TECHNICAL MEMORANDUM

To:	**Ian McAllister, Ashleigh Crompton, Mike Champion, Jackie Boruch and Ryan Schucroft (Woodfibre LNG)**	**Date:**	**2 Aug 2024**
From:	**Cheng Kuang, Holly Pelletier and Patrick Mueller (Lorax)**	**Project #:**	**A633-7**
Subject:	**PE-111578 Weekly Discharge and Compliance Report #24 for July 21 – 27**		

Waste Discharge Authorization Effluent Permit PE-111578 was issued by the British Columbia Energy Regulator (BCER) to Woodfibre LNG on February 9, 2024. The permit specifies monitoring and reporting requirements that are required to be met by Woodfibre LNG during construction of the LNG Export Facility. Reporting is required on a weekly basis.

Discharge and compliance monitoring is conducted by on-site Environmental Monitors (Roe Environmental) that are sub-contracted to the civil works contractor (LB LNG). Analytical samples are submitted by Roe Environmental to ALS Environmental in Burnaby, BC, for testing. Lorax Environmental provides water quality database management and WDA compliance reporting services for Woodfibre LNG.

This technical memorandum (Report #24) was prepared by Lorax Environmental and summarizes monitoring conducted the week of July 21 – 27 for contact waters directed to a WWTP or a sedimentation pond. Monitoring data and pending results from prior reporting periods available at the time of reporting are tabulated and included as appendices. Report #24 has been prepared to meet the requirements specified in Condition 4.2 of WDA Effluent Permit PE-111578:

> "The Permittee shall summarize the results of the discharge and compliance monitoring program in a report that shall be submitted to the BCER weekly over the term of this permit. Reports must include suitable tabulated data. The table must include any applicable regulatory limits/guidelines *e.g.* permit limits, BC Water Quality Guidelines etc. Any exceedances of respective regulatory limits/guidelines must be clearly highlighted. Any missed sampling events/missing data must be identified with an explanation provided. Reporting frequency may be reduced upon a history of compliance and by written confirmation from the BCER. These reports shall be submitted to Waste.Management@bc-er.ca. A copy of the reports shall be provided to each First Nation consulted with regarding this subject permit, and also made publicly available on the Woodfibre LNG Environmental Reporting webpage."

The site layout is shown in Figure 1 at the end of this report. Sedimentation pond photographs are included in Appendix A, and monitoring results are tabulated in Appendix B through Appendix G for contact water and receiving environment samples.

1. Current Conditions

The Construction Phase of the Woodfibre LNG Export Facility commenced in October 2023. Early stage civil works are ongoing, and these include site grading, levelling, bedrock excavation and sedimentation pond and WWTP construction. Shoring works along the shoreline and foreshore areas were initiated in December 2023, and in early 2024 construction of water management infrastructure was initiated and has continued through the July 21 – 27 monitoring period. The East WWTP is constructed and operating, and the East Sedimentation Pond has been commissioned for discharge. The PE- 111578 water management facilities that are completed or were under construction during the reporting period are shown in Figure 1.

The East and West catchments contact water conveyance ditches described in PE-111578 were designed to transport non-contaminated contact water to the East and West sedimentation ponds and will be constructed following completion of site preparation activities (*e.g.,* site grading, bedrock excavation) along the ditch lines. Until the ditches are operational, non-contaminated contact waters are managed to remain on site or are directed by pumping to the East Sedimentation Pond or East WWTP. Contaminated contact waters are contained and directed to the East WWTP.

A revised schedule is being developed to complete the installation of the East Sedimentation Pond permanent outfall structure. Until the outfall is constructed, a temporary discharge system (*i.e.,* pump, hosing and diffusor) is used to convey East Sedimentation Pond effluent to the authorized discharge location when necessary for the discharge of excess water, and if the effluent water quality meets the requirements set out in PE-111578.

The West Sedimentation Pond is complete, except for the outfall structure, and has not been commissioned for discharge. However, the pond has been used to store contact water that is subsequently directed to the East WWTP for treatment. The schedule for completion of the pond outfall structure is being revised. The West WWTP has been partially assembled and commissioning of the WWTP is planned for early August with the commencement of pilot trials.

The completed non-contact water diversion ditch west of Mill Creek was commissioned for use on April 7 and discharges to Mill Creek at station OUT-06 (Figure 1). Monitoring stations OUT-01, OUT-02, and OUT-11 at pre-existing culvert outlets have been established noting that the outlets will be upgraded and extended later in the construction schedule. Additional construction is underway for diversion ditching leading to stations OUT-02 and OUT-11.

Pilot testing of the East WWTP continued during the monitoring period (July 21 – 27). Contaminated and potentially contaminated contact waters from baker tanks located near the East Sedimentation Pond were directed to the East WWTP for treatment, as well as water recirculated from the East Sedimentation Pond. The contact water source areas are shown in Figure 2 and Figure 3 in Appendix A. A total of 3,739 m^3 of treated WWTP effluent was discharged to the East

Sedimentation Pond during the reporting period (July 21 – 27). Daily WWTP effluent flows are provided in Appendix C (Table C-4).

A total of 1,443 m^3 of effluent was intermittently discharged from the East Sedimentation Pond to Howe Sound on July 24 and 25. There were no discharges from the East and West Sedimentation Ponds from July 21 – 23 and July 26 – 27. Daily effluent flows are provided in Appendix B (Table B-5). Photographs of the ponds are included in Appendix A (Figure 4 and Figure 5).

The weather was warm and sunny during the monitoring period (July 21 – 27). Daily Temperature and precipitation records were not available at the local Woodfibre Weather Station due to ongoing station outage. The weather station will be repaired; however, it is uncertain when the station will be back to normal operation. In the interim, weather data were obtained from the Main Street Squamish Station. The daily weather conditions are summarized in Table 1.

**Table 1: **
Summary of Certified Project Area (CPA) Daily Weather Conditions.

Date	Precipitation (mm)	Max. Temp (°C)	Min. Temp (°C)	Weather Description
07-21-2024	0	28.5	15.2	Sun
07-22-2024	0	22.5	17.7	Sun
07-23-2024	0	22.2	16.2	Sun
07-24-2024	0	22.8	14.3	Sun
07-25-2024	0	21.4	12.8	Sun
07-26-2024	0	22.2	10.4	Sun
07-27-2024	0	23.2	12.3	Sun

Note: Data retrieved from the Main Street Squamish Station due to ongoing outage of the Woodfibre Weather Station.

2. Monitoring Summary

The PE-111578 authorized works were under construction during the July 21 – 27 monitoring period. Compliance monitoring stations are progressively established as water management infrastructure is completed. Monitoring is conducted by the on-site Environmental Monitors (Roe Environmental). Analytical samples are submitted by Roe Environmental to ALS Environmental in Burnaby, BC, for testing.

The following monitoring stations have been established (Figure 1):

- Creek water (SW-01, SW-02, SW-03, SW-04, SW-07).
- Howe Sound reference and IDZ locations (WQR1, WQR2, IDZ-E1 and IDZ-E2).
- Non-contact diversion ditch outlets (OUT-01, OUT-02, OUT-06, and OUT-11).

- Contact water monitoring locations (WWTP-E-IN, WWTP-E-OUT, SP-E-IN-2, SP-E-OUT, SP-E-NE, SP-E-NW, SP-W-NE, and SP-W-NW).

East Sedimentation Pond influent and effluent stations SP-E-NW and SP-E-NE, respectively, are in-pond stations that may be monitored in place of stations SP-E-IN-2 and SP-E-OUT when there is no influent to, or discharge from the East Sedimentation Pond. Water quality in the West Sedimentation Pond is currently monitored at in-pond stations SP-W-NE and SP-W-NW.

Stations IDZ-E1, IDZ-E2, WWTP-E-IN, WWTP-E-OUT, SP-E-NW, SP-E-NE, and SP-E-OUT were monitored during the monitoring period (July 21 – 27). Sampling dates and parameters tested are summarized in Table 2. Overall, the PE-111578 monitoring requirements that were applicable during the monitoring period (July 21 – 27) were met. Daily field parameters and analytical samples were not collected at the influent station SP-E-IN-2 as the pond did not receive contact water inflows during the monitoring period. Daily field parameters were not collected at SP-E-OUT July 21 – 23, 26 and 27 because sedimentation pond effluent was not discharged on these days.

Quarterly toxicity testing was conducted using an effluent sample collected at SP-E-OUT and two marine water samples collected at IDZ-E1 and IDZ-E2 on May 8, 2024. Lab reports for the May 8 toxicity tests (acute and chronic) were received by July 26. Data interpretation is in progress and the May 8 toxicity test results will be included in the next weekly report.

Table 2:
Summary of PE-111578 Monitoring Samples Collected July 21 – 27.

Sampling Date	Sample	Description	Parameters Tested	Monitoring Frequency
July 21, 2024	SP-E-NE [1]	East Sedimentation Pond, in-pond sample, represents effluent quality	Field, Physical & General Parameters, Total and Dissolved Metals.	P
	SP-E-NW [1]	East Sedimentation Pond, in-pond sample, represents influent quality		
	WWTP-E-OUT	East WWTP effluent	Field, Physical & General Parameters, Total and Dissolved Metals.	D, W_1, P
	WWTP-E-IN	East WWTP influent		
July 22, 2024	SP-E-NE [1]	East Sedimentation Pond, in-pond sample, represents effluent quality	Field Parameters.	P
	WWTP-E-OUT	East WWTP effluent	Field Parameters.	D
	WWTP-E-IN	East WWTP influent		
July 23, 2024	SP-E-NE [1]	East Sedimentation Pond, in-pond sample, represents effluent quality	Field & General Parameters, Total and Dissolved Metals.	P
	WWTP-E-OUT	East WWTP effluent	Field Parameters.	D
	WWTP-E-IN	East WWTP influent		
July 24, 2024	SP-E-OUT	East Sedimentation Pond effluent (compliance point)	Field, Physical & General Parameters, VH & BTEX, EPHs & PAHs, Total, Dissolved and Speciated Metals, VOCs, Methylmercury, Dioxins and Furans.	D, W_1, W_2
	SP-E-NE [1]	East Sedimentation Pond, in-pond sample, represents effluent quality	Field and Physical Parameters, Total and Dissolved Metals.	P
	WWTP-E-OUT	East WWTP effluent	Field, Physical & General Parameters, VH & BTEX, EPHs & PAHs, Total, Dissolved and Speciated Metals, VOCs, Methylmercury, Dioxins and Furans.	D, W_1, W_2
	WWTP-E-IN	East WWTP influent		
July 25, 2024	SP-E-NE [1]	East Sedimentation Pond, in-pond sample, represents effluent quality	Field Parameters.	P
	SP-E-OUT	East Sedimentation Pond effluent (compliance point)	Field Parameters.	D
	WWTP-E-OUT	East WWTP effluent		
	WWTP-E-IN	East WWTP influent		
July 26, 2024	WWTP-E-OUT	East WWTP effluent	Field, Physical & General Parameters, VH & BTEX, EPHs & PAHs, Total, Dissolved and Speciated Metals, VOCs, Methylmercury, Glycols, Oil and Grease	D, W_1, W_2
	WWTP-E-IN	East WWTP influent		
	IDZ-E1-0.5	Howe Sound IDZ station E1; 0.5 m below surface	Field and Physical Parameters, Total, Dissolved and Speciated Metals.	W_3
	IDZ-E1-2m	Howe Sound IDZ station E1; 2 m below surface		
	IDZ-E1-SF	Howe Sound IDZ station E1; 2 m above the seafloor		
	IDZ-E2-0.5	Howe Sound IDZ station E2; 0.5 m below surface		
	IDZ-E2-2m	Howe Sound IDZ station E2; 2 m below surface		
	IDZ-E2-SF	Howe Sound IDZ station E2; 2 m above the seafloor		
July 27, 2024	SP-E-NE [1]	East Sedimentation Pond, in-pond sample, represents effluent quality	Field and Physical Parameters, Total, Dissolved and Speciated Metals.	P
	SP-E-NW [1]	East Sedimentation Pond, in-pond sample, represents influent quality		
	WWTP-E-OUT	East WWTP effluent	Field, Physical & General Parameters, VH & BTEX, EPHs & PAHs, Total, Dissolved and Speciated Metals, VOCs, Methylmercury, Glycols, Oil and Grease	D, W_1, W_2
	WWTP-E-IN	East WWTP influent		

Notes:
Monitoring frequency requirements under PE-111578 are indicated as follows:
D – daily monitoring of field parameters at WWTP and sedimentation pond influent and effluent stations.
M – Monthly monitoring for all parameters at WWTP, sedimentation pond and receiving environment stations.
W_1 – initial high frequency monitoring for physical parameters at WWTP and sedimentation pond influent and effluent stations (weekly for the first 6 months of monitoring).
W_2 - initial high frequency monitoring for all parameters at WWTP and sedimentation pond influent and effluent stations (weekly for the first 5 weeks of monitoring).
W_3 – initial high frequency monitoring for physical parameters at IDZ stations (weekly for the first 5 weeks of monitoring).
P - periodic monitoring for targeted parameters that is supplementary to PE-111578 requirements.
[1] In-Pond stations SP-E-NW and SP-E-NE may be monitored in place of stations SP-E-IN-2 and SP-E-OUT, respectively, when there is no influent to, or discharge from the East Sedimentation Pond at the time of monitoring. The monitoring of in-pond stations is not a PE-111578 requirement and is conducted at the discretion of field staff.

3. Water Quality Results

3.1 Screening and Reporting Overview

Water quality and flow monitoring results are screened against field quality control (QC) criteria, benchmark values and PE-111578 discharge limits. The screening results are discussed in the following sections and items outside the screening criteria are also summarized in the Section 4 tracking table (Table 6).

All water quality results are stored in the Woodfibre LNG environmental monitoring database. However, for brevity, a sub-set of the results are presented in the weekly report appendices. Results are reported for parameters with a freshwater, estuarine or marine water quality guideline for the protection of aquatic life, parameters with a discharge limit, parameters of potential concern (*i.e.,* dioxins and furans), as well as other parameters that are relevant for water quality characterization.

Federal and Provincial Water Quality Guidelines (WQG) are not specified for dioxins and furans. The general term "dioxins and furans" refers to a grouping of hundreds of individual compounds with similar chemical composition and properties. To simplify result presentation and interpretation, the results of individual compounds are converted to a total toxic equivalent (TEQ) value and are summed to produce single TEQ values for each sample by the laboratory. Consistent with the pre-construction baseline monitoring program, a lower-bound TEQ value is reported. The lower-bound TEQ is calculated assuming a concentration of zero for results reported as not detected, therefore, if individual compounds are not detected the TEQ will equal zero.

3.2 Summary of Reported Results

Field measurements and analytical results available at the time of reporting for samples collected during the monitoring period (July 21 – 27) and for other samples that have not been previously reported are listed below in Table 3. Analytical results not available at the time of reporting will be included in future weekly reports when available for the following samples:

- IDZ-E1 and IDZ-E2 samples collected July 26 (only field results available)

Analytical results for methylmercury, dioxins and furans were not reported for the following samples and will be included in future weekly reports when available (these tests typically require up to 4 weeks to complete):

- IDZ-E1 and IDZ-E2 collected July 13 (dioxins and furans)
- WWTP-E-IN and WWTP-E-OUT collected July 24 (methylmercury, dioxins and furans)
- SP-E-OUT collected July 24 (methylmercury, dioxins and furans)
- WWTP-E-IN and WWTP-E-OUT collected July 26 (methylmercury)
- WWTP-E-IN and WWTP-E-OUT collected July 27 (methylmercury)

Table 3:
Summary of Analytical Results Included in Weekly Discharge and Compliance Report #24.

Sample	Description	Sampling Date	Parameters Reported
SP-E-OUT	East Sedimentation Pond effluent (compliance point)	June 3, 2024	Dioxins and Furans.
IDZ-E1-0.5	Howe Sound IDZ station E1; 0.5 m below surface	June 4, 2024	Dioxins and Furans.
IDZ-E1-2m	Howe Sound IDZ station E1; 2 m below surface		
IDZ-E1-SF	Howe Sound IDZ station E1; 2 m above the seafloor		
IDZ-E2-0.5	Howe Sound IDZ station E2; 0.5 m below surface		
IDZ-E2-2m	Howe Sound IDZ station E2; 2 m below surface		
IDZ-E2-SF	Howe Sound IDZ station E2; 2 m above the seafloor		
WQR1-0.5	Reference site 1; 0.5 m below surface.		
WQR1-2m	Reference site 1; 2 m below surface.		
WQR1-SF	Reference site 1; 2 m above the seafloor.		
SP-E-OUT	East Sedimentation Pond effluent (compliance point)	June 8, 2024	Dioxins and Furans.
SP-E-NE	East Sedimentation Pond, in-pond sample, represents effluent quality	June 10, 2024	Dioxins and Furans.
WWTP-E-OUT	East WWTP effluent		
WWTP-E-IN	East WWTP influent		
IDZ-E1-0.5	Howe Sound IDZ station E1; 0.5 m below surface		
IDZ-E1-2m	Howe Sound IDZ station E1; 2 m below surface		
IDZ-E1-SF	Howe Sound IDZ station E1; 2 m above the seafloor		
IDZ-E2-0.5	Howe Sound IDZ station E2; 0.5 m below surface		
IDZ-E2-2m	Howe Sound IDZ station E2; 2 m below surface		
IDZ-E2-SF	Howe Sound IDZ station E2; 2 m above the seafloor		
SP-E-OUT	East Sedimentation Pond effluent (compliance point)	June 16, 2024	Dioxins and Furans.
SP-E-OUT	East Sedimentation Pond effluent (compliance point)	June 22, 2024	Dioxins and Furans.
WWTP-E-OUT	East WWTP effluent		
WWTP-E-IN	East WWTP influent		
WWTP-E-OUT	East WWTP effluent	June 25, 2024	Dioxins and Furans.
WWTP-E-IN (Baker 1)	East WWTP influent		
WWTP-E-IN (Baker 2)	East WWTP influent		
OUT-02	Non-Contact Water Diversion Ditch Outlet	June 26, 2024	Methylmercury.
SW-01	Lower Reach of Woodfibre Creek (near the mouth)		Methylmercury, Dioxins and Furans.
SW-04	Lower Reach of East Creek (near the outlet to the outfall culvert)		
SW-07	Upstream Mill Creek (at the diversion inlet)		
SW-02	Upper Reach of Mill Creek (upstream of the third bridge)	June 27, 2024	Methylmercury, Dioxins and Furans.
SW-03	Lower Reach of Mill Creek (near the mouth, in the estuarine zone)		
SP-E-OUT	East Sedimentation Pond effluent (compliance point)	July 1, 2024	Dioxins and Furans.
WWTP-E-OUT	East WWTP effluent		
WWTP-E-IN	East WWTP influent		
WQR1-0.5	Reference site 1; 0.5 m below surface.	July 9, 2024	Field, Physical and General Parameters, Total and Dissolved Metals, Hexavalent Chromium, Methylmercury, PAHs, and VOCs.
WQR1-2m	Reference site 1; 2 m below surface.		
WQR1-SF	Reference site 1; 2 m above the seafloor.		
WQR2-0.5	Reference site 2; 0.5 m below surface.		
WQR2-2m	Reference site 2; 2 m below surface.		
WQR2-SF	Reference site 2; 2 m above the seafloor.		
IDZ-E1-0.5	Howe Sound IDZ station E1; 0.5 m below surface	July 13, 2024	Field, Physical and General Parameters, Total and Dissolved Metals, Hexavalent Chromium, Methylmercury, PAHs, and VOCs.
IDZ-E1-2m	Howe Sound IDZ station E1; 2 m below surface		
IDZ-E1-SF	Howe Sound IDZ station E1; 2 m above the seafloor		
IDZ-E2-0.5	Howe Sound IDZ station E2; 0.5 m below surface		
IDZ-E2-2m	Howe Sound IDZ station E2; 2 m below surface		
IDZ-E2-SF	Howe Sound IDZ station E2; 2 m above the seafloor		
IDZ-E1-0.5	Howe Sound IDZ station E1; 0.5 m below surface	July 17, 2024	Field and Physical Parameters.
IDZ-E1-2m	Howe Sound IDZ station E1; 2 m below surface		
IDZ-E1-SF	Howe Sound IDZ station E1; 2 m above the seafloor		
IDZ-E2-0.5	Howe Sound IDZ station E2; 0.5 m below surface		
IDZ-E2-2m	Howe Sound IDZ station E2; 2 m below surface		
IDZ-E2-SF	Howe Sound IDZ station E2; 2 m above the seafloor		
SP-E-OUT	East Sedimentation Pond effluent (compliance point)	July 18, 2024	Methylmercury.
SP-E-NE	East Sedimentation Pond, in-pond sample, represents effluent quality	July 21, 2024	Field and Physical Parameters, Total and Dissolved Metals.
SP-E-NW	East Sedimentation Pond, in-pond sample, represents influent quality		
WWTP-E-OUT	East WWTP effluent		
WWTP-E-IN	East WWTP influent		
SP-E-NE	East Sedimentation Pond, in-pond sample, represents effluent quality	July 23, 2024	Field and Physical Parameters, Total and Dissolved Metals.
SP-E-NE	East Sedimentation Pond, in-pond sample, represents effluent quality	July 24, 2024	Field and Physical Parameters, Total and Dissolved Metals.
SP-E-OUT	East Sedimentation Pond effluent (compliance point)		Field, Physical and General Parameters, Total and Dissolved Metals, Hexavalent Chromium, PAHs, and VOCs.
WWTP-E-OUT	East WWTP effluent		
WWTP-E-IN	East WWTP influent		
WWTP-E-OUT	East WWTP effluent	July 26, 2024	Field, Physical and General Parameters, Total and Dissolved Metals, Hexavalent Chromium, PAHs, and VOCs.
WWTP-E-IN	East WWTP influent		
SP-E-NE	East Sedimentation Pond, in-pond sample, represents effluent quality	July 27, 2024	Field and Physical Parameters, Total and Dissolved Metals.
SP-E-NW	East Sedimentation Pond, in-pond sample, represents influent quality		
WWTP-E-OUT	East WWTP effluent		Field, Physical and General Parameters, Total and Dissolved Metals, Hexavalent Chromium, PAHs, and VOCs.
WWTP-E-IN	East WWTP influent		

3.3 East Sedimentation Pond

The East Sedimentation Pond influent and effluent results are screened against PE-111578 discharge limits. Parameters without a discharge limit are screened against BC, Canadian and Federal water quality guidelines (WQGs) for the protection of marine water aquatic life. Influent water is not discharged from site, therefore only effluent water quality is assessed for exceedances. The analytical results, daily field parameters, discharge limits and WQGs are summarized in Table B-1 through Table B-4 (analytical results) and Table B-5 (field measurements) of Appendix B.

During the monitoring period (July 21 – 27), the East Sedimentation Pond received East WWTP treated effluent each day. The sedimentation pond did not receive contact water during the monitoring period; therefore, field measurements and analytical samples at station SP-E-IN-2 were not collected. Field measurements were taken daily at the in-pond effluent quality station (SP-E-NE) except on July 26 (Section 2), and twice at the in-pond influent quality station (SP-E-NW). Analytical samples were collected at station SP-E-NE on July 21, 23, 24 and 27; and at station SP-E-NW on July 21 and 27.

The East Sedimentation Pond intermittently discharged on July 24 and 25 by pumping effluent to the discharge location SP-E-OUT. Field measurements were collected at SP-E-OUT on both days. An analytical sample was collected on July 24 while the pond was discharging.

Field measurements and analytical results for the in-pond samples and July 24 effluent sample met PE-111578 discharge limits and WQGs during the monitoring period (July 21 – 27) except for dissolved oxygen. Field measurements of dissolved oxygen collected at SP-E-OUT on July 24 and 25 (6.32 and 6.11 mg/L, respectively) did not meet the WQG (≥8 mg/L; Table 4). The mixing zone model indicates the effluent dissolved oxygen would meet the WQG within the initial mixing zone (IDZ) defined in PE-111578.

Dioxins and furans analytical results were available at the time of reporting for samples collected at SP-E-OUT on June 3, June 8, June 16, June 22, and July 1, and for an in-pond sample collected at SP-E-NE on June 10 (discussed in Weekly reports #17, #18, #19, #21). The lower bound polychlorinated dibenzodioxins/dibenzofurans (PCDD/F; dioxins and furans) toxic equivalency (TEQ) ranged from 0.109 to 1.11 pg/L in the SP-E-OUT samples and was 0.0127 pg/L in the SP-E-NE sample.

A methylmercury analytical result was available at the time of reporting for the July 18 SP-E-OUT sample discussed in Weekly report #23, which had a concentration of 0.000096 µg/L.

Table 4:
Summary of WQG Exceedances for the East Sedimentation Pond at Effluent Station SP- E- OUT.

Parameter	Units	WQG (LT)	N	N >WQG	Commentary
Dissolved Oxygen	mg/L	>= 8.0	2	2	The field measurement of dissolved oxygen at the effluent station (SP-E-OUT) on July 24 (6.32 mg/L) and July 25 (6.11 mg/L) were below the lower limit of the WQG. The mixing zone model indicates the dissolved concentration would be raised above the lower limit of the WQG within the initial dilution zone defined in PE-111578. The root cause and potential mitigation of the low dissolved oxygen concentrations are under investigation and are being tracked in Section 4 (Table 6) of this report.

WQG = British Columbia or Canadian Water Quality Guideline for the Protection of Aquatic Life. LT = long-term freshwater or estuarine aquatic life guideline. Variable dependant guidelines were calculated for each sample using sample specific parameter values. The nearest boundary value was used if a variable was outside the formula range.
N = number of samples.
Non-detect results are screened using the detection limit value.

3.4 East Wastewater Treatment Plant

The East WWTP influent and effluent results are screened against the minimum discharge objectives (MDOs) which the WWTP was designed to meet. Contaminated contact water is directed to the WWTP influent, and it is expected that influent water is unlikely to meet the design MDOs, therefore only effluent water quality is assessed for exceedances. The analytical results, daily field measurements, and the design MDOs are summarized in Table C-1 through Table C-3 (analytical results) and Table C-4 (field measurements) of Appendix C. Screening results are summarized in Table 5 for parameter concentrations that do not meet the design MDOs.

The East WWTP received contact water and recirculated East Sedimentation Pond water each day July 21 – 27 (Section 2). The influent waters were treated by the East WWTP and discharged to the East Sedimentation Pond. Field measurements were collected each day at the influent and effluent stations, WWTP-E-IN and WWTP-E-OUT, respectively. Field pH ranged from 6.9 to 7.7 at WWTP-E-IN during the monitoring period (July 21 – 27), while dissolved oxygen ranged from 5.93 to 7.68 mg/L, and turbidity ranged from 0.54 to 6.16 NTU (Appendix C, Table C-4). Field pH, dissolved oxygen, and turbidity in the East WWTP effluent (WWTP-E-OUT) ranged from 5.6 to 6.5 pH unit, 0.55 to 6.73 mg/L, and 0.43 to 1.43 NTU, respectively.

Field measurements for pH did not meet the design MDOs in all WWTP-E-OUT samples collected during the monitoring period. However, all pH measurements met the PE-111578 discharge limits. Pilot testing of the East WWTP is underway and the deviations in pH are attributed to WWTP process adjustments during the monitoring period. A design MDO for dissolved oxygen was not specified in the WWTP design report; however, due to the frequency of low dissolved oxygen

values an investigation is underway to identify root cause and potential mitigations for low oxygen concentrations (Table 6).

Analytical samples were collected from East WWTP influent and effluent stations on July 21, 24, 26, and 27. Effluent quality monitored at WWTP-E-OUT met design MDOs for all parameters except for total vanadium in three out of the four samples (Table 5). Total vanadium concentrations in the WWTP-E-OUT samples ranged from 0.00475 to 0.00545 mg/L.

Dioxins and furans analytical results were available at the time of reporting for the WWTP influent and effluent samples collected on June 10, June 22, June 25, and July 1 (discussed in Weekly reports #18, #19, #21). The lower bound polychlorinated dibenzodioxins/dibenzofurans (PCDD/F; dioxins and furans) toxic equivalency (TEQ) ranged from 0.0302 to 3.17 pg/L at WWTP-E-IN; and ranged from 0.0142 to 0.426 pg/L at WWTP-E-OUT.

Table 5:
Summary of MDO Exceedances for the East WWTP at Effluent Station WWTP-E-OUT.

Parameter	Units	MDO	N	N >MDO	Commentary
Field pH	s.u.	7.0-8.7	7	7	Field pH was below the lower limit of the design MDO during the monitoring period (July 21 – 27). Process adjustments are underway and occasional deviations from the design MDOs may occur during the pilot period.
Total Vanadium	mg/L	0.005	4	3	The total vanadium concentrations were marginally above the design MDO in the July 21 (0.00545 mg/L), July 24 (0.00502 mg/L), and July 26 (0.00511 mg/L) samples. Additional process adjustments are under development to improve the removal of vanadium.

MDO = Minimum discharge objective which the East WWTP was designed to meet.
N = number of samples.
Non-detect results are screened using the detection limit value.

3.5 Non-Contact Water Diversion Ditch Outlets

Water quality results for non-contact water are screened against BC, Canadian and Federal WQGs for the protection of freshwater aquatic life. The analytical results, field parameters and WQGs are summarized in Appendix D.

Methylmercury analytical results were available at the time of reporting for the June 26 sample discussed in Weekly Report #20 for non-contact water diversion ditch outlet station OUT-02. The methylmercury concentration was 0.000048 µg/L and is within the range observed in the pre-construction baseline monitoring program for freshwater creeks within the CPA.

3.6 Freshwater and Estuarine Water Receiving Environment

Freshwater and estuarine water receiving environment samples are screened against BC, Canadian and Federal WQGs for the protection of freshwater or estuarine water aquatic life. The analytical

results, field parameters and WQGs are summarized in Appendix E and Appendix F for freshwater and estuarine water, respectively.

Dioxins and furans analytical results were available at the time of reporting for the June 26 – 27 samples discussed in Weekly Report #20 for freshwater and estuarine water receiving environment stations. The lower bound PCDD/F TEQ ranged from 0.0772 to 0.442 pg/L in freshwater samples from Woodfibre Creek (SW-01), Mill Creek (SW-02 and SW-07), and East Creek (SW- 04). The lower bound PCDD/F TEQ in the estuarine lower reach of Mill Creek (SW-03) was 0.0120 pg/L.

Methylmercury analytical results were available at the time of reporting for the June 26 – 27 samples discussed in Weekly Report #20 for freshwater and estuarine water receiving environment stations. Methylmercury concentrations were <0.000020 µg/L in the freshwater samples from Woodfibre Creek (SW-01) and upstream Mill Creek (SW-07), and <0.000050 µg/L in the samples from Mill Creek (SW-02) and East Creek (SW- 04). The methylmercury concentration in the estuarine lower reach of Mill Creek (SW-03) was <0.000050 µg/L. Methylmercury concentrations are within the ranges observed in the pre-construction baseline monitoring program.

3.7 Marine Water Receiving Environment

Marine water receiving environment samples are screened against BC, Canadian and Federal WQGs for the protection of marine water aquatic life. Parameter concentrations above a WQG value, but within the range of values observed in the baseline monitoring program are considered to represent the natural condition of the water and are not flagged as exceedances. The analytical results, field parameters and WQGs are summarized in Appendix G (Tables G-1 to G-8).

Analytical results for the July 9 marine water monitoring at WQR1 and WQR2 and for the July 13 and 17 monitoring at IDZ-E1 and IDZ-E2 at 0.5 and 2 m below the water surface and 2 m above the seafloor discussed in Weekly Reports #22 and #23 were available at the time of reporting (Table 2). Analytical and field results met WQGs except for dissolved oxygen and total boron. Dissolved oxygen concentrations were outside the WQG (≥8 mg/L) in samples collected from 2 m above the seafloor at reference station WQR1 on July 9 (6.05 mg/L) and at IDZ-E2 on July 13 and July 17 (7.52 and 7.48 mg/L, respectively). The concentrations of total boron in the samples ranged from <0.3 to 4.4 mg/L and were above the WQG (1.2 mg/L) in all samples collected 2 m above the seafloor and at 2 m below surface at reference stations WQR1 and WQR2 on July 9. The reported concentrations of dissolved oxygen and total boron observed in the marine water samples are within the concentration ranges observed in the pre-construction baseline monitoring program.

Dioxins and furans analytical results were available at the time of reporting for the June 4 samples discussed in Weekly Report #17 for marine receiving environment stations IDZ-E1, IDZ-E2, and WQR1 at 0.5 and 2 m below the water surface and 2 m above the seafloor. Dioxins and furans

analytical results were also available at the time of reporting for the June 10 samples discussed in Weekly Report #18 for marine receiving environment stations IDZ-E1 and IDZ-E2 at 0.5 and 2 m below the water surface and 2 m above the seafloor. For the June 4 samples, the lower bound PCDD/F TEQ concentrations ranged from 0.000648 to 0.253 pg/L at station IDZ-E1, 0.0196 to 0.167 pg/L at station IDZ-E2 and ranged from 0 to 0.144 pg/L at reference station WQR1. The lower bound PCDD/F TEQ concentrations for the June 10 samples ranged from 0.000375 to 1.07 pg/L at station IDZ-E1 and 0 to 0.0154 pg/L at station IDZ-E2.

Methylmercury analytical results were available at the time of reporting for the July 9 marine water monitoring at WQR1 and WQR2 at 0.5 and 2 m below the water surface and 2 m above the seafloor and for the July 13 marine water monitoring at IDZ-E1 and IDZ-E2 at 0.5 and 2 m below the water surface and 2 m above the seafloor discussed in Weekly Report #22. Methylmercury concentrations for the July 9 samples collected from marine reference stations WQR1 and WQR2 ranged from 0.000021 to 0.000026 µg/L. Methylmercury concentrations for the July 13 samples ranged from 0.000021 to 0.000027 µg/L at IDZ-E1 and from <0.000020 to 0.000026 µg/L at IDZ-E2. The methylmercury values observed in the marine water samples are within the concentrations ranges observed in the pre-construction baseline monitoring program.

4. Quality Control

This section presents the results of the quality control (QC) evaluation for the PE-111578 weekly report (Table 6). The evaluation includes a review of field and lab QC, completeness of the weekly report (*e.g.,* pending data), completeness of the monitoring program, confirmation of recordkeeping, evaluation of compliance and review of water management activities. Items flagged for follow-up in the exceedance tables in Section 3 are transferred to Table 6. Any items flagged for follow-up in Table 6 are carried forward to future reports until they are closed.

Table 6:
Weekly Report QC Evaluations and Ongoing Items

QC Procedure	Observation	Investigation/Resolution
Reporting Period (July 21 – 27, Report #24)		
Monitoring Program Evaluation	PE-111578 contact water, non-contact water and initial dilution zone monitoring stations have not been fully established.	The PE-111578 authorized works were under construction during the reporting period. Monitoring stations are progressively established as water management infrastructure is completed. The East Sedimentation Pond and East WWTP are completed, and pilot testing of the East WWTP is ongoing. The East Sedimentation Pond was commissioned for discharge on April 15. The West Sedimentation Pond is complete, except the outfall structure and West WWTP is under construction. The West Sedimentation Pond is not commissioned for discharge and did not discharge. The non-contact water diversion ditch that discharges at station OUT-06 has been commissioned, and stations for pre-existing outfalls OUT-01, OUT-02, and OUT-11 have also been established.
Monitoring Program Evaluation	Sampling location for SP-E-OUT	A sample port for SP-E-OUT was installed on May 23 and first sampled during pond discharge on May 27. All SP-E-OUT samples collected from May 27 to the time of writing were taken from the sample port which is located near the intake end of the temporary discharge hose. This sampling location is safer for staff access and is considered equivalent to sampling at the discharge end of the hose. This item is closed.
Pending Data	Methyl mercury, dioxin and furan results for samples collected July 24, 26, and 27 were not reported.	Methylmercury, dioxin and furan results for samples collected July 24, 26, and 27 were not complete at the time of reporting. Testing of these parameters typically requires up to 4 weeks to complete. The pending results are expected in late August. This item remains open.
Pending Data	Toxicity test results for samples collected May 8 were not reported	Quarterly toxicity testing was conducted using an effluent sample collected at SP-E-OUT and two marine water samples collected at IDZ-E1 and IDZ-E2 on May 8, 2024. Lab reports for the May 8 toxicity tests (acute and chronic) were received by July 26. Data interpretation is in progress and the May 8 toxicity test results will be included in the next weekly report. This item remains open.
Ongoing Items from Previous Weekly Reports		
Report #13: WWTP Performance Evaluation	The May 6 monitoring results for East WWTP indicate dissolved vanadium was not being removed by the treatment process.	Sampling conducted since May 6 indicates vanadium in treated WWTP effluent is almost entirely in soluble form, suggesting this form of vanadium is only partially treated, resulting in residual vanadium concentrations in the treated effluent that are generally below, but often in the vicinity of the MDO concentration (0.005 mg/L). Process adjustments are underway to improve vanadium removal as part of the WWTP pilot trials. This item remains open.
Report #17: Pending Data	Methyl mercury, dioxin and furan results for samples collected June 3 – 4 and June 8 were not reported.	Available methylmercury results for the June 3 SP-E-OUT sample are discussed in Section 3.3 of Report #17. The same section in Report #18 includes the June 4 and June 8 methylmercury results. Dioxin and furan results for samples collected June 3 – 4, and June 8 are discussed in Sections 3.3 and 3.7 of Report #24. This item is closed.
Report # 18: Pending Data	Dioxin and furan results for samples collected June 10 were not reported.	Dioxins and furans results are discussed in Section 3.3, 3.4, and 3.7 of Report #24. This item is closed.
Report #19: Pending Data	Methyl mercury, dioxin and furan results for samples collected June 16 and June 22 were not reported.	Available methylmercury results are discussed in Section 3.3 of Report #20. Dioxins and furans results are discussed in Section 3.3 and 3.4 of Report #24. This item is closed.
Report #20: Pending Data	Dioxin and furan results for samples collected June 25 were not reported.	Dioxins and furans results were not complete at the time of reporting. Testing of these parameters typically requires up to 4 weeks to complete. The pending results are expected in early August. This item remains open.
	Analytical results for samples collected June 26 – 27 were not reported.	Available analytical results for freshwater receiving environment samples collected June 26 – 27 are discussed in Section 3.6 of Report #21. Methylmercury, dioxin and furans results as discussed in Section 3.6 of Report #24. This item is closed.
Report #21: WWTP Performance Evaluation	Dissolved oxygen is frequently outside the treatment MDO	Previous weekly reports have indicated there was a design MDO for dissolved oxygen, this was incorrect, rather the marine WQG for dissolved oxygen water was evaluated as an MDO. This has been clarified in Appendix C, Table C-1. However, low dissolved oxygen has been observed in sedimentation pond effluent and investigation for root cause and evaluation of mitigation options for low dissolved oxygen in sedimentation pond is ongoing. A mitigation option currently (as of July 21) being evaluated is aeration of the contact water upstream of or within the East Sedimentation Pond. This item remains open.
Report #21: Pending Data	Dioxin and furan results for samples collected July 1 were not reported.	Dioxins and furans results are discussed in Sections 3.3 and 3.4 of Report #24. This item is closed.
Report #22: Pending Data	Analytical results for samples collected July 9 and July 13 were not reported.	Available analytical results for marine receiving environment samples collected July 9 and 13 are discussed in Section 3.7 of Report #24. Dioxin and furans results were not complete at the time of reporting. Testing of these parameters typically requires up to 4 weeks to complete. The pending results are expected in late August. This item remains open.
Report #22: Monitoring Program Evaluation	Site temperature and precipitation data are not available since July 12 due to malfunction of the Woodfibre Weather Station	Ongoing Woodfibre Weather Station outage. It is uncertain when the station will be back to normal operation. In the interim, weather data are obtained from the Main Street Squamish Station. This item remains open.
Report #23: Pending Data	Analytical results for samples collected July 17, 19, and 20 were not reported.	Available analytical results for marine receiving environment samples collected July 17 are discussed in Section 3.7 of Report #24. Analytical results for samples collected July 19 and 20 were not complete at the time of reporting. The pending results will be included in future weekly reports when available. This item remains open.
Report #23: Pending Data	Methyl mercury, dioxin and furan results for samples collected July 16 and July 18 were not reported.	The methylmercury result for July 18 SP-E-OUT sample is discussed in Section 3.3 of Report #24. Dioxins and furans results for samples collected July 16 and July 18 were not complete at the time of reporting. Testing of these parameters typically requires up to 4 weeks to complete. The pending results will be included in future weekly reports when available. This item remains open.
Report #23: Lab Data QC	Dissolved zinc greater than total zinc concentration in the SP-E-OUT sample collected July 18.	The concentration of dissolved zinc (0.0144 mg/L) was greater than the concentration of total zinc (0.0099 mg/L) and above the total zinc discharge limit (0.0133 mg/L). Total zinc represents the concentration of dissolved and particle-bound zinc, therefore, by this definition, total zinc should be equal to or greater than the corresponding dissolved zinc concentration. Laboratory re-analysis verified the original reported results for dissolved and total zinc. The laboratory also tested the unpreserved water in the general parameters sample bottle and reported comparable total and dissolved zinc concentrations (0.0090 and 0.0089 mg/L, respectively) that are aligned with the originally reported total zinc concentration. Based on the lab investigation, the original dissolved zinc result of 0.0144 mg/L is inferred to influenced by contamination of the dissolved metals bottle. Based on further investigation, the original dissolved zinc result of 0.0144 mg/L is inferred to be influenced by contamination from the SP-E-OUT sampling port. This item is closed.

Notes:
Result QA/QC screening includes the evaluation of field and lab QC results, comparison of total and dissolved metal results and review for modified detection limits.
Pending data are outstanding results from monitoring samples reported in the current or previous weekly reports.
Monitoring program evaluation is an assessment of the completeness of the monitoring program compared to PE-111578 requirements.

5. Closure

This weekly report is a desktop review by Lorax of the PE-111578 discharge and compliance monitoring program records, reports and results provided by Woodfibre LNG and prime contractor McDermott International and their sub-contractors. The records reviewed and analyzed by Lorax include ALS Environmental laboratory test reports and site reports (from Roe Environmental, LB LNG, McDermott and Woodfibre LNG). Verbal or electronic communications between Lorax, and Roe Environmental, LB LNG, McDermott, and Woodfibre LNG staff are conducted as needed to confirm the information presented in this report.

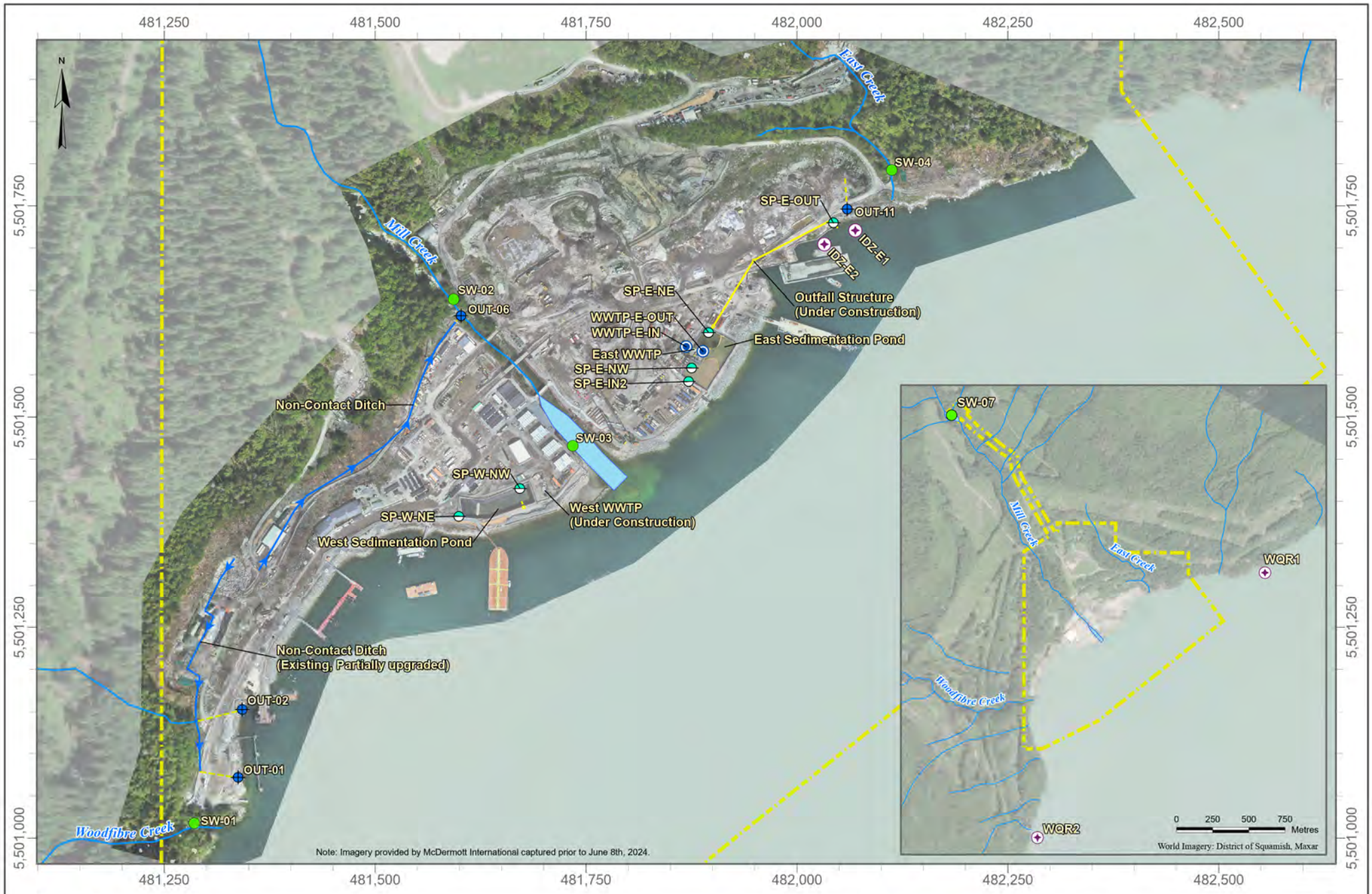
Regards,

LORAX ENVIRONMENTAL SERVICES LTD.

Holly Pelletier, B.Sc., GIT
Environmental Geoscientist

Cheng Kuang, M.Sc., RPBio
Environmental Scientist

Patrick Mueller, B.Sc., P.Chem.
Environmental Chemist



LEGEND

- Freshwater Monitoring Station
- Marine Water Monitoring Station
- Certified Project Area
- Waterbody
- Watercourse
- Non-Contact Diversion Ditch
- Outfall
- Culvert Pipe
- Clean Water Diversion Discharge Station
- Sediment Pond Monitoring Stations (Water Quality)
- Wastewater Treatment Plant (WWTP)

DATE SAVED:	Jul 30, 2024
DRAWN BY:	DM
REVIEWED:	PM
VERSION:	1

Coordinate System: NAD 1983 UTM Zone 10N
Projection: Transverse Mercator
Datum: North American 1983
Units: Metre

1:6,000

0 50 100 150 Metres

CLIENT: Woodfibre LNG

LORAX ENVIRONMENTAL

PROJECT:

Woodfibre LNG Project Construction Phase

TITLE: Completed or Under Construction Water Management Facilities and Established PE-111578 Monitoring Stations (July 27, 2024)

PROJECT #: A633-7 FIGURE: 1

P:\@Drafting\Woodfibre\Drafting Figures\APRX\WLNG Construction Phase 2024\WLNG Construction Phase 2024 - Weekly Reporting.aprx Figure 1 Monitoring and Compliance Locations

Appendix A: East and West Catchment Photographs

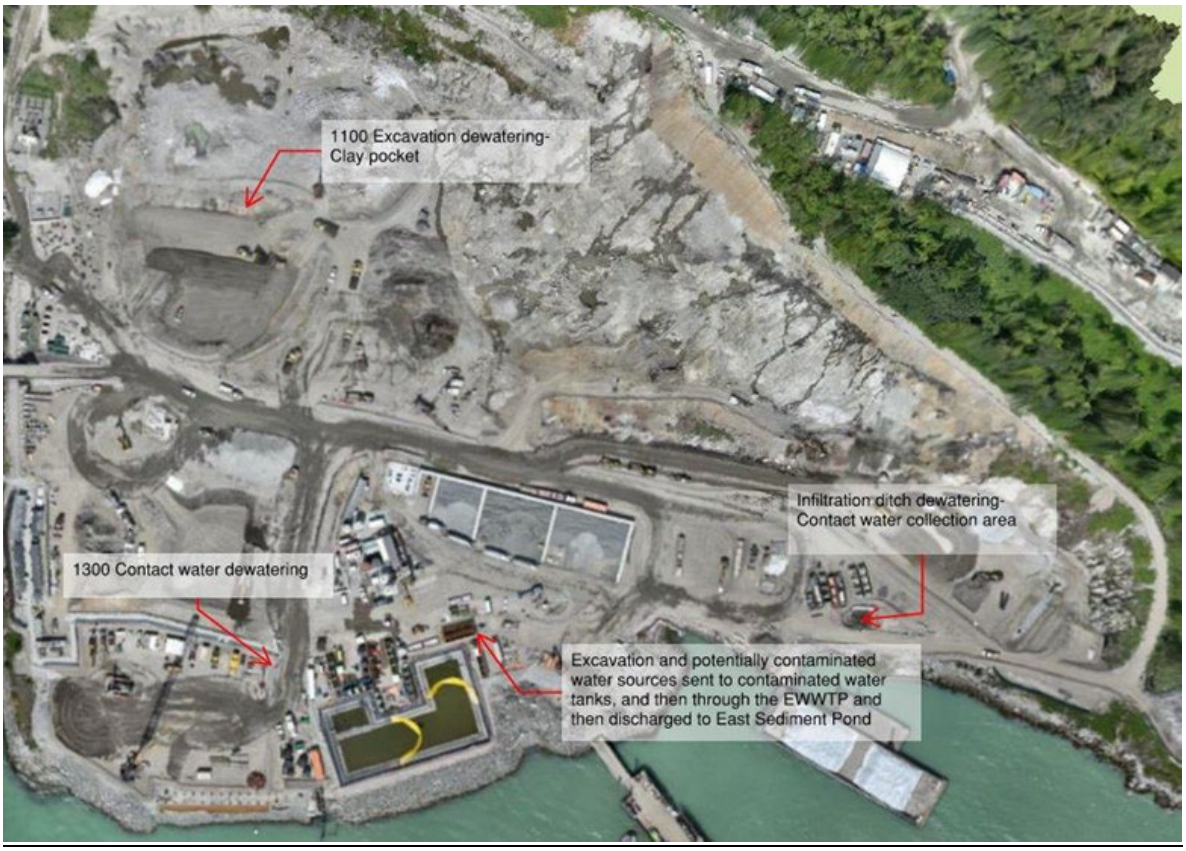


Figure 2: East Catchment dewatering areas. For the July 21 – 27, 2024 monitoring period dewatering was only active for the 1100 Excavation and was directed to the East WWTP.

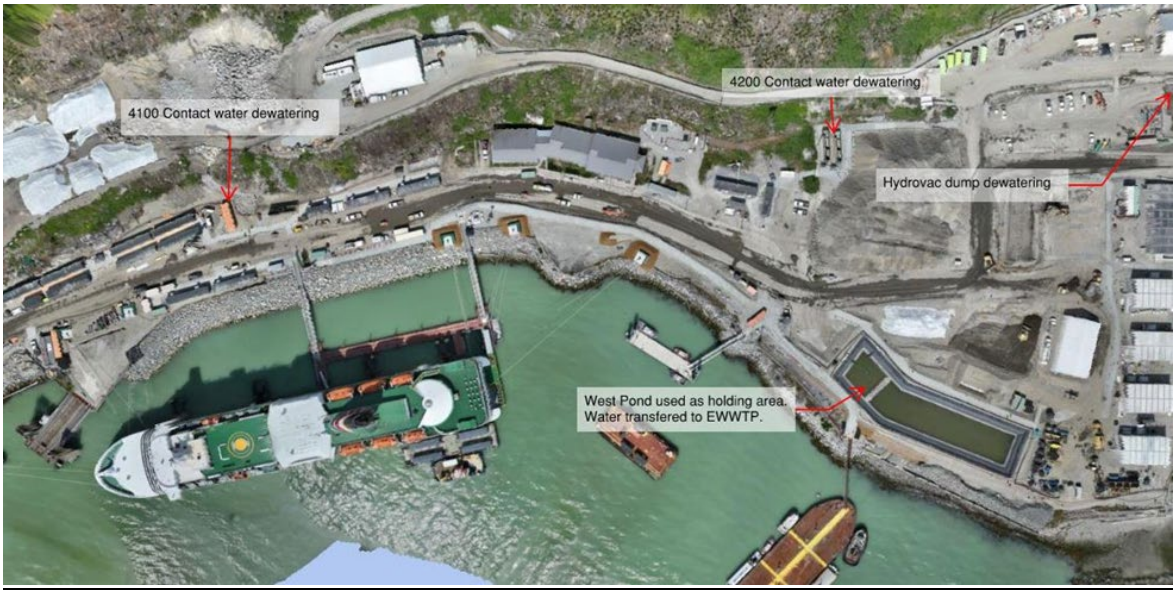


Figure 3: West Catchment dewatering areas. Dewatering of the West Catchment did not occur during the July 21 – 27, 2024 monitoring period.

Figure 4: Aerial view of the East Sedimentation Pond showing the placement of two sediment curtains (July 26, 2024). The East WWTP is located on the left side of the pond.

Figure 5: Aerial view showing the West Sedimentation Pond and West WWTP (located to the right of the pond) on July 26, 2024.

Appendix B: East Sedimentation Pond Results

Table B-1:
Summary of East Sedimentation Pond Water Quality Results Received at the Time of Reporting.

Parameter	Unit	Lowest Applicable Guideline [1, 2]		PE-111578 Discharge Limit *	East Sedimentation Pond				
					In-Pond at Effluent Location	In-Pond Location	In-Pond at Effluent Location	In-Pond at Effluent Location	Effluent
					SP-E-NE	SP-E-NW	SP-E-NE	SP-E-NE	SP-E-Out
					VA24B7741-002	VA24B7741-001	VA24B7981-002	VA24B8166-007	VA24B8166-006
		Long Term	Short Term		7/21/2024	7/21/2024	7/23/2024	7/24/2024	7/24/2024
General Parameters									
pH - Field	pH units	- [6]	-	5.5 - 9.0	6.5	7.3	6.6	6.8	7.2
Conductivity - Field	µS/cm	-	-	-	1180	1555	1216	1119	1138
Temperature - Field	°C	-	-	-	25	27.2	24.8	22.1	22.9
Salinity - Field	ppt	-	-	-	0.59	0.75	0.61	0.59	0.59
Turbidity - Field	NTU	-	-	-	1.62	6.88	0.54	1.86	0.47
TSS	mg/L	-	-	25	<3.0	6.1	-	3.7	<3.0
Dissolved Oxygen - Field	mg/L	>=8	-	-	***7.35***	***7.81***	***7.25***	***7.44***	***6.32***
Anions and Nutrients									
Sulphate	mg/L	-	-	-	38.4	48.6	37.5	-	43.3
Chloride	mg/L	-	-	-	96	218	68	-	63.8
Fluoride	mg/L	-	1.5	-	0.343	0.25	0.384	-	0.424
Ammonia (N-NH_3)	mg/L	Variable [3]	Variable [3]	-	0.0064	0.005	<0.0050	-	<0.0050
Nitrite (N-NO_2)	mg/L	-	-	-	<0.0050	<0.0050	<0.0050	-	<0.0050
Nitrate (N-NO_3)	mg/L	3.7	339	-	0.388	<0.0250	0.403	-	0.399
Total Metals									
Aluminum, total (T-Al)	mg/L	-	-	-	0.0846	0.198	0.0787	0.0754	0.0656
Antimony, total (T-Sb)	mg/L	-	0.27 [4]	-	0.00075	0.00153	0.00089	0.00094	0.00095
Arsenic, total (T-As)	mg/L	0.0125	0.0125	-	0.00214	0.00364	0.00214	0.00207	0.00208
Barium, total (T-Ba)	mg/L	-	-	-	0.00267	0.011	0.00241	0.00279	0.00226
Beryllium, total (T-Be)	mg/L	0.1	-	-	<0.000020	<0.000020	<0.000020	<0.000100	<0.000100
Boron, total (T-B)	mg/L	1.2	-	-	0.261	0.179	0.258	0.224	0.217
Cadmium, total (T-Cd)	mg/L	0.00012	-	-	<0.0000200	<0.0000300	<0.0000200	<0.0000150	<0.0000150
Chromium, total (T-Cr)	mg/L	-	-	-	<0.00050	0.00053	<0.00050	<0.00050	<0.00050
Cobalt, total (T-Co)	mg/L	-	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper, total (T-Cu)	mg/L	- [6]	- [6]	0.0043	0.0008	0.00226	0.0013	0.00082	0.00236
Iron, total (T-Fe)	mg/L	-	-	-	0.024	0.148	0.019	0.017	0.024
Lead, total (T-Pb)	mg/L	- [6]	- [6]	0.0035	0.000058	0.000325	0.00008	0.000075	0.000514
Manganese, total (T-Mn)	mg/L	-	-	-	0.00168	0.00409	0.00094	0.00111	0.00081
Mercury, total (T-Hg) [5]	mg/L	0.000016	-	-	-	-	-	<0.0000050	<0.0000050
Molybdenum, total (T-Mo)	mg/L	-	-	-	0.0634	0.0542	0.0674	0.0689	0.0681
Nickel, total (T-Ni)	mg/L	0.0083	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Selenium, total (T-Se)	mg/L	0.002	-	-	0.000103	0.000129	0.000102	0.000123	0.000148
Silver, total (T-Ag)	mg/L	0.0015	0.003	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thallium, total (T-Tl)	mg/L	-	-	-	<0.000010	0.000021	<0.000010	<0.000010	<0.000010
Uranium, total (T-U)	mg/L	-	-	-	0.0445	0.0482	0.044	0.0441	0.0414
Vanadium, total (T-V)	mg/L	- [6]	-	0.0081	0.00499	0.00743	0.00513	0.00484	0.00475
Zinc, total (T-Zn)	mg/L	- [6]	- [6]	0.0133	<0.0030	0.0079	<0.0030	0.0042	0.0039
Hexavalent Chromium, total	mg/L	0.0015	-	-	-	-	-	-	<0.00050
Dissolved Metals									
Cadmium, dissolved (D-Cd)	mg/L	-	-	-	<0.0000150	<0.0000200	<0.0000150	<0.0000150	<0.0000150
Copper, dissolved (D-Cu)	mg/L	-	-	-	0.00067	0.00152	0.00073	0.00071	0.00188
Iron, dissolved (D-Fe)	mg/L	-	-	-	<0.010	<0.010	<0.010	<0.010	0.012
Lead, dissolved (D-Pb)	mg/L	-	-	-	<0.000050	<0.000050	<0.000050	<0.000050	0.000586
Manganese, dissolved (D-Mn)	mg/L	-	-	-	0.00123	0.00089	0.00056	0.00061	0.00064
Nickel, dissolved (D-Ni)	mg/L	-	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Strontium, dissolved (D-Sr)	mg/L	-	-	-	0.0532	0.154	0.0377	0.044	0.0409
Vanadium, dissolved (D-V)	mg/L	-	-	-	0.00492	0.00626	0.00508	0.00458	0.00448
Zinc, dissolved (D-Zn)	mg/L	-	-	-	0.0014	0.005	0.0012	0.0018	0.0087
Polycyclic Aromatic Hydrocarbons (PAHs)									
Acenaphthene	mg/L	0.006	-	-	-	-	-	-	<0.000010
Acridine	mg/L	-	-	-	-	-	-	-	<0.000010
Anthracene	mg/L	-	-	-	-	-	-	-	<0.000010
Benz(a)anthracene	mg/L	-	-	-	-	-	-	-	<0.000010
Benzo(a)pyrene	mg/L	0.00001	-	-	-	-	-	-	<0.0000050
Chrysene	mg/L	0.0001	-	-	-	-	-	-	<0.000010
Fluoranthene	mg/L	-	-	-	-	-	-	-	<0.000010
Fluorene	mg/L	0.012	-	-	-	-	-	-	<0.000010
1-methylnaphthalene	mg/L	0.001	-	-	-	-	-	-	<0.000010
2-methylnaphthalene	mg/L	0.001	-	-	-	-	-	-	<0.000010
Naphthalene	mg/L	0.001	-	-	-	-	-	-	<0.000050
Phenanthrene	mg/L	-	-	-	-	-	-	-	<0.000020
Pyrene	mg/L	-	-	-	-	-	-	-	<0.000010
Quinoline	mg/L	-	-	-	-	-	-	-	<0.000050
Volatile Organic Compounds (VOCs)									
Benzene	mg/L	0.11	-	-	-	-	-	-	<0.00050
Ethylbenzene	mg/L	0.25	-	-	-	-	-	-	<0.00050
Methyl-tert-butyl-ether	mg/L	5	0.44	-	-	-	-	-	<0.00050
Styrene	mg/L	-	-	-	-	-	-	-	<0.00050
Toluene	mg/L	0.215	-	-	-	-	-	-	<0.00040
Total Xylenes	mg/L	-	-	-	-	-	-	-	<0.00050
Chlorobenzene	mg/L	0.025	-	-	-	-	-	-	<0.00050
1,2-Dichlorobenzene	mg/L	0.042	-	-	-	-	-	-	<0.00050

Notes: Results ***underlined in bold italics*** exceed the applicable long-term water quality guideline for the protection of marine water aquatic life.
Shaded results exceed the applicable short-term water quality guideline for the protection of marine water aquatic life.
Results in orange text exceeded the PE11578 East Sedimentation Pond Discharge Limit.
* The PE111578 East Sedimentation Pond Discharge Limit applies only to the point of discharge from the East Sedimentation Pond (SP-E-Out). A sample port for SP-E-OUT was installed on the temporary discharge hose on May 23 and first sampled during pond discharge on May 27. All SP-E-OUT samples collected from May 27 to the time of writing were taken from the sample port which is located near the inlet end of the temporary discharge hose.
[1] Approved British Columbia Water Quality Guidelines for the protection of marine aquatic life (BC ENV, 2021). Where an approved guideline is not established, the working guideline is applied.
[2] Canadian Water Quality Guideline for the protection of marine aquatic life (CCME, 2021).
[3] The approved total ammonia nitrogen BC WQG is salinity, pH and temperature dependent; see Tables 26E and 26F in BC WQG guidance document (BC ENV, 2021).
[4] The working BC WQG for trivalent antimony [SB(III)] is 0.27 mg/L and is applied to total antimony results.
[5] When MeHg ⩽ 0.5% of total Hg, BC WQG = 0.00002 mg/L. The Canadian WQG = 0.000016 mg/L.
[6] Where discharge limits apply, the water quality guideline was not evaluated.
The lowest applicable guidelines are shown in the table; however, water quality data was screened to all applicable guidelines.

Table B-2:
Summary of East Sedimentation Pond Water Quality Results Received at the Time of Reporting.

Parameter	Unit	Lowest Applicable Guideline [1, 2]		PE-111578 Discharge Limit *	East Sedimentation Pond	
					In-Pond at Effluent Location	In-Pond Location
					SP-E-NE	SP-E-NW
					VA24B8550-003	VA24B8550-004
		Long Term	Short Term		7/27/2024	7/27/2024
General Parameters						
pH - Field	pH units	- [6]	-	5.5 - 9.0	6.8	6.4
Conductivity - Field	µS/cm	-	-	-	1286	1346
Temperature - Field	°C	-	-	-	22	23.7
Salinity - Field	ppt	-	-	-	0.69	0.69
Turbidity - Field	NTU	-	-	-	3.83	1
TSS	mg/L	-	-	25	3.2	4.2
Dissolved Oxygen - Field	mg/L	>=8	-	-	***6.3***	***6.59***
Anions and Nutrients						
Sulphate	mg/L	-	-	-	-	-
Chloride	mg/L	-	-	-	-	-
Fluoride	mg/L	-	1.5	-	-	-
Ammonia (N-NH_3)	mg/L	Variable [3]	Variable [3]	-	-	-
Nitrite (N-NO_2)	mg/L	-	-	-	-	-
Nitrate (N-NO_3)	mg/L	3.7	339	-	-	-
Total Metals						
Aluminum, total (T-Al)	mg/L	-	-	-	0.314	0.0781
Antimony, total (T-Sb)	mg/L	-	0.27 [4]	-	0.0012	0.00117
Arsenic, total (T-As)	mg/L	0.0125	0.0125	-	0.00265	0.00289
Barium, total (T-Ba)	mg/L	-	-	-	0.0104	0.00964
Beryllium, total (T-Be)	mg/L	0.1	-	-	<0.000100	<0.000100
Boron, total (T-B)	mg/L	1.2	-	-	0.226	0.256
Cadmium, total (T-Cd)	mg/L	0.00012	-	-	<0.0000350	<0.0000300
Chromium, total (T-Cr)	mg/L	-	-	-	0.00146	0.00216
Cobalt, total (T-Co)	mg/L	-	-	-	0.00018	<0.00010
Copper, total (T-Cu)	mg/L	- [6]	- [6]	0.0043	0.00213	0.00205
Iron, total (T-Fe)	mg/L	-	-	-	0.23	0.052
Lead, total (T-Pb)	mg/L	- [6]	- [6]	0.0035	0.000726	0.000198
Manganese, total (T-Mn)	mg/L	-	-	-	0.019	0.00292
Mercury, total (T-Hg) [5]	mg/L	0.000016	-	-	0.0000053	<0.0000050
Molybdenum, total (T-Mo)	mg/L	-	-	-	0.0898	0.0935
Nickel, total (T-Ni)	mg/L	0.0083	-	-	<0.00050	<0.00050
Selenium, total (T-Se)	mg/L	0.002	-	-	0.000225	0.00019
Silver, total (T-Ag)	mg/L	0.0015	0.003	-	<0.000010	<0.000010
Thallium, total (T-Tl)	mg/L	-	-	-	0.000016	0.000022
Uranium, total (T-U)	mg/L	-	-	-	0.0471	0.0517
Vanadium, total (T-V)	mg/L	- [6]	-	0.0081	0.00499	0.00395
Zinc, total (T-Zn)	mg/L	- [6]	- [6]	0.0133	0.0122	0.0043
Hexavalent Chromium, total	mg/L	0.0015	-	-	<0.00050	0.00094
Dissolved Metals						
Cadmium, dissolved (D-Cd)	mg/L	-	-	-	<0.0000250	<0.0000200
Copper, dissolved (D-Cu)	mg/L	-	-	-	0.00125	0.00116
Iron, dissolved (D-Fe)	mg/L	-	-	-	0.014	0.01
Lead, dissolved (D-Pb)	mg/L	-	-	-	0.000073	0.000052
Manganese, dissolved (D-Mn)	mg/L	-	-	-	0.00924	0.00192
Nickel, dissolved (D-Ni)	mg/L	-	-	-	<0.00050	<0.00050
Strontium, dissolved (D-Sr)	mg/L	-	-	-	0.131	0.219
Vanadium, dissolved (D-V)	mg/L	-	-	-	0.00435	0.00389
Zinc, dissolved (D-Zn)	mg/L	-	-	-	0.0079	0.002
Polycyclic Aromatic Hydrocarbons (PAHs)						
Acenaphthene	mg/L	0.006	-	-	-	-
Acridine	mg/L	-	-	-	-	-
Anthracene	mg/L	-	-	-	-	-
Benz(a)anthracene	mg/L	-	-	-	-	-
Benzo(a)pyrene	mg/L	0.00001	-	-	-	-
Chrysene	mg/L	0.0001	-	-	-	-
Fluoranthene	mg/L	-	-	-	-	-
Fluorene	mg/L	0.012	-	-	-	-
1-methylnaphthalene	mg/L	0.001	-	-	-	-
2-methylnaphthalene	mg/L	0.001	-	-	-	-
Naphthalene	mg/L	0.001	-	-	-	-
Phenanthrene	mg/L	-	-	-	-	-
Pyrene	mg/L	-	-	-	-	-
Quinoline	mg/L	-	-	-	-	-
Volatile Organic Compounds (VOCs)						
Benzene	mg/L	0.11	-	-	-	-
Ethylbenzene	mg/L	0.25	-	-	-	-
Methyl-tert-butyl-ether	mg/L	5	0.44	-	-	-
Styrene	mg/L	-	-	-	-	-
Toluene	mg/L	0.215	-	-	-	-
Total Xylenes	mg/L	-	-	-	-	-
Chlorobenzene	mg/L	0.025	-	-	-	-
1,2-Dichlorobenzene	mg/L	0.042	-	-	-	-

Notes: Results ***underlined in bold italics*** exceed the applicable long-term water quality guideline for the protection of marine water aquatic life.
Shaded results exceed the applicable short-term water quality guideline for the protection of marine water aquatic life.
Results in orange text exceeded the PE11578 East Sedimentation Pond Discharge Limit.
* The PE111578 East Sedimentation Pond Discharge Limit applies only to the point of discharge from the East Sedimentation Pond (SP-E-Out).
A sample port for SP-E-OUT was installed on the temporary discharge hose on May 23 and first sampled during pond discharge on May 27. All SP-E-OUT samples collected from May 27 to the time of writing were taken from the sample port which is located near the inlet end of the temporary discharge hose.
[1] Approved British Columbia Water Quality Guidelines for the protection of marine aquatic life (BC ENV, 2021). Where an approved guideline is not established, the working guideline is applied.
[2] Canadian Water Quality Guideline for the protection of marine aquatic life (CCME, 2021).
[3] The approved total ammonia nitrogen BC WQG is salinity, pH and temperature dependent; see Tables 26E and 26F in BC WQG guidance document (BC ENV, 2021).
[4] The working BC WQG for trivalent antimony [SB(III)] is 0.27 mg/L and is applied to total antimony results.
[5] When MeHg ⩽ 0.5% of total Hg, BC WQG = 0.00002 mg/L. The Canadian WQG = 0.000016 mg/L.
[6] Where discharge limits apply, the water quality guideline was not evaluated. The lowest applicable guidelines are shown in the table; however, water quality data was screened to all applicable guidelines.

Table B-3:
Summary of East Sedimentation Pond Water Quality Results for Dioxins and Furans Received at the Time of Reporting.

Parameter	Unit	East Sedimentation Pond					
		Effluent	Effluent	In-Pond at Effluent Location	Effluent	Effluent	Effluent
		SP-E-OUT	SP-E-OUT	SP-E-NE	SP-E-OUT	SP-E-OUT	SP-E-OUT
		L2756035-1	L2756142-1	L2756176-1	L2756251-1	L2756355-1	L2756479-3
		2024-06-03	2024-06-08	2024-06-10	2024-06-16	2024-06-22	2024-07-01
Lower Bound PCDD/F TEQ	**pg/L**	0.109	0.631	0.0127	0.128	0.360	1.11

Notes:
PCDD = polychlorinated dibenzodioxins (dioxins)
PCDF = polychlorinated dibenzofurans (furans)
TEQ = toxic equivalency
Lower bound PCDD/F TEQ is the sum of the toxic equivalency results for the individual PCDD/F parameters. Non-detectable parameters are assigned a value of zero (0).

Table B-4:
Summary of East Sedimentation Pond Water Quality Results for Methylmercury Results Received at the Time of Reporting.

Parameter	Unit	East Sedimentation Pond
		Effluent
		SP-E-OUT
		VA24B7521-001
		2024-07-18
Methylmercury	**µg/L**	0.000096

Table B-5:
Summary of East Sedimentation Pond Daily Field Parameters Received at the Time of Reporting.

Parameter		Temperature	DO	Salinity	Turbidity	pH	Conductivity	Visibility of Sheen	Total Daily Discharge from the East Sedimentation Pond to Howe Sound
Unit		**°C**	**mg/L**	**ppt**	**NTU**	**s.u.**	**µS/cm**		**m^3**
PE-111578 Discharge Limit [1]		-	-	-	-	5.5 - 9.0	-	-	-[2]
Lowest Applicable Guideline [3,4]		-	>=8	-	-	-[5]	-	-	-
Station ID [6]	**Date**								
SP-E-NE	7/21/2024 12:29	25.0	***7.35***	0.59	1.62	6.5	1180	No	0
SP-E-NW	7/21/2024 12:21	27.2	***7.81***	0.75	6.88	7.3	1555	No	
SP-E-NE	7/22/2024 12:22	22.6	***6.38***	0.58	0.44	6.5	1120	No	0
SP-E-NE	7/23/2024 14:39	24.8	***7.25***	0.61	0.54	6.6	1216	No	0
SP-E-OUT	7/24/2024 12:24	22.9	***6.32***	0.59	0.47	7.2	1138	No	617
SP-E-NE	7/24/2024 11:37	22.1	***7.44***	0.59	1.86	6.8	1119	No	
SP-E-OUT	7/25/2024 15:08	23.7	***6.11***	0.7	6.17	7.6	1371	No	825
SP-E-NE	7/25/2024 14:58	22.2	***5.31***	0.62	5.47	6.5	1176	No	
- [7]	7/26/2024	-	-	-	-	-	-	-	0
SP-E-NE	7/27/2024 10:39	22.0	***6.30***	0.69	3.83	6.8	1286	No	0
SP-E-NW	7/27/2024 10:57	23.7	***6.59***	0.69	1.0	6.4	1346	No	

Notes:
Results ***underlined in bold italics*** exceed the applicable long-term water quality guideline for the protection of marine water aquatic life.
Results in orange text exceeded the PE- 11578 East Sedimentation Pond Discharge Limit.
[1] PE-111578 East Sedimentation Pond Discharge Limit applies only to the point of discharge from the East Sedimentation Pond (SP-E-OUT).
A sample port for SP-E-OUT was installed on the temporary discharge hose on May 23 and first sampled during pond discharge on May 27. All SP-E-OUT samples collected from May 27 to the time of writing were taken from the sample port which is located near the inlet end of the temporary discharge hose.
[2] The annual average authorized discharge rate from the East Sedimentation Pond is 650 m^3/day. As noted in PE-111578 Condition 2.1.4, the actual discharge rate may deviate from the annual average rate due to annual variations in precipitation amounts within the catchment area. Therefore, the annual average authorized discharge rate is not evaluated as a discharge limit.
[3] Approved British Columbia Water Quality Guidelines for the protection of marine aquatic life (BC ENV, 2021). Where an approved guideline is not established, the working guideline is applied.
[4] Canadian Water Quality Guideline for the protection of marine aquatic life (CCME, 2021).
[5] Discharge limit applies therefore the water quality guideline was not evaluated.
[6] The sedimentation pond did not receive non-contaminated contact water influent July 21 – July 27, therefore daily measurements for station SP-E-IN-2 were not collected. The East Sedimentation Pond discharged July 24 – 25. In-Pond stations SP-E-NW and SP-E-NE may be monitored in place of stations SP-E-IN-2 and SP-E-OUT, respectively when there is no influent to, or discharge from the East Sedimentation Pond at the time of monitoring.
[7] There was no non-contaminated contact water influent to, or discharge of effluent from the East Sedimentation Pond on July 26, therefore field parameters were not collected on July 26.

Appendix C: East Wastewater Treatment Plant Results

Table C-1:
Summary of East Wastewater Treatment Plant Water Quality Results Received at the Time of Reporting.

Parameter	Unit	Minimum Discharge Objective [1]	East WWTP			
			Influent	Effluent	Influent	Effluent
			WWTP-E-IN	WWTP-E-OUT	WWTP-E-IN	WWTP-E-OUT
			VA24B7741-003	VA24B7741-004	VA24B8166-001	VA24B8166-002
			7/21/2024	7/21/2024	7/24/2024	7/24/2024
General Parameters						
pH - Field	pH units	7.0 - 8.7	7.0	***6.5***	7.3	***6.5***
Conductivity - Field	µS/cm	-	1184	1383	1146	1118
Temperature - Field	°C	-	25.1	24.7	23.3	22.9
Salinity - Field	ppt	-	0.59	0.7	0.59	0.58
Turbidity - Field	NTU	-	0.69	1.43	0.75	1.43
TSS	mg/L	-	<3.0	<3.0	<3.0	<3.0
Dissolved Oxygen - Field	mg/L	>=8 [2]	***7.68***	***6.08***	***7.48***	***6.73***
Anions and Nutrients						
Sulphate	mg/L	-	38.2	36.4	44	44.1
Chloride	mg/L	-	95	96.9	68.6	59.9
Fluoride	mg/L	-	0.339	0.331	0.432	0.439
Ammonia (N-NH_3)	mg/L	Variable	0.0058	0.0208	<0.0050	0.0083
Nitrite (N-NO_2)	mg/L	-	<0.0050	<0.0050	<0.0050	<0.0050
Nitrate (N-NO_3)	mg/L	3.7	0.366	0.378	0.368	0.46
Total Metals						
Aluminum, total (T-Al)	mg/L	-	0.0670	0.0993	0.0718	0.0729
Antimony, total (T-Sb)	mg/L	-	0.00076	0.00078	0.00098	0.00091
Arsenic, total (T-As)	mg/L	0.0125	0.00217	0.00231	0.00213	0.00201
Barium, total (T-Ba)	mg/L	-	0.00255	0.00304	0.00294	0.00212
Beryllium, total (T-Be)	mg/L	0.1	<0.000020	<0.000020	<0.000100	<0.000100
Boron, total (T-B)	mg/L	1.2	0.258	0.293	0.22	0.231
Cadmium, total (T-Cd)	mg/L	0.00012	<0.0000150	<0.0000150	<0.0000150	<0.0000100
Chromium, total (T-Cr)	mg/L	-	<0.00050	0.00081	<0.00050	<0.00050
Cobalt, total (T-Co)	mg/L	-	<0.00010	<0.00010	<0.00010	<0.00010
Copper, total (T-Cu)	mg/L	0.002	0.00099	0.00144	0.00182	0.00137
Iron, total (T-Fe)	mg/L	-	0.035	0.014	0.018	0.012
Lead, total (T-Pb)	mg/L	0.002	0.000054	<0.000050	0.000092	<0.000050
Manganese, total (T-Mn)	mg/L	-	0.00126	0.00067	0.00112	0.00047
Mercury, total (T-Hg)	mg/L	0.000016	-	-	<0.0000050	<0.0000050
Molybdenum, total (T-Mo)	mg/L	-	0.065	0.0659	0.0703	0.064
Nickel, total (T-Ni)	mg/L	0.0083	<0.00050	<0.00050	<0.00050	<0.00050
Selenium, total (T-Se)	mg/L	0.002	0.000094	0.000094	0.000112	0.000114
Silver, total (T-Ag)	mg/L	0.0015	<0.000010	<0.000010	<0.000010	<0.000010
Thallium, total (T-Tl)	mg/L	-	<0.000010	<0.000010	<0.000010	<0.000010
Uranium, total (T-U)	mg/L	-	0.0475	0.0486	0.0432	0.0426
Vanadium, total (T-V)	mg/L	0.005	***0.00501***	***0.00545***	0.00476	***0.00502***
Zinc, total (T-Zn)	mg/L	0.01	0.0078	<0.0030	0.0056	<0.0030
Hexavalent Chromium, total	mg/L	0.0015	-	-	<0.00050	<0.00050
Dissolved Metals						
Cadmium, dissolved (D-Cd)	mg/L	-	<0.0000150	<0.0000100	<0.0000150	<0.0000100
Copper, dissolved (D-Cu)	mg/L	-	0.00079	0.00124	0.00096	0.00091
Iron, dissolved (D-Fe)	mg/L	-	<0.010	0.031	<0.010	<0.010
Lead, dissolved (D-Pb)	mg/L	-	<0.000050	0.000141	<0.000050	<0.000050
Manganese, dissolved (D-Mn)	mg/L	-	0.00183	0.00106	0.00069	0.00018
Nickel, dissolved (D-Ni)	mg/L	-	<0.00050	<0.00100	<0.00050	<0.00050
Strontium, dissolved (D-Sr)	mg/L	-	0.0518	0.0515	0.0458	0.04
Vanadium, dissolved (D-V)	mg/L	-	0.00488	0.00574	0.00456	0.00476
Zinc, dissolved (D-Zn)	mg/L	-	0.0084	<0.0020	0.004	<0.0010
Polycyclic Aromatic Hydrocarbons (PAHs)						
Acenaphthene	mg/L	0.006	-	-	<0.000010	<0.000010
Acridine	mg/L	-	-	-	<0.000010	<0.000010
Anthracene	mg/L	-	-	-	<0.000010	<0.000010
Benz(a)anthracene	mg/L	-	-	-	<0.000010	<0.000010
Benzo(a)pyrene	mg/L	0.00001	-	-	<0.0000050	<0.0000050
Chrysene	mg/L	0.0001	-	-	<0.000010	<0.000010
Fluoranthene	mg/L	-	-	-	<0.000010	<0.000010
Fluorene	mg/L	0.012	-	-	<0.000010	<0.000010
1-methylnaphthalene	mg/L	0.001	-	-	<0.000010	<0.000010
2-methylnaphthalene	mg/L	0.001	-	-	<0.000010	<0.000010
Naphthalene	mg/L	0.001	-	-	<0.000050	<0.000050
Phenanthrene	mg/L	-	-	-	<0.000020	<0.000020
Pyrene	mg/L	-	-	-	<0.000010	<0.000010
Quinoline	mg/L	-	-	-	<0.000050	<0.000050
Volatile Organic Compounds (VOCs)						
Benzene	mg/L	0.11	-	-	<0.00050	<0.00050
Ethylbenzene	mg/L	0.25	-	-	<0.00050	<0.00050
Methyl-tert-butyl-ether	mg/L	5	-	-	<0.00050	<0.00050
Styrene	mg/L	-	-	-	<0.00050	<0.00050
Toluene	mg/L	0.215	-	-	<0.00040	<0.00040
Total Xylenes	mg/L	-	-	-	<0.00050	<0.00050
Chlorobenzene	mg/L	0.025	-	-	<0.00050	<0.00050
1,2-Dichlorobenzene	mg/L	0.042	-	-	<0.00050	<0.00050

Notes:
[1] Minimum discharge objectives the WWTP was designed to meet for WWTP effluent.
[2] A design MDO for dissolved oxygen was not specified in the WWTP design report. The water quality guideline is provided in place of an MDO for reference purposes only.
Results ***underlined in bold italics*** exceed the applicable minimum discharge objective.

Table C-2:
Summary of East Wastewater Treatment Plant Water Quality Results Received at the Time of Reporting.

Parameter	Unit	Minimum Discharge Objective [1]	East WWTP			
			Influent	Effluent	Influent	Effluent
			WWTP-E-IN	WWTP-E-OUT	WWTP-E-IN	WWTP-E-OUT
			VA24B8505-001	VA24B8505-002	VA24B8550-001	VA24B8550-002
			7/26/2024	7/26/2024	7/27/2024	7/27/2024
General Parameters						
pH - Field	pH units	7.0 - 8.7	7.6	***5.8***	7.1	***6.2***
Conductivity - Field	µS/cm	-	1439	1176	1257	1296
Temperature - Field	°C	-	25.5	22.4	21.7	22.7
Salinity - Field	ppt	-	0.71	0.62	0.67	0.68
Turbidity - Field	NTU	-	5.88	1.02	3.31	0.81
TSS	mg/L	-	6.1	<3.0	3.6	<3.0
Dissolved Oxygen - Field	mg/L	>=8 [2]	***7.26***	***4.40***	***5.93***	***5.64***
Anions and Nutrients						
Sulphate	mg/L	-	42.2	38.5	57.8	56.6
Chloride	mg/L	-	167	101	125	142
Fluoride	mg/L	-	0.276	0.299	0.314	0.355
Ammonia (N-NH_3)	mg/L	Variable	<0.0050	0.0101	0.223	0.847
Nitrite (N-NO_2)	mg/L	-	<0.0050	0.0118	0.0142	0.0452
Nitrate (N-NO_3)	mg/L	3.7	<0.0250	0.324	0.25	0.416
Total Metals						
Aluminum, total (T-Al)	mg/L	-	0.284	0.0837	0.149	0.0566
Antimony, total (T-Sb)	mg/L	-	0.00132	0.00106	0.00119	0.00123
Arsenic, total (T-As)	mg/L	0.0125	0.00334	0.00235	0.00268	0.00292
Barium, total (T-Ba)	mg/L	-	0.0108	0.00301	0.00932	0.00858
Beryllium, total (T-Be)	mg/L	0.1	<0.000100	<0.000100	<0.000100	<0.000100
Boron, total (T-B)	mg/L	1.2	0.192	0.204	0.22	0.248
Cadmium, total (T-Cd)	mg/L	0.00012	<0.0000300	<0.0000150	<0.0000350	<0.0000200
Chromium, total (T-Cr)	mg/L	-	<0.00050	<0.00100	0.00125	0.00174
Cobalt, total (T-Co)	mg/L	-	0.00011	<0.00020	0.00011	<0.00010
Copper, total (T-Cu)	mg/L	0.002	***0.00285***	0.00134	***0.00243***	0.00161
Iron, total (T-Fe)	mg/L	-	0.157	<0.020	0.098	0.033
Lead, total (T-Pb)	mg/L	0.002	0.000664	<0.000100	0.000408	0.000126
Manganese, total (T-Mn)	mg/L	-	0.00544	0.00034	0.0109	0.0017
Mercury, total (T-Hg)	mg/L	0.000016	<0.0000050	<0.0000050	0.0000112	0.0000091
Molybdenum, total (T-Mo)	mg/L	-	0.0639	0.0654	0.0894	0.0878
Nickel, total (T-Ni)	mg/L	0.0083	<0.00050	<0.00100	<0.00050	<0.00050
Selenium, total (T-Se)	mg/L	0.002	0.000148	0.000113	0.000208	0.000219
Silver, total (T-Ag)	mg/L	0.0015	<0.000010	<0.000020	<0.000010	<0.000010
Thallium, total (T-Tl)	mg/L	-	0.000017	<0.000020	0.000015	0.000023
Uranium, total (T-U)	mg/L	-	0.0454	0.0468	0.0466	0.0501
Vanadium, total (T-V)	mg/L	0.005	***0.00622***	***0.00511***	0.00483	0.00418
Zinc, total (T-Zn)	mg/L	0.01	***0.0108***	<0.0060	***0.0147***	<0.0030
Hexavalent Chromium, total	mg/L	0.0015	<0.00050	<0.00050	0.00059	0.00090
Dissolved Metals						
Cadmium, dissolved (D-Cd)	mg/L	-	<0.0000200	<0.0000150	<0.0000250	<0.0000200
Copper, dissolved (D-Cu)	mg/L	-	0.00229	0.0017	0.00159	0.00139
Iron, dissolved (D-Fe)	mg/L	-	0.031	<0.010	0.014	0.019
Lead, dissolved (D-Pb)	mg/L	-	0.000215	<0.000050	0.000087	0.000072
Manganese, dissolved (D-Mn)	mg/L	-	0.00259	0.00041	0.00934	0.00163
Nickel, dissolved (D-Ni)	mg/L	-	<0.00050	<0.00050	<0.00050	<0.00050
Strontium, dissolved (D-Sr)	mg/L	-	0.135	0.0598	0.125	0.224
Vanadium, dissolved (D-V)	mg/L	-	0.00572	0.00496	0.00454	0.00416
Zinc, dissolved (D-Zn)	mg/L	-	0.010	0.0027	0.0134	0.0011
Polycyclic Aromatic Hydrocarbons (PAHs)						
Acenaphthene	mg/L	0.006	<0.000010	<0.000010	<0.000011	<0.000010
Acridine	mg/L	-	<0.000010	<0.000010	<0.000010	<0.000010
Anthracene	mg/L	-	<0.000010	<0.000010	<0.000010	<0.000010
Benz(a)anthracene	mg/L	-	<0.000010	<0.000010	<0.000010	<0.000010
Benzo(a)pyrene	mg/L	0.00001	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Chrysene	mg/L	0.0001	<0.000010	<0.000010	<0.000010	<0.000010
Fluoranthene	mg/L	-	<0.000010	<0.000010	<0.000010	<0.000010
Fluorene	mg/L	0.012	<0.000010	<0.000010	<0.000010	<0.000010
1-methylnaphthalene	mg/L	0.001	<0.000010	<0.000010	<0.000010	<0.000010
2-methylnaphthalene	mg/L	0.001	<0.000010	<0.000010	<0.000010	<0.000010
Naphthalene	mg/L	0.001	<0.000050	<0.000050	<0.000050	<0.000050
Phenanthrene	mg/L	-	<0.000020	<0.000020	<0.000020	<0.000020
Pyrene	mg/L	-	<0.000010	<0.000010	<0.000010	<0.000010
Quinoline	mg/L	-	<0.000050	<0.000050	<0.000050	<0.000050
Volatile Organic Compounds (VOCs)						
Benzene	mg/L	0.11	<0.00050	<0.00050	<0.00050	<0.00050
Ethylbenzene	mg/L	0.25	<0.00050	<0.00050	<0.00050	<0.00050
Methyl-tert-butyl-ether	mg/L	5	<0.00050	<0.00050	<0.00050	<0.00050
Styrene	mg/L	-	<0.00050	<0.00050	<0.00050	<0.00050
Toluene	mg/L	0.215	<0.00040	<0.00040	<0.00040	<0.00040
Total Xylenes	mg/L	-	<0.00050	<0.00050	<0.00050	<0.00050
Chlorobenzene	mg/L	0.025	<0.00050	<0.00050	<0.00050	<0.00050
1,2-Dichlorobenzene	mg/L	0.042	<0.00050	<0.00050	<0.00050	<0.00050

Notes:
[1] Minimum discharge objectives the WWTP was designed to meet for WWTP effluent.
[2] A design MDO for dissolved oxygen was not specified in the WWTP design report. The water quality guideline is provided in place of an MDO for reference purposes only.
Results ***underlined in bold italics*** exceed the applicable minimum discharge objective.

Table C-3:
Summary of East Wastewater Treatment Plant Water Quality Results for Dioxins and Furans Received at the Time of Reporting.

Parameter	Unit	East WWTP								
		Influent	Effluent	Influent	Effluent	Influent	Influent	Effluent	Influent	Effluent
		WWTP-E-IN	WWTP-E-OUT	WWTP-E-IN	WWTP-E-OUT	WWTP-E-IN (Baker 1)	WWTP-E-IN (Baker 2)	WWTP-E-OUT	WWTP-E-IN	WWTP-E-OUT
		L2756176-2	L2756176-3	L2756355-2	L2756355-3	L2756393-1	L2756393-2	L2756393-3	L2756479-1	L2756479-2
		2024-06-10	2024-06-10	2024-06-22	2024-06-22	2024-06-25	2024-06-25	2024-06-25	2024-07-01	2024-07-01
Lower Bound PCDD/F TEQ	**pg/L**	0.0302	0.426	0.582	0.0142	0.980	3.17	0.0513	0.251	0.0417

Notes:
PCDD = polychlorinated dibenzodioxins (dioxins)
PCDF = polychlorinated dibenzofurans (furans)
TEQ = toxic equivalency
Lower bound PCDD/F TEQ is the sum of the toxic equivalency results for the individual PCDD/F parameters. Non-detectable parameters are assigned a value of zero (0).

Table C-4:
Summary of East Wastewater Treatment Plant Daily Field Parameters Received at the Time of Reporting.

Parameter		Temperature	DO	Salinity	Turbidity	pH	Conductivity	Visibility of Sheen	Total Daily Discharge from the East WWTP
Unit		**°C**	**mg/L**	**ppt**	**NTU**	**s.u.**	**µS/cm**		**m^3**
PE-111578 Discharge Limit [1]		-	-	-	-	-	-	-	1,100
Minimum Discharge Objective [2]		-	>=8 [3]	-	-	7.0 - 8.7	-	-	-
Station ID	**Date**								
WWTP-E-IN	7/21/2024 12:40	25.1	***7.68***	0.59	0.69	7.0	1184	No	-
WWTP-E-OUT	7/21/2024 12:51	24.7	***6.08***	0.7	1.43	***6.5***	1383	No	576
WWTP-E-IN	7/22/2024 12:19	22.8	***6.75***	0.58	0.54	***6.9***	1120	No	-
WWTP-E-OUT	7/22/2024 12:08	21.0	***5.73***	0.64	0.44	***6.5***	1182	No	504
WWTP-E-IN	7/23/2024 14:43	25.1	***6.88***	0.61	1.67	7.1	1229	No	-
WWTP-E-OUT	7/23/2024 14:49	24.9	***0.55***	0.67	0.82	***5.6***	1350	No	541
WWTP-E-IN	7/24/2024 12:30	23.3	***7.48***	0.59	0.75	7.3	1146	No	-
WWTP-E-OUT	7/24/2024 12:35	22.9	***6.73***	0.58	1.43	***6.5***	1118	No	536
WWTP-E-IN	7/25/2024 15:03	23.4	***6.49***	0.7	6.16	7.7	1354	No	-
WWTP-E-OUT	7/25/2024 15:16	26.2	***5.70***	0.6	0.43	***6.4***	1246	No	501
WWTP-E-IN	7/26/2024 17:20	25.5	***7.26***	0.71	5.88	7.6	1439	No	-
WWTP-E-OUT	7/26/2024 16:48	22.4	***4.40***	0.62	1.02	***5.8***	1176	No	534
WWTP-E-IN	7/27/2024 10:11	21.7	***5.93***	0.67	3.31	7.1	1257	No	-
WWTP-E-OUT	7/27/2024 9:32	22.7	***5.64***	0.68	0.81	***6.2***	1296	No	547

Notes:
[1] PE-111578 East WWTP Discharge Limit is applied to effluent compliance station WWTP-E-OUT.
[2] Minimum discharge objectives the WWTP was designed to meet for WWTP effluent.
[3] A design MDO for dissolved oxygen was not specified in the WWTP design report. The water quality guideline is provided in place of an MDO for reference purposes only.
Results ***underlined in bold italics*** exceed the applicable minimum discharge objective.

Appendix D: Non-Contact Diversion Outlet Results

Table D-1:
Summary of Freshwater Quality Results for Methylmercury Results Received at the Time of Reporting.

Parameter	Unit	Station OUT-02
		Non-Contact Water Diversion Ditch Outlet
		OUT-02
		VA24B5289-006
		2024-06-26
Methylmercury	**µg/L**	0.000048

Appendix E: Freshwater Receiving Environment Results

Table E-1:
Summary of Freshwater Quality Results for Dioxins and Furans Results Received at the Time of Reporting.

Parameter	Unit	Station SW-01	Station SW-02	Station SW-07	Station SW-04
		Lower Reach of Woodfibre Creek (near the mouth)	Upper Reach of Mill Creek (upstream of the third bridge)	Upstream Mill Creek (at the diversion inlet)	Lower Reach of East Creek (near the outlet to the outfall culvert)
		SW-01	SW-02	SW-07	SW-04
		L2756419-1	L2756458-1	L2756419-3	L2756419-2
		2024-06-26	2024-06-27	2024-06-26	2024-06-26
Lower Bound PCDD/F TEQ	**pg/L**	0.101	0.397	0.0772	0.442

Notes:
PCDD = polychlorinated dibenzodioxins (dioxins)
PCDF = polychlorinated dibenzofurans (furans)
TEQ = toxic equivalency
Lower bound PCDD/F TEQ is the sum of the toxic equivalency results for the individual PCDD/F parameters. Non-detectable parameters are assigned a value of zero (0).

Table E-2:
Summary of Freshwater Quality Results for Methylmercury Results Received at the Time of Reporting.

Parameter	Unit	Station SW-01	Station SW-02	Station SW-07	Station SW-04
		Lower Reach of Woodfibre Creek (near the mouth)	Upper Reach of Mill Creek (upstream of the third bridge)	Upstream Mill Creek (at the diversion inlet)	Lower Reach of East Creek (near the outlet to the outfall culvert)
		SW-01	SW-02	SW-07	SW-04
		VA24B5289-001	VA24B5540-001	VA24B5289-003	VA24B5289-002
		2024-06-26	2024-06-27	2024-06-26	2024-06-26
Methylmercury	µg/L	<0.000020	<0.000050	<0.000020	<0.000050

Appendix F: Estuarine Receiving Environment Results

Table F-1:
Summary of Mill Creek Estuary Water Quality Results for Dioxins and Furans Results Received at the Time of Reporting.

Parameter	Unit	Station SW-03
		Mill Creek Estuary
		SW-03
		L2756458-2
		2024-06-27
Lower Bound PCDD/F TEQ	**pg/L**	0.0120

Notes:
PCDD = polychlorinated dibenzodioxins (dioxins)
PCDF = polychlorinated dibenzofurans (furans)
TEQ = toxic equivalency
Lower bound PCDD/F TEQ is the sum of the toxic equivalency results for the individual PCDD/F parameters. Non-detectable parameters are assigned a value of zero (0).

Table F-2:
Summary of Mill Creek Estuary Water Quality Results for Methylmercury Results Received at the Time of Reporting.

Parameter	Unit	Station SW-03
		Mill Creek Estuary
		SW-03
		VA24B5540-002
		2024-06-27
Methylmercury	**µg/L**	<0.000050

Appendix G: Marine Water Receiving Environment Results

Table G-1:
Summary of Marine Water Quality Results Received at the Time of Reporting

Parameter	Unit	Lowest Applicable Guideline [1, 2]		Reference Station WQR1			Reference Station WQR2		
				0.5 m Below Surface	2 m Below Surface	2 m Above Seafloor	0.5 m Below Surface	2 m Below Surface	2 m Above Seafloor
				WQR1-0.5	WQR1-2m	WQR1-SF	WQR2-0.5	WQR2-2m	WQR2-SF
				VA24B6465-001	VA24B6465-002	VA24B6465-003	VA24B6465-004	VA24B6465-005	VA24B6465-006
		Long Term	Short Term	7/9/2024	7/9/2024	7/9/2024	7/9/2024	7/9/2024	7/9/2024
General Parameters									
pH - Field	pH units	7.0 - 8.7	-	7.6	7.9	7.4	7.8	8	7.7
Specific Conductivity - Field	µS/cm	-	-	6753	25304	31993	8785	15886	31339
Temperature - Field	°C	-	-	15.4	13.8	9.1	14.5	14.2	11.2
Salinity - Field	ppt	Narrative[3]	-	4.62	20.14	29.59	6.27	11.98	27.3
Turbidity - Field	NTU	Narrative[3]	Narrative[3]	9.18	2.02	0.52	8.88	5.39	0.77
TSS	mg/L	Narrative[3]	Narrative[3]	11.3	7.3	2.9	13.4	10.8	2.6
Dissolved Oxygen - Field	mg/L	>=8	-	11	11.23	***6.05***	11.02	11.05	8.9
Anions and Nutrients									
Sulphate	mg/L	-	-	278	890	1840	262	668	2010
Chloride	mg/L	-	-	2180	6680	13400	2150	5180	14800
Fluoride	mg/L	-	1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ammonia ($N\text{-}NH_3$)	mg/L	Variable [4]	Variable [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Nitrite ($N\text{-}NO_2$)	mg/L	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrate ($N\text{-}NO_3$)	mg/L	3.7	339	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Metals									
Aluminum, total (T-Al)	mg/L	-	-	0.499	0.229	0.0448	0.615	0.342	0.0717
Antimony, total (T-Sb)	mg/L	-	0.27 [5]	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Arsenic, total (T-As)	mg/L	0.0125	0.0125	0.00073	0.0021	0.00379	0.00106	0.00147	0.00349
Barium, total (T-Ba)	mg/L	-	-	0.0166	0.015	0.0122	0.0184	0.0148	0.012
Beryllium, total (T-Be)	mg/L	0.1	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron, total (T-B)	mg/L	1.2	-	0.48	***1.72***	***3.3***	0.65	***1.33***	***3.74***
Cadmium, total (T-Cd)	mg/L	0.00012	-	<0.000020	0.000036	0.000068	<0.000020	0.000022	0.000067
Chromium, total (T-Cr)	mg/L	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, total (T-Co)	mg/L	-	-	0.000223	0.00014	0.000086	0.000257	0.000177	0.000101
Copper, total (T-Cu)	mg/L	0.002	0.003	0.00179	0.00096	0.00074	0.00136	0.00107	0.00078
Iron, total (T-Fe)	mg/L	-	-	0.413	0.199	0.044	0.494	0.292	0.076
Lead, total (T-Pb)	mg/L	0.002	0.14	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Manganese, total (T-Mn)	mg/L	-	-	0.0153	0.00837	0.00283	0.0169	0.0109	0.00356
Mercury, total (T-Hg)	mg/L	0.000016	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum, total (T-Mo)	mg/L	-	-	0.00142	0.00368	0.00896	0.00145	0.00311	0.00857
Nickel, total (T-Ni)	mg/L	0.0083	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Selenium, total (T-Se)	mg/L	0.002	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Silver, total (T-Ag)	mg/L	0.0015	0.003	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Thallium, total (T-Tl)	mg/L	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Uranium, total (T-U)	mg/L	-	-	0.000366	0.00102	0.00263	0.000411	0.000889	0.00266
Vanadium, total (T-V)	mg/L	0.005 [7]	-	0.00142	0.00119	0.00138	0.00162	0.00128	0.00134
Zinc, total (T-Zn)	mg/L	0.01	0.055	0.0086	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Hexavalent Chromium, total	mg/L	0.0015	-	<0.00150	<0.00150	<0.00150	<0.00150	<0.00150	<0.00150
Dissolved Metals									
Cadmium, dissolved (D-Cd)	mg/L	-	-	<0.000020	<0.000020	0.00005	<0.000020	<0.000020	0.00006
Copper, dissolved (D-Cu)	mg/L	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00053
Iron, dissolved (D-Fe)	mg/L	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Lead, dissolved (D-Pb)	mg/L	-	-	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Manganese, dissolved (D-Mn)	mg/L	-	-	0.00504	0.0052	0.00106	0.00484	0.00458	0.00138
Nickel, dissolved (D-Ni)	mg/L	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Strontium, dissolved (D-Sr)	mg/L	-	-	0.836	0.742	4.96	0.816	1.14	6.1
Vanadium, dissolved (D-V)	mg/L	-	-	<0.00050	<0.00050	0.00108	<0.00050	0.00052	0.00121
Zinc, dissolved (D-Zn)	mg/L	-	-	0.0014	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Polycyclic Aromatic Hydrocarbons (PAHs)									
Acenaphthene	mg/L	0.006	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Acridine	mg/L	-	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Anthracene	mg/L	-	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Benz(a)anthracene	mg/L	-	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Benzo(a)pyrene	mg/L	0.00001	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Chrysene	mg/L	0.0001	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Fluoranthene	mg/L	-	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Fluorene	mg/L	0.012	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
1-methylnaphthalene	mg/L	0.001	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
2-methylnaphthalene	mg/L	0.001	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Naphthalene	mg/L	0.001	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Phenanthrene	mg/L	-	-	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Pyrene	mg/L	-	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Quinoline	mg/L	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Volatile Organic Compounds (VOCs)									
Benzene	mg/L	0.11	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Ethylbenzene	mg/L	0.25	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Methyl-tert-butyl-ether	mg/L	5	0.44	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Styrene	mg/L	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Toluene	mg/L	0.215	-	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Total Xylenes	mg/L	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Chlorobenzene	mg/L	0.025	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
1,2-Dichlorobenzene	mg/L	0.042	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

Notes:
Results ***underlined in bold italics*** exceed the applicable long-term water quality guideline for the protection of marine water aquatic life.
Shaded results exceed the applicable short-term water quality guideline for the protection of marine water aquatic life.
[1] Approved British Columbia Water Quality Guidelines for the protection of marine aquatic life (BC ENV, 2021). Where an approved guideline is not established, the working guideline is applied.
[2] Canadian Water Quality Guideline for the protection of marine aquatic life (CCME, 2021).
[3] Narrative guideline for the evaluation of change from background conditions arising from discharges to the aquatic environment. The water quality data presented in the table were collected when the site was discharging, therefore the guidelines were evaluated.
[4] The approved total ammonia nitrogen BC WQG is salinity, pH and temperature dependent; see Tables 26E and 26F in BC WQG guidance document (BC ENV, 2021).
[5] The working BC WQG for trivalent antimony [SB(III)] is 0.27 mg/L and is applied to total antimony results.
[6] When MeHg ⩽ 0.5% of total Hg, BC WQG = 0.00002 mg/L.
[7] Federal Water Quality Guideline for Vanadium (Environment and Climate Change Canada).
[8] The recorded field salinity measurements for IDZ-2 do not correlate with conductivity measurements and are suspected to be erroneous.
The lowest applicable guidelines are shown in the table; however, water quality data was screened to all applicable guidelines.

Table G-2:
Summary of Marine Water Quality Results Received at the Time of Reporting

Parameter	Unit	Lowest Applicable Guideline [1, 2]		Station IDZ-E1			Station IDZ-E2		
				0.5 m Below Surface	2 m Below Surface	2 m Above Seafloor	0.5 m Below Surface	2 m Below Surface	2 m Above Seafloor
				IDZ-E1-0.5	IDZ-E1-2m	IDZ-E1-SF	IDZ-E2-0.5	IDZ-E2-2m	IDZ-E2-SF
				VA24B6997-001	VA24B6997-002	VA24B6997-003	VA24B6997-004	VA24B6997-005	VA24B6997-006
		Long Term	Short Term	7/13/2024	7/13/2024	7/13/2024	7/13/2024	7/13/2024	7/13/2024
General Parameters									
pH - Field	pH units	7.0 - 8.7	-	7.7	7.7	7.5	7.7	8.2	7.5
Specific Conductivity - Field	µS/cm	-	-	1772	7392	31643	1940	3440	31750
Temperature - Field	°C	-	-	14.7	14.3	10.5	15	14.3	10.2
Salinity - Field	ppt	Narrative[3]	-	1.14	5.24	28.12	1.22	2.32	28.47
Turbidity - Field	NTU	Narrative[3]	Narrative[3]	16.92	15.11	0.69	17.04	11.15	0.55
TSS	mg/L	Narrative[3]	Narrative[3]	16.5	15.1	<2.0	8.7	16.5	<2.0
Dissolved Oxygen - Field	mg/L	>=8	-	10.65	10.74	8.04	10.68	11.24	***7.52***
Anions and Nutrients									
Sulphate	mg/L	-	-	78	93	2280	79	90	2190
Chloride	mg/L	-	-	665	776	16400	660	739	15800
Fluoride	mg/L	-	1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ammonia (N-NH_3)	mg/L	Variable [4]	Variable [4]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Nitrite (N-NO_2)	mg/L	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Nitrate (N-NO_3)	mg/L	3.7	339	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Metals									
Aluminum, total (T-Al)	mg/L	-	-	0.668	0.737	0.0556	0.616	0.663	0.03
Antimony, total (T-Sb)	mg/L	-	0.27 [5]	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Arsenic, total (T-As)	mg/L	0.0125	0.0125	<0.00040	0.00042	0.00312	<0.00040	<0.00040	0.00341
Barium, total (T-Ba)	mg/L	-	-	0.0184	0.0202	0.0129	0.0178	0.0186	0.0129
Beryllium, total (T-Be)	mg/L	0.1	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron, total (T-B)	mg/L	1.2	-	<0.30	<0.30	***4.23***	<0.30	<0.30	***4.4***
Cadmium, total (T-Cd)	mg/L	0.00012	-	<0.000020	<0.000020	0.000086	<0.000020	<0.000020	0.000079
Chromium, total (T-Cr)	mg/L	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, total (T-Co)	mg/L	-	-	0.000299	0.000308	0.000095	0.000276	0.000312	0.000084
Copper, total (T-Cu)	mg/L	0.002	0.003	0.0016	0.00161	0.00069	0.00154	0.00158	0.00057
Iron, total (T-Fe)	mg/L	-	-	0.564	0.591	0.059	0.514	0.567	0.029
Lead, total (T-Pb)	mg/L	0.002	0.14	0.0001	0.00011	<0.00010	<0.00010	0.0001	<0.00010
Manganese, total (T-Mn)	mg/L	-	-	0.0197	0.0202	0.00333	0.0183	0.0195	0.00242
Mercury, total (T-Hg)	mg/L	0.000016	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum, total (T-Mo)	mg/L	-	-	0.00055	0.0006	0.00914	0.00053	0.00064	0.00951
Nickel, total (T-Ni)	mg/L	0.0083	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Selenium, total (T-Se)	mg/L	0.002	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Silver, total (T-Ag)	mg/L	0.0015	0.003	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Thallium, total (T-Tl)	mg/L	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Uranium, total (T-U)	mg/L	-	-	0.000131	0.000165	0.00289	0.00014	0.000149	0.00281
Vanadium, total (T-V)	mg/L	0.005 [7]	-	0.00173	0.0017	0.00136	0.00156	0.00169	0.00135
Zinc, total (T-Zn)	mg/L	0.01	0.055	<0.0030	0.0032	<0.0030	<0.0030	<0.0030	<0.0030
Hexavalent Chromium, total	mg/L	0.0015	-	<0.00150	<0.00150	<0.00150	<0.00150	<0.00150	<0.00150
Dissolved Metals									
Cadmium, dissolved (D-Cd)	mg/L	-	-	<0.000020	<0.000020	0.000054	<0.000020	<0.000020	0.000053
Copper, dissolved (D-Cu)	mg/L	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Iron, dissolved (D-Fe)	mg/L	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Lead, dissolved (D-Pb)	mg/L	-	-	<0.00010	<0.00010	0.00011	<0.00010	0.00013	<0.00010
Manganese, dissolved (D-Mn)	mg/L	-	-	0.00594	0.00596	0.00302	0.00598	0.00602	0.00199
Nickel, dissolved (D-Ni)	mg/L	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Strontium, dissolved (D-Sr)	mg/L	-	-	0.268	0.302	4.03	0.284	0.29	5.46
Vanadium, dissolved (D-V)	mg/L	-	-	<0.00050	<0.00050	0.00095	<0.00050	<0.00050	0.00113
Zinc, dissolved (D-Zn)	mg/L	-	-	<0.0010	0.0011	0.0017	<0.0010	0.002	0.0011
Polycyclic Aromatic Hydrocarbons (PAHs)									
Acenaphthene	mg/L	0.006	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Acridine	mg/L	-	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Anthracene	mg/L	-	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Benz(a)anthracene	mg/L	-	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Benzo(a)pyrene	mg/L	0.00001	-	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Chrysene	mg/L	0.0001	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Fluoranthene	mg/L	-	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Fluorene	mg/L	0.012	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
1-methylnaphthalene	mg/L	0.001	-	<0.000010	<0.000010	<0.000010	0.000032	<0.000010	<0.000010
2-methylnaphthalene	mg/L	0.001	-	<0.000010	<0.000010	<0.000010	0.000063	<0.000010	<0.000010
Naphthalene	mg/L	0.001	-	<0.000050	<0.000050	<0.000050	0.000084	<0.000050	<0.000050
Phenanthrene	mg/L	-	-	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Pyrene	mg/L	-	-	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Quinoline	mg/L	-	-	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Volatile Organic Compounds (VOCs)									
Benzene	mg/L	0.11	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Ethylbenzene	mg/L	0.25	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Methyl-tert-butyl-ether	mg/L	5	0.44	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Styrene	mg/L	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Toluene	mg/L	0.215	-	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040	<0.00040
Total Xylenes	mg/L	-	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Chlorobenzene	mg/L	0.025	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
1,2-Dichlorobenzene	mg/L	0.042	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

Notes:
Results ***underlined in bold italics*** exceed the applicable long-term water quality guideline for the protection of marine water aquatic life.
Shaded results exceed the applicable short-term water quality guideline for the protection of marine water aquatic life.
[1] Approved British Columbia Water Quality Guidelines for the protection of marine aquatic life (BC ENV, 2021). Where an approved guideline is not established, the working guideline is applied.
[2] Canadian Water Quality Guideline for the protection of marine aquatic life (CCME, 2021).
[3] Narrative guideline for the evaluation of change from background conditions arising from discharges to the aquatic environment. The water quality data presented in the table were collected when the site was discharging, therefore the guidelines were evaluated.
[4] The approved total ammonia nitrogen BC WQG is salinity, pH and temperature dependent; see Tables 26E and 26F in BC WQG guidance document (BC ENV, 2021).
[5] The working BC WQG for trivalent antimony [SB(III)] is 0.27 mg/L and is applied to total antimony results.
[6] When MeHg ⩽ 0.5% of total Hg, BC WQG = 0.00002 mg/L.
[7] Federal Water Quality Guideline for Vanadium (Environment and Climate Change Canada).
The lowest applicable guidelines are shown in the table; however, water quality data was screened to all applicable guidelines.

Table G-3:
Summary of Marine Water Quality Results Received at the Time of Reporting

Parameter	Unit	Lowest Applicable Guideline [1, 2]		Station IDZ-E1			Station IDZ-E2		
				0.5 m Below Surface	2 m Below Surface	2 m Above Seafloor	0.5 m Below Surface	2 m Below Surface	2 m Above Seafloor
				IDZ-E1-0.5	IDZ-E1-2m	IDZ-E1-SF	IDZ-E2-0.5	IDZ-E2-2m	IDZ-E2-SF
				VA24B7450-001	VA24B7450-002	VA24B7450-003	VA24B7450-004	VA24B7450-005	VA24B7450-006
		Long Term	Short Term	7/17/2024	7/17/2024	7/17/2024	7/17/2024	7/17/2024	7/17/2024
General Parameters									
pH - Field	pH units	7.0 - 8.7	-	7.9	7.9	7.8	7.9	7.9	7.6
Specific Conductivity - Field	µS/cm	-	-	3650	13845	31262	3864	12728	31847
Temperature - Field	°C	-	-	16.8	15.7	11.8	16.6	15.7	10.3
Salinity - Field	ppt	Narrative[3]	-	2.32	9.94	26.74	2.47	9.07	28.45
Turbidity - Field	NTU	Narrative[3]	Narrative[3]	12.03	7.16	1.18	12.56	8.45	0.95
TSS	mg/L	Narrative[3]	Narrative[3]	13.4	10.9	<2.0	11.2	13.1	2.9
Dissolved Oxygen - Field	mg/L	>=8	-	10.41	10.30	9.14	10.53	10.35	***7.48***
Anions and Nutrients									
Sulphate	mg/L	-	-	-	-	-	-	-	-
Chloride	mg/L	-	-	-	-	-	-	-	-
Fluoride	mg/L	-	1.5	-	-	-	-	-	-
Ammonia ($N\text{-}NH_3$)	mg/L	Variable [4]	Variable [4]	-	-	-	-	-	-
Nitrite ($N\text{-}NO_2$)	mg/L	-	-	-	-	-	-	-	-
Nitrate ($N\text{-}NO_3$)	mg/L	3.7	339	-	-	-	-	-	-
Total Metals									
Aluminum, total (T-Al)	mg/L	-	-	-	-	-	-	-	-
Antimony, total (T-Sb)	mg/L	-	0.27 [5]	-	-	-	-	-	-
Arsenic, total (T-As)	mg/L	0.0125	0.0125	-	-	-	-	-	-
Barium, total (T-Ba)	mg/L	-	-	-	-	-	-	-	-
Beryllium, total (T-Be)	mg/L	0.1	-	-	-	-	-	-	-
Boron, total (T-B)	mg/L	1.2	-	-	-	-	-	-	-
Cadmium, total (T-Cd)	mg/L	0.00012	-	-	-	-	-	-	-
Chromium, total (T-Cr)	mg/L	-	-	-	-	-	-	-	-
Cobalt, total (T-Co)	mg/L	-	-	-	-	-	-	-	-
Copper, total (T-Cu)	mg/L	0.002	0.003	-	-	-	-	-	-
Iron, total (T-Fe)	mg/L	-	-	-	-	-	-	-	-
Lead, total (T-Pb)	mg/L	0.002	0.14	-	-	-	-	-	-
Manganese, total (T-Mn)	mg/L	-	-	-	-	-	-	-	-
Mercury, total (T-Hg)	mg/L	0.000016	-	-	-	-	-	-	-
Molybdenum, total (T-Mo)	mg/L	-	-	-	-	-	-	-	-
Nickel, total (T-Ni)	mg/L	0.0083	-	-	-	-	-	-	-
Selenium, total (T-Se)	mg/L	0.002	-	-	-	-	-	-	-
Silver, total (T-Ag)	mg/L	0.0015	0.003	-	-	-	-	-	-
Thallium, total (T-Tl)	mg/L	-	-	-	-	-	-	-	-
Uranium, total (T-U)	mg/L	-	-	-	-	-	-	-	-
Vanadium, total (T-V)	mg/L	0.005 [7]	-	-	-	-	-	-	-
Zinc, total (T-Zn)	mg/L	0.01	0.055	-	-	-	-	-	-
Hexavalent Chromium, total	mg/L	0.0015	-	-	-	-	-	-	-
Dissolved Metals									
Cadmium, dissolved (D-Cd)	mg/L	-	-	-	-	-	-	-	-
Copper, dissolved (D-Cu)	mg/L	-	-	-	-	-	-	-	-
Iron, dissolved (D-Fe)	mg/L	-	-	-	-	-	-	-	-
Lead, dissolved (D-Pb)	mg/L	-	-	-	-	-	-	-	-
Manganese, dissolved (D-Mn)	mg/L	-	-	-	-	-	-	-	-
Nickel, dissolved (D-Ni)	mg/L	-	-	-	-	-	-	-	-
Strontium, dissolved (D-Sr)	mg/L	-	-	-	-	-	-	-	-
Vanadium, dissolved (D-V)	mg/L	-	-	-	-	-	-	-	-
Zinc, dissolved (D-Zn)	mg/L	-	-	-	-	-	-	-	-
Polycyclic Aromatic Hydrocarbons (PAHs)									
Acenaphthene	mg/L	0.006	-	-	-	-	-	-	-
Acridine	mg/L	-	-	-	-	-	-	-	-
Anthracene	mg/L	-	-	-	-	-	-	-	-
Benz(a)anthracene	mg/L	-	-	-	-	-	-	-	-
Benzo(a)pyrene	mg/L	0.00001	-	-	-	-	-	-	-
Chrysene	mg/L	0.0001	-	-	-	-	-	-	-
Fluoranthene	mg/L	-	-	-	-	-	-	-	-
Fluorene	mg/L	0.012	-	-	-	-	-	-	-
1-methylnaphthalene	mg/L	0.001	-	-	-	-	-	-	-
2-methylnaphthalene	mg/L	0.001	-	-	-	-	-	-	-
Naphthalene	mg/L	0.001	-	-	-	-	-	-	-
Phenanthrene	mg/L	-	-	-	-	-	-	-	-
Pyrene	mg/L	-	-	-	-	-	-	-	-
Quinoline	mg/L	-	-	-	-	-	-	-	-
Volatile Organic Compounds (VOCs)									
Benzene	mg/L	0.11	-	-	-	-	-	-	-
Ethylbenzene	mg/L	0.25	-	-	-	-	-	-	-
Methyl-tert-butyl-ether	mg/L	5	0.44	-	-	-	-	-	-
Styrene	mg/L	-	-	-	-	-	-	-	-
Toluene	mg/L	0.215	-	-	-	-	-	-	-
Total Xylenes	mg/L	-	-	-	-	-	-	-	-
Chlorobenzene	mg/L	0.025	-	-	-	-	-	-	-
1,2-Dichlorobenzene	mg/L	0.042	-	-	-	-	-	-	-

Notes:
Results ***underlined in bold italics*** exceed the applicable long-term water quality guideline for the protection of marine water aquatic life.
Shaded results exceed the applicable short-term water quality guideline for the protection of marine water aquatic life.
[1] Approved British Columbia Water Quality Guidelines for the protection of marine aquatic life (BC ENV, 2021). Where an approved guideline is not established, the working guideline is applied.
[2] Canadian Water Quality Guideline for the protection of marine aquatic life (CCME, 2021).
[3] Narrative guideline for the evaluation of change from background conditions arising from discharges to the aquatic environment. The water quality data presented in the table were collected when the site was discharging, therefore the guidelines were evaluated.
[4] The approved total ammonia nitrogen BC WQG is salinity, pH and temperature dependent; see Tables 26E and 26F in BC WQG guidance document (BC ENV, 2021).
[5] The working BC WQG for trivalent antimony [SB(III)] is 0.27 mg/L and is applied to total antimony results.
[6] When MeHg ⩽ 0.5% of total Hg, BC WQG = 0.00002 mg/L.
[7] Federal Water Quality Guideline for Vanadium (Environment and Climate Change Canada).
The lowest applicable guidelines are shown in the table; however, water quality data was screened to all applicable guidelines.

Table G-4:
Summary of IDZ Marine Water Quality Results for Dioxins and Furans Received at the Time of Reporting

Parameter	Unit	Station IDZ-E1			Station IDZ-E2		
		0.5 m Below Surface	2 m Below Surface	2 m Above Seafloor	0.5 m Below Surface	2 m Below Surface	2 m Above Seafloor
		IDZ-E1-0.5	IDZ-E1-2m	IDZ-E1-SF	IDZ-E2-0.5	IDZ-E2-2m	IDZ-E2-SF
		L2756068-4	L2756068-5	L2756068-6	L2756068-7	L2756068-8	L2756068-9
		2024-06-04	2024-06-04	2024-06-04	2024-06-04	2024-06-04	2024-06-04
Lower Bound PCDD/F TEQ	**pg/L**	0.253	0.00834	0.000648	0.160	0.167	0.0196

Notes:
PCDD = polychlorinated dibenzodioxins (dioxins)
PCDF = polychlorinated dibenzofurans (furans)
TEQ = toxic equivalency
Lower bound PCDD/F TEQ is the sum of the toxic equivalency results for the individual PCDD/F parameters. Non-detectable parameters are assigned a value of zero (0).

Table G-5:
Summary of IDZ Marine Water Quality Results for Dioxins and Furans Received at the Time of Reporting

Parameter	Unit	Station IDZ-E1			Station IDZ-E2		
		0.5 m Below Surface	2 m Below Surface	2 m Above Seafloor	0.5 m Below Surface	2 m Below Surface	2 m Above Seafloor
		IDZ-E1-0.5	IDZ-E1-2m	IDZ-E1-SF	IDZ-E2-0.5	IDZ-E2-2m	IDZ-E2-SF
		L2756174-1	L2756174-2	L2756174-3	L2756174-4	L2756174-5	L2756174-6
		2024-06-10	2024-06-10	2024-06-10	2024-06-10	2024-06-10	2024-06-10
Lower Bound PCDD/F TEQ	**pg/L**	1.07	0.000375	0.0307	0	0.0154	0.000321

Notes:
PCDD = polychlorinated dibenzodioxins (dioxins)
PCDF = polychlorinated dibenzofurans (furans)
TEQ = toxic equivalency
Lower bound PCDD/F TEQ is the sum of the toxic equivalency results for the individual PCDD/F parameters. Non-detectable parameters are assigned a value of zero (0).

Table G-6:
Summary of Reference Station Marine Water Quality Results for Dioxins and Furans Received at the Time of Reporting

Parameter	Unit	Reference Station WQR1		
		0.5 m Below Surface	2 m Below Surface	2 m Above Seafloor
		WQR1-0.5	WQR1-2m	WQR1-SF
		L2756068-1	L2756068-2	L2756068-3
		2024-06-04	2024-06-04	2024-06-04
Lower Bound PCDD/F TEQ	pg/L	0	0.0113	0.144

Notes:
PCDD = polychlorinated dibenzodioxins (dioxins)
PCDF = polychlorinated dibenzofurans (furans)
TEQ = toxic equivalency
Lower bound PCDD/F TEQ is the sum of the toxic equivalency results for the individual PCDD/F parameters. Non-detectable parameters are assigned a value of zero (0).

Table G-7:
Summary of IDZ Marine Water Quality Results for Methylmercury Received at the Time of Reporting

Parameter	Unit	Station IDZ-E1			Station IDZ-E2		
		0.5 m Below Surface	2 m Below Surface	2 m Above Seafloor	0.5 m Below Surface	2 m Below Surface	2 m Above Seafloor
		IDZ-E1-0.5	IDZ-E1-2m	IDZ-E1-SF	IDZ-E2-0.5	IDZ-E2-2m	IDZ-E2-SF
		VA24B6997-001	VA24B6997-002	VA24B6997-003	VA24B6997-004	VA24B6997-005	VA24B6997-006
		2024-07-13	2024-07-13	2024-07-13	2024-07-13	2024-07-13	2024-07-13
Methylmercury	µg/L	0.000025	0.000021	0.000027	0.000026	<0.000020	0.000021

Table G-8:
Summary of Reference Station Marine Water Quality Results for Methylmercury Received at the Time of Reporting

Parameter	Unit	Reference Station WQR1			Reference Station WQR2		
		0.5 m Below Surface	2 m Below Surface	2 m Above Seafloor	0.5 m Below Surface	2 m Below Surface	2 m Above Seafloor
		WQR1-0.5	WQR1-2m	WQR1-SF	WQR2-0.5	WQR2-2m	WQR2-SF
		VA24B6465-001	VA24B6465-002	VA24B6465-003	VA24B6465-004	VA24B6465-005	VA24B6465-006
		2024-07-09	2024-07-09	2024-07-09	2024-07-09	2024-07-09	2024-07-09
Methylmercury	µg/L	0.000026	0.000026	0.000021	0.000021	0.000021	0.000024