Results

Sample Date (YYYY/MM/DD)	EPS 1 / RM / 13	EPS 1 / RM / 50	Was sample acutely lethal?
2025/01/06	Multi-Concentration Test	Yes	No
2025/02/05	Multi-Concentration Test	Yes	No
2025/03/06	Multi-Concentration Test	Yes	No
2025/04/08	Multi-Concentration Test	Yes	No
2025/05/08	Multi-Concentration Test	Yes	No
2025/06/09	Multi-Concentration Test	Yes	No
2025/07/10	Multi-Concentration Test	Yes	No
2025/08/06	Multi-Concentration Test	Yes	No
2025/09/03	Multi-Concentration Test	Yes	No
2025/10/02	Multi-Concentration Test	Yes	No
2025/11/03	Multi-Concentration Test	Yes	No
2025/12/03	Multi-Concentration Test	Yes	No

6.5 SECONDARY PROCESS

The secondary process operated using an average of three trickling filters (TFs), three aeration tanks in solids contact mode, and four secondary clarifiers in service in 2025.

The average soluble CBOD₅ (SCBOD₅) removal across the TFs was 79%. The TF effluent SCBOD₅ concentrations were in the range of 24 to 47 mg/L with an average of 14 mg/L.

The mixed liquor suspended solids (MLSS) were between 1,660 to 2,370 mg/L, with an average of 1,300 mg/L. The average mean cell residence time (MCRT) was 0.92 days and varied from 0.63 days to 1.32 days.

6.6 SOLIDS TREATMENT

Mixed sludge from the Lulu Island WWTP and 2,300 m³ of TWSS from the Northwest Langley WWTP were processed in the Lulu Island WWTP digesters.

Biosolids dewatering achieved an average cake solids content of 23.6% and an average centrate suspended solids concentration of 969 mg/L with an average recovery of 95%. The average polymer dosage was 10.1 kg/tonne.

TABLE 6.10 LULU ISLAND WWTP – 2025 ROUTINE MONITORING RESULTS AND PERFORMANCE SUMMARY

Lulu Island WWTP - 2025 Routine Monitoring Results and Performance Summary

MONTH	Max. Inst.Flow Rate (m ³ /sec)	Total Daily Effluent Flow (MLD)			Grab pH Average	Max. Comp. Un-ionized NH ₃	Grab NH ₃ Ave. mg/L	96 hr LC50 (%v/v)
		Max.	Min.	Ave.	FINAL	mg/L	FINAL	FINAL EFFLUENT
					EFF		EFF	Regular
JAN	1.27	83.0	59.8	73.3	7.0	0.56	33.7	>100
FEB	1.28	85.4	69.2	74.3	7.0	0.60	33.7	100.0
MAR	1.29	81.4	71.0	74.9	7.0	0.55	31.1	>100
APR	1.26	81.6	67.8	71.9	7.1	0.65	30.8	>100
MAY	1.16	73.7	65.8	70.4	7.1	0.73	29.6	>100
JUN	1.30	76.3	68.7	71.8	7.2	0.73	36.8	>100
JUL	1.14	71.2	65.4	68.2	7.1	0.69	30.5	>100
AUG	1.13	75.3	64.8	67.5	7.1	0.75	35.4	>100
SEP	1.09	71.7	66.5	68.0	7.1	0.75	34.2	>100
OCT	1.10	73.1	65.7	67.6	7.2	0.75	37.5	>100
NOV	1.30	81.2	69.0	73.8	7.1	0.68	35.0	>100
DEC	1.62	96.2	71.7	78.2	7.1	0.51	33.1	>100

# Samples	-	-	-	365	248	156	65	12
Maximum-Yr.	1.62	96	-	-	7.4	0.75	44.5	>100
Minimum-Yr.	-	-	59.8	-	6.7	0.25	23.7	100.0
Average-Yr.	-	-	-	71.6	7.1	0.53	33.5	>100

MONTH	Ave. Temp. (°C)	Average DO (mg/L)	SBS Dose (mg/L Cl ₂)	Ave. Residual Chlorine FINAL EFFLUENT (mg/L)		SBS Dose (mg/L SO ₂)	SO ₂ Outfall (mg/L)	Geometric Mean Fecal Coliform (MPN/100mL) AT EFFLUENT WEIR		Geometric Mean E. coli (MPN/100mL) AT EFFLUENT WEIR		Geometric Mean Enterococci (MPN/100mL) AT EFFLUENT WEIR	
	FINAL EFF	FINAL EFF	EFF	Before SBS	After SBS	EFF	EFF	Monthly	Max. 30 d GMean	Monthly	Max. 30 d GMean	Monthly	Max. 30 d GMean
JAN	15.9	2.2	-	-	-	-	-	-	-	-	-	-	-
FEB	14.9	2.1	-	-	-	-	-	-	-	-	-	-	-
MAR	16.0	2.1	-	-	-	-	-	-	-	-	-	-	-
APR	17.1	1.9	1.5	0.64	<0.02	2.2	1.5	266	1487	127	1487	84	581
MAY	18.9	2.3	1.7	0.63	<0.02	2.2	1.5	211	212	68	88	34	77
JUN	20.6	2.1	1.9	0.67	<0.02	2.1	1.4	117	261	70	97	39	65
JUL	21.8	2.2	2.4	0.65	<0.02	2.2	1.3	71	106	47	70	18	39
AUG	22.6	1.9	2.2	0.57	<0.02	2.1	1.3	164	141	43	47	30	37
SEP	22.6	2.1	2.1	0.50	<0.02	2.1	1.2	110	207	31	55	39	39
OCT	20.7	2.0	1.9	0.55	<0.02	2.3	1.5	134	140	62	62	30	59
NOV	18.6	2.1	-	-	-	-	-	-	-	-	-	-	-
DEC	17.0	2.3	-	-	-	-	-	-	-	-	-	-	-

# Samples	64	12	219	217	217	231	230	62	62	60	60	62	62
Maximum-Yr.	23	2.3	2.7	1.0	<0.02	3.5	5.78	1700	1487	581	581	1700	1487
Minimum-Yr.	15	1.9	0.2	0.4	<0.02	0.8	0.38	20	69	10	15	18	30
Average-Yr.	19	2.1	1.9	0.6	<0.02	2.1	1.55	-	217	-	45	-	123
Geometric Mean	-	-	-	-	-	-	-	142	-	35	-	59	-

- (1) pH, Dissolved Oxygen, Temperature, Residual Chlorine, 96-hour LC50 and Coliform are determined on grab samples; all other parameters are determined on 24-hour flow proportioned composite samples.
- (2) Effluent is disinfected between April 1 and October 31.
- (3) Average values containing one or more results below the detection limit are preceded with a "<" symbol.

TABLE 6.10 CONTINUED: LULU ISLAND WWTP – 2025 ROUTINE MONITORING RESULTS AND PERFORMANCE SUMMARY

MONTH	Total Suspended Solids (mg/L)						Suspended Solids Ave. % Reduction		Ave. Susp. Solids Loadings (Tonnes/day)		Ave Conductivity (umhos/cm) FINAL	
	RAW INFLUENT			FINALEFFLUENT								
	Max.	Min.	Ave.	Max.	Min.	Ave.	Primary	Final	Influent	Effluent	INF	EFF
JAN	358	184	233	10	6	8	76	97	17.2	0.6	698	758
FEB	278	211	237	9	6	7	77	97	17.6	0.5	696	762
MAR	417	156	263	21	8	11	76	96	19.7	0.8	695	751
APR	368	175	223	11	6	9	74	96	16.1	0.6	698	769
MAY	417	188	311	10	6	8	80	97	21.9	0.6	713	780
JUN	492	220	317	9	4	6	60	98	22.8	0.4	704	777
JUL	320	210	276	7	4	6	77	98	18.8	0.4	685	762
AUG	362	220	285	6	4	4	78	98	19.2	0.3	674	754
SEP	488	203	305	5	3	4	80	99	20.8	0.3	678	755
OCT	340	202	256	7	4	6	76	98	17.3	0.4	706	782
NOV	511	190	295	8	5	6	78	98	21.8	0.5	701	764
DEC	433	173	252	50	6	10	74	96	19.9	0.8	707	765

# Samples	-	-	348	-	-	365	336	348	348	365	348	365
Maximum-Yr.	511	-	-	50	-	-	88	99	41.6	3.6	786	838
Minimum-Yr.	-	156	-	-	3	-	-142	79	11.5	0.2	622	636
Average-Yr.	-	-	272	-	-	7	76	97	19.5	0.5	696	765
Total to Date - Suspended Solids Loadings (Tonnes):									7100	185		

MONTH	BOD ₅ (mg/L)			CBOD ₅ (mg/L)			Average BOD ₅ % Reduction		Average BOD ₅ /CBOD ₅ Loadings (Tonnes/day)		Average COD (mg/L)	
	RAW INFLUENT			FINALEFFLUENT					Influent	Effluent		
	Max.	Min.	Ave.	Max.	Min.	Ave.	Primary	Final	BOD	cBOD	Inf	Eff
JAN	411	265	350	11	8	10	46	97	26.1	0.7	682	64
FEB	360	284	313	25	7	10	49	97	23.3	0.8	659	68
MAR	398	294	352	25	9	13	50	97	26.2	1.0	721	81
APR	361	289	330	13	9	11	48	97	23.9	0.8	664	75
MAY	427	332	377	13	8	10	52	97	26.6	0.7	797	70
JUN	470	304	371	9	6	7	38	98	26.7	0.5	785	64
JUL	349	276	317	7	5	6	47	98	21.8	0.4	726	63
AUG	344	276	310	6	4	5	47	99	21.0	0.3	710	60
SEP	421	271	323	6	4	5	52	98	22.0	0.4	726	62
OCT	333	247	298	8	5	6	43	98	20.0	0.4	674	62
NOV	441	261	328	8	6	7	54	98	24.8	0.5	702	56
DEC	313	253	275	129	7	18	51	97	22.4	1.4	643	79

# Samples	-	-	91	-	-	156	89	91	91	156	348	262
Maximum-Yr.	470	-	-	129	-	-	69	99	33.2	9.2	1170	354
Minimum-Yr.	-	247	-	-	4	-	-19	92	16.5	0.3	513	48
Average-Yr.	-	-	329	-	-	9	48	98	23.6	0.7	708	67
Total to Date - Biochemical Oxygen Demand Loadings (Tonnes):									8628	239		

- (1) Percent reduction is calculated only for days when both influent and effluent samples are tested.
- (2) Half the detection limit is used for less than values when calculating the monthly CBOD and TSS averages reported to WSER.
- (3) Average values containing one or more results below the detection limit are preceded with a "<" symbol.

TABLE 6.11 LULU ISLAND WWTP – 2025 COMPREHENSIVE PROGRAM INFLUENT CONCENTRATIONS SUMMARY

Parameters	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Max	Min.	Average
Aluminum Dissolved (µg/L)	48	24	17	29	17	18	14	27	30	22	16	26	48	14	24
Aluminum Total (µg/L)	318	334	257	371	337	283	267	266	485	261	308	270	485	257	313
Arsenic Total (µg/L)	1.0	1.0	0.9	1.1	1.0	1.1	1.0	1.2	1.0	1.0	1.0	1.1	1.2	0.9	1.0
Barium Dissolved (µg/L)	11.4	6.7	5.2	7.5	6.8	6.7	6.0	7.0	6.9	6.9	6.3	8.3	11.4	5.2	7.1
Barium Total (µg/L)	23.8	17.5	17.4	19.5	19.1	18.2	18.4	17.4	20.3	15.3	19.2	22.0	23.8	15.3	19.0
Boron Dissolved (µg/L)	74	58	61	53	61	68	54	53	54	63	59	53	74	53	59
Boron Total (µg/L)	76	62	65	58	61	70	60	59	60	65	64	52	76	52	63
Cadmium Dissolved (µg/L)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium Total (µg/L)	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.2	<0.2	<0.2
Calcium Total (µg/L)	17600	17100	17900	19200	17000	15700	16900	16400	16800	17800	17300	19500	19500	15700	17400
Chromium Dissolved (µg/L)	0.9	0.7	0.6	0.8	0.6	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.9	0.5	0.6
Chromium Total (µg/L)	2.2	1.9	1.9	2.1	1.7	1.7	1.8	1.8	1.9	1.9	1.8	2.0	2.2	1.7	1.9
Cobalt Dissolved (µg/L)	<0.5	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5
Cobalt Total (µg/L)	0.7	0.7	0.7	1.0	0.6	0.6	0.6	<0.5	0.6	0.9	0.7	0.8	1.0	<0.5	<0.7
Copper Dissolved (µg/L)	5.2	6.9	2.0	6.2	4.0	6.4	2.3	6.3	7.5	7.3	2.5	5.6	7.5	2.0	5.2
Copper Total (µg/L)	26.2	26.9	30.2	28.4	31.2	33.9	33.8	34.6	38.2	29.8	33.3	30.9	38.2	26.2	31.5
Cyanide Total (mg/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.02	<0.01	<0.01
Fluoride (mg/L)	0.05	<0.05	<0.05	0.12	0.06	0.05	<0.05	0.12	0.10	<0.05	<0.05	0.15	0.15	<0.05	<0.08
Hardness as CaCO ₃ (mg/L)	73.5	71.8	74.8	78.1	71.8	68.2	69.9	65.4	66.2	67.9	75.2	80.0	80.0	65.4	71.9
Iron Dissolved (µg/L)	858	863	514	745	580	686	382	603	644	678	385	805	863	382	645
Iron Total (µg/L)	2240	2350	2560	2320	2240	2160	2080	1890	2160	1840	2210	2940	2940	1840	2250
Lead Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Lead Total (µg/L)	1.4	1.5	2.0	1.7	2.1	2.2	2.1	2.8	2.8	1.8	1.9	1.8	2.8	1.4	2.0
Magnesium Total (µg/L)	7170	7090	7280	7310	7130	7070	6710	5940	5870	5700	7750	7580	7750	5700	6880
Manganese Dissolved (µg/L)	69.4	71.1	61.7	65.3	60.0	57.0	56.4	52.2	49.3	53.9	60.0	71.0	71.1	49.3	60.6
Manganese Total (µg/L)	93.0	95.2	94.3	91.3	86.8	87.3	89.3	77.7	80.1	78.6	93.6	106	106	77.7	89.4
Mercury Total (µg/L)	<0.05	<0.05	0.06	<0.05	0.07	0.09	<0.05	0.12	0.07	<0.05	0.06	0.11	0.12	<0.05	<0.07
Methylene Blue Active Substance (mg/L)	2.2	2.8	2.9	2.4	2.6	2.9	3.6	4.4	4.7	3.0	3.0	2.8	4.7	2.2	3.1
Molybdenum Dissolved (µg/L)	1.0	0.8	0.8	1.0	0.8	0.7	0.7	0.8	0.8	0.9	1.0	0.9	1.0	0.7	0.9
Molybdenum Total (µg/L)	1.5	1.2	1.6	1.6	1.4	1.4	1.4	1.4	1.6	1.4	1.5	1.5	1.6	1.2	1.5
Nickel Dissolved (µg/L)	2.3	1.8	1.6	2.9	1.5	1.4	1.0	1.5	1.4	1.4	1.7	1.7	2.9	1.0	1.7
Nickel Total (µg/L)	3.6	2.9	3.1	4.1	2.8	3.1	2.7	2.9	3.0	2.6	3.1	5.1	5.1	2.6	3.3
Nitrogen - Ammonia as N (mg/L)	29.5	32.0	31.1	28.2	34.5	31.8	33.0	32.3	32.8	32.9	32.5	32.2	34.5	28.2	31.9
Nitrogen - Nitrate as N (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrogen - Nitrite as N (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Nitrogen - Total Kjeldahl (mg/L)	41	47	45	40	56	49	53	49	53	49	46	48	56	40	48
Oil & Grease (mg/L)	24	31	29	24	33	32	32	33	31	48	30	33	48	24	32
Phenol (mg/L)	0.04	0.04	0.04	0.04	0.05	0.05	0.05	0.057	0.057	0.056	0.042	0.044	0.06	0.04	0.05
Phosphorus Dissolved (µg/L)	2980	2850	2700	2190	3080	2650	3220	2930	2970	2900	2420	2680	3220	2190	2800
Phosphorus Total (µg/L)	4920	4820	5170	4210	5020	4770	5140	5250	5590	5150	4620	5080	5590	4210	4980
Selenium Total (µg/L)	<0.5	<0.5	0.6	<0.5	0.5	0.6	<0.5	0.5	1.0	0.7	<0.5	0.7	1.0	<0.5	<0.6
Silver Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sulphate (mg/L)	17.6	16.5	16.5	16.6	12.4	13.4	10.1	10.2	9.9	11.0	17.5	14.8	17.6	9.9	13.9
Vanadium Dissolved (µg/L)	0.7	0.7	0.6	0.7	0.6	0.6	0.7	0.6	0.6	0.7	0.8	0.8	0.8	0.6	0.7
Vanadium Total (µg/L)	1.4	1.4	1.3	1.5	1.3	1.4	1.2	1.2	1.8	1.4	1.6	1.6	1.8	1.2	1.4
Zinc Dissolved (µg/L)	19	20	15	17	13	19	11	16	15	16	12	15	20	11	16
Zinc Total (µg/L)	91	93	108	81	96	117	104	112	132	98	96	100	132	81	102

TABLE 6.12 LULU ISLAND WWTP – 2025 COMPREHENSIVE PROGRAM EFFLUENT CONCENTRATIONS SUMMARY

Parameters	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Max	Min.	Average
Aluminum Dissolved (µg/L)	11	6	7	8	6	7	8	9	12	6	7	7	12	6	8
Aluminum Total (µg/L)	26	22	19	23	17	18	19	16	15	19	18	19	26	15	19
Arsenic Total (µg/L)	0.7	0.6	0.6	0.8	0.7	0.7	0.7	0.7	0.6	0.8	0.7	0.8	0.8	0.6	0.7
Barium Dissolved (µg/L)	3.3	2.9	3.8	4.3	4.8	2.9	3.5	3.0	3.1	2.6	3.7	11.4	11.4	2.6	4.1
Barium Total (µg/L)	4.4	4.3	5.1	5.7	5.5	4.0	5.0	4.1	4.1	3.4	4.9	14.9	14.9	3.4	5.5
Boron Dissolved (µg/L)	68	64	62	56	58	62	60	58	56	58	59	50	68	50	59
Boron Total (µg/L)	70	68	63	58	63	64	62	64	65	58	65	53	70	53	63
Cadmium Dissolved (µg/L)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium Total (µg/L)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium Total (µg/L)	16600	16400	16400	17400	15500	13400	15600	14200	14900	15500	15700	16600	17400	13400	15700
Chromium Dissolved (µg/L)	0.6	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	<0.5
Chromium Total (µg/L)	0.7	0.6	0.6	0.7	0.5	0.5	0.5	<0.5	0.6	<0.5	0.6	0.6	0.7	<0.5	<0.6
Cobalt Dissolved (µg/L)	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	0.5	0.7	<0.5	<0.5
Cobalt Total (µg/L)	0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	0.6	0.8	<0.5	<0.6
Copper Dissolved (µg/L)	2.3	2.1	2.1	3.1	3.0	5.0	3.9	5.0	5.1	4.3	2.4	2.2	5.1	2.1	3.4
Copper Total (µg/L)	6.4	6.3	7.6	7.4	6.6	9.7	8.3	9.0	8.7	8.2	6.5	6.3	9.7	6.3	7.6
Cyanide Total (mg/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.02	<0.01	<0.01
Fluoride (mg/L)	0.05	0.06	<0.05	0.06	0.07	<0.05	<0.05	0.06	0.13	<0.05	0.06	<0.05	0.13	<0.05	<0.06
Hardness as CaCO3 (mg/L)	69.6	68.3	68.7	71.3	66.7	59.4	65.6	56.6	60.1	60.4	67.8	70.5	71.3	56.6	65.4
Iron Dissolved (µg/L)	104	106	97	105	120	109	129	86	90	98	101	94	129	86	103
Iron Total (µg/L)	317	326	458	363	352	329	330	216	196	208	258	339	458	196	308
Lead Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Lead Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Magnesium Total (µg/L)	6810	6640	6750	6780	6810	6310	6490	5170	5560	5300	6960	7020	7020	5170	6380
Manganese Dissolved (µg/L)	41.7	48.8	58.7	63.4	58.7	52.7	53.9	39.6	33.5	30.0	53.1	57.7	63.4	30.0	49.3
Manganese Total (µg/L)	61.5	65.3	69.9	68.8	64.4	57.0	64.4	47.6	42.8	42.2	62.5	74.8	74.8	42.2	60.1
Mercury Total (µg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Methylene Blue Active Substance (mg/L)	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0.2	0.3	0.2	0.3	0.2	0.3
Molybdenum Dissolved (µg/L)	0.8	0.6	<0.5	1.1	0.6	0.9	0.7	0.6	0.7	1.1	0.8	0.7	1.1	<0.5	<0.8
Molybdenum Total (µg/L)	0.8	0.6	0.6	1.2	0.7	1.0	0.9	0.7	0.8	1.3	0.9	0.8	1.3	0.6	0.9
Nickel Dissolved (µg/L)	2.4	1.8	1.6	2.6	1.4	1.4	1.4	1.4	1.3	1.6	2.1	2.1	2.6	1.3	1.8
Nickel Total (µg/L)	2.6	1.9	1.8	2.9	1.6	1.5	1.7	1.5	1.6	1.8	2.3	2.3	2.9	1.5	2.0
Nitrogen - Ammonia as N (mg/L)	39.1	43.1	34.0	34.4	42.1	41.4	39.4	42.5	40.7	41.5	42.4	41.5	43.1	34.0	40.2
Nitrogen - Nitrate as N (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.01
Nitrogen - Nitrite as N (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	0.02	0.02	0.02	0.03	0.03	<0.01	<0.01	0.03	<0.01	<0.02
Nitrogen - Total Kjeldahl (mg/L)	43	46	38	37	47	48	44	46	44	45	42	45	48	37	44
Oil & Grease (mg/L)	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3	<3
Phenol (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.002	0.002	0.002	<0.002	<0.002	<0.01	<0.01	<0.01
Phosphorus Dissolved (µg/L)	3290	3640	2440	2430	3250	3540	3560	3540	3410	3190	2880	3250	3640	2430	3200
Phosphorus Total (µg/L)	3480	4070	2830	2650	3450	3610	3570	4160	3920	3430	3210	3740	4160	2650	3510
Selenium Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sulphate (mg/L)	22.1	19.1	18.2	21.5	19.3	20.4	19.3	18.3	19.6	22.0	23.6	20.9	23.6	18.2	20.4
Vanadium Dissolved (µg/L)	0.6	0.5	<0.5	0.6	0.5	<0.5	0.5	<0.5	0.6	0.6	0.6	0.7	0.7	<0.5	<0.6
Vanadium Total (µg/L)	0.6	0.5	<0.5	0.5	<0.5	<0.5	0.5	<0.5	0.6	0.6	0.5	0.7	0.7	<0.5	<0.5
Zinc Dissolved (µg/L)	17	14	15	19	13	30	28	16	17	19	11	14	30	11	18
Zinc Total (µg/L)	23	20	21	23	15	34	33	20	20	22	16	20	34	15	22

6.7 LULU ISLAND WWTP — ANNUAL TREND SUMMARY (2021–2025)

Graphical analysis of results is presented under Figure 6.4.

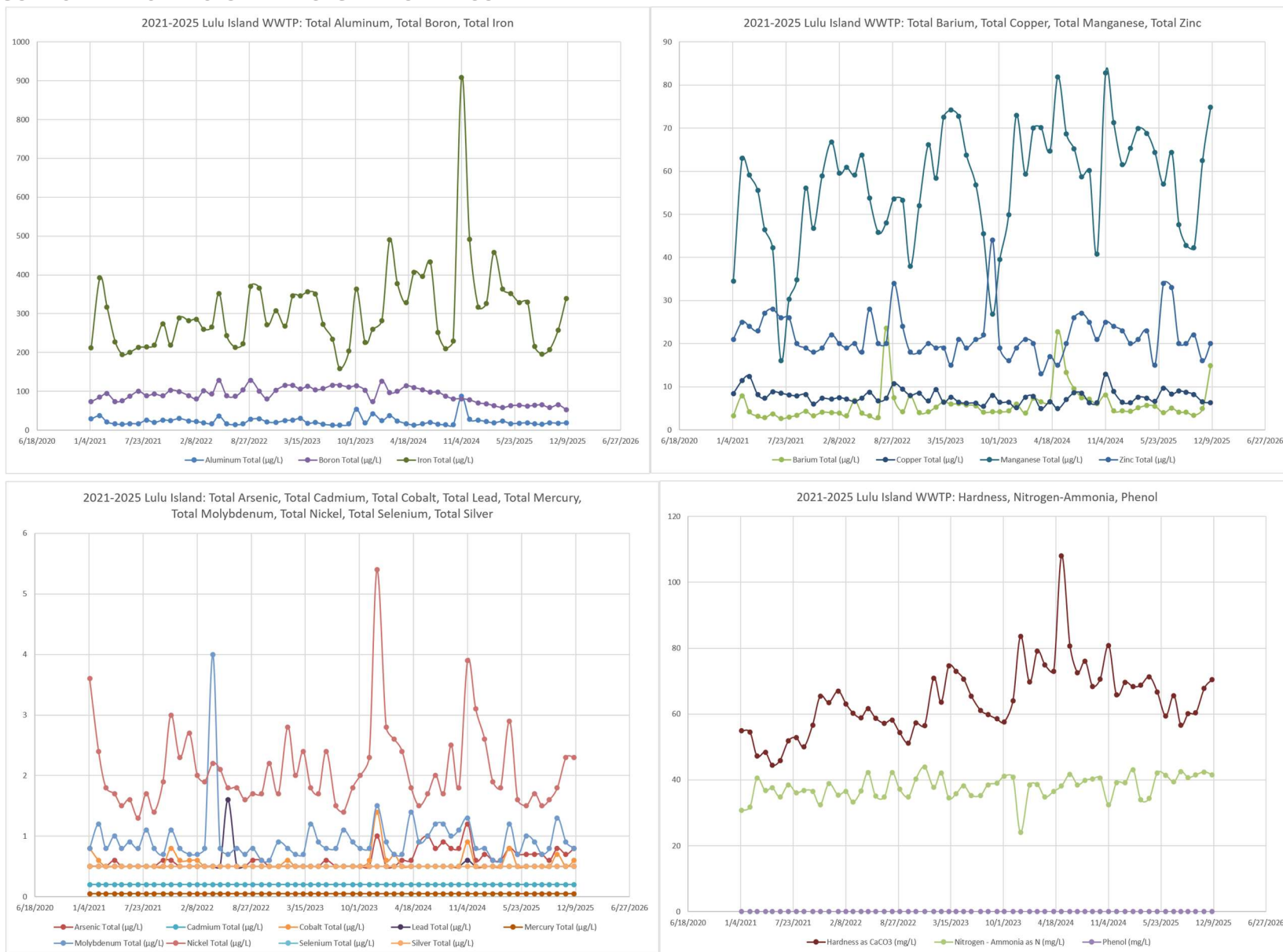
Notable trends (2021–2025)

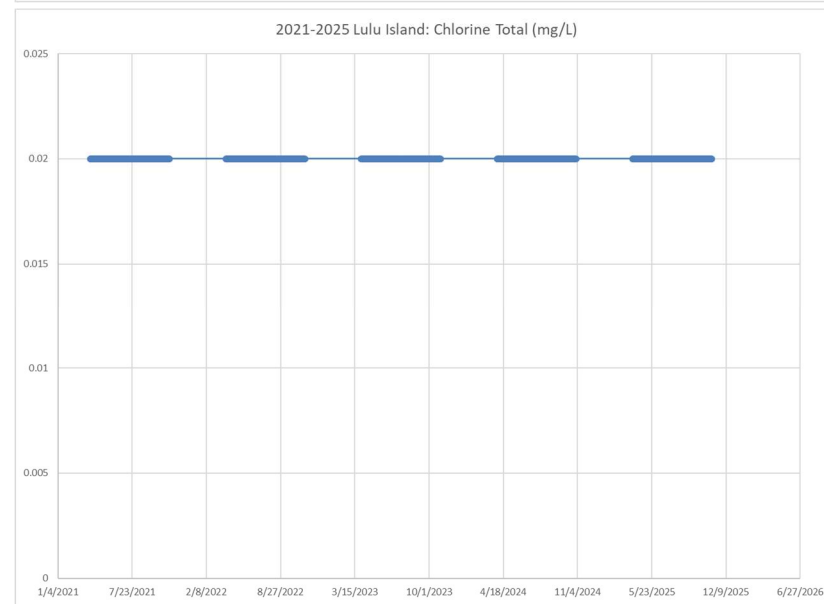
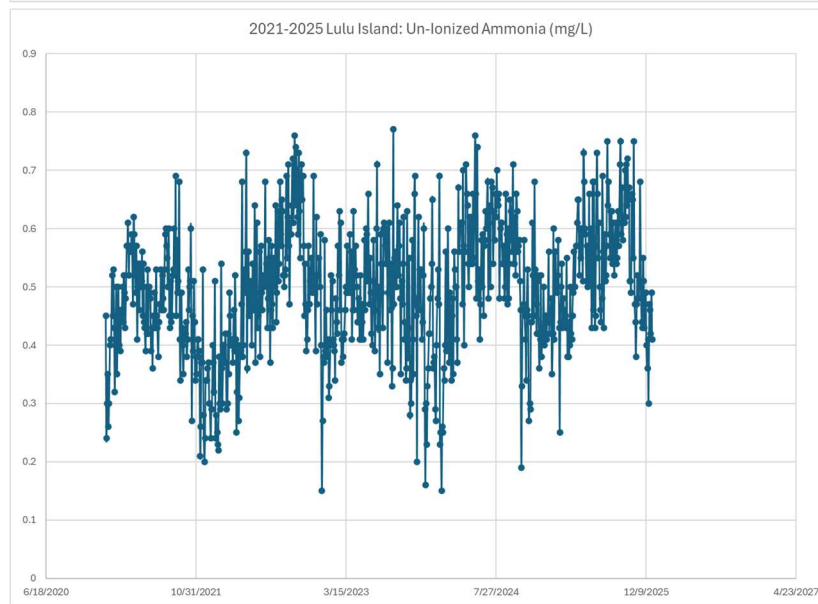
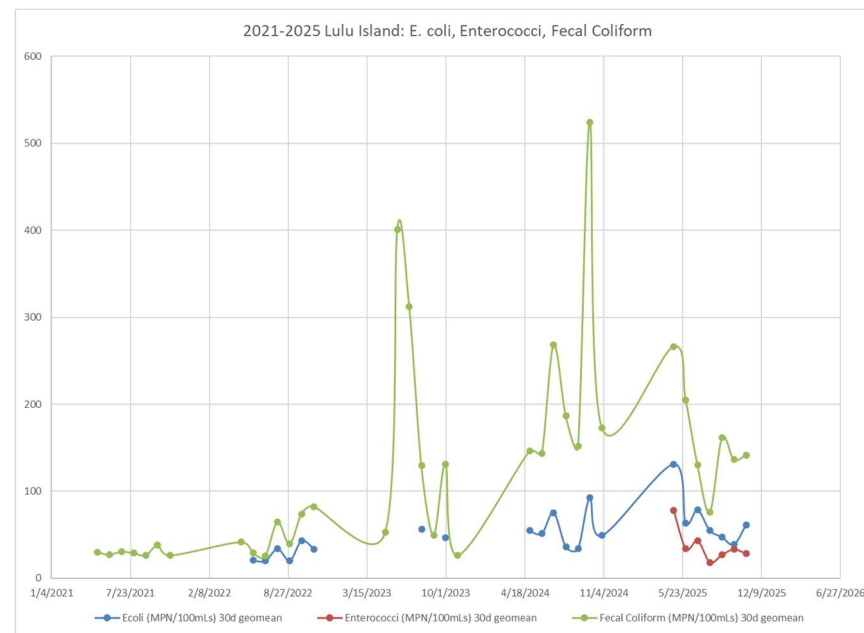
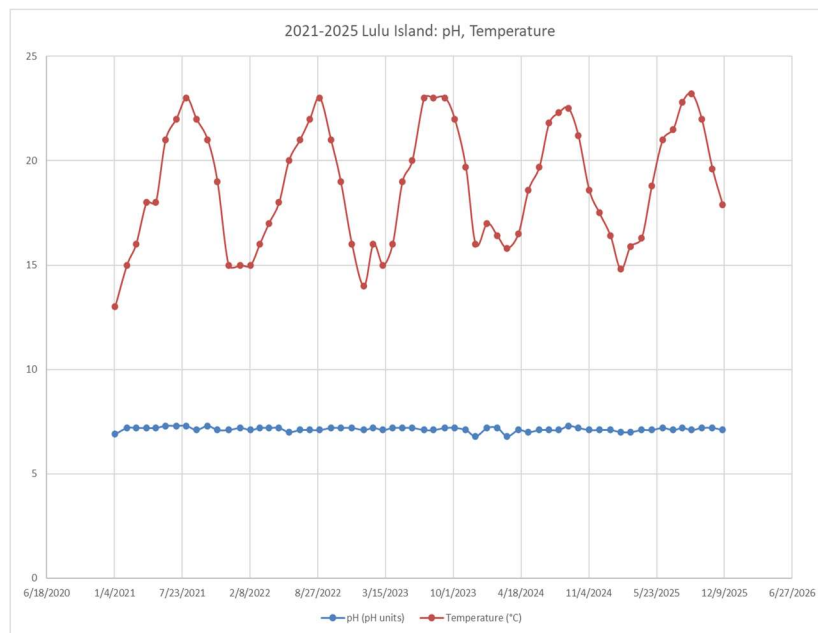
- Most monitored parameters track within stable bands year-to-year. The variability visible on the charts is consistent with seasonal patterns and routine operational fluctuation rather than directional change.
- Metals and other trace parameters appear low and generally steady. Where short-term excursions occur, they present as isolated points and do not persist across subsequent sampling periods.
- General chemistry indicators show modest, repeating oscillation that aligns with expected seasonal/source-water influences; no step-changes or multi-year drifts are apparent in the figures.
- Field parameters—where shown—maintain typical operational control (e.g., pH within a tight band; temperature is following expected seasonal cycles) without out-of-season anomalies.

Interpretation and reporting context

The dataset depicts a stable operating environment at Lulu Island WWTP with no clear multi-year upward trends in the reviewed panels. Observed fluctuations are consistent with seasonality and routine plant variability.

FIGURE 6.4 2021-2025 TRENDS: GRAPHS AND SUMMARY





7.0 NORTHWEST LANGLEY WWTP



7.0 NORTHWEST LANGLEY WWTP

7.1 EFFLUENT QUALITY

The quality of effluent from the Northwest Langley WWTP in 2025, along with the discharge monitoring parameters listed in Operational Certificate (OC) 4339, is summarized in Table 7.1.

TABLE 7.1 NORTHWEST LANGLEY WWTP – 2025 PERFORMANCE SUMMARY

Operational Certificate 4339, March 04, 2022

Parameters	Testing Frequency	OC Limits	Max. Value for the Year	Number of Times Criteria Not Met											
				Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total Discharge Flow (MLD)	Daily	42	34.6	0	0	0	0	0	0	0	0	0	0	0	0
CBOD ₅ (mg/L)	1/week	45	30	0	0	0	0	0	0	0	0	0	0	0	0
Suspended Solids (mg/L)	1/week	45	28	0	0	0	0	0	0	0	0	0	0	0	0
Chlorine Residual (mg/L)*	Daily	<0.1	N/A	0	0	0	0	0	0	0	0	0	0	0	0
Disinfection	-	-	-	0	0	0	0	0	0	0	1	0	0	0	0

* Effluent disinfected between April 1 and October 31. Peracetic Acid is used as the primary disinfectant

7.2 PERFORMANCE REVIEW AND OPERATIONAL SUMMARY

The Ministry of Environment and Parks (ENV), under the provisions of the Environmental Management Act and in accordance with Metro Vancouver's ILWRMP, issued OC 4339 on March 4, 2022. The OC specifies authorized levels shown in Table 7.2.

TABLE 7.2 NORTHWEST LANGLEY WWTP – OPERATIONAL CERTIFICATE AUTHORIZED LEVELS

Daily authorized rate of discharge	42,000 cubic meters/day, maximum
5-day CBOD ₅	45 mg/L, maximum
TSS (non-filterable residue)	45 mg/L, maximum

7.2.1. PERFORMANCE REVIEW

A comprehensive review of 2025 routine monitoring results and performance summary is provided in Table 7.9 at the end of Section 7. A comprehensive summary of influent and effluent concentrations is provided in Tables 7.10 and 7.11, respectively at the end of Section 7.

PLANT BYPASSES

There were no plant bypass events in 2025.

DAILY DISCHARGE LIMITS

There were no exceedances of daily discharge limits specified by the OC.

EVENTS REPORTED TO REGULATORY AUTHORITIES

There was one instance of Category 1 and no instance of Category 2 or Category 3 reported to the regulators in 2025. See Table 7.3 for a detailed summary of the events, including probable causes, mitigation measures, and potential environmental effects.

TABLE 7.3 NORTHWEST LANGLEY WWTP – CATEGORY 1 EVENTS REPORTED TO THE ENV

Plant	Date	Description	Quantity Discharged	Duration	Probable Cause	Mitigation Measures	Potential Environmental Effects
North-west Langley WWTP	Aug 8	Discharge of treated wastewater that was not fully disinfected.	0.04 million litres	0.017 days	A delay of starting the Peracetic Acid (PAA) pumps while returning the Chlorine Contact Tank (CCT) to service.	The PAA dosing system pumps were started, and the disinfection system was restored to service.	The following information is an estimation based on dilution dispersion modelling of the receiving environment: The applicable Health Canada Recreational Water Quality Guidelines were expected to have been met in the Fraser River. The applicable BC Ministry of Environment and Parks Water Quality Guidelines for fecal coliforms were expected to have been met in the Fraser River.

DISINFECTION

From April 1 to October 31 inclusive, the Northwest Langley WWTP final effluent was disinfected using Peracetic Acid (PAA). The PAA dosage ranged from 0.1 to 2.8 mg/L with an average of 1.9 mg/L.

There was one disinfection disruption on August 8, 2025, which lasted 24 minutes.

The Fraser River fecal coliform WQO of 200 MPN/100 mL for the edge of the IDZ was predicted to have been met from April to October in 2023 as shown in Table 7.4.

TABLE 7.4 NORTHWEST LANGLEY WWTP – PREDICTED 30-DAY FECAL COLIFORM GEOMETRIC MEAN AT THE IDZ

Month	Apr	May	Jun	Jul	Aug	Sept	Oct
Max 30-day Geometric Mean (MPN/100 mL) *	1674	1195	534	636	59	689	485
Dilution Factor**	51	51	51	51	51	51	51
IDZ Result (MPN/100 ml) ***	32.8	23.4	10.5	12.5	11.7	13.5	9.5
WQO (Met or Not Met)	Met	Met	Met	Met	Met	Met	Met

* Geometric Mean (MPN/100mL) over a 30-day period (effluent).

** Lowest seasonal average dilution factor: 48-h average dilution factor based on peak plant flow and low river flow conditions.

*** IDZ Result – determined by calculation of geometric mean of fecal coliform levels in the receiving water due to discharges of final effluent, for 30-day periods at the edge of the IDZ.

DAILY DISCHARGE LIMITS

There were no exceedances of the daily discharge limits in 2025.

7.3 EFFLUENT MONITORING

7.3.1. FLOW AND LOADINGS

A total of 6,585 ML of wastewater was treated at the Northwest Langley WWTP in 2025. The average daily flow of 18.0 MLD was 0.84% higher than in 2024. The highest average daily flow of 31.9 MLD occurred on Dec 10th and a peak instantaneous flow of 42.5 MLD occurred on January 28th (Figure 7.1).

FIGURE 7.1 NORTHWEST LANGLEY WWTP – 2025 EFFLUENT TOTAL DAILY FLOWS

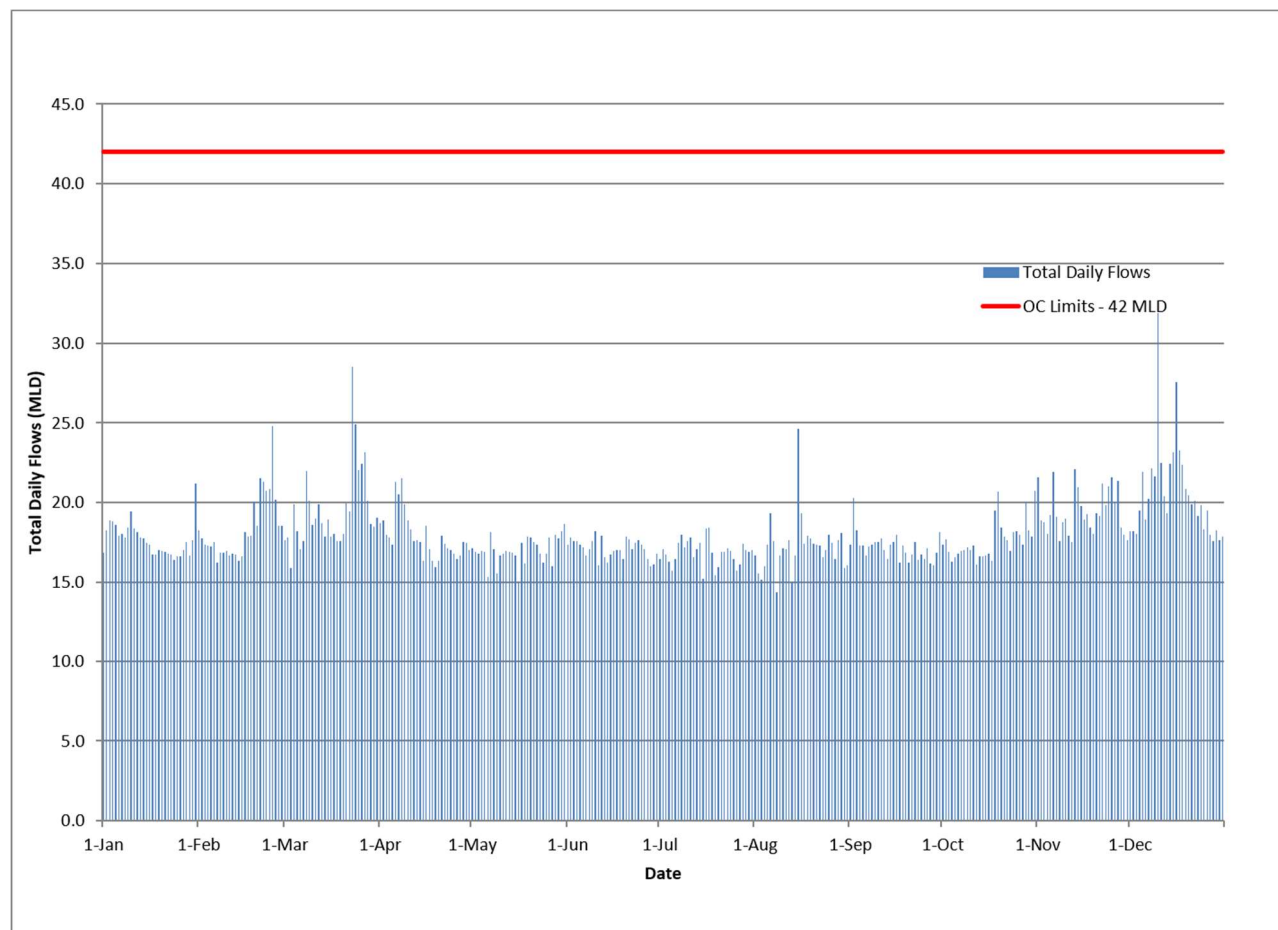


TABLE 7.5 NORTHWEST LANGLEY WWTP – 2016–2025 ANNUAL DATA FOR FLOW, SS AND BOD₅

NW LANGLEY WWTP									
YEAR	FLOWS MLD	Suspended Solids mg/L		Suspended Solids Tonnes/year		BOD ₅	CBOD ₅	BOD ₅	CBOD ₅
		INF	EFF	INF	EFF	mg/L		Tonnes/year	
						INF	EFF	INF	EFF
2016	12.4	280	18	1258	83	292	15	1330	69
2017	12.8	292	18	1360	85	295	15	1399	68
2018	13.3	272	19	1309	91	329	17	1592	83
2019	14.4	261	19	1366	99	298	16	1575	84
2020	15.4	251	18	1403	102	276	15	1559	81
2021	15.8	256	17	1460	100	277	14	1612	77
2022	15.7	294	18	1661	102	320	15	1825	85
2023	16.3	292	19	1725	112	321	18	1917	107
2024	17.7	279	19	1786	121	320	18	2058	117
2025	18.0	266	17	1743	115	288	16	1898	108

The influent SS concentrations ranged from 160 to 388 mg/L with an average of 255 mg/L. The influent BOD₅ concentrations varied from 206 to 389 mg/L with an average of 288 mg/L. The influent SS loadings of 1,743 tonnes/year was 2.4% lower than in 2024 and the BOD₅ loadings of

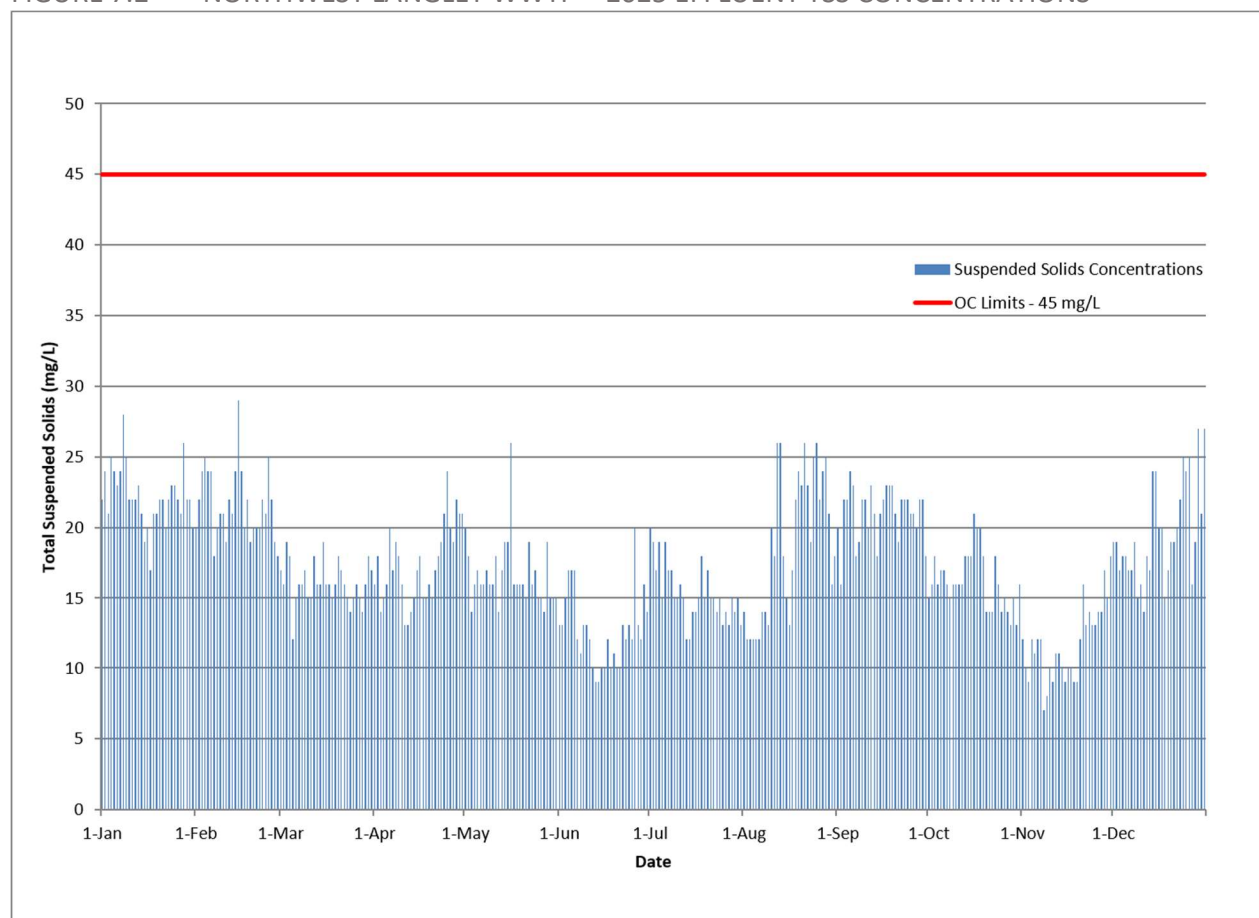
1,898 tonnes/year was 7.8% lower than in 2024 (Table 7.5). The average TSS reduction was 93% and the average TSS removal was 94%.

7.3.2. TOTAL SUSPENDED SOLIDS (TSS)

The effluent SS concentrations were between 7 and 29 mg/L with an average of 17 mg/L (Figure 7.2). The average effluent SS loadings of 115 tonnes/year was 5.2% lower than in 2024.

Effluent TSS showed a seasonal trend, with higher values in winter, improving through spring, and lowest in early summer. Occasional late summer spikes occurred, but overall performance remained stable due to effective treatment and chemical addition.

FIGURE 7.2 NORTHWEST LANGLEY WWTP – 2025 EFFLUENT TSS CONCENTRATIONS

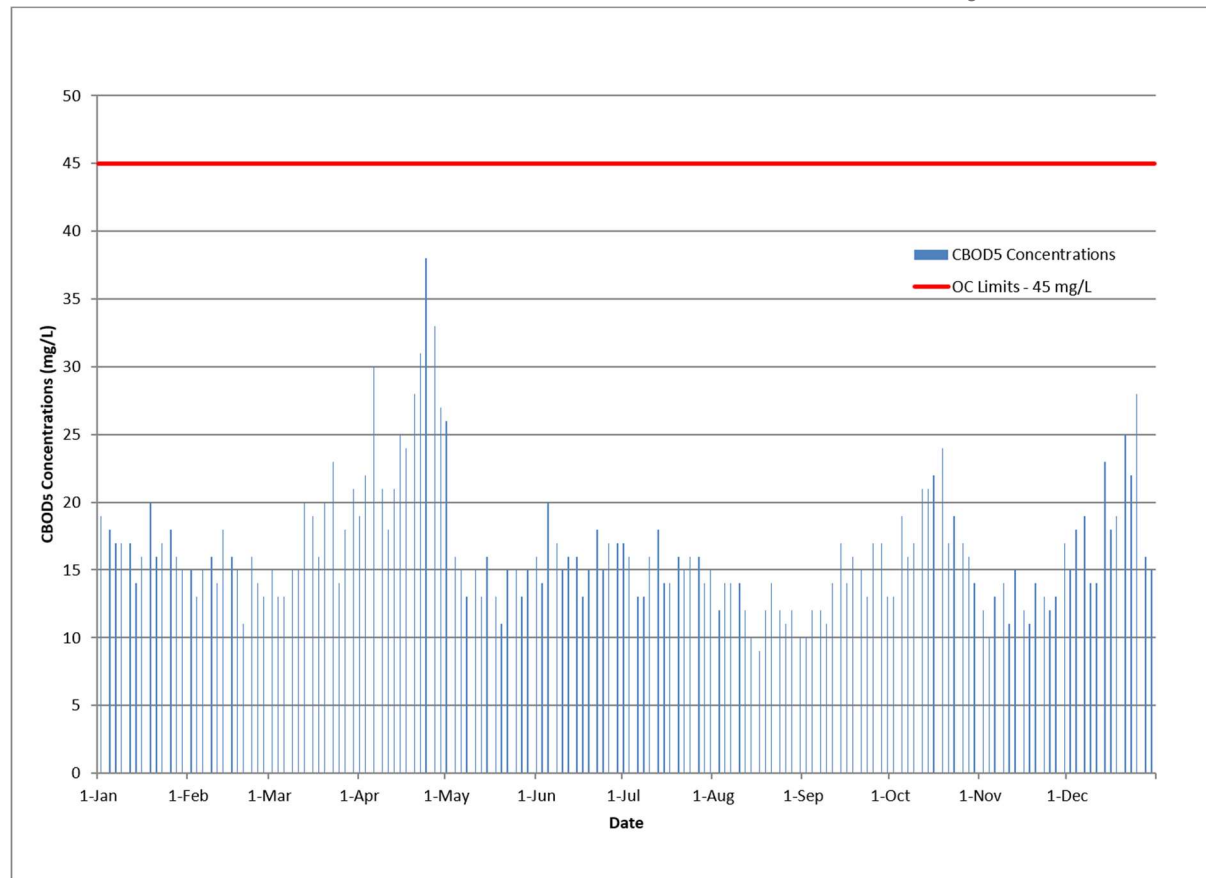


7.3.3. CARBONACEOUS BIOCHEMICAL OXYGEN DEMAND (CBOD₅)

The effluent CBOD₅ concentrations were between 9 and 38 mg/L with an average of 16 mg/L (Figure 7.3). The effluent CBOD₅ loadings of 108 tonnes/year was 7.5% lower than in 2024.

CBOD₅ showed a seasonal trend, with higher winter values due to reduced biological activity, decreasing through spring and reaching lowest levels in summer. Occasional spikes occurred, but overall performance remained stable and well controlled.

FIGURE 7.3 NORTHWEST LANGLEY WWTP – 2025 EFFLUENT TOTAL CBOD₅ CONCENTRATIONS



7.4 WASTEWATER SYSTEMS EFFLUENT REGULATIONS (WSER)

The WSER specifies the limits for the substances that are authorized to be deposited by any wastewater system. The effluent quality standards and limits for the Northwest Langley WWTP are shown in Table 7.6.

TABLE 7.6 NORTHWEST LANGLEY WWTP – WSER AUTHORIZED LEVELS

Quarterly average CBOD	25 mg/L
Quarterly average concentration of SS	25 mg/L
Quarterly average concentration of total residual chlorine	0.02 mg/L

Quarterly monitoring reports were submitted through ECCC's ERRIS. The effluent monitoring data reported included the number of days effluent was deposited, the total volume of effluent deposited in cubic meters, the average concentration of CBOD (in mg/L), the average concentration of SS (in mg/L), and acute lethality.

During the 2025 reporting year, the Northwest Langley Wastewater Treatment Plant met the WSER effluent quality standards and authorized limits for CBOD and SS, with one exceedance. In April 2026, the monthly average CBOD concentration was 26 mg/L. This exceedance was investigated, and operational conditions were reviewed to identify contributing factors and implement appropriate corrective measures.

In 2025, WSER monitoring frequency transitioned from quarterly to monthly average concentrations following an increase in influent flow in 2024.

Effluent discharged from the Northwest Langley WWTP was not acutely lethal in 2025. All effluent quality monitoring results are summarized in Table 7.7.

TABLE 7.7 NORTHWEST LANGLEY WWTP – 2025 WSER MONITORING REPORT

	Number of days that effluent was deposited	Total volume of effluent deposited (m ³)	Average CBOD (mg/L)	Average concentration of suspended solids (mg/L)
January	31	547,641	17	22
February	28	514,560	15	22
March	31	605,047	17	16
April	30	535,908	26	17
May	31	527,138	15	17
June	30	513,034	16	13
July	31	522,792	15	15
August	31	534,566	12	19
September	30	515,740	14	21
October	31	545,841	18	16
November	30	583,405	13	12
December	31	639,255	19	20

Acute Lethality Test Results

Sample Date (YYYY/MM/DD)	EPS 1 / RM / 13	EPS 1 / RM / 50	Was sample acutely lethal?
2025/05/08	Multi-Concentration Test	Yes	No

7.5 SECONDARY PROCESS

Approximately 54% of plant flow passed through the plant equalization pond where it was mixed and aerated before discharge into the TF. The remaining 46% of the raw influent flowed directly to the TF.

The average soluble CBOD₅ (SCBOD₅) removal across the TF was 57%. The trickling filter effluent SCBOD₅ concentrations were in the range of 6 to 120 mg/L with an average of 11 mg/L.

As part of the operational control strategy to maintain regulatory compliance, alum is selectively dosed upstream of the secondary clarifiers to promote coagulation and floc formation, enhance solids separation, and minimize total suspended solids (TSS) in the final effluent when process performance indicates the need.

7.6 SLUDGE TREATMENT

In 2025, 18,318 m³ of undigested thickened waste secondary sludge was trucked to the Annacis Island, Iona Island and Lulu Island WWTPs for processing.

7.7 TRUCKED LIQUID WASTE RECORDS

TABLE 7.8 2025 SUMMARY OF TRUCKED WASTES RECORDS FOR THE NORTHWEST LANGLEY WWTP

	Annual Total
Total domestic discharge volume, m ³	5,938
Total number of domestic generator loads	722
Total non-domestic discharge volume, m ³	0
Total number of non-domestic generator loads	0
Total discharge volume, m ³	5,938
Total number of carrier loads	722

TABLE 7.9 NORTHWEST LANGLEY WWTP – 2025 ROUTINE MONITORING RESULTS AND PERFORMANCE SUMMARY

MONTH	Max. EFF Inst. Flow Rate (m3/sec)	Total Daily Effluent Flow (MLD)			Ave. DO (mg/L)	Un-ionized NH3 Comp - Max (mg/L) EFF	Ave NH3 Grab (mg/L) EFF
		Max.	Min.	Ave.	FINAL EFF		
JAN	0.5	21.2	16.4	17.7	6.8	0.31	29.7
FEB	0.4	24.8	16.2	18.4	7.5	0.28	29.4
MAR	0.4	28.5	15.9	19.5	5.5	0.33	27.4
APR	0.4	21.5	16.0	17.9	6.3	0.50	31.2
MAY	0.4	18.7	15.0	17.0	5.7	0.34	33.7
JUN	0.4	18.2	16.0	17.1	5.2	0.34	31.1
JUL	0.4	18.4	15.2	16.9	5.0	0.31	24.6
AUG	0.4	24.6	14.4	17.2	5.7	0.24	27.5
SEP	0.4	20.3	16.1	17.2	5.1	0.29	29.0
OCT	0.4	20.7	16.1	17.6	5.5	0.29	25.3
NOV	0.4	22.1	17.5	19.4	6.6	0.43	27.6
DEC	0.4	31.9	17.6	20.6	5.1	0.32	27.7

# Samples	-	-	-	365	60	52	64
Maximum-Yr.	0.5	31.9	-	-	8.8	0.50	35.9
Minimum-Yr.	-	-	14.4	-	3.7	0.11	19.9
Average-Yr.	-	-	-	18.0	5.8	0.26	28.6

MONTH	Average COD		PAA Dose mg/L EFF	Residual PAA (mg/L) Morning At Injection	Geometric Mean Fecal Coliform (MPN/100mL) AT EFFLUENT WEIR		Geometric Mean E. coli (MPN/100mL) AT EFFLUENT WEIR		Geometric Mean Enterococci (MPN/100mL) AT EFFLUENT WEIR		96 hr LC50 (%v/v) EFF
	INF	EFF			Monthly	Max 30 d GMean	Monthly	Max 30 d GMean	Monthly	Max 30 d GMean	
JAN	675	104	-	-	-	-	-	-	-	-	-
FEB	655	91	-	-	-	-	-	-	-	-	>100
MAR	612	108	-	-	-	-	-	-	-	-	-
APR	704	135	1.9	0.7	1,674	1,674	82	82	563	1,246	-
MAY	690	104	1.8	0.8	154	1,195	23	85	58	563	>100
JUN	683	112	2.0	0.8	603	534	77	97	272	587	-
JUL	683	115	1.9	0.8	477	636	56	85	33	272	-
AUG	646	99	1.8	0.8	587	598	67	97	64	136	>100
SEP	669	106	1.7	0.8	598	689	31	74	127	127	-
OCT	669	110	2.4	1.2	464	485	82	82	48	101	-
NOV	594	93	-	-	-	-	-	-	-	-	>100
DEC	603	107	-	-	-	-	-	-	-	-	-

# Samples	364	365	235	231	31	31	31	31	30	30	4
Maximum-Yr.	861	151	2.8	2.0	17,000	1,674	2,400	97	24,196	1,246	>100
Minimum-Yr.	363	60	0.1	0.5	78	209	<18	23	<10	19	>100
Average-Yr.	657	107	1.9	0.9	-	598	-	57	-	203	>100
Geometric Mean	-	-	-	-	517	-	53	-	95	-	-

NOTES:

- (1) pH, Dissolved Oxygen, Temperature, Residual Chlorine, 96-hour LC50 and Coliform are determined on grab samples; all other parameters are determined on 24-hour flow proportioned composite samples.
- (2) Effluent is disinfected between April 1 and October 31.
- (3) Average values containing one or more results below the detection limit are preceded with a "<" symbol.

TABLE 7.9

CONTINUED: NORTHWEST LANGLEY WWTP - 2025 ROUTINE MONITORING
RESULTS AND PERFORMANCE SUMMARY

MONTH	Total Suspended Solids (mg/L)						AVE TSS % Reduct.	Total Susp. Solids Average Loadings (Tonnes/day)	
	RAW INFLUENT			FINAL EFFLUENT				INF	EFF
	Max.	Min.	Ave.	Max.	Min.	Ave.			
JAN	330	231	264	28	17	22	92	4.66	0.39
FEB	353	200	265	29	18	22	92	4.83	0.40
MAR	304	188	253	19	12	16	94	4.88	0.31
APR	321	226	278	24	13	17	94	4.95	0.31
MAY	317	231	278	26	14	17	94	4.72	0.28
JUN	363	226	281	20	9	13	95	4.80	0.22
JUL	321	230	279	20	12	15	94	4.71	0.26
AUG	325	211	268	26	12	19	93	4.61	0.32
SEP	388	225	279	24	16	21	92	4.79	0.36
OCT	344	170	263	21	13	16	94	4.60	0.29
NOV	290	205	243	18	7	12	95	4.71	0.23
DEC	321	160	247	27	14	20	92	5.03	0.40

# Samples	-	-	364	-	-	365	364	364	365
Maximum-Yr.	388	-	-	29	-	-	97	6.67	0.62
Minimum-Yr.	-	160	-	-	7	-	88	2.94	0.12
Average-Yr.	-	-	266	-	-	17	93	4.77	0.31
Total to Date - Suspended Solids Loadings (Tonnes):								1743	114.7

MONTH	BOD ₅ (mg/L)			CBOD ₅ (mg/L)			AVE BOD ₅ % Reduct.	Average BOD ₅ /CBOD ₅ Loadings (Tonnes/day)	
	RAW INFLUENT			FINAL EFFLUENT				BOD INF	cBOD EFF
	Max.	Min.	Ave.	Max.	Min.	Ave.			
JAN	389	277	322	20	14	17	95	5.66	0.30
FEB	378	206	293	18	11	15	95	5.32	0.27
MAR	323	214	270	23	13	17	94	5.26	0.34
APR	370	269	320	38	18	26	92	5.69	0.46
MAY	357	265	305	26	11	15	95	5.15	0.25
JUN	321	257	293	20	13	16	95	5.13	0.28
JUL	308	246	276	18	13	15	95	4.71	0.26
AUG	293	211	266	14	9	12	95	4.64	0.21
SEP	338	249	294	17	10	14	96	5.20	0.24
OCT	338	235	294	24	13	18	94	5.15	0.32
NOV	316	221	262	17	10	13	95	5.25	0.25
DEC	274	208	245	28	14	19	93	5.30	0.39

# Samples	-	-	98	-	-	156	98	98	156
Maximum-Yr.	389	-	-	38	-	-	97	6.77	0.66
Minimum-Yr.	-	206	-	-	9	-	89	3.69	0.16
Average-Yr.	-	-	288	-	-	16	94	5.20	0.30
Total to Date - Biochemical Oxygen Demand Loadings (Tonnes):								1898	108.4

NOTES:

- (1) Percent reduction is calculated only for days when both influent and effluent samples were tested.
- (2) Half the detection limit is used for less than values when calculating the monthly CBOD and TSS averages reported to WSER.
- (3) Average values containing one or more results below the detection limit are preceded with a "<" symbol.

TABLE 7.10 NORTHWEST LANGLEY WWTP – 2025 COMPREHENSIVE PROGRAM INFLUENT CONCENTRATIONS SUMMARY

Parameters	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Max	Min.	Average
Aluminum Dissolved (µg/L)	86	83	97	52	30	208	62	35	169	86	77	83	208	30	89
Aluminum Total (µg/L)	1180	831	1210	597	579	1200	478	556	944	538	508	599	1210	478	768
Arsenic Total (µg/L)	0.6	0.5	<0.5	0.6	<0.5	0.6	<0.5	0.6	0.5	0.6	0.5	0.6	0.6	<0.5	<0.6
Barium Dissolved (µg/L)	5.5	5.4	4.9	7.5	8.7	5.1	4.9	5.9	4.0	4.9	6.1	5.3	8.7	4.0	5.7
Barium Total (µg/L)	16.5	17.2	16.4	19.7	16.6	19.2	14.9	16.5	13.1	14.3	16.5	18.3	19.7	13.1	16.6
Boron Dissolved (µg/L)	66	52	47	42	85	70	64	57	62	71	59	55	85	42	61
Boron Total (µg/L)	73	55	53	50	75	84	76	66	74	75	71	72	84	50	69
Cadmium Dissolved (µg/L)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium Total (µg/L)	<0.2	0.3	0.2	<0.2	1.0	0.3	0.2	0.2	<0.2	0.2	<0.2	0.2	1.0	<0.2	<0.3
Calcium Total (µg/L)	13800	11900	14500	16500	14300	9770	14500	15700	9690	11800	15200	13100	16500	9690	13400
Chromium Dissolved (µg/L)	2.0	2.1	1.8	1.9	<0.5	1.8	1.5	1.2	1.3	1.5	1.4	1.5	2.1	<0.5	<1.5
Chromium Total (µg/L)	4.7	4.6	5.2	4.6	4.1	5.3	3.6	3.4	3.6	3.6	3.7	4.7	5.3	3.4	4.3
Cobalt Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt Total (µg/L)	0.7	1.0	0.7	0.8	0.5	0.8	<0.5	0.6	<0.5	<0.5	0.5	0.5	1.0	<0.5	<0.6
Copper Dissolved (µg/L)	14.0	16.0	10.3	10.8	2.8	17.2	8.8	7.5	9.1	10.9	14.6	8.0	17.2	2.8	10.8
Copper Total (µg/L)	43.4	49.1	47.6	43.2	41.3	67.2	39.3	34.4	36.9	40.1	42.5	52.1	67.2	34.4	44.8
Cyanide Total (mg/L)	<0.02	<0.02	<0.02	<0.02	<0.02	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.02	<0.01	<0.01
Fluoride (mg/L)	0.22	0.38	0.35	0.39	0.19	0.38	0.22	0.21	0.38	0.75	0.95	0.73	0.95	0.19	0.43
Hardness as CaCO ₃ (mg/L)	50.1	44.9	53.2	59.0	49.3	37.3	49.9	52.2	36.1	43.0	55.0	48.7	59.0	36.1	48.2
Iron Dissolved (µg/L)	165	174	197	176	113	235	176	152	273	202	176	154	273	113	183
Iron Total (µg/L)	818	740	866	838	685	1160	633	869	1070	798	725	839	1160	633	837
Lead Dissolved (µg/L)	4.8	<0.5	<0.5	3.9	<0.5	1.6	<0.5	<0.5	0.9	<0.5	<0.5	<0.5	4.8	<0.5	<1.3
Lead Total (µg/L)	20.7	1.7	1.7	21.9	4.0	11.5	2.1	2.0	7.5	1.8	2.1	3.2	21.9	1.7	6.7
Magnesium Total (µg/L)	3820	3720	4130	4340	3300	3120	3330	3170	2890	3280	4150	3860	4340	2890	3590
Manganese Dissolved (µg/L)	34.9	32.0	34.2	32.9	36.4	31.7	24.4	26.2	27.4	30.8	29.0	29.6	36.4	24.4	30.8
Manganese Total (µg/L)	59.5	59.8	64.1	58.8	47.9	67.5	48.3	52.3	52.1	53.8	58.2	54.3	67.5	47.9	56.4
Mercury Total (µg/L)	<0.05	0.05	0.16	0.07	0.16	<0.05	0.07	0.05	<0.05	<0.05	<0.05	<0.05	0.16	<0.05	<0.07
Methylene Blue Active Substance (mg/L)	1.1	1.8	1.3	1.3	1.7	1.5	1.6	1.3	1.8	1.6	1.9	1.7	1.9	1.1	1.6
Molybdenum Dissolved (µg/L)	1.7	1.3	1.5	1.7	1.8	1.3	1.7	1.3	1.4	1.9	2.0	1.7	2.0	1.3	1.6
Molybdenum Total (µg/L)	2.3	2.0	2.2	2.4	2.1	1.9	2.5	2.1	2.1	2.7	2.9	2.3	2.9	1.9	2.3
Nickel Dissolved (µg/L)	1.5	5.7	2.6	1.7	1.2	1.5	1.3	6.4	1.7	1.6	1.9	1.7	6.4	1.2	2.4
Nickel Total (µg/L)	2.8	9.0	4.4	3.0	4.5	3.5	2.6	8.9	2.8	2.8	2.6	3.0	9.0	2.6	4.2
Nitrogen - Ammonia as N (mg/L)	31.9	35.1	36.0	28.4	38.6	33.1	34.7	31.3	35.3	36.8	33.8	34.1	38.6	28.4	34.1
Nitrogen - Nitrate as N (mg/L)	<0.01	0.11	<0.01	<0.01	4.43	<0.01	<0.01	0.03	<0.01	<0.01	<0.01	<0.01	4.43	<0.01	<0.39
Nitrogen - Nitrite as N (mg/L)	<0.01	0.06	<0.01	0.01	1.13	<0.01	<0.01	0.07	<0.01	<0.01	<0.01	<0.01	1.13	<0.01	<0.11
Nitrogen - Total Kjeldahl (mg/L)	50	54	58	47	63	58	57	48	57	58	49	54	63	47	54
Oil & Grease (mg/L)	22	16	21	19	22	15	13	10	18	18	23	22	23	10	18
Phenol (mg/L)	0.05	0.05	0.06	0.05	0.05	0.06	0.05	0.010	0.034	0.037	0.038	0.033	0.06	0.01	0.04
Phosphorus Dissolved (µg/L)	2980	3080	2940	2480	1590	3220	3180	2490	2710	3280	2630	2890	3280	1590	2790
Phosphorus Total (µg/L)	5890	6120	6300	4770	5770	5470	5790	5480	5710	6110	5650	5870	6300	4770	5740
Selenium Total (µg/L)	0.8	<0.5	0.6	<0.5	0.5	0.6	0.5	0.6	0.7	0.6	0.5	<0.5	0.8	<0.5	<0.6
Silver Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver Total (µg/L)	0.5	<0.5	<0.5	<0.5	0.9	<0.5	<0.5	0.8	<0.5	0.7	<0.5	1.1	1.1	<0.5	<0.6
Sulphate (mg/L)	35.0	34.2	31.8	23.7	36.3	24.9	40.0	38.8	36.0	34.6	33.7	27.5	40.0	23.7	33.0
Vanadium Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	0.6	0.6	<0.5	<0.5
Vanadium Total (µg/L)	0.9	0.8	0.7	1.2	<0.5	1.4	0.5	1.2	0.8	0.8	0.8	1.2	1.4	<0.5	<0.9
Zinc Dissolved (µg/L)	51	50	54	57	33	67	50	43	53	48	42	51	67	33	50
Zinc Total (µg/L)	134	137	156	142	192	193	153	139	155	140	135	146	193	134	152

TABLE 7.11 NORTHWEST LANGLEY WWTP – 2025 COMPREHENSIVE PROGRAM EFFLUENT CONCENTRATIONS SUMMARY

Parameters	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Max	Min.	Average
Aluminum Dissolved (µg/L)	170	221	148	32	117	72	58	17	93	29	25	33	221	17	85
Aluminum Total (µg/L)	2880	2710	2100	98	2260	145	280	48	2670	70	68	89	2880	48	1120
Arsenic Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	0.5	<0.5	<0.5
Barium Dissolved (µg/L)	2.7	2.6	2.9	5.8	3.7	2.4	2.6	4.7	2.4	4.1	5.9	5.1	5.9	2.4	3.7
Barium Total (µg/L)	4.2	4.4	4.2	8.2	5.2	3.8	4.1	6.2	4.1	5.3	7.4	6.5	8.2	3.8	5.3
Boron Dissolved (µg/L)	66	60	52	52	67	74	70	67	84	71	62	59	84	52	65
Boron Total (µg/L)	71	64	57	60	67	82	71	73	88	75	67	58	88	57	69
Cadmium Dissolved (µg/L)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cadmium Total (µg/L)	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Calcium Total (µg/L)	12700	10500	14000	16200	11600	8970	12300	11400	10800	10900	14800	11900	16200	8970	12200
Chromium Dissolved (µg/L)	<0.5	<0.5	<0.5	1.0	<0.5	0.9	0.7	0.8	<0.5	0.8	0.7	0.9	1.0	<0.5	<0.7
Chromium Total (µg/L)	0.7	0.7	0.6	1.5	0.6	1.2	1.0	1.1	0.7	1.1	1.1	1.2	1.5	0.6	1.0
Cobalt Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Cobalt Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Copper Dissolved (µg/L)	2.7	3.5	3.3	7.2	4.4	8.0	6.1	6.6	5.4	6.4	8.4	5.6	8.4	2.7	5.6
Copper Total (µg/L)	8.8	10.3	10.0	14.1	7.7	14.1	11.7	13.2	10.4	11.6	13.1	12.5	14.1	7.7	11.5
Cyanide Total (mg/L)	<0.02	<0.02	<0.02	<0.02	0.24	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.24	<0.01	<0.03
Fluoride (mg/L)	0.10	0.15	0.33	0.28	0.15	0.26	0.26	0.12	0.23	0.37	0.42	0.58	0.58	0.10	0.27
Hardness as CaCO3 (mg/L)	46.8	39.9	49.5	57.3	42.0	33.8	42.2	38.9	37.7	39.0	53.4	43.3	57.3	33.8	43.7
Iron Dissolved (µg/L)	30	33	33	97	27	94	69	70	27	91	87	98	98	27	63
Iron Total (µg/L)	95	105	120	198	79	157	131	132	115	151	155	170	198	79	134
Lead Dissolved (µg/L)	0.6	<0.5	<0.5	0.9	0.6	0.7	0.8	<0.5	<0.5	<0.5	<0.5	0.7	0.9	<0.5	<0.6
Lead Total (µg/L)	1.6	<0.5	0.7	1.5	0.8	1.2	1.4	0.6	0.5	0.7	<0.5	1.3	1.6	<0.5	<0.9
Magnesium Total (µg/L)	3640	3290	3530	4080	3170	2760	2800	2570	2570	2880	4030	3320	4080	2570	3220
Manganese Dissolved (µg/L)	32.8	34.3	34.8	18.9	30.6	26.2	23.4	22.9	12.9	21.4	23.8	30.2	34.8	12.9	26.0
Manganese Total (µg/L)	39.4	38.8	39.8	32.0	35.3	31.8	29.6	30.2	16.7	26.7	28.9	34.8	39.8	16.7	32.0
Mercury Total (µg/L)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Methylene Blue Active Substance (mg/L)	0.2	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.2
Molybdenum Dissolved (µg/L)	1.3	1.3	1.4	1.4	1.6	1.1	1.4	1.2	1.4	1.5	1.7	1.4	1.7	1.1	1.4
Molybdenum Total (µg/L)	1.5	1.4	1.5	1.7	1.8	1.2	1.6	1.3	1.5	1.7	1.9	1.6	1.9	1.2	1.6
Nickel Dissolved (µg/L)	1.4	4.7	4.3	1.8	2.8	1.4	1.5	2.0	1.6	1.6	1.4	1.8	4.7	1.4	2.2
Nickel Total (µg/L)	1.7	5.2	4.8	2.2	3.1	1.6	1.8	2.4	1.8	1.8	1.6	2.1	5.2	1.6	2.5
Nitrogen - Ammonia as N (mg/L)	30.9	32.5	32.3	28.6	38.0	34.0	25.2	25.2	32.1	26.1	27.5	31.5	38.0	25.2	30.3
Nitrogen - Nitrate as N (mg/L)	0.07	0.07	0.04	<0.01	0.03	0.05	2.27	2.66	1.19	2.13	1.44	0.17	2.66	<0.01	<0.84
Nitrogen - Nitrite as N (mg/L)	0.04	0.03	0.04	<0.01	0.08	0.44	0.97	0.92	0.23	0.70	0.23	0.16	0.97	<0.01	<0.32
Nitrogen - Total Kjeldahl (mg/L)	36	38	37	34	42	43	32	31	38	32	29	38	43	29	36
Oil & Grease (mg/L)	3	<3	<3	<3	<3	<3	<3	4	<3	<3	<3	4	4	<3	<3
Phenol (mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.002	<0.002	<0.002	<0.002	<0.002	<0.01	<0.01	<0.01
Phosphorus Dissolved (µg/L)	93	88	49	2020	123	2840	2800	2920	174	3100	2410	2330	3100	49	1580
Phosphorus Total (µg/L)	1330	1110	833	2990	983	3360	3130	3580	1410	3800	2920	3220	3800	833	2390
Selenium Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sulphate (mg/L)	80.8	79.6	92.0	32.2	99.6	25.5	43.0	35.3	85.5	33.5	33.3	32.6	99.6	25.5	56.1
Vanadium Dissolved (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Vanadium Total (µg/L)	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	0.5	<0.5	<0.5
Zinc Dissolved (µg/L)	23	27	31	38	32	39	35	38	28	40	37	33	40	23	33
Zinc Total (µg/L)	32	36	41	48	38	44	41	46	41	47	42	42	48	32	42

7.8 NW LANGLEY WWTP — ANNUAL TREND SUMMARY (2021–2025)

Graphical analysis of results is presented in Figure 7.4.

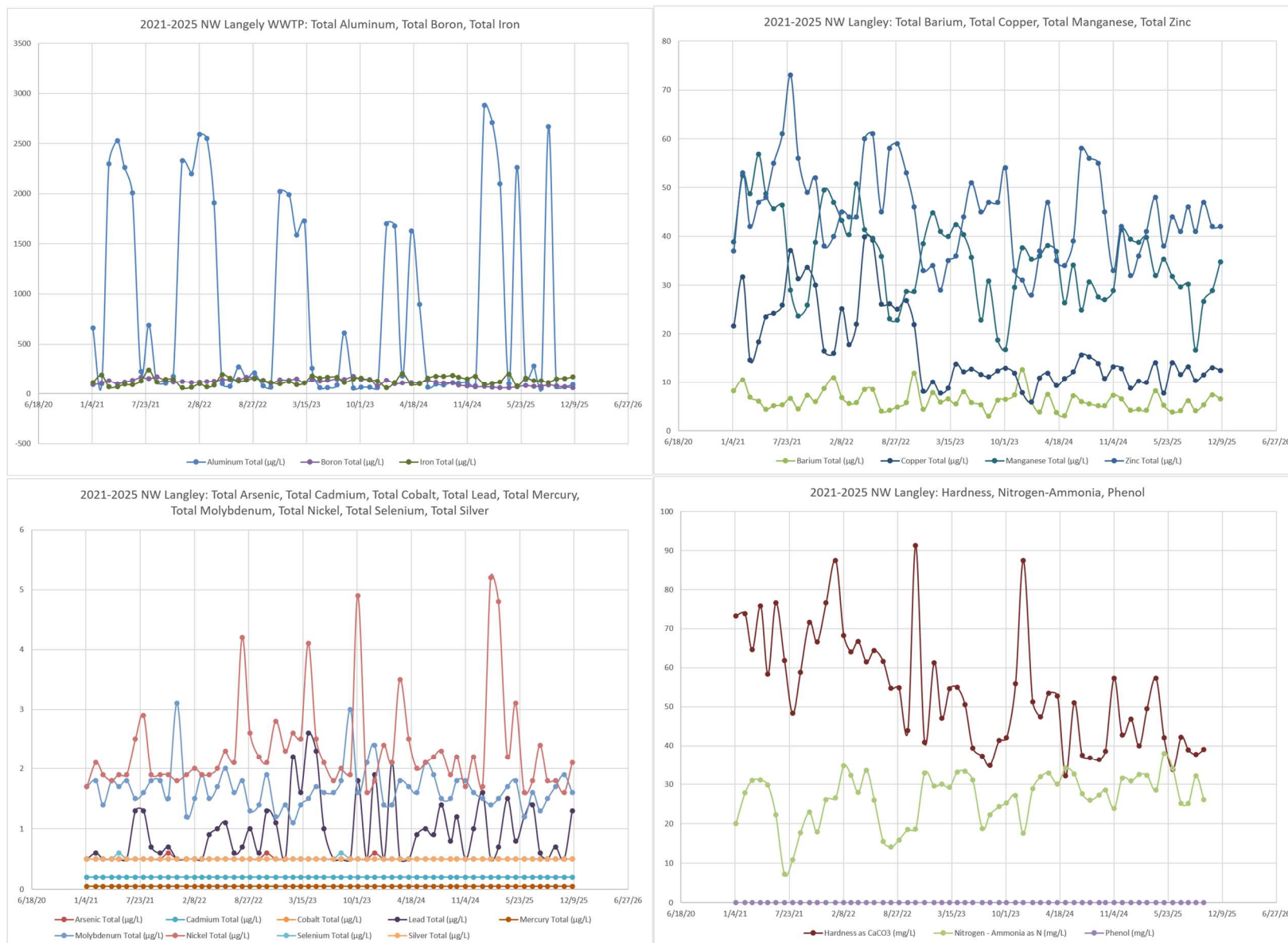
Notable trends

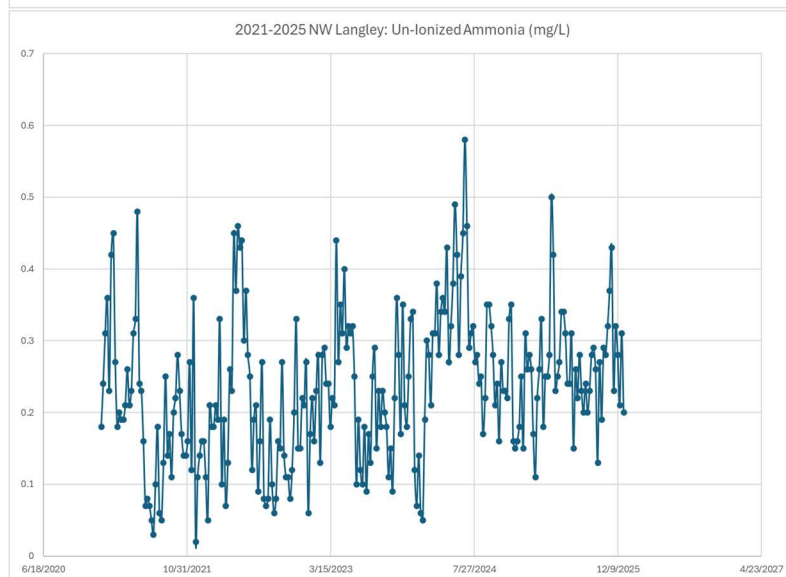
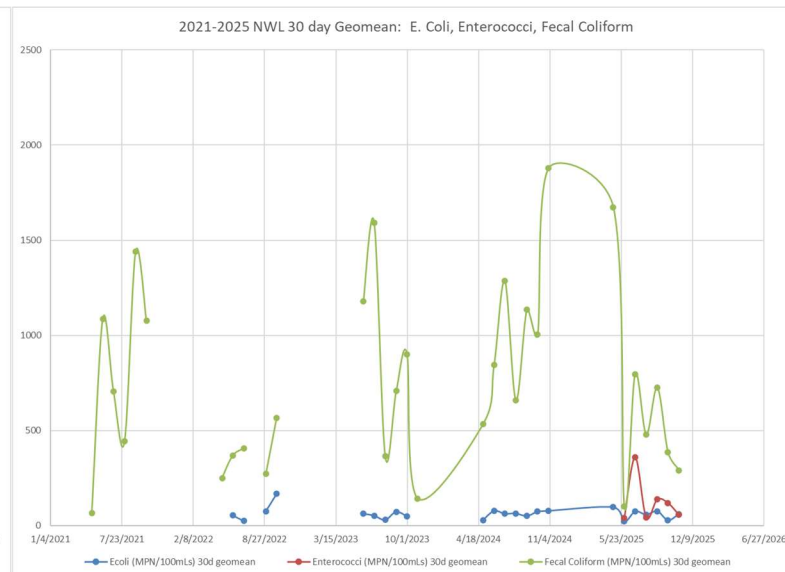
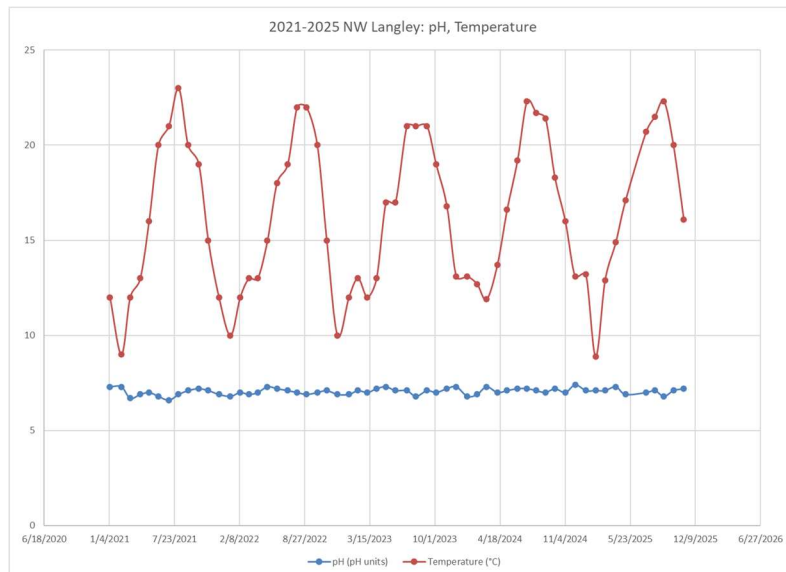
- Overall stability across the monitored parameters, with variability that is seasonal or within routine operational ranges rather than directional change.
- Metals and other trace parameters appear low and generally steady. Where short-term excursions occur on the plots, they present as isolated points and do not persist across subsequent sampling periods.
- General chemistry indicators show modest, repeating oscillation consistent with source-water/ambient influences; no step-changes or multi-year drifts are evident in the figures.
- Field parameters—where shown—are well controlled: pH remains within a tight operational band year-to-year, and temperature follows expected seasonal cycles without out-of-season anomalies.

Interpretation and reporting context

The 2021–2025 dataset depicts a stable operating environment at NW Langley WWTP with no clear multi-year upward trends across the reviewed panels. Observed fluctuations are consistent with seasonality and routine plant variability.

FIGURE 7.4 2021-2025 TRENDS: GRAPHS AND SUMMARY





8.0 BIOSOLIDS MONITORING



8.0 BIOSOLIDS MONITORING

8.1 ANNACIS ISLAND WWTP BIOSOLIDS MONITORING

The Annacis Island WWTP produces Class A dewatered biosolids. A summary of the 2025 testing program results, along with the Organic Matter Recycling Regulation (OMRR) criteria, is shown in Table 8.1.

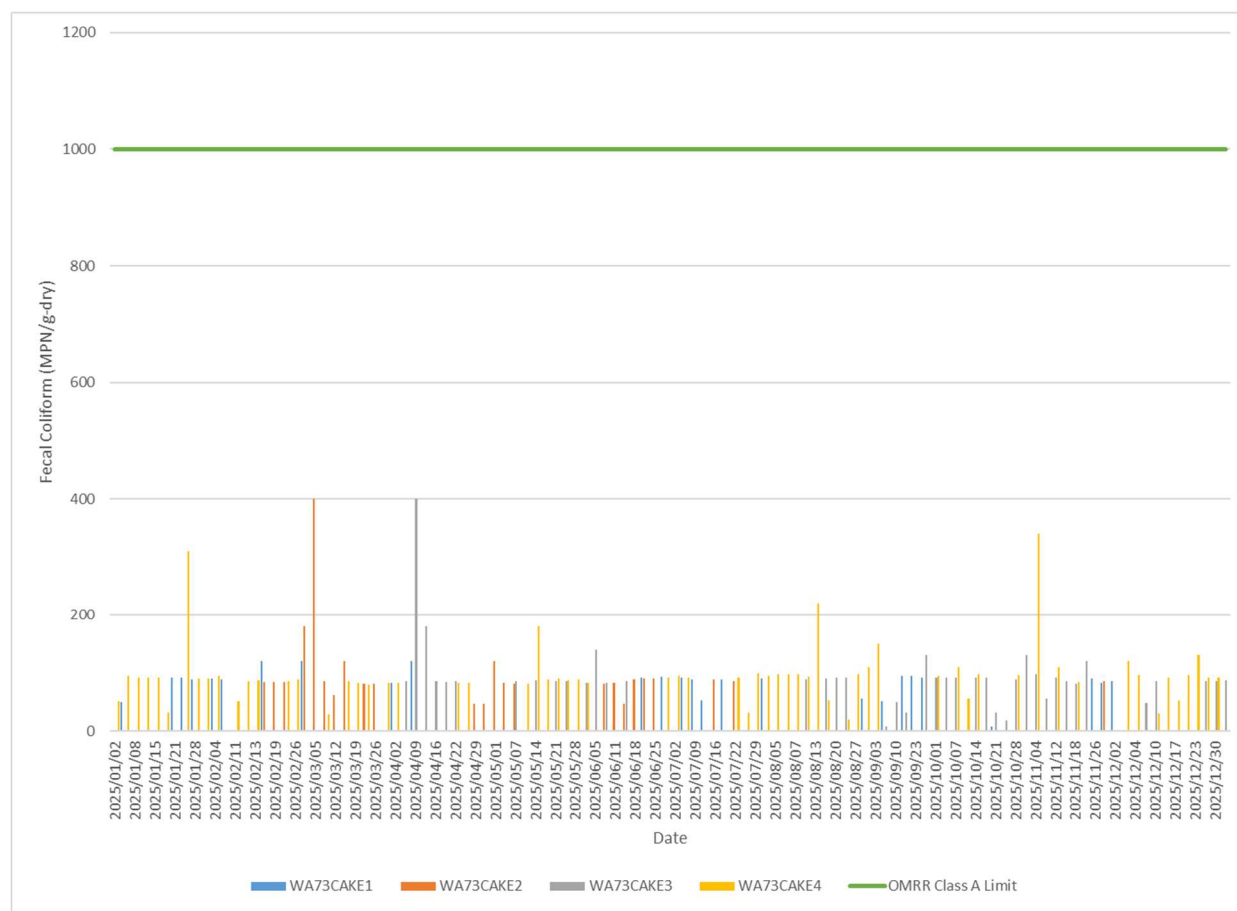
TABLE 8.1 ANNACIS ISLAND WWTP BIOSOLIDS – ORGANIC MATTER RECYCLING REGULATION

Parameters	Arsenic	Cadmium	Chromium *	Cobalt	Copper *	Lead	Mercury	Moly	Nickel	Selenium	Zinc	Fecal Coliform
Units	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	MPN/g-dry
OMRR Class A Criteria	75	20	1060	150	2200	500	5	20	180	14	1850	1000
2025 AVG	4.0	1.7	48.9	4.2	519	30.9	1.8	10.7	21.1	7.9	1272	100
2025 MIN	3.1	1.4	41.4	3.7	410	24.7	0.9	8.7	17.2	6.4	980	18
2025 MAX	7.85	1.96	62	4.9	645	40.1	3.27	12.6	24.5	9.06	1520	400
2025 Number of exceedances	0	0	0	0	0	0	0	0	0	0	0	0

* There are no limits for Chromium and Copper for Class A biosolids; Class B biosolids limits shown for reference.

Throughout 2025, biosolids produced at Annacis Island met all Class A requirements for metals and fecal coliforms. Zinc had the highest average concentration at 69% of the OMRR limit. Fecal coliform results ranged from 18 to 400 MPN/g-dry, with an annual average of 100 MPN/g-dry (Table 8.1 and Figure 8.1).

FIGURE 8.1 ANNACIS ISLAND WWTP BIOSOLIDS – FECAL COLIFORMS 2025



8.2 LIONS GATE WWTP BIOSOLIDS MONITORING

The Lions Gate WWTP produces Class B dewatered biosolids. A summary of the 2025 testing program results, along with the OMRR criteria, is shown in Table 8.2.

TABLE 8.2 LIONS GATE WWTP BIOSOLIDS – ORGANIC MATTER RECYCLING REGULATION

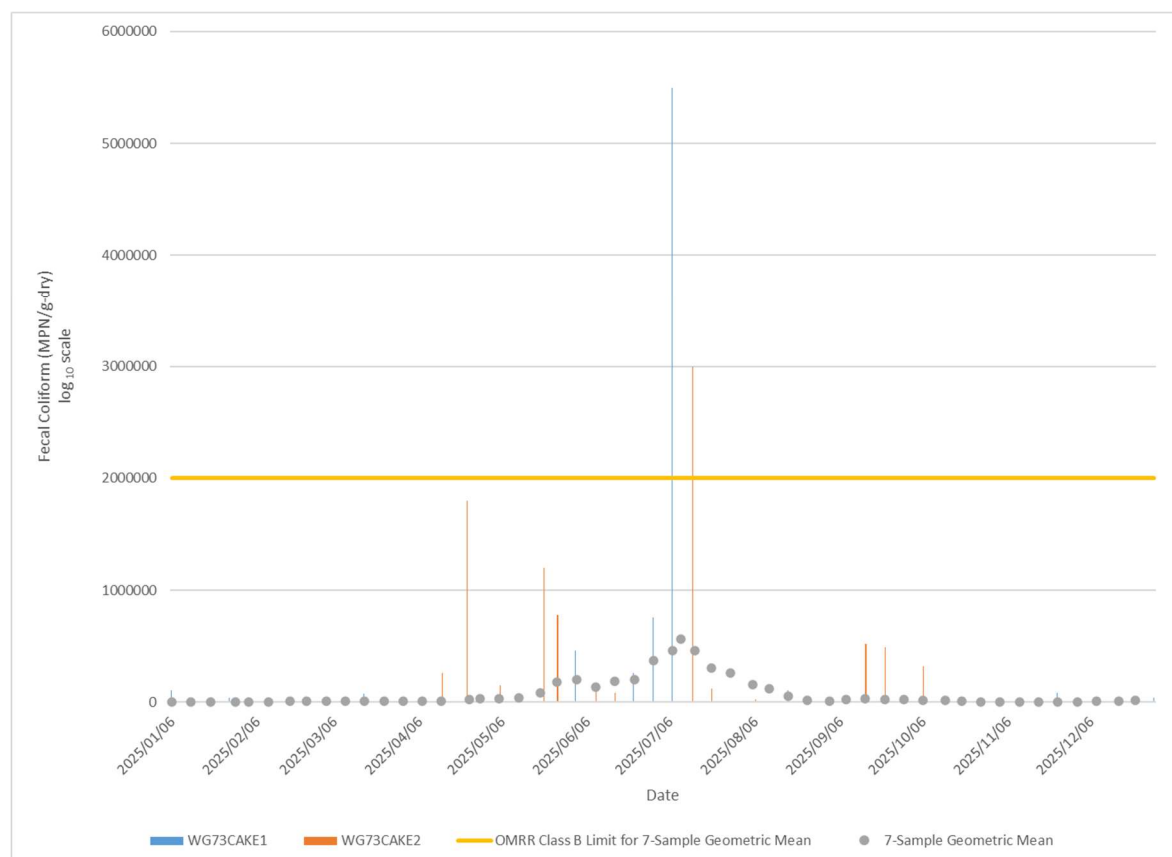
Parameters	Arsenic	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Moly	Nickel	Selenium	Zinc	Fecal Coliform*
Units	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	MPN/g-dry
OMRR Class B Criteria	75	20	1060	150	2200	500	15	20	180	14	1850	2,000,000
2025 AVG	2.7	1.6	23.5	2.4	459	52.0	1.3	7.4	14.4	7.0	1060	90698
2025 MIN	2.4	1.4	18.7	1.9	397	36.5	0.9	6.2	12.4	5.8	844	2994
2025 MAX	3.2	1.8	29.1	3.0	557	67.0	1.7	12.0	19.1	8.6	1280	561682
2025 Number of exceedances	0	0	0	0	0	0	0	0	0	0	0	0

*The Fecal Coliform values are calculated as the geometric mean from the last seven samples. The minimum, maximum and average are calculated from the geometric mean set.

Throughout 2025, biosolids produced at Lions Gate WWTP met all Class B requirements for metals and fecal coliforms. Zinc had the highest average concentration at 57% of the OMRR limit. The fecal coliform 7-sample geometric mean ranged from 2,994 to 561,682 MPN/g-dry, with an annual average of 90,698 MPN/g-dry.

Two grab samples collected on July 7 and 10 had fecal coliform concentrations of 5,500,000 and 3,000,000 MPN/g-dry, respectively (Figure 8.2). The seven-sample geometric mean remained below the OMRR limit throughout.

FIGURE 8.2 LIONS GATE WWTP BIOSOLIDS – FECAL COLIFORMS 2025



8.3 LULU ISLAND WWTP BIOSOLIDS MONITORING

The Lulu Island WWTP produces Class B dewatered biosolids. A summary of the 2025 testing program results, along with the OMRR criteria, is shown in Table 8.3.

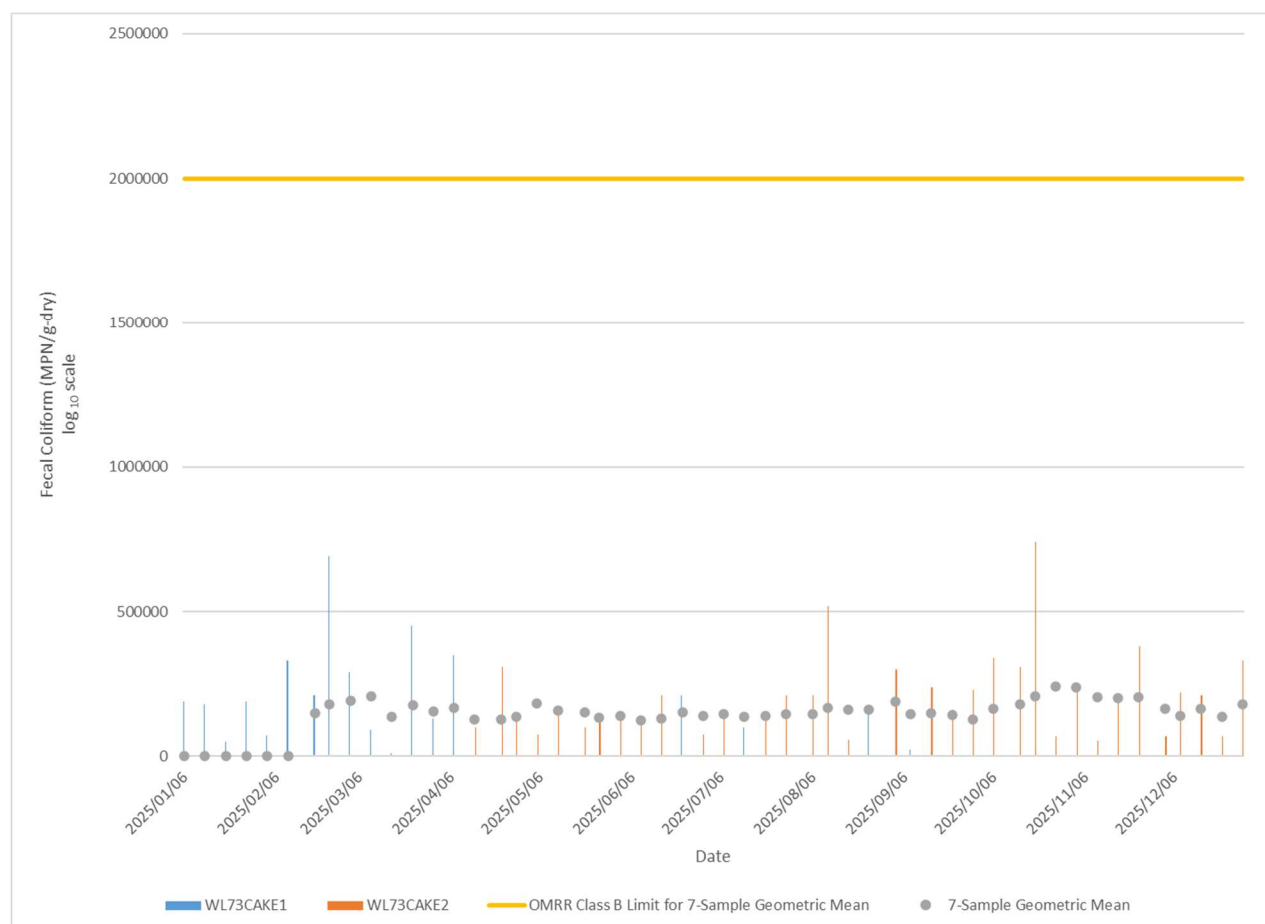
TABLE 8.3 LULU ISLAND WWTP BIOSOLIDS – ORGANIC MATTER RECYCLING REGULATION

Parameters	Arsenic	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Moly	Nickel	Selenium	Zinc	Fecal Coliform*
Units	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	MPN/g-dry
OMRR Class B Criteria	75	20	1060	150	2200	500	15	20	180	14	1850	2,000,000
2025 AVG	5.1	1.8	25.9	3.8	335	26.1	1.1	7.6	19.2	6.9	1230	162218
2025 MIN	4.4	1.4	20.0	3.1	293	17.4	0.7	6.8	16.7	5.7	1050	125710
2025 MAX	6.2	2.2	40.3	5.0	368	38.7	1.6	8.4	25.0	7.9	1420	240724
2025 Number of exceedances	0	0	0	0	0	0	0	0	0	0	0	0

*The Fecal Coliform values are calculated as the geometric mean from the last seven samples. The minimum, maximum and average are calculated from the geometric mean set.

Throughout 2025, biosolids produced at Lulu Island WWTP met all Class B requirements for metals and fecal coliforms. Zinc had the highest average concentration at 66% of the OMRR limit. The fecal coliform seven-sample geometric mean ranged from 125,710 to 240,724 MPN/g-dry, with an annual average of 162,218 MPN/g-dry (Table 8.3 and Figure 8.3).

FIGURE 8.3 LULU ISLAND WWTP BIOSOLIDS – FECAL COLIFORMS 2025



8.4 IONA ISLAND WWTP BIOSOLIDS MONITORING

The Iona Island WWTP uses mesophilic digestion to produce Class B biosolids. Solids are either stabilized in lagoons and later dewatered or directly dewatered from digesters.

TABLE 8.4 IONA ISLAND WWTP LAGOON BIOSOLIDS – ORGANIC MATTER RECYCLING REGULATION

Parameters	Arsenic	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Moly	Nickel	Selenium	Zinc	Fecal Coliform
Units	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	MPN/g-dry
OMRR Class B Criteria	75	20	1060	150	2200	500	15	20	180	14	1850	2,000,000
2025 AVG	5.4	1.9	42.2	5.2	507	61.7	1.6	7.0	23.0	4.0	1002	2429
2025 MIN	4.7	1.4	34.4	4.1	250	50.2	1.0	3.0	19.3	1.4	409	101
2025 MAX	6.3	2.3	49.3	7.6	660	77.9	2.5	10.4	33.1	5.0	1210	32703
2025 Number of exceedances	0	0	0	0	0	0	0	0	0	0	0	0

*The Fecal Coliform values are calculated as the geometric mean from the last seven samples. The minimum, maximum and average are calculated from the geometric mean set.

Throughout 2025, lagoon biosolids produced at the Iona Island WWTP met all Class B requirements for metals and fecal coliforms. Zinc had the highest average concentration at 54% of the OMRR limit. The seven-sample geometric mean for fecal coliforms ranged from 101 to 32,703 MPN/g-dry, with an annual average of 2,429 MPN/g-dry (Table 8.4 and Figure 8.4).

TABLE 8.5 IONA ISLAND WWTP DEWATERED BIOSOLIDS – ORGANIC MATTER RECYCLING REGULATION

Parameters	Arsenic	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Moly	Nickel	Selenium	Zinc	Fecal Coliform
Units	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	mg/kg-dry	MPN/g-dry
OMRR Class B Criteria	75	20	1060	150	2200	500	15	20	180	14	1850	2,000,000
2025 AVG	4.4	1.2	28.8	5.3	334	44.3	0.9	6.1	18.8	4.8	820	219616
2025 MIN	3.4	1.0	26.4	4.0	290	32.8	0.6	5.2	16.9	3.8	668	111182
2025 MAX	4.9	1.7	32.8	6.3	398	54.6	1.4	8.0	21.6	6.1	1010	509852
2025 Number of exceedances	0	0	0	0	0	0	0	0	0	0	0	0

*The Fecal Coliform values are calculated as the geometric mean from the last seven samples. The minimum, maximum and average are calculated from the geometric mean set.

Throughout 2025, dewatered biosolids produced at the Iona Island WWTP met all Class B requirements for metals and fecal coliforms. Zinc had the highest average concentration at 44% of the OMRR limit. The seven-sample geometric mean for fecal coliforms ranged from 111,182 to 509,852 MPN/g-dry, with an annual average of 219,616 MPN/g-dry (Table 8.5 and Figure 8.5).

FIGURE 8.4 IONA ISLAND WWTP LAGOON BIOSOLIDS – FECAL COLIFORMS 2025

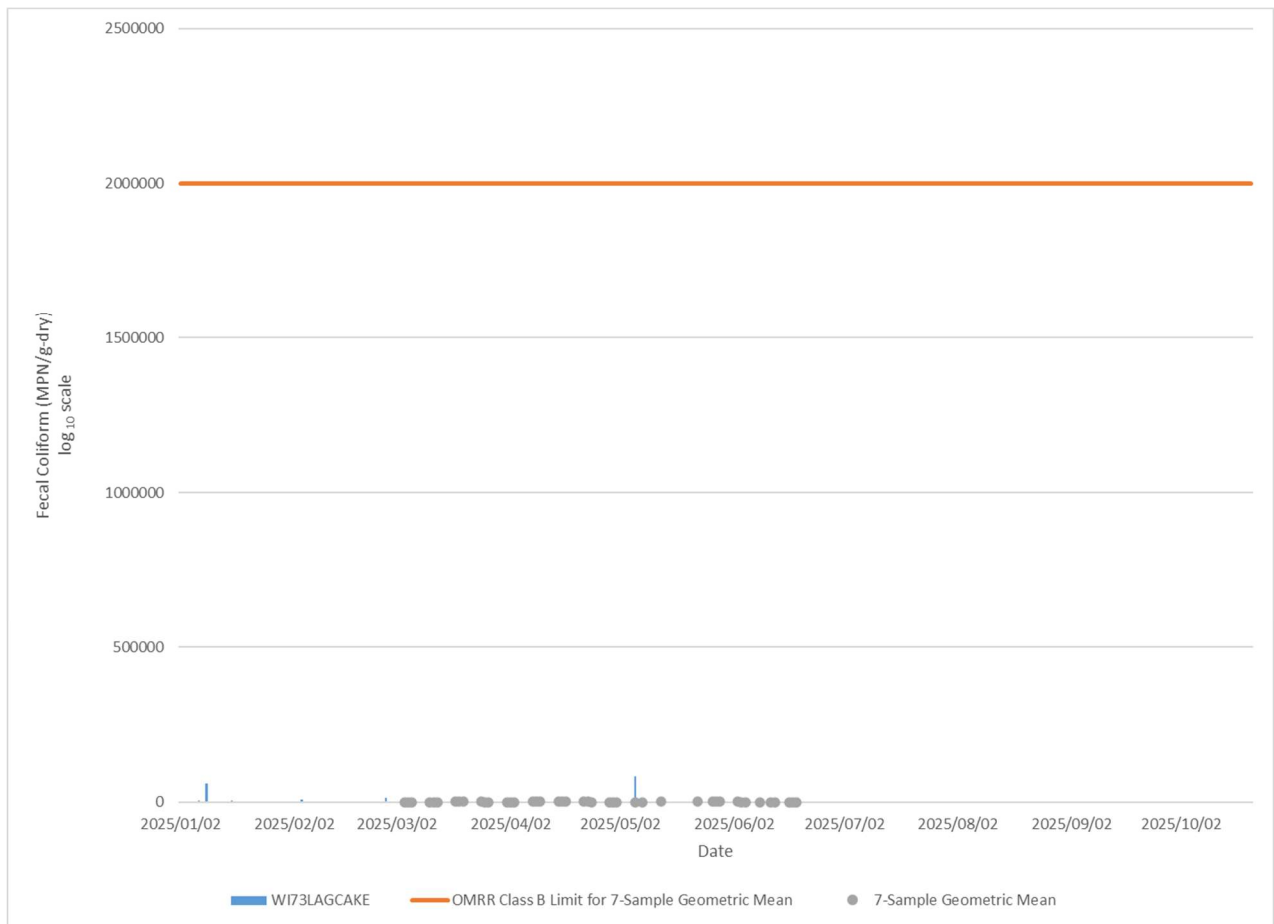
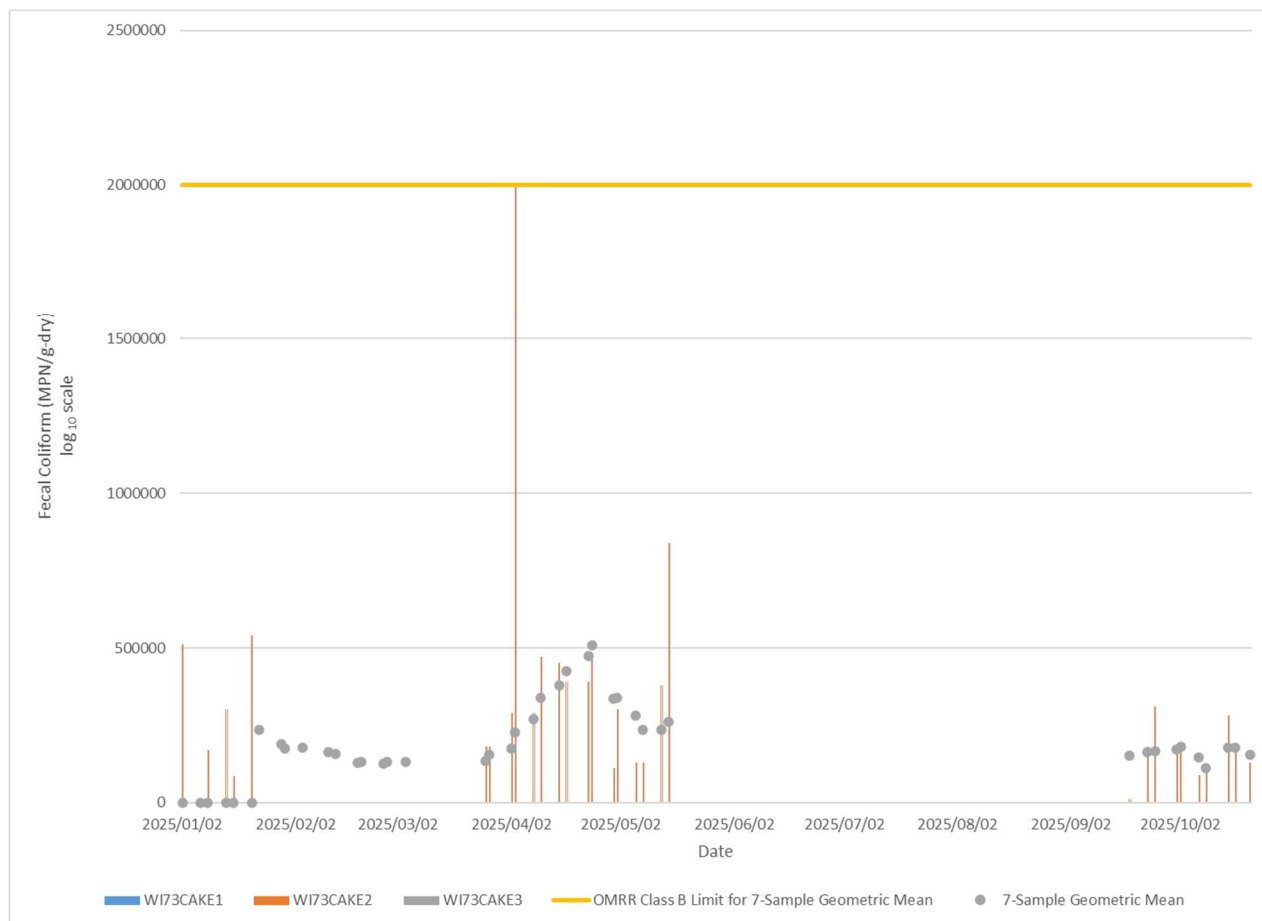


FIGURE 8.5 IONA ISLAND WWTP DEWATERED BIOSOLIDS – FECAL COLIFORMS 2025



8.5 NORTHWEST LANGLEY WWTP SOLIDS PROCESSING

In 2025, undigested solids from the Northwest Langley WWTP were transported to the Annacis Island, Iona Island, or Lulu Island WWTPs for processing into biosolids.

9.0 ENVIRONMENTAL MANAGEMENT PROGRAMS

In 2025, Metro Vancouver's five WWTPs collected and treated approximately 444 billion litres of wastewater before discharging them to the receiving environment. The locations of Metro Vancouver's WWTPs are shown in Figure 9.1.

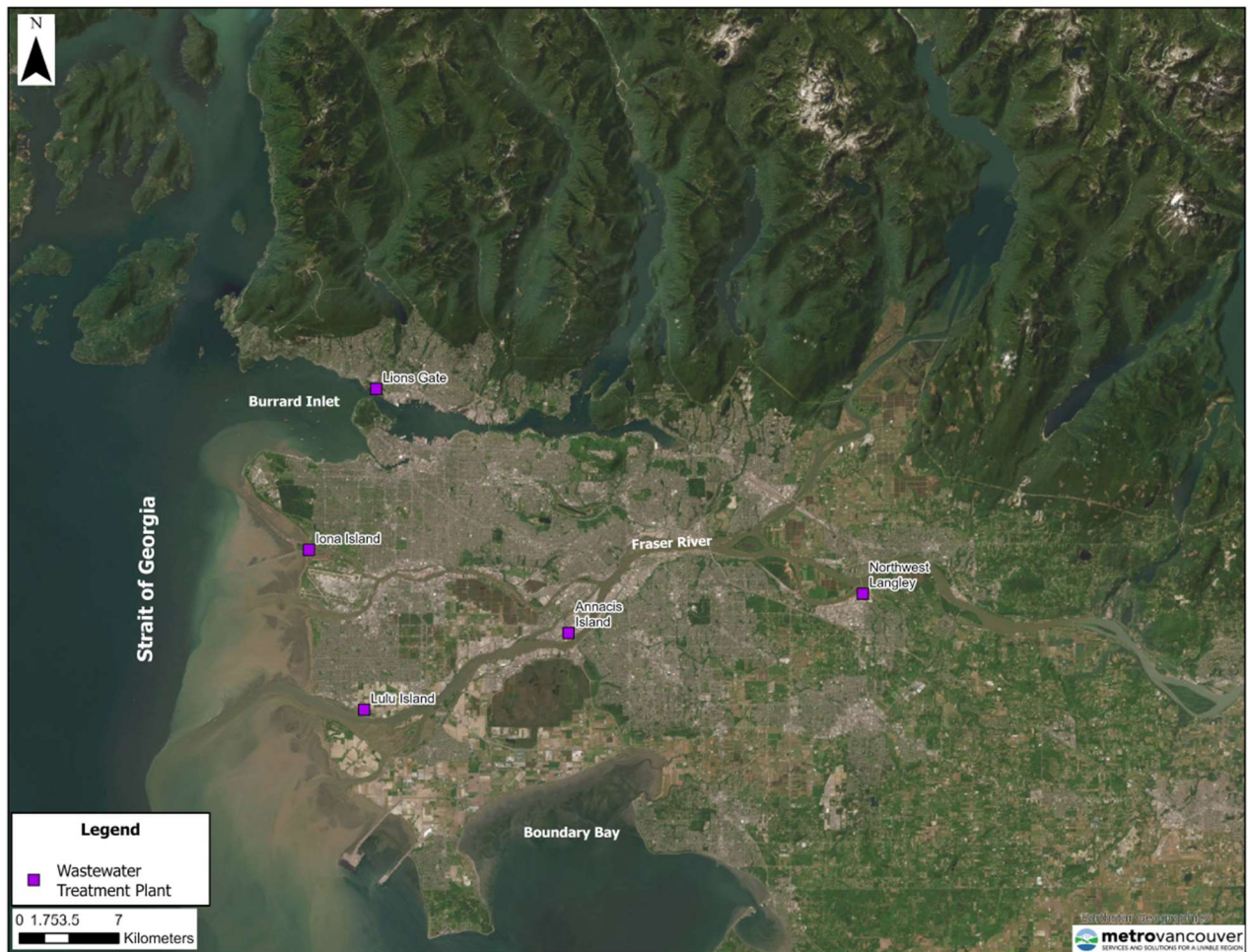
The Iona Island and Lions Gate WWTPs discharge primary treated wastewater into the marine waters of the Strait of Georgia and Burrard Inlet, respectively. The Annacis Island, Lulu Island, and Northwest Langley WWTPs discharge secondary treated wastewater into the Main Arm of the Fraser River.

Environmental management programs form a major part of Metro Vancouver's integrated approach to managing liquid waste. In addition to its environmental monitoring, simulation, modeling and assessment activities, Metro Vancouver conducts special studies and research projects.

The Environmental Monitoring Committee, a technical advisory committee to Metro Vancouver under the ILWRMP, guides and reviews monitoring programs and other environmental initiatives. The committee is made up of representatives from the federal and provincial governments, member municipalities, Metro Vancouver, and universities.

The following chapters present an overview of the environmental monitoring and management programs and initiatives associated with the operation of Metro Vancouver's wastewater collection and treatment system.

FIGURE 9.1 LOCATION OF METRO VANCOUVER WASTEWATER TREATMENT PLANTS



10.0 OVERFLOW MONITORING

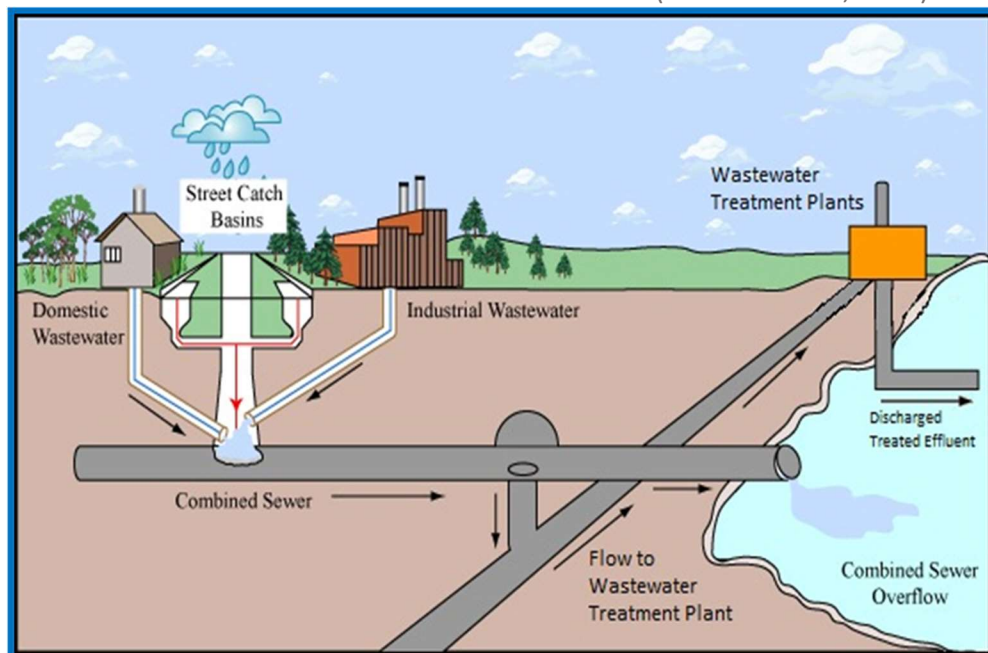
Sewer systems are designed to collect domestic and industrial wastewater in the same pipe. Some older systems, such as combined sewer systems, also collect surface water runoff. During periods of heavy rain and snowmelt, inflow and infiltration to the sewer system can cause the wastewater volume to exceed the capacity of the sewer collection system or treatment plant. Sewer systems are designed to overflow when inputs exceed their conveyance capacity, discharging excess wastewater directly into nearby water bodies. Metro Vancouver monitors these discharges to determine potential effects on the receiving water bodies and provides real-time information about sewer overflows on its web site, so that public can make informed decisions about activities near the areas where these events occur.

10.1 COMBINED SEWER OVERFLOW (CSO) QUALITY MONITORING

Early in the twentieth century, before wastewater was treated, the accepted practice was to consolidate sanitary and stormwater (surface water) flows into a single pipe. This type of collection system is called a combined sewer. Metro Vancouver no longer builds combined sewer systems, but they are still present throughout the region.

WWTPs typically receive and treat all combined and sanitary sewer flows in dry to moderate rainfall periods. During heavy rainfall, the water levels in the combined sewer pipe network can rise beyond their conveyance capacity due to increased surface water runoff. To prevent sewer water from backing up into homes and businesses, the combined sewer systems were designed with relief points to discharge overflow wastewater and stormwater directly into the receiving waters via Combined Sewer Overflows (CSOs), as illustrated in Figure 10.1.

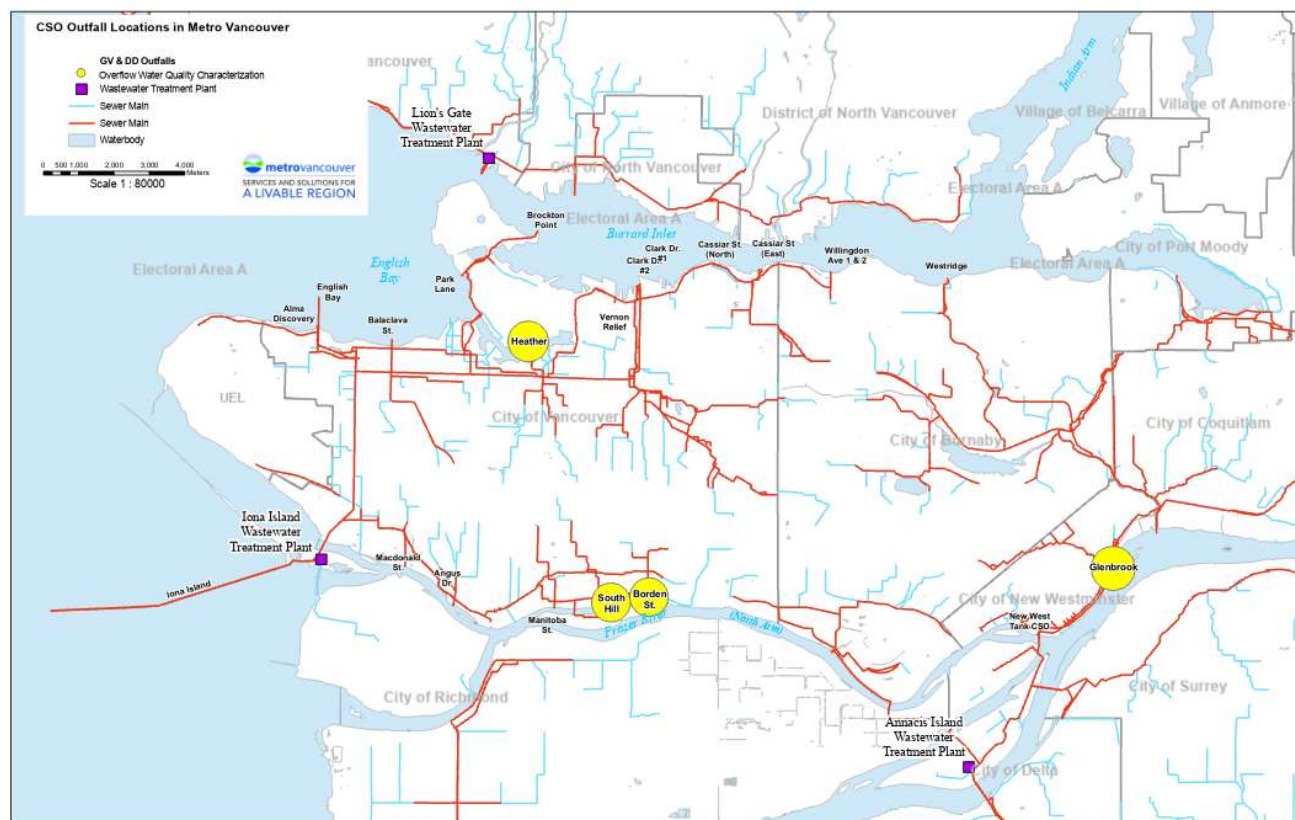
FIGURE 10.1 TYPICAL COMBINED SEWER SYSTEM (FROM ADAMS, 2006)



Metro Vancouver's ILWRMP states that combined sewers will not be built in the region and that existing combined sewers will be separated into storm and sanitary sewers. Separation is achieved via infrastructure replacement or sewer capacity upgrade programs.

Currently, Metro Vancouver operates 20 CSO outfalls at 15 locations (Figure 10.2). These CSOs exist in addition to those owned and operated by the cities of Vancouver, Burnaby, and New Westminster.

FIGURE 10.2 METRO VANCOUVER COMBINED SEWER OUTFALL LOCATIONS MONITORED IN 2025



10.1.1. CSO MONITORING PROGRAM

OVERVIEW

As CSOs continue to operate, the Minister's approval of the ILWRMP includes a requirement to monitor and characterize the quality of CSO discharges. Substances in CSO discharges may result in exceedance of Water Quality Objectives (WQOs) in receiving water bodies.

Since 1996, Metro Vancouver has undertaken an annual effluent quality monitoring program for CSOs under its ownership. The purpose of the CSO Monitoring Program is to characterize the quality of CSO discharges by collecting representative samples for the analysis of targeted parameters. Routinely monitored parameters include microbiological indicators, conventional parameters, and metals. When sample volume permits, select organics such as polycyclic aromatic hydrocarbons

(PAHs), extractable petroleum hydrocarbons (EPH), 6PPD-quinone, and pharmaceuticals and personal care products (PPCPs) are also analyzed. Volatiles analyses and toxicity testing are conducted only periodically when grab samples can be collected, as volatiles are not suitable for automated sampling, and toxicity tests require larger volumes than are available through the automated sampling system.

Since 2018, grab and/or composite samples from select sites have been analyzed for polybrominated diphenyl ethers (PBDEs) and polychlorinated biphenyls (PCBs). As of 2025, samples were also analysed for Total Organic Carbon (TOC) and Dissolved Organic Carbon (DOC).

Since the sampling system was automated, a monitoring plan has been developed to monitor and characterize Metro Vancouver's 15 CSO locations:

- At a rate of three to five locations per year.
- With a target of ten overflow events sampled at each location for the CSO Characterization Program.

The program is continuously being improved by identifying and addressing inefficiencies and upgrading autosampling infrastructure. As priorities change due to site-related interests and activities, the monitoring plan may also change.

AUTOSAMPLER INFRASTRUCTURE

Autosamplers are installed at CSO locations upstream of the outfalls where technically feasible. Most sampling sites consist of prefabricated above-ground metal kiosks or in-ground concrete vaults, while one site is located inside an existing pump station. The kiosks and vaults are secured structures that house each autosampler, which is connected to sampling lines and associated communication electronics (Figure 10.3).

Each sampling site utilizes existing Metro Vancouver water-level monitoring electronics to communicate with the autosampler. When the water-level monitor detects flows exceeding a pre-established level specific for each CSO location, the autosampler will trigger and begin sampling. When automatic triggering is not available, manual (grab) samples are collected whenever possible.

FIGURE 10.3 CSO INFRASTRUCTURE: SAMPLING KIOSK (LEFT), KIOSK WITH AUTOSAMPLER (CENTER), SAMPLER COMMUNICATION ELECTRONICS (RIGHT)



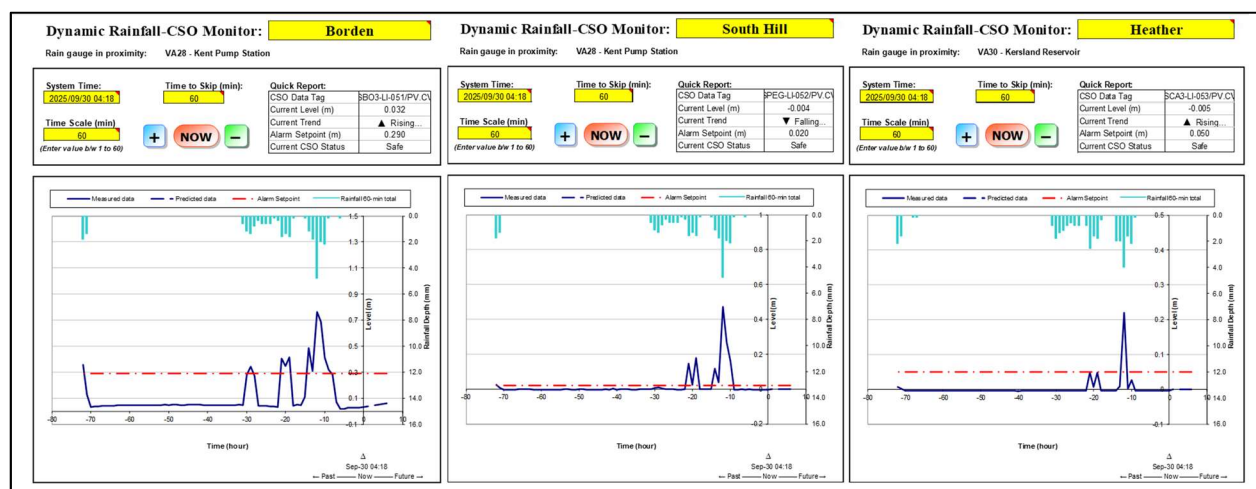
CSO MONITORING APPROACH

Successful monitoring is challenging, even with the automated sampling system. To achieve sampling efficiency, developing storms are tracked using online forecasting tools, such as weather networks and the Global Forecast System, along with information from Metro Vancouver's rain gauges. Autosamplers are programmed before the beginning of a storm for time-based interval sampling of the combined sewer discharge during an overflow.

The objective of CSO monitoring is to sample a given CSO event with emphasis on collecting its "first flush." The first flush occurs at the beginning of the overflow and is characterized by the re-suspension of accumulated solids in the sewer system and impervious surfaces above. This re-suspension results in higher constituent concentrations during the initial discharge, which are subsequently diluted by incoming stormwater. This concentrated first flush represents the worst-case scenario (i.e., highest loading) within the combined discharge pipe. To aid in capturing the "first flush" of an overflow, the autosampler programming is tailored to each CSO site. The drainage area characteristics and the rain forecast will affect the aliquot volume and sampling frequency programmed into the autosampler.

Another challenge to successful sample collection is the unique rainfall response at each of the CSO sites. Figure 10.4 compares three CSO sites located in close proximity to each other during the same rainfall period and demonstrates that overflow characteristics are specific to each drainage area.

FIGURE 10.4 COMPARISON OF RAINFALL AND OVERFLOW EVENTS AT CHILCO-BROCKTON, ENGLISH BAY, AND BALACLAVA CSO LOCATIONS



- Chilco-Brockton (left panel) did not approach the overflow level (and demonstrated a delayed response to the rain).
- English Bay #1 (centre panel) overflowed (i.e., the water level crossed the red dashed line indicating an overflow) at peak rainfall.
- BalACLAVA (right panel) flows fluctuated near the overflow level, without ever actually overflowing.

2025 CSO MONITORING LOCATIONS

Four Metro Vancouver CSO locations were monitored in 2025: Borden, Heather, South Hill, and Glenbrook. Table 10.1 shows a description of the level of effort undertaken for these sites in 2025.

TABLE 10.1 2025 CSO MONITORING EFFORT AND STATUS

CSO Location	2025 Monitoring
Borden	Samples were analyzed for microbiology, general chemical and physical parameters, metals, VOCs, PAHs, PPCPs, 6PPD-Quinone, and PCBs and PBDEs (whole water and filtrate).
Heather ¹	A sample was analyzed for microbiology, general chemical and physical parameters, and PPCPs.
Glenbrook	Samples were analyzed for microbiology, general chemical and physical parameters, metals, VOCs, PAHs, PPCPs, 6PPD-Quinone, and PCBs and PBDEs (whole water and filtrate).
South Hill	Samples were analyzed for microbiology, general chemical and physical parameters, metals, VOCs, PAHs, PPCPs, 6PPD-Quinone, PCBs and PBDEs (whole water and filtrate), and toxicity (LC50).

CSO MONITORING RESULTS

Table 10.2 summarizes estimates of CSO discharge duration, number of events, and total discharge volume for 2025. The total discharge volume for all of Metro Vancouver CSOs in 2025 was 19.84 million cubic meters.

Sampling typically occurs during the rainfall periods of fall and winter months. In 2025, samples collected from Borden, South Hill, Heather, and Glenbrook CSOs were submitted for microbiology and general chemical and physical analyses. Additional analysis across all sites included a total of three samples analyzed for VOCs, six samples analyzed for PAHs, 36 samples analyzed for PPCPs, 17 samples for 6PPD-quinone, ten samples analyzed for PCBs and PBDEs (10 whole water and seven for filtrate), and two samples for toxicity (LC50). Results are provided in Appendix A.

¹ Appendix A contains two Heather samples collected and analyzed for PBDEs and PCBs (whole water) in 2024 for which analytical results were not available in time for the 2024 EMQC Annual Report.

TABLE 10.2 2025 CSO DISCHARGE DURATION, EVENTS, AND VOLUME

Receiving Water	CSO Outfall	Total Duration of Discharges (hours)	Number of Discharge Events	Total Discharge Volume (million m ³)
Burrard Inlet – Second Narrows to Roche Point	Westridge	659	94	0.07
	Willingdon	663	100	0.19
Burrard Inlet – First to Second Narrows	Cassiar	1,397	87	4.38
	Clark/Vernon (Clark #1, Clark #2, Vernon)	2,500	244	10.25
	Brockton	50	12	0.09
Burrard Inlet – False Creek	Heather	131	67	0.27
Burrard Inlet – Outer Harbour	Balaclava	89	56	0.62
	English Bay / Alma Discovery (English Bay #1, English Bay #2)	86	39	0.10
Fraser River – North Arm	Macdonald	114	46	0.06
	Angus ¹	114	70	0.87
	Manitoba	84	44	0.47
	South Hill	329	98	0.60
	Borden	374	110	0.09
	New Westminster CSO Tank	157	12	0.34
Fraser River – Main Stem	Glenbrook	626	92	1.45
Total Discharge Volume (from GVS&DD monitoring sites) ²				19.84

Notes:

1) Sum of results from two monitoring sites

2) Excludes municipal connections downstream of GVS&DD monitoring sites

10.2 SANITARY SEWER OVERFLOW (SSO) MONITORING

The sanitary sewer system typically conveys all sanitary sewer flows to the WWTPs in dry or moderate rainfall periods. However, heavy rainfall events, power outages, and instrumentation or mechanical issues may cause water levels in the sanitary sewer pipe network to rise beyond their conveyance capacity. To prevent sewer backups into homes and businesses, the sanitary sewer systems were designed with relief points to overflow untreated wastewater directly to receiving waters via emergency outfalls.

Metro Vancouver's ILWRMP requires the region to monitor SSO effluents and their receiving environments to assess the fate and effects at significant SSO locations. The ILWRMP also requires prevention of wet weather SSOs during 24-hour storm events with a return period of less than five years. To fulfill this requirement, Metro Vancouver conducted SSO characterization monitoring at significant SSO locations between 2009 and 2017, inclusive, as well as receiving environment water quality monitoring after each SSO event. The information collected was used to conduct human

health and ecological risk assessments for significant SSO locations. When risk assessments for significant SSO sites are completed, SSO characterization monitoring is discontinued.

In addition to real-time posting of sewer overflows on its website, Metro Vancouver continues to conduct receiving environment water quality monitoring following each SSO. Receiving environment water quality data, observations, and impact assessments are provided to regulatory agencies, health authorities, and municipalities in end-of-spill reports that include information on SSO location, date, start and end time, duration, volume, estimated cause, impact to human health, environment and infrastructure, immediate actions taken to minimize duration of the SSO and mitigate the impact, and planned long-term actions to eliminate it.

Table 10.3 summarizes locations, estimates of SSO discharge duration, number of events, and total discharge volume for 2025. The total known discharge volume for all of Metro Vancouver SSOs in 2025 was 377,127 cubic metres. There were 39 overflow events in Metro Vancouver during 2025. They occurred at 24 unique locations, as is depicted visually on Figure 10.5.

TABLE 10.3 GVS&DD 2025 SSO DISCHARGE LOCATION, DURATION, EVENTS, AND ESTIMATED VOLUME

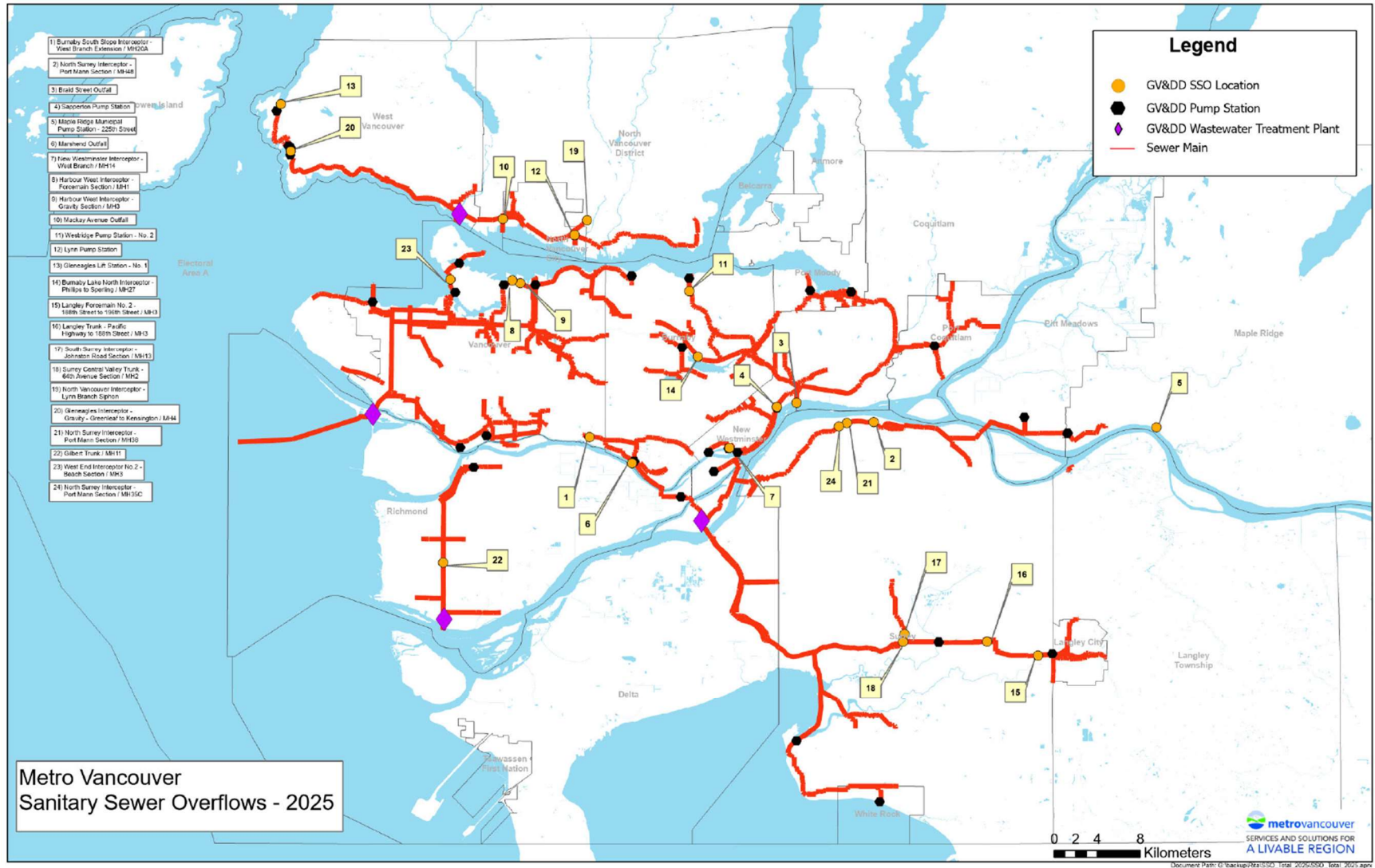
Final Receiving Water	SSO Location Label	Overflow Name	Total Duration of Discharges including concurrent events (hours)	Number of Discharge Events	Total Estimated Discharge Volume (m³)
Fraser River			222.5²	18	351,082.0³
	1	Burnaby South Slope Interceptor - West Branch Extension / MH20A	Unknown	1	Unknown
	2	North Surrey Interceptor - Port Mann Section / MH48	20.5	4	28,225.0
	3	Braid Street Outfall	53.4	5	289,531.0
	4	Sapperton Pump Station	0.3	1	Unknown
	5	Maple Ridge Municipal Pump Station - 225th Street	71.5	5	15,709.0
	6	Marshend Outfall	4.1	1	17,617.0
	7	New Westminster Interceptor - West Branch / MH14	72.8	1	Unknown
Burrard Inlet			2,637.8	7	5,7950.0³
	8	Harbour West Interceptor - Forcemain Section / MH1	2437.3	2	Unknown
	9	Harbour West Interceptor - Gravity Section / MH3	66.2	1	Unknown
	10	Mackay Avenue Outfall	10.0	2	1,591.0
	11	Westridge Pump Station - No. 2	124.3	1	4,204.0
	12	Lynn Pump Station	0.1	1	Unknown
Horseshoe Bay			4.5	1	140.0
	13	Gleneagles Lift Station - No. 1	4.5	1	140.0
Burnaby Lake			6.0	1	19,148.0
	14	Burnaby Lake North Interceptor - Phillips to Sperling / MH27	6.0	1	19,148.0
Nicomekl River			39.0	2	163.0³
	15	Langley Forcemain No. 2 - 188th Street to 196th Street / MH3	31.9	1	Unknown
	16	Langley Trunk - Pacific Highway to 188th Street / MH3	7.2	1	163.0
Serpentine River			6.3	2	Unknown
	17	South Surrey Interceptor - Johnston Road Section / MH13	5.9	1	Unknown
	18	Surrey Central Valley Trunk - 64th Avenue Section / MH2	0.4	1	Unknown
Lynn Creek			4.6	2	705.0
	19	North Vancouver Interceptor - Lynn Branch Siphon / Blowdown Discharge	4.6	2	705.0

Wood Creek			9.6	2	94.0
	20	Gleneagles Interceptor - Gravity - Greenleaf to Kensington / MH4	9.6	2	94.0
Unnamed Ditch			223.6	2	Unknown
	21	North Surrey Interceptor - Port Mann Section / MH38	5.5	1	Unknown
	22	Gilbert Trunk / MH11	218.1	1	Unknown
Contained to Land			574.7	2	Unknown
	23	West End Interceptor No.2 - Beach Section / MH3	18.4	1	Unknown
	24	North Surrey Interceptor - Port Mann Section / MH35C	556.3	1	Unknown
Total Discharge			3,728.49²	39	377,127³

² The total duration reported represents estimates of the total known duration.

³ The total volume reported represents estimates of the total known volume discharged.

FIGURE 10.5 MAP OF LOCATIONS OF 2025 METRO VANCOUVER SANITARY SEWER OVERFLOW EVENTS



11.0 WHOLE EFFLUENT MONITORING

11.1 WWTP EFFLUENT TOXICITY TESTING

Chemical analysis of WWTP effluent cannot predict toxicity by itself. Many chemical substances are either undetectable using common methods of chemical analysis or lack established methods for detection. In addition, when different substances are combined in a mixture such as effluent, the apparent toxicity of the combined substances can be different from the toxicities of the individual substances. Therefore, whole effluent toxicity monitoring is conducted to determine the combined toxic effects of an effluent sample when tested directly on aquatic organisms.

The suite of toxicity tests conducted in 2025 are summarized in Table 11.1 below. The 96-hour rainbow trout acute lethality test is a requirement of both the WWTP OCs and WSER. The remainder of the testing is not required but is conducted to better understand the potential for effects in the receiving environment.

TABLE 11.1 METRO VANCOUVER WWTP EFFLUENT TOXICITY TESTING IN 2025

Component	Test	Frequency
Acute	96-hour Rainbow trout 48-hour <i>Daphnia magna</i>	Annacis, Lulu, Iona and Lions Gate: monthly Northwest Langley: quarterly
Chronic	Seven-day Fathead Minnow 7-day <i>Ceriodaphnia dubia</i>	Quarterly

11.1.1. ACUTE TOXICITY TESTING

OVERVIEW

Acute toxicity testing measures the survival of test organisms when exposed to effluent over a short period of time. The primary objective of the testing is to ensure that the treated wastewater is protective of aquatic life.

The rainbow trout acute lethality test is conducted in accordance with each WWTP's OC and WSER test requirements. In addition, *Daphnia magna* acute toxicity, is conducted as recommended by the Canada-wide Strategy for the Management of Municipal Wastewater Effluent (CWS-MMWE). Samples of whole effluent are screened for acute toxicity following Environment Canada and Climate Change's (ECCC's) test protocols (2000a, 2000b and 2008).

APPROACH

The standard method for determining acute lethality of effluents to rainbow trout is to expose test fish to a series of effluent dilutions and determine the fish survival rate at the end of a 96-hour exposure period. The result is reported as the 96-hour LC50 value (median lethal concentration), which is the percent by volume of the original effluent sample that is estimated to be lethal to 50% of the test fish. This approach continues to be used at all WWTPs, except at Annacis Island WWTP.

A recent update of the Annacis Operational Certificate (May 13, 2025), changed the requirement for rainbow trout acute lethality testing from a multi-concentration test to a single concentration test⁴ (pass/fail). As a result, the reporting requirement was changed to report the test result as percent mortality in 100% effluent test concentration, rather than previous endpoint LC50 %v/v for a multi-concentration test. This change was adopted at the first opportunity beginning in June 2025.

In the multi-concentration test, a pass requires that the LC50 value must be equal to or greater than 100%. This means that 50% or more of the test fish must survive for 96 hours in the original undiluted sample of effluent. In the single concentration test, a sample is considered to have failed if the original undiluted effluent at 100% concentration caused greater than 50% mortality over a 96-hour period (or less than 50% survival). If an effluent sample does not pass the toxicity test, a toxicity identification evaluation is conducted with the objective to identify, and ultimately correct for, the probable cause of the observed toxicity. In addition, for all WWTP samples with the exception of Iona, which is under transitional authorization, if a test fails, an additional test is conducted as soon as possible to confirm the original test result and the testing frequency is increased to biweekly until three consecutive samples are determined to be nonlethal as required by WSER.

In 2025, acute toxicity testing was conducted by Bureau Veritas using standardized Environment Canada approved protocols (i.e., Biological Test Method EPS RM 13 with the add-on procedure EPS RM 50). Testing occurred monthly for Annacis Island, Lulu Island, Iona Island, and Lions Gate WWTPs and quarterly (February, May, August and November) for Northwest Langley WWTP. In addition, effluent testing using *Daphnia magna* (48-hour) acute toxicity test (i.e., Biological Test Method RM-14) was conducted monthly (or quarterly) as above.

RESULTS

In 2025, all rainbow trout toxicity tests passed with the following exceptions: 1) four effluent samples for Iona Island WWTP where the cause was high oxygen demand, 2) one monthly effluent sample for Lions Gate WWTP where the cause was undetermined, but oxygen demand may have been a contributing factor. In addition, in two repeat samples collected and tested following the original test at Lions Gate WWTP (i.e., about one and two weeks later), the cause was determined to be high oxygen demand.

In 2025, all *Daphnia magna* toxicity tests passed.

Overall, when present, acute toxicity was attributable to non-persistent substances that would not be expected to accumulate in the receiving environment.

⁴ Reported as the 96-hour LT50 value (median lethal time), which is the time the original effluent sample is estimated to be lethal to 50% of the test fish

11.1.2. CHRONIC TOXICITY TESTING

OVERVIEW

Chronic toxicity testing measures adverse health effects from repeated or continuous exposures, over a longer period of time. Chronic testing results are reported as both lethal concentration (i.e., LC50) and inhibition concentration (i.e., IC25 or IC50). These endpoints are concentrations (represented as percent by volume) at which there is a lethal or inhibition (i.e., reduced growth or reproduction) response observed in 25% or 50% of the organisms tested. The primary objective of the testing is to demonstrate that the treated wastewater beyond the IDZ boundary is protective of aquatic life.

APPROACH

In 2025, whole effluent chronic toxicity testing was conducted four times. ECCC's biological seven-day test methods (i.e., Environment Canada 2007 and 2011) were used as recommended in the CWS-MMWE:

- Seven-day tests of larval growth and survival using fathead minnow (*Pimephales promelas*)
- Seven-day tests of reproduction and survival using the water flea (*Ceriodaphnia dubia*)

These tests are used to determine the potential chronic toxicity of effluent to different types of organisms in the aquatic environment. The fathead minnow test measures whether an effluent sample affects the growth and survival of very young (larval) minnows. Similarly, the water flea test measures whether the sample affects the reproduction and survival of the water flea.

Additionally, a water sample is collected quarterly from the Fraser River to provide information on background environmental conditions. This water sample is collected at a reference area located at Derby Reach Regional Park, which is upstream of Metro Vancouver's secondary WWTPs and beyond their zone of influence.

Chronic toxicity can provide guidance regarding the potential for effects of wastewater in the receiving environment at the IDZ boundary. The CCME Strategy indicates that chronic toxicity be assessed at the edge of the allocated mixing zone in the same way environmental discharge objectives are derived from environmental quality guidelines. Therefore, results from whole effluent sample chronic toxicity testing are considered in the context of the receiving environment.

RESULTS

Although some chronic toxicity was observed in effluent samples tested in 2025 (Table 11.2), chronic toxicity was not predicted to occur at the IDZ boundary except for *Ceriodaphnia dubia* in one of four effluent samples for both Lulu Island and Annacis Island WWTPs (Table 11.3). For all other WWTP effluent samples and test species chronic toxicity would not be predicted at the IDZ boundary.

TABLE 11.2 CHRONIC TOXICITY TESTING RESULTS FOR 2025

WWTP	Species	# tests	Observed range for each endpoint ^a					
			Survival LC50 %v/v (min - max)		Growth/Reproduction IC50 %v/v (min - max)		Growth/Reproduction IC25 %v/v (min - max)	
Annacis	Fathead minnow	4	43.6	55.9	48.7	58.9	37.6	45.7
	<i>Ceriodaphnia</i>	4	74.3	>100	14.4	>100	1.6	>100
Lulu	Fathead minnow	4	30.1	54.1	30.9	63.1	24.4	50
	<i>Ceriodaphnia</i>	4	89.1	>100	19.1	57.7	2.4	32.7
NWL	Fathead minnow	4	59.3	72.9	68.8	71	57	59.7
	<i>Ceriodaphnia</i>	4	>100		80.7	>100	59.6	>100
Iona	Fathead minnow	4	43.8	>100	46.2	>100	33	>100
	<i>Ceriodaphnia</i>	4	>100		54	>100	36	>100
Lions Gate	Fathead minnow	4	62.8	72.2	70.2	81.6	58.8	73.8
	<i>Ceriodaphnia</i>	4	>100		42.9	>100	32.8	74.3
Fraser River	Fathead minnow	4	>100		>100		80.6	>100
	<i>Ceriodaphnia</i>	4	>100		>100		>100	

LC = Lethal Concentration, IC = Inhibition Concentration, N/A = Not Available

^a single value presented where there is no difference between min-max

TABLE 11.3 POTENTIAL FOR CHRONIC TOXICITY AT THE INITIAL DILUTION ZONE (IDZ) BOUNDARY

WWTP	Species	# tests	Dilution needed to eliminate potential for toxicity at the IDZ boundary (100/Endpoint)				Modelled dilution (X:1) ^b	Potential for toxicity at IDZ boundary (# samples)
			LC50	NOEC	IC50 ^a	IC25 ^a		
Annacis	Fathead minnow	4	2.3	4.0	2.1	2.7	40	0
	<i>Ceriodaphnia dubia</i>	4	1.3	2.0	6.9	62.5		1
Lulu	Fathead minnow	4	3.3	4.0	3.2	4.1	30	0
	<i>Ceriodaphnia dubia</i>	4	1.1	2.0	5.2	41.7		1
NWL	Fathead minnow	4	1.7	2.0	1.5	1.8	51	0
	<i>Ceriodaphnia dubia</i>	4	1.0	1.0	1.2	1.7		0
Iona	Fathead minnow	4	2.3	4.0	2.2	3.0	157	0
	<i>Ceriodaphnia dubia</i>	4	1.0	1.0	1.9	2.8		0
Lions Gate	Fathead minnow	4	1.6	2.0	1.4	1.7	122	0
	<i>Ceriodaphnia dubia</i>	4	1.0	1.0	2.3	3.0		0

LC = Lethal Concentration, NOEC (survival) = No Observable Effect Concentration, IC = Inhibition Concentration, IDZ = Initial dilution Zone

^a Depending on the test this may represent growth or reproduction. Shaded cells indicate that the observed effluent concentration threshold with effects exceeds the modelled effluent dilution at the IDZ boundary, and as a result there is potential for effects at the IDZ boundary.^b Modelled average dilution at IDZ boundary sources: Annacis (Seaconsult and ABR, 1997); Lulu (Seaconsult, 1997); Iona, Lions Gate and NWL (Li Gu, Personal Communication, February 24, 2024).

The chronic TIE study conducted previously by Nautilus (2021) attributed chronic toxicity in the WWTP effluent samples to non-persistent substances that would not be expected to accumulate in the receiving environment (i.e., ammonia for all WWTP effluent samples, and oxygen demand and anionic surfactants in primary WWTP effluent samples). Ammonia toxicity is related to the proportion of unionized ammonia, and its concentration increases with increasing pH. A shift in pH often happens during the fathead minnow and water flea chronic toxicity tests as a result of diffusion of carbon dioxide (CO₂). The previous chronic TIE study and parallel CO₂ stabilization tests conducted in 2025 indicate that with CO₂ stabilization, ammonia toxicity is reduced. Further, ammonia is not expected to persist in the environment as it would be affected by the turbulence in the receiving environment.

11.1.3. AMMONIA AS A POTENTIAL TOXICANT

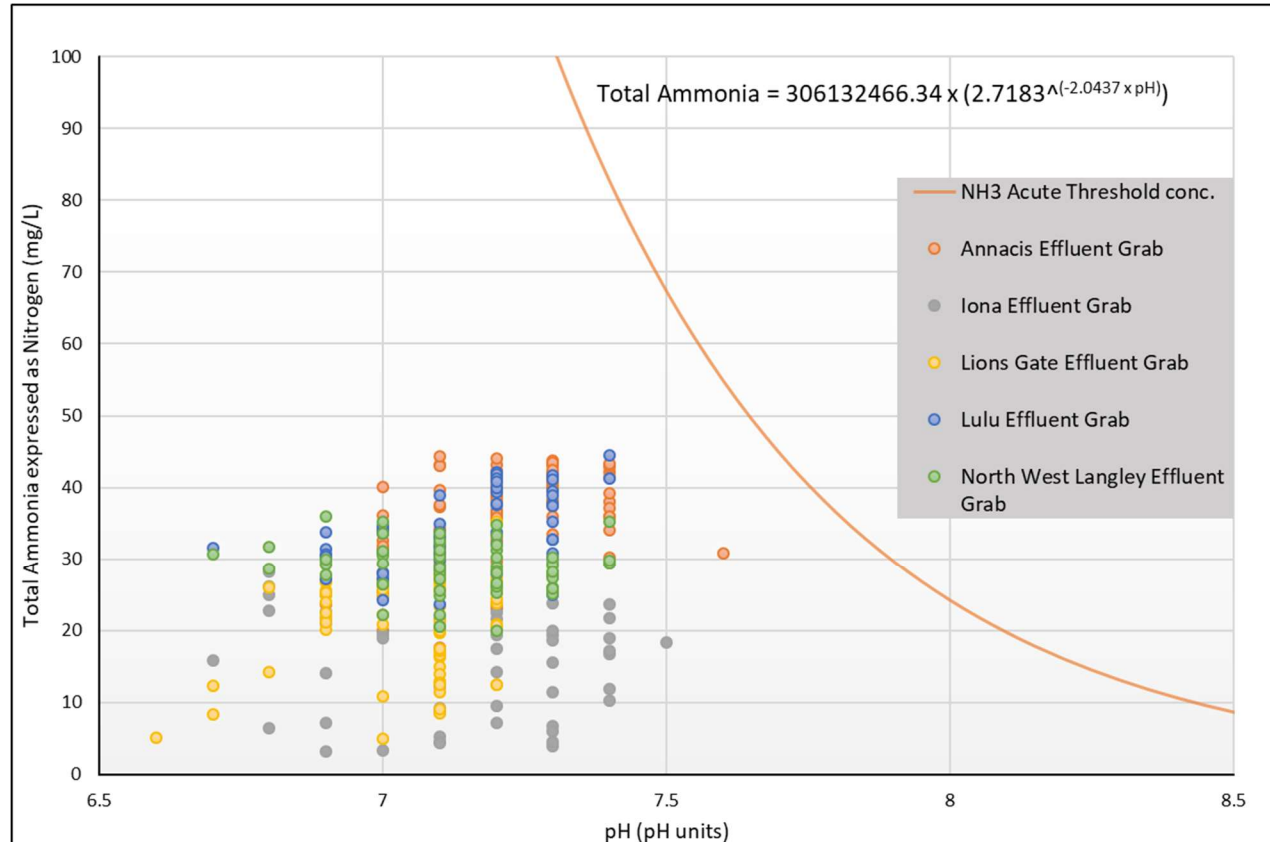
Ammonia in wastewater effluent can be toxic and harmful to aquatic life, especially fish. Ammonia dissolved in water is a substance specified on the List of Toxic Substances in Schedule 1 of the Canadian Environmental Protection Act (CEPA). Sources of ammonia in the environment include municipal and industrial wastewater, as well as agricultural runoff and natural processes.

In keeping with the national strategy for the management of municipal wastewater, ECCC developed the CEPA threshold toxicity curve which can be used to determine the potential for acute ammonia toxicity. The pH of the effluent is a factor in ammonia toxicity and the CEPA ammonia toxicity threshold curve takes this into account. Metro Vancouver monitors the quality of the final effluent for the ammonia concentration and pH level on a weekly basis at each of its WWTPs.

If the data point for ammonia and pH falls below the CEPA curve, the effluent would not be predicted to contain an acutely lethal concentration of ammonia. Conversely, if the data point falls on or above the curve, the effluent would be predicted to contain an acutely lethal concentration of ammonia. All paired pH and ammonia concentrations for weekly effluent samples for all of the treatment plants were below the expected threshold CEPA acute concentration curve for ammonia (Figure 11.1). This indicates that these effluent samples are not predicted to contain an acutely lethal concentration of ammonia.

In addition to the CEPA threshold used to assess the potential for ammonia toxicity at the end of pipe, there are also applicable provincial WQOs or guidelines for total ammonia or unionized ammonia (freshwater guideline) that apply to the receiving waters for each WWTP. Studies by Metro Vancouver in the vicinity of the wastewater discharges continue to show that the provincial WQO or guideline (as applicable) for total ammonia both average (chronic guideline) and maximum (acute guideline) are met in the aquatic environment.

FIGURE 11.1 COMPARISON OF 2025 WWTP EFFLUENT QUALITY WITH THE ACUTE AMMONIA THRESHOLD TOXICITY CURVE



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12.0 REGIONAL WATER BODY MONITORING

A key component of Metro Vancouver's ILWRMP involves monitoring, assessment, and forecasting to evaluate potential effects of liquid waste discharges, such as WWTP effluents, into the receiving water bodies. Monitoring determines if the discharges meet site specific WQOs and guidelines (WQGs) at the edge of the IDZ for WWTPs, characterizes the receiving environment, provides background data, develops indicators of environmental change, and assesses long-term trends.

The data collected are required and used to evaluate the impact of Metro Vancouver liquid waste discharges on the regional water bodies that receive wastewater and stormwater discharges, provide information necessary for effective management of liquid waste discharges, and determine the need and priority for facility upgrades.

Currently Metro Vancouver's programs are presented within Strait of Georgia, Burrard Inlet and Fraser River water bodies in order to provide a more holistic approach and understanding of potential effects from wastewater discharged to the aquatic environment.

Monitoring reports that present the results and provide assessments of the monitoring work are produced annually. Depending on the type of study, timing of fieldwork, and corresponding analyses undertaken, publication of these annual reports may be delayed to allow sufficient time for data analysis, interpretation, report preparation and review.

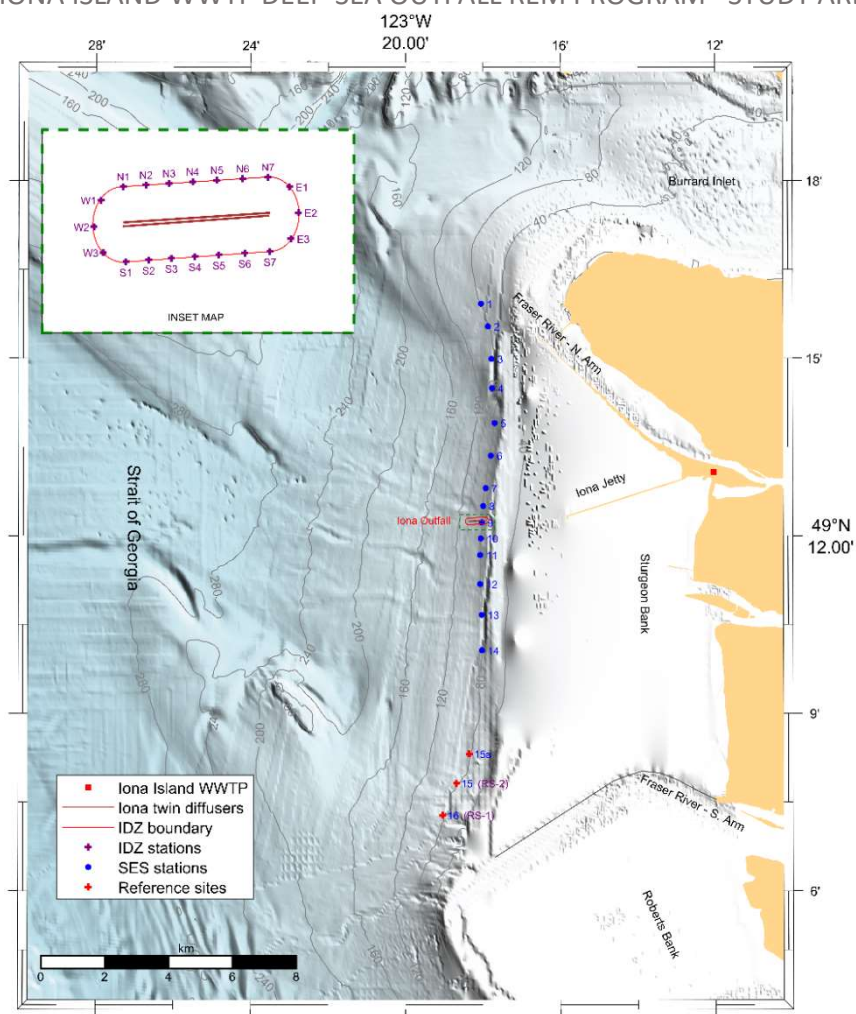
12.1 STRAIT OF GEORGIA

12.1.1. IONA DEEP SEA OUTFALL RECEIVING ENVIRONMENT MONITORING PROGRAM

The Iona Deep-Sea Outfall Receiving Environment Monitoring (REM) Program has occurred annually since 1986, including two years of baseline monitoring prior to the operation of the deep-sea outfall in 1988. Prior to 1988, wastewater effluent was discharged directly to the intertidal region of Iona Beach. The Iona deep-sea outfall discharges primary-treated effluent from the Iona Island WWTP at an average depth of about 90 m, through a diffuser system into the Strait of Georgia. The deep-sea outfall consists of two 7.2 km long pipes, each connected to a 505 m long diffuser with 100 ports. Each diffuser is composed of three pipe sections with decreasing pipe diameter and increasing port size towards the offshore direction.

The study area of the Iona Deep Sea Outfall REM Program is shown in Figure 12.1 below.

FIGURE 12.1 IONA ISLAND WWTP DEEP-SEA OUTFALL REM PROGRAM— STUDY AREA



Developed in 2000, the overall objective of the Iona Deep Sea Outfall REM Program is to determine possible short and long-term effects of the discharge to the receiving environment.

The work conducted under the monitoring program has included assessments of effluent quality, plume near-field mixing, receiving water quality, sediment quality, community health and structure of the organisms that dwell in and on the sediments, and contaminant uptake and overall health of fish and crab. The 2025 program included an annual Sediment Effects Survey (SES), IDZ Boundary Monitoring Program, and Strait of Georgia Ambient Monitoring Program. Recently finalized monitoring reports include the 2023, 2024 and 2025 Iona Deep-Sea Outfall IDZ reports, the 2022 through 2025 Iona SES reports, and the 2024 Strait of Georgia Ambient Monitoring program report. The conclusions of the finalized reports are consistent with those described in earlier Environmental Management and Quality Control Annual Reports.

12.1.2. IONA SEDIMENT EFFECTS SURVEY

OVERVIEW

The Iona sediment effects monitoring program is a comprehensive marine monitoring program to assess possible effects, if any, of the Iona Wastewater Treatment Plant on sediment quality. The 2025 Iona SES included monitoring of sediment chemistry and bacteriology in addition to benthic infaunal community structure. These components have been monitored annually since 2000, typically in March/April under pre-freshet conditions, allowing for the evaluation of potential long-term effects on the receiving environment.

APPROACH

The typical survey includes 16 established monitoring stations located on a north-south transect on the 80 m depth contour in the Iona outfall study area (Figure 12.1). At all stations, sediment samples are collected and analysed for physical, chemical, and bacteriological parameters, as well as benthic community structure (Figure 12.2). The approach to complete the 2025 Iona SES program followed the established study design and sampling methods from previous years. The chemical analysis conducted in 2025 included particle size, nutrients, metals, stable isotopes and several core organic groups (sterols, hormones, PAHs and alkylphenols). In addition to the core analysis conducted annually, several organic analyte groups were also analyzed including, dioxins and furans, methylmercury, tributyltin, polybrominated diphenyl ethers (PBDEs), polychlorinated biphenyls (PCBs) and perfluorinated organic compounds (PFCs). In 2025, the analysis and reporting approach for the program has been updated from previous years. In the new model, data compilation, quality review, and reporting is structured in a three-year cycle. The annual report details the results of the 2025 survey for both the sediment quality and benthic infauna components, including assessments of sediment quality against guidelines and historic assessment thresholds and spatial differences in benthic infauna community composition and diversity. The assessment thresholds developed in 2025 were based on the distributions of historical data which were analyzed and the distributions fit to a statistical model. Those models were then used to estimate lower and upper thresholds that identify changes outside of lower and upper 10% of observations. A comprehensive report will be prepared in 2027, examining the results from entire three-year cycle, in the context of the long-term dataset, to address the technical objectives of the program.

FIGURE 12.2 IONA DEEP SEA OUTFALL
SEDIMENT EFFECTS MONITORING



RESULTS

The following key findings were identified:

- The concentration of substances measured in the sediments were below concentrations that would likely affect aquatic life with the exceptions of a few PBDEs and total PCDD/Fs TEQ.
- Metals such as arsenic, copper, and nickel were found in elevated concentrations along the 80-m transect of the Iona Island WWTP, with concentrations greater than environmental quality guidelines across sampling station groups. Elevation across the transect indicates that the concentrations are related to background conditions rather than effects from the Iona Island WWTP. PAHs were consistently detected in sediments, with concentrations of acenaphthene, dibenzo[a,h]anthracene, fluoranthene, and phenanthrene greater than guidelines at the station nearest the outfall. Concentrations of PAH compounds were generally within historical assessment thresholds.

Substances are typically found at higher concentrations at stations closest to the outfall and to the north of the outfall. This is consistent with the prevailing direction of the water currents at the depth of the diffuser. Changes to the benthic invertebrate community structure at stations immediately north of the outfall were observed. Changes include decreased species abundance, lower species richness, and lower shell staining of *A. serricata* adults, which are an indication of decreasing dissolved oxygen conditions near the seabed. Overall, the 2025 SES results indicate some localized wastewater influences on sediment quality and effects on benthic invertebrate community composition and some univariate endpoints (i.e. percent low shell staining, Simpsons Diversity Index and Swartz Dominance Index). Although concentrations of various analytes were greater than guidelines, particularly near the outfall, the broader influence on the Strait of Georgia marine environment appears limited, with many analytes remaining below detection limits or remaining within historical thresholds.

In general, findings from 2025 Iona SES program are found consistent with those observed in previous years (Great Pacific Consulting, 2026a, 2026b, 2026c).

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12.1.3. IONA INITIAL DILUTION ZONE BOUNDARY MONITORING

OVERVIEW

A monitoring program for the edge of the Iona Island WWTP IDZ was included as an annual component of the REM in 2010. The objective of this component of the overall REM program is to evaluate attainment of the applicable water quality guidelines at the boundary of the IDZ.

The IDZ for marine environments is defined as the zone extending up to 100 m horizontally in any direction from a discharge, but not to exceed more than 25% of the width of the water body at the discharge point. The boundary of the IDZ is the regulatory and compliance boundary where water quality objectives and guidelines begin to apply.

Between 2010 and 2017, water samples were collected from fixed locations identified in the program design and at upstream far-field sampling locations. The samples were analyzed for chemical and biological parameters, and the results were compared with the applicable water quality guidelines. In 2018, the Iona Island WWTP IDZ monitoring program was augmented by an effluent dye tracer study to better characterize near-field effluent plume mixing and to update a near-field mixing model. Based on the findings of the 2018 dye study, various improvements to the IDZ boundary monitoring program have been implemented since 2019.

APPROACH

Water quality monitoring is designed to allow for the attainment assessment of both short-term (acute) and long-term (chronic) water quality objectives and guidelines. In line with previous Iona IDZ monitoring years, sampling was conducted to facilitate the calculation of five-samples over 30-days average values (referred as a 5-in-30 average).

The field work for the 2025 Iona IDZ Monitoring Program was conducted from June 24 to July 23, 2025, and the report is under preparation. In 2025, findings of the 2024 field season were compiled into the report.

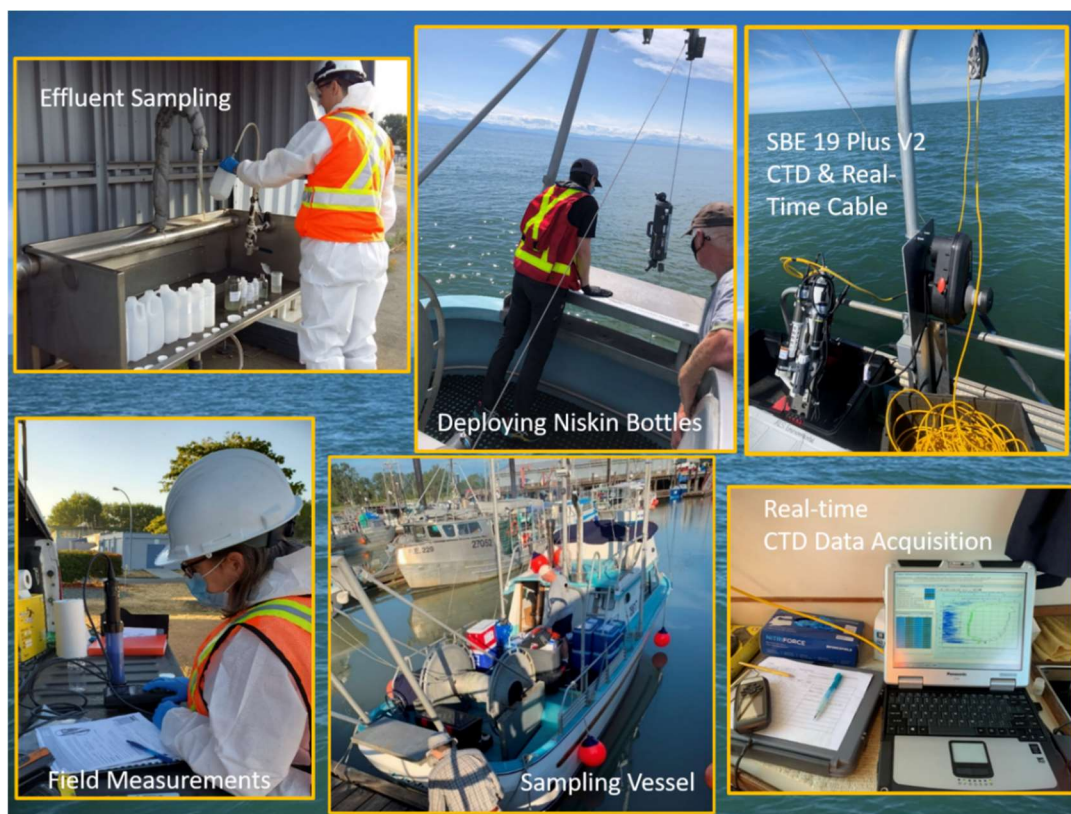
The 2024 Iona IDZ monitoring program was conducted over five days from June 5 to June 24, 2024. Sampling times were selected to reflect various tidal conditions (ebb, flood and slack) at the edge of the IDZ.

The location of the plume was determined in the field using a Sea-Bird Electronics (SBE) 19plus V2 CTD (Conductivity Temperature Depth) profiling system with real-time feed of data, such as CDOM (Colored Dissolved Organic Matter), turbidity and dissolved oxygen (Figure 12.3). Six samples were collected from a single station at the IDZ boundary each week. Samples were collected using 4.2 litre Niskin water samplers affixed to a winch wire and spaced two to four metres apart depending on the observed plume thickness.

Samples were simultaneously collected from the Iona Island WWTP effluent and at the reference location. Approximately 477 parameters were analyzed, which included physical parameters,

bacteriology, nutrients, metals, and organics such as, methylmercury, PCDD/Fs, PCBs, PBDEs, SVOCs, VOCs, pyrethroid pesticide, HBCDD, chlorinated alkanes and TBBPA.

FIGURE 12.3 IONA INITIAL DILUTION ZONE BOUNDARY MONITORING - MATERIAL AND METHODS



RESULTS

2024 IONA IDZ BOUNDARY MONITORING FINDINGS

The effluent plume was captured over a wide depth range (35 m – 75 m), reflecting the fact that a wide range of oceanographic conditions were captured during the 2024 sampling program. Bacterial concentrations positively correlated with CTD profiles confirming that the applied field methods were accurate in identifying the effluent plume. The Iona Island WWTP effluent plume was successfully captured in 100% of samples collected during the 2024 survey.

Water quality parameters were evaluated against regulatory guidelines and objectives. All water quality guidelines at the IDZ boundary were met except for total boron and dissolved oxygen. The observed elevated boron concentrations in the receiving environment are a result of natural background conditions rather than a reflection of the Iona Island WWTP effluent impact. The measured Iona Island WWTP effluent concentrations are an order of magnitude less than the water quality guideline. Additionally, the concentrations observed at the edge of the IDZ are not statistically different than the upstream far-field location. For dissolved oxygen, the BC WQGs are applicable to surface and near-surface waters and therefore do not directly apply to coastal

subsurface intermediate water depths where low natural oxygen levels are expected (BC ENV 1997). Furthermore, dissolved oxygen concentrations observed at the IDZ boundary were not statistically different from the concentrations at the upstream far-field location. This indicates that the observed dissolved oxygen concentrations are not directly attributable to the Iona Island WWTP effluent but rather largely reflect regional conditions of the southern Strait of Georgia.

Chlorinated alkanes, methyl mercury, PCDD/Fs, HBCDD, PCBs and PBDEs are considered persistent, bio-accumulative and toxic substances (PBTs). As a result, they are not allowed a mixing zone and effluent concentrations must meet water quality guidelines (CCME, 2008). Effluent samples collected in the 2024 program had concentrations of methyl mercury, total pentaPBDEs, PBDE-99 and PBDE-100 greater than long-term guidelines, however concentrations were within the ranges observed over the period from 2014 to 2024. Overall, there is no indication of increasing impacts to the water quality within the Iona study area.

2025 IONA IDZ BOUNDARY MONITORING FINDINGS

Overall, results from the 2025 monitoring program indicate that conditions have remained consistent with recent years, with no significant changes in trends. Key findings include:

- The effluent plume was captured in 100% of samples at the IDZ
- Effluent concentrations for PBT substances that did not meet WQGs included methylmercury, PBDE-99, PBDE-100, total penta-PBDE, and total PCBs.
- All other SOPCs met WQGs at the IDZ with the exception of dissolved oxygen and boron which reflect regional environmental background conditions, and permethrin (2.0 ng/L), which marginally exceeded the long-term guideline of 1 ng/L.
- Long-term trends for fecal coliforms, *E.coli*, ammonia, boron, copper, PBDEs and methylmercury remained consistent with previous years indicating no increasing impacts on water quality.

Overall, the findings from 2024 and 2025 Iona IDZ monitoring program remain consistent with previous years (Quinn & Gu, 2025, Quinn *et al*, 2026).

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12.1.4. IONA DEMERSAL BIOTA MONITORING

OVERVIEW

The Iona demersal biota monitoring program has run in 2001, 2008, 2017, and 2023. This program has consistently sampled English Sole (*Parophrys vetulus*) in all survey years and has included Dungeness crab (*Metacarcinus magister*) as a sentinel species in all survey years but 2017. Both species are bottom-dwelling organisms and therefore may be exposed to substances present in water and sediments, and both are valued fisheries resources. In addition, the program includes an assessment of fish community structure at each site as an indicator of ecosystem health.

APPROACH

In the autumn of 2023, the biota monitoring program included three nearfield sites and one reference site. English sole and Dungeness crab were targeted at all sites. The fish community was identified, enumerated, and weighed to allow for detailed community analysis. English Sole were collected by bottom trawl, targeting approximately 70 individuals per site for health and chemical analyses, while Dungeness Crab were collected using traps targeting approximately 40 individuals per site with an effort to balance samples between both sexes. Target samples for English Sole were not achieved at the reference site and the Dungeness Crab target was not achieved at one of the near field sites. Each individual had biometric data and a detailed health assessment (including histopathology) recorded. Liver, muscle and whole-body samples were collected from English Sole and muscle and hemolymph samples were collected from Dungeness crab and submitted to laboratories for biochemical and tissue chemistry analysis. Biochemical endpoints were used as a biomarker of contaminant exposure. Tissue chemistry samples were compared spatially across sites and against tissue quality guidelines.

RESULTS

There was no indication that fish community structure was influenced by the Iona Island WWTP. Overall health assessment data did not demonstrate any spatial patterns indicative of exposure to contaminants. PAH metabolites concentrations were elevated at the nearfield sites in English Sole compared to the reference site indicating contaminant exposure; however, this pattern was not present in Dungeness Crab. Tissue chemistry results showed that several contaminants exceeded applicable guidelines, including arsenic, methylmercury, selenium, selected PBDE congeners, and mammalian PCB toxicity equivalents in English Sole, and selenium in Dungeness Crab across sites. Spatially, PBDEs were elevated in English Sole in the near field sites compared to the reference

sites; however, this pattern was not present in Dungeness Crab. The weight of evidence framework concluded that there was not a consistent Iona Island WWTP driven gradient across the lines of evidence.

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12.1.5. STRAIT OF GEORGIA AMBIENT MONITORING PROGRAM

OVERVIEW

The Strait of Georgia Ambient Monitoring Program was initiated in 2004. For the first 10 years the program was conducted in partnership with the Department of Fisheries and Oceans' Institute of Ocean Sciences (IOS). This program largely focused on sediment characterization. Since 2013, Metro Vancouver has continued the collaboration on this monitoring program with the Department of Earth, Ocean and Atmospheric Sciences (EOAS) of the University of British Columbia (UBC). The current program is a five-year (2022-2026) research project jointly funded by Metro Vancouver and the Natural Sciences and Engineering Research Council of Canada (NSERC). The information presented here represents the third year of the research project.

The project's overall objectives are to:

- Measure and quantify spatial patterns and temporal variations of circulation in the Strait of Georgia surface water, intermediate depth water and in deep water over various time scales.
- Establish how this circulation affects the dispersal of particles added by rivers and biological production
- Elucidate the modes of addition, dispersion and removal of different silver, cadmium, PBDEs, and Endocrine Disruptive Chemicals (EDCs).

APPROACH

Project objectives are realized by a combination of modelling and field sampling. With the continued operation of Ocean Networks Canada/Victoria Experimental Network Under the Sea (ONC/VENUS) coastal observatory (e.g. VENUS' seabed monitoring nodes and the Ferry Monitoring System), it is possible to monitor the state of the Strait and to provide a context for more efficient examination of circulation and mixing processes in the Strait. Other existing monitoring initiatives include, IOS quarterly water quality survey cruises and biweekly survey cruises conducted by Pacific Salmon Foundation under the Salish Sea Marine Survival Project.

Coastal Ocean Dynamics Applications Radar (CODAR), Moderate-Resolution Imaging Spectroradiometer (MODIS) images from Aqua satellite, and surface drifters were used to study surface water circulation and dynamics of the Fraser River plume. In addition, particle tracking techniques and neutrally buoyant floats were developed to study the pathways of intermediate

water within the Strait of Georgia. Finally, SalishSeaCast, a Nucleus for European Modeling of the Ocean (NEMO) 3.6 model configured for the Salish Sea, was used to study the deep renewal events, residence time of treated effluent from Iona Island WWTP, and dispersion of PBDEs in the Strait of Georgia.

2024 was an intensive field sampling year to meet the program's overall objectives. This included float deployments and particle dynamics measurements for dispersion, cycling and bottom sediment resuspension, sampling EDCs and trace metals in the Salish Sea and effluent at Iona Island (and Annacis Island WWTPs), as well as sediment coring for further PBDE inputs into the SalishSeaCast model.

RESULTS

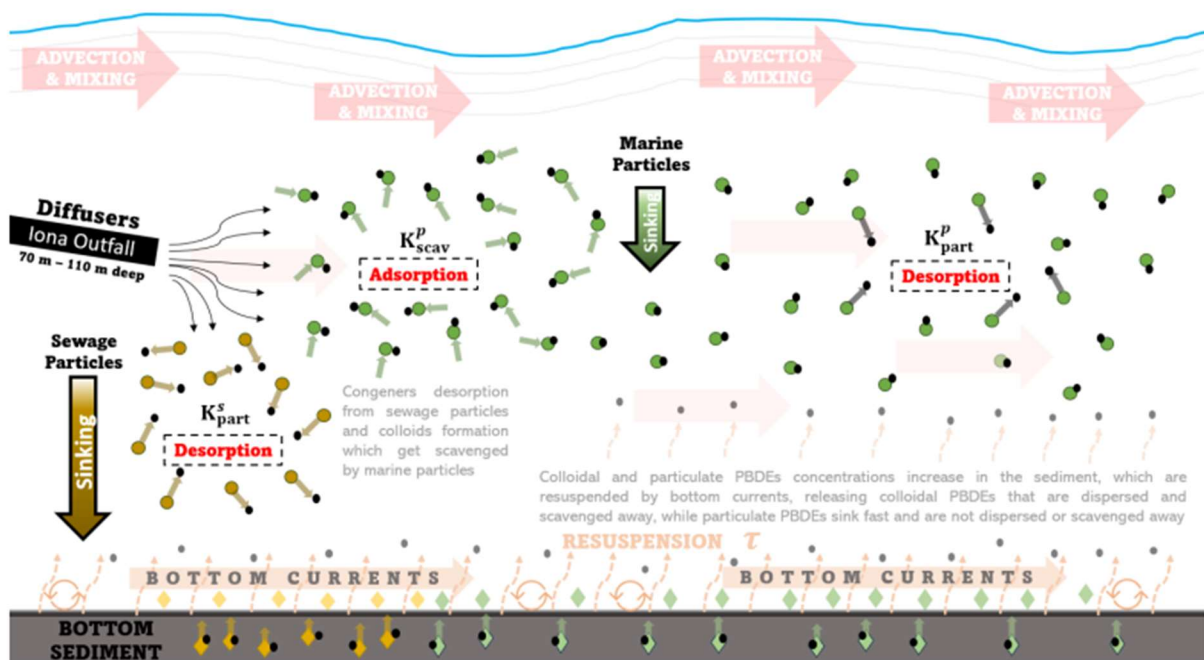
Under the Strait of Georgia Ambient Monitoring Program, studies have been carried out to understand the biogeochemical cycling of the trace metal cadmium. Cadmium is a non-essential metal that can have adverse effects on aquatic life. Research through this program has shown that wastewater inputs contribute very little to the receiving environment. The dominant source of dissolved cadmium in the Strait of Georgia is water upwelled from the Pacific Ocean creating naturally high background conditions. Current measurements indicate cadmium is well below British Columbia's WQGs.

One notable finding is an unexpected increase in particulate cadmium around 50 meters depth, which may be linked to chemical reactions occurring with effluent particles from the Iona Island WWTP outfall. To test this hypothesis, seawater and effluent mixing laboratory experiments were carried out. Researchers first mixed filtered effluent and filtered seawater in different ratios to see if dissolved cadmium turns into particles during mixing over a 24-hour period. Initial results showed that cadmium in the effluent starts turning into particles on its own, even before it mixes with seawater. In seawater alone, no meaningful change in dissolved cadmium occurred over the 24 hours. The next phase of testing will include unfiltered effluent to see whether low-oxygen wastewater particles help form cadmium sulfide in the water column. The experiments will help capture real-world conditions to understand the biogeochemical cycling and how wastewater effluent may influence cadmium behaviour when it is discharged and dispersed into the receiving marine environment.

The dissolved and particulate PBDEs in the water column were found at higher-than-expected levels in samples collected during the early phases of this program. Further research into the PBDE load indicated it is dominantly colloidal (tiny dissolved/particle-like bits). These high concentrations could not be explained by known sources such as the Iona Island WWTP, Fraser River or atmospheric deposition. It was hypothesized that contaminated sediments near the Iona Island outfall become resuspended by strong bottom currents near the seafloor. This resuspension may release both larger particles that settle back down quickly and tiny colloids that stay in the water column long enough to spread widely, as shown schematically in Figure 12.4. Over time, this process could expand the area of impacted seafloor creating a long-term source of PBDEs to the

water column even after PBDE production was banned in 2006. Because sediment mixing brings older contaminated layers back to the surface, the decline in PBDE levels is expected to be very slow.

FIGURE 12.4 SCHEMATICS SHOWING THE MAIN ANTICIPATED PBDES PROCESSES IN THE WATER COLUMN AFTER BEING RELEASED FROM IONA ISLAND WWTP OUTFALL



To test the above-mentioned hypothesis, a dispersion model was developed based on SalishSeaCast model outputs and a Lagrangian particle tracking computing framework (Ocean Parcels). The model resolves PBDEs absorption and desorption interactions within the water column, and physical processes such as mixing, sinking, and resuspension from the bottom sediment throughout the Strait of Georgia. Specific PBDEs changes in the water column are defined by three different processes: desorption of PBDEs from wastewater particles into a colloidal state, absorption of PBDEs from colloids onto marine particles and desorption of PBDEs from marine particles into a colloidal state again (Figure 12.4). The modelling also involves construction of a long-term source function for PBDEs in the Iona Island WWTP effluent to act as a model input.

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12.2 BURRARD INLET ENVIRONMENTAL MONITORING PROGRAMS

The Lions Gate WWTP currently discharges primary treated effluent into the turbulent First Narrows area of Burrard Inlet through a diffuser located just to the west of the Lions Gate Bridge in West Vancouver. The effluent is disinfected between May 1 and September 30 each year. The diffuser discharges at an average depth of 20 m and about 184 m offshore. The effluent is dispersed initially throughout Inner and Outer Burrard Inlet before entering the Strait of Georgia.

The Burrard Inlet Environmental Monitoring Program aims to understand the influence of Metro Vancouver discharges on Burrard Inlet. To date, the work conducted under this monitoring program has included assessments of effluent quality, plume near-field mixing and far-field dispersion modeling, water quality, sediment quality, benthic invertebrate community structure and health, and fish contaminant uptake and health. In 2025, the field work was conducted for the water column and sediment effects surveys in Burrard Inlet.

12.2.1. BURRARD INLET WATER COLUMN MONITORING

OVERVIEW

The water column monitoring program focuses on the IDZ of the Lions Gate WWTP, and includes background locations within Burrard Inlet so the potential effects of this discharge can be assessed.

APPROACH

Burrard Inlet environmental monitoring for the 2025 water column program was conducted between October 13 and November 3. Daily activities included collecting depth-stratified water chemistry samples paired with water column profiles from up to eight locations throughout Burrard Inlet (Figure 12.5), and up to four stations along the down-current edge of the IDZ boundary (Figure 12.6). Physical water column profiles were also conducted at up to 16 additional stations along the IDZ boundary and throughout Burrard Inlet.

All sampling was conducted using a Sea-Bird Electronics (SBE) ECO55 Sea Carousel integrated with a SBE 25Plus CTD profiler. At the IDZ boundary two sensors were used as real-time indicators of the effluent plume: a WetLabs ECO CDOM fluorometer and a Turner C-FLUOR tryptophan fluorometer. Based on visual interpretation of the real-time CDOM and tryptophan readings, the effluent plume was identified and manual closure of water bottles facilitated a plume capture rate of 88%.

Results from the 2022, 2023, 2024 and 2025 programs are outlined below.

FIGURE 12.5 BURRARD INLET ENVIRONMENTAL MONITORING PROGRAM – WATER COLUMN AMBIENT SAMPLING STATIONS

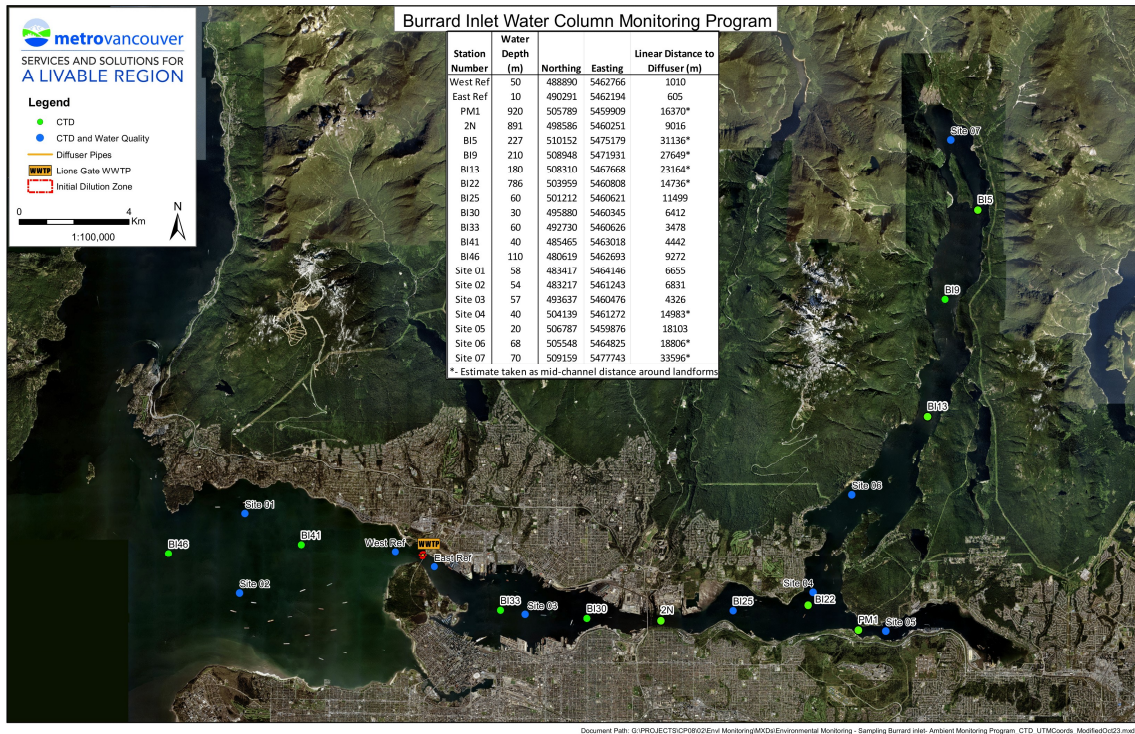
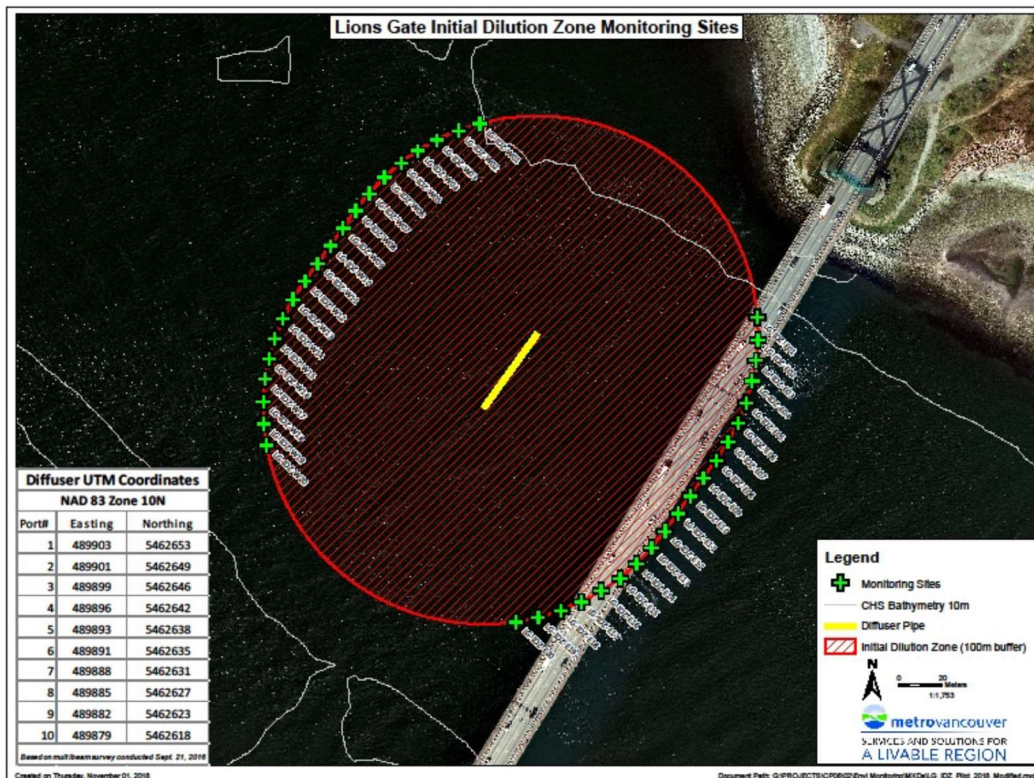


FIGURE 12.6 BURRARD INLET ENVIRONMENTAL MONITORING PROGRAM – WATER COLUMN INITIAL DILUTION ZONE SAMPLING STATIONS



RESULTS

Effluent Guideline Comparison of PBT Substances

Persistent, bioaccumulative, and toxic substances (PBTs) are not permitted a dilution zone and guidelines are intended to be met at the end of pipe. The majority of PBTs met applicable WQOs and WQGs at the end of pipe except for total pentaBDE in all years; PCB 105 in 2022; total PCBs in 2022 and 2023; total mercury in 2023 and 2024; PCB 126 in 2024; PBDE 99 and PBDE 100 between 2023 and 2025; and Total DDT and dieldrin in 2024 and 2025. There were quantification challenges in assessing guideline attainment for other organochlorine pesticides and Total PCBs in 2024 and 2025 due to blank contamination resulting from the ubiquitous nature of these substances and the stringency of new WQOs. Differences between years may be reflective of changing WQGs and WQOs or quantification challenges rather than changes in effluent quality.

Guideline Comparisons at the IDZ Boundary

Between 2022 and 2025, the majority of WQOs and WQGs at the IDZ boundary were achieved except for total boron, turbidity, *E. coli*, enterococci, and dissolved oxygen in all years. A small number of samples also did not meet WQGs and/or WQOs for dissolved organic carbon (DOC) and temperature in 2022; total organic carbon (TOC) between 2022 and 2024; and total PCBs and TSS in 2022 and 2023. Exceedances of total boron and dissolved oxygen are reflective of natural regional oceanographic conditions rather than a result of the discharge. Fecal indicator bacteria WQOs apply year-round to protect shellfish harvesting, cultural practices, and recreational use. Therefore, it is expected that these WQOs would be exceeded as Lions Gate WWTP does not disinfect outside the bathing season.

Guideline Comparison in the Ambient Environment

Between 2022 and 2025, the majority of WQOs and WQGs in the ambient environment of Burrard Inlet were achieved. However, like at the IDZ boundary, exceedances of the total boron and dissolved oxygen WQGs and/or WQOs occurred across Burrard Inlet in all years. Exceedances of the lower pH WQO also occurred across Burrard Inlet. Exceedances of the fecal indicator bacteria, TOC, and DOC thresholds are most prevalent in the Outer, Inner, Central Harbour, and Port Moody Arm and may be attributable to cumulative discharges from Lions Gate WWTP, CSOs, SSOs, stormwater, etc. Exceedances of the shellfish harvest WQOs are widespread where and when they came into place. However, shellfish harvesting is currently closed throughout most of Burrard Inlet. This is expected as the enterococci and *E. coli* thresholds are below the lowest detection limit available with current testing methodologies for these parameters. Aside from these, total arsenic exceeded its WQO below the mixing layer in the Inner and Outer Harbour in 2023 and total selenium exceeded its WQG in the same basins but in the entire water column in 2024.

Temporal Trends

Since 2006 in the effluent of the Lions Gate WWTP, there has been a significant decrease in the concentrations of 6 PAHs, 10 PCB and 23 PBDE congeners, 4-nonylphenol and 4-nonylphenol diethoxylate, HCH beta, total and dissolved barium, iron, and manganese, dissolved copper, and

total lead. Conversely, there has been a significant increase in total and dissolved aluminum and zinc, total calcium, enterococci, DOC, TOC, ammonia, total kjeldahl nitrogen (TKN), and nine alkylated PAHs which were only analyzed starting in 2018.

At the IDZ boundary, there was a significant decrease in DO along with nitrate and total boron. Total aluminum, arsenic, barium, cadmium, calcium, iron, manganese, strontium, enterococci, *E. coli*, ammonia, PCB 1, salinity, turbidity and temperature were all found to significantly increase over the period examined.

Dissolved oxygen has also declined significantly across the bottom waters of Burrard Inlet, which supports the likelihood that a temporal decline in DO at the IDZ and across Burrard Inlet is associated with larger-scale declines in Pacific Ocean waters. Aside from DO, trends tend to be geographically isolated. Decreases of silicon, sulfur, lead, nickel, total suspended solids, TOC, DOC, and ammonia were found primarily in the Inner and Outer Harbour, Port Moody Arm, and/or southern Indian Arm. Conversely, increases were observed for barium, phosphorus, turbidity, salinity, temperature, enterococci, *E. coli*, and TKN.

SUMMARY

Overall, the Lions Gate WWTP discharge is meeting WQG and WGOs at the IDZ boundary for the majority of constituents. There have been some changes in water chemistry in the effluent, IDZ, and ambient environment over the years of the program. Although some changes do not have a clear explanation, some are linked to regulatory restrictions or bans of chemical substances, changes in treatment, or to larger scale changes in the receiving environment.

12.2.2. LIONS GATE SEDIMENTS EFFECTS SURVEY

OVERVIEW

The Burrard Inlet sediment effects monitoring program is a comprehensive marine monitoring program to assess possible effects, if any, of the Lions Gate WWTP on sediment quality. The 2025 survey included 21 stations throughout Burrard Inlet with most in Outer and Inner Burrard Inlet.

APPROACH

Field work was conducted between March 20 and April 4, 2025, following the established study design and sampling methods from previous years (Figure 12.7). Sediment samples were collected and analysed for physical, chemical, and bacteriological parameters at all sample locations, as well as benthic community structure at the 21 stations throughout Burrard Inlet (Figure 12.8).

The Lions Gate SES program monitors core set of sediment quality indicators including bacteriological indicators (fecal tracers), as well as groups of compounds that may potentially affect aquatic organisms. Chemical analysis included particle size, nutrients, metals, stable isotopes and several core organic groups (sterols, hormones, PAHs and alkylphenols). In addition to the core

organic analysis conducted annually, several organic analyte groups were also analyzed including, dioxins and furans, methylmercury, tributyltin, PBDEs, PCBs and PFCs in 2025.

As of 2025, on an annual basis the data report summarizes sediment quality, guideline attainment, and benthic infaunal community structure and diversity with comparisons to historical benchmarks and spatial trends. Every three years, starting in 2027, a more comprehensive report will include a review of the prior three years in the context of the longer-term dataset.

FIGURE 12.7 LIONS GATE WWTP MONITORING ACTIVITIES IN BURRARD INLET

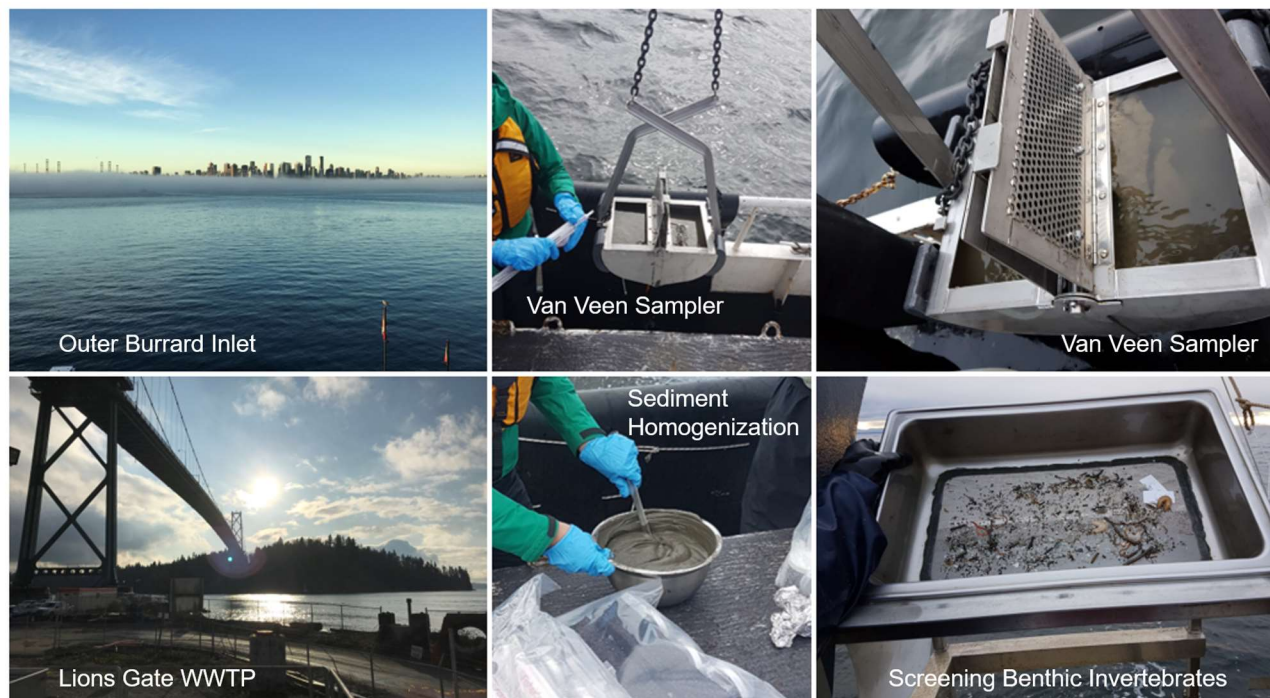
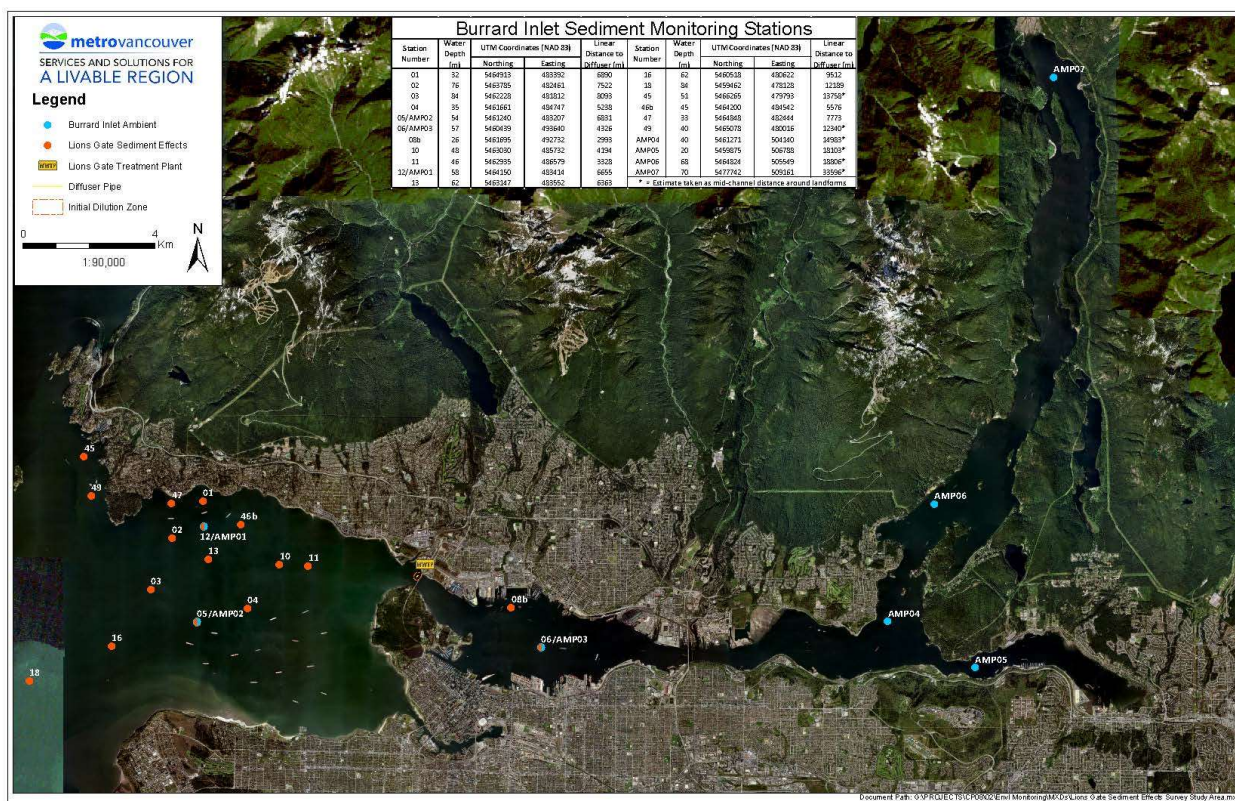


FIGURE 12.8 METRO VANCOUVER BURRARD INLET SEDIMENT SAMPLING STATIONS



RESULTS

Most sediment samples contained detectable concentrations of bacterial indicators, metals, sterols, isotopes, PAHs, PBDEs, PCBs, and dioxins and furans; whereas, hormones, bisphenols, and PFCs were largely below detection limits. While several metals and organic contaminants exceeded sediment quality guidelines (SQG) and objectives (SQO) at individual stations, these elevated concentrations were observed across sub-basins (Inner and Outer Harbours, Indian Arm and Port Moody Arm) which may reflect regional conditions and not specific point sources. PAH, PBDE, and metal concentrations were generally lower than historical thresholds at the majority of stations, with a few exceptions of elevated concentrations of select analytes at isolated stations.

Benthic invertebrate univariate endpoints did not indicate clear wastewater effects; however, community composition varied spatially. East/Inner Harbour stations had an increased abundance of species that are tolerant to organic enrichment (e.g., *Parvilucina tenuisculpta*), lower density of *Alvania rosana* and an absence of *Levinsenia gracilis*, both of which may be sensitive to organic enrichment. Consistently, the Outer Burrard Inlet northwest (stations 1, 10, 11 and 46b, and 47) and southwest (stations 16 and 18), had an increased abundance of *P. tenuisculpta* and lower densities of *A. rosana*. East/Inner Harbour stations and northwest (stations 1, 10, 11, and 46b) tended to have a higher portion of *Axinopsida serricata* with low ferrous oxide related shell staining, which may be indicative of lower oxygen environments.

Overall, the 2025 Lions Gate SES results suggest some differences in sediment quality and benthic invertebrate community composition across Burrard Inlet. Although there are some SQG and SQO exceedances, these occur throughout Burrard Inlet and are therefore not clearly associated with any specific point source.

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12.2.3. DEMERSAL BIOTA MONITORING

OVERVIEW

The Burrard Inlet demersal biota monitoring program has run in 2007, 2012, 2017, and 2023. This program has consistently sampled English Sole (*Parophrys vetulus*) in all survey years and Dungeness crab (*Metacarcinus magister*) was added as a sentinel species in 2023. Both species are bottom-dwelling organisms and therefore may be exposed to substances present in water and sediments, and both are valued fisheries resources. In addition, the program includes an assessment of fish community structure at each site as an indicator of ecosystem health.

APPROACH

In the autumn of 2023, the biota monitoring program included sampling at two sites in the Outer Harbour, one site in the Inner Harbour, one site in Port Moody Arm and one site in southern Indian Arm. English sole and Dungeness crab were targeted at all sites. The fish community was identified, enumerated, and weighed to allow for detailed community analysis. English Sole were collected by bottom trawl, targeting approximately 70 individuals per site for health and chemical analyses, while Dungeness Crab were collected using traps targeting approximately 40 individuals per site with an effort to balance samples between both sexes. Target samples sizes for English Sole were not achieved at Port Moody Arm. Each individual had biometric data and a detailed health assessment (including histopathology) recorded. Liver, muscle and whole-body samples were collected from English Sole and muscle and hemolymph samples were collected from Dungeness crab and submitted to laboratories for biochemical and tissue chemistry analysis. Biochemical endpoints were used as a biomarker of contaminant exposure. Tissue chemistry samples were compared spatially across sites and against tissue quality guidelines.

RESULTS

There was no indication that fish community structure was influenced by the Lions Gate WWTP. Overall health assessment data was consistent with exposure to contaminants in the Inner Harbour Site for both species. Biochemical biomarker results suggest higher exposure to organic contaminants in Easter Burrard Inlet compared to other stations for both species. Tissue chemistry results identified multiple tissue quality guideline and objective exceedances in both species, including PCDD/F toxicity equivalents, metals, selected OCPs, PBDEs, and PCBs in English Sole, and metals and legacy organochlorine

contaminants in Dungeness Crab. Spatial patterns were analyte-specific: metals were generally higher at outer Harbour sites, whereas legacy organic contaminants such as PCBs, PBDEs, and PCDD/Fs were more frequently elevated at inner Harbour and easternmost Burrard Inlet sites. The weight of evidence framework concluded that there was no consistent Lions Gate WWTP driven gradient across the lines of evidence and that contaminant distributions likely reflect a combination of legacy, industrial and urban sources rather than a dominant influence from a single source.

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12.3 FRASER RIVER ENVIRONMENTAL MONITORING PROGRAM

Metro Vancouver owns and operates three secondary WWTPs that discharge treated effluent into the Main Stem and the Main Arm of the Fraser River. The largest of these plants is the Annacis Island WWTP, which discharges into the Fraser River immediately downstream of the Alex Fraser Bridge. The other two plants that discharge into the Fraser River are the Lulu Island WWTP at the foot of Gilbert Street in Richmond and the Northwest Langley WWTP downstream of 201st Street in Langley.

12.3.1. FRASER RIVER WATER MONITORING

The Fraser River Environmental Monitoring Program (FREMP) assesses the water quality around the Annacis Island WWTP IDZ boundary, at mid-field sites upstream of the IDZ, and at far-field sites upstream and downstream within the geographic area of the Fraser River in the Metro Vancouver region. The effluent plume at the Annacis Island WWTP outfall can be sampled with a relatively high success rate, compared to the highly transient plumes located at the Lulu Island and Northwest Langley WWTP outfalls. In addition, the effluent discharge rate at the Annacis Island WWTP is substantially greater than at either the Lulu Island or Northwest Langley WWTPs. Consequently, indicators of potential effects, if present, would likely be detected in the Annacis Island WWTP receiving environment first. Therefore, monitoring has been focused on the Annacis Island WWTP since 2003.

Metro Vancouver's ILWRMP was approved by the BC ENV with the condition that "monitoring near the outfalls for all five wastewater treatment plants" is undertaken (Ministerial Condition #6). As a result, Metro Vancouver has reviewed the feasibility of monitoring for the more transient plumes at the Lulu Island and Northwest Langley WWTPs. Pilot studies were undertaken at the Lulu Island WWTP in 2014–2015 and 2022, and at Northwest Langley WWTP in 2017–2018.

OVERVIEW

FREMP water monitoring typically occurs between the last week of January and the first week in March when river flows are at their lowest before the freshet. Low river flows coinciding with the highest period of rainfall reflect the worst-case conditions for water quality: minimum dilution and high probability of SSOs, CSOs, and rainfall runoff.

Samples are collected from eight far-field sites throughout the Fraser River upstream and downstream of AIWWTP, three mid-field sites upstream of the Fraser River trifurcation near the SkyTrain Bridge in New Westminster, and five sites within the effluent plume on the IDZ boundary (Figure 12.9). Concurrent with sampling at the IDZ boundary, final effluent samples are collected at Annacis Island WWTP to assist with interpretation of the receiving environment water samples and enable calculations of effluent dilution.

FIGURE 12.9 SAMPLING VESSEL AT THE ANNACIS OUTFALL



In January 2025, the new Annacis Island WWTP Stage V Outfall became operational. It is a new outfall and diffuser designed to accommodate future population growth while ensuring sufficient dilution of effluent. The outfall is located approximately 120-175 metres from the north bank of the river and consists of a 260-metre diffuser section with 18 currently active ports (out of a total of 24 ports). The ports discharge horizontally as buoyant jets, and their flexible duckbill valves are designed to help optimize exit velocities and prevent river water intrusion.

The 2024 monitoring results presented below represent the final year of monitoring at the old outfall IDZ (Figure 12.10). Monitoring at the IDZ for the new outfall occurred in 2025 (Figure 12.11).

APPROACH

Five weekly sampling events are conducted within a 30-day period to allow for comparison with 30-day average WQOs. During each monitoring event, samples are collected at 5 m depth from three upstream mid-field sites approximately six kilometres from the IDZ and five additional samples are collected from within the effluent plume (depth 3 to 8 m) at the edge of the IDZ boundary. Confirmation that samples are collected from within the plume is based on bacteriological analyses.

Additionally, eight far-field samples are collected throughout the Fraser River: four upstream as far as the boundary between the Metro Vancouver Regional District and the Fraser Valley Regional District, and four downstream as far as the mouth of the Fraser River in both the North Arm and the Main Arm.

Bacterial analysis and in-situ water quality measurements are completed at every site. Additionally depth profiles for temperature, pH, conductivity, salinity, turbidity, and dissolved oxygen are measured at one reference and one IDZ boundary site.

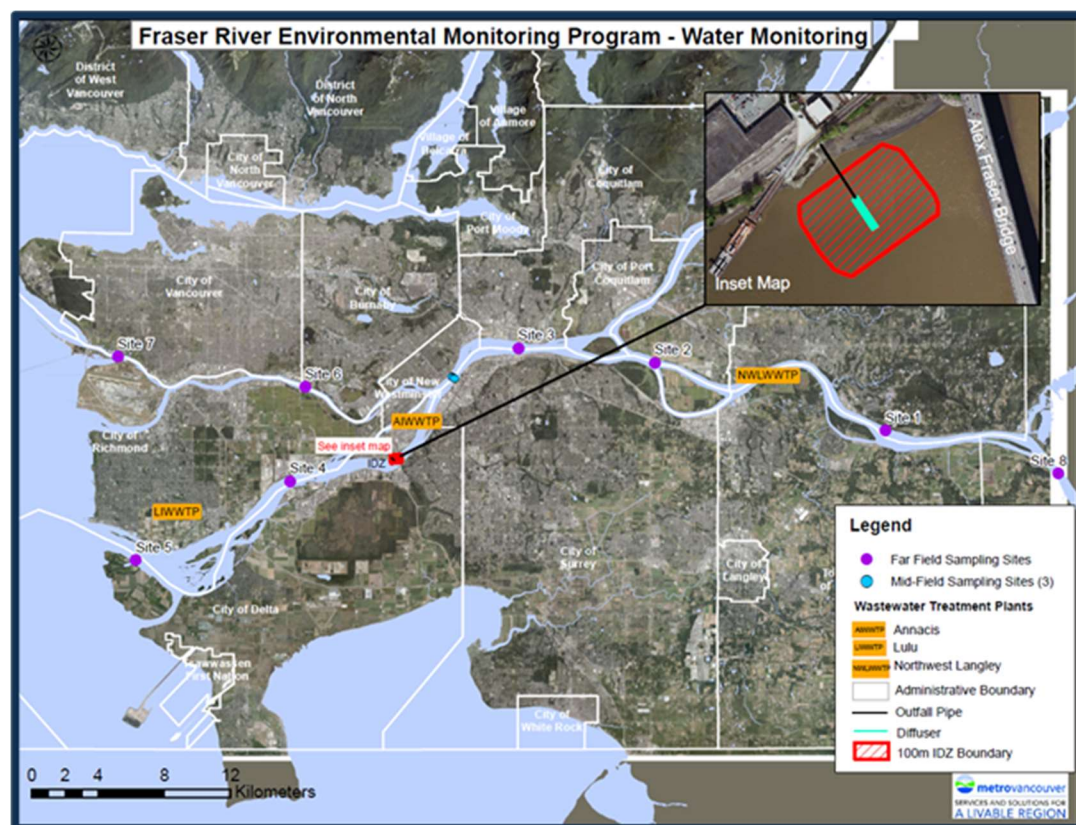
All far-field and mid-field samples and those IDZ boundary samples confirmed to have been collected from the effluent plume⁵ are analyzed for conventional wastewater parameters, nutrients, low-level total and dissolved metals, TOC and DOC, and chlorophyll a. In addition, samples are periodically analyzed for select trace organics. Since many of these compounds are difficult to detect in the receiving environment, concentrations are derived based on dilution calculations.

RESULTS

2024 FREMP WATER MONITORING RESULTS

Sampling within the plume at the edge of the IDZ at the Annacis Island WWTP was generally successful, with the majority of samples capturing the plume. Based on fecal coliform concentrations, 100% of samples captured the plume, and based on enterococci concentrations, 84% of samples did.

FIGURE 12.10 FRASER RIVER ENVIRONMENTAL MONITORING PROGRAM – WATER MONITORING, 2024 STUDY AREA AND SAMPLE LOCATIONS



⁵ Fecal coliform concentration ≥ 1000 MPN/100 mL, and/or enterococci concentrations ≥ 300 MPN/100 mL are deemed to have captured the plume.

All parameters met their respective WQOs or approved British Columbia WQGs at the IDZ boundary throughout the 2024 survey with the exception of total aluminum, total copper, total iron and dissolved copper. Noted exceedances of Fraser River objectives and/or guidelines on the IDZ boundary were either within the range of analytical variability, and therefore not considered meaningful, or were reflective of regional conditions in the far-field and mid-field.

Un-ionized ammonia concentrations were below the CCME guideline at all locations throughout the program.

Total aluminum, total iron, and dissolved copper were the only parameters to have exceeded WQOs or approved British Columbia guidelines at mid-field sites. At far-field sites, total aluminum, total copper, total iron, total lead, and dissolved copper exceeded WQOs or approved British Columbia guidelines. These exceedances may be a result of geological impact and related to sediment transport: metal concentrations were generally correlated with TSS concentration, and there was little variability in concentration throughout the river.

In the 2024 monitoring program, bacteria and total ammonia increased from upstream to downstream, with an overall peak in concentration at the IDZ boundary. Total phosphorus and dissolved copper concentrations showed no apparent pattern from upstream to downstream. Total aluminum, copper, and iron had weak spatial patterns that appeared to correspond with TSS concentrations, suggestive of an influence from the downstream transport of particulate metals from sources upstream of the AIWWTP. Spatial patterns observed in 2024 remained consistent with those in the previous 22 years of Fraser River water quality monitoring.

The results of the 2003-2024 annual Fraser River water monitoring programs were compared to identify temporal trends, if any. Fecal coliform concentrations have significantly increased in the mid-field area since 2022 while remaining generally stable in the IDZ boundary area, resulting in a smaller difference in concentration between the two areas. Differences in ammonia concentration between the IDZ and mid-field areas have varied. Concentrations sharply decreased between 2022 and 2024 in the near-field to levels comparable to those in the mid-field. Differences in total phosphorous concentration have not been consistent between the near-field and mid-field areas throughout the program's history. Concentrations in the near-field increased significantly between 2022 and 2024 while in the mid-field area concentrations remained stable between 2013 and 2022 with a slight increase in 2023 and 2024. Fecal coliforms have been significantly increasing at sites 3 (Sapperton Bar), 4 (Tilbury Island) and 5 (Ewen Slough) and enterococci concentrations have been increasing at all far-field sites between 2013 and 2024. TSS and nitrate have been higher in concentration at downstream far-field sites than upstream ones.

Trends noted at near- and mid-field sites may differ from those at far-field sites due to the tide state during which sampling occurred: far-field as close to the end of ebb tide as possible and near- and mid-field sites during ebb, flood, and slack tide conditions. It is possible that some trends at near- and mid-field sites are masked by tide conditions, namely effects of saltwater intrusion from

marine waters downstream. No association was made between temporal trends and the AIWWTP effluent

Total aluminum, total copper, and total iron concentrations have all been increasing at both near- and mid-field sites since approximately 2009 while dissolved copper concentrations have been more stable. At far-field sites, total aluminum, copper, and iron concentrations significantly increased between approximately 2009 and 2014 before becoming more stable with no significant change through 2024.

2025 FREMP WATER MONITORING RESULTS

Sampling within the plume at the edge of the IDZ was generally successful, with the majority of samples capturing the plume. Based on fecal coliform concentrations, 88% of samples captured the plume; based on enterococci concentrations, 76%; and based on *E. coli*, 92%.

FIGURE 12.11 FRASER RIVER ENVIRONMENTAL MONITORING PROGRAM – WATER MONITORING, 2025 STUDY AREA AND SAMPLE LOCATIONS



All parameters met their respective WQOs or approved British Columbia WQGs at the IDZ boundary throughout the 2025 survey with the exception of TSS, total aluminum, total copper, total iron and dissolved iron. Noted exceedances of Fraser River objectives and/or guidelines at the IDZ boundary were either within the range of analytical variability, and therefore not considered meaningful, or were reflective of regional conditions.

All parameters met respective WQGs at mid-field sites with the exception of total aluminum, total copper, and total iron. The exceedances of these metals at near and mid-field sites is indicative of downstream sediment transport. The upstream geology of the Fraser River watershed and the erosion thereof likely contributes to elevated levels of total metals which correspond to elevated TSS.

At far-field sites, all parameters met respective WQGs with the exception of total aluminum, total boron, total iron, total lead, and dissolved copper. This further suggests that upstream geology and resulting sediment transport contributes to the elevated levels of these metals. Elevated boron levels only occurred at Site 7 (McDonald Slough) and were likely indicative of marine water intrusion.

Un-ionized ammonia concentrations were below the CCME guideline at all locations throughout the program.

Bacteria and total ammonia increased from upstream to downstream sites with an overall peak in concentration at the IDZ boundary. Spatial patterns observed in 2025 were consistent with those in previous years. Total phosphorous had similar concentrations at all sites with no strong spatial pattern apart from the concentration being elevated at the IDZ boundary. Parameters that exceeded WQGs had no observed spatial patterns and were strongly correlated with TSS suggesting that they are influenced by sediment transport in the river rather than a result of effluent discharge.

Temporal trends noted as part of 2025 monitoring included fecal coliform concentrations rising faster in the mid-field area compared to the near-field area, shrinking the magnitude of difference between the two areas that had been present in previous years. Differences in concentration at the IDZ boundary and mid-field areas have also been shrinking for total ammonia and total phosphorous, with a decrease in total ammonia at the near-field area between 2022 and 2025, and an increase in total phosphorous at the near-field area. No association was made between these temporal trends and the AIWWTP effluent.

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12.3.2. FRASER RIVER SEDIMENT MONITORING

Sediment deposition occurs during the winter low flow period. During freshet, deposited sediments are likely to be re-suspended or moved due to high river flows thus the highest concentration of accumulated contaminants coincides with the pre-freshet period. For this sediment reason monitoring is timed for the pre-freshet period.

In 2025, as part of the AIWWTP upgrade, Metro Vancouver installed a new outfall in the Fraser River downstream of the previous outfall.

2023 AND 2024 AIWWTP PRE-DISCHARGE SEDIMENT SAMPLING APPROACH

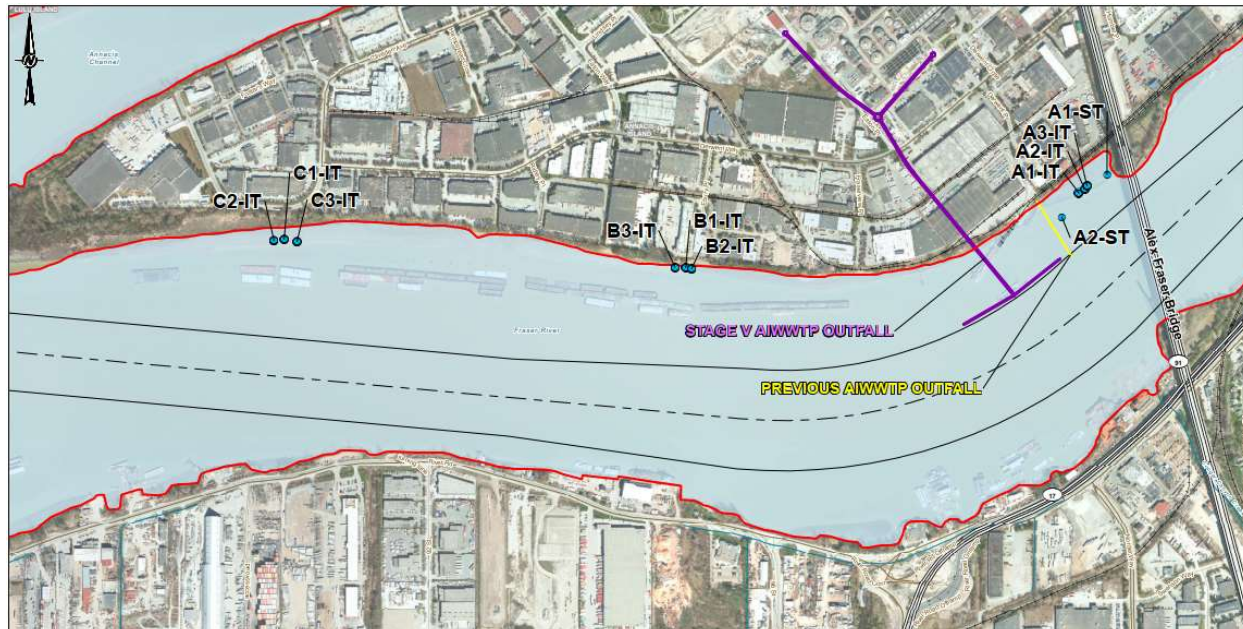
In 2023, pre-discharge sampling of the AIWWTP receiving environment was completed to establish sediment conditions prior to discharge from the new outfall.

Specific objectives were to:

- Characterize the sediment chemistry, toxicity and benthic invertebrate community structure at depositional areas in proximity to the new outfall and assess whether there is evidence of wastewater influence.
- Determine whether pre-discharge sediment quality parameters exceed relevant WQGs and WQOs.
- Assess if there are spatial or temporal (where data exist) trends in sediment quality, toxicity and benthic invertebrate community structure.
- Evaluate the influences of confounding factors on the results observed.
- Provide recommendations regarding future sediment monitoring at the new Annacis WWTP outfall.

The 2023 scope of work included sediment sampling within three subtidal areas in the vicinity of the new AIWWTP outfall. These areas were previously identified as depositional; however, sampling of subtidal depositional sediments was successful at only two of fifteen sites, both within the same area (Area A). No depositional sediments were found at the remaining subtidal sites. The monitoring program was modified to include sampling at nine intertidal sites adjacent to the subtidal areas (Figure 12.12).

FIGURE 12.12 2023 AIWWTP OUTFALL PRE-DISCHARGE SEDIMENT MONITORING –SAMPLING LOCATIONS YIELDING SUCCESSFUL RESULTS



IT – Intertidal, ST – Subtidal. Figure from MV EMC 2025.

The following chemical and biological analyses were completed for sediment samples collected in 2023: particle size, fecal coliforms, *E. coli*, enterococci, moisture, pH, acid volatile sulfide/simultaneous extracted metals (AVS/SEM), TOC, total organic nitrogen, stable carbon to nitrogen isotopes, total metals, PAHs, nonylphenols, PCBs, multi-residue (MRES) and organochlorine pesticides, chloroparaffins, bisphenols, TBBPA, HBCD, dioxins and furans, alkylated PAHs, PBDEs, estradiols and sterols, chlorinated alkanes, and sediment toxicity with *Hyalella azteca* (14-day survival and growth toxicity test). Additionally, a benthic invertebrate community structure survey and biomass measurements were completed (WSP, 2026a).

Subsequently to the 2023 sediment monitoring, an AIWWTP effluent particle settling velocity study was undertaken. Results indicated that AIWWTP-effluent derived particles have a low settling velocity and are unlikely to settle in the vicinity of the outfall (NHC 2023).

The settling velocity informed the particle transport modelling completed by Metro Vancouver to identify new sub-tidal depositional areas for sampling in 2024. Modelling simulated a two-week timeline during the low flow period in the Fraser River. Four sites having maximum transitory sediment deposition were identified: Site 1 located on Annacis Island, Sites 2 and 3 located across the river from Annacis Island, and Site 4 located on the north-shore of the main arm of the Fraser River near Tilbury Island. The model predicted that settling of effluent-derived particles was transitory and prone to resuspension into the water column following the strong ebb tide (Masoom, 2025).

Goals of the 2024 AIWWTP Outfall Pre-Discharge Sediment Monitoring were to:

- Confirm the absence/presence of depositional areas in the vicinity of the new outfall.
- Establish whether there are depositional sediments at the areas identified by the particle settling model.
- Collect sediment samples and ascertain the sediment quality in relation to the sediment quality objectives and guidelines and determine the status of the benthic invertebrate community.
- Provide recommendations for the outfall post-commissioning sediment monitoring, if appropriate.

Sediment samples were collected in March 2024 over a period of seven days. Sampling of model-identified areas was conducted in 2 phases representative of different tidal conditions. Phase 1 sampling of the model-identified sites was conducted during flood and high slack tides during the period of predicted sediment deposition; Phase 2 sampling was conducted following the strong ebb tide. The three areas in the vicinity of Annacis Island were sampled in Phase 1 only (WSP, 2026b).

The following analysis were completed on samples that were collected in Phase 1 and Phase 2: particle size, moisture, organic matter, TOC, total organic nitrogen, estradiol and indicators of wastewater exposure such as stable carbon/nitrogen isotopes, sterols, and bacteria (fecal coliform, *E. coli*, and enterococci) (WSP, 2026b).

Additional chemical parameters were completed on Phase 1 samples only: PAHs, AVS/SEM, nonylphenols, PCBs, MRES and organochlorine pesticides, chloroparaffins, bisphenols, TBBPA, HBCD, dioxins and furans, alkylated PAHs, PBDEs, and chlorinated alkanes (WSP, 2026b).

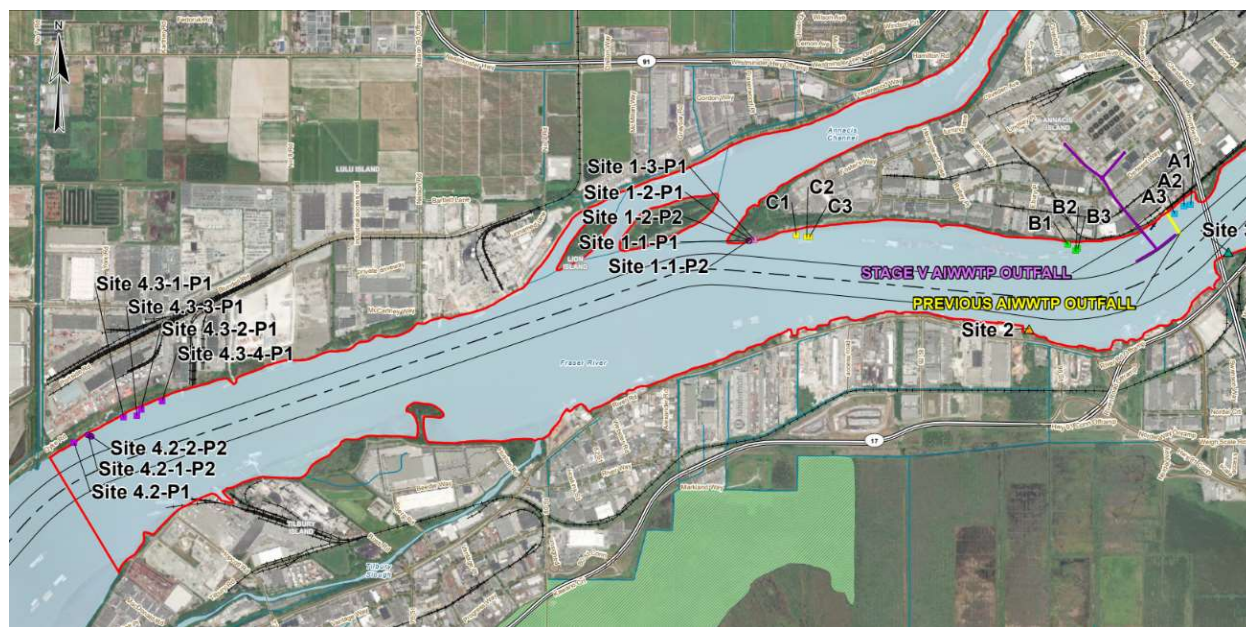
Determination of sediment toxicity (survival and growth) with the freshwater amphipod *Hyaella azteca*, and a benthic invertebrate community survey with biomass measurement were also completed during Phase 1 (WSP, 2026b).

RESULTS

Results of the 2023 sediment sampling indicate that there is a low likelihood of wastewater influence at subtidal area A and a negligible likelihood of wastewater influence at the intertidal sites based on indicators of wastewater exposure specifically sterol ratios, bacteriology and carbon: nitrogen isotopes (MV EMC, 2025 and WSP, 2026a).

In 2024, subtidal samples were successfully collected at the same three sub-tidal areas in vicinity of the new outfall that were attempted in 2023 although there was insufficient depositional sediment to collect benthic invertebrate samples in one Area in 2024 (samples for analysis of chemical parameters were collected). Sub-tidal samples were also successfully collected at 2 of the 4 sites (Site 1 and 4) that were identified by modelling as having maximum transitory deposition of AIWWTP effluent-derived particles. Samples could not be collected at Sites 2 and 3 due to lack of suitable substrate; Site 2 was characterized by concrete, gravel and debris while Site 3 included the cobble apron/scour protection for the Alex Fraser Bridge (WSP, 2026b; Figure 12.13).

FIGURE 12.13 2024 AIWWTP OUTFALL PRE-DISCHARGE SEDIMENT MONITORING – SEDIMENT SAMPLING LOCATIONS



P1 = Phase 1. P2 = Phase 2. Figure from MV EMC 2025.

Bacterial concentrations, carbon and nitrogen isotopes and sterol ratios indicated some level of wastewater exposure in both Phase 1 and Phase 2. It was concluded that the likelihood of wastewater influence was low at three areas close to the AIWWTP and at modeled Site 1 while Site 4 had a moderate level of wastewater exposure (WSP, 2026b; MV EMC 2025).

Sediment quality was generally within the range of Fraser River background sites upstream of the AIWWTP. When compared to Fraser River objectives and provincial and federal guidelines, most samples were below upper limits: the nickel concentration in one sample exceeded the BC Upper Sediment Quality Guideline for marine water (conservatively, both marine and freshwater guidelines were considered due to the tidal influence). Arsenic, chromium, copper, iron, manganese, nickel and some organic parameters marginally exceeded the lower objective/guideline limits. Maximum concentrations of all parameters, except for total PCBs, dioxins and furans and phenanthrene, were less than two times the background conditions in the Fraser River as measured at two sites in 2021 and appear to be reflective of existing conditions in the river (WSP, 2026b; Figure 12.13).

Benthic invertebrate communities were dominated by oligochaetes. Toxicity results indicated no effects on amphipod survival while variable growth results could not be explained by sediment chemistry and could have been influenced by outside factors (WSP, 2026b).

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12.3.3. FRASER RIVER BIOTA MONITORING

OVERVIEW

Biota monitoring in the Fraser River, has occurred on a five-year cycle. The first fish survey was conducted in 2003–2004. However, insufficient fish were captured, so a second survey was completed in 2007 and subsequently in 2012 (cycle 2), 2018 (Cycle 3) and 2023 (Cycle 4).

Prior to 2018, fish were collected from three areas representing the Main Stem, Main Arm, and North Arm of the Fraser River. The study design was revised in 2018, with sites selected to focus on potential effects related to Metro Vancouver WWTP discharges. The 2018 Fraser River Fish Community Monitoring Program involved collecting fish from within 1 km upstream or downstream of five locations in the Fraser River, as follows: up-river control in the Main Arm of the Fraser River; exposure areas for the Northwest Langley, Annacis Island, and Lulu Island WWTPs; and a Fraser River North Arm site.

Fish surveys include a fish community and health assessment, and tissue chemistry analysis. The target fish species has consistently been Peamouth Chub (*Mylocheilus caurinus*). Additional target species have been Largescale Sucker (*Catostomus macrocheilus*; 2007 and 2012), Threespine Stickleback (*Gasterosteus aculeatus*; 2018) and Northern Pikeminnow (*Ptychocheilus oregonensis*; 2018 and 2023). Fish sampling is conducted in September to allow for gonad growth after spring spawning.

The fish monitoring program encompasses fish community assessments, analytical testing, and data interpretation within the context of Metro Vancouver WWTP discharges. Fish are surveyed for health indicators, metals, organic contaminants, and biochemical markers of exposure to contaminants.

APPROACH

In 2023, the same five monitoring areas were targeted as were sampled in 2018 with an additional sixth site in proximity to the Pattullo Bridge: North Arm, Lulu Island WWTP exposure, Annacis Island WWTP exposure, Northwest Langley WWTP exposure, Pattullo Bridge, and the Main Stem (upriver control/reference site; Figure 12.14). Target fish species continued to be Peamouth Chub with supplementary sampling of Northern Pikeminnow. Sampling occurred between September 19 and October 12, 2023, with the objectives of determining fish community structure, assessing fish health, analyzing fish tissue for compliance with Fraser River objectives and federal and provincial tissue quality guidelines and determination of any spatial or temporal trends. The program aimed to capture 55 adult Peamouth Chub (total length ≥ 16 cm, lowered to 13 cm to increase retention rates) and 16 adult Northern Pikeminnow (total length ≥ 20 cm) per site (Ecofish, 2026).

FIGURE 12.14 2023 FRASER RIVER FISH SAMPLING SITES (REPRESENTED BY ORANGE CIRCLES)



Figure adapted from MV EMC 2025.

Beach seining was the primary method of fish capture. Supplementary sampling using baited Fedds traps and angling was conducted to try and increase the number of fish captured. Captured fish were sorted. Bycatch were identified to the species level and the bulk weight of each species recorded before release. Lengths of individual Peamouth Chub and Northern Pikeminnow, the target species, were measured and those not meeting the minimum length requirements were

released. Peamouth Chub and Northern Pikeminnow that met the minimum length requirements were dissected in a field laboratory. External health assessments were completed for all retained fish; internal health assessments were completed on all fish larger than 14 cm total length (Ecofish, 2026).

Due to the low number of Northern Pikeminnow retained (n=2), only Peamouth chub tissue was submitted for analysis. Chemical analysis of muscle, liver and whole-body samples included subsets of the following parameters: metals, methylmercury, organochlorine pesticides, PCBs, PBDEs, per- and polyfluoroalkyl substances (PFAS), PAHs, PPCPs, dioxins and furans. Gill arches and liver tissue were submitted for histopathology. Gallbladder, liver and muscle samples were submitted for analysis of PAH metabolites, Ethoxyresorufin-O-deethylase (EROD) activity, and stable isotopes respectively. Aging was completed on scale samples and morphological analysis was completed on stomach contents (Ecofish, 2026).

RESULTS

Twenty-one (21) fish species and 2 crustacean species were captured with the most abundant species being Peamouth Chub, Redside Shiner (*Richardsonius balteatus*), Starry Flounder (*Platichthys stellatus*), and Three-Spined Stickleback (*Gasterosteus aculeatus*). Target sample numbers were not achieved at any of the 6 sites for either target fish species. Twenty-eight (28) Peamouth Chub, total of all sites, were of sufficient size and retained. No Peamouth Chub of sufficient length were captured at either the Main Stem control or the Pattullo Bridge sites. Tissue samples from all 28 Peamouth Chub were submitted for chemical analysis. No Northern Pikeminnow tissue was submitted for chemical analysis due to the very low retention of adult fish (1 fish per site at 2 sites). Due to the small sample size and no adult target species being captured at the upstream reference site, neither statistical data analysis nor gradient control/exposure comparison could be completed (Ecofish, 2026).

Data indicates that aside from slight differences between the estuarine sites and the more upstream sampling sites, community composition differs more among years than sites. Fin erosion and parasites in Peamouth Chub were observed across all sampled sites. The Health Assessment Index (HAI) was variable among sites. Lesions of potential concern were observed in three of the thirteen fish submitted for histopathology; no lesions indicative of contaminant exposure were observed. Slight differences in Peamouth Chub stable isotope ratios among sites were observed. Methylmercury exceeded the whole-body tissue guideline for the protection of wildlife consumers of aquatic biota in samples collected from the Lulu and Annacis Island Exposure Areas. No other guideline exceedances were noted. The highest PCB concentrations were measured in Peamouth Chub at the Lulu Island and Annacis Island Exposure Areas. PBDEs, PAHs, organochlorine pesticides and pharmaceutical concentrations did not show a clear pattern among sites. The highest EROD activity was measured at sites close to WWTPs, no clear patterns in PAH metabolites were observed between sites close to WWTPs and sites further away (Ecofish, 2026).

Power analysis results indicate that 40 fish per site (20 males, 20 females) should be sufficient to detect differences in health and tissue chemistry (Ecofish, 2026).

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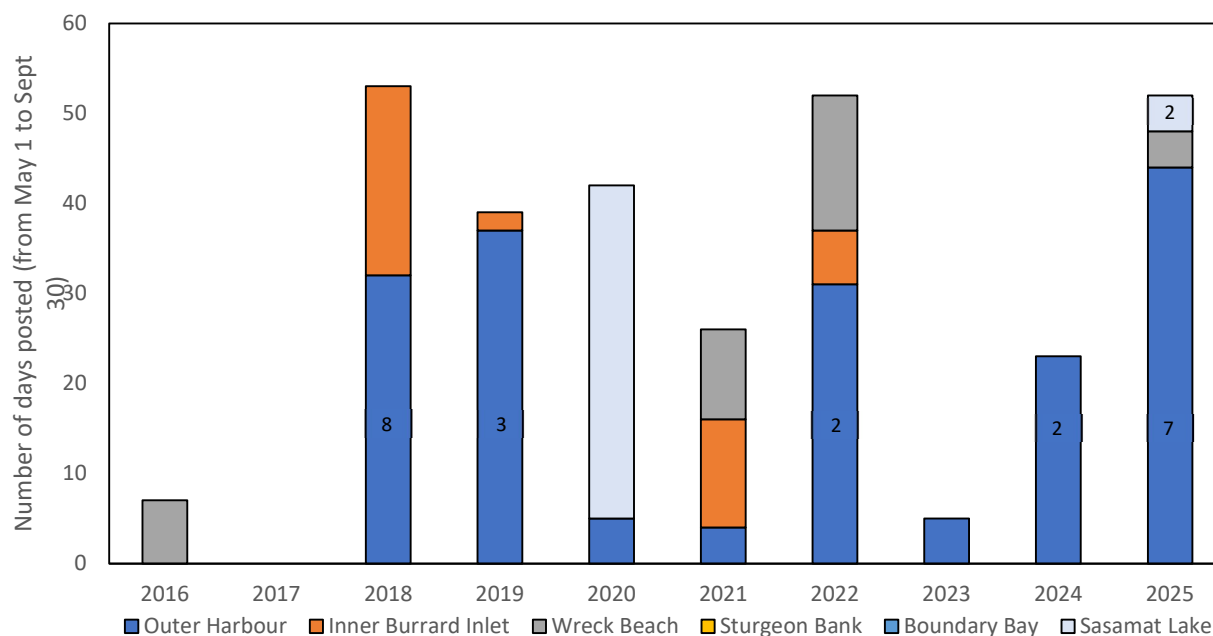
12.4 RECREATIONAL WATER QUALITY MONITORING PROGRAM

Metro Vancouver monitors the bacteriological quality of local recreational waters on a weekly basis throughout the beach season from April to September⁶. In 2025, the local health authorities issued swimming advisories for ten of the thirty-five designated swimming beach locations for a total of 52 days. The advisories were generally issued because the measured *E. coli* concentration was above the consecutive⁷ single sample maximum for primary contact recreation (i.e., 400 MPN/100mL) and were as follows:

- Sasamat Lake White Pine Beach North – 2 days
- Sasamat Lake White Pine Beach South – 2 days
- Third Beach – 15 days
- Sunset Beach – 6 days
- Dundarave – 2 days
- Second Beach – 5 days
- Kitsilano Beach – 5 days
- English Bay – 5 days
- Wreck Beach Trail 4 (Towers) – 4 days
- Ambleside Beach – 6 days

Recreational water quality in 2025 was comparable with water quality of the last 10 years (Figure 12.15).

FIGURE 12.15 NUMBER OF DAYS THE BEACHES** WERE POSTED FOR EACH WATER BODY



**OVERLAID NUMBER INDICATES THE NUMBER OF BEACHES POSTED WITHIN EACH WATER BODY, IF GREATER THAN ONE.

⁶ Monitoring begins in April to allow for 30-d geomean prior to the Victoria Long Weekend in May. Monitoring also occurs in December in English Bay in preparation for the Annual Vancouver Polar Bear Swim.

⁷ Usually after the single sample maximum is exceeded and confirmed through repeat sampling.

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13.0 LWS ENVIRONMENTAL MANAGEMENT SYSTEM

13.1 OVERVIEW

Metro Vancouver continues to develop the Environmental Management System (EMS) for LWS. An EMS is a management framework for identifying and addressing how a business is interacting with the environment, complying with environmental regulations, ensuring due diligence, and continuously improving environmental performance in operations. It is a systematic and iterative approach to planning, doing, reviewing, and taking preventative and corrective action. It involves evaluating environmental risks and compliance obligations, then developing policies, programs, procedures, protocols, training, communications, and performance measures to address them. International standards, the most widely followed being International Organization for Standardization (ISO), define these essential components.

Metro Vancouver is incorporating the principles of the standard ISO EMS 14001:2015 into its LWS practices, including:

1. Evaluating environmental risks and compliance obligations as a basis for setting priorities for action and improvement.
2. Measurable targets that motivate continuous improvement and are consistent with other departmental and corporate objectives.
3. Regular monitoring and reporting on progress toward meeting these targets.
4. Procedures and processes that continuously improve environmental performance in operating the Liquid Waste utility.
5. Environmental training for staff.

13.2 EMS WORK 2025

In 2025, EMS work included the following:

- Developed and implemented EMS documentation per the ISO 14001:2015 standard.
- Delivered spill response materials and training for WWTPs to strengthen environmental incident preparedness and due diligence.
- Created a web-based fuel management learning module to raise awareness around best practices for storage, handling, and transportation of fuel.
- Completed an inventory of refrigerant-containing equipment across LWS pump stations, facilitating leak-rate calculations and emissions tracking.
- Completed an inventory of hydrocarbon-containing tanks across pump stations and WWTPs, confirmed unknown tank capacities, established maximum safe fill levels, and reviewed leak detection processes to ensure regulatory compliance.
- Upgraded pump station and WWTP infrastructure and instrumentation to lower the risk of fuel spills.

Work on EMS is ongoing with annual review and iterative modifications, providing opportunity for continuous improvement and alignment with other LWS objectives, processes, and systems (e.g., environmental monitoring and risk assessments and management systems for safety, assets, energy, budget prioritization, quality and performance).

APPENDIX A:
2025 CSO WATER QUALITY MONITORING
LABORATORY RESULTS

BORDEN CSO QUALITY MONITORING, 2025 – MICROBIOLOGY, GENERAL CHEMISTRY, METALS

Analyte	Detection Limit	Units	Descriptive Statistics ¹																	
			Grab								Composite									
			Range		Mean	Stdev	N	%ND ³	Range		Mean	Stdev	N	%ND ³	Range		Mean	Stdev	N	%ND ³
Microbiology ²																				
Ecoli	1800-18000	MPN/100ml	48000	3500000	766218	1299135	6	0%	170000	5400000	647414	1366892	13	0%	48000	5400000	682792	1326495	19	0%
Enterococci	1000-10000	MPN/100ml	85700	1119900	303253	415553	6	0%	52100	648800	184494	185600	13	0%	52100	1119900	215842	287186	19	0%
Fecal Coliform	1800-18000	MPN/100ml	460000	5810000	1413214	2128919	6	0%	170000	5400000	791231	1340476	13	0%	170000	5810000	950281	1650450	19	0%
General Chemistry and Physical																				
Biochemical Oxygen Demand	4-10	mg/L	26.0	39.0	32.5	9.2	2	0%	20.0	60.0	35.9	11.49	11	0%	20.0	60.0	35.4	10.9	13	0%
Chemical Oxygen Demand	20	mg/L	95.0	105	100	7.1	2	0%	52.0	148	110	28.18	11	0%	52.0	148.0	108.1	26.0	13	0%
Conductivity	1	µmho/cm	119	262	191	101	2	0%	65.0	183	137	32.03	11	0%	65.0	262.0	145.1	46.0	13	0%
Hardness as CaCO3	0.1	mg/L	26.2	68.5	47.4	29.9	2	0%	24.5	46.2	39.8	5.59	12	0%	24.5	68.5	40.9	10.14	14	0%
Nitrogen - Ammonia as N	0.2	mg/L	1.0	2.4	1.7	1.0	2	0%	0.80	2.90	1.60	0.69	12	0%	0.80	2.9	1.6	0.69	14	0%
Nitrogen - Nitrate as N	0.01	mg/L	0.33	1.6	1.0	0.9	2	0%	0.33	0.91	0.67	0.18	11	0%	0.33	1.6	0.7	0.32	13	0%
Nitrogen - Nitrite as N	0.01	mg/L	0.03	0.03	0.03	0	2	0%	0.02	0.05	0.03	0.01	11	0%	0.02	0.05	0.03	0.01	13	0%
pH	0.1	PH	6.9	7.4	7.2	0.4	2	0%	6.90	7.30	7.10	0.14	11	0%	6.9	7.4	7.1	0.17	13	0%
Total Suspended Solids	3-10	mg/L	17.0	92.0	52.7	23.4	11	0%	22.0	101	64.4	22.14	12	0%	17.0	101.0	58.8	23.0	23	0%
Volatile Suspended Solids	3-10	mg/L	17.0	45.0	32.1	9.6	11	0%	18.0	68.0	44.0	14.09	12	0%	17.0	68.0	38.3	13.4	23	0%
Organic Carbon Total	0.5	mg/L	10.0	10.0	10.0	**	1	0%	17.0	17.0	17.0	**	1	0%	10.0	17.0	13.5	4.95	2	0%
Organic Carbon Dissolved	0.5	mg/L	10.0	10.0	10.0	**	1	0%	12.0	12.0	12.0	**	1	0%	10.0	12.0	11.0	1.41	2	0%
Total Metals																				
Aluminum Total	5.0	µg/L	213	1630	922	1002	2	0%	458	1750	928	486	12	0%	213	1750	927	527	14	0%
Arsenic Total	0.5	µg/L	0.7	1.0	0.85	0.21	2	0%	0.7	1.1	0.88	0.12	12	0%	0.7	1.10	0.87	0.13	14	0%
Barium Total	0.5	µg/L	22.3	29.4	26	5.02	2	0%	17.1	31	22.50	4.71	12	0%	17.1	30.60	22.98	4.71	14	0%
Boron Total	10.0	µg/L	<10	16	13	4.24	2	50%	<10	43	14.75	9.17	12	17%	<10	43.00	14.50	8.54	14	21%
Cadmium Total	0.2	µg/L	<0.2	<0.2	<0.2	0.00	2	100%	<0.2	<0.2	<0.2	0.00	12	100%	<0.2	<0.2	0	14	100%	0
Calcium Total	20-200	µg/L	8410	22900	15655	10246	2	0%	7920	14900	13035	1861	12	0%	7920	22900	13409	3451	14	0%
Chromium Total	0.5	µg/L	0.7	3.1	1.90	1.70	2	0%	1.00	3.10	1.80	0.73	12	0%	0.7	3.10	1.81	0.82	14	0%
Cobalt Total	0.5	µg/L	<0.5	0.8	0.65	0.21	2	50%	<0.5	1	0.58	0.14	12	58%	<0.5	0.80	0.59	0.14	14	57%
Copper Total	0.5	µg/L	8.6	22.2	15.40	9.62	2	0%	8.3	21	14.32	3.79	12	0%	8.3	22.20	14.47	4.41	14	0%
Iron Total	5.0	µg/L	365	1660	1013	916	2	0%	539	1710	995	452	12	0%	365	1710	997	487	14	0%
Lead Total	0.5	µg/L	0.9	5.2	3.05	3.04	2	0%	1.7	6	3.43	1.62	12	0%	0.9	6.40	3.38	1.72	14	0%
Magnesium Total	10.0	µg/L	1260	2740	2000.00	1046.52	2	0%	1150	2170	1746	252	12	0%	1150	2740	1782	383	14	0%
Manganese Total	0.5	µg/L	19.7	42.3	31.00	15.98	2	0%	26	53	37.65	10.11	12	0%	19.7	52.90	36.70	10.58	14	0%
Mercury Total	0.1	µg/L	<0.05	<0.05	<0.05	0	2	100%	<0.05	0.5	0.09	0.13	12	92%	<0.05	0.50	0.08	0.12	14	93%
Molybdenum Total	0.5	µg/L	0.9	1.1	1.00	0.14	2	0%	0.6	1.0	0.87	0.14	12	0%	0.6	1.10	0.89	0.14	14	0%
Nickel Total	0.5	µg/L	0.8	2.1	1.45	0.92	2	0%	0.7	1.9	1.29	0.42	12	0%	0.7	2.10	1.31	0.47	14	0%
Phosphorus Total	15.0	µg/L	565	796	680.50	163.34	2	0%	502	1590	802	334	12	0%	502	1590	784	313	14	0%
Selenium Total	0.5	µg/L	<0.5	<0.5	<0.5	0	2	100%	<0.5	<0.5	<0.5	0	12	100%	<0.5	<0.5	<0.5	0.00	14	100%
Silver Total	0.5	µg/L	<0.5	<0.5	<0.5	0	2	100%	<0.5	<0.5	<0.5	0	12	100%	<0.5	<0.5	<0.5	0.00	14	100%
Sodium Total	50-500	µg/L	9730	22400	16065	8959	2	0%	3880	17800	10341	3735	12	0%	3880	22400	11159	4722	14	0%
Zinc Total	3.0	µg/L	21	65	43.00	31.11	2	0%	31	76	49.42	15.52	12	0%	21	76.00	48.50	16.85	14	0%
Dissolved Metals																				
Aluminum Dissolved	5.0	µg/L	23	45	34.00	15.56	2	0%	11	55	24.09	13.15	11	0%	11	55.00	25.62	13.35	13	0%
Arsenic Dissolved	0.5	µg/L	0.7	0.7	0.70	0	2	0%	0.6	1	0.68	0.08	11	0%	0.6	0.80	0.68	0.07	13	0%
Barium Dissolved	0.5	µg/L	9.3	18.7	14.00	6.65	2	0%	7.6	14	10.86	1.65	11	0%	7.6	18.70	11.35	2.71	13	0%
Boron Dissolved	10.0	µg/L	<10	16	13.00	4.24	2	50%	<10	42	14.82	9.39	11	45%	<10	42.00	14.54	8.69	13	46%
Cadmium Dissolved	0.2	µg/L	<0.2	<0.2	<0.2	0	2	100%	<0.2	<0.2	<0.2	0	11	100%	<0.2	<0.2	0	13	100%	0
Calcium Dissolved	20-200	µg/L	6750	22000	14375	10783	2	0%	5990	13200	11371.82	2103.55	11	0%	5990	22000	11834	3827	13	0%
Chromium Dissolved	0.5	µg/L	<0.5	0.6	0.55	0.07	2	50%	<0.5	<0.5	<0.5	0	11	100%	<0.5	0.60	0.51	0.03	13	92%
Cobalt Dissolved	0.5	µg/L	<0.5	<0.5	<0.5	0.00	2	100%	<0.5	<0.5	<0.5	0	11	100%	<0.5	<0.5	<0.5	0	13	100%
Copper Dissolved	0.5	µg/L	3.6	5.1	4.35	1.06	2	0%	3	7	4.35	1.30	11	0%	3	6.80	4.35	1.23	13	0%
Iron Dissolved	5.0	µg/L	57	70	63.50	9.19	2	0%	28	84	49.00	16.80	11	0%	28	84.00	51.23	16.49	13	0%
Lead Dissolved	0.5	µg/L	<0.5	<0.5	<0.5	0.00	2	100%	<0.5	<0.5	0.50	0	11	91%	<0.5	<0.5	0.50	0.00	13	92%
Magnesium Dissolved	10.0	µg/L	746	2560	1653.00	1282.69	2	0%	599	1760	1353.55	304.16	11	0%	599	2560	1400	476	13	0%
Manganese Dissolved	0.5	µg/L	10.7	14.2	12.45	2.47	2	0%	9	27	16.05	4.56	11	0%	9	27.40	15.50	4.44	13	0%
Molybdenum Dissolved	0.5	µg/L	0.5	1	0.75	0.35	2	0%	<0.5	1	0.63	0.09	11	9%	<0.5	1.00	0.65	0.14	13	8%
Nickel Dissolved	0.5	µg/L	<0.5	0.5	0.50	0.00	2	50%	<0.5	1	0.53	0.06	11	82%	<0.5	0.70	0.52	0.06	13	77%
Phosphorus Dissolved	15.0	µg/L	136	346	241	148	2	0%	152	960	343	236	11	0%	136	960	327	223	13	0%
Selenium Dissolved	0.5	µg/L	<0.5	<0.5	<0.5	0	2	100%	<0.5	<0.5	<0.5	0	11	100%	<0.5	<0.5	<0.5	0	13	100%
Silver Dissolved	0.5	µg/L	<0.5	<0.5	<0.5	0	2	100%	<0.5	<0.5	<0.5	0	11	100%	<0.5	<0.5	<0.5	0	13	100%
Sodium Dissolved	50-500	µg/L	9200	21600	15400	8768	2	0%	3460	16000	9460	3581	11	0%	3460	21600	10374	4698	13	0%
Zinc Dissolved	3.0	µg/L	9	19	14.00	7.07	2	0%	11	29	17.82	5.65	11	0%	9	29.00	17.23	5.73	13	0%

** Not applicable

< Results reported less than detection limit

1 Range, mean (geomean for microbiology), standard deviation, and number of samples (N) are provided. When results are less than (greater than for microbiology) the detection limit, the detection limit was used to calculate each statistical value

2 Every sample for microbiology was collected with a duplicate, the result reported is the geomean of duplicates

3 Percent of samples with result less than detection limit

4 Total includes both grab and composite

BORDEN CSO QUALITY MONITORING, 2025 – ORGANICS

Analyte	Detection Limit	Units	Descriptive Statistics ¹				
			Grab				
			Range	Mean	Stdev	N	
Volatile petroleum hydrocarbons							
1,1,1,2-Tetrachloroethane	0.5	µg/L	<0.50	<0.50	**	**	1
1,1,1-Trichloroethane	0.5	µg/L	<0.50	<0.50	**	**	1
1,1,2,2-Tetrachloroethane	0.5	µg/L	<0.50	<0.50	**	**	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	2	µg/L	<2.0	<2.0	**	**	1
1,1,2-Trichloroethane	0.5	µg/L	<0.50	<0.50	**	**	1
1,1-Dichloroethane	0.5	µg/L	<0.50	<0.50	**	**	1
1,1-Dichloroethene	0.5	µg/L	<0.50	<0.50	**	**	1
1,2,3-Trichlorobenzene	2	µg/L	<2.0	<2.0	**	**	1
1,2,4-Trichlorobenzene	2	µg/L	<2.0	<2.0	**	**	1
1,2-Dibromoethane	0.2	µg/L	<0.20	<0.20	**	**	1
1,2-Dichlorobenzene	0.5	µg/L	<0.50	<0.50	**	**	1
1,2-Dichloroethane	0.5	µg/L	<0.50	<0.50	**	**	1
1,2-Dichloropropane	0.5	µg/L	<0.50	<0.50	**	**	1
1,3,5-Trimethylbenzene	2	µg/L	<2.0	<2.0	**	**	1
1,3-Butadiene	0.5	µg/L	<0.50	<0.50	**	**	1
1,3-Dichlorobenzene	0.5	µg/L	<0.50	<0.50	**	**	1
1,3-Dichloropropane	1	µg/L	<1.0	<1.0	**	**	1
1,4-Dichlorobenzene	0.5	µg/L	<0.50	<0.50	**	**	1
Benzene	0.4	µg/L	<0.40	<0.40	**	**	1
Bromobenzene	2	µg/L	<2.0	<2.0	**	**	1
Bromodichloromethane	1	µg/L	<1.0	<1.0	**	**	1
Bromoform	1	µg/L	<1.0	<1.0	**	**	1
Bromomethane	1	µg/L	<1.0	<1.0	**	**	1
Carbon Tetrachloride	0.5	µg/L	<0.50	<0.50	**	**	1
Chlorobenzene	0.5	µg/L	<0.50	<0.50	**	**	1
Chloroethane	1	µg/L	<1.0	<1.0	**	**	1
Chloroform	1	µg/L	<1.0	<1.0	**	**	1
Chloromethane	1	µg/L	<1.0	<1.0	**	**	1
Cis-1,2-Dichloroethene	1	µg/L	<1.0	<1.0	**	**	1
Cis-1,3-Dichloropropene	1	µg/L	<1.0	<1.0	**	**	1
Dibromochloromethane	1	µg/L	<1.0	<1.0	**	**	1
Dichlorodifluoromethane	2	µg/L	<2.0	<2.0	**	**	1
Dichloromethane	2	µg/L	<2.0	<2.0	**	**	1
Ethylbenzene	0.4	µg/L	<0.40	<0.40	**	**	1
Hexachlorobutadiene	0.5	µg/L	<0.50	<0.50	**	**	1
Isopropylbenzene	2	µg/L	<2.0	<2.0	**	**	1
m & p-Xylene	0.4	µg/L	<0.40	<0.40	**	**	1
Methyl-tert-butylether (MTBE)	4	µg/L	<4.0	<4.0	**	**	1
o-Xylene	0.4	µg/L	<0.40	<0.40	**	**	1
Styrene	0.5	µg/L	<0.50	<0.50	**	**	1
Tetrachloroethene	0.5	µg/L	<0.50	<0.50	**	**	1
Toluene	0.4	µg/L	<0.40	<0.40	**	**	1
trans-1,2-Dichloroethene	1	µg/L	<1.0	<1.0	**	**	1
trans-1,3-Dichloropropene	1	µg/L	<1.0	<1.0	**	**	1
Trichloroethene	0.5	µg/L	<0.50	<0.50	**	**	1
Trichlorofluoromethane	4	µg/L	<4.0	<4.0	**	**	1
VH C6-C10 ³	300	µg/L	<300	<300	**	**	1
Vinyl Chloride	0.5	µg/L	<0.50	<0.50	**	**	1
VPH (VH6 to 10 - BTEX) ⁴	300	µg/L	<300	<300	**	**	1
Xylenes (Total)	0.4	µg/L	<0.40	<0.40	**	**	1

** Not applicable

< Results reported less than detection limit

1 Range, mean (geomean for microbiology), standard deviation, and number of samples (N) are provided. When results are less than (greater than for microbiology) the detection limit, the detection limit was used to calculate each statistical value

2 Percent of samples with result less than detection limit

3 Volatile Hydrocarbons containing all petroleum hydrocarbons in the carbon range of C6-C10, including BTEX and Styrene

4 Volatile Petroleum Hydrocarbons containing all pretroleum hydrocarbons in the carbon range of C6-C10 minus BTEX

BORDEN CSO QUALITY MONITORING, 2025 – ORGANICS CONTINUED

Analyte			Detection Limit		Units		Descriptive Statistics ¹															
							Grab					Composite					Total ⁷					
							Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²	
Extractable petroleum hydrocarbons																						
LEPH (C10-C19 less PAH) ³			0.2	mg/L	<0.20	<0.20	<0.20	**	1	100%	<0.20	<0.20	<0.20	**	1	100%	<0.20	<0.20	<0.20	0	2	100%
HEPH (C19-C32 less PAH) ⁴			0.2	mg/L	0.61	0.61	0.61	**	1	0%	0.59	0.59	0.59	**	1	0%	0.59	0.61	0.6	0	2	0%
EPH (C10-C19)			0.2	mg/L	<0.20	<0.20	<0.20	**	1	100%	<0.20	<0.20	<0.20	**	1	100%	<0.20	<0.20	<0.20	0	2	100%
EPH (C19-C32)			0.2	mg/L	0.61	0.61	0.61	**	1	0%	0.59	0.59	0.59	**	1	0%	0.59	0.61	0.6	0	2	0%
Polycyclic aromatic hydrocarbons (PAH)																						
Low molecular weight PAHs (LPAH)	1-Methylnaphthalene ⁵	0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%	
	2-Methylnaphthalene	0.1	µg/L	<0.10	<0.10	<0.10	**	1	100%	<0.10	<0.10	<0.10	**	1	100%	<0.10	<0.10	<0.10	0	2	100%	
	Phenanthrene	0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%	
	Acenaphthene	0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%	
	Acenaphthylene	0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%	
	Anthracene	0.01	µg/L	<0.010	<0.010	<0.010	**	1	100%	<0.010	<0.010	<0.010	**	1	100%	<0.010	<0.010	<0.010	0	2	100%	
	Acridine ⁶	0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%	
	Fluorene	0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%	
	Naphthalene	0.1	µg/L	<0.10	<0.10	<0.10	**	1	100%	<0.10	<0.10	<0.10	**	1	100%	<0.10	<0.10	<0.10	0	2	100%	
	Quinoline ⁶	0.02	µg/L	0.022	0.022	0.022	**	1	0%	<0.020	<0.020	<0.020	**	1	100%	<0.020	0.022	0.021	0	2	50%	
	Total LPAHs	0.1	µg/L	0.022	0.022	0.022	**	1	0%	<0.1	<0.1	<0.1	**	1	100%	<0.1	0.022	0.021	**	2	33%	
	High molecular weight PAHs (HPAH)	Benzo(a)anthracene	0.01	µg/L	<0.010	<0.010	<0.010	**	1	100%	<0.010	<0.010	<0.010	**	1	100%	<0.010	<0.010	<0.010	0	2	100%
Benzo(a)pyrene		0.005	µg/L	0.011	0.011	0.011	**	1	0%	0.009	0.009	0.009	**	1	0%	0.009	0.011	0.01	0	2	0%	
Benzo(b&j)fluoranthene		0.03	µg/L	<0.030	<0.030	<0.030	**	1	100%	<0.030	<0.030	<0.030	**	1	100%	<0.030	<0.030	<0.030	0	2	100%	
Benzo(g,h,i)perylene		0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%	
Benzo(k)fluoranthene		0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%	
Chrysene		0.02	µg/L	0.025	0.025	0.025	**	1	0%	<0.020	<0.020	<0.020	**	1	100%	<0.020	0.025	0.0225	0	2	50%	
Dibenz(a,h)anthracene		0.003	µg/L	<0.0030	<0.0030	<0.0030	**	1	100%	<0.0030	<0.0030	<0.0030	**	1	100%	<0.0030	<0.0030	<0.0030	0	2	100%	
Fluoranthene		0.02	µg/L	0.027	0.027	0.027	**	1	0%	0.022	0.022	0.022	**	1	0%	0.022	0.027	0.0245	0	2	0%	
Indeno(1,2,3-cd)pyrene		0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%	
Pyrene		0.02	µg/L	0.034	0.034	0.034	**	1	0%	0.029	0.029	0.029	**	1	0%	0.029	0.034	0.0315	0	2	0%	
Total HPAHs		0.05	µg/L	0.097	0.097	0.097	**	1	0%	0.06	0.06	0.06	**	1	0%	0.06	0.097	0.0885	**	2	0%	
Total PAH = LPAH + HPAH			0.1	µg/L	0.119	0.119	0.119	**	1	0%	0.16	0.16	0.16	**	1	0%	0.16	0.119	0.1095	**	2	0%

** Not applicable

< Results reported less than detection limit

¹ Range, mean (geomean for microbiology), standard deviation, and number of samples (N) are provided. When results are less than (greater than for microbiology) the detection limit, the detection limit was used to calculate each statistical value

² Percent of samples with result less than detection limit

³ LEPH = Light Extractable Petroleum Hydrocarbons

⁴ HEPH = Heavy Extractable Petroleum Hydrocarbons

⁵ Alkylated Low Molecular Weight PAHs

⁶ N-Heterocycle Low Molecular Weight PAHs

⁷ Total includes both grab and composite

BORDEN CSO QUALITY MONITORING, 2025 – ORGANICS CONTINUED

Analyte	Detection Limit	Units	Descriptive Statistics ¹																	
			Grab						Composite						Total ³					
			Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²			
Pharmaceuticals																				
Acetaminophen	30-300	ng/L	11000	26500	18750	10960	2	0%	4720	37600	21152	9472	10	0%	4720	37600	20752	9230	12	0%
Bisphenol A	5.0	ng/L	33	70	51.5	26	2	0%	12	70.0	49.2	17.5	10	0%	12	70	49.6	18	12	0%
Caffeine	100-1000	ng/L	8800	36300	22550	19445	2	0%	2180	34600	13222	10383	10	0%	2180	36300	14777	11652	12	0%
Carbamazepine	5-50	ng/L	<5	7.0	6.0	1.4	2	50%	<5	<50	12.5	13.9	10	50%	<5	<50	11.4	13	12	50%
Diclofenac	10-100	ng/L	170	3100	1635	2072	2	0%	81	2360	493	667	10	0%	81	3100	684	975	12	0%
Fluoxetine	20-200	ng/L	<20	<200	<200	127	2	100%	<20	<200	95	90.8	10	90%	<20	<200	<200	91	12	92%
Gemfibrozil	10.0	ng/L	<10	<10	<10	0	2	100%	<10	<10	<10	0	10	100%	<10	<10	<10	0	12	100%
Ibuprofen	5.0	ng/L	444	830	637	273	2	0%	255	1080	534.2	251	10	0%	255	1080	551	245	12	0%
Naproxen	5-50	ng/L	158	234	196	54	2	0%	56	1980	615.5	579	10	0%	56	1980	545.5833	549	12	0%
Primidone	5-50	ng/L	<5	<50	<50	32	2	100%	<5	<50	<50	23	10	100%	<5	<50	<50	23	12	100%
Sulfamethoxazole	1-10	ng/L	10	13	11.5	2.1	2	0%	8	136	42.90	43	10	10%	8	136	37.7	41	12	8%
Triclosan	20.0	ng/L	<20	<20	<20	0	2	100%	<20	<20	<20	0.0	10	100%	<20	<20	<20	0.0	12	100%
Trimethoprim	1-10	ng/L	9	18.0	13.5	6.4	2	0%	7	306	72.60	99	10	20%	7	306	62.8	93	12	17%
Sucralose	9.74-300	ng/L	3180	11800	7490	6095	2	0%	1170	3990	2825	964	10	0%	1170	11800	3603	2727	12	0%
Organic Compounds																				
6PPD-Quinone	0.001-0.0012	µg/L	0.115	0.138	0.125	0.012	3	0%	0.0729	0.199	0.146483	964	6	0%	0.0729	0.199	0.139322	0.037	9	0%

** Not applicable
 < Results reported less than detection limit
 1 Range, mean (geomean for microbiology), standard deviation, and number of samples (N) are provided. When results are less than (greater than for microbiology) the detection limit, the detection limit was used to calculate each statistical value
 2 Percent of samples with result less than detection limit
 3 Total includes both grab and composite

BORDEN CSO QUALITY MONITORING, 2025 – UNFILTERED SAMPLE POLYBROMINATED DIPHENYL ETHERS (PBDEs)

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹																	
				Grab						Composite						Total ³					
				Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²			
Polybrominated diphenyl ethers (PBDEs)																					
Di	PBDE 7	2.57-2.87	pg/L	<2.57	<2.74	<2.74	0.09	3	100%	<2.72	<2.87	<2.87	0.08	3	100%	<2.57	<2.87	<2.87	0.10	6	100%
Di	PBDE 8/11	2.57-2.87	pg/L	<2.57	<2.74	<2.74	0.09	3	100%	<2.72	<2.87	<2.87	0.08	3	100%	<2.57	<2.87	<2.87	0.10	6	100%
Di	PBDE 10	2.57-2.87	pg/L	<2.57	<2.74	<2.74	0.09	3	100%	<2.72	<2.87	<2.87	0.08	3	100%	<2.57	<2.87	<2.87	0.10	6	100%
Di	PBDE 12/13	2.57-2.87	pg/L	2.64	<2.74	2.67667	0.06	3	67%	<2.72	<2.87	2.78	0.08	3	67%	2.64	<2.87	2.73	0.08	6	83%
Di	PBDE 15	2.57-2.87	pg/L	<2.65	3.88	3.09	0.69	3	67%	<2.72	3.11	2.90	0.20	3	67%	<2.65	3.88	3.00	0.46	6	67%
Tri	PBDE 17/25	2.65-4.29	pg/L	9	13.3	10.5	2.43	3	0%	11.1	14.8	12.43	2.06	3	0%	9	14.80	11.47	2.27	6	0%
Tri	PBDE 28/33	2.65-2.89	pg/L	15.1	24.7	18.4	5.46	3	0%	19.1	21.3	19.90	1.22	3	0%	15.1	24.70	19.15	3.63	6	0%
Tri	PBDE 30	2.65-4.54	pg/L	<2.65	<4.21	<4.21	0.86	3	100%	<3.03	<4.54	<4.54	0.76	3	100%	<2.65	<4.54	<4.54	0.73	6	100%
Tri	PBDE 32	2.65-3.39	pg/L	<2.65	<3.09	<3.09	0.24	3	100%	<2.72	<3.39	<3.39	0.38	3	100%	<2.65	<3.39	<3.39	0.29	6	100%
Tri	PBDE 35	2.64-2.87	pg/L	<2.65	3.4	2.93	0.41	3	67%	<2.72	<2.87	2.78	0.08	3	67%	<2.65	3.40	2.85	0.28	6	83%
Tri	PBDE 37	2.61-2.87	pg/L	<2.61	<2.74	<2.74	0.07	3	100%	<2.72	3.11	3.11	0.20	3	100%	<2.61	3.11	2.78	0.18	6	83%
Tetra	PBDE 47	2.57-2.87	pg/L	625	1040	825.333	208	3	0%	796	1120	1008.67	184.24	3	0%	625	1120	917	202	6	0%
Tetra	PBDE 49	2.57-2.87	pg/L	17.7	33.3	24.6	7.95	3	0%	37.8	41.8	40.10	2.07	3	0%	17.7	41.80	32.35	9.95	6	0%
Tetra	PBDE 51	2.57-2.87	pg/L	2.7	5.17	3.67	1.32	3	0%	4.61	6.05	5.43	0.74	3	0%	2.7	6.05	4.55	1.36	6	0%
Tetra	PBDE 66	2.57-2.87	pg/L	15.1	27.3	19.6	6.70	3	0%	23.2	34.4	29.90	5.92	3	0%	15.1	34.40	24.75	7.99	6	0%
Tetra	PBDE 71	2.57-2.87	pg/L	<2.74	6.71	4.23333	2.16	3	33%	<2.72	4.97	4.11	1.22	3	33%	<2.72	6.71	4.17	1.57	6	33%
Tetra	PBDE 75	2.57-2.87	pg/L	<2.65	3.98	3.2	0.68	3	33%	<2.72	3.46	3.02	0.39	3	33%	<2.65	3.98	3.13	0.51	6	50%
Tetra	PBDE 77	2.57-2.87	pg/L	<2.57	<2.74	<2.74	0.09	3	100%	<2.72	<2.87	<2.87	0.08	3	100%	<2.57	<2.87	<2.87	0.10	6	100%
Tetra	PBDE 79	2.57-2.87	pg/L	<2.57	<2.74	<2.74	0.09	3	100%	<2.72	<2.87	<2.87	0.08	3	100%	<2.57	<2.87	<2.87	0.10	6	100%
Penta	PBDE 85	2.57-2.87	pg/L	29.6	45.6	35.7667	8.61	3	0%	40.9	55.4	45.90	8.23	3	0%	29.6	55.40	40.83	9.36	6	0%
Penta	PBDE 99	2.57-2.87	pg/L	685	941	811.667	128	3	0%	816	1160	1028.67	185.86	3	0%	685	1160.00	920.17	185.74	6	0%
Penta	PBDE 100	2.57-2.87	pg/L	145	200	170	27.84	3	0%	184	243	221.00	32.23	3	0%	145	243.00	195.50	38.81	6	0%
Penta	PBDE 105	2.57-2.97	pg/L	<2.57	<2.74	<2.74	0.09	3	100%	<2.74	<2.97	<2.97	0.12	3	100%	<2.57	<2.97	<2.97	0.15	6	100%
Penta	PBDE 116	2.65-4.07	pg/L	<2.65	<3.37	<3.37	0.39	3	100%	<3.25	<4.07	<4.07	0.45	3	100%	<2.65	<4.07	<4.07	0.60	6	100%
Penta	PBDE 119/120	2.57-2.87	pg/L	<2.65	4.37	3.48667	0.86	3	33%	3.88	7.19	5.91	1.78	3	33%	<2.65	7.19	4.70	1.82	6	17%
Penta	PBDE 126	2.57-2.87	pg/L	<2.57	<2.74	<2.74	0.09	3	100%	<2.72	<2.87	<2.87	0.08	3	100%	<2.57	<2.87	<2.87	0.10	6	100%
Hexa	PBDE 128	2.65-5.64	pg/L	<2.65	<3.24	<3.24	0.32	3	100%	<5.12	<5.64	<5.64	0.28	3	100%	<2.65	<5.64	<5.64	1.43	6	100%
Hexa	PBDE 138/166	2.57-5.83	pg/L	8.76	14.9	10.9	3.47	3	0%	11.2	16.5	14.20	2.72	3	0%	8.76	16.50	12.55	3.32	6	0%
Hexa	PBDE 140	2.57-4.31	pg/L	<2.74	4.71	3.5	1.04	3	33%	<4.31	5.86	5.17	0.79	3	33%	<2.74	5.86	4.36	1.22	6	33%
Hexa	PBDE 153	2.57-4.2	pg/L	67.7	86	74.9	9.77	3	0%	76.1	114	96.17	19.05	3	0%	67.7	114	85.52	17.87	6	0%
Hexa	PBDE 154	2.57-3.2	pg/L	51.7	69	60.1	8.66	3	0%	66.4	93	82.80	14.34	3	0%	51.7	93.00	71.47	16.32	6	0%
Hexa	PBDE 155	2.57-3.14	pg/L	3.97	4.76	4.4	0.40	3	0%	5.6	7.38	6.72	0.98	3	0%	3.97	7.38	5.56	1.43	6	0%
Hepta	PBDE 181	2.65-6.03	pg/L	<2.65	<5.1	<5.1	1.39	3	100%	<4.25	<6.03	<6.03	0.97	3	100%	<2.65	<6.03	<6.03	1.48	6	100%
Hepta	PBDE 183	2.65-5.19	pg/L	8.99	30.7	22.7	11.93	3	0%	30.8	65.2	42.43	19.72	3	0%	8.99	65.20	32.57	18.15	6	0%
Hepta	PBDE 190	2.65-9.95	pg/L	<2.65	<8.39	<8.39	3.03	3	100%	<7.01	<9.95	<9.95	1.60	3	100%	<2.65	<9.95	<9.95	3.03	6	100%
Octa	PBDE 203	3.18-36.3	pg/L	10.5	52	36.8	22.84	3	0%	72.8	211	120.43	78.47	3	0%	10.5	211	78.60	69.08	6	0%
Nona	PBDE 206	9.57-44.8	pg/L	88.8	116	103.3	13.68	3	0%	158	1430	602.7	717.2	3	0%	88.8	1430	353	530	6	0%
Nona	PBDE 207	15.3-61.7	pg/L	100	135	123.3	20.21	3	0%	144	1280	544.7	637.7	3	0%	100	1280	334	465	6	0%
Nona	PBDE 208	15.2-68.4	pg/L	49.1	114	90	35.62	3	0%	82.5	807	361.8	389.7	3	0%	49.1	807	226	289	6	0%
Deca	PBDE 209	16.9-458	pg/L	809	5170	2853	2193.3	3	0%	4360	31500	13873	15281	3	0%	809	31500	8363	11479	6	0%

** Not applicable

< Results reported less than detection limit

1 Range, mean (geomean for microbiology), standard deviation, and number of samples (N) are provided. When results are less than (greater than for microbiology) the detection limit, the detection limit was used to calculate each statistical value

2 Percent of samples with result less than detection limit

3 Total includes both grab and composite

BORDEN CSO QUALITY MONITORING, 2025 – FILTRATE POLYBROMINATED DIPHENYL ETHERS (PBDEs)

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹																	
				Grab						Composite						Total ³					
				Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²			
Polybrominated diphenyl ethers (PBDEs)																					
Di	PBDE 7	2.76-4.56	pg/L	<3.43	<4.56	<4.56	0.80	2	100%	<2.76	<2.82	<2.82	0.03	3	100%	<2.76	<4.56	<4.56	0.77	5	100%
Di	PBDE 8/11	2.56-2.82	pg/L	<2.56	<2.74	<2.74	0.13	2	100%	<2.76	<2.82	<2.82	0.03	3	100%	<2.56	<2.82	<2.82	0.10	5	100%
Di	PBDE 10	2.74-3.66	pg/L	<2.74	<3.66	<3.66	0.65	2	100%	<2.76	<2.82	<2.82	0.03	3	100%	<2.74	<3.66	<3.66	0.40	5	100%
Di	PBDE 12/13	2.56-2.82	pg/L	<2.56	<2.75	<2.75	0.13	2	100%	<2.76	<2.82	<2.82	0.03	3	100%	<2.56	<2.82	<2.82	0.10	5	100%
Di	PBDE 15	2.56-2.82	pg/L	<2.56	<2.74	<2.74	0.13	2	100%	<2.76	<2.82	<2.82	0.03	3	100%	<2.56	<2.82	<2.82	0.10	5	100%
Tri	PBDE 17/25	2.82-4.87	pg/L	4.95	5.3	5.125	0.25	2	0%	<2.9	6.96	4.73	2.06	3	0%	<2.9	6.96	4.89	1.48	5	40%
Tri	PBDE 28/33	2.77-3.26	pg/L	3.39	8.32	5.855	3.49	2	0%	3.24	6.57	4.96	1.67	3	0%	3.24	8.32	5.32	2.16	5	0%
Tri	PBDE 30	2.9-5.27	pg/L	<4.64	<5.27	<5.27	0.45	2	100%	<2.9	<4.57	<4.57	0.90	3	100%	<2.9	<5.27	<5.27	1.03	5	100%
Tri	PBDE 32	2.77-3.85	pg/L	<3.41	<3.85	<3.85	0.31	2	100%	<2.77	<3.36	<3.36	0.33	3	100%	<2.77	<3.85	<3.85	0.45	5	100%
Tri	PBDE 35	2.77-3.01	pg/L	<2.89	<3.01	<3.01	0.08	2	100%	<2.77	<2.84	<2.84	0.04	3	100%	<2.77	<3.01	<3.01	0.09	5	100%
Tri	PBDE 37	2.76-2.98	pg/L	<2.79	<2.98	<2.98	0.13	2	100%	<2.76	<2.82	<2.82	0.03	3	100%	<2.76	<2.98	<2.98	0.09	5	100%
Tetra	PBDE 47	2.56-2.82	pg/L	78	419	248.5	241	2	0%	44.9	260	174.97	114.40	3	0%	44.9	419	204	151	5	0%
Tetra	PBDE 49	2.56-2.82	pg/L	3.35	13.8	8.575	7.39	2	0%	4.12	13.7	7.71	5.22	3	0%	3.35	13.80	8.06	5.24	5	0%
Tetra	PBDE 51	2.56-2.82	pg/L	<2.56	<2.74	<2.74	0.13	2	100%	<2.76	<2.82	<2.82	0.03	3	100%	<2.56	<2.82	<2.82	0.10	5	100%
Tetra	PBDE 66	2.56-2.82	pg/L	<2.74	13.1	7.92	7.33	2	50%	2.77	8.53	6.26	3.07	3	50%	<2.74	13.10	6.92	4.35	5	20%
Tetra	PBDE 71	2.56-2.82	pg/L	<2.56	<2.74	<2.74	0.13	2	100%	<2.76	<2.82	<2.82	0.03	3	100%	<2.56	<2.82	<2.82	0.10	5	100%
Tetra	PBDE 75	2.56-2.82	pg/L	<2.56	<2.74	<2.74	0.13	2	100%	<2.76	<2.82	<2.82	0.03	3	100%	<2.56	<2.82	<2.82	0.10	5	100%
Tetra	PBDE 77	2.56-2.82	pg/L	<2.56	<2.74	<2.74	0.13	2	100%	<2.76	<2.82	<2.82	0.03	3	100%	<2.56	<2.82	<2.82	0.10	5	100%
Tetra	PBDE 79	2.56-2.82	pg/L	<2.56	<2.74	<2.74	0.13	2	100%	<2.76	<2.82	<2.82	0.03	3	100%	<2.56	<2.82	<2.82	0.10	5	100%
Penta	PBDE 85	2.56-3.37	pg/L	<3.37	18.7	11.035	10.84	2	50%	<2.77	15.8	11.09	7.23	3	50%	<2.77	18.70	11.07	7.45	5	40%
Penta	PBDE 99	2.56-2.82	pg/L	70.2	409	239.6	240	2	0%	44.6	306	205.53	140.80	3	0%	44.6	409.00	219.16	156.87	5	0%
Penta	PBDE 100	2.56-2.82	pg/L	17.9	86.9	52.4	48.79	2	0%	10.2	67.9	43.43	29.83	3	0%	10.2	86.90	47.02	32.62	5	0%
Penta	PBDE 105	2.56-4.09	pg/L	<2.56	<4.09	<4.09	1.08	2	100%	<2.76	<2.82	<2.82	0.03	3	100%	<2.56	<4.09	<4.09	0.62	5	100%
Penta	PBDE 116	2.76-5.68	pg/L	<2.79	<5.68	<5.68	2.04	2	100%	<2.76	<3.08	<3.08	0.18	3	100%	<2.76	<5.68	<5.68	1.27	5	100%
Penta	PBDE 119/120	2.56-3.46	pg/L	<2.56	<3.46	<3.46	0.64	2	100%	<2.76	3.61	3.61	0.49	3	100%	<2.56	3.61	3.03	0.47	5	80%
Penta	PBDE 126	2.56-2.82	pg/L	<2.56	<2.74	<2.74	0.13	2	100%	<2.76	<2.82	<2.82	0.03	3	100%	<2.56	<2.82	<2.82	0.10	5	100%
Hexa	PBDE 128	2.83-9.17	pg/L	<2.83	<9.17	<9.17	4.48	2	100%	<4.02	<5.97	<5.97	1.05	3	100%	<2.83	<9.17	<9.17	2.40	5	100%
Hexa	PBDE 138/166	2.56-4.36	pg/L	<4.36	7.67	6.0	2.34	2	50%	4.84	6.29	5.44	0.76	3	50%	<4.36	7.67	5.67	1.32	5	20%
Hexa	PBDE 140	2.56-3.17	pg/L	<2.56	<3.17	<3.17	0.43	2	100%	<2.76	<2.82	<2.82	0.03	3	100%	<2.56	<3.17	<3.17	0.22	5	100%
Hexa	PBDE 153	2.56-3.13	pg/L	9.67	41	25.3	22.15	2	0%	5.39	40	25.23	17.85	3	0%	5.39	41	25.27	16.79	5	0%
Hexa	PBDE 154	2.56-2.82	pg/L	9.24	33	21.1	16.80	2	0%	4.85	29.7	20.65	13.73	3	0%	4.85	33.00	20.84	12.84	5	0%
Hexa	PBDE 155	2.56-2.82	pg/L	<2.56	<2.74	<2.74	0.13	2	100%	<2.76	3.45	3.45	0.40	3	100%	<2.56	3.45	2.86	0.34	5	80%
Hepta	PBDE 181	2.76-3.03	pg/L	<2.78	<2.88	<2.88	0.07	2	100%	<2.76	3.58	3.58	0.47	3	100%	<2.76	3.58	2.95	0.35	5	80%
Hepta	PBDE 183	2.56-2.82	pg/L	9.94	13.6	11.8	2.59	2	0%	4.63	38	16.60	18.57	3	0%	4.63	38.00	14.67	13.46	5	0%
Hepta	PBDE 190	3.38-5.09	pg/L	<4.78	<4.84	<4.84	0.04	2	100%	<3.38	<5.09	<5.09	0.90	3	100%	<3.38	<5.09	<5.09	0.76	5	100%
Octa	PBDE 203	6.74-15.9	pg/L	18.6	57.6	38.1	27.58	2	0%	10.7	27	20.50	8.64	3	0%	10.7	58	27.54	17.90	5	0%
Nona	PBDE 206	14-24.1	pg/L	55.1	205	130.1	106.00	2	0%	48.3	127	89.2	39.4	3	0%	48.3	205	106	64	5	0%
Nona	PBDE 207	15.9-27.3	pg/L	47.8	282	164.9	165.60	2	0%	29.8	147	94.3	59.5	3	0%	29.8	282	123	101	5	0%
Nona	PBDE 208	19.6-33.7	pg/L	48.2	227	138	126.43	2	0%	42	99.9	73.2	29.2	3	0%	42	227	99	75	5	0%
Deca	PBDE 209	125-224	pg/L	1170	3570	2370	1697.1	2	0%	944	2290	1641	674	3	0%	944	3570	1933	1052	5	0%

** Not applicable

< Results reported less than detection limit

¹ Range, mean (geomean for microbiology), standard deviation, and number of samples (N) are provided. When results are less than (greater than for microbiology) the detection limit, the detection limit was used to calculate each statistical value

² Percent of samples with result less than detection limit

³ Total includes both grab and composite

BORDEN CSO QUALITY MONITORING, 2025 – UNFILTERED SAMPLE POLYCHLORINATED BIPHENYLS (PCBs)

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹																	
				Grab					Composite					Total ³							
				Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²			
Polychlorinated biphenyls (PCBs)																					
Mono	PCB 1	0.344-0.387	pg/L	24.3	46.5	32.3	12.33	3	0%	43.4	76.7	54.53	19.20	3	0%	24.3	76.70	43.42	18.88	6	0%
Mono	PCB 2	0.344-0.387	pg/L	7.25	11.7	8.833333	2.49	3	0%	9.43	12.2	10.71	1.40	3	0%	7.25	12.20	9.77	2.08	6	0%
Mono	PCB 3	0.344-0.387	pg/L	30.4	76.9	47.56667	25.53	3	0%	29.4	178	87.63	79.34	3	0%	29.4	178	67.60	57.10	6	0%
Di	PCB 4	0.344-0.387	pg/L	3.52	8.89	5.976667	2.71	3	0%	6.12	13.4	8.83	3.98	3	0%	3.52	13.40	7.41	3.42	6	0%
Di	PCB 5	0.344-0.387	pg/L	0.449	1.53	1.096	0.57	3	0%	1.21	2.4	1.70	0.62	3	0%	0.449	2.40	1.40	0.63	6	0%
Di	PCB 6	0.344-0.387	pg/L	2.44	5.59	4.286667	1.64	3	0%	4.02	9.39	6.44	2.72	3	0%	2.44	9.39	5.36	2.33	6	0%
Di	PCB 7	0.344-0.387	pg/L	3.32	6.99	5.643333	2.02	3	0%	2.82	6.4	4.31	1.86	3	0%	2.82	6.99	4.98	1.89	6	0%
Di	PCB 8	0.344-0.387	pg/L	5.01	17.1	11.70333	6.15	3	0%	9.52	27	18.24	8.74	3	0%	5.01	27.00	14.97	7.65	6	0%
Di	PCB 9	0.344-0.387	pg/L	1.14	1.61	1.373	0.24	3	0%	0.833	3.3	1.91	1.26	3	0%	0.833	3.30	1.64	0.86	6	0%
Di	PCB 10	0.344-0.387	pg/L	<0.344	0.535	0.408	0.11	3	67%	<0.367	0.849	0.55	0.26	3	67%	<0.344	0.85	0.48	0.20	6	50%
Di	PCB 11	0.344-0.387	pg/L	54.8	130	98.6	39.10	3	0%	144	190	168	23.03	3	0%	54.8	190	133.1	47.49	6	0%
Di	PCB 12/13	0.344-0.387	pg/L	2.02	4.16	3.116667	1.07	3	0%	4.3	6.56	5.23	1.18	3	0%	2.02	6.56	4.17	1.54	6	0%
Di	PCB 14	0.344-0.387	pg/L	0.361	1.68	0.869	0.71	3	0%	0.571	1.67	1.05	0.56	3	0%	0.361	1.68	0.96	0.58	6	0%
Di	PCB 15	0.344-0.387	pg/L	3.4	11.4	7.743	4.04	3	0%	11.6	17.4	13.70	3.21	3	0%	3.4	17.40	10.72	4.62	6	0%
Tri	PCB 16	0.344-0.387	pg/L	5.31	12.2	9.026667	3.48	3	0%	8.44	14.8	11.91	3.22	3	0%	5.31	14.80	10.47	3.39	6	0%
Tri	PCB 17	0.344-0.387	pg/L	4.64	10.7	7.983333	3.08	3	0%	7.14	13.5	10.61	3.22	3	0%	4.64	13.50	9.30	3.16	6	0%
Tri	PCB 18/30	0.344-0.387	pg/L	14.3	32.5	24.10	9.18	3	0%	22.7	39.4	32.20	8.58	3	0%	14.3	39.40	28.15	9.10	6	0%
Tri	PCB 19	0.344-0.387	pg/L	1.63	3.19	2.380	0.78	3	0%	2.08	3.6	2.90	0.77	3	0%	1.63	3.60	2.64	0.75	6	0%
Tri	PCB 20/28	0.344-0.387	pg/L	13.2	35.3	25.63	11.31	3	0%	28.6	49.2	38.33	10.35	3	0%	13.2	49.20	31.98	11.93	6	0%
Tri	PCB 21/33	0.344-0.387	pg/L	8.52	24.7	18.21	8.55	3	0%	14.5	34.1	24.97	9.87	3	0%	8.52	34.10	21.59	9.05	6	0%
Tri	PCB 22	0.344-0.387	pg/L	5.81	15.6	11.64	5.15	3	0%	12.2	21.7	17.07	4.75	3	0%	5.81	21.70	14.35	5.34	6	0%
Tri	PCB 23	0.344-0.387	pg/L	<0.344	<0.37	<0.37	0.01	3	100%	<0.367	<0.387	<0.387	0.01	3	100%	<0.344	<0.387	<0.387	0.02	6	100%
Tri	PCB 24	0.344-0.387	pg/L	<0.344	0.49	0.394333	0.08	3	33%	<0.367	0.616	0.48	0.13	3	33%	<0.344	0.62	0.44	0.11	6	33%
Tri	PCB 25	0.344-0.387	pg/L	1.33	3.34	2.50	1.04	3	0%	2.62	4.68	3.66	1.03	3	0%	1.33	4.68	3.08	1.13	6	0%
Tri	PCB 26/29	0.344-0.387	pg/L	2.43	6.81	4.99	2.28	3	0%	5.15	9.16	7.27	2.01	3	0%	2.43	9.16	6.13	2.29	6	0%
Tri	PCB 27	0.344-0.387	pg/L	0.861	1.99	1.467	0.57	3	0%	1.23	2.47	1.93	0.63	3	0%	0.861	2.47	1.70	0.59	6	0%
Tri	PCB 31	0.344-0.387	pg/L	13.2	35.9	26.46667	11.83	3	0%	28.3	48.8	38.47	10.25	3	0%	13.2	48.80	32.47	11.88	6	0%
Tri	PCB 32	0.344-0.387	pg/L	3.8	8.22	6.19	2.23	3	0%	5.1	10.8	8.14	2.87	3	0%	3.8	10.80	7.16	2.53	6	0%
Tri	PCB 34	0.344-0.387	pg/L	<0.344	<0.37	<0.37	0.01	3	100%	<0.367	<0.387	<0.387	0.01	3	100%	<0.344	<0.387	<0.387	0.02	6	100%
Tri	PCB 35	0.344-0.387	pg/L	1.16	3.5	2.623	1.28	3	0%	3.76	6.15	5.23	1.29	3	0%	1.16	6.15	3.93	1.83	6	0%
Tri	PCB 36	0.344-0.387	pg/L	0.404	1.12	0.812	0.37	3	0%	1.74	1.99	1.91	0.14	3	0%	0.404	1.99	1.36	0.65	6	0%
Tri	PCB 37	0.344-0.387	pg/L	3.45	14.2	9.316667	5.44	3	0%	14	18.9	16.47	2.45	3	0%	3.45	18.90	12.89	5.44	6	0%
Tri	PCB 38	0.344-0.387	pg/L	<0.344	<0.37	<0.37	0.01	3	100%	<0.367	<0.387	<0.387	0.01	3	100%	<0.344	<0.387	<0.387	0.02	6	100%
Tri	PCB 39	0.344-0.387	pg/L	<0.344	0.49	0.401	0.08	3	33%	<0.367	0.818	0.52	0.26	3	33%	<0.344	0.82	0.46	0.18	6	50%
Tetra	PCB 40/41/71	0.344-0.387	pg/L	6.32	21	14.81	7.60	3	0%	20.7	35	25.70	8.06	3	0%	6.32	35.00	20.25	9.20	6	0%
Tetra	PCB 42	0.344-0.387	pg/L	3.22	11	7.70	4.02	3	0%	10.4	17.5	12.93	3.96	3	0%	3.22	17.50	10.32	4.58	6	0%
Tetra	PCB 43	0.344-0.387	pg/L	0.472	1.54	1.074	0.55	3	0%	1.28	2.38	1.66	0.62	3	0%	0.472	2.38	1.37	0.61	6	0%
Tetra	PCB 44/47/65	0.344-0.387	pg/L	19.9	63.3	46.86667	23.54	3	0%	61.2	114	80.27	29.30	3	0%	19.9	114	63.57	29.99	6	0%
Tetra	PCB 45/51	0.344-0.387	pg/L	4	10.8	8.13	3.63	3	0%	9.28	15.8	12.03	3.38	3	0%	4	15.80	10.08	3.79	6	0%
Tetra	PCB 46	0.344-0.387	pg/L	0.856	2.24	1.66	0.72	3	0%	1.91	3.51	2.62	0.82	3	0%	0.856	3.51	2.14	0.86	6	0%
Tetra	PCB 48	0.344-0.387	pg/L	2.58	8.39	6.026667	3.05	3	0%	7.34	12.8	9.51	2.90	3	0%	2.58	12.80	7.77	3.27	6	0%
Tetra	PCB 49/69	0.344-0.387	pg/L	8.87	25.6	19.12	8.98	3	0%	24.4	49.1	32.93	14.01	3	0%	8.87	49.10	26.03	12.96	6	0%
Tetra	PCB 50/53	0.344-0.387	pg/L	2.16	5.96	4.06	1.68	3	0%	4.58	8.45	6.13	2.05	3	0%	2.16	8.45	5.10	2.02	6	0%
Tetra	PCB 52	0.344-0.387	pg/L	23.3	62.3	47.00	20.81	3	0%	55.2	135	83.67	44.54	3	0%	23.3	135.0	65.33	37.02	6	0%
Tetra	PCB 54	0.344-0.387	pg/L	<0.344	<0.37	<0.37	0.01	3	100%	<0.367	<0.387	<0.387	0.01	3	100%	<0.344	<0.387	<0.387	0.02	6	100%
Tetra	PCB 55	0.344-0.387	pg/L	<0.344	0.794	0.60	0.23	3	33%	0.754	1.19	0.94	0.22	3	33%	<0.344	1.19	0.77	0.28	6	17%
Tetra	PCB 56	0.344-0.387	pg/L	4.32	11.6	8.60	3.81	3	0%	11.3	23.3	16.67	6.10	3	0%	4.32	23.30	12.63	6.34	6	0%
Tetra	PCB 57	0.344-0.387	pg/L	<0.344	<0.37	<0.37	0.01	3	100%	<0.367	0.389	0.39	0.01	3	100%	<0.344	0.39	0.37	0.02	6	83%
Tetra	PCB 58	0.344-0.387	pg/L	<0.344	<0.37	<0.37	0.01	3	100%	<0.367	<0.387	<0.387	0.01	3	100%	<0.344	<0.387	<0.387	0.02	6	100%
Tetra	PCB 59/62/75	0.344-0.387	pg/L	1.09	3.91	2.73	1.47	3	0%	3.6	5.81	4.40	1.22	3	0%	1.09	5.81	3.57	1.51	6	0%
Tetra	PCB 60	0.344-0.387	pg/L	2.6	7.67	5.51	2.62	3	0%	7.26	14	10.36	3.40	3	0%	2.6	14.00	7.94	3.80	6	0%
Tetra	PCB 61/70/74/76	0.344-0.387	pg/L	21.1	52.3	40.77	17.12	3	0%	49.8	122	78.90	38.08	3	0%	21.1	122.0	59.83	33.67	6	0%
Tetra	PCB 63	0.344-0.387	pg/L	0.486	1.38	1.02	0.47	3	0%	1.31	2.5	1.77	0.64	3	0%	0.486	2.50	1.39	0.65	6	0%
Tetra	PCB 64	0.344-0.387	pg/L	6.18	19.1	13.79	6.76	3	0%	18.9	33	23.73	8.03	3	0%	6.18	33.00	18.76	8.59	6	0%
Tetra	PCB 66	0.344-0.387	pg/L	9.94	26.2	19.78	8.65	3	0%	25.8	52	37.20	13.43	3	0%	9.94	52.00	28.49	13.90	6	0%
Tetra	PCB 67	0.344-0.387	pg/L	0.349	1.2	0.808	0.43	3	0%	1.12	1.77	1.39	0.34	3	0%	0.349	1.77	1.10</			

BORDEN CSO QUALITY MONITORING, 2025 – UNFILTERED SAMPLE POLYCHLORINATED BIPHENYLS (PCBs)
CONTINUED

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹																	
				Grab					Composite					Total ³							
				Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²			
Polychlorinated biphenyls (PCBs)																					
Penta	PCB 82	0.344-0.387	pg/L	4.4	8.5	7.01	2.27	3	0%	7.26	19.4	13.09	6.08	3	0%	4.4	19.40	10.05	5.29	6	0%
Penta	PCB 83/99	0.344-0.387	pg/L	16.3	33.7	26.13	8.92	3	0%	26.5	71.7	46.67	22.99	3	0%	16.3	71.70	36.40	19.23	6	0%
Penta	PCB 84	0.344-0.387	pg/L	7.23	17.5	12.78	5.18	3	0%	13.3	35.9	23.17	11.57	3	0%	7.23	35.90	17.97	9.83	6	0%
Penta	PCB 85/116/117	0.344-0.387	pg/L	7.01	13.6	11.13667	3.60	3	0%	11.5	30.7	20.63	9.63	3	0%	7.01	30.70	15.89	8.33	6	0%
Penta	PCB 86/87/97/109/119/125	0.344-0.387	pg/L	26.4	55.9	43.03	15.11	3	0%	43.4	126	80.77	41.86	3	0%	26.4	126	61.90	34.92	6	0%
Penta	PCB 88/91	0.344-0.387	pg/L	3.77	9.79	7.12	3.07	3	0%	7.46	19.3	12.69	6.04	3	0%	3.77	19.30	9.90	5.26	6	0%
Penta	PCB 89	0.344-0.387	pg/L	0.346	0.867	0.671	0.28	3	0%	0.761	1.69	1.22	0.46	3	0%	0.346	1.69	0.94	0.46	6	0%
Penta	PCB 90/101/113	0.344-0.387	pg/L	32.9	75.3	55.47	21.33	3	0%	53.3	158	100.00	53.26	3	0%	32.9	158	77.73	43.72	6	0%
Penta	PCB 92	0.344-0.387	pg/L	6.15	14.9	10.71667	4.39	3	0%	10.2	29.8	19.07	9.93	3	0%	6.15	29.80	14.89	8.25	6	0%
Penta	PCB 93/95/98/100/102	0.344-0.387	pg/L	23	63.3	44.10	20.22	3	0%	42.2	119	76.20	39.15	3	0%	23	119	60.15	32.95	6	0%
Penta	PCB 94	0.344-0.387	pg/L	<0.344	<0.37	<0.37	0.01	3	100%	<0.387	0.68	0.68	0.16	3	100%	<0.344	0.68	0.42	0.13	6	67%
Penta	PCB 96	0.344-0.387	pg/L	<0.344	0.573	0.48	0.12	3	33%	0.547	1	0.71	0.25	3	33%	<0.344	1.00	0.60	0.22	6	17%
Penta	PCB 103	0.344-0.387	pg/L	<0.344	0.618	0.45	0.15	3	33%	0.411	0.908	0.62	0.26	3	33%	<0.344	0.91	0.54	0.21	6	17%
Penta	PCB 104	0.344-0.387	pg/L	<0.344	<0.37	0.36	0.01	3	67%	<0.367	<0.387	0.38	0.01	3	67%	<0.344	<0.387	0.37	0.01	6	83%
Penta	PCB 105	0.344-0.387	pg/L	13.5	24.1	19.87	5.61	3	0%	20.3	58.1	39.27	18.90	3	0%	13.5	58.10	29.57	16.38	6	0%
Penta	PCB 106	0.344-0.387	pg/L	<0.344	<0.37	<0.37	0.01	3	100%	<0.367	<0.387	<0.387	0.01	3	100%	<0.344	<0.387	<0.387	0.02	6	100%
Penta	PCB 107	0.344-0.387	pg/L	1.88	3.38	2.83	0.83	3	0%	2.96	8.11	5.58	2.58	3	0%	1.88	8.11	4.21	2.28	6	0%
Penta	PCB 108/124	0.344-0.387	pg/L	1.53	2.62	2.22	0.60	3	0%	2.02	5.99	4.01	1.99	3	0%	1.53	5.99	3.12	1.64	6	0%
Penta	PCB 110/115	0.344-0.387	pg/L	44.6	87.2	68.5	21.77	3	0%	66.5	183	121.83	58.47	3	0%	44.6	183	95.17	49.10	6	0%
Penta	PCB 111	0.344-0.387	pg/L	<0.344	<0.37	<0.37	0.01	3	100%	<0.367	<0.387	<0.387	0.01	3	100%	<0.344	<0.387	<0.387	0.02	6	100%
Penta	PCB 112	0.344-0.387	pg/L	<0.344	<0.37	<0.37	0.01	3	100%	<0.367	<0.387	<0.387	0.01	3	100%	<0.344	<0.387	<0.387	0.02	6	100%
Penta	PCB 114	0.344-0.387	pg/L	0.817	1.47	1.25	0.37	3	0%	1.46	3.48	2.37	1.03	3	0%	0.817	3.48	1.81	0.92	6	0%
Penta	PCB 118	0.344-0.387	pg/L	30.4	52.7	44.00	11.93	3	0%	44.1	131	84.10	43.86	3	0%	30.4	131	64.05	36.18	6	0%
Penta	PCB 120	0.344-0.387	pg/L	<0.344	<0.37	<0.37	0.01	3	100%	<0.367	<0.387	<0.387	0.01	3	100%	<0.344	<0.387	<0.387	0.02	6	100%
Penta	PCB 121	0.344-0.387	pg/L	<0.344	0.516	0.41	0.09	3	67%	<0.367	0.389	0.38	0.01	3	67%	<0.344	0.52	0.40	0.06	6	67%
Penta	PCB 122	0.344-0.387	pg/L	0.528	0.952	0.779	0.22	3	0%	0.778	1.92	1.34	0.57	3	0%	0.528	1.92	1.06	0.49	6	0%
Penta	PCB 123	0.344-0.387	pg/L	0.651	1.05	0.907	0.22	3	0%	1	2.15	1.61	0.58	3	0%	0.651	2.15	1.26	0.55	6	0%
Penta	PCB 126	0.344-0.387	pg/L	<0.344	0.734	0.474333	0.22	3	67%	0.423	0.917	0.69	0.25	3	67%	<0.344	0.92	0.58	0.24	6	33%
Penta	PCB 127	0.344-0.387	pg/L	<0.344	<0.37	<0.37	0.01	3	100%	<0.367	<0.387	<0.387	0.01	3	100%	<0.344	<0.387	<0.387	0.02	6	100%
Hexa	PCB 128/166	0.344-0.387	pg/L	10	16.6	14.33	3.75	3	0%	14	29.9	24.00	8.71	3	0%	10	29.90	19.17	8.00	6	0%
Hexa	PCB 129/138/160/163	0.344-0.387	pg/L	47.9	84.7	72.13	20.99	3	0%	72.3	140	114.10	36.54	3	0%	47.9	140	93.12	35.20	6	0%
Hexa	PCB 130	0.344-0.387	pg/L	2.98	5.21	4.40	1.23	3	0%	4.08	8.4	6.85	2.41	3	0%	2.98	8.40	5.63	2.18	6	0%
Hexa	PCB 131	0.344-0.387	pg/L	0.626	1.39	1.01	0.38	3	0%	1.07	2.47	1.80	0.70	3	0%	0.626	2.47	1.41	0.67	6	0%
Hexa	PCB 132	0.344-0.387	pg/L	13.7	26.9	21.20	6.78	3	0%	20.4	42.3	33.40	11.51	3	0%	13.7	42.30	27.30	10.77	6	0%
Hexa	PCB 133	0.344-0.387	pg/L	0.811	1.48	1.17	0.34	3	0%	1.21	1.96	1.68	0.41	3	0%	0.811	1.96	1.43	0.44	6	0%
Hexa	PCB 134/143	0.344-0.387	pg/L	2.31	4.35	3.38	1.02	3	0%	3.22	7.92	5.67	2.36	3	0%	2.31	7.92	4.52	2.05	6	0%
Hexa	PCB 135/151/154	0.344-0.387	pg/L	9.71	25.6	18.94	8.25	3	0%	19.5	33.8	28.97	8.20	3	0%	9.71	33.80	23.95	9.18	6	0%
Hexa	PCB 136	0.344-0.387	pg/L	4.03	11	7.653333	3.49	3	0%	8.02	15.1	12.04	3.64	3	0%	4.03	15.10	9.85	3.99	6	0%
Hexa	PCB 137	0.344-0.387	pg/L	2.94	4.18	3.71	0.67	3	0%	3.54	8.45	6.20	2.48	3	0%	2.94	8.45	4.96	2.12	6	0%
Hexa	PCB 139/140	0.344-0.387	pg/L	0.636	1.77	1.28	0.58	3	0%	1.34	2.81	2.08	0.74	3	0%	0.636	2.81	1.68	0.74	6	0%
Hexa	PCB 141	0.344-0.387	pg/L	6.29	13.5	10.83	3.95	3	0%	11.1	20.4	17.13	5.23	3	0%	6.29	20.40	13.98	5.40	6	0%
Hexa	PCB 142	0.344-0.387	pg/L	<0.344	<0.37	<0.37	0.01	3	100%	<0.367	<0.387	<0.387	0.01	3	100%	<0.344	<0.387	<0.387	0.02	6	100%
Hexa	PCB 144	0.344-0.387	pg/L	1.55	4.12	2.96	1.30	3	0%	3.21	6.04	4.78	1.44	3	0%	1.55	6.04	3.87	1.58	6	0%
Hexa	PCB 145	0.344-0.387	pg/L	<0.344	<0.37	<0.37	0.01	3	100%	<0.367	<0.387	<0.387	0.01	3	100%	<0.344	<0.387	<0.387	0.02	6	100%
Hexa	PCB 146	0.344-0.387	pg/L	5.32	10.9	8.62	2.93	3	0%	8.7	15.1	12.87	3.61	3	0%	5.32	15.10	10.75	3.75	6	0%
Hexa	PCB 147/149	0.344-0.387	pg/L	23.4	56.2	42.3	16.95	3	0%	43	80.2	66.87	20.72	3	0%	23.4	80.20	54.57	21.64	6	0%
Hexa	PCB 148	0.344-0.387	pg/L	<0.344	0.442	0.385	0.05	3	67%	<0.367	<0.387	0.38	0.01	3	67%	<0.344	0.44	0.38	0.03	6	83%
Hexa	PCB 150	0.344-0.387	pg/L	<0.344	<0.37	<0.37	0.01	3	100%	<0.367	<0.387	<0.387	0.01	3	100%	<0.344	<0.387	<0.387	0.02	6	100%
Hexa	PCB 152	0.344-0.387	pg/L	<0.345	0.75	0.49	0.23	3	67%	<0.367	<0.387	0.38	0.01	3	67%	<0.345	0.75	0.43	0.16	6	83%
Hexa	PCB 153/168	0.344-0.387	pg/L	36.6	73.9	58.7	19.60	3	0%	59.3	101	87.10	24.08	3	0%	36.6	101	72.92	25.04	6	0%
Hexa	PCB 155	0.344-0.387	pg/L	0.703	4.79	2.37	2.14	3	0%	1.33	4.28	2.64	1.50	3	0%	0.703	4.79	2.51	1.66	6	0%
Hexa	PCB 156/157	0.344-0.387	pg/L	6.02	9.75	8.50	2.15	3	0%	7.73	18.4	13.71	5.45	3	0%	6.02	18.40	11.11	4.68	6	0%
Hexa	PCB 158	0.344-0.387	pg/L	3.82	7.52	6.24	2.10	3	0%	6.37	13.4	10.46	3.65	3	0%	3.82	13.40	8.35	3.53	6	0%
Hexa	PCB 159	0.344-0.387	pg/L	<0.344	<0.37	<0.37	0.01	3	100%	<0.367	<0.387	<0.387	0.01	3	100%	<0.344	<0.387	<0.387	0.02	6	100%
Hexa	PCB 161	0.344-0.387	pg/L	<0.344	<0.37	<0.37	0.01	3	100%	<0.367	<0.387	<0.387	0.01	3	100%	<0.344	<0.387	<0.387	0.02	6	100%
Hexa	PCB 162	0.344-0.38																			

BORDEN CSO QUALITY MONITORING, 2025 – UNFILTERED SAMPLE POLYCHLORINATED BIPHENYLS (PCBs)
CONTINUED

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹																	
				Grab					Composite					Total ³							
				Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²			
Polychlorinated biphenyls (PCBs)																					
Hepta	PCB 170	0.344-0.387	pg/L	5.6	15.3	11.93	5.49	3	0%	11	25.2	17.57	7.16	3	0%	5.6	25.20	14.75	6.49	6	0%
Hepta	PCB 171/173	0.344-0.387	pg/L	1.45	4.37	3.31	1.61	3	0%	3.53	6.99	5.25	1.73	3	0%	1.45	6.99	4.28	1.84	6	0%
Hepta	PCB 172	0.344-0.387	pg/L	1.09	3	2.28	1.04	3	0%	2.38	5.11	3.54	1.41	3	0%	1.09	5.11	2.91	1.30	6	0%
Hepta	PCB 174	0.344-0.387	pg/L	4.35	14.1	10.22	5.17	3	0%	11.7	23.8	16.73	6.30	3	0%	4.35	23.80	13.48	6.27	6	0%
Hepta	PCB 175	0.344-0.387	pg/L	<0.344	0.713	0.57	0.20	3	33%	0.636	1.12	0.87	0.24	3	33%	<0.344	1.12	0.72	0.26	6	17%
Hepta	PCB 176	0.344-0.387	pg/L	0.562	2.08	1.48	0.81	3	0%	1.74	3.2	2.43	0.73	3	0%	0.562	3.20	1.96	0.86	6	0%
Hepta	PCB 177	0.344-0.387	pg/L	2.97	8.99	6.65	3.22	3	0%	7.43	15	10.55	3.95	3	0%	2.97	15.00	8.60	3.87	6	0%
Hepta	PCB 178	0.344-0.387	pg/L	1.27	3.84	2.98	1.48	3	0%	3.37	6.02	4.38	1.43	3	0%	1.27	6.02	3.68	1.51	6	0%
Hepta	PCB 179	0.344-0.387	pg/L	1.95	6.41	4.91	2.57	3	0%	6	10.6	7.81	2.45	3	0%	1.95	10.60	6.36	2.75	6	0%
Hepta	PCB 180/193	0.344-0.387	pg/L	14.5	41	31.17	14.51	3	0%	29.1	64.5	45.00	17.97	3	0%	14.5	64.50	38.08	16.46	6	0%
Hepta	PCB 181	0.344-0.387	pg/L	<0.344	<0.37	<0.37	0.01	3	100%	<0.367	<0.387	<0.387	0.01	3	100%	<0.344	<0.387	<0.387	0.02	6	100%
Hepta	PCB 182	0.344-0.387	pg/L	<0.344	<0.37	<0.37	0.01	3	100%	<0.367	<0.387	<0.387	0.01	3	100%	<0.344	<0.387	<0.387	0.02	6	100%
Hepta	PCB 183/185	0.344-0.387	pg/L	3.3	10.4	7.85	3.95	3	0%	8.92	17.1	12.37	4.24	3	0%	3.3	17.10	10.11	4.42	6	0%
Hepta	PCB 184	0.344-0.387	pg/L	1.05	8.17	3.86	3.79	3	0%	1.79	5.94	3.50	2.17	3	0%	1.05	8.17	3.68	2.77	6	0%
Hepta	PCB 186	0.344-0.387	pg/L	<0.344	<0.37	<0.37	0.01	3	100%	<0.367	<0.387	<0.387	0.01	3	100%	<0.344	<0.387	<0.387	0.02	6	100%
Hepta	PCB 187	0.344-0.387	pg/L	6.73	22.2	16.38	8.41	3	0%	19.4	35.8	25.50	8.97	3	0%	6.73	35.80	20.94	9.25	6	0%
Hepta	PCB 188	0.344-0.387	pg/L	<0.344	<0.37	<0.37	0.01	3	100%	<0.367	<0.387	<0.387	0.01	3	100%	<0.344	<0.387	<0.387	0.02	6	100%
Hepta	PCB 189	0.344-0.387	pg/L	0.383	0.944	0.738667	0.31	3	0%	0.575	1.26	0.94	0.34	3	0%	0.383	1.26	0.84	0.31	6	0%
Hepta	PCB 190	0.344-0.387	pg/L	1.27	3.43	2.43	1.09	3	0%	2.62	5.57	3.92	1.50	3	0%	1.27	5.57	3.18	1.43	6	0%
Hepta	PCB 191	0.344-0.387	pg/L	<0.344	0.721	0.54	0.19	3	33%	<0.387	0.948	0.66	0.28	3	33%	<0.344	0.95	0.60	0.22	6	33%
Hepta	PCB 192	0.344-0.387	pg/L	<0.344	<0.37	<0.37	0.01	3	100%	<0.367	<0.387	<0.387	0.01	3	100%	<0.344	<0.387	<0.387	0.02	6	100%
Octa	PCB 194	0.344-0.387	pg/L	2.99	9.51	6.57	3.31	3	0%	7.71	14.9	10.18	4.09	3	0%	2.99	14.90	8.38	3.87	6	0%
Octa	PCB 195	0.344-0.387	pg/L	0.787	3.35	2.11	1.28	3	0%	2.44	5.14	3.47	1.46	3	0%	0.787	5.14	2.79	1.44	6	0%
Octa	PCB 196	0.344-0.387	pg/L	0.905	4.16	2.73	1.66	3	0%	3.47	6.77	4.63	1.85	3	0%	0.905	6.77	3.68	1.89	6	0%
Octa	PCB 197/200	0.344-0.387	pg/L	0.54	1.84	1.34	0.70	3	0%	1.24	2.45	1.82	0.61	3	0%	0.54	2.45	1.58	0.64	6	0%
Octa	PCB 198/199	0.344-0.387	pg/L	2.61	10.4	6.96	3.98	3	0%	8.92	17.7	11.96	4.98	3	0%	2.61	17.70	9.46	4.87	6	0%
Octa	PCB 201	0.344-0.387	pg/L	<0.344	1.11	0.76	0.39	3	33%	0.772	1.76	1.17	0.52	3	33%	<0.344	1.76	0.97	0.47	6	17%
Octa	PCB 202	0.344-0.387	pg/L	0.537	2.19	1.58	0.91	3	0%	1.64	3.51	2.39	0.99	3	0%	0.537	3.51	1.99	0.96	6	0%
Octa	PCB 203	0.344-0.387	pg/L	1.46	6.69	4.32	2.85	3	0%	5.14	10.4	7.00	2.95	3	0%	1.46	10.40	5.66	2.90	6	0%
Octa	PCB 204	0.344-0.387	pg/L	<0.344	0.413	0.38	0.03	3	67%	<0.367	<0.387	0.38	0.01	3	67%	<0.344	0.41	0.38	0.02	6	83%
Octa	PCB 205	0.344-0.387	pg/L	<0.344	0.534	0.41	0.11	3	67%	<0.387	0.852	0.57	0.25	3	67%	<0.344	0.85	0.49	0.19	6	50%
Nona	PCB 206	0.344-0.387	pg/L	1.15	4.38	2.87	1.63	3	0%	2.84	8.74	5.08	3.20	3	0%	1.15	8.74	3.98	2.57	6	0%
Nona	PCB 207	0.344-0.387	pg/L	<0.344	0.572	0.46	0.11	3	33%	<0.387	1.12	0.70	0.38	3	33%	<0.344	1.12	0.58	0.28	6	33%
Nona	PCB 208	0.344-0.387	pg/L	0.439	1.23	0.90	0.41	3	0%	0.852	2.39	1.44	0.83	3	0%	0.439	2.39	1.17	0.66	6	0%
Deca	PCB 209	0.344-1.03	pg/L	1.63	2.49	1.92	0.49	3	0%	1.92	4.2	3.08	1.14	3	0%	1.63	4.20	2.50	1.01	6	0%

** Not applicable

< Results reported less than detection limit

1 Range, mean (geomean for microbiology), standard deviation, and number of samples (N) are provided. When results are less than (greater than for microbiology) the detection limit, the detection limit was used to calculate each statistical value

2 Percent of samples with result less than detection limit

3 Total includes both grab and composite

BORDEN CSO QUALITY MONITORING, 2025 – FILTRATE POLYCHLORINATED BIPHENYLS (PCBs)

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹																	
				Grab					Composite					Total ³							
				Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²			
Polychlorinated biphenyls (PCBs)																					
Mono	PCB 1	0.345-0.381	pg/L	3.3	3.4	3.35	0.07	2	0%	3.68	15.1	9.29	5.71	3	0%	3.3	15.10	6.92	5.19	5	0%
Mono	PCB 2	0.345-0.381	pg/L	6.01	6.45	6.23	0.31	2	0%	5.21	6.39	5.99	0.68	3	0%	5.21	6.45	6.09	0.52	5	0%
Mono	PCB 3	0.345-0.381	pg/L	11.3	25.9	18.6	10.32	2	0%	11	17.6	14.47	3.31	3	0%	11	26	16.12	6.10	5	0%
Di	PCB 4	0.345-0.381	pg/L	2.6	3.77	3.185	0.83	2	0%	1.88	6.28	4.01	2.20	3	0%	1.88	6.28	3.68	1.67	5	0%
Di	PCB 5	0.345-0.381	pg/L	0.762	1.03	0.896	0.19	2	0%	1.05	1.33	1.18	0.14	3	0%	0.762	1.33	1.07	0.21	5	0%
Di	PCB 6	0.345-0.381	pg/L	2.48	2.74	2.61	0.18	2	0%	2.41	3.5	2.97	0.55	3	0%	2.41	3.50	2.83	0.44	5	0%
Di	PCB 7	0.345-0.381	pg/L	3.43	3.89	3.66	0.33	2	0%	3.23	4.81	4.08	0.80	3	0%	3.23	4.81	3.91	0.63	5	0%
Di	PCB 8	0.345-0.381	pg/L	5.34	5.75	5.545	0.29	2	0%	4.26	8.93	6.70	2.34	3	0%	4.26	8.93	6.24	1.78	5	0%
Di	PCB 9	0.345-0.381	pg/L	0.498	0.613	0.556	0.08	2	0%	0.465	0.861	0.69	0.20	3	0%	0.465	0.86	0.64	0.17	5	0%
Di	PCB 10	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Di	PCB 11	0.345-0.381	pg/L	37.8	56.5	47.15	13.22	2	0%	34.1	57	49	13.22	3	0%	34.1	57	48.5	11.51	5	0%
Di	PCB 12/13	0.345-0.381	pg/L	1.78	2.21	1.995	0.30	2	0%	2.29	2.93	2.63	0.32	3	0%	1.78	2.93	2.38	0.44	5	0%
Di	PCB 14	0.345-0.381	pg/L	0.537	0.603	0.570	0.05	2	0%	0.525	0.562	0.55	0.02	3	0%	0.525	0.60	0.56	0.03	5	0%
Di	PCB 15	0.345-0.381	pg/L	2.8	3.75	3.275	0.67	2	0%	8.37	10.7	9.29	1.24	3	0%	2.8	10.70	6.88	3.42	5	0%
Tri	PCB 16	0.345-0.381	pg/L	3.03	4.49	3.76	1.03	2	0%	3.02	5.41	4.27	1.20	3	0%	3.02	5.41	4.07	1.03	5	0%
Tri	PCB 17	0.345-0.381	pg/L	2.47	3.64	3.055	0.83	2	0%	2.46	4.61	3.60	1.08	3	0%	2.46	4.61	3.38	0.92	5	0%
Tri	PCB 18/30	0.345-0.381	pg/L	8.07	11.2	9.64	2.21	2	0%	8.37	14.5	11.52	3.07	3	0%	8.07	14.50	10.77	2.65	5	0%
Tri	PCB 19	0.345-0.381	pg/L	0.927	1.03	0.979	0.07	2	0%	0.643	3.6	1.87	1.54	3	0%	0.643	3.60	1.51	1.20	5	0%
Tri	PCB 20/28	0.345-0.381	pg/L	6.87	12.6	9.74	4.05	2	0%	14.9	23.6	18.80	4.42	3	0%	6.87	23.60	15.17	6.21	5	0%
Tri	PCB 21/33	0.345-0.381	pg/L	5.46	9.89	7.68	3.13	2	0%	12.2	19.8	15.87	3.81	3	0%	5.46	19.80	12.59	5.46	5	0%
Tri	PCB 22	0.345-0.381	pg/L	3.19	5.76	4.48	1.82	2	0%	6.98	10.9	8.75	1.99	3	0%	3.19	10.90	7.04	2.88	5	0%
Tri	PCB 23	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.373	1.9	1.90	0.88	3	100%	<0.345	1.90	0.67	0.69	5	80%
Tri	PCB 24	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Tri	PCB 25	0.345-0.381	pg/L	0.8	1.24	1.02	0.31	2	0%	1.65	2.54	2.04	0.46	3	0%	0.8	2.54	1.63	0.66	5	0%
Tri	PCB 26/29	0.345-0.381	pg/L	1.43	2.44	1.94	0.71	2	0%	3.16	4.97	4.08	0.91	3	0%	1.43	4.97	3.22	1.39	5	0%
Tri	PCB 27	0.345-0.381	pg/L	0.477	0.771	0.624	0.21	2	0%	0.648	0.994	0.80	0.18	3	0%	0.477	0.99	0.73	0.19	5	0%
Tri	PCB 31	0.345-0.381	pg/L	7.2	13.2	10.2	4.24	2	0%	16	25.4	20.43	4.72	3	0%	7.2	25.40	16.34	6.86	5	0%
Tri	PCB 32	0.345-0.381	pg/L	1.85	2.95	2.40	0.78	2	0%	2.2	3.71	2.95	0.76	3	0%	1.85	3.71	2.73	0.73	5	0%
Tri	PCB 34	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.373	1.63	1.63	0.72	3	100%	<0.345	1.63	0.62	0.57	5	80%
Tri	PCB 35	0.345-0.381	pg/L	<0.367	1.33	0.849	0.68	2	50%	0.96	1.08	1.02	0.06	3	50%	<0.367	1.33	0.95	0.36	5	20%
Tri	PCB 36	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	0.48	0.48	0.06	3	100%	<0.345	0.48	0.39	0.05	5	80%
Tri	PCB 37	0.345-0.381	pg/L	2.82	4.9	3.86	1.47	2	0%	9.25	17	13.98	4.15	3	0%	2.82	17.00	9.93	6.32	5	0%
Tri	PCB 38	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Tri	PCB 39	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Tetra	PCB 40/41/71	0.345-0.381	pg/L	3.1	7.41	5.26	3.05	2	0%	6.5	9.25	7.76	1.39	3	0%	3.1	9.25	6.76	2.27	5	0%
Tetra	PCB 42	0.345-0.381	pg/L	1.51	3.67	2.59	1.53	2	0%	2.97	4.39	3.67	0.71	3	0%	1.51	4.39	3.24	1.09	5	0%
Tetra	PCB 43	0.345-0.381	pg/L	<0.367	0.527	0.447	0.11	2	50%	0.479	0.59	0.53	0.06	3	50%	<0.367	0.59	0.50	0.08	5	20%
Tetra	PCB 44/47/65	0.345-0.381	pg/L	20.7	24.3	22.5	2.55	2	0%	15.2	26.3	21.00	5.57	3	0%	15.2	26	21.60	4.22	5	0%
Tetra	PCB 45/51	0.345-0.381	pg/L	3.93	4.21	4.07	0.20	2	0%	2.29	4.24	3.39	1.00	3	0%	2.29	4.24	3.66	0.80	5	0%
Tetra	PCB 46	0.345-0.381	pg/L	0.399	0.79	0.59	0.28	2	0%	0.505	0.836	0.69	0.17	3	0%	0.399	0.84	0.65	0.19	5	0%
Tetra	PCB 48	0.345-0.381	pg/L	1.14	2.74	1.94	1.13	2	0%	2.37	3.44	2.86	0.54	3	0%	1.14	3.44	2.49	0.85	5	0%
Tetra	PCB 49/69	0.345-0.381	pg/L	3.7	9.71	6.71	4.25	2	0%	7.38	10.8	9.03	1.71	3	0%	3.7	10.80	8.10	2.76	5	0%
Tetra	PCB 50/53	0.345-0.381	pg/L	0.921	1.89	1.41	0.69	2	0%	1.19	1.9	1.61	0.37	3	0%	0.921	1.90	1.53	0.45	5	0%
Tetra	PCB 52	0.345-0.381	pg/L	7.93	25.9	16.92	12.71	2	0%	13.5	21.4	17.93	4.04	3	0%	7.93	25.9	17.53	6.99	5	0%
Tetra	PCB 54	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.373	1.66	1.66	0.74	3	100%	<0.345	1.66	0.63	0.58	5	80%
Tetra	PCB 55	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	0.378	0.798	0.80	0.23	3	100%	<0.345	0.80	0.53	0.23	5	40%
Tetra	PCB 56	0.345-0.381	pg/L	1.71	4.38	3.05	1.89	2	0%	5.21	6.9	5.83	0.93	3	0%	1.71	6.90	4.72	1.91	5	0%
Tetra	PCB 57	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Tetra	PCB 58	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Tetra	PCB 59/62/75	0.345-0.381	pg/L	0.714	1.29	1.00	0.41	2	0%	1.4	2.03	1.66	0.33	3	0%	0.714	2.03	1.40	0.48	5	0%
Tetra	PCB 60	0.345-0.381	pg/L	1.07	2.78	1.925	1.21	2	0%	3.26	4.76	3.92	0.76	3	0%	1.07	4.76	3.12	1.36	5	0%
Tetra	PCB 61/70/74/76	0.345-0.381	pg/L	7.36	21.6	14.48	10.07	2	0%	22.2	30.9	25.67	4.61	3	0%	7.36	30.9	21.19	8.57	5	0%
Tetra	PCB 63	0.345-0.381	pg/L	<0.367	0.481	0.42	0.08	2	50%	0.597	0.889	0.76	0.15	3	50%	<0.367	0.89	0.63	0.22	5	20%
Tetra	PCB 64	0.345-0.381	pg/L	2.53	6.65	4.59	2.91	2	0%	5.35	8.1	6.64	1.38	3	0%	2.53	8.10	5.82	2.08	5	0%
Tetra	PCB 66	0.345-0.381	pg/L	3.9	9.7	6.80	4.10	2	0%	12.1	16.9	14.03	2.53	3	0%	3.9	16.90	11.14	4.81	5	0%
Tetra	PCB 67	0.345-0.381	pg/L	<0.367	0.409	0.388	0.03	2	50%	0.55											

BORDEN CSO QUALITY MONITORING, 2025 – FILTRATE POLYCHLORINATED BIPHENYLS (PCBs)
CONTINUED

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹																	
				Grab								Composite				Total ³					
				Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²			
Polychlorinated biphenyls (PCBs)																					
Penta	PCB 82	0.345-0.381	pg/L	0.83	3.81	2.32	2.11	2	0%	1.14	2.34	1.85	0.63	3	0%	0.83	3.81	2.04	1.17	5	0%
Penta	PCB 83/99	0.345-0.381	pg/L	3.52	15.4	9.46	8.40	2	0%	4.83	9.36	7.72	2.51	3	0%	3.52	15.40	8.41	4.66	5	0%
Penta	PCB 84	0.345-0.381	pg/L	1.54	7.8	4.67	4.43	2	0%	1.67	4.32	3.16	1.36	3	0%	1.54	7.80	3.76	2.55	5	0%
Penta	PCB 85/116/117	0.345-0.381	pg/L	1.48	6.21	3.845	3.34	2	0%	2.19	3.82	3.26	0.92	3	0%	1.48	6.21	3.49	1.82	5	0%
Penta	PCB 86/87/97/109/119/125	0.345-0.381	pg/L	5.27	26.4	15.84	14.94	2	0%	7.98	15.3	12.56	3.99	3	0%	5.27	26	13.87	8.19	5	0%
Penta	PCB 88/91	0.345-0.381	pg/L	0.901	4.07	2.49	2.24	2	0%	1.12	2.49	1.94	0.73	3	0%	0.901	4.07	2.16	1.27	5	0%
Penta	PCB 89	0.345-0.381	pg/L	<0.367	0.376	0.372	0.01	2	50%	<0.372	<0.381	0.38	0.00	3	50%	<0.367	<0.381	0.37	0.01	5	80%
Penta	PCB 90/101/113	0.345-0.381	pg/L	6.94	34.8	20.87	19.70	2	0%	10.1	19.7	16.23	5.33	3	0%	6.94	35	18.09	10.85	5	0%
Penta	PCB 92	0.345-0.381	pg/L	1.37	6.68	4.025	3.75	2	0%	2.05	3.59	3.07	0.89	3	0%	1.37	6.68	3.45	2.05	5	0%
Penta	PCB 93/95/98/100/102	0.345-0.381	pg/L	5.16	27.8	16.48	16.01	2	0%	6.44	14.9	11.38	4.41	3	0%	5.16	28	13.42	9.03	5	0%
Penta	PCB 94	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Penta	PCB 96	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Penta	PCB 103	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Penta	PCB 104	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.373	1.02	1.02	0.37	3	100%	<0.345	1.02	0.50	0.29	5	80%
Penta	PCB 105	0.345-0.381	pg/L	2.82	9.59	6.21	4.79	2	0%	3.9	7.05	5.91	1.75	3	0%	2.82	9.59	6.03	2.70	5	0%
Penta	PCB 106	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Penta	PCB 107	0.345-0.381	pg/L	0.498	1.54	1.02	0.74	2	0%	0.739	1.09	0.95	0.18	3	0%	0.498	1.54	0.98	0.39	5	0%
Penta	PCB 108/124	0.345-0.381	pg/L	<0.367	1.21	0.79	0.60	2	50%	0.827	0.948	0.88	0.06	3	50%	<0.367	1.21	0.84	0.31	5	20%
Penta	PCB 110/115	0.345-0.381	pg/L	7.85	38.5	23.175	21.67	2	0%	11.2	21.2	17.83	5.74	3	0%	7.85	39	19.97	11.94	5	0%
Penta	PCB 111	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Penta	PCB 112	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Penta	PCB 114	0.345-0.381	pg/L	<0.367	0.618	0.49	0.18	2	50%	0.46	0.895	0.65	0.22	3	50%	<0.367	0.90	0.59	0.20	5	20%
Penta	PCB 118	0.345-0.381	pg/L	6.12	22.4	14.26	11.51	2	0%	8.58	15.1	12.83	3.68	3	0%	6.12	22	13.40	6.37	5	0%
Penta	PCB 120	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Penta	PCB 121	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Penta	PCB 122	0.345-0.381	pg/L	<0.367	0.369	0.368	0.00	2	50%	<0.372	0.396	0.38	0.01	3	50%	<0.367	0.40	0.38	0.01	5	60%
Penta	PCB 123	0.345-0.381	pg/L	<0.367	0.481	0.424	0.08	2	50%	<0.373	0.716	0.55	0.17	3	50%	<0.367	0.72	0.50	0.14	5	40%
Penta	PCB 126	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.381	0.623	0.62	0.12	3	100%	<0.345	0.62	0.45	0.12	5	60%
Penta	PCB 127	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Hexa	PCB 128/166	0.345-0.381	pg/L	1.55	9.79	5.67	5.83	2	0%	1.56	3.27	2.67	0.96	3	0%	1.55	9.79	3.87	3.41	5	0%
Hexa	PCB 129/138/160/163	0.345-0.381	pg/L	8.83	52.6	30.72	30.95	2	0%	8.39	17.8	14.60	5.38	3	0%	8.39	53	21.04	18.22	5	0%
Hexa	PCB 130	0.345-0.381	pg/L	0.46	3.14	1.80	1.90	2	0%	0.562	1.05	0.87	0.27	3	0%	0.46	3.14	1.24	1.09	5	0%
Hexa	PCB 131	0.345-0.381	pg/L	<0.367	0.774	0.57	0.29	2	50%	<0.372	<0.381	0.38	0.00	3	50%	<0.367	0.77	0.45	0.18	5	80%
Hexa	PCB 132	0.345-0.381	pg/L	1.96	16.5	9.23	10.28	2	0%	1.95	5.18	3.96	1.75	3	0%	1.95	16.50	6.07	6.02	5	0%
Hexa	PCB 133	0.345-0.381	pg/L	<0.367	0.836	0.60	0.33	2	50%	<0.372	<0.381	0.38	0.00	3	50%	<0.367	0.84	0.47	0.21	5	80%
Hexa	PCB 134/143	0.345-0.381	pg/L	0.384	2.9	1.64	1.78	2	0%	0.541	0.897	0.77	0.20	3	0%	0.384	2.90	1.12	1.02	5	0%
Hexa	PCB 135/151/154	0.345-0.381	pg/L	2.08	14.6	8.34	8.85	2	0%	2.43	5.35	4.27	1.60	3	0%	2.08	14.60	5.90	5.08	5	0%
Hexa	PCB 136	0.345-0.381	pg/L	0.67	6.13	3.4	3.86	2	0%	0.738	2.02	1.52	0.69	3	0%	0.67	6.13	2.27	2.24	5	0%
Hexa	PCB 137	0.345-0.381	pg/L	0.402	2.73	1.57	1.65	2	0%	0.487	0.875	0.74	0.22	3	0%	0.402	2.73	1.07	0.95	5	0%
Hexa	PCB 139/140	0.345-0.381	pg/L	<0.367	0.845	0.61	0.34	2	50%	<0.372	0.411	0.39	0.02	3	50%	<0.367	0.85	0.47	0.21	5	60%
Hexa	PCB 141	0.345-0.381	pg/L	1.22	8.15	4.685	4.90	2	0%	1.37	2.89	2.35	0.85	3	0%	1.22	8.15	3.28	2.83	5	0%
Hexa	PCB 142	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Hexa	PCB 144	0.345-0.381	pg/L	<0.367	2.51	1.44	1.52	2	50%	0.444	0.836	0.70	0.23	3	50%	<0.367	2.51	1.00	0.87	5	20%
Hexa	PCB 145	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Hexa	PCB 146	0.345-0.381	pg/L	1.24	6.5	3.87	3.72	2	0%	1.3	2.4	1.97	0.59	3	0%	1.24	6.50	2.73	2.17	5	0%
Hexa	PCB 147/149	0.345-0.381	pg/L	4.51	33.5	19.0	20.50	2	0%	4.85	11.3	8.95	3.56	3	0%	4.51	33.50	12.97	11.91	5	0%
Hexa	PCB 148	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Hexa	PCB 150	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Hexa	PCB 152	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Hexa	PCB 153/168	0.345-0.381	pg/L	8.32	41.2	24.8	23.25	2	0%	7.77	16.4	13.29	4.79	3	0%	7.77	41	17.88	13.64	5	0%
Hexa	PCB 155	0.345-0.381	pg/L	<0.367	2.35	1.36	1.40	2	50%	<0.373	1.54	0.93	0.59	3	50%	<0.367	2.35	1.10	0.85	5	40%
Hexa	PCB 156/157	0.345-0.381	pg/L	1.09	4.69	2.89	2.55	2	0%	1.4	2.6	2.09	0.62	3	0%	1.09	4.69	2.41	1.42	5	0%
Hexa	PCB 158	0.345-0.381	pg/L	0.668	4.73	2.70	2.87	2	0%	0.955	1.55	1.33	0.33	3	0%	0.668	4.73	1.88	1.64	5	0%
Hexa	PCB 159	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Hexa	PCB 161	0.345-0.381	pg/L	<0.345	<0.367	<0.3															

BORDEN CSO QUALITY MONITORING, 2025 – FILTRATE POLYCHLORINATED BIPHENYLS (PCBs)
CONTINUED

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹																	
				Grab						Composite						Total ²					
				Range	Mean	Stdev	N	%ND ³	Range	Mean	Stdev	N	%ND ³	Range	Mean	Stdev	N	%ND ²			
Polychlorinated biphenyls (PCBs)																					
Hepta	PCB 170	0.345-0.381	pg/L	1.37	6.06	3.72	3.32	2	0%	1.33	2.83	2.22	0.79	3	0%	1.33	6.06	2.82	1.93	5	0%
Hepta	PCB 171/173	0.345-0.381	pg/L	0.452	3.62	2.04	2.24	2	0%	0.6	0.836	0.73	0.12	3	0%	0.452	3.62	1.25	1.33	5	0%
Hepta	PCB 172	0.345-0.381	pg/L	<0.367	2.21	1.29	1.30	2	50%	0.47	0.526	0.49	0.03	3	50%	<0.367	2.21	0.81	0.78	5	20%
Hepta	PCB 174	0.345-0.381	pg/L	1.09	10.3	5.70	6.51	2	0%	1.18	2.39	1.96	0.68	3	0%	1.09	10.30	3.46	3.87	5	0%
Hepta	PCB 175	0.345-0.381	pg/L	<0.367	0.672	0.52	0.22	2	50%	<0.372	<0.381	0.38	0.00	3	50%	<0.367	0.67	0.43	0.13	5	80%
Hepta	PCB 176	0.345-0.381	pg/L	<0.367	1.14	0.75	0.55	2	50%	<0.372	0.423	0.39	0.03	3	50%	<0.367	1.14	0.54	0.34	5	60%
Hepta	PCB 177	0.345-0.381	pg/L	0.899	6.37	3.63	3.87	2	0%	0.811	1.7	1.36	0.48	3	0%	0.811	6.37	2.27	2.33	5	0%
Hepta	PCB 178	0.345-0.381	pg/L	0.436	2.96	1.70	1.78	2	0%	0.399	0.796	0.61	0.20	3	0%	0.399	2.96	1.04	1.08	5	0%
Hepta	PCB 179	0.345-0.381	pg/L	0.5	3.13	1.82	1.86	2	0%	0.563	1.32	1.05	0.43	3	0%	0.5	3.13	1.36	1.06	5	0%
Hepta	PCB 180/193	0.345-0.381	pg/L	4.07	15.5	9.79	8.08	2	0%	3.67	7.39	6.06	2.07	3	0%	3.67	15.50	7.55	4.76	5	0%
Hepta	PCB 181	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Hepta	PCB 182	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Hepta	PCB 183/185	0.345-0.381	pg/L	0.962	8.28	4.62	5.17	2	0%	1.15	2.14	1.75	0.53	3	0%	0.962	8.28	2.90	3.05	5	0%
Hepta	PCB 184	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.373	1.41	1.41	0.55	3	100%	<0.345	1.41	0.74	0.53	5	60%
Hepta	PCB 186	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Hepta	PCB 187	0.345-0.381	pg/L	2.01	15.9	8.96	9.82	2	0%	2.14	4.27	3.47	1.16	3	0%	2.01	15.90	5.66	5.82	5	0%
Hepta	PCB 188	0.367-0.723	pg/L	<0.367	<0.723	<0.723	0.25	2	100%	<0.373	0.521	0.52	0.08	3	100%	<0.367	<0.723	0.47	0.15	5	80%
Hepta	PCB 189	0.345-0.381	pg/L	<0.367	0.437	0.402	0.05	2	50%	<0.381	0.399	0.39	0.01	3	50%	<0.367	0.44	0.40	0.03	5	40%
Hepta	PCB 190	0.345-0.381	pg/L	<0.367	2.29	1.33	1.36	2	50%	<0.373	0.563	0.49	0.11	3	50%	<0.367	2.29	0.83	0.82	5	40%
Hepta	PCB 191	0.345-0.381	pg/L	<0.367	0.451	0.41	0.06	2	50%	<0.372	<0.381	0.38	0.00	3	50%	<0.367	0.45	0.39	0.04	5	80%
Hepta	PCB 192	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Octa	PCB 194	0.345-0.381	pg/L	2.05	6.48	4.27	3.13	2	0%	2.09	2.42	2.27	0.17	3	0%	2.05	6.48	3.07	1.91	5	0%
Octa	PCB 195	0.345-0.381	pg/L	<0.367	1.73	1.05	0.96	2	50%	0.462	0.658	0.54	0.10	3	50%	<0.367	1.73	0.75	0.56	5	20%
Octa	PCB 196	0.345-0.381	pg/L	0.419	2.24	1.33	1.29	2	0%	0.602	0.806	0.67	0.11	3	0%	0.419	2.24	0.94	0.74	5	0%
Octa	PCB 197/200	0.345-0.381	pg/L	0.359	<0.367	0.36	0.01	2	50%	<0.372	0.472	0.41	0.05	3	50%	0.359	0.47	0.39	0.05	5	40%
Octa	PCB 198/199	0.345-0.381	pg/L	0.975	6.21	3.59	3.70	2	0%	1.43	1.77	1.59	0.17	3	0%	0.975	6.21	2.39	2.16	5	0%
Octa	PCB 201	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Octa	PCB 202	0.367-0.561	pg/L	<0.367	1.12	0.74	0.53	2	50%	0.405	0.715	0.56	0.16	3	50%	<0.367	1.12	0.63	0.31	5	20%
Octa	PCB 203	0.345-0.381	pg/L	0.636	3.76	2.20	2.21	2	0%	0.914	1.05	0.96	0.08	3	0%	0.636	3.76	1.46	1.30	5	0%
Octa	PCB 204	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Octa	PCB 205	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Nona	PCB 206	0.345-0.381	pg/L	<0.367	0.983	0.68	0.44	2	50%	0.593	0.881	0.71	0.15	3	50%	<0.367	0.98	0.69	0.24	5	20%
Nona	PCB 207	0.345-0.381	pg/L	<0.345	<0.367	<0.367	0.02	2	100%	<0.372	<0.381	<0.381	0.00	3	100%	<0.345	<0.381	<0.381	0.01	5	100%
Nona	PCB 208	0.367-0.571	pg/L	<0.367	0.675	0.52	0.22	2	50%	<0.373	0.539	0.43	0.09	3	50%	<0.367	0.68	0.47	0.14	5	60%
Deca	PCB 209	0.372-1.13	pg/L	<1.13	<1.13	<1.13	**	2	100%	0.412	1.41	1.41	0.52	3	100%	0.412	1.41	0.91	0.45	5	40%

** Not applicable

< Results reported less than detection limit

1 Range, mean (geomean for microbiology), standard deviation, and number of samples (N) are provided. When results are less than (greater than for microbiology) the detection limit, the detection limit was used to calculate each statistical value

2 Percent of samples with result less than detection limit

3 Total includes both grab and composite

GLENBROOK CSO QUALITY MONITORING, 2025 – MICROBIOLOGY, GENERAL CHEMISTRY, METALS

Analyte	Detection Limit	Units	Descriptive Statistics ¹																	
			Grab				Composite				Total ⁴									
			Range	Mean	Stdev	N	%ND ³	Range	Mean	Stdev	N	%ND ³	Range	Mean	Stdev	N	%ND ³			
Microbiology ²																				
Ecoli	1800-18000	MPN/100ml	490000	1700000	800596	500670	5	0%	130000	2400000	496914	772137	10	0%	130000	2400000	582540	676079	15	0%
Enterococci	100-10000	MPN/100ml	98040	241960	171699	63717	5	0%	57940	488400	121158	130494	10	0%	57940	488400	136089	110977	15	0%
Fecal Coliform	1800-18000	MPN/100ml	490000	1700000	818605	510754	5	0%	170000	2400000	674906	863765	10	0%	170000	2400000	719759	744905	15	0%
General Chemistry and Physical																				
Biochemical Oxygen Demand	4-10	mg/L	22.0	31.0	25.33	4.93	3	0%	11	44	30.33	12.26	6	0%	11	44.00	28.67	10.31	9	0%
Chemical Oxygen Demand	20	mg/L	68.0	131	99.50	27.38	4	0%	34	126	84.67	34.72	6	0%	34	131.00	90.60	31.28	10	0%
Conductivity	1	µmho/cm	121.0	152	134.00	13.74	4	0%	61	129	101.33	25.76	6	0%	61	152.00	114.40	26.76	10	0%
Hardness as CaCO3	0.1	mg/L	24.3	33.9	29.55	3.99	4	0%	12.6	33	21.61	6.07	9	0%	12.6	33.90	24.05	6.56	13	0%
Nitrogen - Ammonia as N	0.2	mg/L	1.2	4.2	2.85	1.28	4	0%	1.7	5	2.97	0.86	10	0%	1.2	4.60	2.94	0.94	14	0%
Nitrogen - Nitrate as N	0.01	mg/L	0.5	0.8	0.68	0.15	4	0%	0.39	1	0.47	0.06	6	0%	0.39	0.80	0.55	0.15	10	0%
Nitrogen - Nitrite as N	0.01	mg/L	0.02	0.0	0.03	0.01	4	0%	0.02	0	0.03	0.01	6	0%	0.02	0.03	0.03	0.01	10	0%
pH	0.1	PH	7.1	7.3	7.18	0.10	4	0%	7	7	7.22	0.15	6	0%	7	7.40	7.20	0.12	10	0%
Total Suspended Solids	2-10	mg/L	21.0	156	52.55	25.02	84	0%	12	87	48.50	24.83	8	0%	12	156.00	52.20	24.90	92	0%
Volatile Suspended Solids	2-10	mg/L	10.0	121	38.34	20.30	71	0%	12	60	35.83	18.51	6	0%	10	121.00	38.14	20.06	77	0%
Organic Carbon Total	0.5	mg/L	19.0	19.0	19.00	**	1	0%	**	**	**	**	0	**	19	19.00	19.00	**	1	0%
Organic Carbon Dissolved	0.5	mg/L	13.0	13.0	13.00	**	1	0%	**	**	**	**	0	0%	13	13.00	13.00	**	1	0%
Total Metals																				
Aluminum Total	5	µg/L	197	1360	637.3	502.11	4	0%	171	1620	861	445	10	0%	171	1620	797	454	14	0%
Arsenic Total	0.5	µg/L	0.70	1.00	0.78	0.15	4	0%	0.70	1.20	0.92	0.18	10	0%	0.70	1.20	0.88	0.18	14	0%
Barium Total	0.5	µg/L	13.60	22.00	16.50	3.81	4	0%	7.70	30.50	18.15	6.93	10	0%	7.70	30.50	17.68	6.10	14	0%
Boron Total	10	µg/L	11.00	29.00	17.50	8.27	4	0%	<10	16.00	11.50	2.01	10	50%	<10	29.00	13.21	5.15	14	36%
Cadmium Total	0.2	µg/L	<0.2	<0.2	<0.2	0.00	4	100%	<0.2	<0.2	<0.2	0.00	10	100%	<0.2	<0.2	<0.2	0.00	14	100%
Calcium Total	20	µg/L	7770	11100	9710	1420	4	0%	4240	10900	6914	1842	10	0%	4240	11100	7713	2129	14	0%
Chromium Total	0.5	µg/L	0.90	2.60	1.53	0.75	4	0%	1.00	3.90	2.30	1.01	10	0%	0.90	3.90	2.08	0.98	14	0%
Cobalt Total	0.5	µg/L	<0.5	0.80	0.58	0.15	4	75%	<0.5	2.90	0.84	0.78	10	40%	<0.5	2.90	0.76	0.66	14	50%
Copper Total	0.5	µg/L	7.70	17.70	13.95	4.33	4	0%	9.20	34.50	19.89	7.69	10	0%	7.70	34.50	18.19	7.28	14	0%
Iron Total	5	µg/L	300	1470	791.5	493.0	4	0%	268	1880	1134.20	491.94	10	0%	268	1880	1036	499	14	0%
Lead Total	0.5	µg/L	1.20	4.10	2.18	1.31	4	0%	1.10	9.90	3.49	2.54	10	0%	1.10	9.90	3.11	2.29	14	0%
Magnesium Total	10	µg/L	1180	1500	1283	148.0	4	0%	481	1520	975.90	315.77	10	0%	481	1520	1064	308	14	0%
Manganese Total	0.5	µg/L	24.60	41.30	30.88	7.53	4	0%	15.00	59.10	38.72	13.66	10	0%	15.00	59.10	36.48	12.49	14	0%
Mercury Total	0.05	µg/L	<0.05	0.13	0.07	0.04	4	75%	<0.05	<0.05	0.05	0	8	88%	<0.05	0.13	0.06	0.02	12	83%
Molybdenum Total	0.5	µg/L	0.60	0.80	0.70	0.08	4	0%	<0.5	1.70	0.88	0.36	10	10%	<0.5	1.70	0.83	0.31	14	7%
Nickel Total	0.5	µg/L	0.60	2.10	1.33	0.63	4	0%	0.70	7.70	2.33	2.15	10	0%	0.60	7.70	2.04	1.87	14	0%
Phosphorus Total	15	µg/L	438	1350	893.0	423.8	4	0%	314	2150	901.20	531.43	10	0%	314	2150	899	487	14	0%
Selenium Total	0.5	µg/L	<0.5	<0.5	<0.5	0.00	4	100%	<0.5	<0.5	<0.5	0	10	100%	<0.5	<0.5	<0.5	0.00	14	100%
Silver Total	0.5	µg/L	<0.5	<0.5	<0.5	0.00	4	100%	<0.5	<0.5	<0.5	0	10	100%	<0.5	<0.5	<0.5	0.00	14	100%
Sodium Total	50	µg/L	6610	11400	9433	2188	4	0%	3830	10800	7257.00	1972.18	10	0%	3830	11400	7879	2200	14	0%
Zinc Total	3	µg/L	27.00	68.00	43.75	17.76	4	0%	25.00	111.0	61.20	27.47	10	0%	25.00	111.00	56.21	25.74	14	0%
Dissolved Metals																				
Aluminum Dissolved	5	µg/L	17	24	21.00	2.94	4	0%	14	27	19.78	3.77	9	0%	14.00	27.00	20.15	3.46	13	0%
Arsenic Dissolved	0.5	µg/L	0.5	0.6	0.58	0.05	4	0%	<0.5	1	0.63	0.11	9	11%	<0.5	0.80	0.62	0.10	13	8%
Barium Dissolved	0.5	µg/L	6.5	9.6	8.20	1.28	4	0%	5.1	9	6.42	1.20	9	0%	5.10	9.60	6.97	1.45	13	0%
Boron Dissolved	10	µg/L	<10	16	11.50	3.00	4	75%	<10	14	10.78	1.39	9	67%	<10	16.00	11.00	1.91	13	69%
Cadmium Dissolved	0.2	µg/L	<0.2	<0.2	<0.2	0.00	4	100%	<0.2	<0.2	<0.2	0.00	9	100%	<0.2	<0.2	<0.2	0.00	13	100%
Calcium Dissolved	20	µg/L	5850	9540	8212.50	1630.55	4	0%	3850	8150	5758.89	1354.36	9	0%	3850	9540	6514	1810	13	0%
Chromium Dissolved	0.5	µg/L	<0.5	0.6	0.55	0.06	4	50%	<0.5	1	0.77	0.28	9	22%	<0.5	1.20	0.70	0.25	13	31%
Cobalt Dissolved	0.5	µg/L	<0.5	<0.5	<0.5	0.00	4	100%	<0.5	<0.5	<0.5	0.00	9	100%	<0.5	<0.5	<0.5	0.00	13	100%
Copper Dissolved	0.5	µg/L	3.2	4.7	4.03	0.64	4	0%	4.3	8	5.76	1.54	9	0%	3.20	8.30	5.22	1.54	13	0%
Iron Dissolved	5	µg/L	52	109	83.25	24.17	4	0%	52	136	80.22	27.78	9	0%	52.00	136.00	81.15	25.75	13	0%
Lead Dissolved	0.5	µg/L	<0.5	0.8	0.58	0.15	4	75%	<0.5	<0.5	<0.5	0.00	9	100%	<0.5	0.80	0.52	0.08	13	92%
Magnesium Dissolved	10	µg/L	714	1130	993.50	189.94	4	0%	409	881	643.11	166.06	9	0%	409	1130	751	236	13	0%
Manganese Dissolved	0.5	µg/L	9.9	20.1	15.05	4.28	4	0%	9.4	21	15.08	4.30	9	0%	9.40	21.30	15.07	4.11	13	0%
Molybdenum Dissolved	0.5	µg/L	<0.5	0.6	0.53	0.05	4	50%	<0.5	1	0.63	0.21	9	44%	<0.5	1.00	0.60	0.18	13	46%
Nickel Dissolved	0.5	µg/L	<0.5	0.6	0.53	0.05	4	75%	<0.5	1	0.58	0.17	9	44%	<0.5	1.00	0.56	0.14	13	54%
Phosphorus Dissolved	15	µg/L	324	680	471.50	174.44	4	0%	247	649	372.11	133.54	9	0%	247	680	403	148	13	0%
Selenium Dissolved	0.5	µg/L	<0.5	<0.5	<0.5	0.00	4	100%	<0.5	<0.5	<0.5	0.00	9	100%	<0.5	<0.5	<0.5	0.00	13	100%
Silver Dissolved	0.5	µg/L	<0.5	<0.5	<0.5	0.00	4	100%	<0.5	<0.5	<0.5	0.00	9	100%	<0.5	<0.5	<0.5	0.00	13	100%
Sodium Dissolved	50	µg/L	6520	11000	8860.00	1903.42	4	0%	3670	10200	6953.33	1901.01	9	0%	3670	11000	7540	2038	13	0%
Zinc Dissolved	3	µg/L	14	17	15.50	1.73	4	0%	14	31	19.11	5.30	9	0%	14.00	31.00	18.00	4.74	13	0%

** Not applicable

< Results reported less than detection limit

1 Range, mean (geomean for microbiology), standard deviation, and number of samples (N) are provided. When results are less than (greater than for microbiology) the detection limit, the detection limit was used to calculate each statistical value

2 Every sample for microbiology was collected with a duplicate, the result reported is the geomean of duplicates

3 Percent of samples with result less than detection limit

4 Total includes both grab and composite

5. LC50 results represent % survival, results show 0% mortality throughout test

GLENBROOK CSO QUALITY MONITORING, 2025 – ORGANICS

Analyte	Detection Limit	Units	Descriptive Statistics ¹				
			Grab				N
			Range	Mean	Stdev		
Volatile petroleum hydrocarbons							
1,1,1,2-Tetrachloroethane	0.5	µg/L	<0.50	<0.50	**	**	1
1,1,1-Trichloroethane	0.5	µg/L	<0.50	<0.50	**	**	1
1,1,2,2-Tetrachloroethane	0.5	µg/L	<0.50	<0.50	**	**	1
1,1,2-Trichloro-1,2,2-Trifluoroethane	2	µg/L	<2.0	<2.0	**	**	1
1,1,2-Trichloroethane	0.5	µg/L	<0.50	<0.50	**	**	1
1,1-Dichloroethane	0.5	µg/L	<0.50	<0.50	**	**	1
1,1-Dichloroethene	0.5	µg/L	<0.50	<0.50	**	**	1
1,2,3-Trichlorobenzene	2	µg/L	<2.0	<2.0	**	**	1
1,2,4-Trichlorobenzene	2	µg/L	<2.0	<2.0	**	**	1
1,2-Dibromoethane	0.2	µg/L	<0.20	<0.20	**	**	1
1,2-Dichlorobenzene	0.5	µg/L	<0.50	<0.50	**	**	1
1,2-Dichloroethane	0.5	µg/L	<0.50	<0.50	**	**	1
1,2-Dichloropropane	0.5	µg/L	<0.50	<0.50	**	**	1
1,3,5-Trimethylbenzene	2	µg/L	<2.0	<2.0	**	**	1
1,3-Butadiene	0.5	µg/L	<0.50	<0.50	**	**	1
1,3-Dichlorobenzene	0.5	µg/L	<0.50	<0.50	**	**	1
1,3-Dichloropropane	1	µg/L	<1.0	<1.0	**	**	1
1,4-Dichlorobenzene	0.5	µg/L	<0.50	<0.50	**	**	1
Benzene	0.4	µg/L	<0.40	<0.40	**	**	1
Bromobenzene	2	µg/L	<2.0	<2.0	**	**	1
Bromodichloromethane	1	µg/L	<1.0	<1.0	**	**	1
Bromoform	1	µg/L	<1.0	<1.0	**	**	1
Bromomethane	1	µg/L	<1.0	<1.0	**	**	1
Carbon Tetrachloride	0.5	µg/L	<0.50	<0.50	**	**	1
Chlorobenzene	0.5	µg/L	<0.50	<0.50	**	**	1
Chloroethane	1	µg/L	<1.0	<1.0	**	**	1
Chloroform	1	µg/L	<1.0	<1.0	**	**	1
Chloromethane	1	µg/L	<1.0	<1.0	**	**	1
Cis-1,2-Dichloroethene	1	µg/L	<1.0	<1.0	**	**	1
Cis-1,3-Dichloropropene	1	µg/L	<1.0	<1.0	**	**	1
Dibromochloromethane	1	µg/L	<1.0	<1.0	**	**	1
Dichlorodifluoromethane	2	µg/L	<2.0	<2.0	**	**	1
Dichloromethane	2	µg/L	<2.0	<2.0	**	**	1
Ethylbenzene	0.4	µg/L	<0.40	<0.40	**	**	1
Hexachlorobutadiene	0.5	µg/L	<0.50	<0.50	**	**	1
Isopropylbenzene	2	µg/L	<2.0	<2.0	**	**	1
m & p-Xylene	0.4	µg/L	<0.40	<0.40	**	**	1
Methyl-tert-butylether (MTBE)	4	µg/L	<4.0	<4.0	**	**	1
o-Xylene	0.4	µg/L	<0.40	<0.40	**	**	1
Styrene	0.5	µg/L	<0.50	<0.50	**	**	1
Tetrachloroethene	0.5	µg/L	<0.50	<0.50	**	**	1
Toluene	0.4	µg/L	<0.40	<0.40	**	**	1
trans-1,2-Dichloroethene	1	µg/L	<1.0	<1.0	**	**	1
trans-1,3-Dichloropropene	1	µg/L	<1.0	<1.0	**	**	1
Trichloroethene	0.5	µg/L	<0.50	<0.50	**	**	1
Trichlorofluoromethane	4	µg/L	<4.0	<4.0	**	**	1
VH C6-C10 ³	300	µg/L	<300	<300	**	**	1
Vinyl Chloride	0.5	µg/L	<0.50	<0.50	**	**	1
VPH (VH6 to 10 - BTEX) ⁴	300	µg/L	<300	<300	**	**	1
Xylenes (Total)	0.4	µg/L	<0.40	<0.40	**	**	1

** Not applicable

< Results reported less than detection limit

¹ Range, mean (geomean for microbiology), standard deviation, and number of samples (N) are provided. When results are less than (greater than for microbiology) the detection limit, the detection limit was used to calculate each statistical value

² Percent of samples with result less than detection limit

³ Volatile Hydrocarbons containing all petroleum hydrocarbons in the carbon range of C6-C10, including BTEX and Styrene

⁴ Volatile Petroleum Hydrocarbons containing all petroleum hydrocarbons in the carbon range of C6-C10 minus BTEX

GLENBROOK CSO QUALITY MONITORING, 2025 – ORGANICS CONTINUED

Analyte	Detection Limit	Units	Descriptive Statistics ¹																		
			Grab						Composite						Total ⁷						
			Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²				
Extractable petroleum hydrocarbons																					
LEPH (C10-C19 less PAH) ³	0.2	mg/L	<0.20	<0.20	<0.20	**	1	100%	<0.20	<0.20	<0.20	**	1	100%	<0.20	<0.20	<0.20	0	2	100%	
HEPH (C19-C32 less PAH) ⁴	0.2	mg/L	0.81	0.81	0.81	**	1	0%	0.74	0.74	0.74	**	1	0%	0.74	0.81	0.775	0	2	0%	
EPH (C10-C19)	0.2	mg/L	<0.20	<0.20	<0.20	**	1	100%	<0.20	<0.20	<0.20	**	1	100%	<0.20	<0.20	<0.20	0	2	100%	
EPH (C19-C32)	0.2	mg/L	0.81	0.81	0.81	**	1	0%	0.74	0.74	0.74	**	1	0%	0.74	0.81	0.775	0	2	0%	
Polycyclic aromatic hydrocarbons (PAH)																					
Low molecular weight PAHs (LPAH)	1-Methylnaphthalene ⁵	0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%
	2-Methylnaphthalene	0.1	µg/L	<0.10	<0.10	<0.10	**	1	100%	<0.10	<0.10	<0.10	**	1	100%	<0.10	<0.10	<0.10	0	2	100%
	Phenanthrene	0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%
	Acenaphthene	0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%
	Acenaphthylene	0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%
	Anthracene	0.01	µg/L	<0.010	<0.010	<0.010	**	1	100%	<0.010	<0.010	<0.010	**	1	100%	<0.010	<0.010	<0.010	0	2	100%
	Acridine ⁶	0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%
	Fluorene	0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%
	Naphthalene	0.1	µg/L	<0.10	<0.10	<0.10	**	1	100%	<0.10	<0.10	<0.10	**	1	100%	<0.10	<0.10	<0.10	0	2	100%
	Quinoline ⁶	0.02	µg/L	0.025	0.025	0.025	**	1	0%	<0.020	<0.020	<0.020	**	1	100%	<0.020	0.025	0.0225	0	2	50%
Total LPAHs	0.1	µg/L	0.025	0.025	0.025	**	1	0%	<0.1	<0.1	<0.1	**	1	100%	<0.1	0.025	0.0225	**	2	33%	
High molecular weight PAHs (HPAH)	Benzo(a)anthracene	0.01	µg/L	<0.010	<0.010	<0.010	**	1	100%	<0.010	<0.010	<0.010	**	1	100%	<0.010	<0.010	<0.010	0	2	100%
	Benzo(a)pyrene	0.005	µg/L	0.0071	0.0071	0.0071	**	1	0%	0.0074	0.0074	0.0074	**	1	0%	0.0071	0.0074	0.00725	0	2	0%
	Benzo(b&j)fluoranthene	0.03	µg/L	<0.030	<0.030	<0.030	**	1	100%	<0.030	<0.030	<0.030	**	1	100%	<0.030	<0.030	<0.030	0	2	100%
	Benzo(g,h,i)perylene	0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%
	Benzo(k)fluoranthene	0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%
	Chrysene	0.02	µg/L	<0.020	<0.020	<0.020	**	1	100%	<0.020	<0.020	<0.020	**	1	100%	<0.020	<0.020	<0.020	0	2	100%
	Dibenz(a,h)anthracene	0.003	µg/L	<0.0030	<0.0030	<0.0030	**	1	100%	<0.0030	<0.0030	<0.0030	**	1	100%	<0.0030	<0.0030	<0.0030	0	2	100%
	Fluoranthene	0.02	µg/L	<0.020	<0.020	<0.020	**	1	100%	<0.020	<0.020	<0.020	**	1	100%	<0.020	<0.020	<0.020	0	2	100%
	Indeno(1,2,3-cd)pyrene	0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%
	Pyrene	0.02	µg/L	0.021	0.021	0.021	**	1	0%	0.02	0.02	0.02	**	1	0%	0.02	0.021	0.0205	0	2	0%
Total HPAHs	0.05	µg/L	0.0281	0.0281	0.0281	**	1	0%	0.0274	0.0274	0.0274	**	1	0%	0.0271	0.0284	0.02775	**	2	0%	
Total PAH = LPAH + HPAH	0.1	µg/L	0.0531	0.0531	0.0531	**	1	0%	0.1274	0.1274	0.1274	**	1	0%	0.1271	0.0534	0.05025	**	2	0%	

** Not applicable

< Results reported less than detection limit

1 Range, mean (geomean for microbiology), standard deviation, and number of samples (N) are provided. When results are less than (greater than for microbiology) the detection limit, the detection limit was used to calculate each statistical value

2 Percent of samples with result less than detection limit

3 LEPH = Light Extractable Petroleum Hydrocarbons

4 HEPH = Heavy Extractable Petroleum Hydrocarbons

5 Alkylated Low Molecular Weight PAHs

6 N-Heterocycle Low Molecular Weight PAHs

7 Total includes both grab and composite

GLENBROOK CSO QUALITY MONITORING, 2025 – ORGANICS CONTINUED

Analyte	Detection Limit	Units	Descriptive Statistics ¹																	
			Grab						Composite						Total ³					
			Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²			
Pharmaceuticals																				
Acetaminophen	3-300	ng/L	13300	37500	22700	12972	3	0%	10100	28700	16500	6285	9	0%	10100	37500	18050	8197	12	0%
Bisphenol A	5.0	ng/L	45	81	59	19	3	0%	<5	216	106	59	9	11%	<5	216	94	56	12	8%
Caffeine	100-1000	ng/L	10000	19900	13767	5358	3	0%	3530	21100	9981	5132	9	0%	3530	21100	10928	5225	12	0%
Carbamazepine	5-50	ng/L	<5	<50	<50	26	3	100%	<5	<50	13	14	9	33%	<5	<50	<50	17	12	50%
Diclofenac	10-1000	ng/L	355	1210	728	438	3	0%	78	<1000	328	275	9	11%	78	1210	428	350	12	8%
Fluoxetine	20-200	ng/L	<20	<200	<200	104	3	100%	<20	<200	<200	95	9	100%	<20	<200	<200	93	12	100%
Gemfibrozil	10.0	ng/L	<10	<10	<10	0	3	100%	<10	118	22	36	9	89%	<10	118	<10	31	12	92%
Ibuprofen	5.0	ng/L	445	1880	988	778	3	0%	<5	1240	703	380	9	11%	<5	1880	775	482	12	8%
Naproxen	5-50	ng/L	293	835	558	271	3	0%	386	1180	662	248	9	0%	293	1180	636	246	12	0%
Primidone	5-500	ng/L	<5	<50	<50	26	3	100%	<5	<500	89	159	9	89%	<5	<500	<50	139	12	92%
Sulfamethoxazole	1-10	ng/L	4.0	51	25	24	3	0%	5.0	195	44	60	9	0%	4.0	195	39	53	12	0%
Triclosan	20.0	ng/L	<20	22	21	1.2	3	33%	<20	675	94	218	9	67%	<20	675	76	189	12	58%
Trimethoprim	1-10	ng/L	4.0	59	26	29	3	0%	6	73	30	25	9	0%	4.0	73	29	25	12	0%
Sucralose	9.81-3000	ng/L	3070	6300	4890	1654	3	0%	1600	14500	4681	4147	9	11%	1600	14500	4733	3607	12	8%
Organic Compounds																				
6PPD-Quinone	0.001-0.0011	µg/L	0.11	0.154	0.12975	0	4	0%	0.08	0.0816	0.0816	**	1	0%	0.08	0.154	0.12012	0.027	5	0%
** Not applicable < Results reported less than detection limit 1 Range, mean (geomean for microbiology), standard deviation, and number of samples (N) are provided. When results are less than (greater than for microbiology) the detection limit, the detection limit was used to caculate each statistical value 2 Percent of samples with result less than detection limit 3 Total includes both grab and composite																				

GLENBROOK CSO QUALITY MONITORING, 2025 – UNFILTERED SAMPLE POLYBROMINATED DIPHENYL ETHERS (PBDEs)

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹																	
				Grab						Composite						Total ³					
				Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²			
Polybrominated diphenyl ethers (PBDEs)																					
Di	PBDE 7	2.72-2.98	pg/L	<2.72	<2.89	<2.89	0.120	2	100%	<2.98	<2.98	<2.98	**	1	100%	<2.72	<2.98	<2.98	0.13	3	100%
Di	PBDE 8/11	2.72-2.98	pg/L	<2.72	<2.89	<2.89	0.120	2	100%	<2.98	<2.98	<2.98	**	1	100%	<2.72	<2.98	<2.98	0.13	3	100%
Di	PBDE 10	2.72-2.98	pg/L	<2.72	<2.89	<2.89	0.12	2	100%	<2.98	<2.98	<2.98	**	1	100%	<2.72	<2.98	<2.98	0.13	3	100%
Di	PBDE 12/13	2.72-2.98	pg/L	<2.72	<2.89	<2.89	0.120	2	100%	<2.98	<2.98	<2.98	**	1	100%	<2.72	<2.98	<2.98	0.13	3	100%
Di	PBDE 15	2.72-2.98	pg/L	<2.89	3.63	3.26	0.523	2	50%	<2.98	<2.98	<2.98	**	1	50%	<2.89	3.63	3.17	0.40	3	67%
Tri	PBDE 17/25	2.89-3.66	pg/L	6.51	14.3	10.405	5.51	2	0%	8.65	8.65	8.65	**	1	0%	6.51	14.30	9.82	4.02	3	0%
Tri	PBDE 28/33	2.72-2.98	pg/L	15.9	29.7	22.8	9.76	2	0%	18.7	18.7	18.70	**	1	0%	15.90	29.70	21.43	7.29	3	0%
Tri	PBDE 30	2.89-3.87	pg/L	<2.89	<3.16	<3.16	0.191	2	100%	<3.87	<3.87	<3.87	**	1	100%	<2.89	<3.87	<3.87	0.51	3	100%
Tri	PBDE 32	2.72-2.98	pg/L	<2.72	<2.89	<2.89	0.120	2	100%	<2.98	<2.98	<2.98	**	1	100%	<2.72	<2.98	<2.98	0.13	3	100%
Tri	PBDE 35	2.72-2.98	pg/L	<2.72	<2.89	<2.89	0.120	2	100%	<2.98	<2.98	<2.98	**	1	100%	<2.72	<2.98	<2.98	0.13	3	100%
Tri	PBDE 37	2.72-2.98	pg/L	<2.72	<2.89	<2.89	0.120	2	100%	<2.98	<2.98	<2.98	**	1	100%	<2.72	<2.98	<2.98	0.13	3	100%
Tetra	PBDE 47	2.72-2.98	pg/L	1000	1250	1125	176.8	2	0%	807	807	807.0	**	1	0%	807.00	1250	1019.0	222.1	3	0%
Tetra	PBDE 49	2.72-2.98	pg/L	23.9	45.8	34.85	15.49	2	0%	28.7	28.7	28.70	**	1	0%	23.90	45.80	32.80	11.51	3	0%
Tetra	PBDE 51	2.72-2.98	pg/L	2.9	4.03	3.465	0.799	2	0%	4.49	4.49	4.49	**	1	0%	2.90	4.49	3.81	0.82	3	0%
Tetra	PBDE 66	2.72-2.98	pg/L	22.4	32.2	27.3	6.930	2	0%	27.9	27.9	27.90	**	1	0%	22.40	32.20	27.50	4.91	3	0%
Tetra	PBDE 71	2.72-2.98	pg/L	<2.72	<2.89	<2.89	0.120	2	100%	5.32	5.32	5.32	**	1	100%	<2.72	5.32	3.64	1.45	3	67%
Tetra	PBDE 75	2.72-2.98	pg/L	<2.89	3.53	3.21	0.453	2	50%	<2.98	<2.98	<2.98	**	1	50%	<2.89	3.53	3.13	0.35	3	67%
Tetra	PBDE 77	2.72-2.98	pg/L	<2.72	<2.89	<2.89	0.120	2	100%	<2.98	<2.98	<2.98	**	1	100%	<2.72	<2.98	<2.98	0.13	3	100%
Tetra	PBDE 79	2.72-2.98	pg/L	<2.72	3.05	2.885	0.233	2	50%	3.63	3.63	3.63	**	1	50%	<2.72	3.63	3.13	0.46	3	33%
Penta	PBDE 85	2.72-2.98	pg/L	30.7	55.3	43	17.39	2	0%	44.9	44.9	44.90	**	1	0%	30.70	55.30	43.63	12.35	3	0%
Penta	PBDE 99	2.72-2.98	pg/L	810	1230	1020	297.0	2	0%	933	933	933.0	**	1	0%	810.00	1230	991.0	215.9	3	0%
Penta	PBDE 100	2.72-2.98	pg/L	172	262	217	63.64	2	0%	195	195	195.0	**	1	0%	172.00	262.0	209.7	46.76	3	0%
Penta	PBDE 105	2.72-2.98	pg/L	<2.72	<2.89	<2.89	0.120	2	100%	<2.98	<2.98	<2.98	**	1	100%	<2.72	<2.98	<2.98	0.13	3	100%
Penta	PBDE 116	2.89-3.21	pg/L	<2.89	<3.05	<3.05	0.113	2	100%	<3.21	<3.21	<3.21	**	1	100%	<2.89	<3.21	<3.21	0.16	3	100%
Penta	PBDE 119/120	2.72-2.98	pg/L	<2.89	4.43	3.66	1.089	2	50%	4.66	4.66	4.66	**	1	50%	<2.89	4.66	3.99	0.96	3	33%
Penta	PBDE 126	2.72-2.98	pg/L	<2.72	<2.89	<2.89	0.120	2	100%	<2.98	<2.98	<2.98	**	1	100%	<2.72	<2.98	<2.98	0.13	3	100%
Hexa	PBDE 128	2.89-5.95	pg/L	<2.89	<5.95	<5.95	2.164	2	100%	<5.9	<5.9	<5.9	**	1	100%	<2.89	<5.95	<5.95	1.75	3	100%
Hexa	PBDE 138/166	2.89-3.79	pg/L	6.96	13.1	10.03	4.342	2	0%	16.8	16.8	16.80	**	1	0%	6.96	16.80	12.29	4.97	3	0%
Hexa	PBDE 140	2.75-2.98	pg/L	<2.89	4.56	3.725	1.181	2	50%	6.9	6.9	6.90	**	1	50%	<2.89	6.90	4.78	2.01	3	33%
Hexa	PBDE 153	2.72-2.98	pg/L	63.2	119	91.1	39.46	2	0%	96.6	96.6	96.60	**	1	0%	63.20	119.0	92.93	28.08	3	0%
Hexa	PBDE 154	2.72-2.98	pg/L	53.8	92.4	73.1	27.29	2	0%	78.5	78.5	78.50	**	1	0%	53.80	92.40	74.90	19.55	3	0%
Hexa	PBDE 155	2.72-2.98	pg/L	3.91	6.54	5.225	1.860	2	0%	7.29	7.29	7.29	**	1	0%	3.91	7.29	5.91	1.78	3	0%
Hepta	PBDE 181	2.89-6.46	pg/L	<2.89	<4.07	<4.07	0.834	2	100%	<6.46	<6.46	<6.46	**	1	100%	<2.89	<6.46	<6.46	1.82	3	100%
Hepta	PBDE 183	2.89-5.55	pg/L	24.3	40.8	32.55	11.67	2	0%	51.5	51.5	51.50	**	1	0%	24.30	51.50	38.87	13.70	3	0%
Hepta	PBDE 190	4.3-10.7	pg/L	<4.3	<6.83	<6.83	1.789	2	100%	<10.7	<10.7	<10.7	**	1	100%	<4.3	<10.7	<10.7	3.22	3	100%
Octa	PBDE 203	3.3-25.4	pg/L	18.1	67	42.55	34.58	2	0%	110	110	110.00	**	1	0%	18.10	110.0	65.03	45.98	3	0%
Nona	PBDE 206	10.3-24	pg/L	158	174	166	11.31	2	0%	362	362	362.0	**	1	0%	158.00	362.0	231.3	113.4	3	0%
Nona	PBDE 207	16.4-33	pg/L	154	214	184	42.43	2	0%	335	335	335.0	**	1	0%	154.00	335.0	234.3	92.2	3	0%
Nona	PBDE 208	16.4-36.6	pg/L	108	165	136.5	40.31	2	0%	218	218	218.0	**	1	0%	108.00	218.0	163.7	55.01	3	0%
Deca	PBDE 209	44.3-176	pg/L	1930	3120	2525	841	2	0%	6940	6940	6940	**	1	0%	1930	6940	3997	2618	3	0%
** Not applicable																					
< Results reported less than detection limit																					
1 Range, mean (geomean for microbiology), standard deviation, and number of samples (N) are provided. When results are less than (greater than for microbiology) the detection limit, the detection limit was used to calculate each statistical value																					
2 Percent of samples with result less than detection limit																					
3 Total includes both grab and composite																					

GLENBROOK CSO QUALITY MONITORING, 2025 – FILTRATE POLYBROMINATED DIPHENYL ETHERS (PBDEs)

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹																	
				Grab						Composite						Total ³					
				Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²			
Polybrominated diphenyl ethers (PBDEs)																					
Di	PBDE 7	2.95-4.48	pg/L	<4.48	<4.48	<4.48	**	1	100%	<2.95	<2.95	<2.95	**	1	100%	<2.95	<4.48	<4.48	**	2	100%
Di	PBDE 8/11	2.95-3.16	pg/L	<3.16	<3.16	<3.16	**	1	100%	<2.95	<2.95	<2.95	**	1	100%	<2.95	<3.16	<3.16	**	2	100%
Di	PBDE 10	2.95-4.92	pg/L	<4.92	<4.92	<4.92	**	1	100%	<2.95	<2.95	<2.95	**	1	100%	<2.95	<4.92	<4.92	**	2	100%
Di	PBDE 12/13	2.71-2.95	pg/L	<2.71	<2.71	<2.71	**	1	100%	<2.95	<2.95	<2.95	**	1	100%	<2.71	<2.95	<2.95	**	2	100%
Di	PBDE 15	2.66-2.95	pg/L	<2.66	<2.66	<2.66	**	1	100%	<2.95	<2.95	<2.95	**	1	100%	<2.66	<2.95	<2.95	**	2	100%
Tri	PBDE 17/25	4.47-6.17	pg/L	10.7	10.7	10.7	**	1	0%	6.08	6.08	6.08	**	1	0%	6.08	10.70	8.39	**	2	0%
Tri	PBDE 28/33	3.05-4.13	pg/L	10.1	10.1	10.1	**	1	0%	<3.05	<3.05	<3.05	**	1	0%	<3.05	10.10	6.58	**	2	50%
Tri	PBDE 30	4.71-6.67	pg/L	<6.67	<6.67	<6.67	**	1	100%	<4.71	<4.71	<4.71	**	1	100%	<4.71	<6.67	<6.67	**	2	100%
Tri	PBDE 32	3.46-4.87	pg/L	<4.87	<4.87	<4.87	**	1	100%	<3.46	<3.46	<3.46	**	1	100%	<3.46	<4.87	<4.87	**	2	100%
Tri	PBDE 35	2.95-3.81	pg/L	<3.81	<3.81	<3.81	**	1	100%	<2.95	<2.95	<2.95	**	1	100%	<2.95	<3.81	<3.81	**	2	100%
Tri	PBDE 37	2.95-3.78	pg/L	<3.78	<3.78	<3.78	**	1	100%	<2.95	<2.95	<2.95	**	1	100%	<2.95	<3.78	<3.78	**	2	100%
Tetra	PBDE 47	2.66-2.95	pg/L	418	418	418	**	1	0%	86.2	86.2	86.2	**	1	0%	86.20	418	252.1	**	2	0%
Tetra	PBDE 49	2.93-2.95	pg/L	14.8	14.8	14.8	**	1	0%	3.5	3.5	3.50	**	1	0%	3.50	14.80	9.15	**	2	0%
Tetra	PBDE 51	2.66-2.95	pg/L	<2.66	<2.66	<2.66	**	1	100%	<2.95	<2.95	<2.95	**	1	100%	<2.66	<2.95	<2.95	**	2	100%
Tetra	PBDE 66	2.95-3.09	pg/L	9.5	9.5	9.5	**	1	0%	3.66	3.66	3.66	**	1	0%	3.66	9.50	6.58	**	2	0%
Tetra	PBDE 71	2.95-3.03	pg/L	<3.03	<3.03	<3.03	**	1	100%	<2.95	<2.95	<2.95	**	1	100%	<2.95	<3.03	<3.03	**	2	100%
Tetra	PBDE 75	2.66-2.95	pg/L	<2.66	<2.66	<2.66	**	1	100%	<2.95	<2.95	<2.95	**	1	100%	<2.66	<2.95	<2.95	**	2	100%
Tetra	PBDE 77	2.66-2.95	pg/L	<2.66	<2.66	<2.66	**	1	100%	<2.95	<2.95	<2.95	**	1	100%	<2.66	<2.95	<2.95	**	2	100%
Tetra	PBDE 79	2.66-2.95	pg/L	<2.66	<2.66	<2.66	**	1	100%	<2.95	<2.95	<2.95	**	1	100%	<2.66	<2.95	<2.95	**	2	100%
Penta	PBDE 85	2.95-3.06	pg/L	20.2	20.2	20.2	**	1	0%	2.99	2.99	2.99	**	1	0%	2.99	20.20	11.60	**	2	0%
Penta	PBDE 99	2.66-2.95	pg/L	463	463	463	**	1	0%	70.6	70.6	70.6	**	1	0%	70.60	463	266.8	**	2	0%
Penta	PBDE 100	2.66-2.95	pg/L	108	108	108	**	1	0%	15.3	15.3	15.3	**	1	0%	15.30	108.0	61.7	**	2	0%
Penta	PBDE 105	2.95-3.72	pg/L	<3.72	<3.72	<3.72	**	1	100%	<2.95	<2.95	<2.95	**	1	100%	<2.95	<3.72	<3.72	**	2	100%
Penta	PBDE 116	2.95-5.16	pg/L	<5.16	<5.16	<5.16	**	1	100%	<2.95	<2.95	<2.95	**	1	100%	<2.95	<5.16	<5.16	**	2	100%
Penta	PBDE 119/120	2.95-3.14	pg/L	<3.14	<3.14	<3.14	**	1	100%	<2.95	<2.95	<2.95	**	1	100%	<2.95	<3.14	<3.14	**	2	100%
Penta	PBDE 126	2.66-2.95	pg/L	<2.66	<2.66	<2.66	**	1	100%	<2.95	<2.95	<2.95	**	1	100%	<2.66	<2.95	<2.95	**	2	100%
Hexa	PBDE 128	5.32-10.2	pg/L	<10.2	<10.2	<10.2	**	1	100%	<5.32	<5.32	<5.32	**	1	100%	<5.32	<10.2	<10.2	**	2	100%
Hexa	PBDE 138/166	2.95-6.13	pg/L	10.3	10.3	10.3	**	1	0%	<2.95	<2.95	<2.95	**	1	0%	<2.95	10.30	6.63	**	2	50%
Hexa	PBDE 140	2.95-4.45	pg/L	<4.45	<4.45	<4.45	**	1	100%	<2.95	<2.95	<2.95	**	1	100%	<2.95	<4.45	<4.45	**	2	100%
Hexa	PBDE 153	2.95-4.14	pg/L	54	54	54	**	1	0%	6.36	6.36	6.36	**	1	0%	6.36	54.0	30.18	**	2	0%
Hexa	PBDE 154	2.95-3.35	pg/L	39.1	39.1	39.1	**	1	0%	6.12	6.12	6.12	**	1	0%	6.12	39.10	22.61	**	2	0%
Hexa	PBDE 155	2.95-3.33	pg/L	6.23	6.23	6.23	**	1	0%	<2.95	<2.95	<2.95	**	1	0%	<2.95	6.23	4.59	**	2	50%
Hepta	PBDE 181	3.96-3.98	pg/L	<3.96	<3.96	<3.96	**	1	100%	<3.98	<3.98	<3.98	**	1	100%	<3.96	<3.98	<3.98	**	2	100%
Hepta	PBDE 183	3.21-3.53	pg/L	18.7	18.7	18.7	**	1	0%	4.58	4.58	4.58	**	1	0%	4.58	18.70	11.64	**	2	0%
Hepta	PBDE 190	6.66-6.84	pg/L	8.86	8.86	8.86	**	1	0%	<6.84	<6.84	<6.84	**	1	0%	<6.84	8.86	7.85	**	2	50%
Octa	PBDE 203	12.4-28.4	pg/L	44.3	44.3	44.3	**	1	0%	<12.4	<12.4	<12.4	**	1	0%	<12.4	44.3	28.35	**	2	50%
Nona	PBDE 206	29.1-29.6	pg/L	337	337	337	**	1	0%	80.6	80.6	80.6	**	1	0%	80.60	337.0	208.8	**	2	0%
Nona	PBDE 207	32.9-39.9	pg/L	286	286	286	**	1	0%	46.6	46.6	46.6	**	1	0%	46.60	286.0	166.3	**	2	0%
Nona	PBDE 208	40.7-44.3	pg/L	177	177	177	**	1	0%	45.2	45.2	45.2	**	1	0%	45.20	177.0	111.1	**	2	0%
Deca	PBDE 209	278-413	pg/L	9640	9640	9640	**	1	0%	1710	1710	1710	**	1	0%	1710	9640	5675	**	2	0%
** Not applicable																					
< Results reported less than detection limit																					
1 Range, mean (geomean for microbiology), standard deviation, and number of samples (N) are provided. When results are less than (greater than for microbiology) the detection limit, the detection limit was used to calculate each statistical value																					
2 Percent of samples with result less than detection limit																					
3 Total includes both grab and composite																					

GLENBROOK CSO QUALITY MONITORING, 2025 – UNFILTERED SAMPLE POLYCHLORINATED BIPHENYLS (PCBs)

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹																	
				Grab					Composite					Total ³							
				Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²			
Polychlorinated biphenyls (PCBs)																					
Mono	PCB 1	0.369-0.406	pg/L	28.4	39.5	33.95	7.848885	2	0%	27	27	27.00	**	1	0%	27.00	39.50	31.63	6.85	3	0%
Mono	PCB 2	0.369-0.406	pg/L	8.11	13	10.555	3.457752	2	0%	10.9	10.9	10.90	**	1	0%	8.11	13.00	10.67	2.45	3	0%
Mono	PCB 3	0.369-0.406	pg/L	35.2	53.4	44.3	12.86934	2	0%	29.9	29.9	29.90	**	1	0%	29.90	53.40	39.50	12.33	3	0%
Di	PCB 4	0.369-0.406	pg/L	6.29	23.8	15.045	12.38144	2	0%	6.08	6.08	6.08	**	1	0%	6.08	23.80	12.06	10.17	3	0%
Di	PCB 5	0.369-0.406	pg/L	0.711	1.3	1.0055	0.416486	2	0%	1.47	1.47	1.47	**	1	0%	0.71	1.47	1.16	0.40	3	0%
Di	PCB 6	0.369-0.406	pg/L	5.07	6.29	5.68	0.86267	2	0%	2.84	2.84	2.84	**	1	0%	2.84	6.29	4.73	1.75	3	0%
Di	PCB 7	0.369-0.406	pg/L	4.08	7.52	5.8	2.432447	2	0%	9.23	9.23	9.23	**	1	0%	4.08	9.23	6.94	2.62	3	0%
Di	PCB 8	0.369-0.406	pg/L	14.6	21.1	17.85	4.596194	2	0%	5.95	5.95	5.95	**	1	0%	5.95	21.10	13.88	7.60	3	0%
Di	PCB 9	0.369-0.406	pg/L	1.17	3.34	2.255	1.534422	2	0%	0.696	0.696	0.70	**	1	0%	0.70	3.34	1.74	1.41	3	0%
Di	PCB 10	0.369-0.406	pg/L	0.41	0.832	0.621	0.298399	2	0%	<0.406	<0.406	<0.406	**	1	0%	<0.406	0.83	0.55	0.24	3	33%
Di	PCB 11	0.369-0.406	pg/L	141	163	152	15.55635	2	0%	173	173	173.00	**	1	0%	141.00	173.0	159.0	16.37	3	0%
Di	PCB 12/13	0.369-0.406	pg/L	3.64	4.39	4.015	0.53033	2	0%	4.28	4.28	4.28	**	1	0%	3.64	4.39	4.10	0.41	3	0%
Di	PCB 14	0.369-0.406	pg/L	0.47	0.651	0.5605	0.127986	2	0%	0.755	0.755	0.76	**	1	0%	0.47	0.76	0.63	0.14	3	0%
Di	PCB 15	0.369-0.406	pg/L	8.34	17.5	12.92	6.477098	2	0%	11.3	11.3	11.30	**	1	0%	8.34	17.50	12.38	4.67	3	0%
Tri	PCB 16	0.369-0.406	pg/L	10.8	31.6	21.2	14.70782	2	0%	11	11	11.00	**	1	0%	10.80	31.60	17.80	11.95	3	0%
Tri	PCB 17	0.369-0.406	pg/L	9.5	24.2	16.85	10.39447	2	0%	8.91	8.91	8.91	**	1	0%	8.91	24.20	14.20	8.66	3	0%
Tri	PCB 18/30	0.369-0.406	pg/L	28.4	75	51.7	32.95118	2	0%	28.8	28.8	28.80	**	1	0%	28.40	75.00	44.07	26.79	3	0%
Tri	PCB 19	0.369-0.406	pg/L	3.08	8.24	5.66	3.648671	2	0%	2.48	2.48	2.48	**	1	0%	2.48	8.24	4.60	3.17	3	0%
Tri	PCB 20/28	0.369-0.406	pg/L	29.6	62.4	46	23.1931	2	0%	33.9	33.9	33.90	**	1	0%	29.60	62.40	41.97	17.83	3	0%
Tri	PCB 21/33	0.369-0.406	pg/L	21.8	43.6	32.7	15.41493	2	0%	14.1	14.1	14.10	**	1	0%	14.10	43.60	26.50	15.30	3	0%
Tri	PCB 22	0.369-0.406	pg/L	13.7	31.6	22.65	12.65721	2	0%	12.9	12.9	12.90	**	1	0%	12.90	31.60	19.40	10.57	3	0%
Tri	PCB 23	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Tri	PCB 24	0.369-0.406	pg/L	0.419	0.701	0.56	0.199404	2	0%	<0.406	<0.406	<0.406	**	1	0%	<0.406	0.70	0.51	0.17	3	33%
Tri	PCB 25	0.369-0.406	pg/L	2.94	6.09	4.515	2.227386	2	0%	3.07	3.07	3.07	**	1	0%	2.94	6.09	4.03	1.78	3	0%
Tri	PCB 26/29	0.369-0.406	pg/L	5.89	11.9	8.895	4.249712	2	0%	6.35	6.35	6.35	**	1	0%	5.89	11.90	8.05	3.35	3	0%
Tri	PCB 27	0.369-0.406	pg/L	1.74	4.25	2.995	1.774838	2	0%	1.82	1.82	1.82	**	1	0%	1.74	4.25	2.60	1.43	3	0%
Tri	PCB 31	0.369-0.406	pg/L	30.7	63.9	47.3	23.47595	2	0%	33.5	33.5	33.50	**	1	0%	30.70	63.90	42.70	18.41	3	0%
Tri	PCB 32	0.369-0.406	pg/L	7.38	17.2	12.29	6.943789	2	0%	7.78	7.78	7.78	**	1	0%	7.38	17.20	10.79	5.56	3	0%
Tri	PCB 34	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Tri	PCB 35	0.369-0.406	pg/L	3.95	7.43	5.69	2.460732	2	0%	7.88	7.88	7.88	**	1	0%	3.95	7.88	6.42	2.15	3	0%
Tri	PCB 36	0.369-0.406	pg/L	2.39	4.32	3.355	1.364716	2	0%	4.21	4.21	4.21	**	1	0%	2.39	4.32	3.64	1.08	3	0%
Tri	PCB 37	0.369-0.406	pg/L	10.3	22.3	16.3	8.485281	2	0%	20.3	20.3	20.30	**	1	0%	10.30	22.30	17.63	6.43	3	0%
Tri	PCB 38	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	0.473	0.473	0.47	**	1	100%	<0.369	0.47	0.41	0.05	3	67%
Tri	PCB 39	0.369-0.406	pg/L	0.382	<0.39	0.386	0.005657	2	50%	0.423	0.423	0.42	**	1	50%	0.38	0.42	0.40	0.02	3	33%
Tetra	PCB 40/41/71	0.369-0.406	pg/L	15	26.4	20.7	8.061017	2	0%	23.6	23.6	23.60	**	1	0%	15.00	26.40	21.67	5.94	3	0%
Tetra	PCB 42	0.369-0.406	pg/L	7.95	13.2	10.575	3.712311	2	0%	12.2	12.2	12.20	**	1	0%	7.95	13.20	11.12	2.79	3	0%
Tetra	PCB 43	0.369-0.406	pg/L	1.13	1.95	1.54	0.579828	2	0%	1.36	1.36	1.36	**	1	0%	1.13	1.95	1.48	0.42	3	0%
Tetra	PCB 44/47/65	0.369-0.406	pg/L	60.2	60.4	60.3	0.141421	2	0%	64.2	64.2	64.20	**	1	0%	60.20	64.20	61.60	2.25	3	0%
Tetra	PCB 45/51	0.369-0.406	pg/L	10.3	12.4	11.35	1.484924	2	0%	10.3	10.3	10.30	**	1	0%	10.30	12.40	11.00	1.21	3	0%
Tetra	PCB 46	0.369-0.406	pg/L	1.83	3.32	2.575	1.053589	2	0%	2.07	2.07	2.07	**	1	0%	1.83	3.32	2.41	0.80	3	0%
Tetra	PCB 48	0.369-0.406	pg/L	6.08	10.2	8.14	2.91328	2	0%	7.51	7.51	7.51	**	1	0%	6.08	10.20	7.93	2.09	3	0%
Tetra	PCB 49/69	0.369-0.406	pg/L	20.3	29.2	24.75	6.29325	2	0%	26.4	26.4	26.40	**	1	0%	20.30	29.20	25.30	4.55	3	0%
Tetra	PCB 50/53	0.369-0.406	pg/L	4.25	6.91	5.58	1.880904	2	0%	4.8	4.8	4.80	**	1	0%	4.25	6.91	5.32	1.40	3	0%
Tetra	PCB 52	0.369-0.406	pg/L	49.7	64.1	56.9	10.18234	2	0%	61	61	61.00	**	1	0%	49.70	64.10	58.27	7.58	3	0%
Tetra	PCB 54	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Tetra	PCB 55	0.369-0.406	pg/L	0.655	1.69	1.1725	0.731856	2	0%	1.28	1.28	1.28	**	1	0%	0.66	1.69	1.21	0.52	3	0%
Tetra	PCB 56	0.369-0.406	pg/L	9.71	19.1	14.405	6.639733	2	0%	21.6	21.6	21.60	**	1	0%	9.71	21.60	16.80	6.27	3	0%
Tetra	PCB 57	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Tetra	PCB 58	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Tetra	PCB 59/62/75	0.369-0.406	pg/L	2.89	4.86	3.875	1.393	2	0%	4.12	4.12	4.12	**	1	0%	2.89	4.86	3.96	1.00	3	0%
Tetra	PCB 60	0.369-0.406	pg/L	6.27	12.6	9.435	4.475986	2	0%	14.3	14.3	14.30	**	1	0%	6.27	14.30	11.06	4.23	3	0%
Tetra	PCB 61/70/74/76	0.369-0.406	pg/L	45.9	66.4	56.15	14.49569	2	0%	76.3	76.3	76.30	**	1	0%	45.90	76.30	62.87	15.50	3	0%
Tetra	PCB 63	0.369-0.406	pg/L	1.07	1.68	1.375	0.431335	2	0%	1.71	1.71	1.71	**	1	0%	1.07	1.71	1.49	0.36	3	0%
Tetra	PCB 64	0.369-0.406	pg/L	13.8	21.8	17.8	5.656854	2	0%	20	20	20.00	**	1	0%	13.80	21.80	18.53	4.20	3	0%
Tetra	PCB 66	0.369-0.406	pg/L	23	38.4	30.7	10.88944	2	0%	42	42	42.00	**	1	0%	23.00	42.00	34.47	10.09	3	0%
Tetra	PCB 67	0.369-0.406	pg/L	0.937	1.5	1.2185	0.398101	2	0%	1.61	1.61	1.61	**	1	0%	0.94	1.61	1.35	0.36	3	0%
Tetra	PCB 68	0.369-0.406	pg/L	1.84	3.93	2.885	1.477853	2	0%	3.41	3.41										

GLENBROOK CSO QUALITY MONITORING, 2025 – UNFILTERED SAMPLE POLYCHLORINATED BIPHENYLS (PCBs) CONTINUED

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹																	
				Grab						Composite						Total ³					
				Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²			
Polychlorinated biphenyls (PCBs)																					
Penta	PCB 82	0.369-0.406	pg/L	5.86	6.85	6.355	0.700036	2	0%	9.13	9.13	9.13	**	1	0%	5.86	9.13	7.28	1.68	3	0%
Penta	PCB 83/99	0.369-0.406	pg/L	23.5	25.6	24.55	1.484924	2	0%	29.7	29.7	29.70	**	1	0%	23.50	29.70	26.27	3.15	3	0%
Penta	PCB 84	0.369-0.406	pg/L	11.8	11.8	11.8	0	2	0%	14.7	14.7	14.70	**	1	0%	11.80	14.70	12.77	1.67	3	0%
Penta	PCB 85/116/117	0.369-0.406	pg/L	9.9	10.9	10.4	0.707107	2	0%	14	14	14.00	**	1	0%	9.90	14.00	11.60	2.14	3	0%
Penta	PCB 86/87/97/109/119/125	0.369-0.406	pg/L	37.7	39.6	38.65	1.343503	2	0%	51.3	51.3	51.30	**	1	0%	37.70	51.30	42.87	7.37	3	0%
Penta	PCB 88/91	0.369-0.406	pg/L	6.65	6.91	6.78	0.183848	2	0%	8.29	8.29	8.29	**	1	0%	6.65	8.29	7.28	0.88	3	0%
Penta	PCB 89	0.369-0.406	pg/L	0.603	0.753	0.678	0.106066	2	0%	0.894	0.894	0.89	**	1	0%	0.60	0.89	0.75	0.15	3	0%
Penta	PCB 90/101/113	0.369-0.406	pg/L	48.1	52.6	50.35	3.181981	2	0%	61.3	61.3	61.30	**	1	0%	48.10	61.30	54.00	6.71	3	0%
Penta	PCB 92	0.369-0.406	pg/L	9.37	10.4	9.885	0.72832	2	0%	11.7	11.7	11.70	**	1	0%	9.37	11.70	10.49	1.17	3	0%
Penta	PCB 93/95/98/100/102	0.369-0.406	pg/L	39.1	40.2	39.65	0.777817	2	0%	47.4	47.4	47.40	**	1	0%	39.10	47.40	42.23	4.51	3	0%
Penta	PCB 94	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Penta	PCB 96	0.369-0.406	pg/L	0.408	0.417	0.4125	0.006364	2	0%	0.477	0.477	0.48	**	1	0%	0.41	0.48	0.43	0.04	3	0%
Penta	PCB 103	0.369-0.406	pg/L	<0.39	0.446	0.418	0.039598	2	50%	0.452	0.452	0.45	**	1	50%	<0.39	0.45	0.43	0.03	3	33%
Penta	PCB 104	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Penta	PCB 105	0.369-0.406	pg/L	16.9	17.8	17.35	0.636396	2	0%	26.4	26.4	26.40	**	1	0%	16.90	26.40	20.37	5.24	3	0%
Penta	PCB 106	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Penta	PCB 107	0.369-0.406	pg/L	2.6	2.62	2.61	0.014142	2	0%	3.54	3.54	3.54	**	1	0%	2.60	3.54	2.92	0.54	3	0%
Penta	PCB 108/124	0.369-0.406	pg/L	1.78	1.91	1.845	0.091924	2	0%	2.55	2.55	2.55	**	1	0%	1.78	2.55	2.08	0.41	3	0%
Penta	PCB 110/115	0.369-0.406	pg/L	59.1	61.1	60.1	1.414214	2	0%	78.5	78.5	78.50	**	1	0%	59.10	78.50	66.23	10.67	3	0%
Penta	PCB 111	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Penta	PCB 112	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Penta	PCB 114	0.369-0.406	pg/L	1.23	1.32	1.275	0.06364	2	0%	1.55	1.55	1.55	**	1	0%	1.23	1.55	1.37	0.17	3	0%
Penta	PCB 118	0.369-0.406	pg/L	37.4	42.1	39.75	3.323402	2	0%	51.5	51.5	51.50	**	1	0%	37.40	51.50	43.67	7.18	3	0%
Penta	PCB 120	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Penta	PCB 121	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Penta	PCB 122	0.369-0.406	pg/L	0.785	0.911	0.848	0.089095	2	0%	1.04	1.04	1.04	**	1	0%	0.79	1.04	0.91	0.13	3	0%
Penta	PCB 123	0.369-0.406	pg/L	0.752	1.04	0.896	0.203647	2	0%	1.22	1.22	1.22	**	1	0%	0.75	1.22	1.00	0.24	3	0%
Penta	PCB 126	0.369-0.406	pg/L	<0.39	0.469	0.4295	0.055861	2	50%	0.952	0.952	0.95	**	1	50%	<0.39	0.95	0.60	0.30	3	33%
Penta	PCB 127	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Hexa	PCB 128/166	0.369-0.406	pg/L	9.03	10.3	9.865	0.898026	2	0%	14.4	14.4	14.40	**	1	0%	9.03	14.40	11.24	2.81	3	0%
Hexa	PCB 129/138/160/163	0.369-0.406	pg/L	52	58.1	55.05	4.313351	2	0%	75.5	75.5	75.50	**	1	0%	52.00	75.50	61.87	12.19	3	0%
Hexa	PCB 130	0.369-0.406	pg/L	3.06	3.52	3.29	0.325269	2	0%	4.51	4.51	4.51	**	1	0%	3.06	4.51	3.70	0.74	3	0%
Hexa	PCB 131	0.369-0.406	pg/L	0.81	0.834	0.822	0.016971	2	0%	1.01	1.01	1.01	**	1	0%	0.81	1.01	0.88	0.11	3	0%
Hexa	PCB 132	0.369-0.406	pg/L	15.5	16.1	15.8	0.424264	2	0%	20.6	20.6	20.60	**	1	0%	15.50	20.60	17.40	2.79	3	0%
Hexa	PCB 133	0.369-0.406	pg/L	1	1.02	1.01	0.014142	2	0%	1.12	1.12	1.12	**	1	0%	1.00	1.12	1.05	0.06	3	0%
Hexa	PCB 134/143	0.369-0.406	pg/L	2.57	2.87	2.72	0.212132	2	0%	3.57	3.57	3.57	**	1	0%	2.57	3.57	3.00	0.51	3	0%
Hexa	PCB 135/151/154	0.369-0.406	pg/L	16.2	17.7	16.95	1.06066	2	0%	20.2	20.2	20.20	**	1	0%	16.20	20.20	18.03	2.02	3	0%
Hexa	PCB 136	0.369-0.406	pg/L	6.67	6.79	6.73	0.084853	2	0%	7.7	7.7	7.70	**	1	0%	6.67	7.70	7.05	0.56	3	0%
Hexa	PCB 137	0.369-0.406	pg/L	2.39	2.84	2.615	0.318198	2	0%	2.93	2.93	2.93	**	1	0%	2.39	2.93	2.72	0.29	3	0%
Hexa	PCB 139/140	0.369-0.406	pg/L	0.949	1.18	1.0645	0.163342	2	0%	1.29	1.29	1.29	**	1	0%	0.95	1.29	1.14	0.17	3	0%
Hexa	PCB 141	0.369-0.406	pg/L	8.57	9.23	8.9	0.46669	2	0%	10.5	10.5	10.50	**	1	0%	8.57	10.50	9.43	0.98	3	0%
Hexa	PCB 142	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Hexa	PCB 144	0.369-0.406	pg/L	2.49	2.62	2.555	0.091924	2	0%	3.01	3.01	3.01	**	1	0%	2.49	3.01	2.71	0.27	3	0%
Hexa	PCB 145	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Hexa	PCB 146	0.369-0.406	pg/L	6.94	7.75	7.345	0.572756	2	0%	8.6	8.6	8.60	**	1	0%	6.94	8.60	7.76	0.83	3	0%
Hexa	PCB 147/149	0.369-0.406	pg/L	34.3	37.3	35.8	2.12132	2	0%	44.7	44.7	44.70	**	1	0%	34.30	44.70	38.77	5.35	3	0%
Hexa	PCB 148	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Hexa	PCB 150	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Hexa	PCB 152	0.369-0.406	pg/L	<0.369	1.71	1.0395	0.94823	2	50%	<0.406	<0.406	<0.406	**	1	50%	<0.369	1.71	0.83	0.76	3	67%
Hexa	PCB 153/168	0.369-0.406	pg/L	46.5	53.9	50.2	5.23259	2	0%	59.3	59.3	59.30	**	1	0%	46.50	59.30	53.23	6.43	3	0%
Hexa	PCB 155	0.369-0.406	pg/L	1.89	2.89	2.39	0.707107	2	0%	2.07	2.07	2.07	**	1	0%	1.89	2.89	2.28	0.53	3	0%
Hexa	PCB 156/157	0.369-0.406	pg/L	5.35	7.22	6.285	1.32229	2	0%	8.12	8.12	8.12	**	1	0%	5.35	8.12	6.90	1.41	3	0%
Hexa	PCB 158	0.369-0.406	pg/L	4.53	4.59	4.56	0.042426	2	0%	6.53	6.53	6.53	**	1	0%	4.53	6.53	5.22	1.14	3	0%
Hexa	PCB 159	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Hexa	PCB 161	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Hexa	PCB 162</																				

GLENBROOK CSO QUALITY MONITORING, 2025 – UNFILTERED SAMPLE POLYCHLORINATED BIPHENYLS (PCBs) CONTINUED

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹																	
				Grab					Composite					Total ³							
				Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²			
Polychlorinated biphenyls (PCBs)																					
Hepta	PCB 170	0.369-0.406	pg/L	9.72	9.8	9.76	0.056569	2	0%	12.1	12.1	12.10	**	1	0%	9.72	12.10	10.54	1.35	3	0%
Hepta	PCB 171/173	0.369-0.406	pg/L	2.91	3.12	3.015	0.148492	2	0%	3.82	3.82	3.82	**	1	0%	2.91	3.82	3.28	0.48	3	0%
Hepta	PCB 172	0.369-0.406	pg/L	1.86	2.52	2.19	0.46669	2	0%	2.57	2.57	2.57	**	1	0%	1.86	2.57	2.32	0.40	3	0%
Hepta	PCB 174	0.369-0.406	pg/L	8.39	12	10.195	2.552655	2	0%	12	12	12.00	**	1	0%	8.39	12.00	10.80	2.08	3	0%
Hepta	PCB 175	0.369-0.406	pg/L	0.486	0.511	0.4985	0.017678	2	0%	0.692	0.692	0.69	**	1	0%	0.49	0.69	0.56	0.11	3	0%
Hepta	PCB 176	0.369-0.406	pg/L	1.31	1.64	1.475	0.233345	2	0%	1.73	1.73	1.73	**	1	0%	1.31	1.73	1.56	0.22	3	0%
Hepta	PCB 177	0.369-0.406	pg/L	5.91	7.42	6.665	1.067731	2	0%	8.22	8.22	8.22	**	1	0%	5.91	8.22	7.18	1.17	3	0%
Hepta	PCB 178	0.369-0.406	pg/L	2.92	3.06	2.99	0.098995	2	0%	3.66	3.66	3.66	**	1	0%	2.92	3.66	3.21	0.39	3	0%
Hepta	PCB 179	0.369-0.406	pg/L	4.76	6.03	5.395	0.898026	2	0%	6.08	6.08	6.08	**	1	0%	4.76	6.08	5.62	0.75	3	0%
Hepta	PCB 180/193	0.369-0.406	pg/L	27.7	30	28.85	1.626346	2	0%	33.3	33.3	33.30	**	1	0%	27.70	33.30	30.33	2.81	3	0%
Hepta	PCB 181	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Hepta	PCB 182	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Hepta	PCB 183/185	0.369-0.406	pg/L	6.79	8.49	7.64	1.202082	2	0%	9.39	9.39	9.39	**	1	0%	6.79	9.39	8.22	1.32	3	0%
Hepta	PCB 184	0.369-0.406	pg/L	2.98	5.02	4	1.442498	2	0%	2.65	2.65	2.65	**	1	0%	2.65	5.02	3.55	1.28	3	0%
Hepta	PCB 186	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Hepta	PCB 187	0.369-0.406	pg/L	15.9	16.9	16.4	0.707107	2	0%	20	20	20.00	**	1	0%	15.90	20.00	17.60	2.14	3	0%
Hepta	PCB 188	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Hepta	PCB 189	0.369-0.406	pg/L	0.587	0.59	0.5885	0.002121	2	0%	0.699	0.699	0.70	**	1	0%	0.59	0.70	0.63	0.06	3	0%
Hepta	PCB 190	0.369-0.406	pg/L	1.91	2.78	2.345	0.615183	2	0%	2.95	2.95	2.95	**	1	0%	1.91	2.95	2.55	0.56	3	0%
Hepta	PCB 191	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	0.644	0.644	0.64	**	1	100%	<0.369	0.64	0.47	0.15	3	67%
Hepta	PCB 192	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Octa	PCB 194	0.369-0.406	pg/L	5.9	7.87	6.885	1.393	2	0%	7.89	7.89	7.89	**	1	0%	5.90	7.89	7.22	1.14	3	0%
Octa	PCB 195	0.369-0.406	pg/L	1.78	2.58	2.18	0.565685	2	0%	2.65	2.65	2.65	**	1	0%	1.78	2.65	2.34	0.48	3	0%
Octa	PCB 196	0.369-0.406	pg/L	2.26	3.33	2.795	0.756604	2	0%	3.32	3.32	3.32	**	1	0%	2.26	3.33	2.97	0.61	3	0%
Octa	PCB 197/200	0.369-0.406	pg/L	1.08	1.51	1.295	0.304056	2	0%	1.54	1.54	1.54	**	1	0%	1.08	1.54	1.38	0.26	3	0%
Octa	PCB 198/199	0.369-0.406	pg/L	7.04	8	7.52	0.678823	2	0%	9.61	9.61	9.61	**	1	0%	7.04	9.61	8.22	1.30	3	0%
Octa	PCB 201	0.369-0.406	pg/L	0.728	0.933	0.8305	0.144957	2	0%	1.04	1.04	1.04	**	1	0%	0.73	1.04	0.90	0.16	3	0%
Octa	PCB 202	0.369-0.406	pg/L	1.41	1.7	1.555	0.205061	2	0%	1.88	1.88	1.88	**	1	0%	1.41	1.88	1.66	0.24	3	0%
Octa	PCB 203	0.369-0.406	pg/L	4	4.9	4.45	0.636396	2	0%	5.67	5.67	5.67	**	1	0%	4.00	5.67	4.86	0.84	3	0%
Octa	PCB 204	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	<0.406	<0.406	<0.406	**	1	100%	<0.369	<0.406	<0.406	0.02	3	100%
Octa	PCB 205	0.369-0.406	pg/L	<0.369	<0.39	<0.39	0.014849	2	100%	0.468	0.468	0.47	**	1	100%	<0.369	0.47	0.41	0.05	3	67%
Nona	PCB 206	0.369-0.406	pg/L	3.9	7.61	5.755	2.623366	2	0%	6.11	6.11	6.11	**	1	0%	3.90	7.61	5.87	1.87	3	0%
Nona	PCB 207	0.369-0.406	pg/L	0.531	0.712	0.6215	0.127986	2	0%	0.769	0.769	0.77	**	1	0%	0.53	0.77	0.67	0.12	3	0%
Nona	PCB 208	0.369-0.406	pg/L	1.23	2.02	1.625	0.558614	2	0%	1.68	1.68	1.68	**	1	0%	1.23	2.02	1.64	0.40	3	0%
Deca	PCB 209	0.369-0.406	pg/L	3.09	4.35	3.72	0.890955	2	0%	2.88	2.88	2.88	**	1	0%	2.88	4.35	3.44	0.80	3	0%
** Not applicable < Results reported less than detection limit 1 Range, mean (geomean for microbiology), standard deviation, and number of samples (N) are provided. When results are less than (greater than for microbiology) the detection limit, the detection limit was used to calculate each statistical value 2 Percent of samples with result less than detection limit 3 Total includes both grab and composite																					

GLENBROOK CSO QUALITY MONITORING, 2025 – FILTRATE POLYCHLORINATED BIPHENYLS (PCBs)

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹																	
				Grab					Composite					Total ³							
				Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²			
Polychlorinated biphenyls (PCBs)																					
Mono	PCB 1	0.361-0.398	pg/L	12	12	12	**	1	0%	24.9	24.9	24.90	**	1	0%	12.00	24.90	18.45	**	2	0%
Mono	PCB 2	0.361-0.398	pg/L	5.8	5.8	5.8	**	1	0%	7.14	7.14	7.14	**	1	0%	5.80	7.14	6.47	**	2	0%
Mono	PCB 3	0.361-0.398	pg/L	13	13	13	**	1	0%	32.9	32.9	32.90	**	1	0%	13.00	32.90	22.95	**	2	0%
Di	PCB 4	0.361-0.398	pg/L	3.26	3.26	3.26	**	1	0%	3.28	3.28	3.28	**	1	0%	3.26	3.28	3.27	**	2	0%
Di	PCB 5	0.361-0.398	pg/L	1.24	1.24	1.24	**	1	0%	1.25	1.25	1.25	**	1	0%	1.24	1.25	1.25	**	2	0%
Di	PCB 6	0.361-0.398	pg/L	3.02	3.02	3.02	**	1	0%	3.54	3.54	3.54	**	1	0%	3.02	3.54	3.28	**	2	0%
Di	PCB 7	0.361-0.398	pg/L	3.5	3.5	3.5	**	1	0%	3.26	3.26	3.26	**	1	0%	3.26	3.50	3.38	**	2	0%
Di	PCB 8	0.361-0.398	pg/L	7.17	7.17	7.17	**	1	0%	10.7	10.7	10.70	**	1	0%	7.17	10.70	8.94	**	2	0%
Di	PCB 9	0.361-0.398	pg/L	0.641	0.641	0.641	**	1	0%	0.908	0.908	0.91	**	1	0%	0.64	0.91	0.77	**	2	0%
Di	PCB 10	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Di	PCB 11	0.361-0.398	pg/L	61.4	61.4	61.4	**	1	0%	49.1	49.1	49.10	**	1	0%	49.10	61.4	55.3	**	2	0%
Di	PCB 12/13	0.361-0.398	pg/L	2.53	2.53	2.53	**	1	0%	3.86	3.86	3.86	**	1	0%	2.53	3.86	3.20	**	2	0%
Di	PCB 14	0.361-0.398	pg/L	0.547	0.547	0.547	**	1	0%	0.638	0.638	0.64	**	1	0%	0.55	0.64	0.59	**	2	0%
Di	PCB 15	0.361-0.398	pg/L	6.67	6.67	6.67	**	1	0%	24.4	24.4	24.40	**	1	0%	6.67	24.40	15.54	**	2	0%
Tri	PCB 16	0.361-0.398	pg/L	4.85	4.85	4.85	**	1	0%	6.91	6.91	6.91	**	1	0%	4.85	6.91	5.88	**	2	0%
Tri	PCB 17	0.361-0.398	pg/L	3.99	3.99	3.99	**	1	0%	5.58	5.58	5.58	**	1	0%	3.99	5.58	4.79	**	2	0%
Tri	PCB 18/30	0.361-0.398	pg/L	12.5	12.5	12.5	**	1	0%	19	19	19.00	**	1	0%	12.50	19.00	15.75	**	2	0%
Tri	PCB 19	0.361-0.398	pg/L	1.27	1.27	1.27	**	1	0%	1.09	1.09	1.09	**	1	0%	1.09	1.27	1.18	**	2	0%
Tri	PCB 20/28	0.361-0.398	pg/L	18.2	18.2	18.2	**	1	0%	57	57	57.00	**	1	0%	18.20	57.00	37.60	**	2	0%
Tri	PCB 21/33	0.361-0.398	pg/L	15.2	15.2	15.2	**	1	0%	52.2	52.2	52.20	**	1	0%	15.20	52.20	33.70	**	2	0%
Tri	PCB 22	0.361-0.398	pg/L	8.53	8.53	8.53	**	1	0%	27.6	27.6	27.60	**	1	0%	8.53	27.60	18.07	**	2	0%
Tri	PCB 23	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Tri	PCB 24	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Tri	PCB 25	0.361-0.398	pg/L	1.82	1.82	1.82	**	1	0%	5.79	5.79	5.79	**	1	0%	1.82	5.79	3.81	**	2	0%
Tri	PCB 26/29	0.361-0.398	pg/L	3.67	3.67	3.67	**	1	0%	12.2	12.2	12.20	**	1	0%	3.67	12.20	7.94	**	2	0%
Tri	PCB 27	0.361-0.398	pg/L	0.858	0.858	0.858	**	1	0%	1.43	1.43	1.43	**	1	0%	0.86	1.43	1.14	**	2	0%
Tri	PCB 31	0.361-0.398	pg/L	19.4	19.4	19.4	**	1	0%	63.5	63.5	63.50	**	1	0%	19.40	63.50	41.45	**	2	0%
Tri	PCB 32	0.361-0.398	pg/L	3.28	3.28	3.28	**	1	0%	5.45	5.45	5.45	**	1	0%	3.28	5.45	4.37	**	2	0%
Tri	PCB 34	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Tri	PCB 35	0.361-0.398	pg/L	1.27	1.27	1.27	**	1	0%	2.31	2.31	2.31	**	1	0%	1.27	2.31	1.79	**	2	0%
Tri	PCB 36	0.361-0.398	pg/L	0.659	0.659	0.659	**	1	0%	0.439	0.439	0.44	**	1	0%	0.44	0.66	0.55	**	2	0%
Tri	PCB 37	0.361-0.398	pg/L	11.2	11.2	11.2	**	1	0%	50	50	50.00	**	1	0%	11.20	50.00	30.60	**	2	0%
Tri	PCB 38	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Tri	PCB 39	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Tetra	PCB 40/41/71	0.361-0.398	pg/L	7.64	7.64	7.64	**	1	0%	18.8	18.8	18.80	**	1	0%	7.64	18.80	13.22	**	2	0%
Tetra	PCB 42	0.361-0.398	pg/L	3.69	3.69	3.69	**	1	0%	7.98	7.98	7.98	**	1	0%	3.69	7.98	5.84	**	2	0%
Tetra	PCB 43	0.361-0.398	pg/L	0.483	0.483	0.483	**	1	0%	0.985	0.985	0.99	**	1	0%	0.48	0.99	0.73	**	2	0%
Tetra	PCB 44/47/65	0.361-0.398	pg/L	22.1	22.1	22.1	**	1	0%	38.6	38.6	38.60	**	1	0%	22.10	38.60	30.35	**	2	0%
Tetra	PCB 45/51	0.361-0.398	pg/L	3.51	3.51	3.51	**	1	0%	4.16	4.16	4.16	**	1	0%	3.51	4.16	3.84	**	2	0%
Tetra	PCB 46	0.361-0.398	pg/L	0.737	0.737	0.737	**	1	0%	1.03	1.03	1.03	**	1	0%	0.74	1.03	0.88	**	2	0%
Tetra	PCB 48	0.361-0.398	pg/L	2.87	2.87	2.87	**	1	0%	6.29	6.29	6.29	**	1	0%	2.87	6.29	4.58	**	2	0%
Tetra	PCB 49/69	0.361-0.398	pg/L	9.59	9.59	9.59	**	1	0%	19.7	19.7	19.70	**	1	0%	9.59	19.70	14.65	**	2	0%
Tetra	PCB 50/53	0.361-0.398	pg/L	1.69	1.69	1.69	**	1	0%	2.25	2.25	2.25	**	1	0%	1.69	2.25	1.97	**	2	0%
Tetra	PCB 52	0.361-0.398	pg/L	21	21	21	**	1	0%	37.3	37.3	37.30	**	1	0%	21.00	37.30	29.15	**	2	0%
Tetra	PCB 54	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Tetra	PCB 55	0.361-0.398	pg/L	0.43	0.43	0.43	**	1	0%	1.66	1.66	1.66	**	1	0%	0.43	1.66	1.05	**	2	0%
Tetra	PCB 56	0.361-0.398	pg/L	5.71	5.71	5.71	**	1	0%	18.8	18.8	18.80	**	1	0%	5.71	18.80	12.26	**	2	0%
Tetra	PCB 57	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Tetra	PCB 58	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Tetra	PCB 59/62/75	0.361-0.398	pg/L	1.57	1.57	1.57	**	1	0%	4.16	4.16	4.16	**	1	0%	1.57	4.16	2.87	**	2	0%
Tetra	PCB 60	0.361-0.398	pg/L	3.95	3.95	3.95	**	1	0%	12.8	12.8	12.80	**	1	0%	3.95	12.80	8.38	**	2	0%
Tetra	PCB 61/70/74/76	0.361-0.398	pg/L	27.4	27.4	27.4	**	1	0%	80	80	80.00	**	1	0%	27.40	80.00	53.70	**	2	0%
Tetra	PCB 63	0.361-0.398	pg/L	0.656	0.656	0.656	**	1	0%	1.89	1.89	1.89	**	1	0%	0.66	1.89	1.27	**	2	0%
Tetra	PCB 64	0.361-0.398	pg/L	6.7	6.7	6.7	**	1	0%	16.1	16.1	16.10	**	1	0%	6.70	16.10	11.40	**	2	0%
Tetra	PCB 66	0.361-0.398	pg/L	13.6	13.6	13.6	**	1	0%	44	44	44.00	**	1	0%	13.60	44.00	28.80	**	2	0%
Tetra	PCB 67	0.361-0.398	pg/L	0.66	0.66	0.66	**	1	0%	2.2	2.2	2.20	**	1	0%	0.66	2.20	1.43	**	2	0%
Tetra	PCB 68	0.361-0.398	pg/L	1.05	1.05	1.05	**	1	0%	0.953	0.953	0.95	**	1	0%	0.95	1.05	1.00	**	2	0%
Tetra	PCB 72	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Tetra	PCB 73	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Tetra	PCB 77	0.361-0.398	pg/L	1.76	1.76	1.76	**	1	0%	4.69											

GLENBROOK CSO QUALITY MONITORING, 2025 – FILTRATE POLYCHLORINATED BIPHENYLS (PCBs)
CONTINUED

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹																	
				Grab					Composite					Total ³							
				Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²			
Polychlorinated biphenyls (PCBs)																					
Penta	PCB 82	0.361-0.398	pg/L	2.17	2.17	2.17	**	1	0%	3.04	3.04	3.04	**	1	0%	2.17	3.04	2.61	**	2	0%
Penta	PCB 83/99	0.361-0.398	pg/L	10.3	10.3	10.3	**	1	0%	12.5	12.5	12.50	**	1	0%	10.30	12.50	11.40	**	2	0%
Penta	PCB 84	0.361-0.398	pg/L	4.07	4.07	4.07	**	1	0%	4.14	4.14	4.14	**	1	0%	4.07	4.14	4.11	**	2	0%
Penta	PCB 85/116/117	0.361-0.398	pg/L	3.86	3.86	3.86	**	1	0%	5.15	5.15	5.15	**	1	0%	3.86	5.15	4.51	**	2	0%
Penta	PCB 86/87/97/109/119/125	0.361-0.398	pg/L	15.6	15.6	15.6	**	1	0%	21.3	21.3	21.30	**	1	0%	15.60	21.30	18.45	**	2	0%
Penta	PCB 88/91	0.361-0.398	pg/L	2.48	2.48	2.48	**	1	0%	2.43	2.43	2.43	**	1	0%	2.43	2.48	2.46	**	2	0%
Penta	PCB 89	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Penta	PCB 90/101/113	0.361-0.398	pg/L	20.9	20.9	20.9	**	1	0%	28.8	28.8	28.80	**	1	0%	20.90	28.80	24.85	**	2	0%
Penta	PCB 92	0.361-0.398	pg/L	4.03	4.03	4.03	**	1	0%	5.3	5.3	5.30	**	1	0%	4.03	5.30	4.67	**	2	0%
Penta	PCB 93/95/98/100/102	0.361-0.398	pg/L	15	15	15	**	1	0%	15.7	15.7	15.70	**	1	0%	15.00	15.70	15.35	**	2	0%
Penta	PCB 94	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Penta	PCB 96	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Penta	PCB 103	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Penta	PCB 104	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Penta	PCB 105	0.361-0.398	pg/L	7.31	7.31	7.31	**	1	0%	9.52	9.52	9.52	**	1	0%	7.31	9.52	8.42	**	2	0%
Penta	PCB 106	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Penta	PCB 107	0.361-0.398	pg/L	1.16	1.16	1.16	**	1	0%	1.51	1.51	1.51	**	1	0%	1.16	1.51	1.34	**	2	0%
Penta	PCB 108/124	0.361-0.398	pg/L	0.772	0.772	0.772	**	1	0%	1.24	1.24	1.24	**	1	0%	0.77	1.24	1.01	**	2	0%
Penta	PCB 110/115	0.361-0.398	pg/L	22.7	22.7	22.7	**	1	0%	34	34	34.00	**	1	0%	22.70	34.00	28.35	**	2	0%
Penta	PCB 111	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Penta	PCB 112	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Penta	PCB 114	0.361-0.398	pg/L	0.428	0.428	0.428	**	1	0%	0.694	0.694	0.69	**	1	0%	0.43	0.69	0.56	**	2	0%
Penta	PCB 118	0.361-0.398	pg/L	16.5	16.5	16.5	**	1	0%	23.8	23.8	23.80	**	1	0%	16.50	23.80	20.15	**	2	0%
Penta	PCB 120	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Penta	PCB 121	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Penta	PCB 122	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Penta	PCB 123	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	0.514	0.514	0.51	**	1	100%	<0.361	0.51	0.44	**	2	50%
Penta	PCB 126	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Penta	PCB 127	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Hexa	PCB 128/166	0.361-0.398	pg/L	3.21	3.21	3.21	**	1	0%	2.28	2.28	2.28	**	1	0%	2.28	3.21	2.75	**	2	0%
Hexa	PCB 129/138/160/163	0.361-0.398	pg/L	20.8	20.8	20.8	**	1	0%	15.1	15.1	15.10	**	1	0%	15.10	20.80	17.95	**	2	0%
Hexa	PCB 130	0.361-0.398	pg/L	1.15	1.15	1.15	**	1	0%	0.981	0.981	0.98	**	1	0%	0.98	1.15	1.07	**	2	0%
Hexa	PCB 131	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Hexa	PCB 132	0.361-0.398	pg/L	5.21	5.21	5.21	**	1	0%	4.1	4.1	4.10	**	1	0%	4.10	5.21	4.66	**	2	0%
Hexa	PCB 133	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Hexa	PCB 134/143	0.361-0.398	pg/L	0.868	0.868	0.868	**	1	0%	0.68	0.68	0.68	**	1	0%	0.68	0.87	0.77	**	2	0%
Hexa	PCB 135/151/154	0.361-0.398	pg/L	5.73	5.73	5.73	**	1	0%	4.94	4.94	4.94	**	1	0%	4.94	5.73	5.34	**	2	0%
Hexa	PCB 136	0.361-0.398	pg/L	2.2	2.2	2.2	**	1	0%	1.33	1.33	1.33	**	1	0%	1.33	2.20	1.77	**	2	0%
Hexa	PCB 137	0.361-0.398	pg/L	1.02	1.02	1.02	**	1	0%	0.882	0.882	0.88	**	1	0%	0.88	1.02	0.95	**	2	0%
Hexa	PCB 139/140	0.361-0.398	pg/L	0.426	0.426	0.426	**	1	0%	<0.398	<0.398	<0.398	**	1	0%	<0.398	0.43	0.41	**	2	50%
Hexa	PCB 141	0.361-0.398	pg/L	3.02	3.02	3.02	**	1	0%	2.83	2.83	2.83	**	1	0%	2.83	3.02	2.93	**	2	0%
Hexa	PCB 142	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Hexa	PCB 144	0.361-0.398	pg/L	0.907	0.907	0.907	**	1	0%	0.887	0.887	0.89	**	1	0%	0.89	0.91	0.90	**	2	0%
Hexa	PCB 145	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Hexa	PCB 146	0.361-0.398	pg/L	2.86	2.86	2.86	**	1	0%	2.25	2.25	2.25	**	1	0%	2.25	2.86	2.56	**	2	0%
Hexa	PCB 147/149	0.361-0.398	pg/L	12.3	12.3	12.3	**	1	0%	10.6	10.6	10.60	**	1	0%	10.60	12.30	11.45	**	2	0%
Hexa	PCB 148	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Hexa	PCB 150	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Hexa	PCB 152	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Hexa	PCB 153/168	0.361-0.398	pg/L	19.4	19.4	19.4	**	1	0%	15.6	15.6	15.60	**	1	0%	15.60	19.40	17.50	**	2	0%
Hexa	PCB 155	0.361-0.398	pg/L	1.16	1.16	1.16	**	1	0%	<0.398	<0.398	<0.398	**	1	0%	<0.398	1.16	0.78	**	2	50%
Hexa	PCB 156/157	0.361-0.398	pg/L	2.45	2.45	2.45	**	1	0%	1.62	1.62	1.62	**	1	0%	1.62	2.45	2.04	**	2	0%
Hexa	PCB 158	0.361-0.398	pg/L	1.63	1.63	1.63	**	1	0%	1.51	1.51	1.51	**	1	0%	1.51	1.63	1.57	**	2	0%
Hexa	PCB 159	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Hexa	PCB 161	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Hexa	PCB 162	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Hexa	PCB 164	0.361-0.398	pg/L	1.08	1.08	1.08	**	1	0%	0.824	0.824	0.82	**	1	0%	0.82	1.08	0.95	**	2	0%
Hexa	PCB 165	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<										

GLENBROOK CSO QUALITY MONITORING, 2025 – FILTRATE POLYCHLORINATED BIPHENYLS (PCBs)
CONTINUED

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹																	
				Grab					Composite					Total ³							
				Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²			
Polychlorinated biphenyls (PCBs)																					
Hepta	PCB 170	0.361-0.398	pg/L	3.29	3.29	3.29	**	1	0%	1.42	1.42	1.42	**	1	0%	1.42	3.29	2.36	**	2	0%
Hepta	PCB 171/173	0.361-0.398	pg/L	0.902	0.902	0.902	**	1	0%	0.5	0.5	0.50	**	1	0%	0.50	0.90	0.70	**	2	0%
Hepta	PCB 172	0.361-0.398	pg/L	0.605	0.605	0.605	**	1	0%	<0.398	<0.398	<0.398	**	1	0%	<0.398	0.61	0.50	**	2	50%
Hepta	PCB 174	0.361-0.398	pg/L	2.65	2.65	2.65	**	1	0%	1.54	1.54	1.54	**	1	0%	1.54	2.65	2.10	**	2	0%
Hepta	PCB 175	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Hepta	PCB 176	0.361-0.398	pg/L	0.473	0.473	0.473	**	1	0%	<0.398	<0.398	<0.398	**	1	0%	<0.398	0.47	0.44	**	2	50%
Hepta	PCB 177	0.361-0.398	pg/L	1.82	1.82	1.82	**	1	0%	1.11	1.11	1.11	**	1	0%	1.11	1.82	1.47	**	2	0%
Hepta	PCB 178	0.361-0.398	pg/L	0.947	0.947	0.947	**	1	0%	0.556	0.556	0.56	**	1	0%	0.56	0.95	0.75	**	2	0%
Hepta	PCB 179	0.361-0.398	pg/L	1.6	1.6	1.6	**	1	0%	0.958	0.958	0.96	**	1	0%	0.96	1.60	1.28	**	2	0%
Hepta	PCB 180/193	0.361-0.398	pg/L	9.33	9.33	9.33	**	1	0%	4.33	4.33	4.33	**	1	0%	4.33	9.33	6.83	**	2	0%
Hepta	PCB 181	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Hepta	PCB 182	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Hepta	PCB 183/185	0.361-0.398	pg/L	2.36	2.36	2.36	**	1	0%	1.58	1.58	1.58	**	1	0%	1.58	2.36	1.97	**	2	0%
Hepta	PCB 184	0.361-0.398	pg/L	1.9	1.9	1.9	**	1	0%	<0.398	<0.398	<0.398	**	1	0%	<0.398	1.90	1.15	**	2	50%
Hepta	PCB 186	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Hepta	PCB 187	0.361-0.398	pg/L	4.86	4.86	4.86	**	1	0%	3.23	3.23	3.23	**	1	0%	3.23	4.86	4.05	**	2	0%
Hepta	PCB 188	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Hepta	PCB 189	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Hepta	PCB 190	0.361-0.398	pg/L	0.598	0.598	0.598	**	1	0%	<0.398	<0.398	<0.398	**	1	0%	<0.398	0.60	0.50	**	2	50%
Hepta	PCB 191	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Hepta	PCB 192	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Octa	PCB 194	0.361-0.398	pg/L	2.38	2.38	2.38	**	1	0%	1.45	1.45	1.45	**	1	0%	1.45	2.38	1.92	**	2	0%
Octa	PCB 195	0.361-0.398	pg/L	0.578	0.578	0.578	**	1	0%	<0.398	<0.398	<0.398	**	1	0%	<0.398	0.58	0.49	**	2	50%
Octa	PCB 196	0.361-0.398	pg/L	0.692	0.692	0.692	**	1	0%	<0.398	<0.398	<0.398	**	1	0%	<0.398	0.69	0.55	**	2	50%
Octa	PCB 197/200	0.361-0.398	pg/L	0.393	0.393	0.393	**	1	0%	<0.398	<0.398	<0.398	**	1	0%	0.39	<0.398	0.40	**	2	50%
Octa	PCB 198/199	0.361-0.398	pg/L	1.97	1.97	1.97	**	1	0%	1.08	1.08	1.08	**	1	0%	1.08	1.97	1.53	**	2	0%
Octa	PCB 201	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Octa	PCB 202	0.361-0.398	pg/L	0.487	0.487	0.487	**	1	0%	0.452	0.452	0.45	**	1	0%	0.45	0.49	0.47	**	2	0%
Octa	PCB 203	0.361-0.398	pg/L	1.1	1.1	1.1	**	1	0%	0.539	0.539	0.54	**	1	0%	0.54	1.10	0.82	**	2	0%
Octa	PCB 204	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Octa	PCB 205	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Nona	PCB 206	0.361-0.398	pg/L	0.884	0.884	0.884	**	1	0%	0.464	0.464	0.46	**	1	0%	0.46	0.88	0.67	**	2	0%
Nona	PCB 207	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Nona	PCB 208	0.361-0.398	pg/L	<0.361	<0.361	<0.361	**	1	100%	<0.398	<0.398	<0.398	**	1	100%	<0.361	<0.398	<0.398	**	2	100%
Deca	PCB 209	0.361-0.398	pg/L	0.566	0.566	0.566	**	1	0%	<0.398	<0.398	<0.398	**	1	0%	<0.398	0.57	0.48	**	2	50%
** Not applicable < Results reported less than detection limit 1 Range, mean (geomean for microbiology), standard deviation, and number of samples (N) are provided. When results are less than (greater than for microbiology) the detection limit, the detection limit was used to calculate each statistical value 2 Percent of samples with result less than detection limit 3 Total includes both grab and composite																					

HEATHER CSO QUALITY MONITORING, 2025 – MICROBIOLOGY, GENERAL CHEMISTRY

Analyte	Detection Limit	Units	Descriptive Statistics ¹					
			Composite					
			Range	Mean	Stdev	N	%ND ³	
Microbiology ²								
Ecoli	10000	MPN/100ml	41000	41000	41000	**	1	0%
Enterococci	10000	MPN/100ml	140000	140000	140000	**	1	0%
Fecal Coliform	10000	MPN/100ml	70000	70000	70000	**	1	0%
General Chemistry and Physical								
Biochemical Oxygen Demand	4	mg/L	16	16	16	**	1	0%
Chemical Oxygen Demand	20	mg/L	60	60	60	**	1	0%
Conductivity	1	µmho/cm	131	131	131	**	1	0%
Hardness as CaCO3	**	mg/L	**	**	**	**	0	**
Nitrogen - Ammonia as N	0.2	mg/L	0.7	1	0.7	**	1	0%
Nitrogen - Nitrate as N	0.01	mg/L	0.35	0	0.4	**	1	0%
Nitrogen - Nitrite as N	0.01	mg/L	0.02	0	0.0	**	1	0%
pH	0.1	PH	7.2	7	7.2	**	1	0%
Total Suspended Solids	4	mg/L	40	40	40	**	1	0%
Volatile Suspended Solids	4	mg/L	24	24	24	**	1	0%
Organic Carbon Total	**	mg/L	**	**	**	**	0	**
Organic Carbon Dissolved	**	mg/L	**	**	**	**	0	**

** Not applicable

< Results reported less than detection limit

1 Range, mean (geomean for microbiology), standard deviation, and number of samples (N) are provided. When results are less than (greater than for microbiology) the detection limit, the detection limit was used to calculate each statistical value

2 Every sample for microbiology was collected with a duplicate, the result reported is the geomean of duplicates

3 Percent of samples with result less than detection limit

HEATHER CSO QUALITY MONITORING, 2025 – ORGANICS

Analyte	Detection Limit	Units	Descriptive Statistics ¹					
			Composite					
			Range	Mean	Stdev	N	%ND ²	
Pharmaceuticals								
Acetaminophen	30.0	ng/L	7300	7300	7300	**	1	0%
Bisphenol A	5.0	ng/L	102	102	102	**	1	0%
Caffeine	100.0	ng/L	9400	9400	9400	**	1	0%
Carbamazepine	5.0	ng/L	<5	<5	<5	**	1	100%
Diclofenac	10.0	ng/L	84	84	84	**	1	0%
Fluoxetine	20.0	ng/L	<20	<20	<20	**	1	100%
Gemfibrozil	10.0	ng/L	<10	<10	<10	**	1	100%
Ibuprofen	5.0	ng/L	610	610	610	**	1	0%
Naproxen	5.0	ng/L	233	233	233	**	1	0%
Primidone	5.0	ng/L	<5	<5	<5	**	1	100%
Sulfamethoxazole	1.0	ng/L	9.0	9.0	9.0	**	1	0%
Triclosan	20.0	ng/L	<20	<20	<20	**	1	100%
Trimethoprim	1.0	ng/L	26	26	26	**	1	0%
Sucralose	9.74	ng/L	1110	1110	1110	**	1	0%

** Not applicable

< Results reported less than detection limit

¹ Range, mean (geomean for microbiology), standard deviation, and number of samples (N) are provided.

When results are less than (greater than for microbiology) the detection limit, the detection limit was used to

² Percent of samples with result less than detection limit

HEATHER CSO QUALITY MONITORING, 2024 – UNFILTERED SAMPLE POLYBROMINATED DIPHENYL ETHERS (PBDEs)

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹					
				Grab					
				Range	Mean	Stdev	N	%ND ³	
Polybrominated diphenyl ethers (PBDEs)									
Di	PBDE 7	2.55	pg/L	<2.55	<2.55	<2.55	0	2	100%
Di	PBDE 8/11	2.55	pg/L	<2.55	<2.55	<2.55	0	2	100%
Di	PBDE 10	2.55	pg/L	<2.55	<2.55	<2.55	0	2	100%
Di	PBDE 12/13	2.55	pg/L	<2.55	<2.55	<2.55	0	2	100%
Di	PBDE 15	2.55	pg/L	<2.55	4.79	3.67	1.58392	2	50%
Tri	PBDE 17/25	2.55	pg/L	5.72	27.4	16.56	15.3301	2	0%
Tri	PBDE 28/33	2.55	pg/L	16.8	57.5	37.15	28.7792	2	0%
Tri	PBDE 30	2.55	pg/L	<2.55	<2.55	<2.55	0	2	100%
Tri	PBDE 32	2.55	pg/L	<2.55	<2.55	<2.55	0	2	100%
Tri	PBDE 35	2.55	pg/L	<2.55	<2.55	<2.55	0	2	100%
Tri	PBDE 37	2.55	pg/L	<2.55	<2.55	<2.55	0	2	100%
Tetra	PBDE 47	2.55	pg/L	733	2570	1651.5	1298.96	2	0%
Tetra	PBDE 49	2.55	pg/L	26.9	80.4	53.65	37.8302	2	0%
Tetra	PBDE 51	2.55	pg/L	3.73	9.3	6.515	3.93858	2	0%
Tetra	PBDE 66	2.55	pg/L	23.1	62.6	42.85	27.9307	2	0%
Tetra	PBDE 71	2.55	pg/L	2.9	8.85	5.875	4.20729	2	0%
Tetra	PBDE 75	2.55	pg/L	<2.55	4.17	3.36	1.14551	2	50%
Tetra	PBDE 77	2.55	pg/L	<2.55	<2.55	<2.55	0	2	100%
Tetra	PBDE 79	2.55	pg/L	2.65	5.2	3.925	1.80312	2	0%
Penta	PBDE 85	2.55	pg/L	30	95.5	62.75	46.3155	2	0%
Penta	PBDE 99	2.55	pg/L	682	2300	1491	1144.1	2	0%
Penta	PBDE 100	2.55	pg/L	153	507	330	250.316	2	0%
Penta	PBDE 105	2.55	pg/L	<2.55	<2.55	<2.55	0	2	100%
Penta	PBDE 116	2.55	pg/L	<2.55	<2.55	<2.55	0	2	100%
Penta	PBDE 119/120	2.55	pg/L	2.91	6.55	4.73	2.57387	2	0%
Penta	PBDE 126	2.55	pg/L	<2.55	<2.55	<2.55	0	2	100%
Hexa	PBDE 128	2.55	pg/L	<2.55	<2.55	<2.55	0	2	100%
Hexa	PBDE 138/166	2.55	pg/L	8.99	26.8	17.895	12.5936	2	0%
Hexa	PBDE 140	2.55	pg/L	3.78	9.27	6.525	3.88202	2	0%
Hexa	PBDE 153	2.55	pg/L	72.1	232	152.05	113.066	2	0%
Hexa	PBDE 154	2.55	pg/L	54.8	182	118.4	89.944	2	0%
Hexa	PBDE 155	2.55	pg/L	4.31	11.6	7.955	5.15481	2	0%
Hepta	PBDE 181	2.55-3.47	pg/L	<2.55	<3.47	<3.47	0.65054	2	100%
Hepta	PBDE 183	2.55-2.92	pg/L	64.6	99	81.8	24.3245	2	0%
Hepta	PBDE 190	3.75-6.08	pg/L	<3.75	<6.08	<6.08	1.64756	2	100%
Octa	PBDE 203	6.44-7.32	pg/L	84.2	151	117.6	47.2347	2	0%
Nona	PBDE 206	15.7-17.8	pg/L	999	1780	1389.5	552.25	2	0%
Nona	PBDE 207	25-28.4	pg/L	1110	1860	1485	530.33	2	0%
Nona	PBDE 208	24.9-28.3	pg/L	577	1050	813.5	334.462	2	0%
Deca	PBDE 209	21.3-23.1	pg/L	16100	22500	19300	4525.48	2	0%

** Not applicable

< Results reported less than detection limit

1 Range, mean, standard deviation, and number of samples (N) are provided. When results are less than, the detection limit was used to calculate each statistical value

2 Percent of samples with result less than detection limit

HEATHER CSO QUALITY MONITORING, 2024 – UNFILTERED SAMPLE POLYCHLORINATED BIPHENYLS (PCBs)

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹						
				Grab						
				Range	Mean	Stdev	N	%ND ³		
Polychlorinated biphenyls (PCBs)										
Mono	PCB 1	0.339-0.342	pg/L	19	58.3	38.65	**	2	0%	
Mono	PCB 2	0.339-0.342	pg/L	9.13	20.9	15.015	**	2	0%	
Mono	PCB 3	0.339-0.342	pg/L	26.7	148	87.35	**	2	0%	
Di	PCB 4	0.339-0.342	pg/L	3.12	10.7	6.91	**	2	0%	
Di	PCB 5	0.339-0.342	pg/L	0.366	1.29	0.828	**	2	0%	
Di	PCB 6	0.339-0.342	pg/L	2.21	7.7	4.955	**	2	0%	
Di	PCB 7	0.339-0.342	pg/L	4.09	5.69	4.89	**	2	0%	
Di	PCB 8	0.339-0.342	pg/L	5.32	23.3	14.31	**	2	0%	
Di	PCB 9	0.339-0.342	pg/L	0.994	2.76	1.877	**	2	0%	
Di	PCB 10	0.339-0.342	pg/L	<0.342	0.536	0.439	**	2	50%	
Di	PCB 11	0.339-0.342	pg/L	119	372	245.5	**	2	0%	
Di	PCB 12/13	0.339-0.342	pg/L	3.39	8.97	6.18	**	2	0%	
Di	PCB 14	0.339-0.342	pg/L	<0.342	0.704	0.523	**	2	50%	
Di	PCB 15	0.339-0.342	pg/L	8.35	18.3	13.325	**	2	0%	
Tri	PCB 16	0.339-0.342	pg/L	6.75	21.1	13.925	**	2	0%	
Tri	PCB 17	0.339-0.342	pg/L	5.38	17.8	11.59	**	2	0%	
Tri	PCB 18/30	0.339-0.342	pg/L	19	54.3	36.65	**	2	0%	
Tri	PCB 19	0.339-0.342	pg/L	2.11	5.16	3.635	**	2	0%	
Tri	PCB 20/28	0.339-0.342	pg/L	22.2	61.7	41.95	**	2	0%	
Tri	PCB 21/33	0.339-0.342	pg/L	8.67	43.6	26.135	**	2	0%	
Tri	PCB 22	0.339-0.342	pg/L	7.94	29.5	18.72	**	2	0%	
Tri	PCB 23	0.339-0.342	pg/L	<0.339	<0.342	<0.342	**	2	100%	
Tri	PCB 24	0.339-0.342	pg/L	<0.342	0.603	0.4725	**	2	50%	
Tri	PCB 25	0.339-0.342	pg/L	1.95	5.69	3.82	**	2	0%	
Tri	PCB 26/29	0.339-0.342	pg/L	3.94	11.8	7.87	**	2	0%	
Tri	PCB 27	0.339-0.342	pg/L	1.39	3.22	2.305	**	2	0%	
Tri	PCB 31	0.339-0.342	pg/L	19.1	62.7	40.9	**	2	0%	
Tri	PCB 32	0.339-0.342	pg/L	5.49	13.7	9.595	**	2	0%	
Tri	PCB 34	0.339-0.342	pg/L	<0.339	<0.342	<0.342	**	2	100%	
Tri	PCB 35	0.339-0.342	pg/L	7.12	15.7	11.41	**	2	0%	
Tri	PCB 36	0.339-0.342	pg/L	2.39	4.15	3.27	**	2	0%	
Tri	PCB 37	0.339-0.342	pg/L	12	28.9	20.45	**	2	0%	
Tri	PCB 38	0.339-0.342	pg/L	<0.339	<0.342	<0.342	**	2	100%	
Tri	PCB 39	0.339-0.342	pg/L	<0.339	0.521	0.43	**	2	50%	
Tetra	PCB 40/41/71	0.339-0.342	pg/L	18.2	41.1	29.65	**	2	0%	
Tetra	PCB 42	0.339-0.342	pg/L	9.51	21	15.255	**	2	0%	
Tetra	PCB 43	0.339-0.342	pg/L	1.46	3.12	2.29	**	2	0%	
Tetra	PCB 44/47/65	0.339-0.342	pg/L	64.9	130	97.45	**	2	0%	
Tetra	PCB 45/51	0.339-0.342	pg/L	8.49	17.6	13.045	**	2	0%	
Tetra	PCB 46	0.339-0.342	pg/L	1.88	4.37	3.125	**	2	0%	
Tetra	PCB 48	0.339-0.342	pg/L	6.31	15.1	10.705	**	2	0%	
Tetra	PCB 49/69	0.339-0.342	pg/L	25.8	54.6	40.2	**	2	0%	
Tetra	PCB 50/53	0.339-0.342	pg/L	4.46	9.85	7.155	**	2	0%	
Tetra	PCB 52	0.339-0.342	pg/L	90.2	166	128.1	**	2	0%	
Tetra	PCB 54	0.339-0.342	pg/L	<0.339	<0.342	<0.342	**	2	100%	
Tetra	PCB 55	0.339-0.342	pg/L	1.11	2.59	1.85	**	2	0%	
Tetra	PCB 56	0.339-0.342	pg/L	16.2	33.7	24.95	**	2	0%	
Tetra	PCB 57	0.339-0.342	pg/L	<0.342	0.414	0.378	**	2	50%	
Tetra	PCB 58	0.339-0.342	pg/L	<0.339	<0.342	<0.342	**	2	100%	
Tetra	PCB 59/62/75	0.339-0.342	pg/L	3.72	7.99	5.855	**	2	0%	
Tetra	PCB 60	0.339-0.342	pg/L	9	19.1	14.05	**	2	0%	
Tetra	PCB 61/70/74/76	0.339-0.342	pg/L	77.5	161	119.25	**	2	0%	
Tetra	PCB 63	0.339-0.342	pg/L	1.42	3.01	2.215	**	2	0%	
Tetra	PCB 64	0.339-0.342	pg/L	19.3	40.1	29.7	**	2	0%	
Tetra	PCB 66	0.339-0.342	pg/L	34.6	73.1	53.85	**	2	0%	
Tetra	PCB 67	0.339-0.342	pg/L	1.18	2.57	1.875	**	2	0%	
Tetra	PCB 68	0.339-0.342	pg/L	3.08	4.51	3.795	**	2	0%	
Tetra	PCB 72	0.339-0.342	pg/L	<0.342	0.546	0.444	**	2	50%	
Tetra	PCB 73	0.339-0.342	pg/L	<0.339	<0.342	<0.342	**	2	100%	
Tetra	PCB 77	0.339-0.342	pg/L	8.52	14.1	11.31	**	2	0%	
Tetra	PCB 78	0.339-0.342	pg/L	<0.342	0.432	0.387	**	2	50%	
Tetra	PCB 79	0.339-0.342	pg/L	0.482	0.794	0.638	**	2	0%	
Tetra	PCB 80	0.339-0.342	pg/L	<0.339	<0.342	<0.342	**	2	100%	
Tetra	PCB 81	0.339-0.342	pg/L	0.37	0.567	0.4685	**	2	0%	

** Not applicable

< Results reported less than detection limit

¹ Range, mean, standard deviation, and number of samples (N) are provided. When results are less than, the detection limit was used to calculate each statistical value

² Percent of samples with result less than detection limit

HEATHER CSO QUALITY MONITORING, 2024 – UNFILTERED SAMPLE POLYCHLORINATED BIPHENYLS (PCBs)
CONTINUED

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹					
				Grab					
				Range	Mean	Stdev	N	%ND ³	
Polychlorinated biphenyls (PCBs)									
Penta	PCB 82	0.339-0.342	pg/L	22.6	44.6	33.6	**	2	0%
Penta	PCB 83/99	0.339-0.342	pg/L	69.6	128	98.8	**	2	0%
Penta	PCB 84	0.339-0.342	pg/L	36	75.9	55.95	**	2	0%
Penta	PCB 85/116/117	0.339-0.342	pg/L	30	57.2	43.6	**	2	0%
Penta	PCB 86/87/97/109/119/125	0.339-0.342	pg/L	129	249	189	**	2	0%
Penta	PCB 88/91	0.339-0.342	pg/L	18.1	34.9	26.5	**	2	0%
Penta	PCB 89	0.339-0.342	pg/L	1.59	2.91	2.25	**	2	0%
Penta	PCB 90/101/113	0.339-0.342	pg/L	161	295	228	**	2	0%
Penta	PCB 92	0.339-0.342	pg/L	30.9	56.8	43.85	**	2	0%
Penta	PCB 93/95/98/100/102	0.339-0.342	pg/L	118	234	176	**	2	0%
Penta	PCB 94	0.339-0.342	pg/L	0.589	1.08	0.8345	**	2	0%
Penta	PCB 96	0.339-0.342	pg/L	0.849	1.66	1.2545	**	2	0%
Penta	PCB 103	0.339-0.342	pg/L	0.71	1.33	1.02	**	2	0%
Penta	PCB 104	0.339-0.342	pg/L	<0.339	<0.342	<0.342	**	2	100%
Penta	PCB 105	0.339-0.342	pg/L	64.8	137	100.9	**	2	0%
Penta	PCB 106	0.339-0.342	pg/L	<0.339	<0.342	<0.342	**	2	100%
Penta	PCB 107	0.339-0.342	pg/L	9.68	18.7	14.19	**	2	0%
Penta	PCB 108/124	0.339-0.342	pg/L	6.81	13.3	10.055	**	2	0%
Penta	PCB 110/115	0.339-0.342	pg/L	218	439	328.5	**	2	0%
Penta	PCB 111	0.339-0.342	pg/L	<0.342	0.451	0.3965	**	2	50%
Penta	PCB 112	0.339-0.342	pg/L	<0.339	<0.342	<0.342	**	2	100%
Penta	PCB 114	0.339-0.342	pg/L	4.06	7.35	5.705	**	2	0%
Penta	PCB 118	0.339-0.342	pg/L	145	294	219.5	**	2	0%
Penta	PCB 120	0.339-0.342	pg/L	<0.342	0.595	0.4685	**	2	50%
Penta	PCB 121	0.339-0.342	pg/L	<0.342	0.352	0.347	**	2	50%
Penta	PCB 122	0.339-0.342	pg/L	3.37	6.37	4.87	**	2	0%
Penta	PCB 123	0.339-0.342	pg/L	2.66	4.98	3.82	**	2	0%
Penta	PCB 126	0.339-0.342	pg/L	1.55	2.45	2	**	2	0%
Penta	PCB 127	0.339-0.342	pg/L	<0.339	<0.342	<0.342	**	2	100%
Hexa	PCB 128/166	0.339-0.342	pg/L	58.3	103	80.65	**	2	0%
Hexa	PCB 129/138/160/163	0.339-0.342	pg/L	288	488	388	**	2	0%
Hexa	PCB 130	0.339-0.342	pg/L	18.3	29.8	24.05	**	2	0%
Hexa	PCB 131	0.339-0.342	pg/L	4.08	6.36	5.22	**	2	0%
Hexa	PCB 132	0.339-0.342	pg/L	88.1	150	119.05	**	2	0%
Hexa	PCB 133	0.339-0.342	pg/L	3.86	6.13	4.995	**	2	0%
Hexa	PCB 134/143	0.339-0.342	pg/L	15.1	24.1	19.6	**	2	0%
Hexa	PCB 135/151/154	0.339-0.342	pg/L	69.1	106	87.55	**	2	0%
Hexa	PCB 136	0.339-0.342	pg/L	27.4	44.7	36.05	**	2	0%
Hexa	PCB 137	0.339-0.342	pg/L	14.4	25.1	19.75	**	2	0%
Hexa	PCB 139/140	0.339-0.342	pg/L	4.17	6.27	5.22	**	2	0%
Hexa	PCB 141	0.339-0.342	pg/L	45.9	72.6	59.25	**	2	0%
Hexa	PCB 142	0.339-0.342	pg/L	<0.339	<0.342	<0.342	**	2	100%
Hexa	PCB 144	0.339-0.342	pg/L	10.9	16.6	13.75	**	2	0%
Hexa	PCB 145	0.339-0.342	pg/L	<0.339	<0.342	<0.342	**	2	100%
Hexa	PCB 146	0.339-0.342	pg/L	31.8	48.5	40.15	**	2	0%
Hexa	PCB 147/149	0.339-0.342	pg/L	164	260	212	**	2	0%
Hexa	PCB 148	0.339-0.342	pg/L	<0.342	0.528	0.435	**	2	50%
Hexa	PCB 150	0.339-0.342	pg/L	0.402	0.546	0.474	**	2	0%
Hexa	PCB 152	0.339-0.342	pg/L	0.958	1.1	1.029	**	2	0%
Hexa	PCB 153/168	0.339-0.342	pg/L	210	334	272	**	2	0%
Hexa	PCB 155	0.339-0.342	pg/L	0.993	3.06	2.0265	**	2	0%
Hexa	PCB 156/157	0.339-0.342	pg/L	26.1	59.9	43	**	2	0%
Hexa	PCB 158	0.339-0.342	pg/L	27.2	45.4	36.3	**	2	0%
Hexa	PCB 159	0.339-0.342	pg/L	<0.339	<0.342	<0.342	**	2	100%
Hexa	PCB 161	0.339-0.342	pg/L	<0.339	<0.342	<0.342	**	2	100%
Hexa	PCB 162	0.339-0.342	pg/L	1.29	1.87	1.58	**	2	0%
Hexa	PCB 164	0.339-0.342	pg/L	17	26.5	21.75	**	2	0%
Hexa	PCB 165	0.339-0.342	pg/L	<0.339	<0.342	<0.342	**	2	100%
Hexa	PCB 167	0.339-0.342	pg/L	8.96	18.7	13.83	**	2	0%
Hexa	PCB 169	0.339-0.342	pg/L	<0.339	<0.342	<0.342	**	2	100%

** Not applicable
 < Results reported less than detection limit
 1 Range, mean, standard deviation, and number of samples (N) are provided. When results are less than, the detection limit was used to calculate each statistical value
 2 Percent of samples with result less than detection limit

HEATHER CSO QUALITY MONITORING, 2024 – UNFILTERED SAMPLE POLYCHLORINATED BIPHENYLS (PCBs)
CONTINUED

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹					
				Grab					
				Range	Mean	Stdev	N	%ND ³	
Polychlorinated biphenyls (PCBs)									
Hepta	PCB 170	0.339-0.342	pg/L	37	78.1	57.55	**	2	0%
Hepta	PCB 171/173	0.339-0.342	pg/L	17.3	22.8	20.05	**	2	0%
Hepta	PCB 172	0.339-0.342	pg/L	13.5	17.3	15.4	**	2	0%
Hepta	PCB 174	0.339-0.342	pg/L	66.3	83.4	74.85	**	2	0%
Hepta	PCB 175	0.339-0.342	pg/L	3.03	3.63	3.33	**	2	0%
Hepta	PCB 176	0.339-0.342	pg/L	8.24	9.87	9.055	**	2	0%
Hepta	PCB 177	0.339-0.342	pg/L	38.9	50.1	44.5	**	2	0%
Hepta	PCB 178	0.339-0.342	pg/L	15.1	18.5	16.8	**	2	0%
Hepta	PCB 179	0.339-0.342	pg/L	26.2	32.6	29.4	**	2	0%
Hepta	PCB 180/193	0.339-0.342	pg/L	114	224	169	**	2	0%
Hepta	PCB 181	0.339-0.342	pg/L	0.466	0.955	0.7105	**	2	0%
Hepta	PCB 182	0.339-0.342	pg/L	<0.342	0.42	0.381	**	2	50%
Hepta	PCB 183/185	0.339-0.342	pg/L	46.3	57.3	51.8	**	2	0%
Hepta	PCB 184	0.339-0.342	pg/L	0.828	5.74	3.284	**	2	0%
Hepta	PCB 186	0.339-0.342	pg/L	<0.339	<0.342	<0.342	**	2	100%
Hepta	PCB 187	0.339-0.342	pg/L	87.4	110	98.7	**	2	0%
Hepta	PCB 188	0.339-0.342	pg/L	<0.342	0.358	0.35	**	2	50%
Hepta	PCB 189	0.339-0.342	pg/L	1.58	3.62	2.6	**	2	0%
Hepta	PCB 190	0.339-0.342	pg/L	14.5	19.7	17.1	**	2	0%
Hepta	PCB 191	0.339-0.342	pg/L	3.24	4.34	3.79	**	2	0%
Hepta	PCB 192	0.339-0.342	pg/L	<0.339	<0.342	<0.342	**	2	100%
Octa	PCB 194	0.339-0.342	pg/L	39.2	56.3	47.75	**	2	0%
Octa	PCB 195	0.339-0.342	pg/L	14	19.6	16.8	**	2	0%
Octa	PCB 196	0.339-0.342	pg/L	19.8	25.3	22.55	**	2	0%
Octa	PCB 197/200	0.339-0.342	pg/L	5.55	8.71	7.13	**	2	0%
Octa	PCB 198/199	0.339-0.342	pg/L	45.6	63.7	54.65	**	2	0%
Octa	PCB 201	0.339-0.342	pg/L	2.66	6.07	4.365	**	2	0%
Octa	PCB 202	0.339-0.342	pg/L	5.93	10.5	8.215	**	2	0%
Octa	PCB 203	0.339-0.342	pg/L	28.4	38.3	33.35	**	2	0%
Octa	PCB 204	0.339-0.342	pg/L	<0.339	<0.342	<0.342	**	2	100%
Octa	PCB 205	0.339-0.342	pg/L	1.28	2.47	1.875	**	2	0%
Nona	PCB 206	0.339-0.342	pg/L	12	24.1	18.05	**	2	0%
Nona	PCB 207	0.339-0.342	pg/L	0.478	3.32	1.899	**	2	0%
Nona	PCB 208	0.339-0.342	pg/L	4.21	6.56	5.385	**	2	0%
Deca	PCB 209	0.339-3.56	pg/L	4.81	12.1	8.455	**	2	0%

** Not applicable

< Results reported less than detection limit

1 Range, mean, standard deviation, and number of samples (N) are provided. When results are less than, the detection limit was used to calculate each statistical value

2 Percent of samples with result less than detection limit

SOUTH HILL CSO QUALITY MONITORING, 2025 – MICROBIOLOGY, GENERAL CHEMISTRY, TOXICITY, METALS

Analyte	Detection Limit	Units	Descriptive Statistics ¹																Total ⁴				
			Grab					Composite					Range						Range				
			Mean	Stdev	N	%ND ³	Range	Mean	Stdev	N	%ND ³	Range	Mean	Stdev	N	%ND ³	Range	Mean	Stdev	N	%ND ³		
Microbiology ²																							
E. coli	180-18000	MPN/100ml	<10000	109000	22454	41982	5	20%	23000	>16000000	172141	5018242	10	10%	<10000	>16000000	87301	4140737	15	13%			
Enterococci	100-100000	MPN/100ml	2750	120000	11631	50430	5	0%	2130	14800000	28362	4671329	10	0%	2130	14800000	21071	3814090	15	0%			
Fecal Coliform	180-18000	MPN/100ml	11000	79000	34110	26452	5	0%	7900	>16000000	217144	5092734	10	10%	7900	>16000000	117163	4228708	15	7%			
General Chemistry and Physical																							
Biochemical Oxygen Demand	10	mg/L	99.0	99.0	99.0	**	1	0%	35.0	>103	68.2	25.8	9	11%	35.0	>103	71.3	26.2	10	10%			
Chemical Oxygen Demand	20	mg/L	255.0	255.0	255.0	**	1	0%	82.0	272.0	156.8	62.7	9	0%	82.0	272.0	166.6	66.8	10	0%			
Conductivity	1	µmho/cm	233.0	233.0	233.0	**	1	0%	71.0	211.0	135.4	44.9	9	0%	71.0	233.0	145.2	52.4	10	0%			
Hardness as CaCO3	0.1	mg/L	26.3	26.3	26.3	**	1	0%	15.9	52.8	36.7	13.0	7	0%	15.9	52.8	35.4	12.5	8	0%			
Nitrogen - Ammonia as N	0.2	mg/L	1.6	1.6	1.6	**	1	0%	0.3	3.7	1.7	1.1	8	0%	0.3	3.7	1.7	1.0	9	0%			
Nitrogen - Nitrate as N	0.01	mg/L	0.5	0.5	0.5	**	1	0%	0.4	1.8	1.1	0.5	9	0%	0.4	1.8	1.0	0.5	10	0%			
Nitrogen - Nitrite as N	0.01	mg/L	0.0	0.0	0	**	1	0%	0.0	0.1	0.0	0.01	9	0%	0.0	0.1	0.0	0.01	10	0%			
pH	0.1	PH	7.6	7.6	7.6	**	1	0%	6.9	7.8	7.3	0.3	9	0%	6.9	7.8	7.3	0.3	10	0%			
Total Suspended Solids	2-10	mg/L	88.0	88.0	88.0	**	1	0%	19.0	163.0	62.4	42.8	9	0%	19.0	163.0	65.0	41.1	10	0%			
Volatile Suspended Solids	2-10	mg/L	82.0	82.0	82.0	**	1	0%	16.0	157.0	57.9	42.1	9	0%	16.0	157.0	60.3	40.4	10	0%			
Organic Carbon Total	**	mg/L	**	**	**	**	0	**	**	**	**	**	0	**	**	**	**	**	0	**			
Organic Carbon Dissolved	**	mg/L	**	**	**	**	0	**	**	**	**	**	0	**	**	**	**	**	0	**			
Toxicity ⁵																							
LC50 Rainbow Trout 96-hr	**	%vol/vol	100	100	100	0	2	0%	**	**	**	**	0	**	100	100	100	0	2	0%			
Total Metals																							
Aluminum Total	5.0	µg/L	204.0	204.0	204.0	**	1	0%	68.0	220.0	118.1	48.6	7	0%	68.0	220.0	128.9	54.3	8	0%			
Arsenic Total	0.5	µg/L	0.5	0.5	0.5	**	1	0%	<0.5	<0.5	<0.5	0	7	100%	<0.5	<0.5	0.5	0	8	88%			
Barium Total	0.5	µg/L	7.6	7.6	7.6	**	1	0%	5.9	11.7	9.8	2.2	7	0%	5.9	11.7	9.6	2.2	8	0%			
Boron Total	10	µg/L	11.0	11.0	11.0	**	1	0%	<10	21.0	12.6	4.0	7	29%	<10	21.0	12.4	3.7	8	25%			
Cadmium Total	0.2	µg/L	<0.2	<0.2	<0.2	**	1	100%	<0.2	<0.2	<0.2	0.0	7	100%	<0.2	<0.2	<0.2	0	8	100%			
Calcium Total	20-200	µg/L	8990.0	8990.0	8990.0	**	1	0%	5620.0	17400.0	12497.1	4281.5	7	0%	5620.0	17400.0	12058.8	4153.4	8	0%			
Chromium Total	0.5	µg/L	1.4	1.4	1.4	**	1	0%	<0.5	1.1	0.6	0.23	7	57%	<0.5	1.4	0.7	0.34	8	50%			
Cobalt Total	0.5	µg/L	<0.5	<0.5	<0.5	**	1	100%	<0.5	<0.5	<0.5	<0.5	0	7	100%	<0.5	<0.5	<0.5	0	8	100%		
Copper Total	0.5	µg/L	10.4	10.4	10.4	**	1	0%	4.3	22.6	9.9	6.3	7	0%	4.3	22.6	10.0	5.9	8	0%			
Iron Total	5	µg/L	269.0	269.0	269.0	**	1	0%	103.0	288.0	166.9	76.9	7	0%	103.0	288.0	179.6	79.8	8	0%			
Lead Total	0.5	µg/L	0.5	0.5	0.5	**	1	0%	<0.5	2.9	1.1	0.85	7	43%	<0.5	2.9	1.0	0.81	8	38%			
Magnesium Total	10	µg/L	946.0	946.0	946.0	**	1	0%	449.0	2270.0	1334.4	603.0	7	0%	449.0	2270.0	1285.9	574.9	8	0%			
Manganese Total	0.5	µg/L	38.5	38.5	38.5	**	1	0%	10.5	40.2	24.0	12.2	7	0%	10.5	40.2	25.9	12.4	8	0%			
Mercury Total	0.05	µg/L	<0.05	<0.05	<0.05	**	1	100%	<0.05	<0.05	<0.05	<0.05	0	5	100%	<0.05	<0.05	<0.05	0	6	100%		
Molybdenum Total	0.5	µg/L	<0.5	<0.5	<0.5	**	1	100%	<0.5	1.1	0.6	0.22	7	43%	<0.5	1.1	0.6	0.21	8	50%			
Nickel Total	0.5	µg/L	0.6	0.6	0.6	**	1	0%	<0.5	1.2	0.7	0.26	7	43%	<0.5	1.2	0.7	0.24	8	38%			
Phosphorus Total	15	µg/L	1550.0	1550.0	1550.0	**	1	0%	236.0	3960.0	1584.9	1303.3	7	0%	236.0	3960.0	1580.5	1206.7	8	0%			
Selenium Total	0.5	µg/L	<0.5	<0.5	<0.5	**	1	100%	<0.5	<0.5	<0.5	<0.5	0	7	100%	<0.5	<0.5	<0.5	0	8	100%		
Silver Total	0.5	µg/L	<0.5	<0.5	<0.5	**	1	100%	<0.5	<0.5	<0.5	<0.5	0	7	100%	<0.5	<0.5	<0.5	0	8	100%		
Sodium Total	50-500	µg/L	9570.0	9570.0	9570.0	**	1	0%	1950.0	16100.0	7645.7	4874.6	7	0%	1950.0	16100.0	7886.3	4564	8	0%			
Zinc Total	3	µg/L	19.0	19.0	19.0	**	1	0%	11.0	74.0	33.0	20.3	7	0%	11.0	74.0	31.3	19.5	8	0%			
Dissolved Metals																							
Aluminum Dissolved	5	µg/L	16.0	16.0	16.0	**	1	0%	<5	19.0	10.7	5.6	6	17%	<5	19.0	11.4	5.5	7	14%			
Arsenic Dissolved	0.5	µg/L	<0.5	<0.5	<0.5	**	1	100%	<0.5	<0.5	<0.5	<0.5	0	6	100%	<0.5	<0.5	<0.5	0	7	100%		
Barium Dissolved	0.5	µg/L	4.6	4.6	4.6	**	1	0%	5.3	8.8	7.0	1.2	6	0%	4.6	8.8	6.7	1.4	7	0%			
Boron Dissolved	10	µg/L	11.0	11.0	11.0	**	1	0%	<10	20.0	12.3	3.9	6	50%	<10	20.0	12.1	3.6	7	43%			
Cadmium Dissolved	0.2	µg/L	<0.2	<0.2	<0.2	**	1	100%	<0.2	<0.2	<0.2	0.0	6	100%	<0.2	<0.2	<0.2	0.0	7	100%			
Calcium Dissolved	20-200	µg/L	7840.0	7840.0	7840.0	**	1	0%	7530.0	14800.0	11975.0	2950.1	6	0%	7530	14800.0	11384.3	3113.7	7	0%			
Chromium Dissolved	0.5	µg/L	<0.5	<0.5	<0.5	**	1	100%	<0.5	<0.5	<0.5	<0.5	0	6	100%	<0.5	<0.5	<0.5	0	7	100%		
Cobalt Dissolved	0.5	µg/L	<0.5	<0.5	<0.5	**	1	100%	<0.5	<0.5	<0.5	<0.5	0	6	100%	<0.5	<0.5	<0.5	0	7	100%		
Copper Dissolved	0.5	µg/L	5.9	5.9	5.9	**	1	0%	1.9	7.0	3.7	1.8	6	0%	1.9	7.0	4.0	1.9	7	0%			
Iron Dissolved	5	µg/L	30.0	30.0	30.0	**	1	0%	9.0	24.0	18.5	6.4	6	0%	9.0	30.0	20.1	7.3	7	0%			
Lead Dissolved	0.5	µg/L	<0.5	<0.5	<0.5	**	1	100%	<0.5	<0.5	<0.5	<0.5	0	6	100%	<0.5	<0.5	<0.5	0	7	100%		
Magnesium Dissolved	10	µg/L	816.0	816.0	816.0	**	1	0%	730.0	1980.0	1293.5	432.2	6	0%	730.0	1980.0	1225.3	433.9	7	0%			
Manganese Dissolved	0.5	µg/L	21.9	21.9	21.9	**	1	0%	5.5	24.1	14.7	7.3	6	0%	5.5	24.1	15.8	7.2	7	0%			
Molybdenum Dissolved	0.5	µg/L	<0.5	<0.5	<0.5	**	1	100%	<0.5	0.9	0.6	0.2	6	50%	<0.5	0.9	0.6	0.1	7	57%			
Nickel Dissolved	0.5	µg/L	<0.5	<0.5	<0.5	**	1	100%	<0.5	<0.5	<0.5	0.0	6	100%	<0.5	<0.5	<0.5	0	7	100%			
Phosphorus Dissolved	15	µg/L	1220.0	1220.0	1220.0	**	1	0%	166.0	2890.0	1225.3	929.0	6	0%	166.0	2890.0	1224.6	848.0	7	0%			
Selenium Dissolved	0.5	µg/L	<0.5	<0.5	<0.5	**	1	100%	<0.5	<0.5	<0.5	0.0	6	100%	<0.5	<0.5	<0.5	0	7	100%			
Silver Dissolved	0.5	µg/L	<0.5	<0.5	<0.5	**	1	100%	<0.5	<0.5	<0.5	0.0	6	100%	<0.5	<0.5	<0.5	0	7	100%			
Sodium Dissolved	50-500	µg/L	10600.0	10600.0	10600.0	**	1	0%	3450.0	15100.0	8101.7	4256.0	6	0%	3450.0	15100.0	8458.6	3998.3	7	0%			
Zinc Dissolved	3	µg/L	17.0	17.0	17.0	**	1	0%	7.0	37.0	16.0	11.4	6	0%	7.0	37.0	16.1	10.4	7	0%			

** Not applicable

< Results reported less than detection limit

1 Range, mean (geomean for microbiology), standard deviation, and number of samples (N) are provided. When results are less than (greater than for microbiology) the detection limit, the detection limit was used to calculate each statistical value

2 Every sample for microbiology was collected with a duplicate, the result reported is the geomean of duplicates

3 Percent of samples with result less than detection limit

4 Total includes both grab and composite

5. LC50 results represent % survival, results show 0% mortality throughout test

SOUTH HILL CSO QUALITY MONITORING, 2025 – ORGANICS

Analyte	Detection Limit	Units	Descriptive Statistics ¹					
			Grab					
			Range	Mean	Stdev	N	%ND ²	
Volatile petroleum hydrocarbons								
1,1,1,2-Tetrachloroethane	0.5	µg/L	<0.50	<0.50	<0.50	**	1	100%
1,1,1-Trichloroethane	0.5	µg/L	<0.50	<0.50	<0.50	**	1	100%
1,1,2,2-Tetrachloroethane	0.5	µg/L	<0.50	<0.50	<0.50	**	1	100%
1,1,2Trichloro-1,2,2Trifluoroethane	2.0	µg/L	<2.0	<2.0	<2.0	**	1	100%
1,1,2-Trichloroethane	0.5	µg/L	<0.50	<0.50	<0.50	**	1	100%
1,1-Dichloroethane	0.5	µg/L	<0.50	<0.50	<0.50	**	1	100%
1,1-Dichloroethene	0.5	µg/L	<0.50	<0.50	<0.50	**	1	100%
1,2,3-Trichlorobenzene	2.0	µg/L	<2.0	<2.0	<2.0	**	1	100%
1,2,4-Trichlorobenzene	2.0	µg/L	<2.0	<2.0	<2.0	**	1	100%
1,2-Dibromoethane	0.2	µg/L	<0.20	<0.20	<0.20	**	1	100%
1,2-Dichlorobenzene	0.5	µg/L	<0.50	<0.50	<0.50	**	1	100%
1,2-Dichloroethane	0.5	µg/L	<0.50	<0.50	<0.50	**	1	100%
1,2-Dichloropropane	0.5	µg/L	<0.50	<0.50	<0.50	**	1	100%
1,3,5-Trimethylbenzene	2.0	µg/L	<2.0	<2.0	<2.0	**	1	100%
1,3-Butadiene	0.5	µg/L	<0.50	<0.50	<0.50	**	1	100%
1,3-Dichlorobenzene	0.5	µg/L	<0.50	<0.50	<0.50	**	1	100%
1,3-Dichloropropane	1.0	µg/L	<1.0	<1.0	<1.0	**	1	100%
1,4-Dichlorobenzene	0.5	µg/L	<0.50	<0.50	<0.50	**	1	100%
Benzene	0.4	µg/L	<0.40	<0.40	<0.40	**	1	100%
Bromobenzene	2.0	µg/L	<2.0	<2.0	<2.0	**	1	100%
Bromodichloromethane	1.0	µg/L	<1.0	<1.0	<1.0	**	1	100%
Bromoform	1.0	µg/L	<1.0	<1.0	<1.0	**	1	100%
Bromomethane	1.0	µg/L	<1.0	<1.0	<1.0	**	1	100%
Carbon Tetrachloride	0.5	µg/L	<0.50	<0.50	<0.50	**	1	100%
Chlorobenzene	0.5	µg/L	<0.50	<0.50	<0.50	**	1	100%
Chloroethane	1.0	µg/L	<1.0	<1.0	<1.0	**	1	100%
Chloroform	1.0	µg/L	3.7	3.7	3.7	**	1	0%
Chloromethane	1.0	µg/L	<1.0	<1.0	<1.0	**	1	100%
Cis-1,2-Dichloroethene	1.0	µg/L	<1.0	<1.0	<1.0	**	1	100%
Cis-1,3-Dichloropropene	1.0	µg/L	<1.0	<1.0	<1.0	**	1	100%
Dibromochloromethane	1.0	µg/L	<1.0	<1.0	<1.0	**	1	100%
Dichlorodifluoromethane	2.0	µg/L	<2.0	<2.0	<2.0	**	1	100%
Dichloromethane	2.0	µg/L	<2.0	<2.0	<2.0	**	1	100%
Ethylbenzene	0.4	µg/L	<0.40	<0.40	<0.40	**	1	100%
Hexachlorobutadiene	0.5	µg/L	<0.50	<0.50	<0.50	**	1	100%
Isopropylbenzene	2.0	µg/L	<2.0	<2.0	<2.0	**	1	100%
m & p-Xylene	0.4	µg/L	<0.40	<0.40	<0.40	**	1	100%
Methyl-tert-butylether (MTBE)	4.0	µg/L	<4.0	<4.0	<4.0	**	1	100%
o-Xylene	0.4	µg/L	<0.40	<0.40	<0.40	**	1	100%
Styrene	0.5	µg/L	<0.50	<0.50	<0.50	**	1	100%
Tetrachloroethene	0.5	µg/L	<0.50	<0.50	<0.50	**	1	100%
Toluene	0.4	µg/L	<0.40	<0.40	<0.40	**	1	100%
trans-1,2-Dichloroethene	1.0	µg/L	<1.0	<1.0	<1.0	**	1	100%
trans-1,3-Dichloropropene	1.0	µg/L	<1.0	<1.0	<1.0	**	1	100%
Trichloroethene	0.5	µg/L	<0.50	<0.50	<0.50	**	1	100%
Trichlorofluoromethane	4.0	µg/L	<4.0	<4.0	<4.0	**	1	100%
VH C6-C10 ³	300	µg/L	<300	<300	<300	**	1	100%
Vinyl Chloride	0.5	µg/L	<0.50	<0.50	<0.50	**	1	100%
VPH (VH6 to 10 - BTEX) ⁴	300	µg/L	<300	<300	<300	**	1	100%
Xylenes (Total)	0.4	µg/L	<0.40	<0.40	<0.40	**	1	100%

** Not applicable

< Results reported less than detection limit

1 Range, mean (geomean for microbiology), standard deviation, and number of samples (N) are provided. When results are less than (greater than for microbiology) the detection limit, the detection limit was used to caculate each statistical value

2 Percent of samples with result less than detection limit

3 Volatile Hydrocarbons containing all petroleum hydrocarbons in the carbon range of C6-C10, including BTEX and Styrene

4 Volatile Petroleum Hydrocarbons containing all pretroleum hydrocarbons in the carbon range of C6-C10 minus BTEX

SOUTH HILL CSO QUALITY MONITORING, 2025 – ORGANICS CONTINUED

Analyte	Detection Limit	Units	Descriptive Statistics ¹																		
			Grab						Composite					Total ⁷							
			Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²				
Extractable petroleum hydrocarbons																					
LEPH (C10-C19 less PAH) ³	0.2	mg/L	0.24	0.24	0.24	**	1	0%	0.45	0.45	0.45	**	1	0%	0.24	0.45	0.35	0.15	2	0%	
HEPH (C19-C32 less PAH) ⁴	0.2	mg/L	3.80	3.80	3.80	**	1	0%	5.40	5.40	5.40	**	1	0%	3.80	5.40	4.60	1.13	2	0%	
EPH (C10-C19)	0.2	mg/L	0.24	0.24	0.24	**	1	0%	0.45	0.45	0.45	**	1	0%	0.24	0.45	0.35	0.15	2	0%	
EPH (C19-C32)	0.2	mg/L	3.80	3.80	3.80	**	1	0%	5.40	5.40	5.40	**	1	0%	3.80	5.40	4.60	1.13	2	0%	
Polycyclic aromatic hydrocarbons (PAH)																					
Low molecular weight PAHs (LPAH)	1-Methylnaphthalene ⁵	0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%
	2-Methylnaphthalene	0.1	µg/L	<0.10	<0.10	<0.10	**	1	100%	<0.10	<0.10	<0.10	**	1	100%	<0.10	<0.10	<0.10	0	2	100%
	Phenanthrene	0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%
	Acenaphthene	0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%
	Acenaphthylene	0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%
	Anthracene	0.01	µg/L	<0.010	<0.010	<0.010	**	1	100%	<0.010	<0.010	<0.010	**	1	100%	<0.010	<0.010	<0.010	0	2	100%
	Acridine ⁶	0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%
	Fluorene	0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%
	Naphthalene	0.1	µg/L	<0.10	<0.10	<0.10	**	1	100%	<0.10	<0.10	<0.10	**	1	100%	<0.10	<0.10	<0.10	0	2	100%
	Quinoline ⁶	0.02	µg/L	<0.020	<0.020	<0.020	**	1	100%	0.03	0.031	0.031	**	1	0%	<0.020	0.031	0.0255	0	2	50%
Total LPAHs	0.1	µg/L	<0.1	<0.1	<0.1	**	1	100%	0.031	0.031	0.031	**	1	0%	<0.1	0.031	0.0255	**	2	33%	
High molecular weight PAHs (HPAH)	Benzo(a)anthracene	0.01	µg/L	<0.010	<0.010	<0.010	**	1	100%	<0.010	<0.010	<0.010	**	1	100%	<0.010	<0.010	<0.010	0	2	100%
	Benzo(a)pyrene	0.005	µg/L	<0.0050	<0.0050	<0.0050	**	1	100%	0.01	0.0063	0.0063	**	1	0%	<0.0050	0.0063	0.00565	0	2	50%
	Benzo(b&j)fluoranthene	0.03	µg/L	<0.030	<0.030	<0.030	**	1	100%	<0.030	<0.030	<0.030	**	1	100%	<0.030	<0.030	<0.030	0	2	100%
	Benzo(g,h,i)perylene	0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%
	Benzo(k)fluoranthene	0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%
	Chrysene	0.02	µg/L	<0.020	<0.020	<0.020	**	1	100%	<0.020	<0.020	<0.020	**	1	100%	<0.020	<0.020	<0.020	0	2	100%
	Dibenz(a,h)anthracene	0.003	µg/L	<0.0030	<0.0030	<0.0030	**	1	100%	<0.0030	<0.0030	<0.0030	**	1	100%	<0.0030	<0.0030	<0.0030	0	2	100%
	Fluoranthene	0.02	µg/L	<0.020	<0.020	<0.020	**	1	100%	<0.020	<0.020	<0.020	**	1	100%	<0.020	<0.020	<0.020	0	2	100%
	Indeno(1,2,3-cd)pyrene	0.05	µg/L	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	**	1	100%	<0.050	<0.050	<0.050	0	2	100%
	Pyrene	0.02	µg/L	<0.020	<0.020	<0.020	**	1	100%	<0.020	<0.020	<0.020	**	1	100%	<0.020	<0.020	<0.020	0	2	100%
Total HPAHs	0.05	µg/L	<0.05	<0.05	<0.05	**	1	100%	0.0063	0.0063	0.0063	**	1	0%	<0.05	0.0063	0.00565	**	2	33%	
Total PAH = LPAH + HPAH	0.1	µg/L	<0.1	<0.1	<0.1	**	1	100%	0.0373	0.0373	0.0373	**	1	0%	<0.1	0.0373	0.03115	**	2	33%	

** Not applicable

< Results reported less than detection limit

1 Range, mean (geomean for microbiology), standard deviation, and number of samples (N) are provided. When results are less than (greater than for microbiology) the detection limit, the detection limit was used to calculate each statistical value

2 Percent of samples with result less than detection limit

3 LEPH = Light Extractable Petroleum Hydrocarbons

4 HEPH = Heavy Extractable Petroleum Hydrocarbons

5 Alkylated Low Molecular Weight PAHs

6 N-Heterocycle Low Molecular Weight PAHs

7 Total includes both grab and composite

SOUTH HILL CSO QUALITY MONITORING, 2025 – ORGANICS CONTINUED

Analyte	Detection Limit	Units	Descriptive Statistics ¹																	
			Grab						Composite						Total ³					
			Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²	Range	Mean	Stdev	N	%ND ²			
Pharmaceuticals																				
Acetaminophen	3-300	ng/L	29.0	29.0	29	**	1	0%	32.0	78500.0	13597	26742.5	10	0%	29.0	78500.0	12363.6	25697.9	11	0%
Bisphenol A	5-50	ng/L	40.0	40.0	40	**	1	0%	5.0	63.0	27	20.2	10	10%	5.0	63.0	28.0	19.6	11	9%
Caffeine	10-1000	ng/L	1060.0	1060.0	1060	**	1	0%	1350.0	29100.0	10796	9093.6	10	0%	1060.0	29100.0	9910.9	9112.7	11	0%
Carbamazepine	5	ng/L	<5	<5	<5,000	**	1	100%	<5	<5	<5,000	0.0	10	100%	<5	<5	<5,000	0.0	11	100%
Diclofenac	10-100	ng/L	63.0	63.0	63	**	1	0%	<10	510.0	104	155.9	10	20%	<10	510.0	99.8	148.4	11	18%
Fluoxetine	20-200	ng/L	<20	<20	<20,000	**	1	100%	<20	<200	<110,000	94.9	10	100%	<20	<200	<101.818	94.0	11	100%
Gemfibrozil	10-100	ng/L	<100	<100	<100,000	**	1	100%	<10	<100	<37,000	43.5	10	100%	<10	<100	<42.727	45.4	11	100%
Ibuprofen	5	ng/L	46.0	46.0	46	**	1	0%	40.0	575.0	246	200.9	10	0%	40.0	575.0	228.0	199.9	11	0%
Naproxen	5	ng/L	<5	<5	<5,000	**	1	100%	<5	220.0	36	69.4	10	60%	<5	220.0	33.5	66.5	11	64%
Primidone	5-50	ng/L	<5	<5	<5,000	**	1	100%	<5	<50	<23,000	23.2	10	100%	<5	<50	<21.364	22.7	11	100%
Sulfamethoxazole	1-10	ng/L	<10	<10	<10,000	**	1	100%	<1	<10	<2,800	3.8	10	100%	<1	<10	<3.455	4.2	11	100%
Triclosan	20-200	ng/L	<200	<200	<200,000	**	1	100%	<20	<200	56	75.7	10	90%	<20	<200	69.5	83.9	11	91%
Trimethoprim	1-10	ng/L	<10	<10	<10,000	**	1	100%	<1	<10	<4,600	4.6	10	100%	<1	<10	<5.091	4.7	11	100%
Sucralose	10-3000	ng/L	2600.0	2600.0	2600	**	1	0%	84.0	31300.0	4750	9436.5	10	20%	84.0	31300.0	4554.9	8975.7	11	18%
Organic Compounds																				
6PPD-Quinone	0.001-0.0011	µg/L	0.0036	0.0036	0.004	**	1	0%	<0.0010	<0.0010	<0.001	9437	2	100%	<0.0010	0.0036	0.0019	0.002	3	67%
** Not applicable < Results reported less than detection limit 1 Range, mean (geomean for microbiology), standard deviation, and number of samples (N) are provided. When results are less than (greater than for microbiology) the detection limit, the detection limit was used to caculate each statistical value 2 Percent of samples with result less than detection limit 3 Total includes both grab and composite																				

SOUTH HILL CSO QUALITY MONITORING, 2025 – UNFILTERED SAMPLE POLYBROMINATED DIPHENYL ETHERS (PBDEs)

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹					
				Grab					
				Range	Mean	Stdev	N	%ND ²	
Polybrominated diphenyl ethers (PBDEs)									
Di	PBDE 7	2.77	pg/L	<2.77	<2.77	<2.77	**	1	100%
Di	PBDE 8/11	2.77	pg/L	<2.77	<2.77	<2.77	**	1	100%
Di	PBDE 10	2.77	pg/L	<2.77	<2.77	<2.77	**	1	100%
Di	PBDE 12/13	2.77	pg/L	<2.77	<2.77	<2.77	**	1	100%
Di	PBDE 15	2.77	pg/L	<2.77	<2.77	<2.77	**	1	100%
Tri	PBDE 17/25	3.89	pg/L	6.02	6.02	6.02	**	1	0%
Tri	PBDE 28/33	2.77	pg/L	4.24	4.24	4.24	**	1	0%
Tri	PBDE 30	4.11	pg/L	<4.11	<4.11	<4.11	**	1	100%
Tri	PBDE 32	3.01	pg/L	<3.01	<3.01	<3.01	**	1	100%
Tri	PBDE 35	2.77	pg/L	<2.77	<2.77	<2.77	**	1	100%
Tri	PBDE 37	2.77	pg/L	<2.77	<2.77	<2.77	**	1	100%
Tetra	PBDE 47	2.77	pg/L	133	133	133	**	1	0%
Tetra	PBDE 49	2.77	pg/L	10.3	10.3	10.3	**	1	0%
Tetra	PBDE 51	2.77	pg/L	<2.77	<2.77	<2.77	**	1	100%
Tetra	PBDE 66	2.77	pg/L	4.61	4.61	4.61	**	1	0%
Tetra	PBDE 71	2.77	pg/L	<2.77	<2.77	<2.77	**	1	100%
Tetra	PBDE 75	2.77	pg/L	<2.77	<2.77	<2.77	**	1	100%
Tetra	PBDE 77	2.77	pg/L	<2.77	<2.77	<2.77	**	1	100%
Tetra	PBDE 79	2.77	pg/L	<2.77	<2.77	<2.77	**	1	100%
Penta	PBDE 85	2.77	pg/L	6.16	6.16	6.16	**	1	0%
Penta	PBDE 99	2.77	pg/L	117	117	117	**	1	0%
Penta	PBDE 100	2.77	pg/L	25.8	25.8	25.8	**	1	0%
Penta	PBDE 105	2.77	pg/L	<2.77	<2.77	<2.77	**	1	100%
Penta	PBDE 116	2.77	pg/L	<2.77	<2.77	<2.77	**	1	100%
Penta	PBDE 119/120	2.77	pg/L	<2.77	<2.77	<2.77	**	1	100%
Penta	PBDE 126	2.77	pg/L	<2.77	<2.77	<2.77	**	1	100%
Hexa	PBDE 128	4.9	pg/L	<4.9	<4.9	<4.9	**	1	100%
Hexa	PBDE 138/166	2.77	pg/L	<2.77	<2.77	<2.77	**	1	100%
Hexa	PBDE 140	2.77	pg/L	<2.77	<2.77	<2.77	**	1	100%
Hexa	PBDE 153	2.77	pg/L	11.6	11.6	11.6	**	1	0%
Hexa	PBDE 154	2.77	pg/L	10.7	10.7	10.7	**	1	0%
Hexa	PBDE 155	2.77	pg/L	<2.77	<2.77	<2.77	**	1	100%
Hepta	PBDE 181	2.77	pg/L	<2.77	<2.77	<2.77	**	1	100%
Hepta	PBDE 183	2.77	pg/L	7.89	7.89	7.89	**	1	0%
Hepta	PBDE 190	4.37	pg/L	<4.37	<4.37	<4.37	**	1	100%
Octa	PBDE 203	12.5	pg/L	22.2	22.2	22.2	**	1	0%
Nona	PBDE 206	17	pg/L	129	129	129	**	1	0%
Nona	PBDE 207	16.7	pg/L	115	115	115	**	1	0%
Nona	PBDE 208	20.3	pg/L	88.3	88.3	88	**	1	0%
Deca	PBDE 209	108	pg/L	1540	1540	1540	**	1	0%

** Not applicable

< Results reported less than detection limit

1 Range, mean, standard deviation, and number of samples (N) are provided. When results are less than, the detection limit was used to calculate each statistical value

2 Percent of samples with result less than detection limit

SOUTH HILL CSO QUALITY MONITORING, 2025 – FILTRATE POLYBROMINATED DIPHENYL ETHERS (PBDEs)

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹					
				Grab					
				Range	Mean	Stdev	N	%ND ²	
Polybrominated diphenyl ethers (PBDEs)									
Di	PBDE 7	2.68	pg/L	<2.68	<2.68	<2.68	**	1	100%
Di	PBDE 8/11	2.68	pg/L	<2.68	<2.68	<2.68	**	1	100%
Di	PBDE 10	2.68	pg/L	<2.68	<2.68	<2.68	**	1	100%
Di	PBDE 12/13	2.68	pg/L	<2.68	<2.68	<2.68	**	1	100%
Di	PBDE 15	2.68	pg/L	<2.68	<2.68	<2.68	**	1	100%
Tri	PBDE 17/25	4.3	pg/L	4.58	4.58	4.58	**	1	0%
Tri	PBDE 28/33	2.9	pg/L	3.44	3.44	3.44	**	1	0%
Tri	PBDE 30	4.55	pg/L	<4.55	<4.55	<4.55	**	1	100%
Tri	PBDE 32	3.4	pg/L	<3.4	<3.4	<3.4	**	1	100%
Tri	PBDE 35	2.79	pg/L	<2.79	<2.79	<2.79	**	1	100%
Tri	PBDE 37	2.71	pg/L	<2.71	<2.71	<2.71	**	1	100%
Tetra	PBDE 47	2.68	pg/L	85.2	85.2	85.2	**	1	0%
Tetra	PBDE 49	2.68	pg/L	2.86	2.86	2.86	**	1	0%
Tetra	PBDE 51	2.68	pg/L	<2.68	<2.68	<2.68	**	1	100%
Tetra	PBDE 66	2.68	pg/L	2.7	2.7	2.7	**	1	0%
Tetra	PBDE 71	2.68	pg/L	<2.68	<2.68	<2.68	**	1	100%
Tetra	PBDE 75	2.68	pg/L	<2.68	<2.68	<2.68	**	1	100%
Tetra	PBDE 77	2.68	pg/L	<2.68	<2.68	<2.68	**	1	100%
Tetra	PBDE 79	2.68	pg/L	<2.68	<2.68	<2.68	**	1	100%
Penta	PBDE 85	2.68	pg/L	7.83	7.83	7.83	**	1	0%
Penta	PBDE 99	2.68	pg/L	115	115	115	**	1	0%
Penta	PBDE 100	2.68	pg/L	23.1	23.1	23.1	**	1	0%
Penta	PBDE 105	2.68	pg/L	<2.68	<2.68	<2.68	**	1	100%
Penta	PBDE 116	2.68	pg/L	<2.68	<2.68	<2.68	**	1	100%
Penta	PBDE 119/120	2.68	pg/L	<2.68	<2.68	<2.68	**	1	100%
Penta	PBDE 126	2.68	pg/L	<2.68	<2.68	<2.68	**	1	100%
Hexa	PBDE 128	3.78	pg/L	<3.78	<3.78	<3.78	**	1	100%
Hexa	PBDE 138/166	2.68	pg/L	<2.68	<2.68	<2.68	**	1	100%
Hexa	PBDE 140	2.68	pg/L	<2.68	<2.68	<2.68	**	1	100%
Hexa	PBDE 153	2.68	pg/L	11.9	11.9	11.9	**	1	0%
Hexa	PBDE 154	2.68	pg/L	11.5	11.5	11.5	**	1	0%
Hexa	PBDE 155	2.68	pg/L	<2.68	<2.68	<2.68	**	1	100%
Hepta	PBDE 181	2.88	pg/L	<2.88	<2.88	<2.88	**	1	100%
Hepta	PBDE 183	2.68	pg/L	9.1	9.1	9.1	**	1	0%
Hepta	PBDE 190	4.75	pg/L	<4.75	<4.75	<4.75	**	1	100%
Octa	PBDE 203	18.4	pg/L	30.4	30.4	30.4	**	1	0%
Nona	PBDE 206	28.6	pg/L	155	155	155	**	1	0%
Nona	PBDE 207	39.4	pg/L	120	120	120	**	1	0%
Nona	PBDE 208	43.7	pg/L	151	151	151	**	1	0%
Deca	PBDE 209	274	pg/L	3640	3640	3640	**	1	0%

** Not applicable

< Results reported less than detection limit

¹ Range, mean, standard deviation, and number of samples (N) are provided. When results are less than, the detection limit was used to calculate each statistical value

² Percent of samples with result less than detection limit

SOUTH HILL CSO QUALITY MONITORING, 2025 – UNFILTERED SAMPLE POLYCHLORINATED BIPHENYLS (PCBs)

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹						
				Grab						
				Range	Mean	Stdev	N	%ND ²		
Polychlorinated biphenyls (PCBs)										
Mono	PCB 1	0.374	pg/L	43.7	43.7	43.7	**	1	0%	
Mono	PCB 2	0.374	pg/L	7.48	7.48	7.48	**	1	0%	
Mono	PCB 3	0.374	pg/L	63.4	63.4	63.4	**	1	0%	
Di	PCB 4	0.374	pg/L	6.06	6.06	6.06	**	1	0%	
Di	PCB 5	0.374	pg/L	1.19	1.19	1.19	**	1	0%	
Di	PCB 6	0.374	pg/L	2.93	2.93	2.93	**	1	0%	
Di	PCB 7	0.374	pg/L	3.5	3.5	3.50	**	1	0%	
Di	PCB 8	0.374	pg/L	6.09	6.09	6.09	**	1	0%	
Di	PCB 9	0.374	pg/L	0.52	0.52	0.52	**	1	0%	
Di	PCB 10	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%	
Di	PCB 11	0.374	pg/L	45.9	45.9	45.90	**	1	0%	
Di	PCB 12/13	0.374	pg/L	1.85	1.85	1.85	**	1	0%	
Di	PCB 14	0.374	pg/L	0.475	0.475	0.48	**	1	0%	
Di	PCB 15	0.374	pg/L	3.29	3.29	3.29	**	1	0%	
Tri	PCB 16	0.374	pg/L	3.07	3.07	3.07	**	1	0%	
Tri	PCB 17	0.374	pg/L	2.74	2.74	2.74	**	1	0%	
Tri	PCB 18/30	0.374	pg/L	7.86	7.86	7.86	**	1	0%	
Tri	PCB 19	0.374	pg/L	3.37	3.37	3.37	**	1	0%	
Tri	PCB 20/28	0.374	pg/L	6.3	6.3	6.30	**	1	0%	
Tri	PCB 21/33	0.374	pg/L	4.53	4.53	4.53	**	1	0%	
Tri	PCB 22	0.374	pg/L	2.95	2.95	2.95	**	1	0%	
Tri	PCB 23	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%	
Tri	PCB 24	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%	
Tri	PCB 25	0.374	pg/L	0.755	0.755	0.76	**	1	0%	
Tri	PCB 26/29	0.374	pg/L	1.44	1.44	1.44	**	1	0%	
Tri	PCB 27	0.374	pg/L	0.69	0.69	0.69	**	1	0%	
Tri	PCB 31	0.374	pg/L	6.45	6.45	6.45	**	1	0%	
Tri	PCB 32	0.374	pg/L	2	2	2.00	**	1	0%	
Tri	PCB 34	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%	
Tri	PCB 35	0.374	pg/L	0.663	0.663	0.66	**	1	0%	
Tri	PCB 36	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%	
Tri	PCB 37	0.374	pg/L	1.97	1.97	1.97	**	1	0%	
Tri	PCB 38	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%	
Tri	PCB 39	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%	
Tetra	PCB 40/41/71	0.374	pg/L	2.63	2.63	2.63	**	1	0%	
Tetra	PCB 42	0.374	pg/L	1.4	1.4	1.40	**	1	0%	
Tetra	PCB 43	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%	
Tetra	PCB 44/47/65	0.374	pg/L	12.1	12.1	12.10	**	1	0%	
Tetra	PCB 45/51	0.374	pg/L	2.42	2.42	2.42	**	1	0%	
Tetra	PCB 46	0.374	pg/L	0.397	0.397	0.40	**	1	0%	
Tetra	PCB 48	0.374	pg/L	1.11	1.11	1.11	**	1	0%	
Tetra	PCB 49/69	0.374	pg/L	3.92	3.92	3.92	**	1	0%	
Tetra	PCB 50/53	0.374	pg/L	1.11	1.11	1.11	**	1	0%	
Tetra	PCB 52	0.374	pg/L	8.62	8.62	8.62	**	1	0%	
Tetra	PCB 54	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%	
Tetra	PCB 55	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%	
Tetra	PCB 56	0.374	pg/L	1.55	1.55	1.55	**	1	0%	
Tetra	PCB 57	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%	
Tetra	PCB 58	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%	
Tetra	PCB 59/62/75	0.374	pg/L	0.599	0.599	0.60	**	1	0%	
Tetra	PCB 60	0.374	pg/L	1.16	1.16	1.16	**	1	0%	
Tetra	PCB 61/70/74/76	0.374	pg/L	7.72	7.72	7.72	**	1	0%	
Tetra	PCB 63	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%	
Tetra	PCB 64	0.374	pg/L	2.43	2.43	2.43	**	1	0%	
Tetra	PCB 66	0.374	pg/L	4.66	4.66	4.66	**	1	0%	
Tetra	PCB 67	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%	
Tetra	PCB 68	0.374	pg/L	1.02	1.02	1.02	**	1	0%	
Tetra	PCB 72	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%	
Tetra	PCB 73	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%	
Tetra	PCB 77	0.374	pg/L	1.04	1.04	1.04	**	1	0%	
Tetra	PCB 78	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%	
Tetra	PCB 79	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%	
Tetra	PCB 80	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%	
Tetra	PCB 81	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%	

** Not applicable

< Results reported less than detection limit

¹ Range, mean, standard deviation, and number of samples (N) are provided. When results are less than, the detection limit was used to calculate each statistical value

² Percent of samples with result less than detection limit

SOUTH HILL CSO QUALITY MONITORING, 2025 – UNFILTERED SAMPLE POLYCHLORINATED BIPHENYLS (PCBs) CONTINUED

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹					
				Grab					%ND ²
				Range	Mean	Stdev	N		
Polybrominated diphenyl ethers (PBDEs)									
Penta	PCB 82	0.374	pg/L	1.15	1.15	1.15	**	1	0%
Penta	PCB 83/99	0.374	pg/L	5.85	5.85	5.85	**	1	0%
Penta	PCB 84	0.374	pg/L	2.44	2.44	2.44	**	1	0%
Penta	PCB 85/116/117	0.374	pg/L	2.39	2.39	2.39	**	1	0%
Penta	PCB 86/87/97/109/119/125	0.374	pg/L	7.77	7.77	7.77	**	1	0%
Penta	PCB 88/91	0.374	pg/L	1.42	1.42	1.42	**	1	0%
Penta	PCB 89	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Penta	PCB 90/101/113	0.374	pg/L	9.98	9.98	9.98	**	1	0%
Penta	PCB 92	0.374	pg/L	2.21	2.21	2.21	**	1	0%
Penta	PCB 93/95/98/100/102	0.374	pg/L	8.12	8.12	8.12	**	1	0%
Penta	PCB 94	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Penta	PCB 96	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Penta	PCB 103	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Penta	PCB 104	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Penta	PCB 105	0.374	pg/L	4.63	4.63	4.63	**	1	0%
Penta	PCB 106	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Penta	PCB 107	0.374	pg/L	0.751	0.751	0.75	**	1	0%
Penta	PCB 108/124	0.374	pg/L	0.484	0.484	0.48	**	1	0%
Penta	PCB 110/115	0.374	pg/L	12.8	12.8	12.80	**	1	0%
Penta	PCB 111	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Penta	PCB 112	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Penta	PCB 114	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Penta	PCB 118	0.374	pg/L	10.8	10.8	10.80	**	1	0%
Penta	PCB 120	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Penta	PCB 121	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Penta	PCB 122	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Penta	PCB 123	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Penta	PCB 126	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Penta	PCB 127	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Hexa	PCB 128/166	0.374	pg/L	3.34	3.34	3.34	**	1	0%
Hexa	PCB 129/138/160/163	0.374	pg/L	14.7	14.7	14.70	**	1	0%
Hexa	PCB 130	0.374	pg/L	0.987	0.987	0.99	**	1	0%
Hexa	PCB 131	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Hexa	PCB 132	0.374	pg/L	3.78	3.78	3.78	**	1	0%
Hexa	PCB 133	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Hexa	PCB 134/143	0.374	pg/L	0.56	0.56	0.56	**	1	0%
Hexa	PCB 135/151/154	0.374	pg/L	3.6	3.6	3.60	**	1	0%
Hexa	PCB 136	0.374	pg/L	1.3	1.3	1.30	**	1	0%
Hexa	PCB 137	0.374	pg/L	0.784	0.784	0.78	**	1	0%
Hexa	PCB 139/140	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Hexa	PCB 141	0.374	pg/L	1.81	1.81	1.81	**	1	0%
Hexa	PCB 142	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Hexa	PCB 144	0.374	pg/L	0.52	0.52	0.52	**	1	0%
Hexa	PCB 145	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Hexa	PCB 146	0.374	pg/L	2.26	2.26	2.26	**	1	0%
Hexa	PCB 147/149	0.374	pg/L	7.76	7.76	7.76	**	1	0%
Hexa	PCB 148	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Hexa	PCB 150	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Hexa	PCB 152	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Hexa	PCB 153/168	0.374	pg/L	13.8	13.8	13.80	**	1	0%
Hexa	PCB 155	0.374	pg/L	0.479	0.479	0.48	**	1	0%
Hexa	PCB 156/157	0.374	pg/L	2	2	2.00	**	1	0%
Hexa	PCB 158	0.374	pg/L	1.26	1.26	1.26	**	1	0%
Hexa	PCB 159	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Hexa	PCB 161	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Hexa	PCB 162	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Hexa	PCB 164	0.374	pg/L	0.711	0.711	0.71	**	1	0%
Hexa	PCB 165	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Hexa	PCB 167	0.374	pg/L	0.791	0.791	0.79	**	1	0%
Hexa	PCB 169	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%

** Not applicable

< Results reported less than detection limit

¹ Range, mean, standard deviation, and number of samples (N) are provided. When results are less than, the detection limit was used to calculate each statistical value

² Percent of samples with result less than detection limit

SOUTH HILL CSO QUALITY MONITORING, 2025 – UNFILTERED SAMPLE POLYCHLORINATED BIPHENYLS (PCBs) CONTINUED

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹					
				Grab					
				Range	Mean	Stdev	N	%ND ²	
Polybrominated diphenyl ethers (PBDEs)									
Hepta	PCB 170	0.374	pg/L	2.28	2.28	2.28	**	1	0%
Hepta	PCB 171/173	0.374	pg/L	0.678	0.678	0.68	**	1	0%
Hepta	PCB 172	0.374	pg/L	0.421	0.421	0.42	**	1	0%
Hepta	PCB 174	0.374	pg/L	1.35	1.35	1.35	**	1	0%
Hepta	PCB 175	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Hepta	PCB 176	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Hepta	PCB 177	0.374	pg/L	1.33	1.33	1.33	**	1	0%
Hepta	PCB 178	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Hepta	PCB 179	0.374	pg/L	0.619	0.619	0.62	**	1	0%
Hepta	PCB 180/193	0.374	pg/L	6.03	6.03	6.03	**	1	0%
Hepta	PCB 181	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Hepta	PCB 182	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Hepta	PCB 183/185	0.374	pg/L	1.54	1.54	1.54	**	1	0%
Hepta	PCB 184	0.374	pg/L	0.607	0.607	0.61	**	1	0%
Hepta	PCB 186	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Hepta	PCB 187	0.374	pg/L	3.54	3.54	3.54	**	1	0%
Hepta	PCB 188	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Hepta	PCB 189	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Hepta	PCB 190	0.374	pg/L	0.559	0.559	0.56	**	1	0%
Hepta	PCB 191	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Hepta	PCB 192	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Octa	PCB 194	0.374	pg/L	1.92	1.92	1.92	**	1	0%
Octa	PCB 195	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Octa	PCB 196	0.374	pg/L	0.49	0.49	0.49	**	1	0%
Octa	PCB 197/200	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Octa	PCB 198/199	0.374	pg/L	1.12	1.12	1.12	**	1	0%
Octa	PCB 201	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Octa	PCB 202	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Octa	PCB 203	0.374	pg/L	0.684	0.684	0.68	**	1	0%
Octa	PCB 204	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Octa	PCB 205	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Nona	PCB 206	0.374	pg/L	0.584	0.584	0.58	**	1	0%
Nona	PCB 207	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Nona	PCB 208	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%
Deca	PCB 209	0.374	pg/L	<0.374	<0.374	<0.374	**	1	100%

** Not applicable

< Results reported less than detection limit

¹ Range, mean, standard deviation, and number of samples (N) are provided. When results are less than, the detection limit was used to calculate each statistical value

² Percent of samples with result less than detection limit

SOUTH HILL CSO QUALITY MONITORING, 2025 – FILTRATE POLYCHLORINATED BIPHENYLS (PCBs)

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹					
				Grab					
				Range	Mean	Stdev	N	%ND ²	
Polychlorinated biphenyls (PCBs)									
Mono	PCB 1	0.362	pg/L	17.7	17.7	17.7	**	1	0%
Mono	PCB 2	0.362	pg/L	7.82	7.82	7.82	**	1	0%
Mono	PCB 3	0.362	pg/L	28	28	28.0	**	1	0%
Di	PCB 4	0.362	pg/L	3.69	3.69	3.69	**	1	0%
Di	PCB 5	0.362	pg/L	1.09	1.09	1.09	**	1	0%
Di	PCB 6	0.362	pg/L	2.15	2.15	2.15	**	1	0%
Di	PCB 7	0.362	pg/L	2.85	2.85	2.85	**	1	0%
Di	PCB 8	0.362	pg/L	4.32	4.32	4.32	**	1	0%
Di	PCB 9	0.362	pg/L	0.37	0.373	0.37	**	1	0%
Di	PCB 10	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Di	PCB 11	0.362	pg/L	35.5	35.5	35.50	**	1	0%
Di	PCB 12/13	0.362	pg/L	1.85	1.85	1.85	**	1	0%
Di	PCB 14	0.362	pg/L	1.55	1.55	1.55	**	1	0%
Di	PCB 15	0.362	pg/L	2.6	2.6	2.60	**	1	0%
Tri	PCB 16	0.362	pg/L	1.98	1.98	1.98	**	1	0%
Tri	PCB 17	0.362	pg/L	1.77	1.77	1.77	**	1	0%
Tri	PCB 18/30	0.362	pg/L	5.04	5.04	5.04	**	1	0%
Tri	PCB 19	0.362	pg/L	1.83	1.83	1.83	**	1	0%
Tri	PCB 20/28	0.362	pg/L	5.55	5.55	5.55	**	1	0%
Tri	PCB 21/33	0.362	pg/L	4.25	4.25	4.25	**	1	0%
Tri	PCB 22	0.362	pg/L	2.52	2.52	2.52	**	1	0%
Tri	PCB 23	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Tri	PCB 24	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Tri	PCB 25	0.362	pg/L	0.67	0.67	0.67	**	1	0%
Tri	PCB 26/29	0.362	pg/L	1.11	1.11	1.11	**	1	0%
Tri	PCB 27	0.362	pg/L	0.434	0.434	0.43	**	1	0%
Tri	PCB 31	0.362	pg/L	5.2	5.2	5.20	**	1	0%
Tri	PCB 32	0.362	pg/L	1.34	1.34	1.34	**	1	0%
Tri	PCB 34	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Tri	PCB 35	0.362	pg/L	0.364	0.364	0.36	**	1	0%
Tri	PCB 36	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Tri	PCB 37	0.362	pg/L	1.96	1.96	1.96	**	1	0%
Tri	PCB 38	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Tri	PCB 39	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Tetra	PCB 40/41/71	0.362	pg/L	1.72	1.72	1.72	**	1	0%
Tetra	PCB 42	0.362	pg/L	0.846	0.846	0.85	**	1	0%
Tetra	PCB 43	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Tetra	PCB 44/47/65	0.362	pg/L	7.88	7.88	7.88	**	1	0%
Tetra	PCB 45/51	0.362	pg/L	1.64	1.64	1.64	**	1	0%
Tetra	PCB 46	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Tetra	PCB 48	0.362	pg/L	0.667	0.667	0.67	**	1	0%
Tetra	PCB 49/69	0.362	pg/L	2.14	2.14	2.14	**	1	0%
Tetra	PCB 50/53	0.362	pg/L	0.575	0.575	0.58	**	1	0%
Tetra	PCB 52	0.362	pg/L	4.56	4.56	4.56	**	1	0%
Tetra	PCB 54	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Tetra	PCB 55	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Tetra	PCB 56	0.362	pg/L	1.08	1.08	1.08	**	1	0%
Tetra	PCB 57	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Tetra	PCB 58	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Tetra	PCB 59/62/75	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Tetra	PCB 60	0.362	pg/L	0.749	0.749	0.75	**	1	0%
Tetra	PCB 61/70/74/76	0.362	pg/L	4.62	4.62	4.62	**	1	0%
Tetra	PCB 63	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Tetra	PCB 64	0.362	pg/L	1.42	1.42	1.42	**	1	0%
Tetra	PCB 66	0.362	pg/L	2.59	2.59	2.59	**	1	0%
Tetra	PCB 67	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Tetra	PCB 68	0.362	pg/L	0.73	0.73	0.73	**	1	0%
Tetra	PCB 72	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Tetra	PCB 73	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Tetra	PCB 77	0.362	pg/L	0.499	0.499	0.50	**	1	0%
Tetra	PCB 78	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Tetra	PCB 79	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Tetra	PCB 80	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Tetra	PCB 81	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
** Not applicable									
< Results reported less than detection limit									
1 Range, mean, standard deviation, and number of samples (N) are provided. When results are less than, the detection limit was used to caculate each statistical value									
2 Percent of samples with result less than detection limit									

SOUTH HILL CSO QUALITY MONITORING, 2025 – FILTRATE POLYCHLORINATED BIPHENYLS (PCBs)
CONTINUED

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹					
				Grab				N	%ND ²
				Range	Mean	Stdev			
Polychlorinated biphenyls (PCBs)									
Penta	PCB 82	0.362	pg/L	0.53	0.53	0.53	**	1	0%
Penta	PCB 83/99	0.362	pg/L	2.29	2.29	2.29	**	1	0%
Penta	PCB 84	0.362	pg/L	1.03	1.03	1.03	**	1	0%
Penta	PCB 85/116/117	0.362	pg/L	1	1	1.00	**	1	0%
Penta	PCB 86/87/97/109/119/125	0.362	pg/L	3.32	3.32	3.32	**	1	0%
Penta	PCB 88/91	0.362	pg/L	0.551	0.551	0.55	**	1	0%
Penta	PCB 89	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Penta	PCB 90/101/113	0.362	pg/L	4.24	4.24	4.24	**	1	0%
Penta	PCB 92	0.362	pg/L	0.866	0.866	0.87	**	1	0%
Penta	PCB 93/95/98/100/102	0.362	pg/L	3.45	3.45	3.45	**	1	0%
Penta	PCB 94	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Penta	PCB 96	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Penta	PCB 103	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Penta	PCB 104	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Penta	PCB 105	0.362	pg/L	2.07	2.07	2.07	**	1	0%
Penta	PCB 106	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Penta	PCB 107	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Penta	PCB 108/124	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Penta	PCB 110/115	0.362	pg/L	5.29	5.29	5.29	**	1	0%
Penta	PCB 111	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Penta	PCB 112	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Penta	PCB 114	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Penta	PCB 118	0.362	pg/L	3.86	3.86	3.86	**	1	0%
Penta	PCB 120	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Penta	PCB 121	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Penta	PCB 122	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Penta	PCB 123	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Penta	PCB 126	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Penta	PCB 127	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hexa	PCB 128/166	0.362	pg/L	0.97	0.97	0.97	**	1	0%
Hexa	PCB 129/138/160/163	0.362	pg/L	5.72	5.72	5.72	**	1	0%
Hexa	PCB 130	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hexa	PCB 131	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hexa	PCB 132	0.362	pg/L	1.4	1.4	1.40	**	1	0%
Hexa	PCB 133	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hexa	PCB 134/143	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hexa	PCB 135/151/154	0.362	pg/L	1.3	1.3	1.30	**	1	0%
Hexa	PCB 136	0.362	pg/L	0.493	0.493	0.49	**	1	0%
Hexa	PCB 137	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hexa	PCB 139/140	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hexa	PCB 141	0.362	pg/L	0.761	0.761	0.76	**	1	0%
Hexa	PCB 142	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hexa	PCB 144	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hexa	PCB 145	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hexa	PCB 146	0.362	pg/L	1.01	1.01	1.01	**	1	0%
Hexa	PCB 147/149	0.362	pg/L	2.9	2.9	2.90	**	1	0%
Hexa	PCB 148	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hexa	PCB 150	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hexa	PCB 152	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hexa	PCB 153/168	0.362	pg/L	5.13	5.13	5.13	**	1	0%
Hexa	PCB 155	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hexa	PCB 156/157	0.362	pg/L	0.815	0.815	0.82	**	1	0%
Hexa	PCB 158	0.362	pg/L	0.405	0.405	0.41	**	1	0%
Hexa	PCB 159	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hexa	PCB 161	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hexa	PCB 162	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hexa	PCB 164	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hexa	PCB 165	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hexa	PCB 167	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hexa	PCB 169	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%

** Not applicable

< Results reported less than detection limit

¹ Range, mean, standard deviation, and number of samples (N) are provided. When results are less than, the detection limit was used to calculate each statistical value

² Percent of samples with result less than detection limit

SOUTH HILL CSO QUALITY MONITORING, 2025 – FILTRATE POLYCHLORINATED BIPHENYLS (PCBs)
CONTINUED

Subclass	Analyte	Detection Limit	Units	Descriptive Statistics ¹					
				Grab					
				Range	Mean	Stdev	N	%ND ²	
Polychlorinated biphenyls (PCBs)									
Hepta	PCB 170	0.362	pg/L	0.904	0.904	0.90	**	1	0%
Hepta	PCB 171/173	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hepta	PCB 172	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hepta	PCB 174	0.362	pg/L	0.59	0.59	0.59	**	1	0%
Hepta	PCB 175	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hepta	PCB 176	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hepta	PCB 177	0.362	pg/L	0.524	0.524	0.52	**	1	0%
Hepta	PCB 178	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hepta	PCB 179	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hepta	PCB 180/193	0.362	pg/L	2.44	2.44	2.44	**	1	0%
Hepta	PCB 181	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hepta	PCB 182	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hepta	PCB 183/185	0.362	pg/L	0.703	0.703	0.70	**	1	0%
Hepta	PCB 184	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hepta	PCB 186	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hepta	PCB 187	0.362	pg/L	1.34	1.34	1.34	**	1	0%
Hepta	PCB 188	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hepta	PCB 189	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hepta	PCB 190	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hepta	PCB 191	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Hepta	PCB 192	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Octa	PCB 194	0.362	pg/L	1.23	1.23	1.23	**	1	0%
Octa	PCB 195	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Octa	PCB 196	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Octa	PCB 197/200	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Octa	PCB 198/199	0.362	pg/L	0.407	0.407	0.41	**	1	0%
Octa	PCB 201	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Octa	PCB 202	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Octa	PCB 203	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Octa	PCB 204	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Octa	PCB 205	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Nona	PCB 206	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Nona	PCB 207	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Nona	PCB 208	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%
Deca	PCB 209	0.362	pg/L	<0.362	<0.362	<0.362	**	1	100%

** Not applicable

< Results reported less than detection limit

¹ Range, mean, standard deviation, and number of samples (N) are provided. When results are less than, the detection limit was used to calculate each statistical value

² Percent of samples with result less than detection limit

