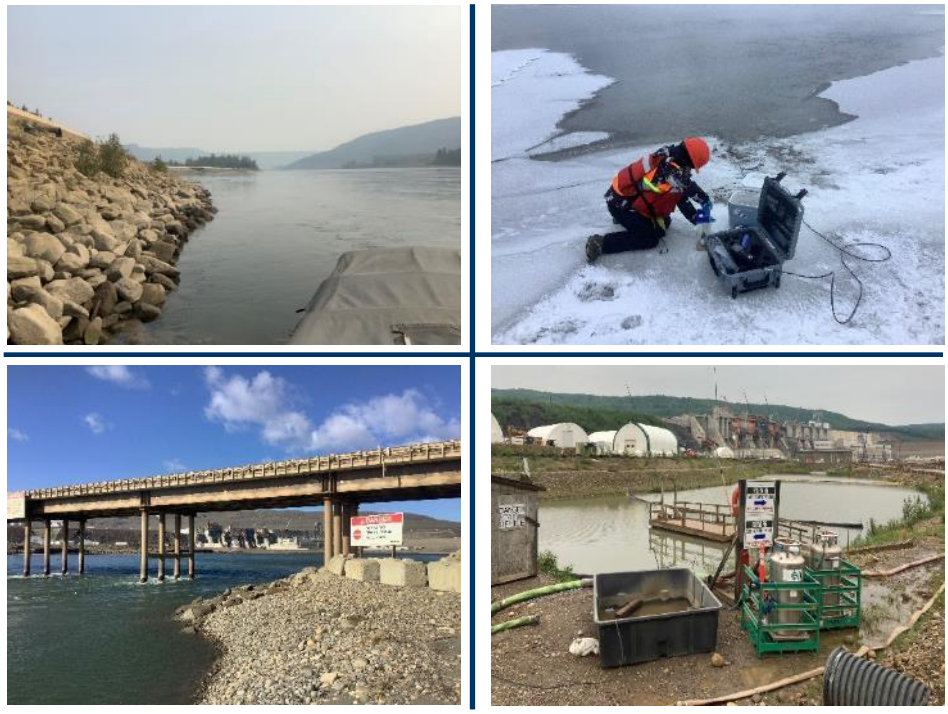
Appendix B

Site C Clean Energy Project

PAG Contact RSEM Pond Monitoring: Peace River Surface Water Quality and Pond Toxicity 2023 Annual Report



Prepared for:

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March 20, 2024

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Published by Ecofish Research Ltd., Suite 906 - 595 Howe Street, Vancouver, BC V6C 2T5 and Aski Reclamation LP, 1717 Civic Core Rd., Moberly Lake, BC V0C 1X0

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Citation:

Ganshorn, K., C. Suzanne, C. Doucet, and R. Johnson. 2024. Site C Clean Energy Project PAG Contact RSEM Pond Monitoring: Peace River Surface Water Quality and Pond Toxicity 2023 Annual Report. Consultant's report prepared for BC Hydro by Ecofish Research Ltd. and Aski Reclamation LP., March 20, 2024.

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EXECUTIVE SUMMARY

Ecofish Research Ltd. (Ecofish) was retained by Aski Reclamation LP (Aski) to conduct surface water quality monitoring on behalf of BC Hydro for the Site C Clean Energy Project (the "Project"). The scope of monitoring is specific to relocated surplus excavated material (RSEM) sediment ponds containing water that has come into contact with potentially acid generating (PAG) material. We acknowledge this work is being conducted on the traditional territory of Treaty 8 First Nations of Dunne Zaa, Cree and Tse'khene cultural descent.

This report summarizes the monitoring results for the 2023 calendar year[1]. Peace River diversion commenced on September 30, 2020, and full diversion was achieved on October 3, 2020. To date, RSEM R6W, R6E, and L6 ponds remain in place following river diversion. Six new Phase 2 PAG-contact RSEM ponds became operational post-diversion but were decommissioned in 2023: four R5A-P2 ponds (decommissioned in April 2023) and two L5-P2 ponds (west pond decommissioned in July 2023 and east pond decommissioned in September 2023). There are safety constraints around working in or next to the Site C headpond in close (~1 km) proximity to the entrance to twin tunnels that divert the entire flow of the Peace River around the Stage 2 cofferdam. Therefore, water quality sampling in the Peace River was not planned for the RSEM R5A-P2 ponds or RSEM L5-P2 ponds prior to decommissioning in 2023. Water quality sampling is no longer required for the RSEM R5A or L5 catchments.

In 2023 during Phase 2 of construction, the RSEM R6E and R6W ponds regularly passively discharged water to the Peace River. In 2023, the RSEM L6 sediment control pond was dewatered by pumping through the discharge pipe from April 10 – 11 and October 20 – 22.

In 2023, monitoring included acute toxicity testing of RSEM pond water as well as surface water quality monitoring in the Peace River as it relates to discharge from PAG contact RSEM sediment ponds. RSEM pond toxicity and Peace River surface water quality monitoring are requirements of the Acid Rock Drainage and Metal Leachate (ARD/ML) Management Plan[2] included as Appendix E of the Construction Environmental Management Plan (CEMP; BC Hydro 2023). The monitoring program was designed to evaluate: 1) RSEM pond water acute toxicity and 2) pond discharge for compliance with BC water quality guidelines (WQG) for the protection of aquatic life at the downstream edge of the 100 m long initial dilution zone (IDZ) in the Peace River. A summary of each monitoring component is provided below.

[1] In addition to this annual report, detailed monthly reports were issued that summarized the current RSEM status, monthly and cumulative monitoring results, and upcoming monitoring requirements. Additional reports are prepared for discharge compliance exceedances when required; this was not required in 2023. Annual and monthly reports were also prepared for the 2017, 2018, 2019, 2020, 2021, and 2022 monitoring periods.

[2] Other requirements of the CEMP, including RSEM in-pond water quality monitoring and mitigation implementation, are the responsibility of the project's Main Civil Works contractor, Peace River Hydro Partners (PRHP); these other requirements are reported on separately by PRHP and/or their Qualified Professional consultants and therefore are not included in this report.

RSEM Pond Acute Toxicity

The toxicity testing program for PAG containing RSEM sediment ponds consists of two components: routine bi-monthly monitoring and targeted monitoring as specified in the CEMP (BC Hydro 2023). In 2023, acute toxicity of RSEM pond water was monitored for each pond, provided sufficient water was available for sampling. Acute toxicity was evaluated using a standard laboratory assay (Rainbow Trout 96-hour LC50 test) performed on water samples collected directly from the pond or from the end of pipe pond outflow.

Considering all RSEM ponds, a total of 26 routine toxicity samples were collected in 2023 and all the tests passed. Four samples were collected from the RSEM R5A-P2 ponds (one from each of ponds A, B, C, and D). Six samples were collected from both the RSEM R6W and RSEM R6E ponds, two from the RSEM L5W-P2 pond, three from the RSEM L5E-P2 pond, and five from the RSEM L6 pond. Given all four Phase 2 RSEM R5A-P2 ponds and both RSEM L5-P2 ponds were decommissioned in 2023, toxicity sampling at the Phase 2 RSEM R5A-P2 and RSEM L5-P2 ponds has been discontinued from the Site C PAG-contact RSEM Sediment Pond Surface Water Quality Monitoring Program.

RSEM Discharge/Peace River Surface Water Quality Monitoring

The ARD/ML Management Plan (BC Hydro 2023) stipulates water quality criteria (i.e., BC WQG for the protection of aquatic life) at the IDZ location 100 m downstream of each RSEM discharge location. To evaluate compliance, a full suite of water quality parameters (including physical parameters, nutrients, anions, total metals, and dissolved metals) was measured in situ and/or sampled for laboratory analysis. Sampling was conducted on monthly and 5 in 30-day sampling schedules (5 sets of samples over a 30-day period during both turbid and clear flow conditions). Sampling was conducted at IDZ sites 100 m downstream of discharging RSEM ponds, as well as at upstream (upstream of all Site C construction influences), immediate background (just upstream of RSEM discharge points), and far-field downstream locations.

BC WQG were occasionally exceeded in 2023 due to naturally occurring Peace River conditions. There were no exceedances of BC WQG measured at IDZ sites that were attributable to discharge of water from RSEM sediment ponds. The range in water quality parameter concentrations measured in 2023 were similar to those measured in 2017, 2018, 2019, 2020, 2021, and 2022, and were within historical water quality data ranges observed in the Peace River.

The RSEM ponds have end of pipe (EOP) limits for total suspended solids (TSS). Continuous turbidity gauges installed on the left and right bank of the Peace River upstream of the confluence with the Moberly River are used to inform the project's Main Civil Works contractor, Peace River Hydro Partners (PRHP), of the Peace River background TSS twice daily via automated email as per Section 2.1 in BC Hydro (2017a). To estimate the background Peace River TSS, Ecofish has developed TSS:turbidity relationships over the course of monitoring which are used to estimate TSS concentrations from the turbidity data logged by the monitoring stations. A total of 263 samples collected over 58 dates between December 15, 2017 to October 31, 2023 were used to develop the

TSS:turbidity relationship used in 2023. These data encompassed a wide range of turbidity (1.1 NTU to 2,618 NTU) and TSS (2 mg/L to 1,710 mg/L) observations. The 2023 background TSS data are reported by PRHP and are not included in this report.

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1. INTRODUCTION

Ecofish Research Ltd. (Ecofish) was retained by Aski Reclamation LP (Aski) to conduct surface water quality monitoring on behalf of BC Hydro for the Site C Clean Energy Project (the "Project") as it relates to sediment ponds in relocated surplus excavated material (RSEM) areas containing potentially acid generating (PAG) material and/or PAG contact water potentially discharging to the Peace River. We acknowledge this work is being conducted on the traditional territory of Treaty 8 First Nations of Dunne Zaa, Cree, and Tse'khene cultural descent.

Project construction works include management of excavated PAG shale bedrock. The excavated shale bedrock is placed in up to four PAG contact RSEM areas (RSEM R5A, R6, L5, and L6; Map 1). Surface runoff from these RSEM areas and water from PAG excavation sites is directed into the associated active PAG contact RSEM sediment ponds (henceforth referred to as RSEM ponds), and water in these ponds may be discharged to the Peace River.

An Acid Rock Drainage and Metal Leachate (ARD/ML) Management Plan is included as Appendix E of the Construction Environmental Management Plan (CEMP; BC Hydro 2023) for the Project. Section 7.2 of the ARD/ML Management Plan specifies compliance requirements related to the PAG-contact RSEM ponds. Ecofish and Aski's scope of work is to conduct the monitoring and reporting associated with compliance requirements for acute toxicity (Section 7.2.1 of the ARD/ML Management Plan) and for Peace River water quality downstream of each PAG-contact RSEM area (Section 7.2.3 of the ARD/ML Management Plan). Other requirements of the CEMP, including RSEM in-pond water quality monitoring and mitigation implementation, are the responsibility of the project's Main Civil Works contractor, Peace River Hydro Partners (PRHP); these other requirements are reported on separately by PRHP and/or their Qualified Professional consultants.

At of the end of 2023, R6W, R6E, and L6 ponds are the only PAG contact RSEM ponds that remain in place. Peace River diversion commenced on September 30, 2020, and full diversion was achieved on October 3, 2020. Six new Phase 2 PAG-contact RSEM ponds became operational post-diversion but they were decommissioned in 2023: four R5A-P2 ponds (decommissioned in April 2023) and two L5-P2 ponds (west pond decommissioned in July 2023 and east pond decommissioned in September 2023). The Phase 1 RSEM R5A, L5, and R5b ponds were decommissioned in 2020. Table 1 provides a summary of PAG contact RSEM pond construction and discharge history; the status of each Phase 1 and Phase 2 pond is further described below.

Water management in the RSEM R5A drainage area was transitioned from the Phase 1 to the Phase 2 RSEM R5A ponds (RSEM R5A-P2A, RSEM R5A-P2B, RSEM R5A-P2C, and RSEM R5A-P2D) in September 2020. All four Phase 2 RSEM R5A-P2 ponds were decommissioned, dewatered, and infilled by April 26, 2023, and final capping was completed as of July 19, 2023.

The Phase 2 RSEM L5-P2 pond was divided by a berm, resulting in two ponds: an east pond (RSEM L5E-P2) and a west pond (RSEM L5W-P2). The ponds were used to manage PAG contact

water from the RSEM Area L5 catchment, the LBEX area, and other areas as needed. Both ponds have been decommissioned: the RSEM L5 Phase 2 West Pond was decommissioned in July 2023 (backfilling began in July 2023 and was completed as of August 28, 2023) and the RSEM L5 Phase 2 East Pond was decommissioned in September 2023 (backfilling began on August 22, 2023 and was completed as of October 12, 2023).

There are safety constraints around working in or next to the Site C headpond in close (~1 km, Map 1) proximity to the entrance to twin tunnels that divert the entire flow of the Peace River around the Stage 2 cofferdam. Therefore, water quality sampling in the Peace River was not planned for the RSEM R5A-P2 ponds or RSEM L5-P2 ponds prior to decommissioning in 2023. Water quality sampling is no longer required for the RSEM R5A or L5 catchments.

The RSEM R6 pond is divided by a berm, resulting in two ponds: an east pond (RSEM R6E) and a west pond (RSEM R6W). Discharge from these RSEM R6 sediment ponds commenced in April 2017. Since May 9, 2020, RSEM R6W receives treated effluent from the Water Treatment Plant (WTP) sludge pond. The two RSEM R6 ponds also receive water from several sources on site as documented in the PRHP Weekly Environmental Monitoring Reports. In 2023 during Phase 2 of construction, the RSEM R6E and R6W ponds regularly passively discharged water to the Peace River.

Construction of the RSEM L6 sediment pond was completed in March 2019. The pond is used to manage PAG-contact water from the RSEM Area L6 catchment; the catchment is small; therefore, the RSEM L6 pond generally does not discharge, and it is generally managed to prevent passive discharge. In October 2023, a pipeline was installed from the LBEX Bench 2 sump to the RSEM L6 pond and the pond has also been designated as a hydrovac dump site for AFDE. In 2023, the RSEM L6 sediment control pond was dewatered by pumping through the discharge pipe from April 10 – 11 and October 20 – 22.

This report fulfils the annual reporting requirement outlined in Section 7.5 of the ARD/ML Management Plan (CEMP, Appendix E, BC Hydro 2023) for the associated monitoring conducted by Ecofish and Aski (RSEM pond toxicity testing and Peace River water quality sampling) on behalf of BC Hydro in 2023.

Table 1. PAG contact RSEM pond construction and discharge history as of the end of 2023.

RSEM Pond	RSEM Pond Construction Completed	Discharge to the Peace River Commenced	Status
R5A-P2[1]	September 2020	March 2022 (R5A-P2A, R5A-P2B) and May 2022 (R5A-P2C and R5A-P2D; indirectly)	Four Phase 2 ponds, all decommissioned on April 26, 2023.
R6	March 2017	April 2017	Two ponds; ponds remain the same in Phase 1 and Phase 2 of construction. The RSEM R6 West pond has been receiving treated effluent from the WTP sludge pond since May 9, 2020.
L5-P2	September 2020	June 2021 (L5E-P2) and August 2021 (L5W-P2)	Single pond divided by a berm, resulting in two ponds: an east pond (L5E-P2) and a west pond (L5W-P2); both ponds decommissioned in 2023 (west pond decommissioned in July 2023 and east pond decommissioned in September 2023).
L6[2]	March 2019	No planned discharge	Unchanged between Phase 1 and Phase 2 of construction.

[1] Water from the four RSEM R5A-P2 ponds is managed to avoid discharge to the Peace River by pumping water between the R5A-P2 ponds. In 2023, discharge to the Peace River occurred on April 6 and 7, when water was pumped from Pond D to Pond C and Pond C was dewatered to the Peace River; on April 10 and 11, when water was pumped from the R5B Phase 2 Sump to Pond A and Pond A was dewatered to the Peace River; and on April 17–19 when Pond A was pumped to the Peace River.

[2] Water stored in RSEM L6 is managed to prevent passive discharge into the Peace River. In 2023, discharge to the Peace River occurred from April 10 – 11 and October 20 – 22 when water was pumped to the Peace River.

628000 629000 630000 631000 632000

6232000 6231000 6230000 6229000

PAM-LB1
PR-2.81
(Peace Upstream)
PR-4.00
(Peace Upstream alternative)
RSEM R5a
RSEM L5
RSEM R5b
RSEM L6
RSEM R6
Peace River
Moberly River

Inset 1
L6 SP Toxicity
L6 Upstream
L6 Back Eddy
L6 Discharge
L6 Discharge
Peace River
L6 IDZ
0 25 50 m

Inset 2
Peace River
R6 Discharge
R6 Upstream
R6 IDZ
R6E EOP Toxicity
R6W EOP Toxicity
R6W SP Toxicity
R6E SP Toxicity
0 50 100 m

Inset 3
Peace River
PAM-RB1
0 50 100 m

Inset 4
PAM-LB2
Peace River
PAM-RB2
0 100 200 m

BC ENV site (far-field downstream, left bank)
BC ENV site (far-field downstream, right bank)

SITE C CLEAN ENERGY PROJECT

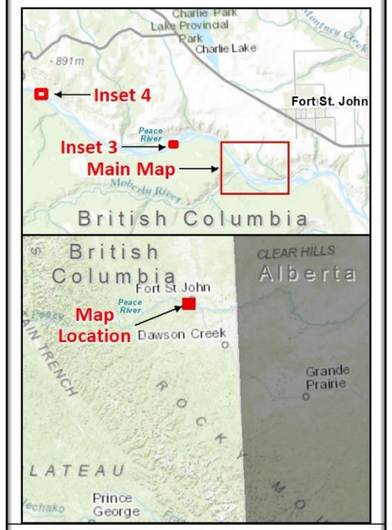
PAG Contact RSEM Sediment Ponds and Water Quality Monitoring Locations

Legend

- Pond toxicity sampling collected in the sediment pond (SP) or from the end of pipe (EOP)
- Peace River Water Quality Monitoring
- RSEM Sediment Pond Discharge Point
- Continuous Turbidity Gauge
- Debris Boom
- Restricted Watercraft Operating Areas (No-Go Zones)

Sediment Ponds

- RSEM Pond constructed and discharge has commenced
- Decommissioned RSEM Pond
- RSEM Pond catchment area



MAP SHOULD NOT BE USED FOR LEGAL OR NAVIGATIONAL PURPOSES

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Scale: 1:17,000

NO.	DATE	REVISION	BY
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2			
3			
4			
5			

Date Saved: 2024-02-13
Coordinate System: NAD 1983 UTM Zone 10N

ECOFISH RESEARCH

Map 1

Path: M:\Projects-Active\1200_SiteC\MXD\WaterQuality\1200_RSEM_WQ_Annual_6415_20240213.mxd

2. BACKGROUND

2.1. RSEM Pond Acute Toxicity

The acute toxicity (Rainbow Trout 96-hour LC50) monitoring program is designed to confirm that water discharged from the PAG contact RSEM ponds is not acutely toxic to aquatic life at the point of discharge into the Peace River (as per Section 7.1 of ARD/ML Management Plan, BC Hydro 2023). Therefore, prior to discharge into the Peace River, and for the duration of discharge into the Peace River, acute toxicity testing is required for each RSEM pond.

The acute toxicity monitoring program is described in Section 7.3.1 of the ARD/ML Management Plan (BC Hydro 2023) and reflects the toxicity monitoring program (Shelley *et al.* 2018) that was accepted by regulators in February 2019. On February 27, 2019 a bi-monthly acute toxicity sampling approach was adopted, and the sampling schedule specified in the CEMP (BC Hydro 2023) switched to a bi-monthly schedule for all RSEM ponds.

The current toxicity monitoring approach specifies that samples be collected from each PAG contact RSEM sediment pond every two months if there is sufficient water to collect a sample (Shelley *et al.* 2018). This will demonstrate regulatory compliance over a range of operating conditions and provide data to confirm or revise the testing program. In the event of an acute toxicity test failure under this monitoring program, an additional sample(s) will be collected to confirm pond water quality returns to non-toxic conditions (Shelley *et al.* 2018). An initial sample will be collected 96 hours after the failed sample; if that sample also fails, additional samples will be collected every 96 hours until a test passes. After a test passes, routine acute toxicity testing will resume at a bi-monthly frequency from the sample date of the passed test (Shelley *et al.* 2018). Additional targeted acute toxicity testing is also conducted if pond pH drops below 6.5 for more than one hour, which is more conservative than the lower end of pipe (EOP) discharge limit of 6.0 for more than one hour (Shelley *et al.* 2018).

A toxicity test "passes" (i.e., the pond water is not acutely toxic) if the result of the test is >50% survival in undiluted pond water. Detailed monthly reports were issued for each month of 2023 which provide results for RSEM pond acute toxicity testing. If a toxicity test fails, results are communicated directly to BC Hydro and PRHP as soon as results are available. A high-level summary of the methods and results of the RSEM pond acute toxicity monitoring conducted in 2023 are provided herein and data summary tables are provided in Appendix A.

2.2. Peace River Water Quality

The compliance requirements for the monitoring program for Peace River water quality downstream of each RSEM pond are described in Section 7.2.3 of the ARD/ML Management Plan (BC Hydro 2023). A compliance requirement includes defining and approving water quality monitoring sites in the Peace River. Compliance requirements also include confirming that the Peace River samples are in fact sampling within the RSEM pond discharge plume and confirming discharge plume dynamics under a range of river flows and discharge rates to confirm plume modeling

predictions (Ganshorn *et al.* 2017a, 2017b). During Phase 2 of construction discharge plume characterization will be confirmed for RSEM R6 and L6.

It is also a compliance requirement that during discharge from RSEM ponds, water quality at the initial dilution zone (IDZ) monitoring locations 100 m downstream of the RSEM discharge points shall meet the Peace River IDZ Limits (i.e., BC Water Quality Guidelines (BC WQG) for the protection of aquatic life) as specified in Table 2 of the ARD/ML Management Plan (BC Hydro 2023). Compliance with this requirement is assessed using a sampling program which is described in Section 7.3.4 of the ARD/ML Management Plan. The program requires sampling only during periods of RSEM discharge and includes monthly and 5 in 30-day sampling (five evenly spaced sampling events over 30 days performed twice per year, once during clear flow conditions and once during turbid flow conditions).

Water quality monitoring within the RSEM ponds is monitored daily by PRHP when the ponds are discharging, and less frequently for RSEM PAG contact water storage ponds that are managed to not discharge but may contain PAG contact water (e.g., RSEM R5A and L6 sediment ponds). PAG contact RSEM pond water quality data for the dates corresponding to monthly and 5 in 30-day sampling in the Peace River are included for reference in this report in the time series graphs of each water quality parameter for RSEM R6 (Appendix B) and RSEM L6 (Appendix C).

It is a compliance requirement (for PRHP) to meet EOP discharge limits for total suspended solids (TSS) in water that discharges to the Peace River from the RSEM ponds. PRHP reports on compliance with respect to EOP limits, and Ecofish provides PRHP with background Peace River TSS data to inform the TSS EOP limit twice a day via automated email. The background TSS data are derived from continuous turbidity data collected at two background real time monitoring stations in the Peace River, and Ecofish and Aski are responsible for developing and maintaining the TSS:turbidity relationships for these stations.

Detailed monthly reports were issued for each month of 2023[3] which provide water quality data summary tables, figures, and sampling details to meet the monthly reporting requirement outlined in Section 7.5.3 of the ARD/ML Management Plan (BC Hydro 2023). In accordance with Section 7.2.3 of the ARD/ML Management Plan, exceedance reports are issued immediately (i.e., within 24 hours of receipt of in situ or laboratory analytical results) if exceedances of the Peace River IDZ limits are identified in any IDZ sample, provided the cause of the exceedance was attributable to discharge from a PAG contact RSEM pond. There were no exceedance reports issued in 2023. A high-level summary of the methods and results of the Peace River and RSEM IDZ surface water quality sampling conducted in 2023 are provided herein.

[3] Annual and monthly reports were also prepared for 2017, 2018, 2019, 2020, 2021, and 2022.

3. METHODS

3.1. RSEM Pond Acute Toxicity

Four sterile 10 L plastic carboys (or two 20 L carboys) are provided by ALS Environmental (ALS) for each acute toxicity test. Carboys are filled with pond water either obtained directly from the outflow pipe when a RSEM pond is discharging, or collected from the pond close to the outflow pipe location if there is no discharge from the RSEM pond. Sampling procedures, chain of custody, and QA/QC follow the guidelines of the British Columbia Field Sampling Manual (Gov BC 2013).

The acute toxicity testing is performed by Nautilus Environmental Inc. (Nautilus, in Burnaby or Calgary), and in rare cases by Bureau Veritas Laboratories (in Burnaby) or ALS (in Winnipeg) when Nautilus is having issues with their supply of Rainbow Trout. Sample carboys are delivered to ALS in Fort St. John shortly after sampling (on the same day) and the samples are shipped to Nautilus following standard chain of custody and within acceptable hold times.

Toxicity samples were not collected if the water level was too low or the pond was frozen to the bottom, in this case, sampling was postponed until sufficient water was available. A toxicity test "passes" (i.e., the pond water is not acutely toxic) if the result of the test is >50% survival in undiluted pond water.

3.1.1. RSEM R5A-P2

In 2023, toxicity samples were only collected from each pond in March; the ponds could not be sampled prior to March due to low water levels or frozen conditions. In April 2023, all four Phase 2 RSEM R5A-P2 ponds were decommissioned; therefore, toxicity sampling at the Phase 2 RSEM R5A-P2 ponds has been discontinued from the Site C PAG-contact RSEM Sediment Pond Surface Water Quality Monitoring Program.

3.1.2. RSEM R6

In 2023, RSEM R6 toxicity samples were collected on a bi-monthly sampling schedule starting in January for RSEM R6W and in February for RSEM R6E.

3.1.3. RSEM L5-P2

In 2023, toxicity samples were collected from the two RSEM L5-P2 ponds in March (both ponds), May (both ponds), and July (L5E-P2 only); the ponds could not be sampled prior to March due to low water levels or frozen conditions. In 2023, the L5W-P2 pond was decommissioned in July and the L5E-P2 pond was decommissioned in September; therefore, toxicity sampling at the Phase 2 RSEM L5 sediment ponds has been discontinued.

3.1.4. RSEM L6

In 2023, toxicity sampling of the RSEM L6 pond was done on a bi-monthly basis from March through November; the pond was frozen/empty in January.

3.1.5. Acute Toxicity Test Failure Evaluation

In the event that a toxicity sample is determined to be acutely toxic, the LC50 (i.e., the concentration at which there is mortality in >50% (v/v) of the fish) is estimated and reported by Nautilus based on the toxicity results at serial dilutions of the pond water sample. Data are provided in tabular format as % Survival of Rainbow Trout for serial dilutions (% v/v) of the RSEM Pond Water. Nautilus provides the final laboratory report to ALS at which point the final report is automatically emailed to Ecofish and PRHP.

Although it is not a requirement of the CEMP (BC Hydro 2023) to collect water quality samples from the Peace River in conjunction with acute toxicity sampling, sampling schedules can overlap and, in some cases, acute toxicity sampling is done in conjunction with water quality sampling in the Peace River. If an acute toxicity test failure occurs for a discharging PAG contact RSEM pond, and corresponding water quality samples are collected in the Peace River (upstream of the discharge, at the compliance point 100 m downstream of the discharge and the far-field monitoring sites), data will be reviewed to evaluate any effects of the discharge in the Peace River.

If an acute toxicity test failure occurs for a discharging PAG contact RSEM pond and water quality sampling was not performed in the Peace River on the date of the toxicity test failure, the potential effects of the discharge on the water quality in the IDZ can be modelled using the site-specific mixing model developed for the RSEM IDZs (Ganshorn *et al.* 2017a). The background water quality (general parameters, metals) in the Peace River required for modelling is estimated based on historical data during similar environmental conditions (seasonal flow and turbidity), and the pond water quality is provided by PRHP, who collect water quality samples daily from the RSEM sediment ponds provided there is sufficient water for sample collection.

3.2. Peace River Water Quality

3.2.1. RSEM Pond Discharge Plume Characterization

Monitoring of RSEM pond discharge plumes within the IDZ is conducted to characterize dilution under a variety of pond discharge and Peace River flows to meet the CEMP requirement to confirm discharge plume dynamics and modeling predictions. IDZ characterization relies on measurements of in situ specific conductivity, as conductivity in the RSEM ponds is reliably higher than the Peace River. In situ specific conductivity measurements are recorded in the Peace River at different depths (typically 15 and 30 cm below the surface), distances from shore, and distances upstream and downstream from pond discharge points.

This work is considered to be complete for the R5b, R6, and Phase 1 L5 RSEM sediment ponds under Phase 1 of Project construction (Ganshorn *et al.* 2017b, 2019a; Ganshorn and Philibert 2023), and for the L6 and R6 sediments ponds under Phase 2 conditions (Ganshorn and Philibert 2023).

3.2.2. Peace River and RSEM IDZ Surface Water Quality Sampling

The following sections describe the methods used to monitor water quality in the Peace River as it relates to discharge from the PAG contact RSEM sediment ponds.

3.2.2.1. Monthly and 5 in 30-day Surface Water Quality Sampling

Monthly and 5 in 30-day water quality sampling (five evenly spaced sampling events over 30 days performed twice per year, once during clear flow and once during turbid flow) were conducted during periods of RSEM pond discharge in 2023 (Table 2). Sampling consists of collecting measurements in the field with in situ water quality meters, and collection of water quality samples for laboratory analysis. In situ and laboratory sampling procedures, chain of custody procedures, and QA/QC procedures adhered to the guidelines of the British Columbia Field Sampling Manual (Gov BC 2013). In addition, data screening and management followed the QA/QC procedures outlined below in Section 3.2.3. Typically, triplicate readings were collected for in situ data and a duplicate sample for laboratory analysis was collected at one site on each sampling date. Field blanks and travel blanks were also collected on each sampling date.

The full suite of laboratory parameters as specified in Section 7.3.2 of the ARD/ML Management Plan (BC Hydro 2023) (physical, anions and nutrients, total metals, and dissolved metals) were sampled monthly when the RSEM ponds were discharging. The same parameters were also sampled for the 5 in 30-day sampling. Monthly sampling was used to also fulfil one or more of the 5 in 30-day sampling requirements. These parameters are consistent with those being measured by PRHP in the RSEM ponds.

The following monthly and 5 in 30-day site locations were sampled in the Peace River to monitor discharge from the RSEM R6 ponds and the RSEM L6 pond (sampled on only two occasions in 2023): a control site upstream of all Site C instream works in the Peace River (Peace 03 was used during Phase 1 of construction, and was replaced by Peace Upstream (aka PR-2.81 (boat access) or PR-4.00 (shore access in winter) following Peace River diversion on October 3, 2020), two far-field locations downstream of the construction footprint on the right bank and left bank of the Peace River (British Columbia Ministry of Environment and Climate Change Strategy (BC ENV) sites), an upstream site located 5 m upstream of the discharge point, and an IDZ monitoring site located at the edge of the IDZ (100 m downstream of the discharge point) (Table 3, Map 1).

In situ measurements and laboratory samples were collected 10 to 15 cm below the surface of the water to avoid surface contamination from airborne particulate and approximately 1 m from shore, except for at the Peace Upstream site. Samples were collected mid-channel at the Peace Upstream site when it is accessed by boat to provide Peace River background data upstream of the confluence of the Moberly River and the Peace River.

Monthly sampling is conducted during months where discharge occurs from each pond (Table 2). In 2023, monthly sampling during discharge was completed for RSEM R6; RSEM L6 was also sampled on April 10, 2023 and October 20, 2023 to meet the monthly requirement when L6 was dewatered to

the Peace River (Table 2). The 5 in 30-day sampling for RSEM R6 was completed during turbid flows from May 11, 2023 to June 8, 2023 and during clear flows from October 4, 2023 to November 2, 2023 (Table 2).

Detailed monthly reports were issued for each month of 2023; these reports provide water quality data summary tables, figures, and sampling details to meet the monthly reporting requirement outlined in Section 7.5.3 of the ARD/ML Management Plan (BC Hydro 2023). A table of summary statistics (average, minimum, maximum, and standard deviation) is provided for each sample site that considers all of the data collected at that site in 2023. Replicate samples and in situ measurements (duplicates and triplicates) were averaged prior to calculating the summary statistics. Parameters with a concentration below the method detection limit (MDL) were assumed to have a concentration equal to the MDL for calculation of the summary statistics.

In the 2023 annual summary statistics tables, the annual average, minimum, and maximum values for each parameter for each Peace River monitoring site were screened against the applicable short-term maximum BC WQG for the protection of aquatic life (BC ENV 2023; Appendix A). The annual average values for each parameter at each site were also screened against the applicable long-term BC WQG (BC ENV 2023; Appendix A). The 5 in 30-day monitoring results were screened against the applicable long-term BC WQG in the June and November 2023 monthly reports.

Several water quality parameters have BC WQGs that are calculated based on an equation, or the Biotic Ligand Model as is required for dissolved copper, that depends on the value of other stream chemistry parameters (e.g., pH, dissolved hardness (as $CaCO_3$), dissolved organic carbon (DOC), chloride). To calculate the short-term BC WQG values using an equation, the site chemistry parameter values as measured at each site/date are used. Exceedances of the short-term BC WQG are shaded in blue in the summary tables and the total number of short-term BC WQG exceedances considering all sites and sampling dates over the 2023 monitoring period is also provided in the summary tables.

To calculate the long-term BC WQGs when the guideline is an equation, the annual average of the required stream chemistry parameter values (e.g., pH, dissolved hardness (as $CaCO_3$), DOC, chloride) at a particular site is used to generate the applicable guideline value. In the summary statistics tables, yellow shading indicates an exceedance of the long-term BC WQG.

Illustrative time series figures depicting monthly and 5 in 30-day data collected at each sampling site for each parameter sampled in 2023 were completed for the RSEM ponds that discharged in 2023 (i.e., RSEM R6 and RSEM L6; Appendix B and Appendix C, respectively). RSEM pond water quality results were also included for each sampling date in the time series figures. Parameters with a concentration below the MDL were assumed to have a concentration equal to the MDL for the purpose of generating the figures. It should be noted that for some of the parameters, the MDL used for the pond water quality analysis was different than the MDL used for the Peace River water quality analysis as two different laboratories are used for these analyses. RSEM pond water quality analyses are contracted by PRHP to Bureau Veritas, whereas Peace River water quality analyses are contracted by Ecofish to ALS.

Short-term and long-term BC WQG are included in the time series figures for illustrative purposes. For those guidelines that are equations which rely on specific stream chemistry parameter values, an average based on previous data collected in the Peace River is used. Details are provided as footnotes to applicable figures.

Table 2. 2023 monthly and 5 in 30-day water quality sampling dates and Peace River background TSS (clear/turbid/very turbid flow).

Month (2023)	Day	Sampling Type	RSEM Area	Background Clear/Turbid Flow at RSEM Pond Upstream Site[1,2]	Background Clear/Turbid Flow at Peace River Upstream/PR-2.81[1,3]
Jan	4	Monthly	RSEM R6	Clear flow	-
	5	Monthly	RSEM R6	-	Clear flow
Feb	27	Monthly	RSEM R6	-	Clear flow
	28	Monthly	RSEM R6	Clear flow	-
Mar	20	Monthly	RSEM R6	Clear flow	-
	21	Monthly	RSEM R6	-	Clear flow
Apr	10	Monthly	RSEM L6	Turbid flow	-
	19	Monthly	RSEM R6	Clear flow	Clear flow
May	11	Monthly/5 in 30 day	RSEM R6	Very turbid flow	Turbid flow
	17	5 in 30 day	RSEM R6	Very turbid flow	Very turbid flow
	23	5 in 30 day	RSEM R6	-	Very turbid flow
	26	5 in 30 day	RSEM R6	Very turbid flow	-
Jun	1	Monthly/5 in 30 day	RSEM R6	Turbid flow	Turbid flow
	8	5 in 30 day	RSEM R6	Turbid flow	Clear flow
Jul	12	Monthly	RSEM R6	Clear flow	Clear flow
Aug	22	Monthly	RSEM R6	-	Clear flow
	24	Monthly	RSEM R6	Clear flow	-
Sep	27	Monthly	RSEM R6	-	Clear flow
	28	Monthly	RSEM R6	Clear flow	-
Oct	4	Monthly/5 in 30 day	RSEM R6	Clear flow	Clear flow
	10	5 in 30 day	RSEM R6	Clear flow	Clear flow
	17	5 in 30 day	RSEM R6	Turbid flow	Clear flow
	20	Monthly	RSEM L6	Clear flow	-
	23	5 in 30 day	RSEM R6	-	Clear flow
	24	5 in 30 day	RSEM R6	Clear flow	-
Nov	1	Monthly/5 in 30 day	RSEM R6	-	Clear flow
	2	Monthly/5 in 30 day	RSEM R6	Clear flow	-
Dec	5	Monthly	RSEM R6	-	Clear flow
	6	Monthly	RSEM R6	Clear flow	-

[1] Clear flow: TSS ≤ 25 mg/L; Turbid flow: TSS > 25 mg/L and ≤ 100 mg/L; Very turbid flow: TSS > 100 mg/L.

[2] TSS data for RSEM R6 upstream (RBPR-7.05) and RSEM L6 upstream (LBPR-6.83) are obtained from ALS laboratory data for each sampling date.

[3] Water quality sampling on January 5, February 27, and April 19, 2023 occurred by foot access from shore (right bank) just downstream of the Phase 1 Peace River Upstream site (PR-3.88) because the boat launch site for the Phase 2 Peace River Upstream site (PR-2.81) was inaccessible.

"-" indicates a water quality sample was not collected at this site during the sampling period.

3.2.2.2. Peace River Background TSS

The RSEM ponds have EOP limits for TSS. Continuous turbidity gauges installed on the left and right bank of the Peace River upstream of the confluence with the Moberly River were used to inform PRHP of the Peace River background TSS twice daily via automated email as per Section 2.1 in BC Hydro (2017a).

The turbidity gauges PAM-LB1 and PAM-RB1 are located on the left and right bank of the Peace River, respectively 2.8 km and 7.5 km upstream from the confluence with the Moberly River (Map 1). They have been used to provide the background TSS data since March 3, 2021. Two additional turbidity gauges, PAM-LB2 and PAM-RB2, located ~21 km upstream of the Moberly River confluence were also used to monitor background TSS. These were installed beyond the influence of backwatering from the construction of the Stage 2 cofferdam and river diversion. These ensure backup data are available if stations closer to the Moberly River confluence do not collect representative background TSS data because of backwatering (e.g., due to the potential for increased settling of TSS under backwatered conditions). In preparation for reservoir filling that had been planned for the fall of 2023, the PAM-LB2 and PAM-RB2 stations were removed on November 3 and October 31, 2023, respectively. The stations were not reinstalled when reservoir filling was further delayed until some time in 2024.

Turbidity data collected over periods of 12 hours, starting at 06:00 MST and at 18:00 MST, are averaged to estimate the Peace River background TSS. These results are automatically emailed to PRHP, BC Hydro, and Ecofish personnel. These results include averaged data from both the left and right bank gauges. In order to estimate the background Peace River TSS that are provided in the automated emails, TSS:turbidity relationships developed over the course of monitoring are used to estimate TSS concentrations from the turbidity data logged by the monitoring stations. Note that background TSS data are reported by PRHP and are not included in this report.

This relationship between TSS and turbidity is dynamic and depends upon a variety of factors, including snowmelt and precipitation driven changes in the relative contributions of various sediment sources (BC ENV 2023), as well as hydrology related changes in the sediment carrying capacity of the Peace River. As such, a site-specific TSS:turbidity relationship has been developed for the Peace River over a range of flow and turbidity conditions and this relationship is updated regularly with turbidity data recorded by the gauges paired with additional data from laboratory analysed TSS samples to ensure the relationship reflects current conditions.

In 2023, a total of 58 water samples were collected from May 17, 2023 to October 31, 2023 in the Peace River for laboratory analysis of TSS. These samples were collected across nine monitoring sites where continuous turbidity loggers are present. These laboratory-analyzed TSS data were paired with simultaneously recorded turbidity data from the real time stations to determine the TSS:turbidity ratio of each paired sample. Sample data were reviewed and excluded if ratios appeared anomalous or confounded by errors in concurrent sensor data. The TSS:turbidity ratios of these individual samples were then plotted over time along with data from 2017 – 2023 to identify whether shifts in the

relationship had occurred. For each period identified, data from within that period are combined and analyzed to determine the appropriate relationship. The analysis of this TSS:turbidity ratio consists of using either a linear model with site specific interactions (if Tukey post hoc tests shows that this ratio differs amongst sites) or if there is no clear evidence of site-specific interactions, then a single common linear relationship is used.

3.2.2.3. BC WQG Exceedance Evaluation and Exceedance Notifications

To determine if an exceedance of the BC WQG (short-term maximum and long-term average) observed at the Peace River IDZ monitoring sites is related to the RSEM pond discharge, or alternately, is naturally occurring, the following steps are taken upon collection of in situ data and upon receipt of laboratory data:

- The RSEM pond discharge logs (kept by PRHP) are reviewed; if there is no discharge corresponding to the exceedance (including discharge residence time), it is assumed that the exceedance was naturally occurring.
- The IDZ monitoring result is compared to the Peace River upstream location data (i.e., RSEM R6 upstream, or RSEM L6 upstream).
- The IDZ monitoring result is compared to the RSEM pond data (pond data are provided by PRHP/Bureau Veritas).
- If the IDZ monitoring result is higher than the RSEM pond data, then it is assumed that the exceedance was naturally occurring.
- If the IDZ monitoring result is lower than the RSEM pond data, and the pond data exceeds the Peace River upstream data, then it is assumed that the exceedance was attributed to the RSEM pond and in accordance with the ARD/ML Management Plan requirements (BC Hydro 2023), an Exceedance Notification memorandum is issued to BC Hydro within 24 hours:
    - Prior to composing the Exceedance Notification memorandum, BC Hydro will be notified immediately following identification of the exceedance.
    - In the Exceedance Notification memorandum, the data are evaluated in the context of the corresponding water quality monitoring results for the Peace Upstream site, the two far-field downstream sites, as well as historical water quality data for the Peace River (Golder 2012; Ganshorn *et al.* 2018, 2019b, 2020, 2021, 2022, 2023).
    - The Exceedance Notification memorandum is distributed by BC Hydro to one or more representatives of each of the following parties: the Project's Independent Environmental Monitor (EDI Environmental Dynamics Inc.), BC Government (Ministry of Environment, Office of the Comptroller of Water Rights, and Emergency

Management BC), PRHP, and PRHP's ARD Qualified Professional (Lorax Environmental).

- Exceedance Notification summary tables including the distribution list, are also provided as required in the applicable monthly report that Ecofish prepares for BC Hydro.
- The exceedance is also logged internally in BC Hydro's enterprise Incident Management System.

3.2.3. QA/QC

To ensure accurate and reliable results, all data collection and analyses undergo rigorous QA/QC. In situ measurements are recorded in triplicate for each parameter. In situ meters are maintained and calibrated as per manufacturer's guidelines; repair and calibration data are recorded and stored in a detailed log. QA/QC replicates (duplicates/triplicates), travel blanks, and field blanks are included in water quality sampling for laboratory analysis as required based on sampling frequency. Laboratory water quality sample analysis is completed by ALS Environmental (ALS, in Burnaby or Calgary), and acute toxicity testing is completed by Nautilus Environmental Inc. (Burnaby or Calgary). Both ALS and Nautilus are registered with the Canadian Association for Laboratory Accreditation (CALA), and both conform with requirements of ISO/IEC 17025:2017. Additionally, both ALS locations (Burnaby and Calgary) and both Nautilus locations (Burnaby and Calgary) are qualified under the British Columbia *Environmental Management Act* Environmental Data Quality Assurance Regulation (EDQA) to perform the suite of chemical analyses included for water quality monitoring (ALS) and to perform acute toxicity testing (Nautilus). All samples are transported under standard chain of custody procedures, and comprehensive QC checks are completed by the laboratory with every analysis.

Data are entered into EcoDAT, Ecofish's proprietary data management system, where comprehensive manual and automated QA/QC procedures are implemented. Sample data and QA/QC results are evaluated based on the BC Guidelines for Interpreting Water Quality Data (RISC 1998) and British Columbia Field Sampling Manual (Gov BC 2013).

The following overall QA/QC objectives were established for the sampling program:

- % QA/QC samples (e.g., replicates, field blanks and travel blanks) collected should be at least 10% of the overall sampling program (Gov BC 2013).
- Field and travel blanks should not exceed the MDL for any parameter, not including pH which is measurable in both samples and blanks.
- Precision between duplicates is expected to meet the Government of BC (Gov BC 2013) guideline, unless variability between replicates is a natural occurrence (e.g., during highly turbid flow, TSS, metals, and turbidity may be highly variable):
  - Relative percent difference (RPD) between duplicates should be <20%; and
  - This metric is only calculated if at least one of the replicates was >5× the MDL.

- Precision between triplicates is expected to meet the Resource Inventory Standards Committee (RISC 1998) guideline, unless variability between replicates is a natural occurrence (e.g., during highly turbid flow, TSS, metals, and turbidity may be highly variable):
  - Relative standard deviation (RSD) between triplicates should be <18%; and
  - This metric is only calculated if at least one of the replicates was >5× the MDL.
- The cation - anion balance (% difference) should be <10% for water quality samples that include the necessary major anions and cations for this calculation. The total anion sum and cation sum are expected to be within 10% of each other (ALS n.d.). Anion balance calculations which exceed this objective may be attributable to the presence of less common species or organic salts (ALS n.d.).
- Considering the water quality parameters having paired dissolved and total concentrations, the dissolved concentration should be <1.2× the total concentration. This metric is calculated if the dissolved concentration was >5× the MDL.

Additional QA/QC checks and procedures in 2023 included:

- Review of recorded field data, QA/QC of in situ and toxicity data in EcoDAT;
- Review of electronically uploaded ALS laboratory data;
- Review of laboratory hold time exceedances and sample qualifiers, the hold time for pH is 15 minutes and therefore exceedance of this hold time is unavoidable for all samples; and
- Review of in situ measurements and corresponding laboratory results for pH, turbidity, and specific conductivity. These data are evaluated to ensure that they are comparable. It is expected that these values will vary due to differences in analytical methods and precision between in situ meters and laboratory instruments. This comparison is therefore completed by a Qualified Professional, and is largely qualitative, ensuring that values measured in the field and in the laboratory are within reasonable agreement.

Laboratory hold time exceedances, sample qualifiers, field and travel blank results, and precision between replicates were reviewed by a Qualified Professional for QA/QC issues that may affect interpretation of the data presented in each of the 2023 monthly sampling reports. Duplicate laboratory results were provided individually in the monthly report summary tables for each sampling date; and error bars were included in the illustrative figures where duplicate data were available.

4. RESULTS

4.1. RSEM Pond Acute Toxicity

The sample schedule for RSEM pond toxicity testing as outlined in the CEMP[4] (BC Hydro 2016) was revised as of February 27, 2019 after acceptance by regulators of an alternate testing program proposed by Shelley *et al.* (2018) on that date (CWR 2019). This revised approach is incorporated into the latest revision (Rev 12.0) of the CEMP (BC Hydro 2023). The updated toxicity testing program for PAG containing RSEM sediment ponds consists of two components: routine monitoring and targeted monitoring. In 2023, only routine monitoring was conducted. Test results are summarized for each pond separately in tables in Appendix A.

4.1.1. RSEM R5A-P2

In 2023, all four samples collected from the four RSEM R5A-P2 ponds (one from each of ponds A, B, C, and D) passed the acute toxicity test. On March 29, 2023, a sample collected from RSEM R5A-P2D had five out of ten fish die (50%) in the undiluted pond water after 96 hours. While this test did not fail as more than 50% of the fish did not die, PRHP were advised to manage this pond water as though it is ARD influenced and if pond water was to be discharged to the Peace River that an additional 96 hour toxicity test should be conducted prior to discharge; PRHP did not discharge water from the R5A-P2D pond to the Peace River in March 2023. A sample is only considered to have failed if at 100% concentration, more than 50% of the test fish die after 96 hours of exposure; therefore, the test passed[5].

4.1.2. RSEM R6

In 2023, all 12 samples collected from the two RSEM R6 ponds (six samples from RSEM R6W and six from RSEM R6E) passed the acute toxicity test.

4.1.3. RSEM L5-P2

In 2023, all five samples collected from the two Phase 2 RSEM L5 ponds (two samples from RSEM L5W-P2 and three from RSEM L5E-P2) passed the acute toxicity test.

4.1.4. RSEM L6

In 2023, all five samples collected from the RSEM L6 pond passed the acute toxicity test.

4.1.5. Acute Toxicity Test Failure Evaluation

In 2023, there were no acute toxicity test failures (Appendix A).

[4] The previous sampling schedule consisted of three bi-weekly samplings after pond construction, periods without discharge in excess of 30 days, and after test failures. Ponds passing this bi-weekly sampling were then sampled on a monthly schedule for one year, followed by a quarterly schedule.

[5] https://www2.gov.bc.ca/assets/gov/environment/research-monitoring-and-reporting/monitoring/emre/section-f-2013.pdf.

4.2. Peace River Water Quality

4.2.1. RSEM Pond Discharge Plume Characterization

Discharge plume characterization was not conducted in 2023. As discussed in Section 3.2.1, discharge plume characterization was completed for L6 and R6 sediments ponds under Phase 2 conditions (Ganshorn and Philibert 2023).

No changes to sampling site locations for RSEM R6 or RSEM L6 are recommended at this time.

4.2.2. Peace River and RSEM IDZ Surface Water Quality Sampling

4.2.2.1. Monthly and 5 in 30-day Surface Water Quality Sampling

Annual in situ and laboratory water quality data summary tables based on data collected during monthly and 5 in 30-day sampling in 2023 are provided in Appendix A. Separate tables are provided for each sampling site (Peace Upstream, RSEM R6 upstream, RSEM R6 IDZ, and two far-field downstream sites; Map 1). Annual average, median, minimum, maximum, and standard deviation for each parameter is provided in the tables. Data were screened against the long-term and short-term BC WQG for the protection of aquatic life, and exceedances are highlighted in the summary tables. In situ and laboratory water quality data summary tables are also included for the RSEM L6 monitoring sites which were sampled twice in 2023 on April 10 and October 20 (Appendix A). Since the RSEM L6 sites were only sampled twice, data are only screened against the short-term BC WQG for the protection of aquatic life. Exceedances are discussed below in Section 4.2.2.3.

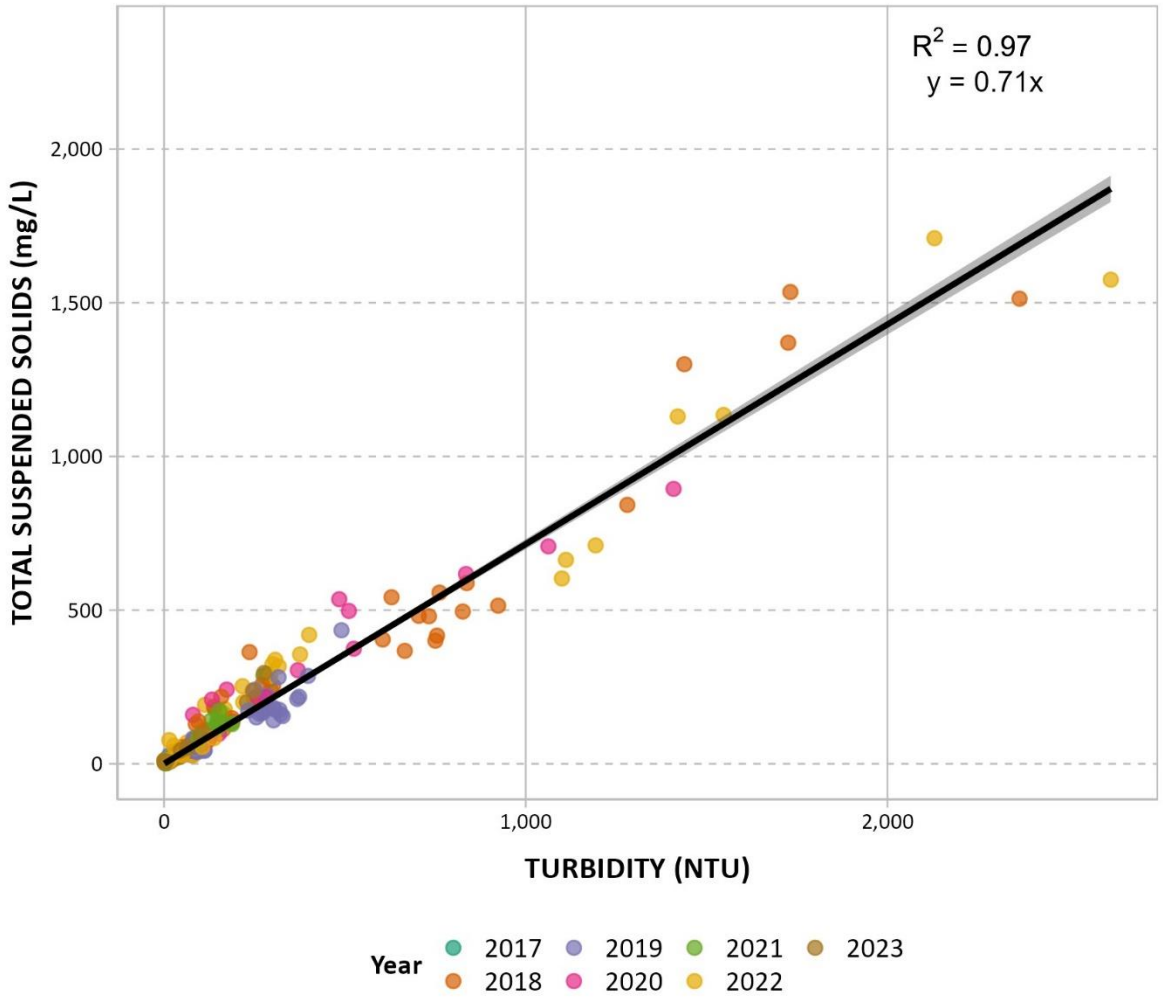
Annual time series bar plots for each water quality parameter based on data collected during monthly and 5 in 30-day sampling in 2023 are provided for RSEM R6 and RSEM L6 in Appendix B and Appendix C, respectively. Applicable BC WQG and Site C EOP limits for each parameter are shown in the figures along with the corresponding RSEM pond water quality data (from PRHP) for each monthly and 5 in 30-day sampling date. These figures illustrate patterns in Peace River and RSEM pond water quality over the course of 2023.

4.2.2.2. Peace River Background TSS

The TSS:turbidity relationship applied to calculate TSS from turbidity data in 2023 was 0.71:1. A total of 263 samples collected over 58 samples dates between December 15, 2017 to October 31, 2023 were used to develop the updated TSS:turbidity relationship. These data encompassed a wide range of turbidity (1.1 NTU to 2,618 NTU) and TSS (2 mg/L to 1,710 mg/L) observations (Figure 1). In 2023, TSS sampling was completed on 13 sampling dates.

The relationship in use at the end of 2023 is shown in Figure 1. Proceeding with a linear model common to all sites in the Peace River including data from 2023, a combined TSS:turbidity relationship of 0.71:1 was found (i.e., TSS = 0.71*Turbidity). This relationship has good agreement amongst the data (R^2 = 0.97) (Figure 1).

Figure 1. Combined relationship for TSS:turbidity in the Peace River using data collected from December 2017 to October 2023. Shaded areas are 95% confidence intervals.



4.2.2.3. BC WQG Exceedances

For the monitoring conducted in 2023, there were no observations of exceedances in the Peace River of the BC WQG (short-term or long-term) for the protection of aquatic life that were attributed to discharge of water from the RSEM ponds. Similar to annual monitoring in 2017 (Ganshorn *et al.* 2018), 2018 (Ganshorn *et al.* 2019b), 2019 (Ganshorn *et al.* 2020), 2020 (Ganshorn *et al.* 2021), 2021 (Ganshorn *et al.* 2022), 2022 (Ganshorn *et al.* 2023), and baseline monitoring (Golder 2012), there were natural exceedances in the Peace River of the BC WQG for the protection of aquatic life. Natural exceedances occurred predominantly during the freshet period (April to the end of June) and were observed at all sample sites. Exceedances were most often associated with elevated concentrations of suspended solids in the Peace River.

4.2.3. QA/QC

The results of the QA/QC checks and procedures completed in 2023 are provided in summary tables in Appendix D. QA/QC issues were reviewed. Two anomalously high values were excluded from the 2023 dataset: one dissolved zinc value from RBPR-7.15 on January 4, 2023 and one dissolved tin value from PR-2.81 on July 12, 2023.

The number of QA/QC laboratory samples (17 replicates, 18 field blanks, and 18 travel blanks) comprised 36.1% (53 of 147 samples) of the overall sampling program based on the total number of monthly and 5 in 30-day samples collected in 2023. The number of QA/QC in situ measurements is 66% (2/3) based on the triplicate measurement for each parameter. Overall, sampling in 2023 has surpassed the QA/QC objective of at least 10% QA/QC effort.

Hold times were exceeded for sample analysis for total ammonia (one sample date), total mercury (one sample date), dissolved orthophosphate (seven sample dates), nitrate (four sample dates), nitrite (four sample dates), total dissolved solids (two sample dates), total phosphorus (one sample date), TSS (two sample dates), total organic carbon (one sample date), and turbidity (three sample dates) in 2023 due to field sampling logistics, shipping delays, and the use of unsuitable containers and/or preservatives. Where hold times were exceeded, results were reviewed to ensure parameter values were consistent with previous sampling results, and no data were flagged in 2023 due to hold time exceedances. The number of samples affected by hold time exceedances which occurred in 2023 are summarized in Table 26 in Appendix D, with the exception of pH which has a hold time of only 15 minutes (laboratory analysis within this time frame is not practical).

Elevated variability between duplicate laboratory samples (RPD>20%) and triplicate in situ measurements (RSD>18%) was observed on a number of occasions for TSS, total dissolved solids, turbidity, total phosphorus, DOC, and select total and dissolved metals, during turbid and clear flow conditions (Table 27 and Table 28 in Appendix D). Variability in excess of the QA/QC objective thresholds occurred on 61 of 1,512 occasions (4.0%) for duplicate samples and 3 of 276 occasions (1.1%) for in situ triplicate sample measurements. These results are thought to reflect real heterogeneity in the Peace River. No substantial effect on data quality is expected.

The 2023 field blank and travel blank results were non-detectable (below the MDL) for 98.6% of the field blank data (1,598/1,620) and 98.4% of the travel blank data (905/920) (Table 29 in Appendix D). Detected concentrations were generally low and less than 5 times the MDL. As such, no substantial effect on data quality is expected.

The cation - anion balance (% difference) was less than 10% in all samples, except for one: the ion balance was 31.0% for the travel blank on April 19, 2023. Exceedance of the ±10% objective is due to the detections of total metals in the travel blank (namely total calcium) without significant corresponding anions. Peace River results are all within historical ranges; therefore, no substantial effect on data quality is expected. The majority of dissolved/total parameter pairs met the QA/QC objective where the dissolved concentration was <1.2 * the total concentration for 99.4% or 4,614 out of a total of 4,642 parameter pairs (Table 30 in Appendix D).

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APPENDICES

Appendix A. Site C PAG Contact RSEM Surface Water Quality Monitoring Data Tables

Table 3. Peace River water quality monitoring site descriptions and coordinates, 2023.

Site Name[1]	Description	UTM Coordinates (Zone 10V)	
		Easting (m)	Northing (m)
PR-2.81	In the Peace River upstream of the confluence with the Moberly River and upstream of the debris boom installed in September 2020. Phase 2 Peace Upstream site.	627,372	6,232,207
PR-4.00[2]	In the Peace River upstream of the confluence with the Moberly River. Alternate Peace Upstream site when boat access to PR-2.81 is not possible.	628,027	6,231,374
RBPR-7.05	In the Peace River, 5 m upstream of the R6 discharge channel.	630,283	6,229,254
RBPR-7.15	In the Peace River, 100 m downstream of the R6 discharge channel.	630,383	6,229,259
LBPR-6.83	In the Peace River, ~250 m upstream of the L6 discharge channel. Site is located more than 5 m upstream of the point of discharge due to the presence of a large back eddy.	630,149	6,229,663
LBPR-7.21	In the Peace River 100 m downstream of the location where the back eddy flow containing the L6 discharge joins the main Peace River flow.	630,495	6,229,560
LBPR-9.34	In the Peace River, downstream of the project.	632,498	6,229,678
RBPR-9.34	In the Peace River, downstream of the project.	632,614	6,229,369

[1] Site names follow a river chainage convention. The numbers in the site name indicate the distance (in km) downstream of the W.A.C. Bennett Dam less 100 km. River chainages at each site are measured perpendicular to the Peace River center line, obtained from the BC government GIS data set.

[2] Water quality sampling on January 5, February 27, and April 19, 2023 occurred by foot access from shore (right bank) just downstream of the Phase 1 Peace River Upstream site (PR-3.88) because the boat launch site for the Phase 2 Peace River Upstream site (PR-2.81) was inaccessible.

Table 4. RSEM R5A Phase 2 pond toxicity sampling results, 2023.

Year	Date	Site[1]	Sampling Schedule	96 hr LC50 % (v/v)
2023	28-Mar	RSEM R5A-P2A-SPTOX	Bi-monthly	>100
		RSEM R5A-P2B-SPTOX	Bi-monthly	>100
	29-Mar	RSEM R5A-P2C-SPTOX	Bi-monthly	>100
		RSEM R5A-P2D-SPTOX	Bi-monthly	100 (95% CL: Not Available)[2]

Note >100% (v/v) indicates toxicity test passed.

[1] The acute toxicity sample is collected from the RSEM pond (indicated by SP in the site name), or collected from the outflow of the discharge pipe (indicated by EOP (end of pipe) in the site name).

[2] A sample is considered to have failed if at 100% concentration, more than 50% of the test fish die after 96 hours of exposure. In this case, 5 out of 10 fish died (50%) in the undiluted pond water after 96 hours, and the test passed.

Phase 2 RSEM R5A-P2 ponds were decommissioned in April 2023.

Table 5. RSEM R6 pond toxicity sampling results, 2023.

Year	Date	Site[1]	Sampling Schedule	96 hr LC50 % (v/v)
2023	16-Jan	RSEM R6W-EOPTOX	Bi-monthly	>100
	21-Feb	RSEM R6E-SPTOX	Bi-monthly	>100
	20-Mar	RSEM R6W-EOPTOX	Bi-monthly	>100
	25-Apr	RSEM R6E-EOPTOX	Bi-monthly	>100
	23-May	RSEM R6W-EOPTOX	Bi-monthly	>100
	13-Jun	RSEM R6E-EOPTOX	Bi-monthly	>100
	24-Jul	RSEM R6W-EOPTOX	Bi-monthly	>100
	14-Aug	RSEM R6E-EOPTOX	Bi-monthly	>100
	20-Sep	RSEM R6W-EOPTOX	Bi-monthly	>100
	30-Oct	RSEM R6E-EOPTOX	Bi-monthly	>100
	06-Nov	RSEM R6W-EOPTOX	Bi-monthly	>100
	01-Dec	RSEM R6E-SPTOX	Bi-monthly	>100

Note >100% (v/v) indicates toxicity test passed.

[1] The acute toxicity sample is collected from the RSEM pond (indicated by SP in the site name), or collected from the outflow of the discharge pipe (indicated by EOP (end of pipe) in the site name).

Table 6. RSEM L5-P2 Phase 2 pond toxicity sampling results, 2023.

Year	Date	Site[1]	Sampling Schedule	96 hr LC50 % (v/v)
2023	20-Mar	RSEM L5E-P2-SPTOX	Bi-monthly	>100
	21-Mar	RSEM L5W-P2-SPTOX	Bi-monthly	>100
	23-May	RSEM L5E-P2-SPTOX	Bi-monthly	>100
		RSEM L5W-P2-SPTOX	Bi-monthly	>100
	24-Jul	RSEM L5E-P2-SPTOX	Bi-monthly	>100

Note >100% (v/v) indicates toxicity test passed.

[1] The acute toxicity sample is collected from the RSEM pond (indicated by SP in the site name), or collected from the outflow of the discharge pipe (indicated by EOP (end of pipe) in the site name).

The Phase 2 RSEM L5-P2 pond is separated by a berm creating an east (L5E-P2) and west (L5W-P2) pond.

The Phase 2 RSEM L5-P2 ponds were decommissioned in July 2023 (L5W-P2) and September 2023 (L5E-P2), prior to the scheduled sampling events.

Table 7. RSEM L6 pond toxicity sampling results, 2023.

Year	Date	Site[1]	Sampling Schedule	96 hr LC50 % (v/v)
2023	21-Mar	RSEM L6-SPTOX	Bi-monthly	>100
	23-May	RSEM L6-SPTOX	Bi-monthly	>100
	24-Jul	RSEM L6-SPTOX	Bi-monthly	>100
	20-Sep	RSEM L6-SPTOX	Bi-monthly	>100
	06-Nov	RSEM L6-SPTOX	Bi-monthly	>100

Note >100% (v/v) indicates toxicity test passed.

[1] The acute toxicity sample is collected from the RSEM pond (indicated by SP in the site name), or collected from the outflow of the discharge pipe (indicated by EOP (end of pipe) in the site name).

Table 8. 2023 annual data summary statistics for lab and in situ sampling (organic carbon, physical tests, anions, and nutrients) collected at the PR-2.81 site.

Site	Min. MDL	PR-2.81[1]							BC Long-Term	BC Short-Term Maximum	
Date: 2023		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.	WQG[2]	WQG[3]	# Exc
Physical Tests (mg/L)											
Dissolved Hardness (as $CaCO_3$)	0.60	20	0	103.4	101	87.8	124	12.1			
Specific Conductivity (in situ, µS/cm)		54		188.0	187.6	121.2	239.0	34.1			
Specific Conductivity (lab, µS/cm)	2.0	20	0	199	192	181	240	19			
Total Dissolved Solids	13	20	0	131	122	106	192	28			
Total Suspended Solids	1.0	20	1	32.4	3.9	1.0	278	74.6		EQ	0
Turbidity (in situ, NTU)		54		20.81	2.56	0.00	145.61	42.19			
Turbidity (lab, NTU)	0.10	20	0	21.72	1.53	0.53	175	49.95			
pH (in situ, pH units)		54		8.02	8.05	7.69	8.22	0.13		6.5 to 9.0	0
pH (lab)	0.10	20	0	8.09	8.12	7.60	8.24	0.15		6.5 to 9.0	0
Anions and Nutrients (mg/L)											
Alkalinity, Total (as $CaCO_3$)	1.0	20	0	91.1	87.2	80.7	117	10.1			
Ammonia, Total (as N)	0.0050	20	15	0.0063	0.0050	0.0050	0.0192	0.0035	0.102[4]	0.68[4]	0
Bromide (Br)	0.050	20	20	0.050	0.050	0.050	0.050	0			
Chloride (Cl)	0.50	20	20	0.50	0.50	0.50	0.50	0	150	600	0
Fluoride (F)	0.020	20	0	0.044	0.044	0.030	0.065	0.009		EQ	0
Nitrate (as N)	0.0050	20	0	0.068	0.0660	0.0446	0.143	0.021	3	32.8	0
Nitrite (as N)	0.0010	20	18	0.0011	0.0010	0.0010	0.0020	0.0002	0.02	EQ	0
Orthophosphate - Dissolved (as P)	0.0010	20	18	0.0011	0.0010	0.0010	0.0021	0.0002			
Total Phosphorus (P)	0.0020	20	0	0.0316	0.0054	0.0040	0.225	0.0641			
Sulfate (SO_4)	0.30	20	0	16.3	14.7	13.2	22.6	3.1	309		
Organic Carbon (mg/L)											
Dissolved Organic Carbon	0.50	20	0	3.24	2.96	2.42	6.65	0.97			
Total Organic Carbon	0.50	20	0	3.25	2.69	2.37	7.60	1.45			
Ion Balance (meq/L)											
Anion Sum	0.10	20	0	2.17	2.06	1.89	2.78	0.26			
Cation - Anion Balance (% difference)		20		-0.76	0.10	-5.90	2.37	2.40			
Cation Sum	0.10	20	0	2.13	2.08	1.81	2.57	0.25			

[1] Water quality sampling on January 5, February 27, and April 19, 2023 was conducted at PR-4.00, and occurred by foot access from shore (right bank) just downstream of the Phase 1 Peace River Upstream site (PR-3.88) because the boat launch site for the Phase 2 Peace River Upstream site (PR-2.81) was inaccessible.

[2] Only average parameter values are compared to the long-term BC WQG. See the methods section of the report for details on how the comparisons are made.

[3] The average, minimum, and maximum values are compared to the short-term max BC WQG. See the methods section of the report for details on how the comparisons are made. A count of the total number of short-term max BC WQG exceedances considering all sampling dates is provided in the "# Exc" column.
EQ indicates that the guidelines values varies per sample based on applicable equations defined by BC ENV (2023).

[4] BC WQG for total ammonia are pH and temperature dependent; guidelines used are the most conservative.

No exceedances occurred. Yellow shading would indicate an exceedance of the long-term 30 day mean BC WQG, and blue shading would indicate an exceedance of the short-term max BC WQG.

Parameters with a concentration below the method detection limit (MDL) are assumed to have a concentration equal to the MDL for calculation of the summary statistics.
n<MDL = number of samples below the method detection limit, Avg. = Average, Min. = Minimum, Max. = Maximum, S.D. = Standard Deviation.

Table 9. 2023 annual data summary statistics for dissolved metals collected at the PR-2.81 site.

Site	Min. MDL	PR-2.81[1]							BC Long-Term	BC Short-Term Maximum	
Date: 2023		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.	WQG[2]	WQG[3]	# Exc
Dissolved Metals (mg/L)											
Aluminum (Al) - Dissolved	0.0010	20	0	0.007	0.0050	0.0033	0.0215	0.005			
Antimony (Sb) - Dissolved	0.00010	20	19	0.00010	0.00010	0.00010	0.00010	0			
Arsenic (As) - Dissolved	0.00010	20	0	0.0002	0.00020	0.00016	0.00024	0.0000			
Barium (Ba) - Dissolved	0.00010	20	0	0.0363	0.0345	0.0281	0.0473	0.0054			
Beryllium (Be) - Dissolved	0.000020	20	20	0.000036	0.000020	0.000020	0.000100	0.000033			
Bismuth (Bi) - Dissolved	0.000050	20	20	0.000050	0.000050	0.000050	0.000050	0			
Boron (B) - Dissolved	0.010	20	20	0.010	0.010	0.010	0.010	0			
Cadmium (Cd) - Dissolved	0.0000050	20	0	0.0000105	0.0000103	0.0000055	0.0000167	0.0000028	EQ	EQ	0
Calcium (Ca) - Dissolved	0.050	20	0	29.7	29.5	24.6	34.6	3.1			
Chromium (Cr) - Dissolved	0.00050	20	20	0.00050	0.00050	0.00050	0.00050	0			
Cobalt (Co) - Dissolved	0.00010	20	20	0.00010	0.00010	0.00010	0.00010	0			
Copper (Cu) - Dissolved	0.00020	20	0	0.00071	0.00065	0.00059	0.00092	0.00011	EQ	EQ	0
Iron (Fe) - Dissolved	0.010	20	14	0.013	0.010	0.010	0.0370	0.007		0.35	0
Lead (Pb) - Dissolved	0.000050	20	20	0.00005	0.00005	0.00005	0.00005	0			
Lithium (Li) - Dissolved	0.0010	20	0	0.0016	0.0014	0.0011	0.0027	0.0005			
Magnesium (Mg) - Dissolved	0.0050	20	0	7.15	6.66	5.86	9.34	1.14			
Manganese (Mn) - Dissolved	0.00010	20	0	0.0013	0.00071	0.00036	0.00408	0.0011			
Mercury (Hg) - Dissolved	0.0000050	20	20	0.0000050	0.0000050	0.0000050	0.0000050	0			
Molybdenum (Mo) - Dissolved	0.000050	20	0	0.000986	0.000864	0.000726	0.00154	0.000271			
Nickel (Ni) - Dissolved	0.00050	20	0	0.00079	0.00071	0.00051	0.00139	0.00023			
Phosphorus (P) - Dissolved	0.050	20	20	0.050	0.050	0.050	0.050	0			
Potassium (K) - Dissolved	0.050	20	0	0.478	0.468	0.433	0.562	0.033			
Selenium (Se) - Dissolved	0.000050	20	0	0.000378	0.000303	0.000246	0.000729	0.000153			
Silicon (Si) - Dissolved	0.050	20	0	2.0	1.95	1.64	2.40	0.2			
Silver (Ag) - Dissolved	0.000010	20	20	0.000010	0.000010	0.000010	0.000010	0			
Sodium (Na) - Dissolved	0.050	20	0	1.25	1.19	1.04	1.61	0.17			
Strontium (Sr) - Dissolved	0.00020	20	0	0.122	0.116	0.0989	0.152	0.016			
Sulfur (S) - Dissolved	0.50	20	0	5.7	5.18	4.68	8.03	1.1			
Thallium (Tl) - Dissolved	0.000010	20	20	0.000010	0.000010	0.000010	0.000010	0			
Tin (Sn) - Dissolved	0.00010	19	19	0.00010	0.00010	0.00010	0.00010	0			
Titanium (Ti) - Dissolved	0.00030	20	16	0.00033	0.00030	0.00030	0.00081	0.00011			
Uranium (U) - Dissolved	0.000010	20	0	0.000481	0.000479	0.000398	0.000561	0.000047			
Vanadium (V) - Dissolved	0.00050	20	20	0.00050	0.00050	0.00050	0.00050	0			
Zinc (Zn) - Dissolved	0.0010	20	19	0.001	0.0010	0.0010	0.0016	0.000	EQ	EQ	0
Zirconium (Zr) - Dissolved	0.00020	20	20	0.00020	0.00020	0.00020	0.00020	0			

[1] Water quality sampling on January 5, February 27, and April 19, 2023 was conducted at PR-4.00, and occurred by foot access from shore (right bank) just downstream of the Phase 1 Peace River Upstream site (PR-3.88) because the boat launch site for the Phase 2 Peace River Upstream site (PR-2.81) was inaccessible.

[2] Only average parameter values are compared to the long-term BC WQG. See the methods section of the report for details on how the comparisons are made.

[3] The average, minimum, and maximum values are compared to the short-term max BC WQG. See the methods section of the report for details on how the comparisons are made. A count of the total number of short-term max BC WQG exceedances considering all sampling dates is provided in the "# Exc" column. EQ indicates that the guidelines values varies per sample based on applicable equations defined by BC ENV (2023).

No exceedances occurred. Yellow shading would indicate an exceedance of the long-term 30 day mean BC WQG, and blue shading would indicate an exceedance of the short-term max BC WQG.

Parameters with a concentration below the method detection limit (MDL) are assumed to have a concentration equal to the MDL for calculation of the summary statistics.

n<MDL = number of samples below the method detection limit, Avg. = Average, Min. = Minimum, Max. = Maximum, S.D. = Standard Deviation.

Table 10. 2023 annual data summary statistics for total metals collected at the PR-2.81 site.

Site	Min. MDL	PR-2.81[1]						BC Long-Term	BC Short-Term Maximum	
Date: 2023		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.	WQG[2]	WQG[3]	# Exc
Total Metals (mg/L)											
Aluminum (Al) - Total	0.0030	20	0	0.539	0.0396	0.0211	5.47	1.334	EQ		
Antimony (Sb) - Total	0.00010	20	14	0.00012	0.00010	0.00010	0.00030	0.00005	0.074	0.25	0
Arsenic (As) - Total	0.00010	20	0	0.00062	0.00024	0.00018	0.00508	0.00115	0.005		
Barium (Ba) - Total	0.00010	20	0	0.0538	0.0366	0.0314	0.210	0.0441			
Beryllium (Be) - Total	0.000020	20	16	0.000055	0.000020	0.000020	0.000186	0.000053			
Bismuth (Bi) - Total	0.000050	20	20	0.000050	0.000050	0.000050	0.000050	0			
Boron (B) - Total	0.010	20	20	0.010	0.010	0.010	0.010	0	1.2		
Cadmium (Cd) - Total	0.0000050	20	0	0.0000683	0.0000185	0.0000119	0.000629	0.0001449			
Calcium (Ca) - Total	0.050	20	0	30.8	29.6	25.8	47.4	5.5			
Chromium (Cr) - Total	0.00050	20	16	0.00132	0.00050	0.00050	0.0101	0.00234			
Cobalt (Co) - Total	0.00010	20	15	0.00036	0.00010	0.00010	0.00230	0.00065	0.004	0.11	0
Copper (Cu) - Total	0.00050	20	0	0.00188	0.00081	0.00066	0.00676	0.00214			
Iron (Fe) - Total	0.010	20	0	0.981	0.056	0.035	11.0	2.607		1	3
Lead (Pb) - Total	0.000050	20	12	0.000386	0.000050	0.000050	0.00298	0.000828	EQ	EQ	0
Lithium (Li) - Total	0.0010	20	0	0.002	0.0014	0.0011	0.0058	0.001			
Magnesium (Mg) - Total	0.0050	20	0	7.53	6.88	6.03	12.2	1.65			
Manganese (Mn) - Total	0.00010	20	0	0.01442	0.00308	0.00179	0.126	0.03091	EQ	EQ	0
Mercury (Hg) - Total	0.0000050	20	17	0.0000054	0.0000050	0.0000050	0.0000107	0.0000013	0.00002		
Molybdenum (Mo) - Total	0.000050	20	0	0.001002	0.000895	0.000752	0.00180	0.000269	7.6	46	0
Nickel (Ni) - Total	0.00050	20	0	0.00173	0.00084	0.00061	0.00824	0.00221			
Phosphorus (P) - Total	0.050	20	16	0.078	0.050	0.050	0.401	0.084			
Potassium (K) - Total	0.050	20	0	0.67	0.485	0.431	2.39	0.48			
Selenium (Se) - Total	0.000050	20	0	0.000397	0.000328	0.000199	0.000944	0.000195	0.002		
Silicon (Si) - Total	0.10	20	0	2.49	2.21	1.66	6.42	1.12			
Silver (Ag) - Total	0.000010	20	17	0.00002	0.000010	0.000010	0.000155	0.00003	EQ	EQ	0
Sodium (Na) - Total	0.050	20	0	1.29	1.24	1.05	1.70	0.18			
Strontium (Sr) - Total	0.00020	20	0	0.125	0.116	0.104	0.186	0.023			
Sulfur (S) - Total	0.50	20	0	5.95	5.48	4.59	8.01	1.06			
Thallium (Tl) - Total	0.000010	20	15	0.000027	0.000010	0.000010	0.000218	0.000049			
Tin (Sn) - Total	0.00010	20	19	0.0001	0.00010	0.00010	0.00011	0.0000			
Titanium (Ti) - Total	0.00030	20	4	0.00568	0.00093	0.00030	0.0376	0.01122			
Uranium (U) - Total	0.000010	20	0	0.00053	0.000509	0.000424	0.000927	0.00012			
Vanadium (V) - Total	0.00050	20	13	0.00281	0.00050	0.00050	0.0270	0.00638			
Zinc (Zn) - Total	0.0030	20	15	0.006	0.0030	0.0030	0.0279	0.008			
Zirconium (Zr) - Total	0.00020	20	19	0.00020	0.00020	0.00020	0.00020	0			

[1] Water quality sampling on January 5, February 27, and April 19, 2023 was conducted at PR-4.00, and occurred by foot access from shore (right bank) just downstream of the Phase 1 Peace River Upstream site (PR-3.88) because the boat launch site for the Phase 2 Peace River Upstream site (PR-2.81) was inaccessible.

[2] Only average parameter values are compared to the long-term BC WQG. See the methods section of the report for details on how the comparisons are made.

[3] The average, minimum, and maximum values are compared to the short-term max BC WQG. See the methods section of the report for details on how the comparisons are made. A count of the total number of short-term max BC WQG exceedances considering all sampling dates is provided in the "# Exc" column.

EQ indicates that the guidelines values varies per sample based on applicable equations defined by BC ENV (2023).

Yellow shading indicates an exceedance of the long-term 30 day mean BC WQG, and blue shading indicates an exceedance of the short-term max BC WQG.

Parameters with a concentration below the method detection limit (MDL) are assumed to have a concentration equal to the MDL for calculation of the summary statistics.

n<MDL = number of samples below the method detection limit, Avg. = Average, Min. = Minimum, Max. = Maximum, S.D. = Standard Deviation.

Table 11. 2023 annual data summary statistics for lab and in situ sampling (organic carbon, physical tests, anions, and nutrients) collected at the RSEM R6 upstream site (RBPR-7.05).

Site	Min. MDL	RBPR-7.05							BC Long-Term WQG[1]	BC Short-Term Maximum	
Date: 2023		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.		WQG[2]	# Exc
Physical Tests (mg/L)											
Dissolved Hardness (as $CaCO_3$)	0.60	22	0	101	100	86.5	121	11			
Specific Conductivity (in situ, µS/cm)		54	0	187.5	190.1	122.6	230.1	31.3			
Specific Conductivity (lab, µS/cm)	2.0	22	0	202	196	180	231	17			
Total Dissolved Solids	13	22	0	129	120	108	176	24			
Total Suspended Solids	1.0	22	0	44.7	8.4	3.1	310	81.2		EQ	0
Turbidity (in situ, NTU)		54	0	24.45	3.38	0.00	155.32	44.31			
Turbidity (lab, NTU)	0.10	22	0	30.0	2.76	0.67	209	57.6			
pH (in situ, pH units)		54	0	8.06	8.06	7.97	8.19	0.07		6.5 to 9.0	0
pH (lab)	0.10	22	0	8.14	8.15	7.90	8.23	0.08		6.5 to 9.0	0
Anions and Nutrients (mg/L)											
Alkalinity, Total (as $CaCO_3$)	1.0	22	0	91.7	87.6	82.8	115	8.8			
Ammonia, Total (as N)	0.0050	22	15	0.0068	0.0050	0.0050	0.0177	0.0037	0.102[3]	0.68[3]	0
Bromide (Br)	0.050	22	22	0.050	0.050	0.050	0.050	0			
Chloride (Cl)	0.50	22	21	0.50	0.50	0.50	0.55	0.01	150	600	0
Fluoride (F)	0.020	22	0	0.044	0.041	0.032	0.069	0.011		EQ	0
Nitrate (as N)	0.0050	22	0	0.0736	0.0623	0.0427	0.153	0.0304	3	32.8	0
Nitrite (as N)	0.0010	22	17	0.0011	0.0010	0.0010	0.0019	0.0003	0.02	EQ	0
Orthophosphate - Dissolved (as P)	0.0010	22	19	0.0013	0.0010	0.0010	0.0047	0.0009			
Total Phosphorus (P)	0.0020	22	0	0.0493	0.0077	0.0032	0.515	0.1123			
Sulfate (SO_4)	0.30	22	0	16.2	15.4	12.9	20.5	2.5	309		
Organic Carbon (mg/L)											
Dissolved Organic Carbon	0.50	22	0	3.60	3.06	2.38	6.76	1.34			
Total Organic Carbon	0.50	22	0	3.62	2.78	2.17	8.20	1.90			
Ion Balance (meq/L)											
Anion Sum	0.10	22	0	2.18	2.07	1.93	2.72	0.22			
Cation - Anion Balance (% difference)		22		-1.76	-1.96	-5.43	3.15	2.01			
Cation Sum	0.10	22	0	2.09	2.07	1.79	2.51	0.23			

[1] Only average parameter values are compared to the long-term BC WQG. See the methods section of the report for details on how the comparisons are made.

[2] The average, minimum, and maximum values are compared to the short-term max BC WQG. See the methods section of the report for details on how the comparisons are made. A count of the total number of short-term max BC WQG exceedances considering all sampling dates is provided in the "# Exc" column.

EQ indicates that the guidelines values varies per sample based on applicable equations defined by BC ENV (2023).

[3] BC WQG for total ammonia are pH and temperature dependent; guidelines used are the most conservative.

No exceedances occurred. Yellow shading would indicate an exceedance of the long-term 30 day mean BC WQG, and blue shading would indicate an exceedance of the short-term max BC WQG.

Parameters with a concentration below the method detection limit (MDL) are assumed to have a concentration equal to the MDL for calculation of the summary statistics.

n<MDL = number of samples below the method detection limit, Avg. = Average, Min. = Minimum, Max. = Maximum, S.D. = Standard Deviation.

Table 12. 2023 annual data summary statistics for dissolved metals collected at the RSEM R6 upstream site (RBPR-7.05).

Site	Min. MDL	RBPR-7.05							BC Long-Term	BC Short-Term Maximum	
Date: 2023		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.	WQG[1]	WQG[2]	# Exc
Dissolved Metals (mg/L)											
Aluminum (Al) - Dissolved	0.0010	22	0	0.0068	0.0056	0.0034	0.0147	0.0035			
Antimony (Sb) - Dissolved	0.00010	22	20	0.00010	0.00010	0.00010	0.00011	0.00000			
Arsenic (As) - Dissolved	0.00010	22	0	0.00020	0.00020	0.00015	0.00026	0.00003			
Barium (Ba) - Dissolved	0.00010	22	0	0.0392	0.0355	0.0286	0.0556	0.0086			
Beryllium (Be) - Dissolved	0.000020	22	22	0.000035	0.000020	0.000020	0.000100	0.000032			
Bismuth (Bi) - Dissolved	0.000050	22	22	0.000050	0.000050	0.000050	0.000050	0			
Boron (B) - Dissolved	0.010	22	22	0.010	0.010	0.010	0.010	0			
Cadmium (Cd) - Dissolved	0.0000050	22	0	0.0000105	0.0000098	0.0000056	0.0000173	0.0000030	EQ	EQ	0
Calcium (Ca) - Dissolved	0.050	22	0	28.7	28.7	24.6	33.6	2.7			
Chromium (Cr) - Dissolved	0.00050	22	22	0.00050	0.00050	0.00050	0.00050	0			
Cobalt (Co) - Dissolved	0.00010	22	21	0.00010	0.00010	0.00010	0.00010	0			
Copper (Cu) - Dissolved	0.00020	22	0	0.00072	0.00067	0.00054	0.00119	0.00016	EQ	EQ	0
Iron (Fe) - Dissolved	0.010	22	14	0.016	0.010	0.010	0.042	0.011		0.35	0
Lead (Pb) - Dissolved	0.000050	22	22	0.000050	0.000050	0.000050	0.000050	0			
Lithium (Li) - Dissolved	0.0010	22	1	0.0017	0.0015	0.0010	0.0027	0.0006			
Magnesium (Mg) - Dissolved	0.0050	22	0	7.15	6.86	5.92	9.06	1.08			
Manganese (Mn) - Dissolved	0.00010	22	0	0.00175	0.00130	0.00042	0.00530	0.00127			
Mercury (Hg) - Dissolved	0.0000050	22	22	0.0000050	0.0000050	0.0000050	0.0000050	0			
Molybdenum (Mo) - Dissolved	0.000050	22	0	0.000957	0.000875	0.000683	0.00140	0.000214			
Nickel (Ni) - Dissolved	0.00050	22	0	0.00081	0.00070	0.00060	0.00158	0.00025			
Phosphorus (P) - Dissolved	0.050	22	22	0.050	0.050	0.050	0.050	0			
Potassium (K) - Dissolved	0.050	22	0	0.494	0.484	0.433	0.579	0.044			
Selenium (Se) - Dissolved	0.000050	22	0	0.000374	0.000305	0.000225	0.000725	0.000138			
Silicon (Si) - Dissolved	0.050	22	0	1.93	1.91	1.66	2.27	0.17			
Silver (Ag) - Dissolved	0.000010	22	22	0.000010	0.000010	0.000010	0.000010	0			
Sodium (Na) - Dissolved	0.050	22	0	1.31	1.25	1.05	1.66	0.20			
Strontium (Sr) - Dissolved	0.00020	22	0	0.117	0.115	0.104	0.138	0.010			
Sulfur (S) - Dissolved	0.50	22	0	5.70	5.33	4.47	7.42	0.84			
Thallium (Tl) - Dissolved	0.000010	22	22	0.000010	0.000010	0.000010	0.000010	0			
Tin (Sn) - Dissolved	0.00010	22	22	0.00010	0.00010	0.00010	0.00010	0			
Titanium (Ti) - Dissolved	0.00030	22	17	0.00038	0.00030	0.00030	0.00080	0.00016			
Uranium (U) - Dissolved	0.000010	22	0	0.000468	0.000466	0.000415	0.000552	0.000035			
Vanadium (V) - Dissolved	0.00050	22	22	0.00050	0.00050	0.00050	0.00050	0			
Zinc (Zn) - Dissolved	0.0010	22	15	0.0011	0.0010	0.0010	0.0018	0.0003	EQ	EQ	0
Zirconium (Zr) - Dissolved	0.00020	22	22	0.00020	0.00020	0.00020	0.00020	0			

[1] Only average parameter values are compared to the long-term BC WQG. See the methods section of the report for details on how the comparisons are made.

[2] The average, minimum, and maximum values are compared to the short-term max BC WQG. See the methods section of the report for details on how the comparisons are made. A count of the total number of short-term max BC WQG exceedances considering all sampling dates is provided in the "# Exc" column. EQ indicates that the guidelines values varies per sample based on applicable equations defined by BC ENV (2023).

No exceedances occurred. Yellow shading would indicate an exceedance of the long-term 30 day mean BC WQG, and blue shading would indicate an exceedance of the short-term max BC WQG.

Parameters with a concentration below the method detection limit (MDL) are assumed to have a concentration equal to the MDL for calculation of the summary statistics.

n<MDL = number of samples below the method detection limit, Avg. = Average, Min. = Minimum, Max. = Maximum, S.D. = Standard Deviation.

Table 13. 2023 annual data summary statistics for total metals collected at the RSEM R6 upstream site (RBPR-7.05).

Site	Min. MDL	RBPR-7.05							BC Long-Term	BC Short-Term Maximum	
Date: 2023		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.	WQG[1]	WQG[2]	# Exc
Total Metals (mg/L)											
Aluminum (Al) - Total	0.0030	22	0	0.528	0.0897	0.0252	2.82	0.891	EQ		
Antimony (Sb) - Total	0.00010	22	14	0.00013	0.00010	0.00010	0.00029	0.00006	0.074	0.25	0
Arsenic (As) - Total	0.00010	22	0	0.00057	0.00027	0.00021	0.00234	0.00063	0.005		
Barium (Ba) - Total	0.00010	22	0	0.0587	0.0368	0.0322	0.162	0.0415			
Beryllium (Be) - Total	0.000020	22	16	0.000059	0.000020	0.000020	0.000185	0.000054			
Bismuth (Bi) - Total	0.000050	22	22	0.000050	0.000050	0.000050	0.000050	0			
Boron (B) - Total	0.010	22	20	0.010	0.010	0.010	0.011	0	1.2		
Cadmium (Cd) - Total	0.0000050	22	0	0.000059	0.0000233	0.0000142	0.000280	0.000081			
Calcium (Ca) - Total	0.050	22	0	30.1	29.0	25.8	36.8	3.5			
Chromium (Cr) - Total	0.00050	22	16	0.00121	0.00050	0.00050	0.00522	0.00146			
Cobalt (Co) - Total	0.00010	22	13	0.00043	0.00010	0.00010	0.00223	0.00065	0.004	0.11	0
Copper (Cu) - Total	0.00050	22	0	0.00201	0.00091	0.00066	0.00692	0.00198			
Iron (Fe) - Total	0.010	22	0	0.923	0.134	0.035	5.33	1.627		1	4
Lead (Pb) - Total	0.000050	22	6	0.00049	0.000085	0.000050	0.00281	0.00084	EQ	EQ	0
Lithium (Li) - Total	0.0010	22	0	0.0022	0.0015	0.0010	0.0060	0.0016			
Magnesium (Mg) - Total	0.0050	22	0	7.46	6.89	6.04	10.5	1.33			
Manganese (Mn) - Total	0.00010	22	0	0.01693	0.00533	0.00209	0.0801	0.02427	EQ	EQ	0
Mercury (Hg) - Total	0.0000050	22	18	0.0000055	0.0000050	0.0000050	0.0000114	0.0000015	0.00002		
Molybdenum (Mo) - Total	0.000050	22	0	0.001018	0.000913	0.000777	0.00161	0.000253	7.6	46	0
Nickel (Ni) - Total	0.00050	22	0	0.0022	0.00091	0.00073	0.00924	0.0026			
Phosphorus (P) - Total	0.050	22	17	0.074	0.050	0.050	0.234	0.054			
Potassium (K) - Total	0.050	22	0	0.674	0.489	0.456	1.60	0.365			
Selenium (Se) - Total	0.000050	22	0	0.000409	0.000329	0.000243	0.000857	0.000181	0.002		
Silicon (Si) - Total	0.10	22	0	2.8	2.22	1.75	6.64	1.4			
Silver (Ag) - Total	0.000010	22	16	0.000017	0.000010	0.000010	0.000061	0.000015	EQ	EQ	0
Sodium (Na) - Total	0.050	22	0	1.34	1.24	1.06	1.85	0.24			
Strontium (Sr) - Total	0.00020	22	0	0.121	0.115	0.102	0.155	0.015			
Sulfur (S) - Total	0.50	22	0	5.84	5.66	4.60	7.60	0.94			
Thallium (Tl) - Total	0.000010	22	16	0.000023	0.000010	0.000010	0.000101	0.000027			
Tin (Sn) - Total	0.00010	22	20	0.00010	0.00010	0.00010	0.00013	0.00001			
Titanium (Ti) - Total	0.00030	22	3	0.00668	0.00195	0.00046	0.0314	0.00966			
Uranium (U) - Total	0.000010	22	0	0.000516	0.000505	0.000432	0.000708	0.000072			
Vanadium (V) - Total	0.00050	22	6	0.00246	0.00062	0.00050	0.0128	0.00374			
Zinc (Zn) - Total	0.0030	22	13	0.0071	0.0030	0.0030	0.0289	0.0079			
Zirconium (Zr) - Total	0.00020	22	20	0.00020	0.00020	0.00020	0.00022	0			

[1] Only average parameter values are compared to the long-term BC WQG. See the methods section of the report for details on how the comparisons are made.

[2] The average, minimum, and maximum values are compared to the short-term max BC WQG. See the methods section of the report for details on how the comparisons are made. A count of the total number of short-term max BC WQG exceedances considering all sampling dates is provided in the "# Exc" column.

EQ indicates that the guidelines values varies per sample based on applicable equations defined by BC ENV (2023).

Yellow shading indicates an exceedance of the long-term 30 day mean BC WQG, and blue shading indicates an exceedance of the short-term max BC WQG.

Parameters with a concentration below the method detection limit (MDL) are assumed to have a concentration equal to the MDL for calculation of the summary statistics.

n<MDL = number of samples below the method detection limit, Avg. = Average, Min. = Minimum, Max. = Maximum, S.D. = Standard Deviation.

Table 14. 2023 annual data summary statistics for lab and in situ sampling (organic carbon, physical tests, anions, and nutrients) collected at the RSEM R6 IDZ site (RBPR-7.15).

Site	Min. MDL	RBPR-7.15							BC Long-Term WQG[1]	BC Short-Term Maximum	
Date: 2023		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.		WQG[2]	# Exc
Physical Tests (mg/L)											
Dissolved Hardness (as $CaCO_3$)	0.60	21	0	108.7	102	88.0	146	18.7			
Specific Conductivity (in situ, µS/cm)		54		203.4	192.1	127.0	306.8	48.5			
Specific Conductivity (lab, µS/cm)	2.0	21	0	224	202	178	329	50			
Total Dissolved Solids	13	21	0	143	124	100	221	40			
Total Suspended Solids	1.0	21	1	37.1	10.9	1.0	267	65.8		EQ	0
Turbidity (in situ, NTU)		54		22.82	4.06	0.00	147.41	41.18			
Turbidity (lab, NTU)	0.10	21	0	25.2	4.81	0.80	191	49.4			
pH (in situ, pH units)		54		8.08	8.09	7.85	8.20	0.09		6.5 to 9.0	0
pH (lab)	0.10	21	0	8.15	8.16	7.95	8.24	0.08		6.5 to 9.0	0
Anions and Nutrients (mg/L)											
Alkalinity, Total (as $CaCO_3$)	1.0	21	0	93.4	89.3	79.7	115	11.3			
Ammonia, Total (as N)	0.0050	21	12	0.007	0.0050	0.0050	0.0228	0.004	0.102[3]	0.68[3]	0
Bromide (Br)	0.050	21	19	0.051	0.050	0.050	0.067	0.004			
Chloride (Cl)	0.50	21	9	1.45	0.65	0.50	4.80	1.47	150	600	0
Fluoride (F)	0.020	21	0	0.055	0.046	0.032	0.098	0.022		EQ	0
Nitrate (as N)	0.0050	21	0	0.0814	0.0796	0.0503	0.134	0.0266	3	32.8	0
Nitrite (as N)	0.0010	21	14	0.0013	0.0010	0.0010	0.0037	0.0006	0.02	EQ	0
Orthophosphate - Dissolved (as P)	0.0010	21	18	0.0011	0.0010	0.0010	0.0016	0.0002			
Total Phosphorus (P)	0.0020	21	1	0.034	0.0091	0.0020	0.230	0.059			
Sulfate (SO_4)	0.30	21	0	21.9	15.8	13.6	49.0	11.5	309		
Organic Carbon (mg/L)											
Dissolved Organic Carbon	0.50	21	0	3.39	3.20	2.21	6.35	1.05			
Total Organic Carbon	0.50	21	0	3.47	2.68	2.33	7.83	1.73			
Ion Balance (meq/L)											
Anion Sum	0.10	21	0	2.37	2.15	1.93	3.41	0.50			
Cation - Anion Balance (% difference)		21		-0.33	-0.72	-3.26	9.25	2.92			
Cation Sum	0.10	21	0	2.35	2.10	1.82	3.39	0.52			

[1] Only average parameter values are compared to the long-term BC WQG. See the methods section of the report for details on how the comparisons are made.

[2] The average, minimum, and maximum values are compared to the short-term max BC WQG. See the methods section of the report for details on how the comparisons are made. A count of the total number of short-term max BC WQG exceedances considering all sampling dates is provided in the "# Exc" column.

EQ indicates that the guidelines values varies per sample based on applicable equations defined by BC ENV (2023).

[3] BC WQG for total ammonia are pH and temperature dependent; guidelines used are the most conservative.

No exceedances occurred. Yellow shading would indicate an exceedance of the long-term 30 day mean BC WQG, and blue shading would indicate an exceedance of the short-term max BC WQG.

Parameters with a concentration below the method detection limit (MDL) are assumed to have a concentration equal to the MDL for calculation of the summary statistics.

n<MDL = number of samples below the method detection limit, Avg. = Average, Min. = Minimum, Max. = Maximum, S.D. = Standard Deviation.

Table 15. 2023 annual data summary statistics for dissolved metals collected at the RSEM R6 IDZ site (RBPR-7.15).

Site	Min. MDL	RBPR-7.15							BC Long-Term	BC Short-Term Maximum	
Date: 2023		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.	WQG[1]	WQG[2]	# Exc
Dissolved Metals (mg/L)											
Aluminum (Al) - Dissolved	0.0010	21	0	0.0076	0.0052	0.0037	0.0216	0.0048			
Antimony (Sb) - Dissolved	0.00010	21	14	0.00013	0.00010	0.00010	0.00025	0.00005			
Arsenic (As) - Dissolved	0.00010	21	0	0.00022	0.00021	0.00016	0.00034	0.00005			
Barium (Ba) - Dissolved	0.00010	21	0	0.0438	0.0376	0.0292	0.0713	0.0133			
Beryllium (Be) - Dissolved	0.000020	21	21	0.000039	0.000020	0.000020	0.000100	0.000035			
Bismuth (Bi) - Dissolved	0.000050	21	21	0.000050	0.000050	0.000050	0.000050	0			
Boron (B) - Dissolved	0.010	21	17	0.011	0.010	0.010	0.016	0.002			
Cadmium (Cd) - Dissolved	0.0000050	21	0	0.000011	0.0000108	0.0000071	0.0000167	0.000003	EQ	EQ	0
Calcium (Ca) - Dissolved	0.050	21	0	31.1	29.3	25.2	41.0	4.9			
Chromium (Cr) - Dissolved	0.00050	21	21	0.00050	0.00050	0.00050	0.00050	0			
Cobalt (Co) - Dissolved	0.00010	21	20	0.00011	0.00010	0.00010	0.00030	0.00004			
Copper (Cu) - Dissolved	0.00020	21	0	0.0008	0.00068	0.00055	0.00160	0.0003	EQ	EQ	0
Iron (Fe) - Dissolved	0.010	21	12	0.013	0.010	0.010	0.032	0.007		0.35	0
Lead (Pb) - Dissolved	0.000050	21	21	0.000050	0.000050	0.000050	0.000050	0			
Lithium (Li) - Dissolved	0.0010	21	1	0.0025	0.0016	0.0010	0.0073	0.0018			
Magnesium (Mg) - Dissolved	0.0050	21	0	7.59	6.84	6.08	10.8	1.63			
Manganese (Mn) - Dissolved	0.00010	21	0	0.00212	0.00136	0.00056	0.0118	0.00241			
Mercury (Hg) - Dissolved	0.0000050	21	21	0.0000050	0.0000050	0.0000050	0.0000050	0			
Molybdenum (Mo) - Dissolved	0.000050	21	0	0.001284	0.000989	0.000774	0.00242	0.000596			
Nickel (Ni) - Dissolved	0.00050	21	0	0.00087	0.00071	0.00060	0.00272	0.00047			
Phosphorus (P) - Dissolved	0.050	21	21	0.050	0.050	0.050	0.050	0			
Potassium (K) - Dissolved	0.050	21	0	0.68	0.567	0.456	1.33	0.28			
Selenium (Se) - Dissolved	0.000050	21	0	0.000457	0.000331	0.000233	0.00130	0.000287			
Silicon (Si) - Dissolved	0.050	21	0	2.03	2.06	1.70	2.40	0.22			
Silver (Ag) - Dissolved	0.000010	21	21	0.000010	0.000010	0.000010	0.000010	0			
Sodium (Na) - Dissolved	0.050	21	0	3.56	1.69	1.11	12.5	3.54			
Strontium (Sr) - Dissolved	0.00020	21	0	0.124	0.116	0.107	0.156	0.016			
Sulfur (S) - Dissolved	0.50	21	0	7.64	5.68	4.61	17.3	3.91			
Thallium (Tl) - Dissolved	0.000010	21	21	0.000010	0.000010	0.000010	0.000010	0			
Tin (Sn) - Dissolved	0.00010	21	18	0.00012	0.00010	0.00010	0.00042	0.00007			
Titanium (Ti) - Dissolved	0.00030	21	18	0.00034	0.00030	0.00030	0.00085	0.00012			
Uranium (U) - Dissolved	0.000010	21	0	0.000535	0.000478	0.000412	0.000785	0.000118			
Vanadium (V) - Dissolved	0.00050	21	21	0.00050	0.00050	0.00050	0.00050	0			
Zinc (Zn) - Dissolved	0.0010	20	17	0.0012	0.0010	0.0010	0.0035	0.0006	EQ	EQ	0
Zirconium (Zr) - Dissolved	0.00020	21	21	0.00020	0.00020	0.00020	0.00020	0			

[1] Only average parameter values are compared to the long-term BC WQG. See the methods section of the report for details on how the comparisons are made.

[2] The average, minimum, and maximum values are compared to the short-term max BC WQG. See the methods section of the report for details on how the comparisons are made. A count of the total number of short-term max BC WQG exceedances considering all sampling dates is provided in the "# Exc" column. EQ indicates that the guidelines values varies per sample based on applicable equations defined by BC ENV (2023).

No exceedances occurred. Yellow shading would indicate an exceedance of the long-term 30 day mean BC WQG, and blue shading would indicate an exceedance of the short-term max BC WQG.

Parameters with a concentration below the method detection limit (MDL) are assumed to have a concentration equal to the MDL for calculation of the summary statistics.

n<MDL = number of samples below the method detection limit, Avg. = Average, Min. = Minimum, Max. = Maximum, S.D. = Standard Deviation.

Table 16. 2023 annual data summary statistics for total metals collected at the RSEM R6 IDZ site (RBPR-7.15).

Site	Min. MDL	RBPR-7.15						BC Long-Term	BC Short-Term Maximum	
Date: 2023		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.	WQG[1]	WQG[2]	# Exc
Total Metals (mg/L)											
Aluminum (Al) - Total	0.0030	21	0	0.464	0.0891	0.0248	2.97	0.802	EQ		
Antimony (Sb) - Total	0.00010	21	11	0.00015	0.00010	0.00010	0.00035	0.00008	0.074	0.25	0
Arsenic (As) - Total	0.00010	21	0	0.00057	0.00030	0.00022	0.00249	0.00061	0.005		
Barium (Ba) - Total	0.00010	21	0	0.0604	0.0420	0.0330	0.176	0.0396			
Beryllium (Be) - Total	0.000020	21	15	0.000059	0.000030	0.000020	0.000198	0.000051			
Bismuth (Bi) - Total	0.000050	21	21	0.000050	0.000050	0.000050	0.000050	0			
Boron (B) - Total	0.010	21	15	0.011	0.010	0.010	0.020	0.003	1.2		
Cadmium (Cd) - Total	0.0000050	21	0	0.0000545	0.0000224	0.0000083	0.000349	0.0000808			
Calcium (Ca) - Total	0.050	21	0	31.9	31.0	26.2	40.8	5.2			
Chromium (Cr) - Total	0.00050	21	14	0.00124	0.00050	0.00050	0.00548	0.00139			
Cobalt (Co) - Total	0.00010	21	11	0.0004	0.00010	0.00010	0.00223	0.0006	0.004	0.11	0
Copper (Cu) - Total	0.00050	21	0	0.00223	0.00092	0.00064	0.0137	0.00315			
Iron (Fe) - Total	0.010	21	0	0.808	0.126	0.039	5.32	1.433		1	5
Lead (Pb) - Total	0.000050	21	6	0.000457	0.000095	0.000050	0.00292	0.000764	EQ	EQ	0
Lithium (Li) - Total	0.0010	21	0	0.0029	0.0017	0.0011	0.0094	0.0024			
Magnesium (Mg) - Total	0.0050	21	0	7.87	7.24	6.16	10.8	1.65			
Manganese (Mn) - Total	0.00010	21	0	0.01592	0.00559	0.00265	0.0884	0.02272	EQ	EQ	0
Mercury (Hg) - Total	0.0000050	21	19	0.0000053	0.0000050	0.0000050	0.0000095	0.0000011	0.00002		
Molybdenum (Mo) - Total	0.000050	21	0	0.001321	0.000949	0.000800	0.00248	0.000599	7.6	46	0
Nickel (Ni) - Total	0.00050	21	0	0.00208	0.00096	0.00074	0.00880	0.00238			
Phosphorus (P) - Total	0.050	21	16	0.069	0.050	0.050	0.257	0.049			
Potassium (K) - Total	0.050	21	0	0.815	0.553	0.450	1.90	0.463			
Selenium (Se) - Total	0.000050	21	0	0.00049	0.000322	0.000257	0.00140	0.00032	0.002		
Silicon (Si) - Total	0.10	21	0	2.8	2.34	1.76	6.44	1.3			
Silver (Ag) - Total	0.000010	21	15	0.000016	0.000010	0.000010	0.000067	0.000014	EQ	EQ	0
Sodium (Na) - Total	0.050	21	0	3.54	1.67	1.13	12.9	3.51			
Strontium (Sr) - Total	0.00020	21	0	0.127	0.119	0.105	0.164	0.019			
Sulfur (S) - Total	0.50	21	0	7.8	5.68	4.76	18.5	4.1			
Thallium (Tl) - Total	0.000010	21	15	0.000021	0.000010	0.000010	0.000103	0.000025			
Tin (Sn) - Total	0.00010	21	19	0.00010	0.00010	0.00010	0.00012	0.00000			
Titanium (Ti) - Total	0.00030	21	1	0.00617	0.00184	0.00042	0.0279	0.00865			
Uranium (U) - Total	0.000010	21	0	0.000579	0.000527	0.000446	0.000941	0.000141			
Vanadium (V) - Total	0.00050	21	8	0.00221	0.00064	0.00050	0.0130	0.00337			
Zinc (Zn) - Total	0.0030	21	15	0.0064	0.0030	0.0030	0.0302	0.0072			
Zirconium (Zr) - Total	0.00020	21	19	0.00021	0.00020	0.00020	0.00029	0.00003			

[1] Only average parameter values are compared to the long-term BC WQG. See the methods section of the report for details on how the comparisons are made.

[2] The average, minimum, and maximum values are compared to the short-term max BC WQG. See the methods section of the report for details on how the comparisons are made. A count of the total number of short-term max BC WQG exceedances considering all sampling dates is provided in the "# Exc" column. EQ indicates that the guidelines values varies per sample based on applicable equations defined by BC ENV (2023).

Yellow shading indicates an exceedance of the long-term 30 day mean BC WQG, and blue shading indicates an exceedance of the short-term max BC WQG.

Parameters with a concentration below the method detection limit (MDL) are assumed to have a concentration equal to the MDL for calculation of the summary statistics.

n<MDL = number of samples below the method detection limit, Avg. = Average, Min. = Minimum, Max. = Maximum, S.D. = Standard Deviation.

Table 17. 2023 annual data summary statistics for lab and in situ sampling (organic carbon, physical tests, anions, and nutrients) collected at the BC ENV far-field downstream right bank site (RBPR-9.34).

Site	Min. MDL	RBPR-9.34							BC Long-Term	BC Short-Term Maximum	
Date: 2023		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.	WQG[1]	WQG[2]	# Exc
Physical Tests (mg/L)											
Dissolved Hardness (as $CaCO_3$)	0.60	23	0	100.9	99.0	88.0	128	12.6			
Specific Conductivity (in situ, µS/cm)		54		187.7	190.3	122.6	230.4	31.3			
Specific Conductivity (lab, µS/cm)	2.0	23	0	202	196	177	237	18			
Total Dissolved Solids	13	23	0	127	118	103	186	23			
Total Suspended Solids	1.0	23	0	46.2	12.2	1.4	225	65.6		EQ	0
Turbidity (in situ, NTU)		54		31.67	4.47	0.00	163.55	48.90			
Turbidity (lab, NTU)	0.10	23	0	33.8	4.27	0.80	223	59.7			
pH (in situ, pH units)		54		8.09	8.10	7.87	8.21	0.07		6.5 to 9.0	0
pH (lab)	0.10	23	0	8.14	8.15	7.95	8.24	0.08		6.5 to 9.0	0
Anions and Nutrients (mg/L)											
Alkalinity, Total (as $CaCO_3$)	1.0	23	0	90.4	87.2	82.1	106	7.5			
Ammonia, Total (as N)	0.0050	23	17	0.0059	0.0050	0.0050	0.0147	0.0023	0.102[3]	0.68[3]	0
Bromide (Br)	0.050	23	22	0.050	0.050	0.050	0.061	0.002			
Chloride (Cl)	0.50	23	22	0.55	0.50	0.50	1.72	0.25	150	600	0
Fluoride (F)	0.020	23	0	0.04	0.042	0.031	0.067	0.01		EQ	0
Nitrate (as N)	0.0050	23	0	0.0678	0.0633	0.0416	0.149	0.0258	3	32.8	0
Nitrite (as N)	0.0010	23	20	0.0011	0.0010	0.0010	0.0018	0.0002	0.02	EQ	0
Orthophosphate - Dissolved (as P)	0.0010	23	20	0.0011	0.0010	0.0010	0.0028	0.0004			
Phosphorus (P) - Total	0.0020	23	0	0.055	0.0120	0.0050	0.336	0.093			
Sulfate (SO_4)	0.30	23	0	16.7	15.4	13.5	24.9	2.8	309		
Organic Carbon (mg/L)											
Dissolved Organic Carbon	0.50	23	0	3.41	3.01	2.22	7.38	1.27			
Total Organic Carbon	0.50	23	0	3.56	2.66	2.27	8.54	1.87			
Ion Balance (meq/L)											
Anion Sum	0.10	23	0	2.16	2.09	1.93	2.53	0.19			
Cation - Anion Balance (% difference)		23		-1.60	-1.43	-8.83	5.70	2.92			
Cation Sum	0.10	23	0	2.09	2.04	1.82	2.66	0.26			

[1] Only average parameter values are compared to the long-term BC WQG. See the methods section of the report for details on how the comparisons are made.

[2] The average, minimum, and maximum values are compared to the short-term max BC WQG. See the methods section of the report for details on how the comparisons are made. A count of the total number of short-term max BC WQG exceedances considering all sampling dates is provided in the "# Exc" column.

EQ indicates that the guidelines values varies per sample based on applicable equations defined by BC ENV (2023).

[3] BC WQG for total ammonia are pH and temperature dependent; guidelines used are the most conservative.

No exceedances occurred. Yellow shading would indicate an exceedance of the long-term 30 day mean BC WQG, and blue shading would indicate an exceedance of the short-term max BC WQG.

Parameters with a concentration below the method detection limit (MDL) are assumed to have a concentration equal to the MDL for calculation of the summary statistics.

n<MDL = number of samples below the method detection limit, Avg. = Average, Min. = Minimum, Max. = Maximum, S.D. = Standard Deviation.

Table 18. 2023 annual data summary statistics for dissolved metals collected at the BC ENV far-field downstream right bank site (RBPR-9.34).

Site	Min. MDL	RBPR-9.34							BC Long-Term	BC Short-Term Maximum	
Date: 2023		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.	WQG[1]	WQG[2]	# Exc
Dissolved Metals(mg/L)											
Aluminum (Al) - Dissolved	0.0010	23	0	0.0059	0.0047	0.0034	0.0170	0.0032			
Antimony (Sb) - Dissolved	0.00010	23	22	0.00010	0.00010	0.00010	0.00010	0			
Arsenic (As) - Dissolved	0.00010	23	0	0.0002	0.00020	0.00015	0.00026	0.0000			
Barium (Ba) - Dissolved	0.00010	23	0	0.0388	0.0342	0.0285	0.0573	0.0094			
Beryllium (Be) - Dissolved	0.000020	23	23	0.000041	0.000020	0.000020	0.000100	0.000036			
Bismuth (Bi) - Dissolved	0.000050	23	23	0.000050	0.000050	0.000050	0.000050	0			
Boron (B) - Dissolved	0.010	23	23	0.010	0.010	0.010	0.010	0			
Cadmium (Cd) - Dissolved	0.0000050	23	0	0.0000093	0.0000082	0.0000054	0.0000163	0.0000027	EQ	EQ	0
Calcium (Ca) - Dissolved	0.050	23	0	28.8	28.4	25.3	36.5	3.2			
Chromium (Cr) - Dissolved	0.00050	23	23	0.00050	0.00050	0.00050	0.00050	0			
Cobalt (Co) - Dissolved	0.00010	23	23	0.00010	0.00010	0.00010	0.00010	0			
Copper (Cu) - Dissolved	0.00020	23	0	0.00088	0.00070	0.00052	0.00359	0.00064	EQ	EQ	0
Iron (Fe) - Dissolved	0.010	23	14	0.014	0.010	0.010	0.041	0.009		0.35	0
Lead (Pb) - Dissolved	0.000050	23	22	0.000052	0.000050	0.000050	0.000093	0.000009			
Lithium (Li) - Dissolved	0.0010	23	1	0.0016	0.0014	0.0010	0.0027	0.0006			
Magnesium (Mg) - Dissolved	0.0050	23	0	7.05	6.64	6.00	9.25	1.16			
Manganese (Mn) - Dissolved	0.00010	23	0	0.00184	0.00152	0.00049	0.00552	0.00137			
Mercury (Hg) - Dissolved	0.0000050	23	23	0.0000050	0.0000050	0.0000050	0.0000050	0			
Molybdenum (Mo) - Dissolved	0.000050	23	0	0.000948	0.000865	0.000717	0.00139	0.000217			
Nickel (Ni) - Dissolved	0.00050	23	0	0.00077	0.00068	0.00059	0.00162	0.00025			
Phosphorus (P) - Dissolved	0.050	23	23	0.050	0.050	0.050	0.050	0			
Potassium (K) - Dissolved	0.050	23	0	0.489	0.475	0.429	0.603	0.043			
Selenium (Se) - Dissolved	0.000050	23	0	0.00036	0.000293	0.000215	0.000706	0.00014			
Silicon (Si) - Dissolved	0.050	23	0	1.93	1.97	1.58	2.21	0.18			
Silver (Ag) - Dissolved	0.000010	23	23	0.000010	0.000010	0.000010	0.000010	0			
Sodium (Na) - Dissolved	0.050	23	0	1.28	1.22	1.05	1.73	0.21			
Strontium (Sr) - Dissolved	0.00020	23	0	0.118	0.115	0.104	0.138	0.011			
Sulfur (S) - Dissolved	0.50	23	0	5.7	5.32	4.75	7.39	0.9			
Thallium (Tl) - Dissolved	0.000010	23	23	0.000010	0.000010	0.000010	0.000010	0			
Tin (Sn) - Dissolved	0.00010	23	23	0.00010	0.00010	0.00010	0.00010	0			
Titanium (Ti) - Dissolved	0.00030	23	19	0.00035	0.00030	0.00030	0.00093	0.00015			
Uranium (U) - Dissolved	0.000010	23	0	0.000468	0.000466	0.000411	0.000544	0.000035			
Vanadium (V) - Dissolved	0.00050	23	23	0.00050	0.00050	0.00050	0.00050	0			
Zinc (Zn) - Dissolved	0.0010	23	18	0.0011	0.0010	0.0010	0.0017	0.0002	EQ	EQ	0
Zirconium (Zr) - Dissolved	0.00020	23	23	0.00020	0.00020	0.00020	0.00020	0			

[1] Only average parameter values are compared to the long-term BC WQG. See the methods section of the report for details on how the comparisons are made.

[2] The average, minimum, and maximum values are compared to the short-term max BC WQG. See the methods section of the report for details on how the comparisons are made. A count of the total number of short-term max BC WQG exceedances considering all sampling dates is provided in the "# Exc" column. EQ indicates that the guidelines values varies per sample based on applicable equations defined by BC ENV (2023).

No exceedances occurred. Yellow shading would indicate an exceedance of the long-term 30 day mean BC WQG, and blue shading would indicate an exceedance of the short-term max BC WQG.

Parameters with a concentration below the method detection limit (MDL) are assumed to have a concentration equal to the MDL for calculation of the summary statistics.

n<MDL = number of samples below the method detection limit, Avg. = Average, Min. = Minimum, Max. = Maximum, S.D. = Standard Deviation.

Table 19. 2023 annual data summary statistics for total metals collected at the BC ENV far-field downstream right bank site (RBPR-9.34).

Site	Min. MDL	RBPR-9.34							BC Long-Term	BC Short-Term Maximum	
Date: 2023		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.	WQG[1]	WQG[2]	# Exc
Total Metals (mg/L)											
Aluminum (Al) - Total	0.0030	23	0	0.5573	0.102	0.0300	2.62	0.8396	EQ		
Antimony (Sb) - Total	0.00010	23	15	0.00013	0.00010	0.00010	0.00027	0.00006	0.074	0.25	0
Arsenic (As) - Total	0.00010	23	0	0.00062	0.00026	0.00016	0.00212	0.00063	0.005		
Barium (Ba) - Total	0.00010	23	0	0.0592	0.0387	0.0313	0.159	0.0405			
Beryllium (Be) - Total	0.000020	23	16	0.000065	0.000057	0.000020	0.000162	0.000048			
Bismuth (Bi) - Total	0.000050	23	23	0.000050	0.000050	0.000050	0.000050	0			
Boron (B) - Total	0.010	23	22	0.010	0.010	0.010	0.010	0	1.2		
Cadmium (Cd) - Total	0.0000050	23	0	0.0000628	0.0000227	0.0000098	0.000279	0.0000779			
Calcium (Ca) - Total	0.050	23	0	30.1	27.8	26.5	36.9	3.9			
Chromium (Cr) - Total	0.00050	23	15	0.00124	0.00050	0.00050	0.00490	0.00137			
Cobalt (Co) - Total	0.00010	23	13	0.00045	0.00010	0.00010	0.00193	0.00062	0.004	0.11	0
Copper (Cu) - Total	0.00050	23	0	0.00189	0.00090	0.00068	0.00628	0.00188			
Iron (Fe) - Total	0.010	23	0	1.005	0.158	0.037	4.63	1.545		1	7
Lead (Pb) - Total	0.000050	23	5	0.000526	0.000110	0.000050	0.00245	0.000804	EQ	EQ	0
Lithium (Li) - Total	0.0010	23	0	0.0022	0.0015	0.0011	0.0055	0.0014			
Magnesium (Mg) - Total	0.0050	23	0	7.5	6.91	5.83	10.1	1.3			
Manganese (Mn) - Total	0.00010	23	0	0.02009	0.00621	0.00219	0.0798	0.02566	EQ	EQ	0
Mercury (Hg) - Total	0.0000050	23	19	0.0000062	0.0000050	0.0000050	0.0000163	0.0000029	0.00002		
Molybdenum (Mo) - Total	0.000050	23	0	0.001011	0.000872	0.000777	0.00160	0.000269	7.6	46	0
Nickel (Ni) - Total	0.00050	23	0	0.00221	0.00096	0.00074	0.00800	0.00237			
Phosphorus (P) - Total	0.050	23	15	0.074	0.050	0.050	0.188	0.046			
Potassium (K) - Total	0.050	23	0	0.673	0.485	0.461	1.52	0.333			
Selenium (Se) - Total	0.000050	23	0	0.000401	0.000316	0.000219	0.000859	0.000185	0.002		
Silicon (Si) - Total	0.10	23	0	2.82	2.34	1.75	6.31	1.33			
Silver (Ag) - Total	0.000010	23	16	0.000017	0.000010	0.000010	0.000054	0.000015	EQ	EQ	0
Sodium (Na) - Total	0.050	23	0	1.35	1.25	1.11	1.90	0.23			
Strontium (Sr) - Total	0.00020	23	0	0.122	0.116	0.103	0.155	0.016			
Sulfur (S) - Total	0.50	23	0	5.82	5.55	4.47	7.60	0.92			
Thallium (Tl) - Total	0.000010	23	16	0.000024	0.000010	0.000010	0.000088	0.000025			
Tin (Sn) - Total	0.00010	23	22	0.0001	0.00010	0.00010	0.00012	0.0000			
Titanium (Ti) - Total	0.00030	23	1	0.00773	0.00197	0.00035	0.0314	0.00972			
Uranium (U) - Total	0.000010	23	0	0.000527	0.000522	0.000427	0.000698	0.000075			
Vanadium (V) - Total	0.00050	23	8	0.00254	0.00069	0.00050	0.0114	0.00344			
Zinc (Zn) - Total	0.0030	23	15	0.0068	0.0030	0.0030	0.0251	0.0072			
Zirconium (Zr) - Total	0.00020	23	22	0.00020	0.00020	0.00020	0.00024	0.00001			

[1] Only average parameter values are compared to the long-term BC WQG. See the methods section of the report for details on how the comparisons are made.

[2] The average, minimum, and maximum values are compared to the short-term max BC WQG. See the methods section of the report for details on how the comparisons are made. A count of the total number of short-term max BC WQG exceedances considering all sampling dates is provided in the "# Exc" column.

EQ indicates that the guidelines values varies per sample based on applicable equations defined by BC ENV (2023).

Yellow shading indicates an exceedance of the long-term 30 day mean BC WQG, and blue shading indicates an exceedance of the short-term max BC WQG.

Parameters with a concentration below the method detection limit (MDL) are assumed to have a concentration equal to the MDL for calculation of the summary statistics.

n<MDL = number of samples below the method detection limit, Avg. = Average, Min. = Minimum, Max. = Maximum, S.D. = Standard Deviation.

Table 20. 2023 annual data summary statistics for lab and in situ sampling (organic carbon, physical tests, anions, and nutrients) collected at the BC ENV far-field downstream left bank site (LBPR-9.34).

Site	Min. MDL	LBPR-9.34							BC Long-Term	BC Short-Term Maximum	
Date: 2023		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.	WQG[1]	WQG[2]	# Exc
Physical Tests (mg/L)											
Dissolved Hardness (as $CaCO_3$)	0.60	21	0	103	102	88.5	130	14			
Specific Conductivity (in situ, µS/cm)		54		189.1	190.5	122.7	236.0	32.9			
Specific Conductivity (lab, µS/cm)	2.0	21	0	204	196	178	243	20			
Total Dissolved Solids	13	21	0	128	115	88	185	28			
Total Suspended Solids	1.0	21	0	45.3	8.6	1.6	279	81.1		EQ	0
Turbidity (in situ, NTU)		54		21.70	3.46	0.00	144.62	40.80			
Turbidity (lab, NTU)	0.10	21	0	29.6	2.15	0.73	179	56.3			
pH (in situ, pH units)		54		8.09	8.08	7.91	8.20	0.08		6.5 to 9.0	0
pH (lab)	0.10	21	0	8.16	8.16	7.93	8.24	0.07		6.5 to 9.0	0
Anions and Nutrients (mg/L)											
Alkalinity, Total (as $CaCO_3$)	1.0	21	0	92.3	88.4	81.5	112	9.3			
Ammonia, Total (as N)	0.0050	21	15	0.006	0.0050	0.0050	0.0118	0.002	0.102[3]	0.68[3]	0
Bromide (Br)	0.050	21	21	0.050	0.050	0.050	0.050	0			
Chloride (Cl)	0.50	21	21	0.50	0.50	0.50	0.50	0	150	600	0
Fluoride (F)	0.020	21	0	0.045	0.042	0.030	0.065	0.009		EQ	0
Nitrate (as N)	0.0050	21	0	0.0671	0.0618	0.0445	0.138	0.0225	3	32.8	0
Nitrite (as N)	0.0010	21	18	0.0011	0.0010	0.0010	0.0019	0.0002	0.02	EQ	0
Orthophosphate - Dissolved (as P)	0.0010	21	19	0.0011	0.0010	0.0010	0.0022	0.0003			
Total Phosphorus (P)	0.0020	21	0	0.0474	0.0095	0.0047	0.237	0.0787			
Sulfate (SO_4)	0.30	21	0	16.5	15.3	13.5	21.9	2.9	309		
Organic Carbon (mg/L)											
Dissolved Organic Carbon	0.50	21	0	3.44	2.79	2.05	6.79	1.39			
Total Organic Carbon	0.50	21	0	3.72	2.69	2.31	9.20	2.10			
Ion Balance (meq/L)											
Anion Sum	0.10	21	0	2.20	2.08	1.92	2.68	0.24			
Cation - Anion Balance (% difference)		21		-1.40	-1.80	-4.88	2.48	1.98			
Cation Sum	0.10	21	0	2.13	2.09	1.83	2.69	0.29			

[1] Only average parameter values are compared to the long-term BC WQG. See the methods section of the report for details on how the comparisons are made.

[2] The average, minimum, and maximum values are compared to the short-term max BC WQG. See the methods section of the report for details on how the comparisons are made. A count of the total number of short-term max BC WQG exceedances considering all sampling dates is provided in the "# Exc" column.
EQ indicates that the guidelines values varies per sample based on applicable equations defined by BC ENV (2023).

[3] BC WQG for total ammonia are pH and temperature dependent; guidelines used are the most conservative.

No exceedances occurred. Yellow shading would indicate an exceedance of the long-term 30 day mean BC WQG, and blue shading would indicate an exceedance of the short-term max BC WQG.

Parameters with a concentration below the method detection limit (MDL) are assumed to have a concentration equal to the MDL for calculation of the summary statistics.

n<MDL = number of samples below the method detection limit, Avg. = Average, Min. = Minimum, Max. = Maximum, S.D. = Standard Deviation.

Table 21. 2023 annual data summary statistics for dissolved metals collected at the BC ENV far-field downstream left bank site (LBPR-9.34).

Site	Min. MDL	LBPR-9.34							BC Long-Term	BC Short-Term Maximum	
Date: 2023		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.	WQG[1]	WQG[2]	# Exc
Dissolved Metals (mg/L)											
Aluminum (Al) - Dissolved	0.0010	21	0	0.0074	0.0049	0.0022	0.0176	0.0049			
Antimony (Sb) - Dissolved	0.00010	21	17	0.00010	0.00010	0.00010	0.00012	0.00000			
Arsenic (As) - Dissolved	0.00010	21	0	0.0002	0.00019	0.00013	0.00027	0.0000			
Barium (Ba) - Dissolved	0.00010	21	0	0.0377	0.0346	0.0282	0.0506	0.0069			
Beryllium (Be) - Dissolved	0.000020	21	21	0.000039	0.000020	0.000020	0.000100	0.000035			
Bismuth (Bi) - Dissolved	0.000050	21	21	0.000050	0.000050	0.000050	0.000050	0			
Boron (B) - Dissolved	0.010	21	21	0.010	0.010	0.010	0.010	0			
Cadmium (Cd) - Dissolved	0.0000050	21	0	0.0000106	0.0000108	0.0000072	0.0000162	0.0000025	EQ	EQ	0
Calcium (Ca) - Dissolved	0.050	21	0	29.4	29.2	25.4	36.6	3.6			
Chromium (Cr) - Dissolved	0.00050	21	21	0.00050	0.00050	0.00050	0.00050	0			
Cobalt (Co) - Dissolved	0.00010	21	20	0.00010	0.00010	0.00010	0.00011	0.00000			
Copper (Cu) - Dissolved	0.00020	21	0	0.00084	0.00066	0.00051	0.00166	0.00033	EQ	EQ	0
Iron (Fe) - Dissolved	0.010	21	14	0.015	0.010	0.010	0.036	0.009		0.35	0
Lead (Pb) - Dissolved	0.000050	21	21	0.000050	0.000050	0.000050	0.000050	0			
Lithium (Li) - Dissolved	0.0010	21	1	0.0017	0.0014	0.0010	0.0028	0.0006			
Magnesium (Mg) - Dissolved	0.0050	21	0	7.22	6.72	6.03	9.47	1.29			
Manganese (Mn) - Dissolved	0.00010	21	0	0.00192	0.00135	0.00066	0.00570	0.00146			
Mercury (Hg) - Dissolved	0.0000050	21	21	0.0000050	0.0000050	0.0000050	0.0000050	0			
Molybdenum (Mo) - Dissolved	0.000050	21	0	0.000998	0.000855	0.000734	0.00151	0.000274			
Nickel (Ni) - Dissolved	0.00050	21	0	0.0008	0.00069	0.00061	0.00160	0.0003			
Phosphorus (P) - Dissolved	0.050	21	21	0.050	0.050	0.050	0.050	0			
Potassium (K) - Dissolved	0.050	21	0	0.491	0.471	0.444	0.585	0.041			
Selenium (Se) - Dissolved	0.000050	21	0	0.000397	0.000310	0.000242	0.000788	0.000182			
Silicon (Si) - Dissolved	0.050	21	0	1.92	1.90	1.65	2.22	0.18			
Silver (Ag) - Dissolved	0.000010	21	21	0.000010	0.000010	0.000010	0.000010	0			
Sodium (Na) - Dissolved	0.050	21	0	1.31	1.22	1.06	1.74	0.22			
Strontium (Sr) - Dissolved	0.00020	21	0	0.121	0.116	0.106	0.149	0.015			
Sulfur (S) - Dissolved	0.50	21	0	5.81	5.32	4.61	7.67	1.02			
Thallium (Tl) - Dissolved	0.000010	21	21	0.000010	0.000010	0.000010	0.000010	0			
Tin (Sn) - Dissolved	0.00010	21	20	0.00010	0.00010	0.00010	0.00014	0.00001			
Titanium (Ti) - Dissolved	0.00030	21	17	0.00037	0.00030	0.00030	0.00086	0.00016			
Uranium (U) - Dissolved	0.000010	21	0	0.00047	0.000467	0.000404	0.000560	0.00004			
Vanadium (V) - Dissolved	0.00050	21	21	0.00050	0.00050	0.00050	0.00050	0			
Zinc (Zn) - Dissolved	0.0010	21	16	0.0013	0.0010	0.0010	0.0071	0.0013	EQ	EQ	0
Zirconium (Zr) - Dissolved	0.00020	21	21	0.00020	0.00020	0.00020	0.00020	0			

[1] Only average parameter values are compared to the long-term BC WQG. See the methods section of the report for details on how the comparisons are made.

[2] The average, minimum, and maximum values are compared to the short-term max BC WQG. See the methods section of the report for details on how the comparisons are made. A count of the total number of short-term max BC WQG exceedances considering all sampling dates is provided in the "# Exc" column. EQ indicates that the guidelines values varies per sample based on applicable equations defined by BC ENV (2023).

No exceedances occurred. Yellow shading would indicate an exceedance of the long-term 30 day mean BC WQG, and blue shading would indicate an exceedance of the short-term max BC WQG.

Parameters with a concentration below the method detection limit (MDL) are assumed to have a concentration equal to the MDL for calculation of the summary statistics.

n<MDL = number of samples below the method detection limit, Avg. = Average, Min. = Minimum, Max. = Maximum, S.D. = Standard Deviation.

Table 22. 2023 annual data summary statistics for total metals collected at the BC ENV far-field downstream left bank site (LBPR-9.34).

Site	Min. MDL	LBPR-9.34							BC Long-Term	BC Short-Term Maximum	
Date: 2023		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.	WQG[1]	WQG[2]	# Exc
Total Metals (mg/L)											
Aluminum (Al) - Total	0.0030	21	0	0.6396	0.0582	0.0174	4.30	1.1844	EQ		
Antimony (Sb) - Total	0.00010	21	14	0.00014	0.00010	0.00010	0.00032	0.00007	0.074	0.25	0
Arsenic (As) - Total	0.00010	21	0	0.00062	0.00024	0.00020	0.00256	0.00077	0.005		
Barium (Ba) - Total	0.00010	21	0	0.0614	0.0379	0.0323	0.202	0.0497			
Beryllium (Be) - Total	0.000020	21	16	0.00007	0.000020	0.000020	0.000229	0.00007			
Bismuth (Bi) - Total	0.000050	21	21	0.000050	0.000050	0.000050	0.000050	0			
Boron (B) - Total	0.010	21	18	0.010	0.010	0.010	0.014	0.001	1.2		
Cadmium (Cd) - Total	0.0000050	21	0	0.0000721	0.0000216	0.0000098	0.000418	0.0001132			
Calcium (Ca) - Total	0.050	21	0	30.6	28.3	24.9	40.7	4.8			
Chromium (Cr) - Total	0.00050	21	14	0.0014	0.00050	0.00050	0.00729	0.0019			
Cobalt (Co) - Total	0.00010	21	14	0.00048	0.00010	0.00010	0.00244	0.00077	0.004	0.11	0
Copper (Cu) - Total	0.00050	21	0	0.00195	0.00097	0.00069	0.00787	0.00227			
Iron (Fe) - Total	0.010	21	0	1.009	0.074	0.040	5.66	1.864		1	5
Lead (Pb) - Total	0.000050	21	8	0.000548	0.000059	0.000050	0.00314	0.000993	EQ	EQ	0
Lithium (Li) - Total	0.0010	21	0	0.0024	0.0015	0.0010	0.0074	0.0019			
Magnesium (Mg) - Total	0.0050	21	0	7.56	6.80	5.96	11.1	1.63			
Manganese (Mn) - Total	0.00010	21	0	0.01789	0.00387	0.00213	0.0972	0.02851	EQ	EQ	0
Mercury (Hg) - Total	0.0000050	21	17	0.000006	0.0000050	0.0000050	0.0000118	0.000002	0.00002		
Molybdenum (Mo) - Total	0.000050	21	0	0.001081	0.000901	0.000792	0.00187	0.000348	7.6	46	0
Nickel (Ni) - Total	0.00050	21	0	0.00232	0.00089	0.00075	0.00962	0.00297			
Phosphorus (P) - Total	0.050	21	14	0.081	0.050	0.050	0.264	0.068			
Potassium (K) - Total	0.050	21	0	0.70	0.486	0.447	1.99	0.44			
Selenium (Se) - Total	0.000050	21	0	0.000442	0.000318	0.000260	0.00102	0.000241	0.002		
Silicon (Si) - Total	0.10	21	0	3.01	2.24	1.76	10.2	2.13			
Silver (Ag) - Total	0.000010	21	17	0.000019	0.000010	0.000010	0.000080	0.000022	EQ	EQ	0
Sodium (Na) - Total	0.050	21	0	1.37	1.28	1.10	1.98	0.25			
Strontium (Sr) - Total	0.00020	21	0	0.12	0.114	0.104	0.169	0.02			
Sulfur (S) - Total	0.50	21	0	5.93	5.43	4.56	8.23	1.16			
Thallium (Tl) - Total	0.000010	21	14	0.000027	0.000010	0.000010	0.000120	0.000035			
Tin (Sn) - Total	0.00010	21	20	0.00010	0.00010	0.00010	0.00010	0			
Titanium (Ti) - Total	0.00030	21	1	0.00933	0.00160	0.00030	0.0887	0.01992			
Uranium (U) - Total	0.000010	21	0	0.000532	0.000507	0.000423	0.000824	0.000114			
Vanadium (V) - Total	0.00050	21	11	0.00297	0.00050	0.00050	0.0173	0.00496			
Zinc (Zn) - Total	0.0030	21	14	0.0076	0.0030	0.0030	0.0335	0.0097			
Zirconium (Zr) - Total	0.00020	21	19	0.00028	0.00020	0.00020	0.00197	0.00039			

[1] Only average parameter values are compared to the long-term BC WQG. See the methods section of the report for details on how the comparisons are made.

[2] The average, minimum, and maximum values are compared to the short-term max BC WQG. See the methods section of the report for details on how the comparisons are made. A count of the total number of short-term max BC WQG exceedances considering all sampling dates is provided in the "# Exc" column.

EQ indicates that the guidelines values varies per sample based on applicable equations defined by BC ENV (2023).

Yellow shading indicates an exceedance of the long-term 30 day mean BC WQG, and blue shading indicates an exceedance of the short-term max BC WQG.

Parameters with a concentration below the method detection limit (MDL) are assumed to have a concentration equal to the MDL for calculation of the summary statistics.

n<MDL = number of samples below the method detection limit, Avg. = Average, Min. = Minimum, Max. = Maximum, S.D. = Standard Deviation.

Table 23. 2023 lab and in situ sampling (organic carbon, physical tests, anions, and nutrients) data collected on April 10 and October 20, 2023 at the RSEM L6 monitoring sites.

Date	April 10, 2023									October 20, 2023									BC Max WQG	EOP Limit
Site	RSEM L6									RSEM L6										
	Upstream/LBPR-6.83			L6-EOP[1]			IDZ/LBPR-7.21			Upstream/LBPR-6.83			L6-EOP[1]			IDZ/LBPR-7.21				
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C		
Physical Tests (mg/L)																				
Dissolved Hardness (as $CaCO_3$)	95.9			201			94.6			94.8			566			96.0				
Specific Conductivity (In Situ, µS/cm)	192	192	192	513	513	512	193	193	193	158	158	158	1,190	1,190	1,190	158	158	158		
Specific Conductivity (lab, µS/cm)	198			516			197			189			1,490			192				
Total Dissolved Solids	96			308			119			105			1,060			107				
Total Suspended Solids	100			10.1			12.1			3.6			2.5			6.5			EQ	
Turbidity (In Situ, NTU)	3.70	4.04	3.86	6.29	6.30	6.31	6.32	6.87	7.77	1.60	1.56	1.56	19.6	18.7	18.2	2.80	2.79	1.98		
Turbidity (lab, NTU)	12.9			9.50			4.31			0.64			3.80			1.90				
pH (In Situ, pH units)	7.96	7.96	7.96	7.59	7.60	7.61	7.98	7.98	7.98	8.06	8.06	8.06	8.08	8.06	8.06	8.27	8.27	8.27	6.5 to 9.0	6.0 to 9.0
pH (lab, pH units)	7.97			7.11			8.00			8.22			8.00			8.16			6.5 to 9.0	6.0 to 9.0
Anions and Nutrients (mg/L)																				
Alkalinity, Total (as $CaCO_3$)	86.1			75.7			83.0			85.6			117			84.8				
Ammonia, Total (as N)	<0.0050			0.185			<0.0050			<0.0050			0.0150			<0.0050			0.68[2]	
Anion Sum (meq/L)	2.07						2.00			2.02						2.01				
Bromide (Br)	<0.050			0.317			<0.050			<0.050			0.830			<0.050				
Cation - Anion Balance (% difference)	-2.22			4.70			-1.26			-1.51			3.20			-0.50				
Cation Sum (meq/L)	1.98						1.95			1.96						1.99				
Chloride (Cl)	<0.50			43.0			<0.50			<0.50			81.9			<0.50			600	
Orthophosphate (as P)	0.0016			0.0040			0.0020			<0.0010			<0.0030			<0.0010				
Fluoride (F)	0.038			0.160			0.038			0.036			0.414			0.038			EQ	
Nitrate (as N)	0.0725			0.400			0.0735			0.0439			0.0950			0.0446			32.8	
Nitrite (as N)	<0.0010			0.0340			<0.0010			<0.0010			<0.010			<0.0010			EQ	
Sulfate (SO_4)	16.3			124			16.1			14.8			548			14.9				
Total Phosphorus (P)	0.0216						0.0141			0.0054						0.0060				
Organic Carbon (mg/L)																				
Dissolved Organic Carbon	2.69			2.78			2.73			3.11			5.11			2.97				
Total Organic Carbon	2.63			3.16			3.00			2.91			4.83			2.44				

No exceedances occurred. Yellow shading would indicate an exceedance of short term (maximum) BC WQG in the Peace River sampling sites or exceedance of the Site C End of Pipe (EOP) Limits in the RSEM pond data (EOP limits are provided in Table 2, Appendix E (Rev 6.1) of the CEMP).

EQ indicates that the applicable guideline is an equation as per BC ENV (2023). The EOP limit for TSS is calculated by PRHP based on upstream TSS data collected at turbidity gauges PAM-LB1 and PAM-RB1. The TSS data are emailed twice daily to PRHP.

[1] Water quality samples for laboratory analysis were collected from within the L6 pond.

[2] BC WQG for total ammonia are pH and temperature dependent; guidelines used are the most conservative.

Table 24. 2023 lab sampling (dissolved metals) data collected on April 10 and October 20, 2023 at the RSEM L6 monitoring sites.

Date	April 10, 2023			October 20, 2023			BC Max WQG	EOP Limit
Site	RSEM L6			RSEM L6				
	Upstream/LBPR-6.83	L6-EOP[1]	IDZ/LBPR-7.21	Upstream/LBPR-6.83	L6-EOP[1]	IDZ/LBPR-7.21		
	A	A	A	A	A	A		
Dissolved Metals (mg/L)								
Aluminum (Al) - Dissolved	0.0051	<0.0030	0.0047	0.0052	0.0207	0.0052		0.46
Antimony (Sb) - Dissolved	<0.00010	<0.00050	<0.00010	<0.00010	0.00086	<0.00010		
Arsenic (As) - Dissolved	0.00018	0.00029	0.00020	0.00019	0.00093	0.00020		
Barium (Ba) - Dissolved	0.0333	0.0612	0.0330	0.0355	0.0642	0.0366		
Beryllium (Be) - Dissolved	<0.000020	<0.00010	<0.000020	<0.000100	<0.00010	<0.000100		
Bismuth (Bi) - Dissolved	<0.000050	<0.0010	<0.000050	<0.000050	<0.0010	<0.000050		
Boron (B) - Dissolved	<0.010	<0.0500	<0.010	<0.010	0.173	<0.010		
Cadmium (Cd) - Dissolved	0.0000091	0.0000340	0.0000066	0.0000078	0.0000210	0.0000091	EQ	0.00186
Calcium (Ca) - Dissolved	28.1	62.5	27.6	26.8	140	27.1		
Chromium (Cr) - Dissolved	<0.00050	<0.0010	<0.00050	<0.00050	0.00210	<0.00050		
Cobalt (Co) - Dissolved	<0.00010	0.00036	<0.00010	<0.00010	0.00024	<0.00010		
Copper (Cu) - Dissolved	0.00066	0.00141	0.00079	0.00065	0.00189	0.00061	EQ	
Iron (Fe) - Dissolved	0.010	0.021	<0.010	<0.010	0.008	<0.010	0.35	
Lead (Pb) - Dissolved	<0.000050	<0.00020	<0.000050	<0.000050	<0.00020	<0.000050		
Lithium (Li) - Dissolved	0.0014	0.0054	0.0014	0.0015	0.0358	0.0015		
Magnesium (Mg) - Dissolved	6.25	10.8	6.24	6.77	52.5	6.87		
Manganese (Mn) - Dissolved	0.00307	0.112	0.00175	0.00105	<0.0010	0.00110		
Mercury (Hg) - Dissolved	<0.0000050	<0.0000019	<0.0000050	<0.0000050	<0.0000019	<0.0000050		
Molybdenum (Mo) - Dissolved	0.000760	0.00570	0.000796	0.000903	0.0113	0.000893		
Nickel (Ni) - Dissolved	0.00078	0.00160	0.00076	0.00055	0.00990	0.00053		
Phosphorus (P) - Dissolved	<0.050	<0.0100	<0.050	<0.050	<0.0100	<0.050		
Potassium (K) - Dissolved	0.456	3.10	0.452	0.507	6.34	0.508		
Selenium (Se) - Dissolved	0.000354	0.00190	0.000374	0.000288	0.00143	0.000290		
Silicon (Si) - Dissolved	2.12	1.76	2.09	1.66	1.68	1.70		
Silver (Ag) - Dissolved	<0.000010	<0.000020	<0.000010	<0.000010	<0.000020	<0.000010		
Sodium (Na) - Dissolved	1.19	17.7	1.18	1.32	83.5	1.32		
Strontium (Sr) - Dissolved	0.108	0.220	0.114	0.114	0.732	0.114		
Sulfur (S) - Dissolved	5.42	35.0	5.38	5.45	178	5.43		
Thallium (Tl) - Dissolved	<0.000010	<0.000010	<0.000010	<0.000010	0.000014	<0.000010		
Tin (Sn) - Dissolved	<0.00010	<0.0050	<0.00010	<0.00010	<0.0050	<0.00010		
Titanium (Ti) - Dissolved	<0.00030	<0.0050	<0.00030	<0.00030	<0.0050	<0.00030		
Uranium (U) - Dissolved	0.000516	0.00139	0.000510	0.000493	0.00307	0.000490		
Vanadium (V) - Dissolved	<0.00050	<0.0050	<0.00050	<0.00050	<0.0050	<0.00050		
Zinc (Zn) - Dissolved	<0.0010	<0.0050	<0.0010	<0.0010	<0.0050	<0.0010	EQ	
Zirconium (Zr) - Dissolved	<0.00020	<0.00010	<0.00020	<0.00020	<0.00010	<0.00020		

No exceedances occurred. Yellow shading would indicate an exceedance of short term (maximum) BC WQG in the Peace River sampling sites or exceedance of the Site C End of Pipe (EOP) Limits in the RSEM pond data (EOP limits are provided in Table 2, Appendix E (Rev 6.1) of the CEMP).
EQ indicates that the applicable guideline is an equation as per BC ENV (2023).

[1] Water quality samples for laboratory analysis were collected from within the L6 pond.

Table 25. 2023 lab sampling (total metals) data collected on April 10 and October 20, 2023 at the RSEM L6 monitoring sites.

Date	April 10, 2023			October 20, 2023			BC Max WQG	EOP Limit
Site	RSEM L6			RSEM L6				
	Upstream/LBPR-6.83	L6-EOP[1]	IDZ/LBPR-7.21	Upstream/LBPR-6.83	L6-EOP[1]	IDZ/LBPR-7.21		
	A	A	A	A	A	A		
Total Metals (mg/L)								
Aluminum (Al) - Total	0.164	0.113	0.0664	0.0204	0.0723	0.0226		
Antimony (Sb) - Total	<0.00010	<0.00050	<0.00010	<0.00010	0.00088	<0.00010	0.25	
Arsenic (As) - Total	0.00041	0.00050	0.00029	0.00022	0.00108	0.00023		0.05
Barium (Ba) - Total	0.0485	0.0730	0.0360	0.0357	0.0679	0.0360		
Beryllium (Be) - Total	<0.000020	<0.00010	<0.000020	<0.000100	<0.00010	<0.000100		
Bismuth (Bi) - Total	<0.000050	<0.0010	<0.000050	<0.000050	<0.0010	<0.000050		
Boron (B) - Total	<0.010	<0.0500	<0.010	<0.010	0.202	<0.010		
Cadmium (Cd) - Total	0.0000542	0.0000420	0.0000254	0.0000126	0.0000290	0.0000089		
Calcium (Ca) - Total	30.5	61.5	29.2	27.2	178	27.6		
Chromium (Cr) - Total	<0.00050	<0.0010	<0.00050	<0.00050	0.00270	<0.00050		
Cobalt (Co) - Total	0.00024	0.00054	<0.00010	<0.00010	0.00062	<0.00010	0.11	0.55
Copper (Cu) - Total	0.00121	0.00196	0.00090	0.00076	0.00253	0.00065		0.0163
Iron (Fe) - Total	0.353	0.374	0.127	0.025	0.110	0.025	1	EQ[2]
Lead (Pb) - Total	0.000238	<0.00020	0.000095	<0.000050	<0.00020	<0.000050	EQ	
Lithium (Li) - Total	0.0018	0.0062	0.0017	0.0017	0.0431	0.0018		
Magnesium (Mg) - Total	7.66	11.5	7.12	6.84	58.8	6.94		
Manganese (Mn) - Total	0.0119	0.146	0.00516	0.00130	0.0163	0.00126	EQ	8.29
Mercury (Hg) - Total	<0.0000050	0.0000029	<0.0000050	<0.0000050	<0.0000019	<0.0000050		
Molybdenum (Mo) - Total	0.000780	0.00610	0.000782	0.000908	0.0118	0.000922	46	
Nickel (Ni) - Total	0.00137	0.00210	0.00098	0.00069	0.0116	0.00069		
Phosphorus (P) - Total	0.080	0.029	<0.050	<0.050	0.022	<0.050		
Potassium (K) - Total	0.568	3.45	0.507	0.516	6.76	0.506		
Selenium (Se) - Total	0.000308	0.00166	0.000318	0.000322	0.00150	0.000323		
Silicon (Si) - Total	2.62	1.81	2.43	1.66	1.99	1.68		
Silver (Ag) - Total	<0.000010	<0.000020	<0.000010	<0.000010	<0.000020	<0.000010	EQ	
Sodium (Na) - Total	1.33	18.1	1.27	1.29	92.1	1.31		
Strontium (Sr) - Total	0.115	0.252	0.110	0.116	0.829	0.116		
Sulfur (S) - Total	6.59	39.5	6.42	5.89	195	5.96		
Thallium (Tl) - Total	<0.000010	0.000011	<0.000010	<0.000010	0.000018	<0.000010		
Tin (Sn) - Total	<0.00010	<0.0050	<0.00010	<0.00010	<0.0050	<0.00010		
Titanium (Ti) - Total	0.00189	<0.0050	0.00112	0.00053	<0.0050	0.00056		
Uranium (U) - Total	0.000543	0.00159	0.000530	0.000505	0.00335	0.000498		
Vanadium (V) - Total	0.00120	<0.0050	0.00068	0.00052	<0.0050	0.00054		
Zinc (Zn) - Total	<0.0030	<0.0050	<0.0030	<0.0030	<0.0050	<0.0030		0.251
Zirconium (Zr) - Total	<0.00020	<0.00010	<0.00020	<0.00020	<0.00010	<0.00020		

No exceedances occurred. Yellow shading would indicate an exceedance of short term (maximum) BC WQG in the Peace River sampling sites or exceedance of the Site C End of Pipe (EOP) Limits in the RSEM pond data (EOP limits are provided in Table 2, Appendix E (Rev 6.1) of the CEMP).
EQ indicates that the applicable guideline is an equation as per BC ENV (2023).

[1] Water quality samples for laboratory analysis were collected from within the L6 pond.

[2] EOP limit for total iron is 10.3 mg/L during the clear flow period (July–March) and 20.9 mg/L during the turbid flow period (April–June).

Appendix B. Site C PAG Contact RSEM Surface Water Quality Monitoring Time Series Plots – R6 Monthly and 5 in 30-day Sampling Data

The following time series plots depict data collected in 2023 at PAG-contact RSEM ponds R6W and R6E and the corresponding Peace River monitoring sites. Unless otherwise specified, all data are laboratory analytical results. Peace River samples were collected by Ecofish and included a field blank, travel blank, and duplicate sample for QA/QC purposes. RSEM pond data were provided by PRHP. Error bars are included when duplicate samples are collected for laboratory data and are also included for all in situ data where triplicate readings are recorded (error bars for in situ data are generally too small to be visible on the plots). The location of duplicate sampling is varied with each sampling date. Similarly pond sampling duplicates are collected periodically, and error bars are included when duplicate sampling in the pond has occurred.

Figure 2. 2023 Peace River (in situ) and RSEM R6 pond (lab) specific conductivity.

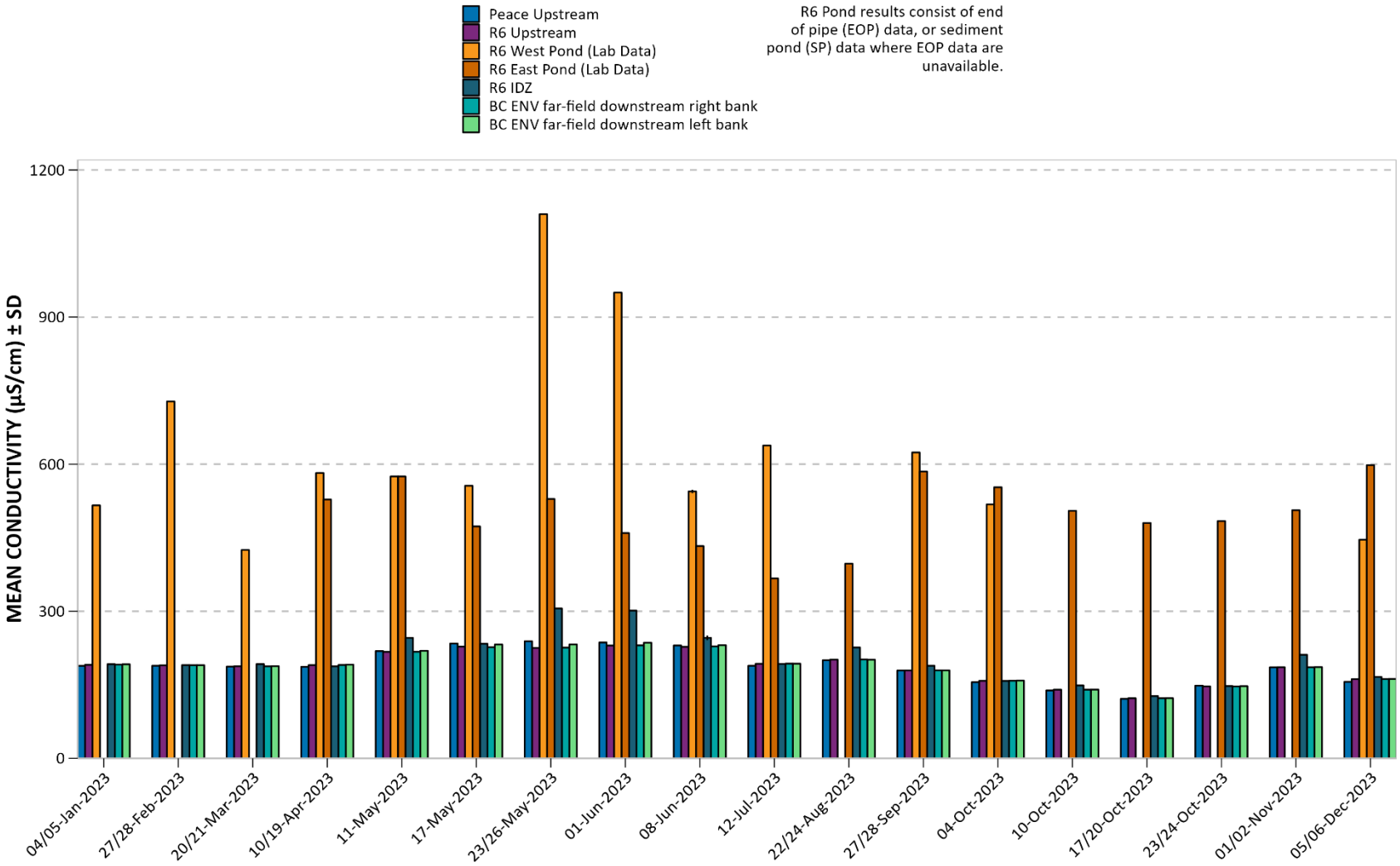


Figure 3. 2023 Peace River and RSEM R6 pond lab specific conductivity.

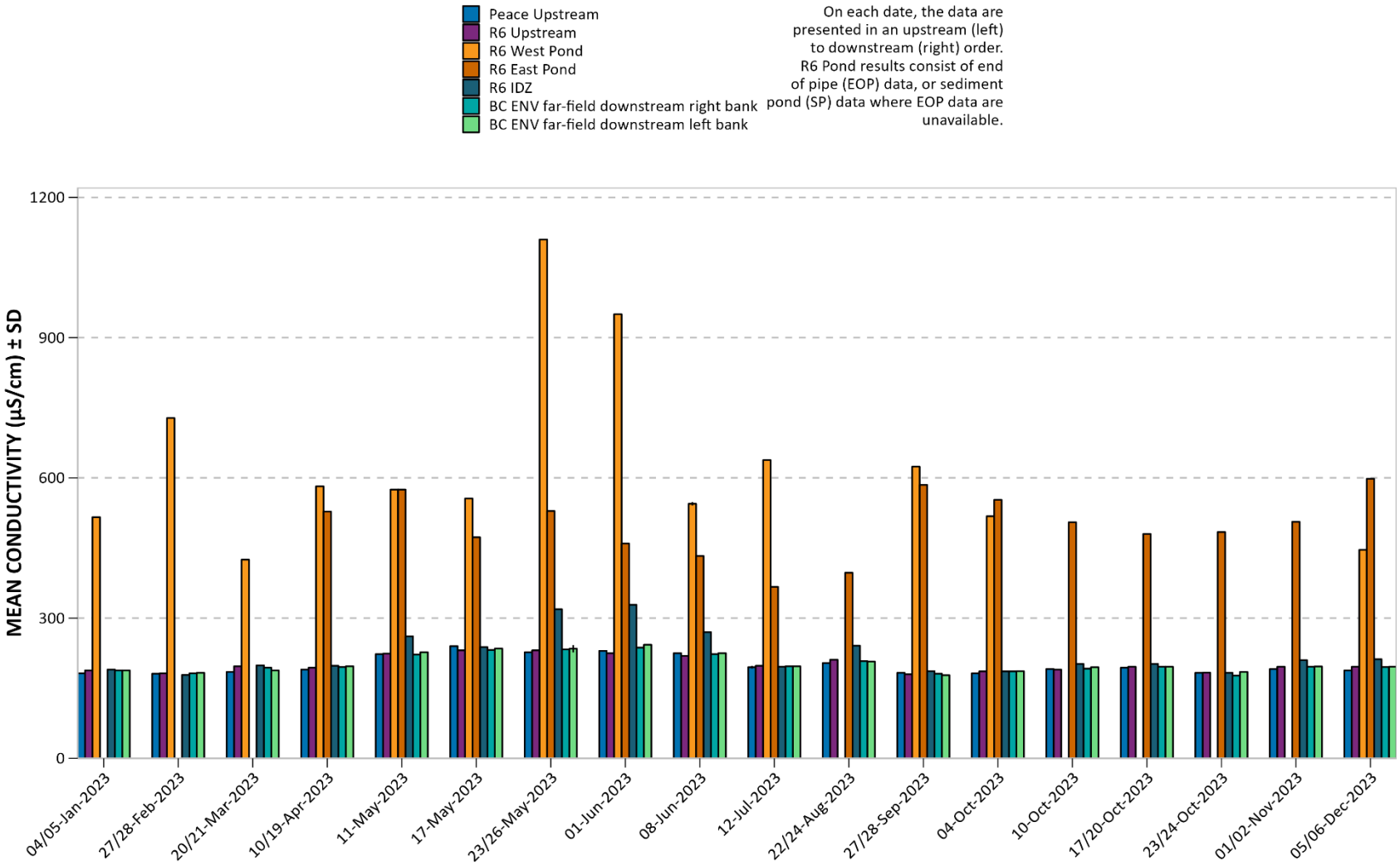


Figure 4. 2023 Peace River and RSEM R6 pond dissolved hardness (as $CaCO_3$).

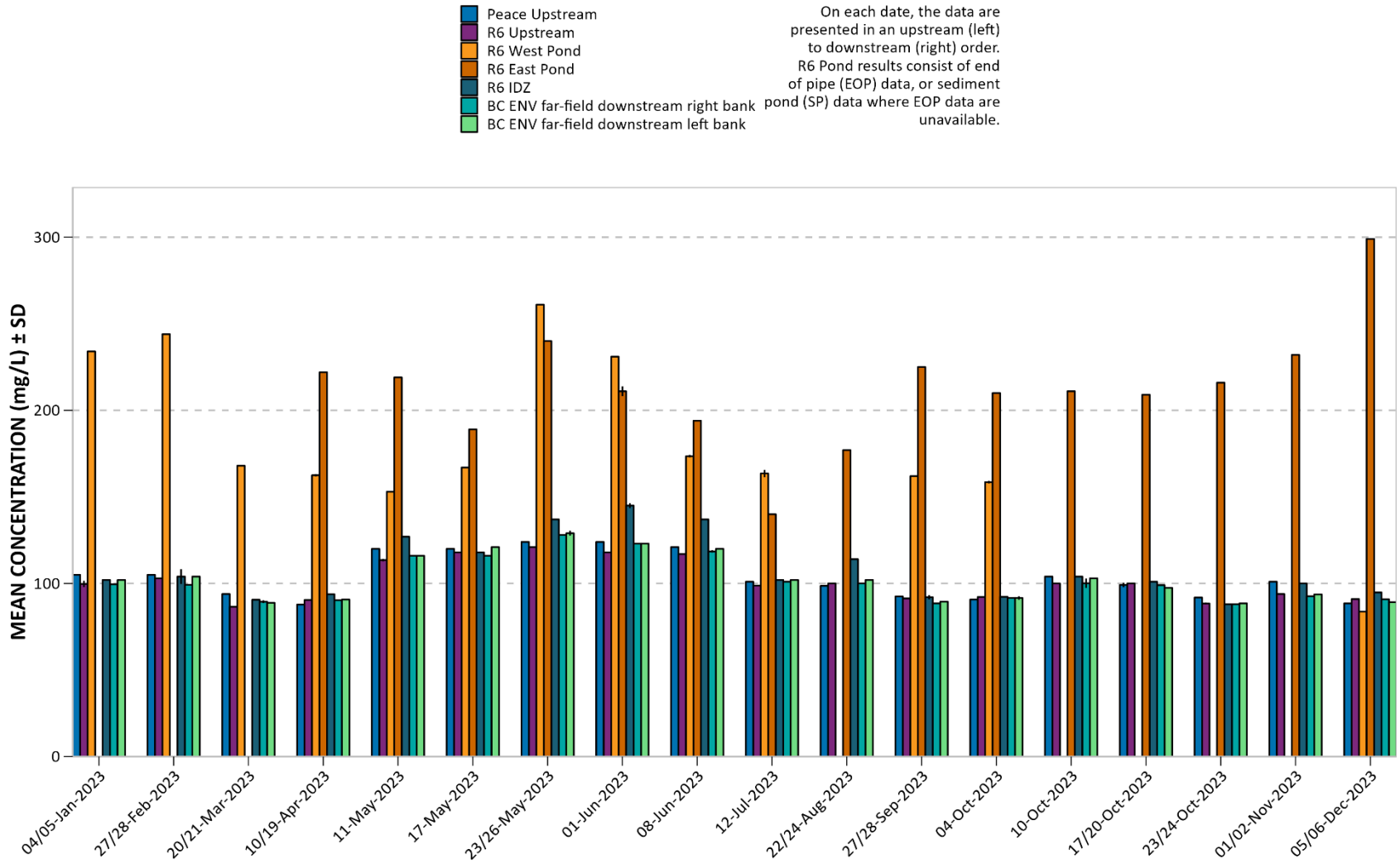


Figure 5. 2023 Peace River and RSEM R6 pond total dissolved solids (TDS).

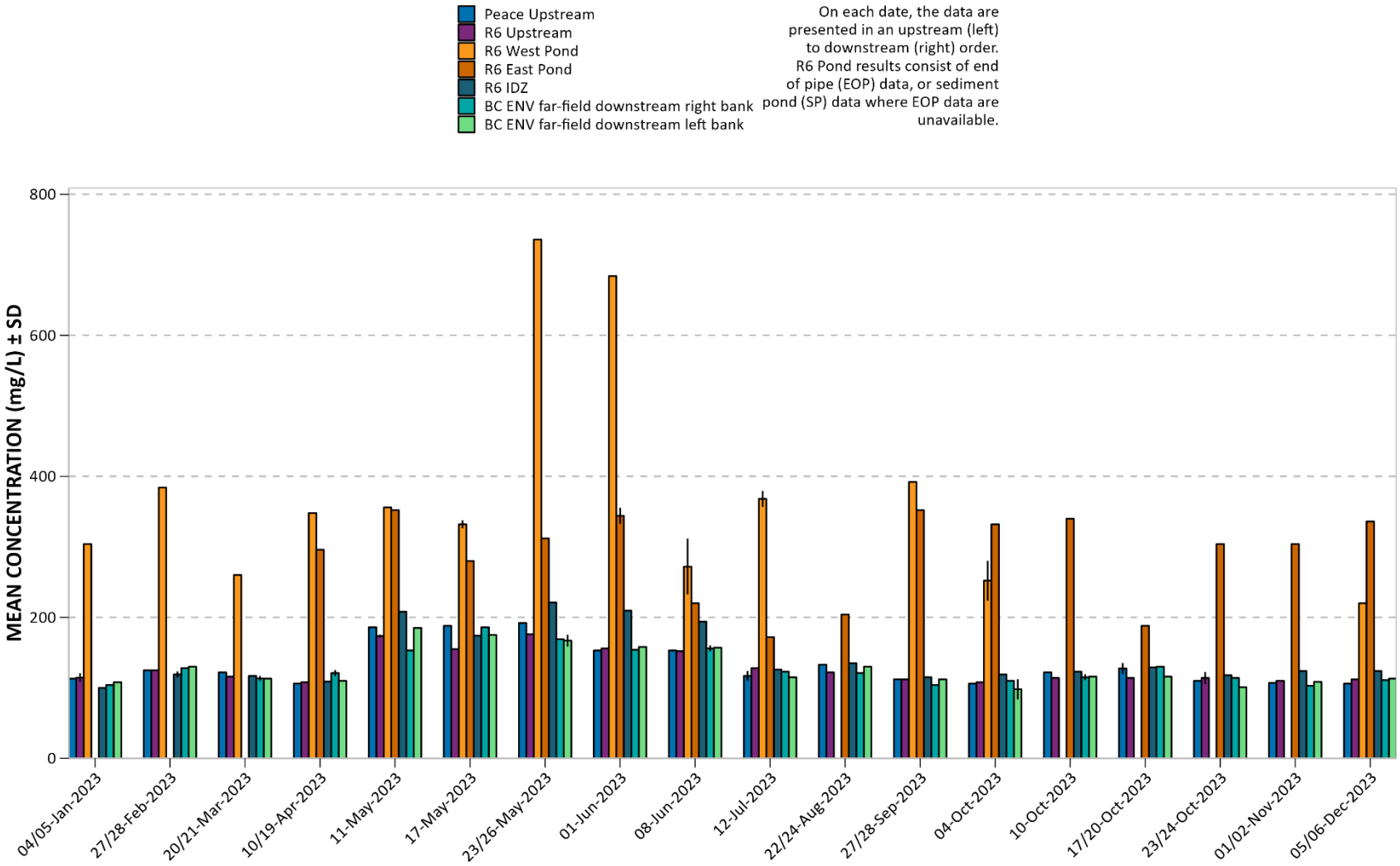


Figure 6. 2023 Peace River and RSEM R6 pond total suspended solids (TSS).

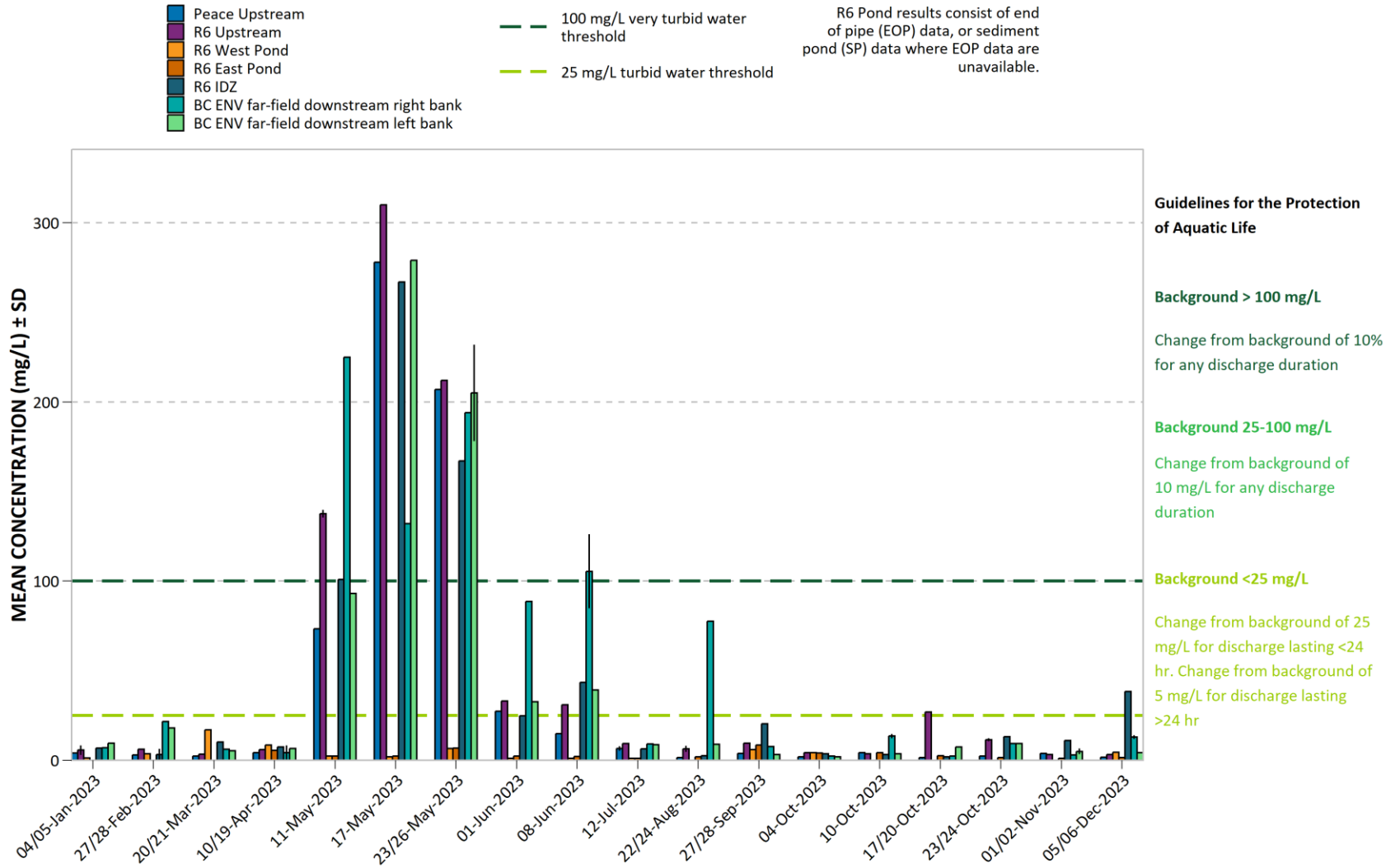


Figure 7. 2023 Peace River (in situ) and RSEM R6 pond (lab) turbidity.

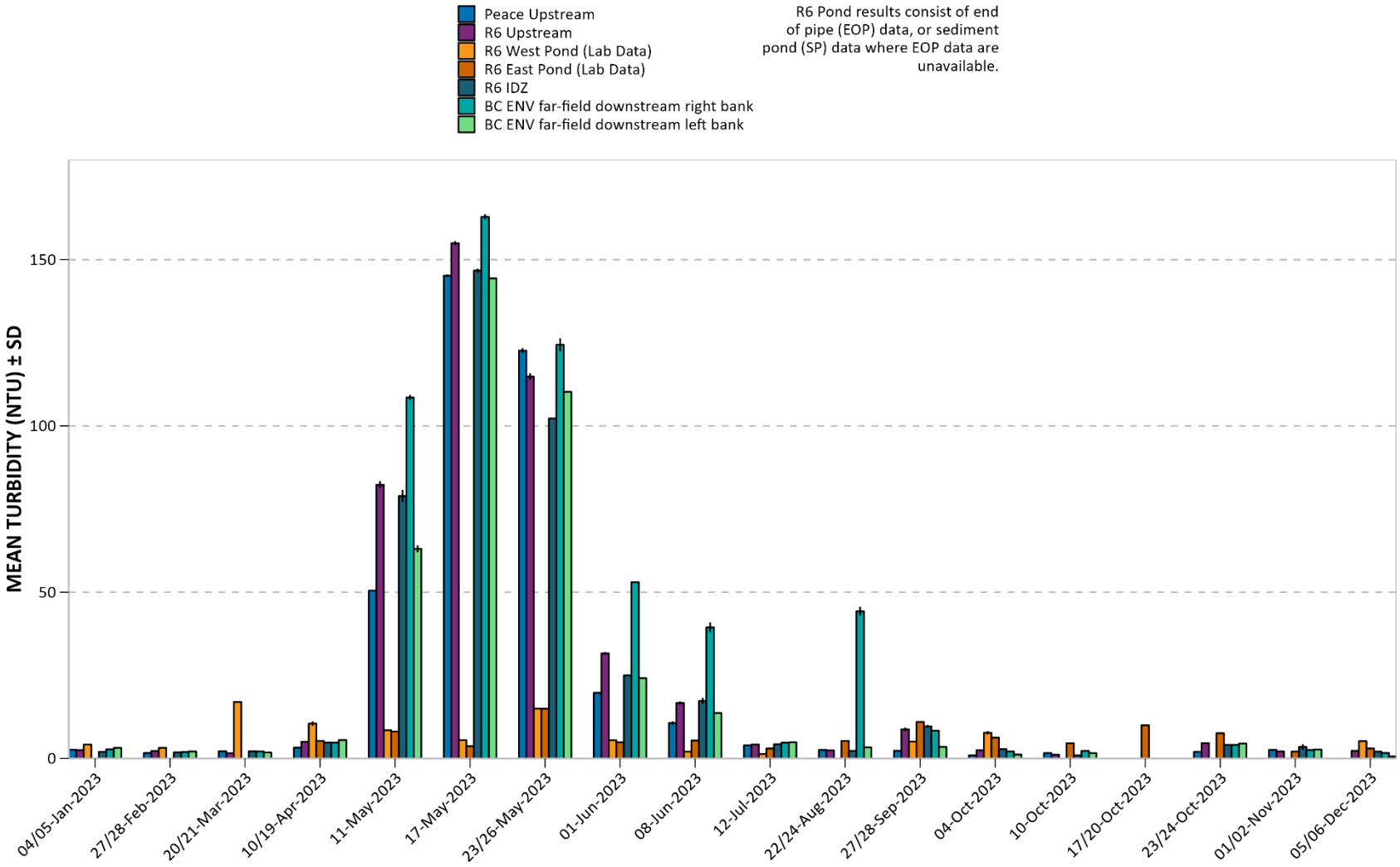


Figure 8. 2023 Peace River (in situ) and RSEM R6 pond (lab) pH.

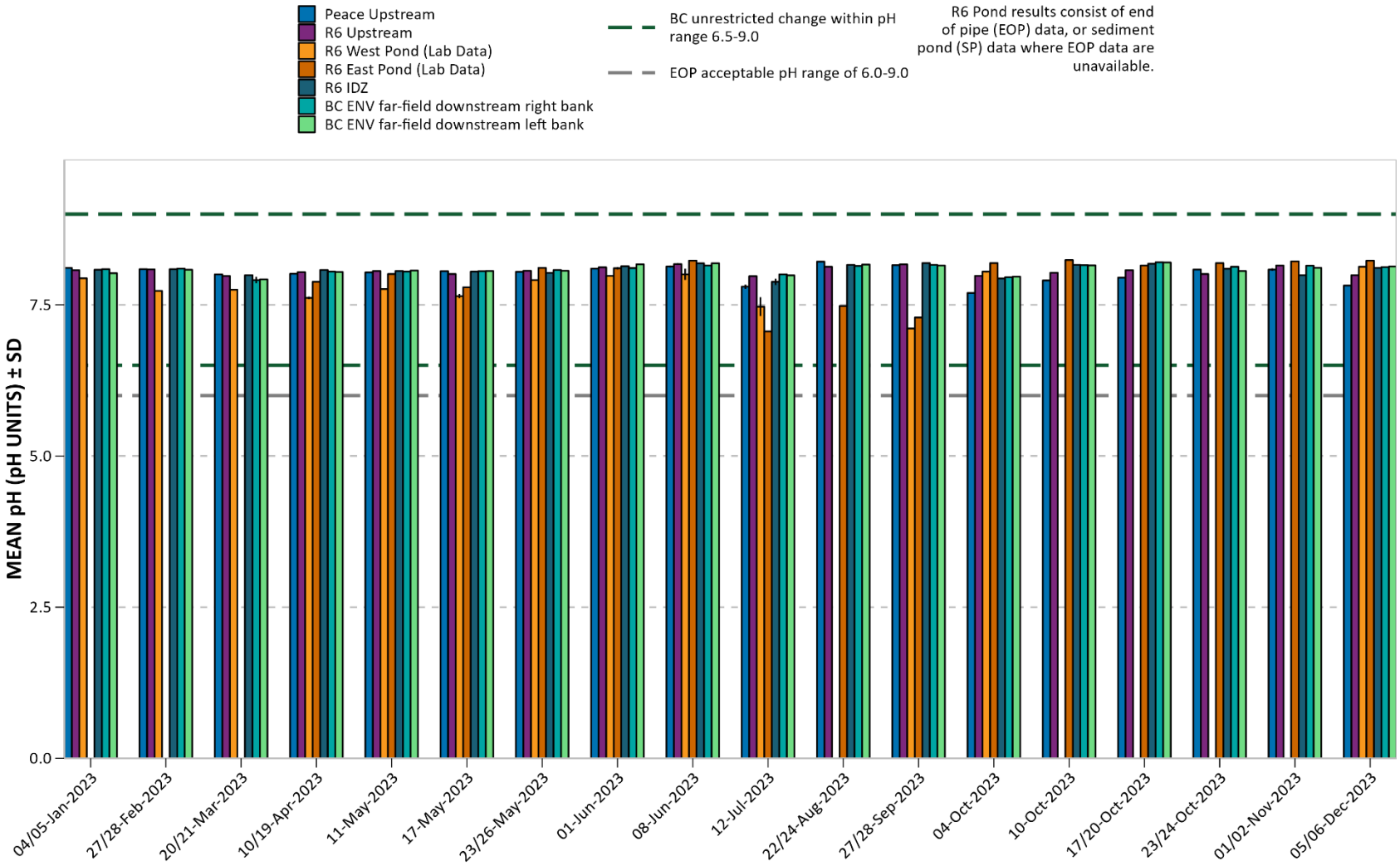


Figure 9. 2023 Peace River and RSEM R6 pond lab pH.

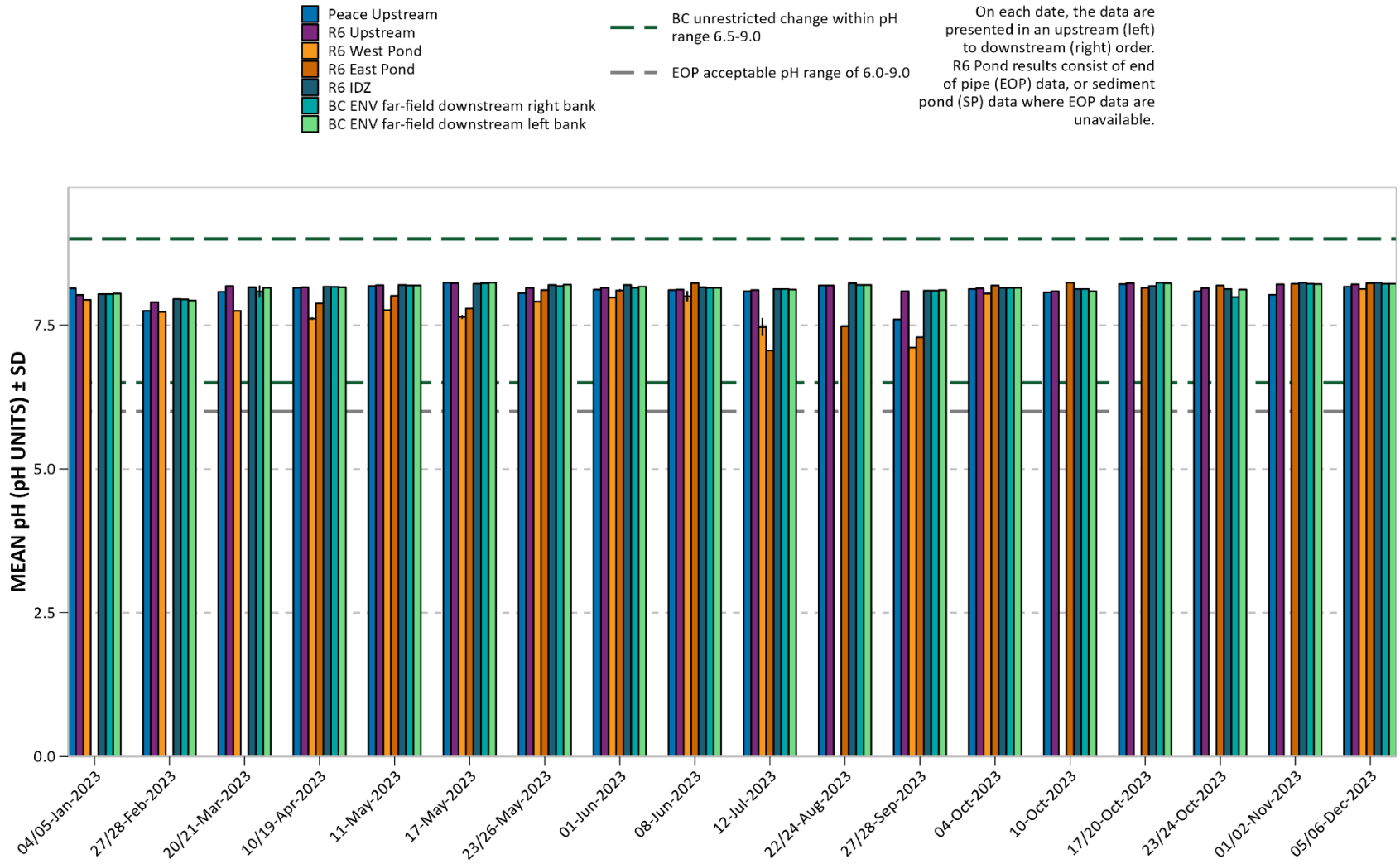


Figure 10. 2023 Peace River and RSEM R6 pond total alkalinity (as $CaCO_3$).

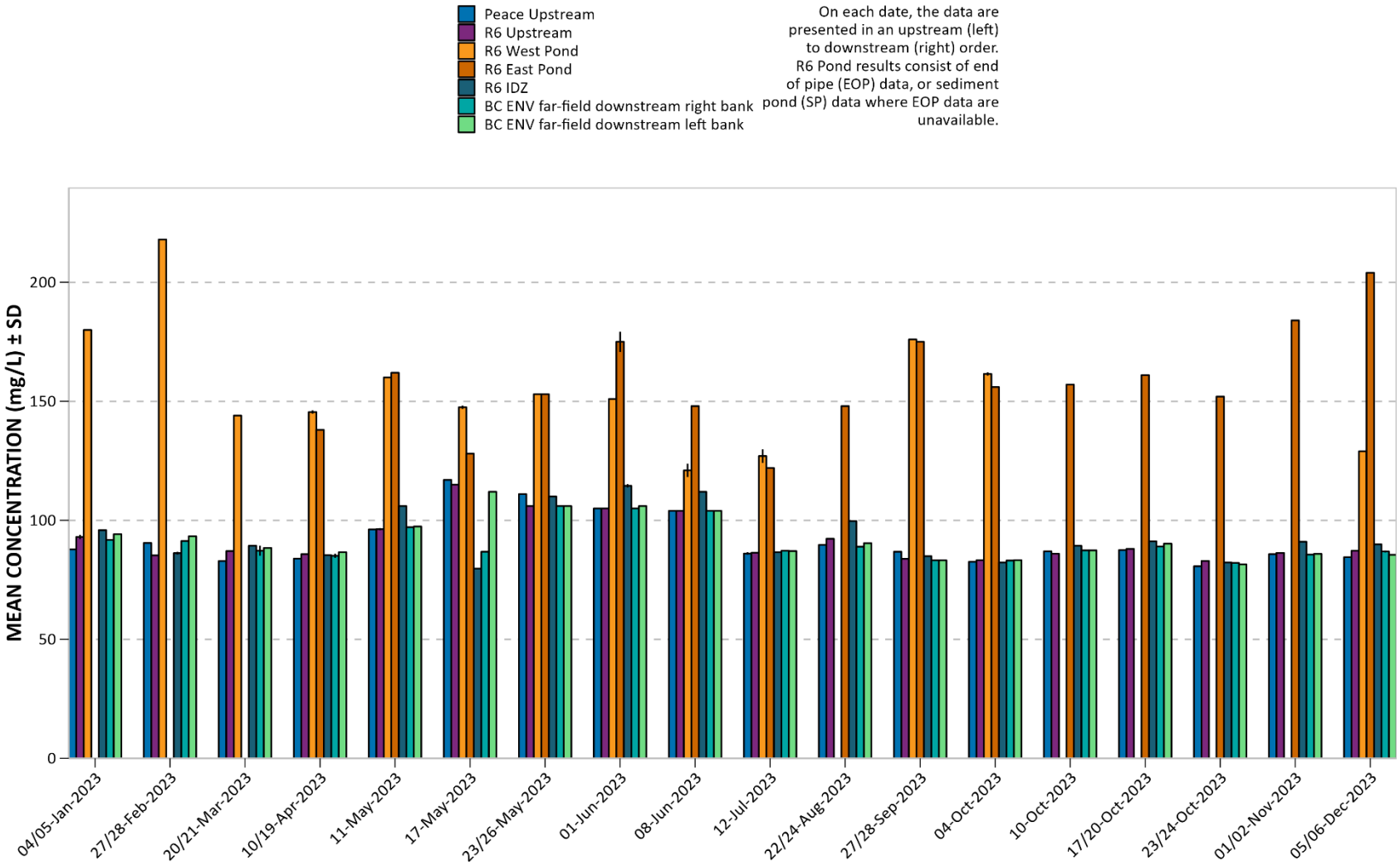
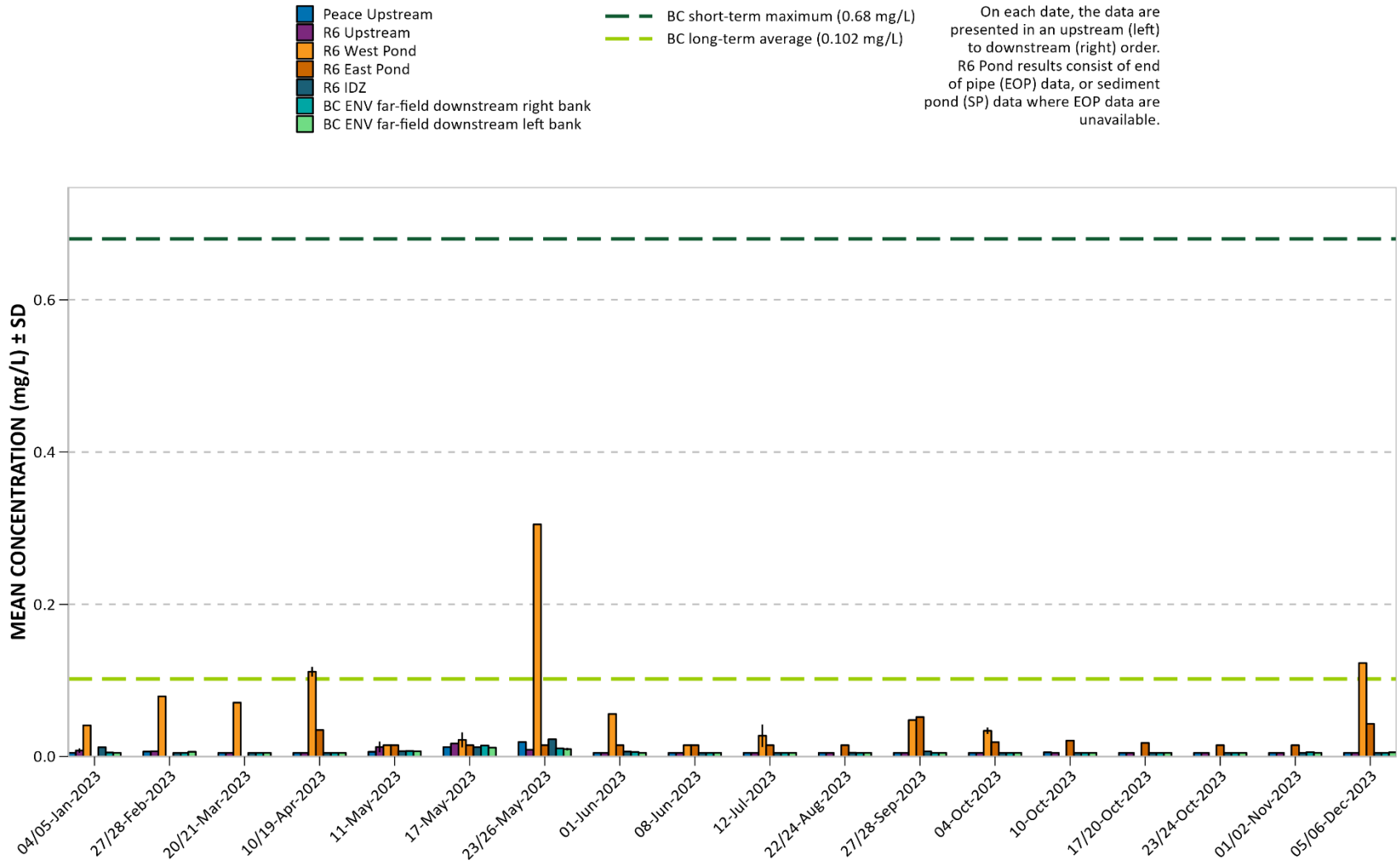


Figure 11. 2023 Peace River and RSEM R6 pond total ammonia (as N).



Note: BC WQG for total ammonia are pH and temperature dependent; guidelines used are the most conservative.

Figure 12. 2023 Peace River and RSEM R6 pond bromide (Br).

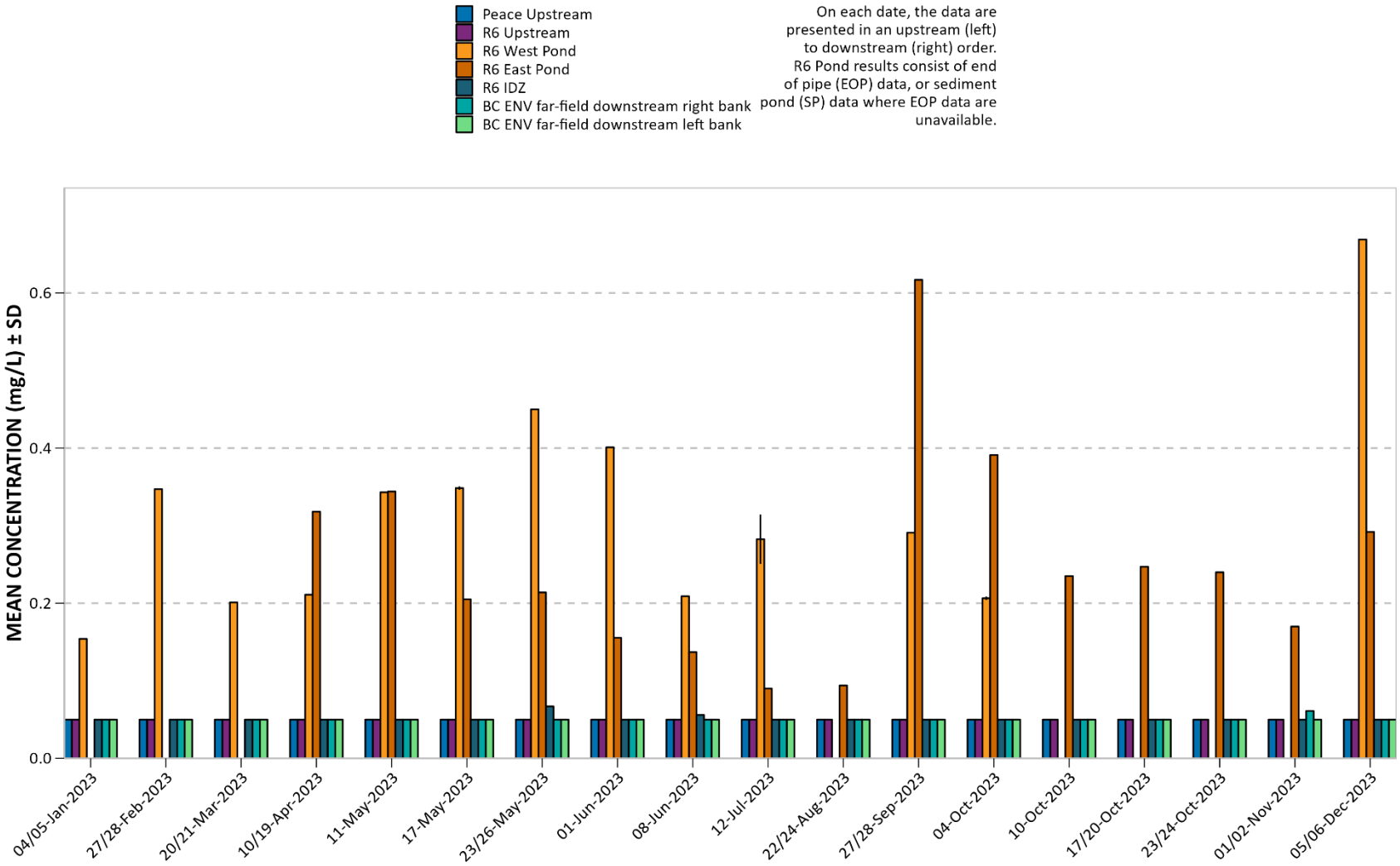


Figure 13. 2023 Peace River and RSEM R6 pond chloride (Cl).

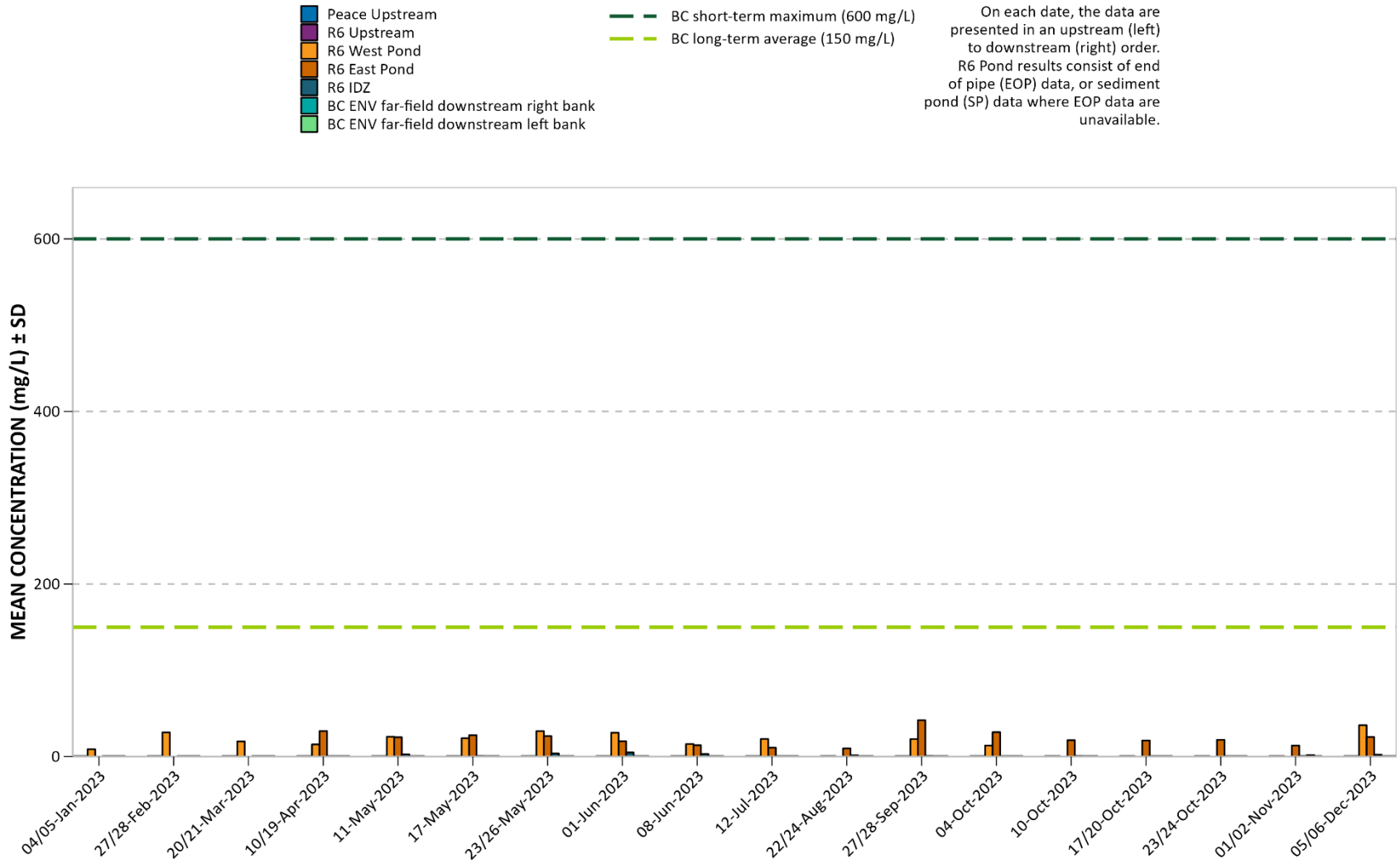


Figure 14. 2023 Peace River and RSEM R6 pond dissolved orthophosphate.

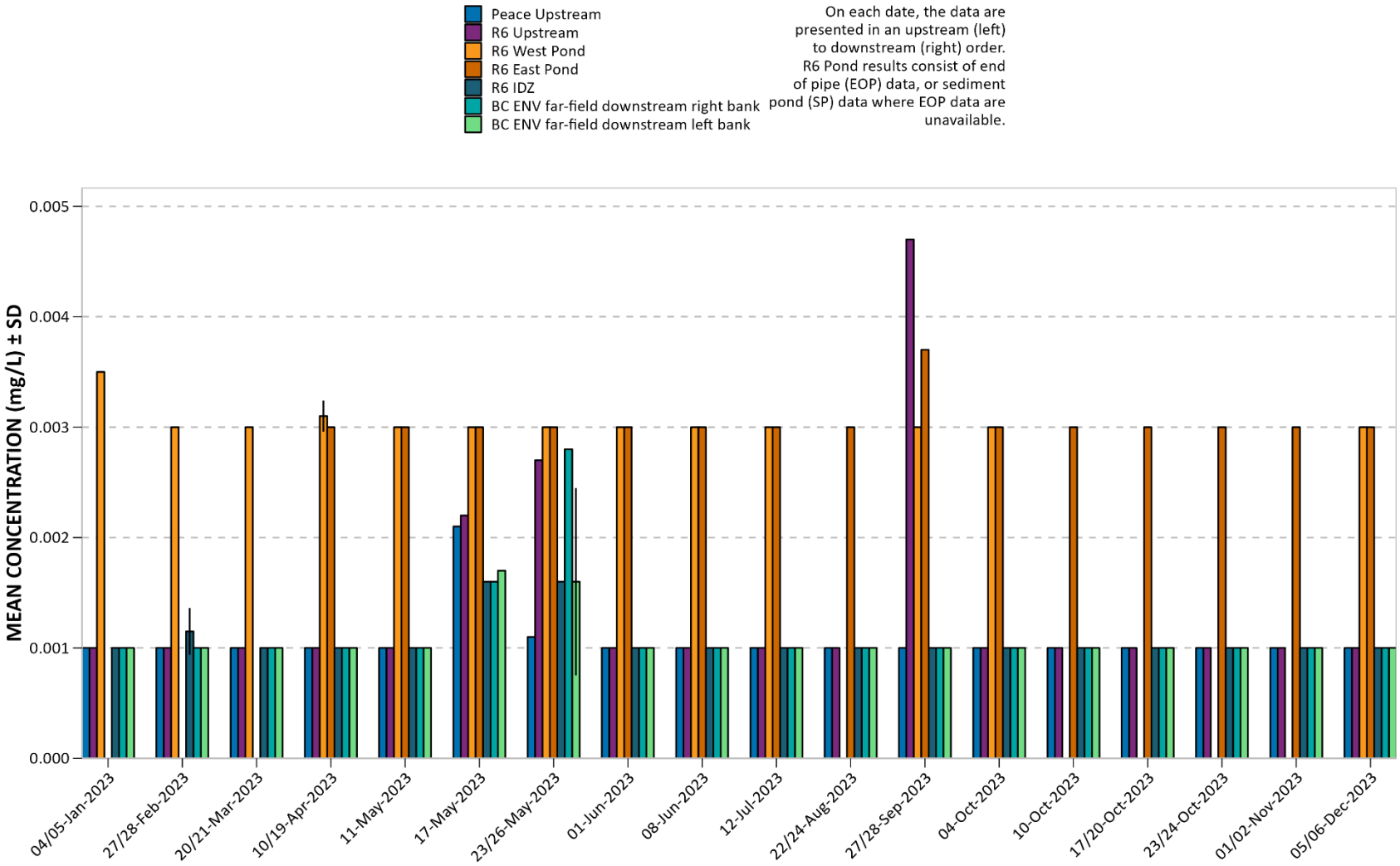
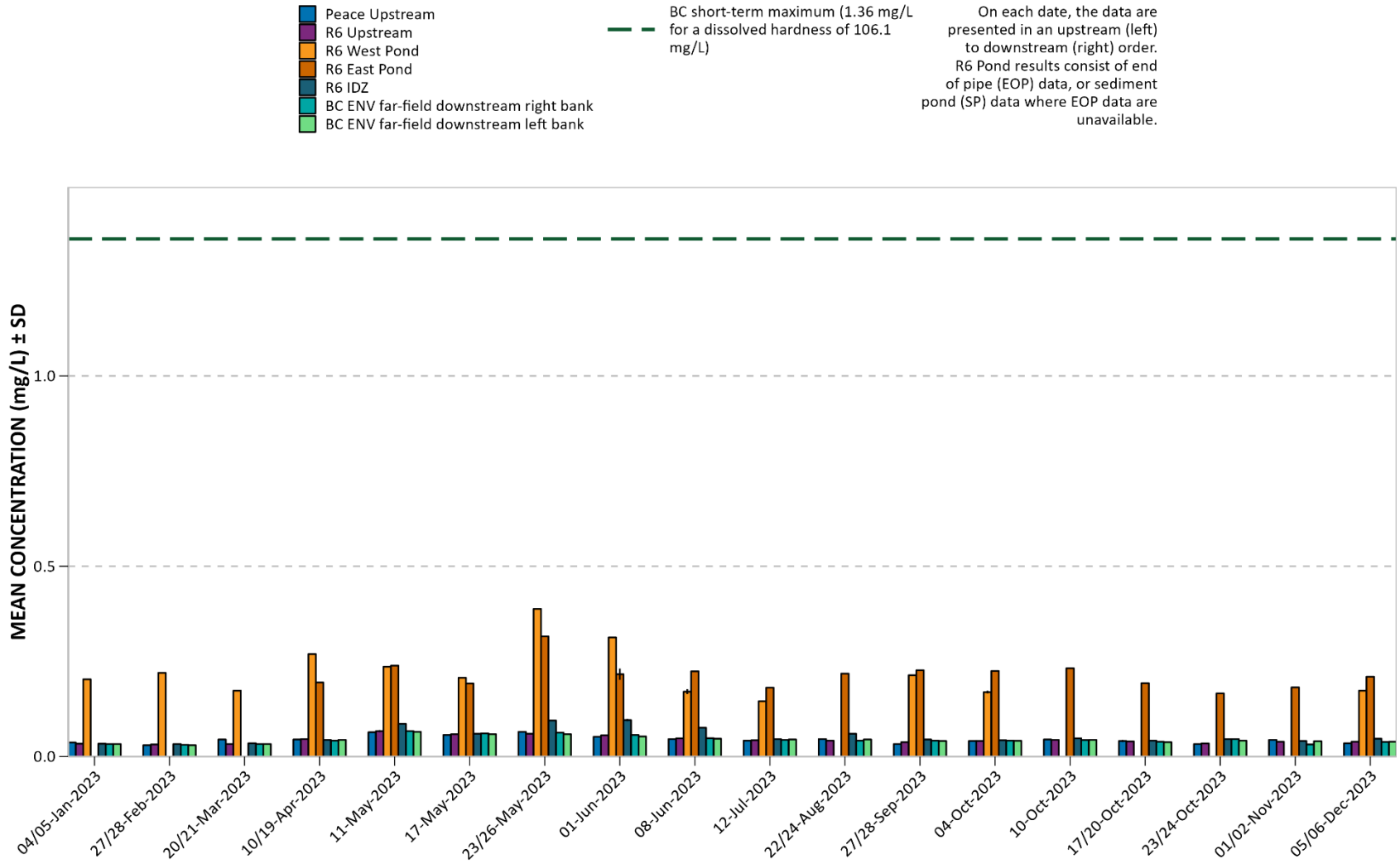


Figure 15. 2023 Peace River and RSEM R6 pond fluoride (F).



Note: BC short-term WQG for fluoride is dissolved hardness dependent. An average Peace River dissolved hardness of 106.1 mg/L (based on 26 samples collected between April 2007 – Jan. 2017; BC Hydro 2017b) was used in the plot to depict the maximum guidelines for ease of interpretation. Sample specific dissolved hardness was used to screen individual sample results against the guideline in the data tables (Appendix A).

Figure 16. 2023 Peace River and RSEM R6 pond nitrate (as N).

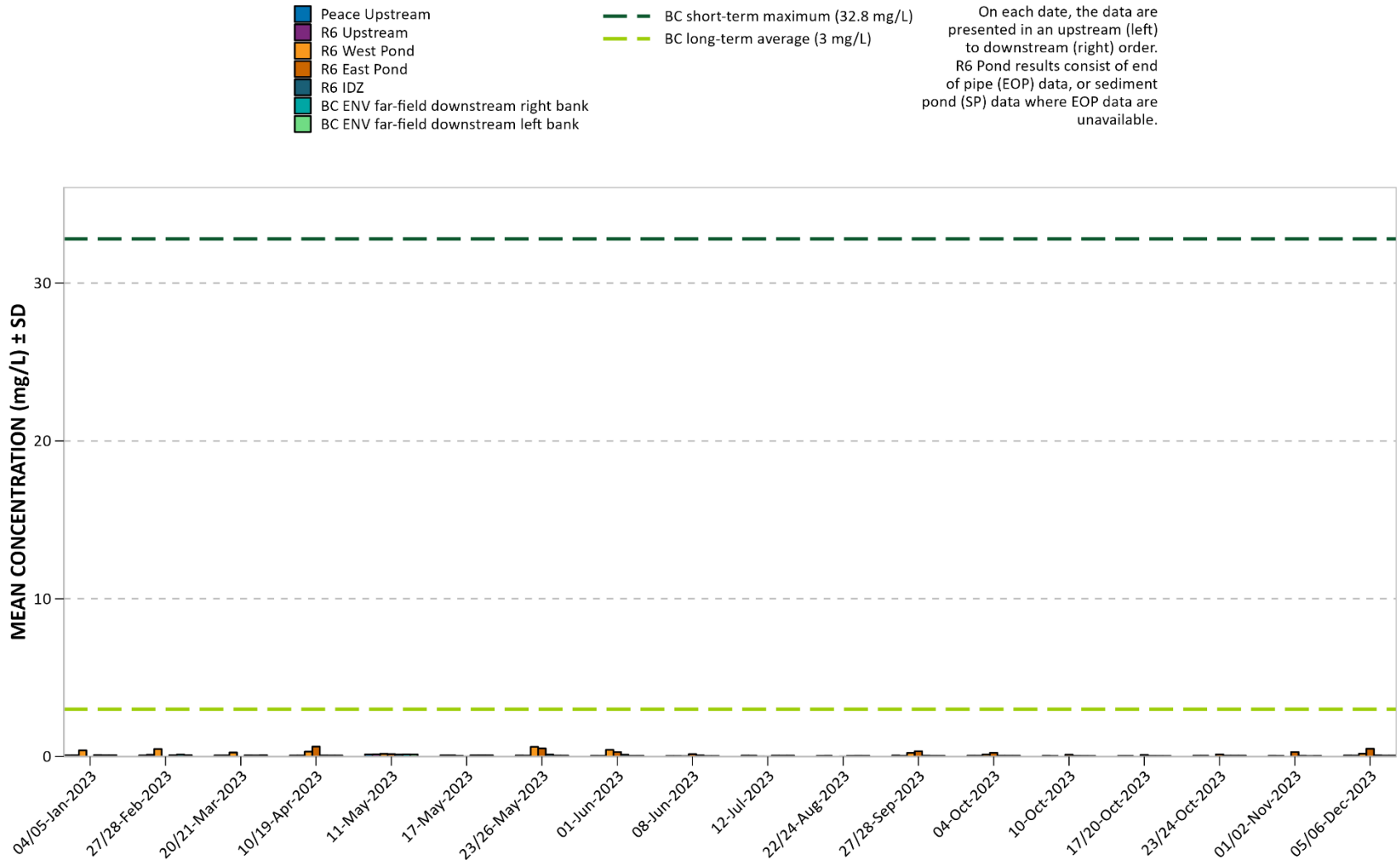
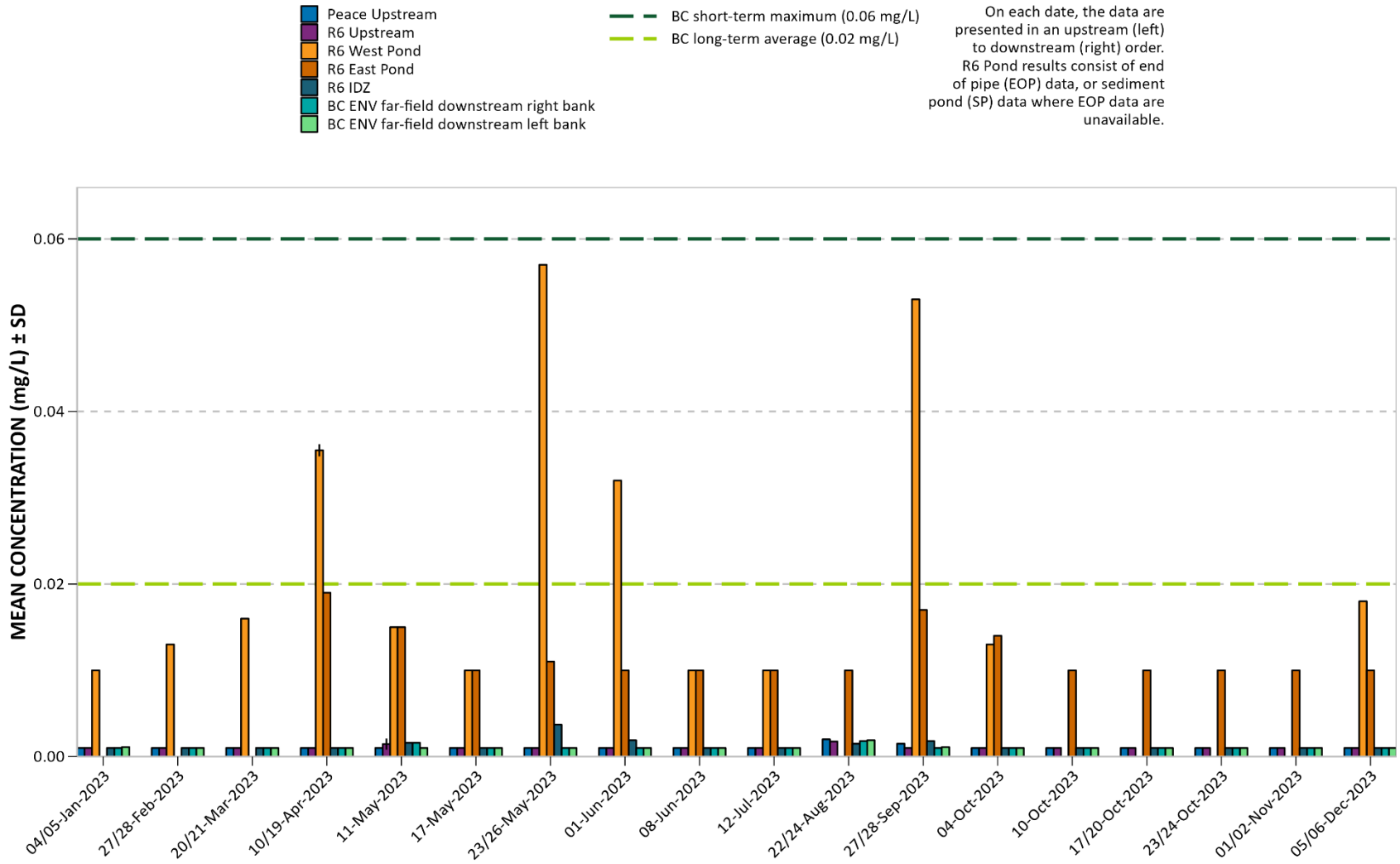
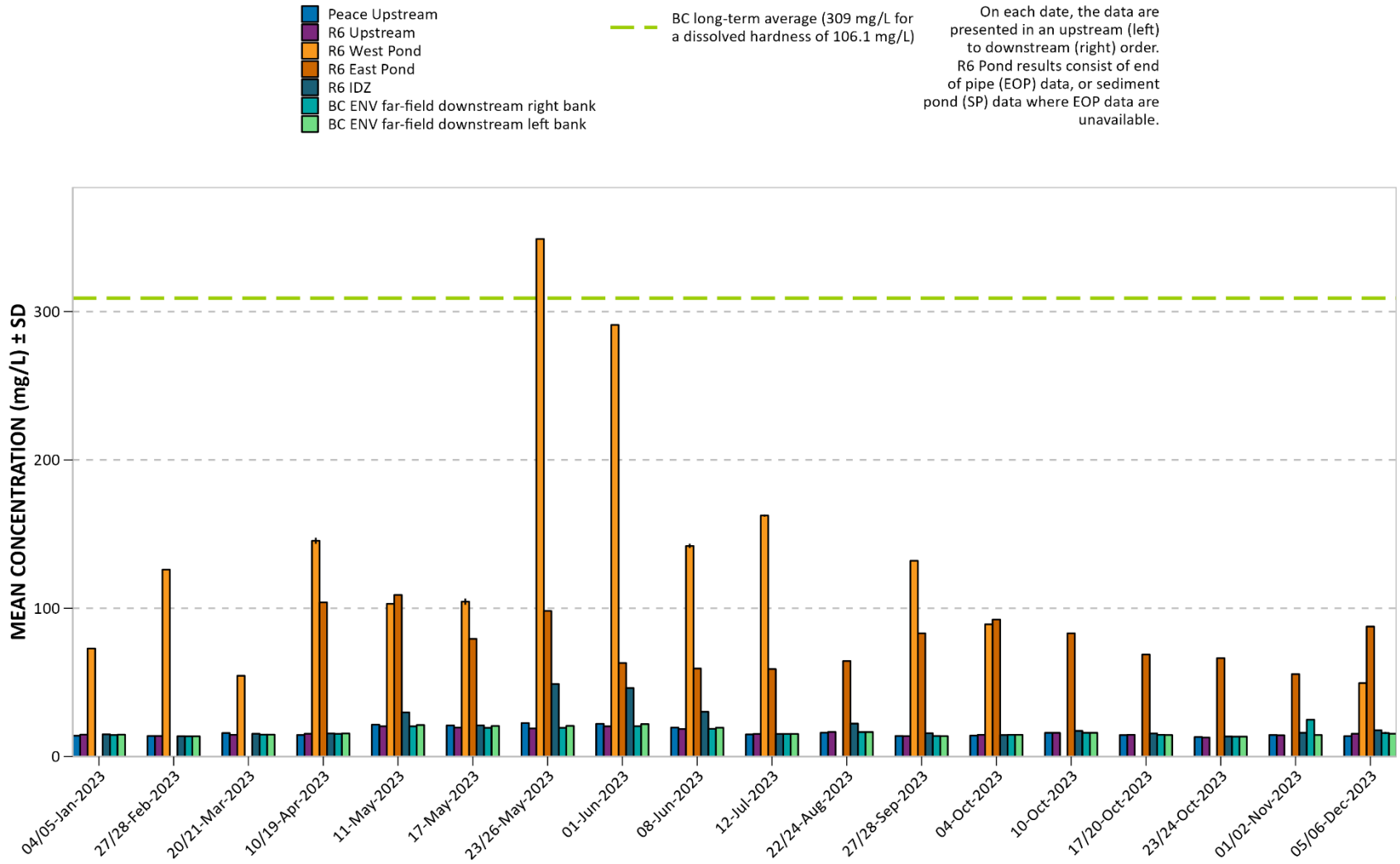


Figure 17. 2023 Peace River and RSEM R6 pond nitrite (as N).



Note: BC WQG for nitrite are chloride dependent, and therefore guidelines depicted in the plot are applicable for Peace River sites only. Based on the range of chloride values observed in the Peace River, the applicable BC Maximum and 30-day guidelines are 0.06 mg/L and 0.02 mg/L, respectively.

Figure 18. 2023 Peace River and RSEM R6 pond sulfate (SO_4).



Note: BC long-term WQG for sulfate is dissolved hardness dependent. An average Peace River dissolved hardness of 106.1 mg/L (based on 26 samples collected between April 2007 – Jan. 2017; BC Hydro 2017b) was used in the plot to depict the 30-day guidelines for ease of interpretation. Sample specific dissolved hardness was used to screen individual sample results against the guideline in the data tables (Appendix A).

Figure 19. 2023 Peace River and RSEM R6 pond dissolved organic carbon (DOC).

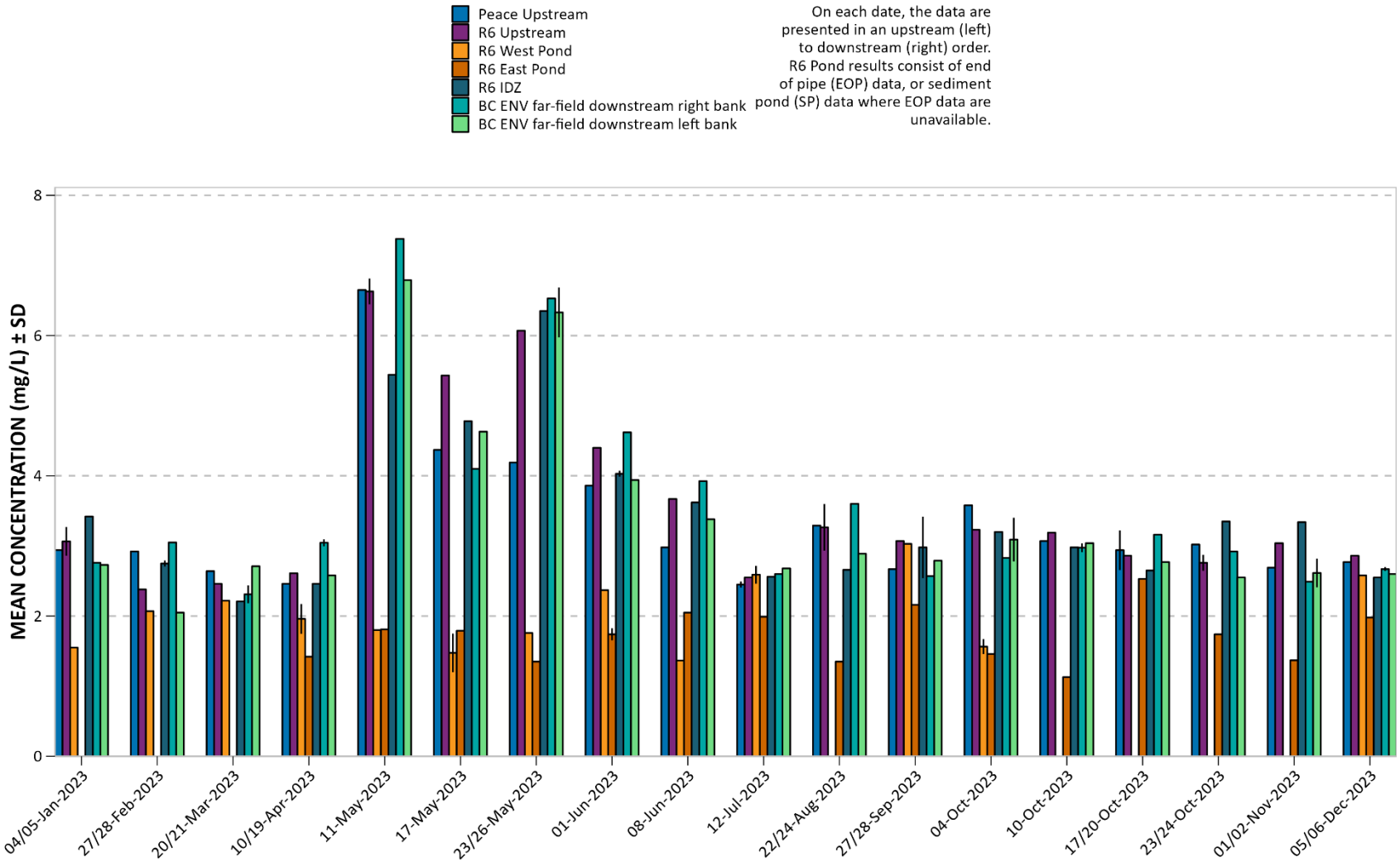


Figure 20. 2023 Peace River and RSEM R6 pond total organic carbon (TOC).

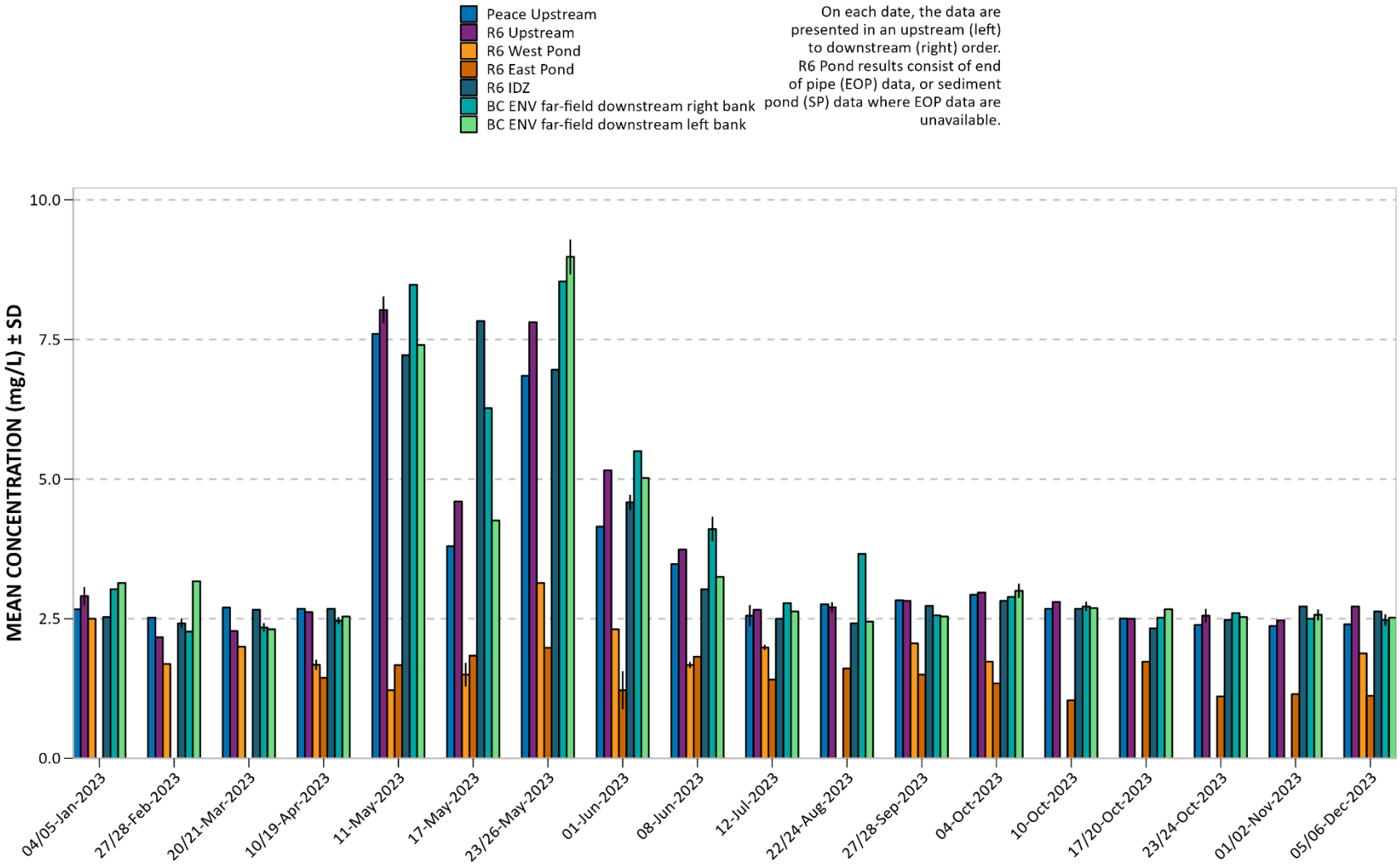
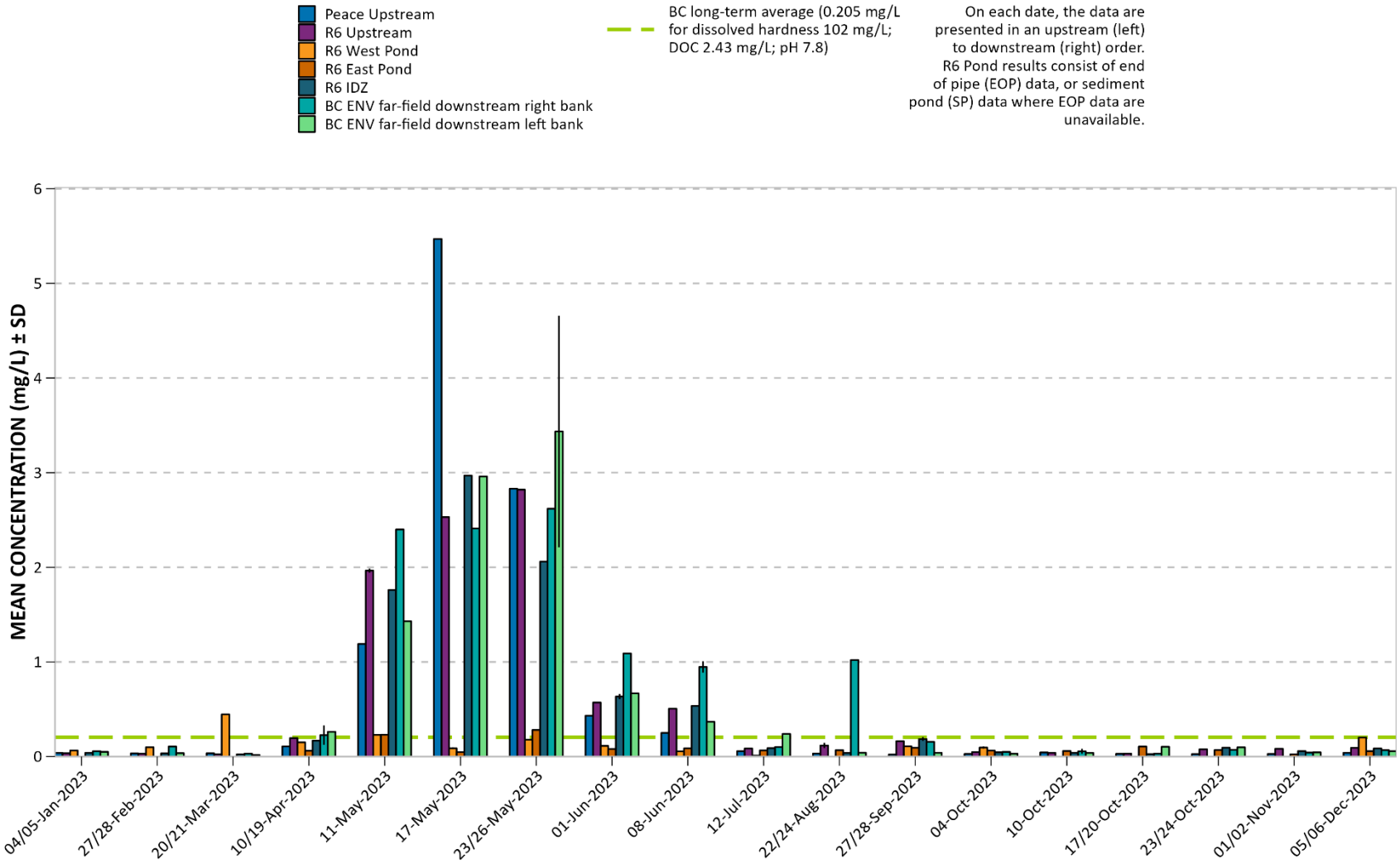


Figure 21. 2023 Peace River and RSEM R6 pond total aluminum (Al).



Note: BC long-term WQG for total aluminum is dissolved hardness, DOC, and pH dependent, and therefore guidelines depicted in the plot are applicable for Peace River sites only. Based on the range of dissolved hardness, DOC, and pH values observed in the Peace River, the applicable BC 30-day guideline is 0.205 mg/L.

Figure 22. 2023 Peace River and RSEM R6 pond total antimony (Sb).

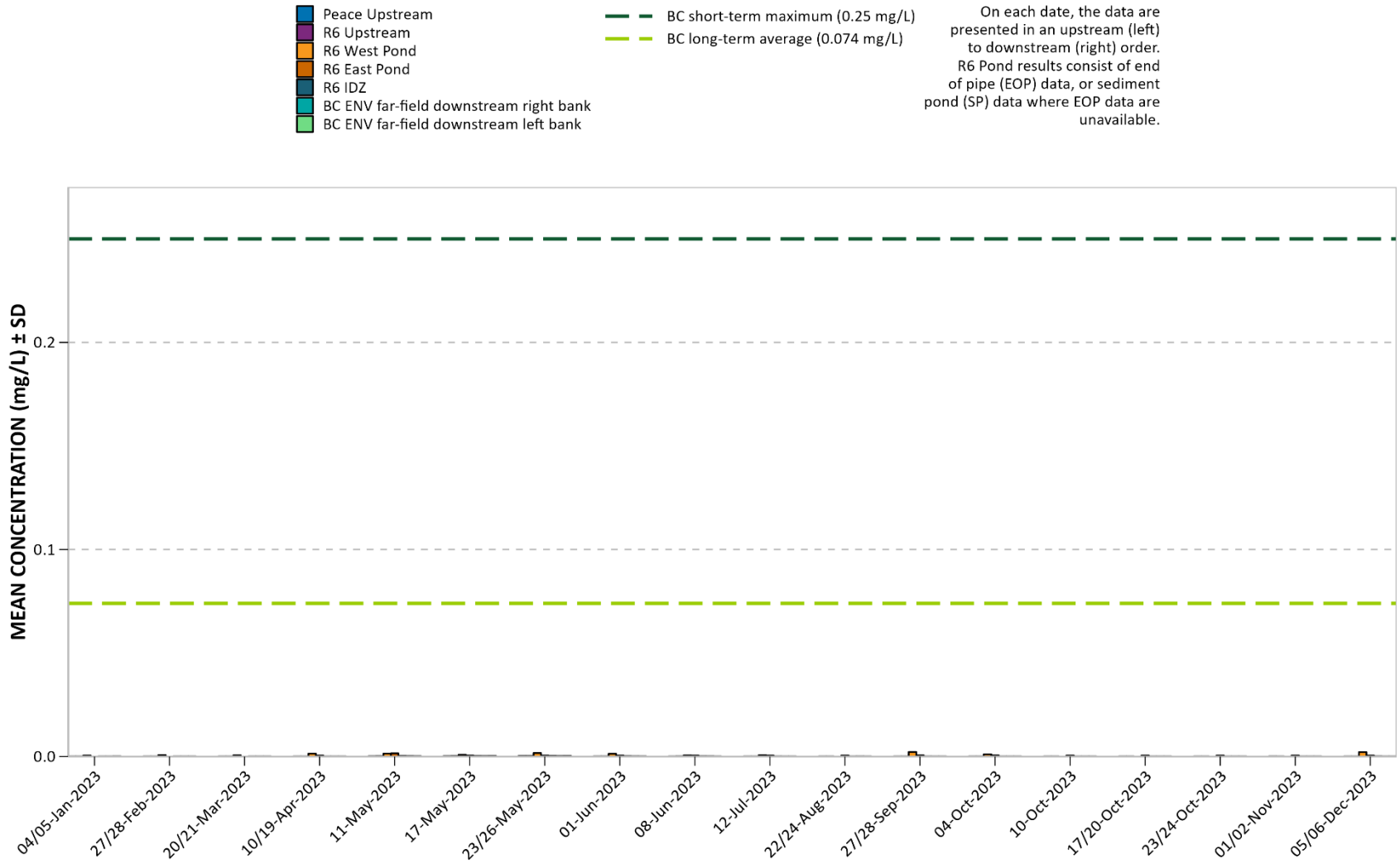


Figure 23. 2023 Peace River and RSEM R6 pond total arsenic (As).

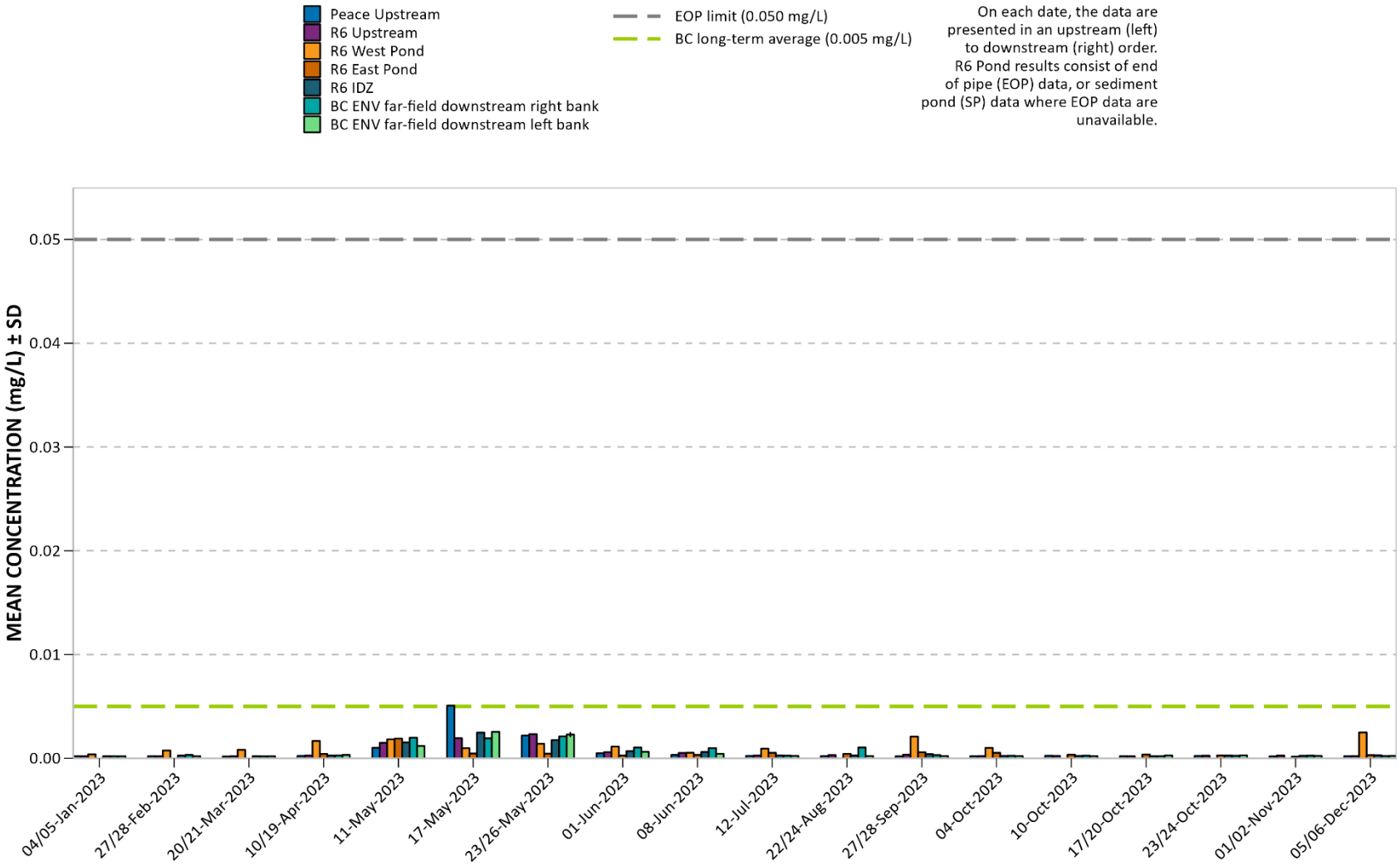


Figure 24. 2023 Peace River and RSEM R6 pond total barium (Ba).

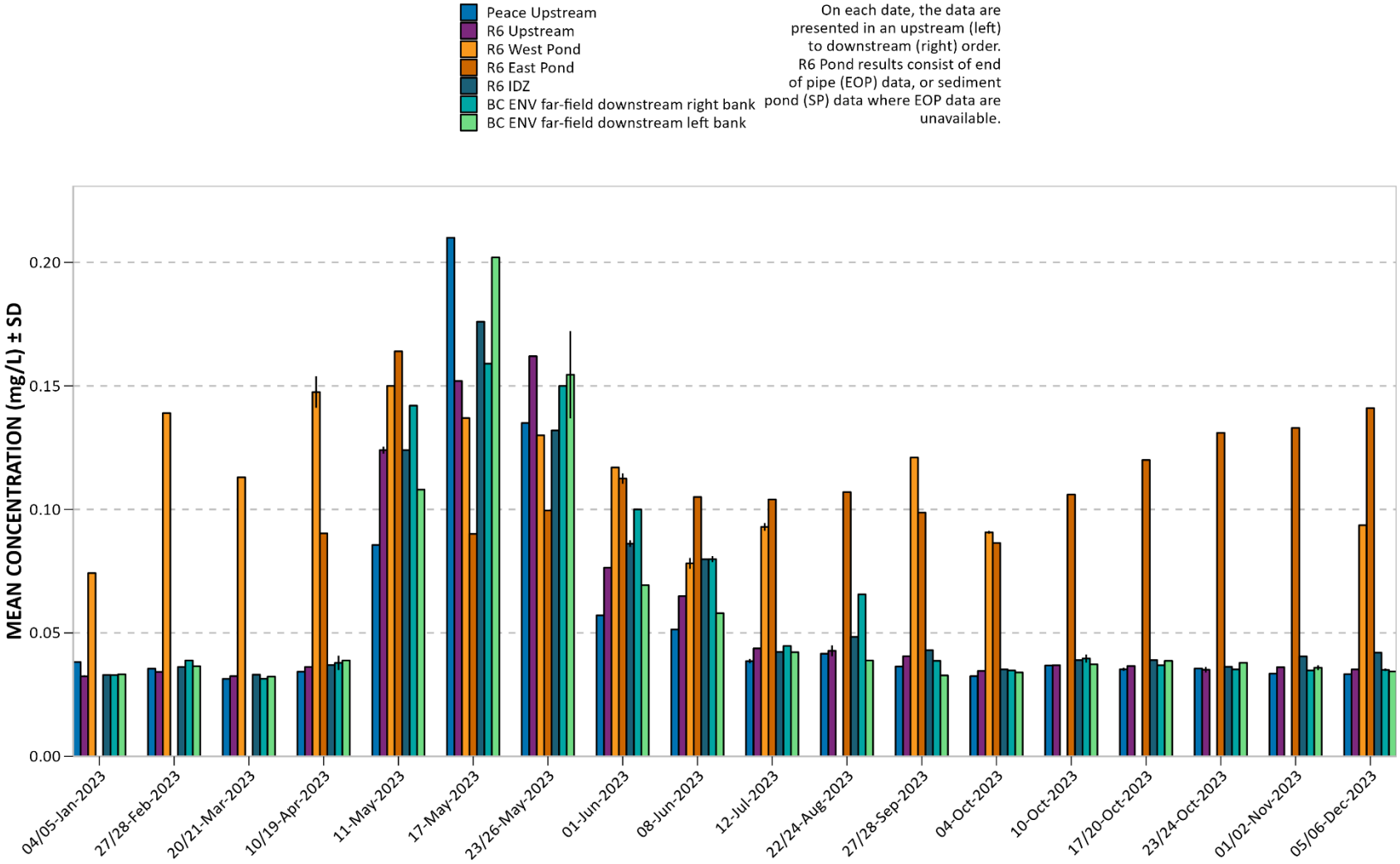


Figure 25. 2023 Peace River and RSEM R6 pond total beryllium (Be).

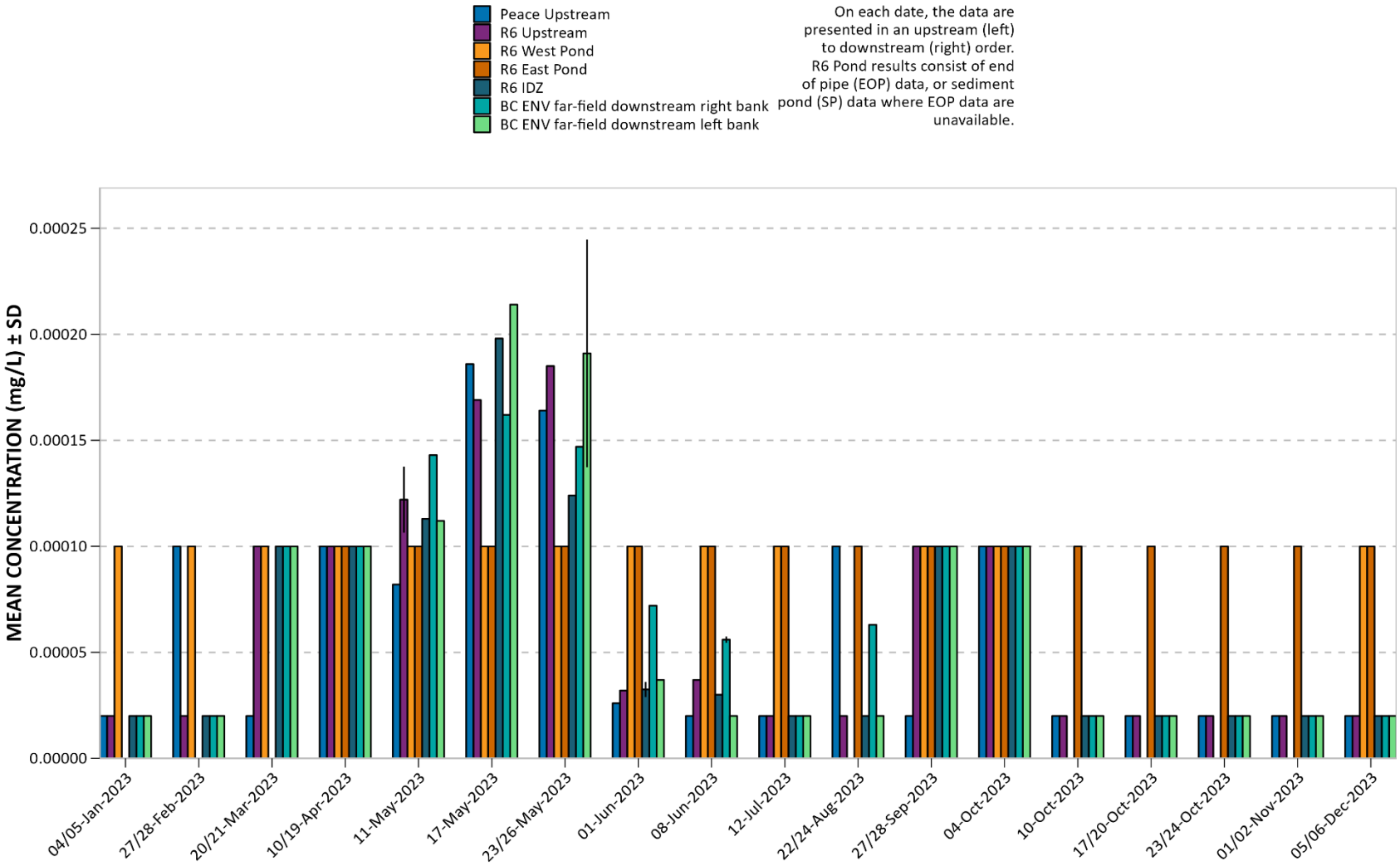


Figure 26. 2023 Peace River and RSEM R6 pond total bismuth (Bi).

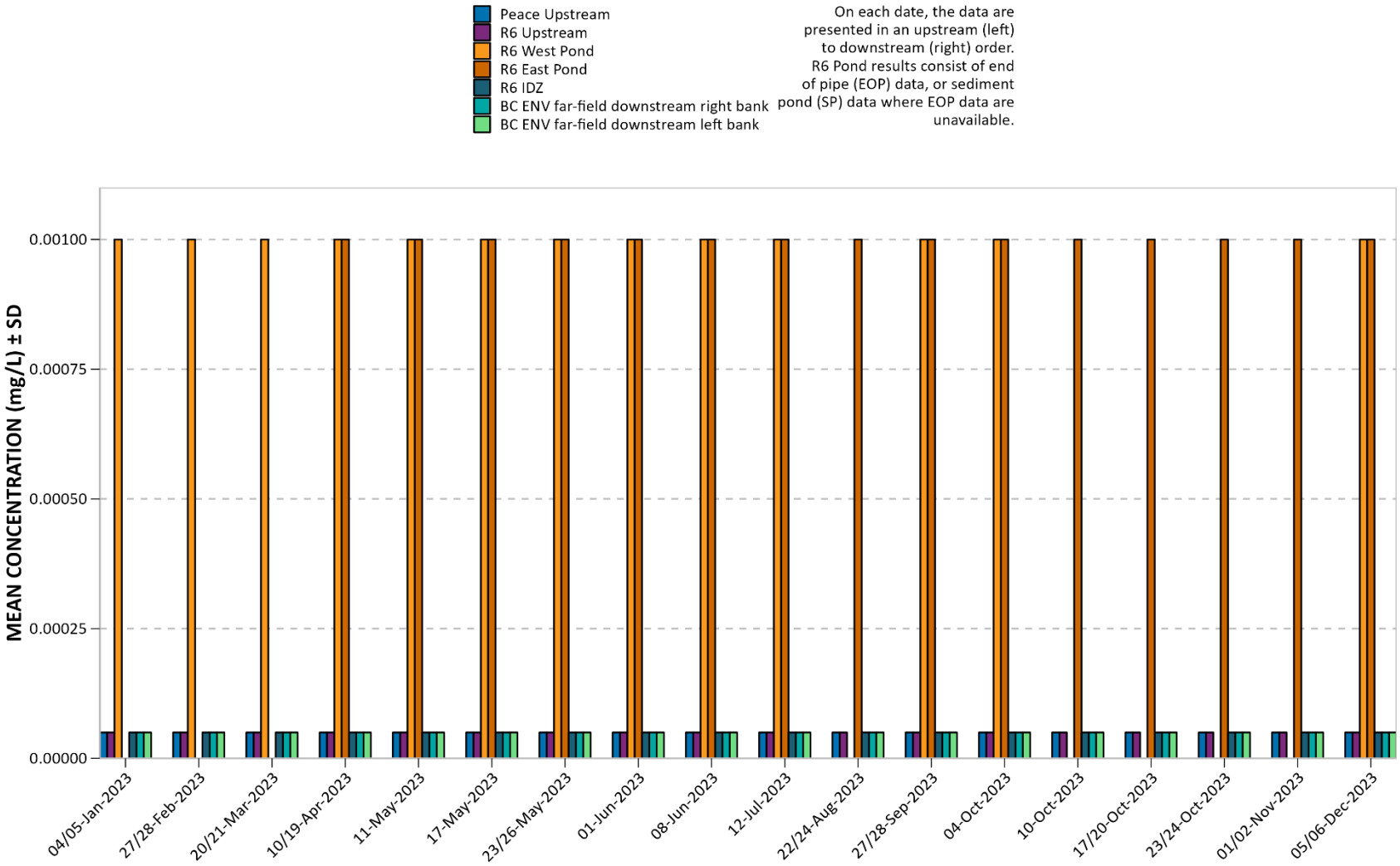


Figure 27. 2023 Peace River and RSEM R6 pond total boron (B).

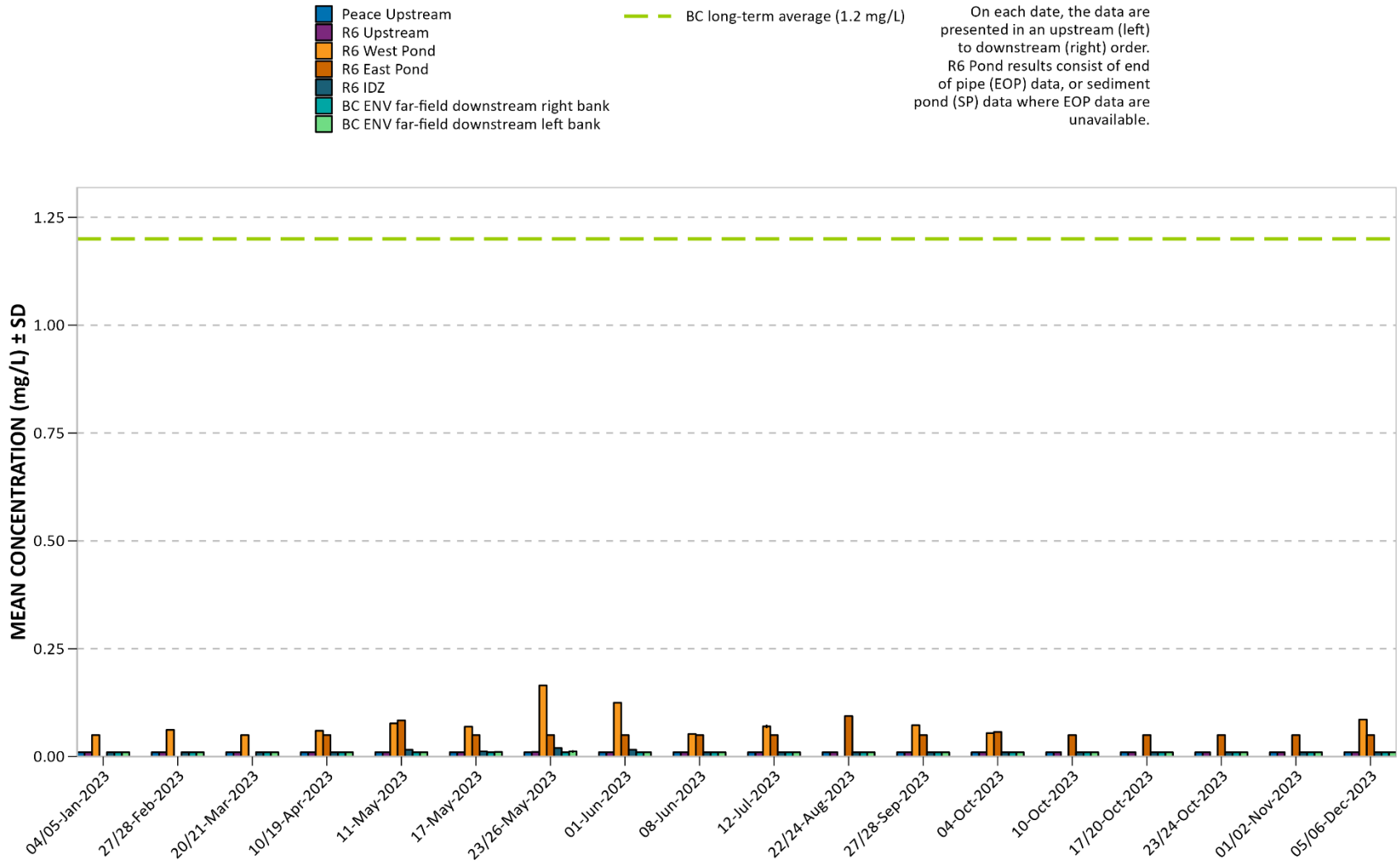


Figure 28. 2023 Peace River and RSEM R6 pond total cadmium (Cd).

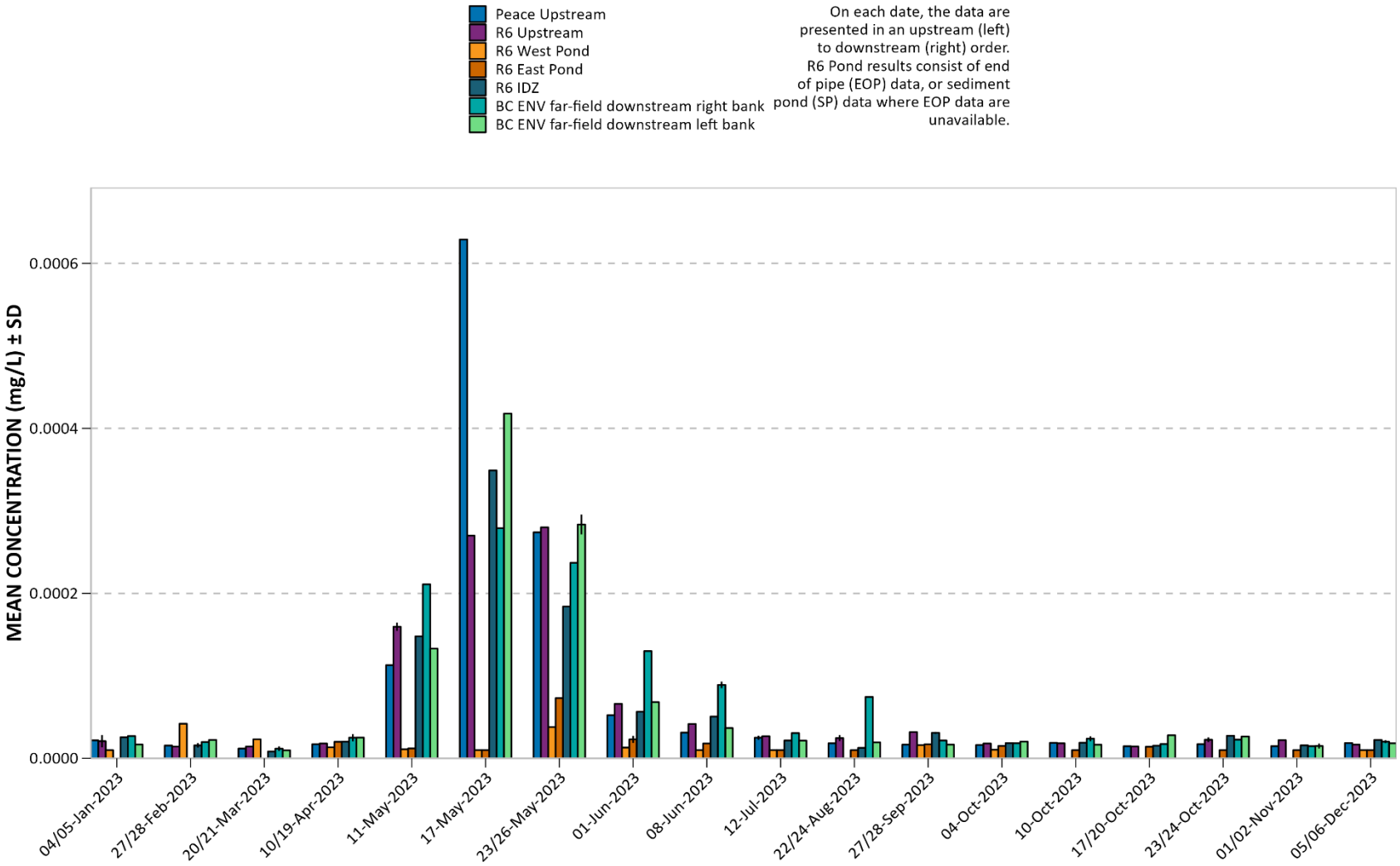


Figure 29. 2023 Peace River and RSEM R6 pond total calcium (Ca).

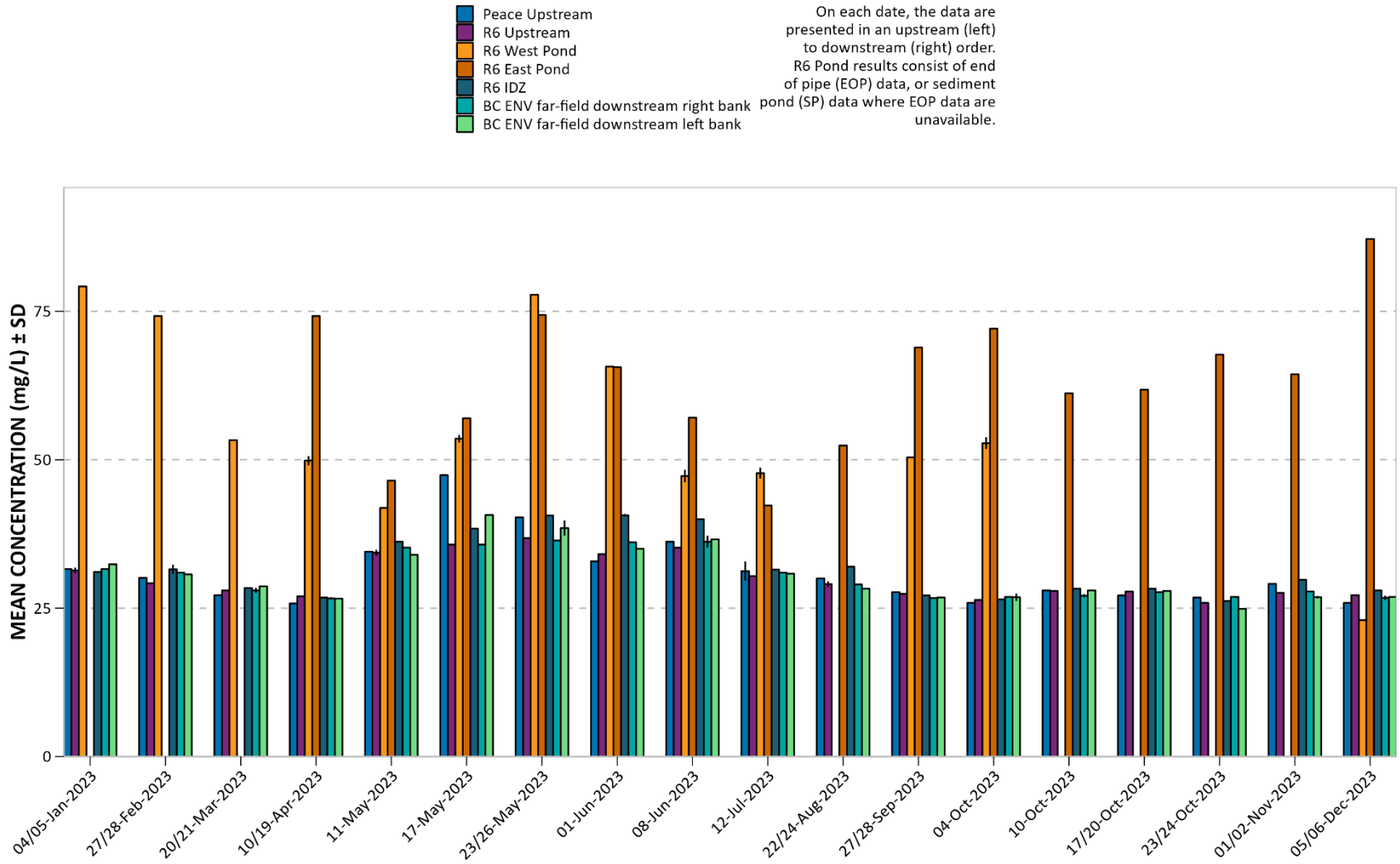


Figure 30. 2023 Peace River and RSEM R6 pond total chromium (Cr).

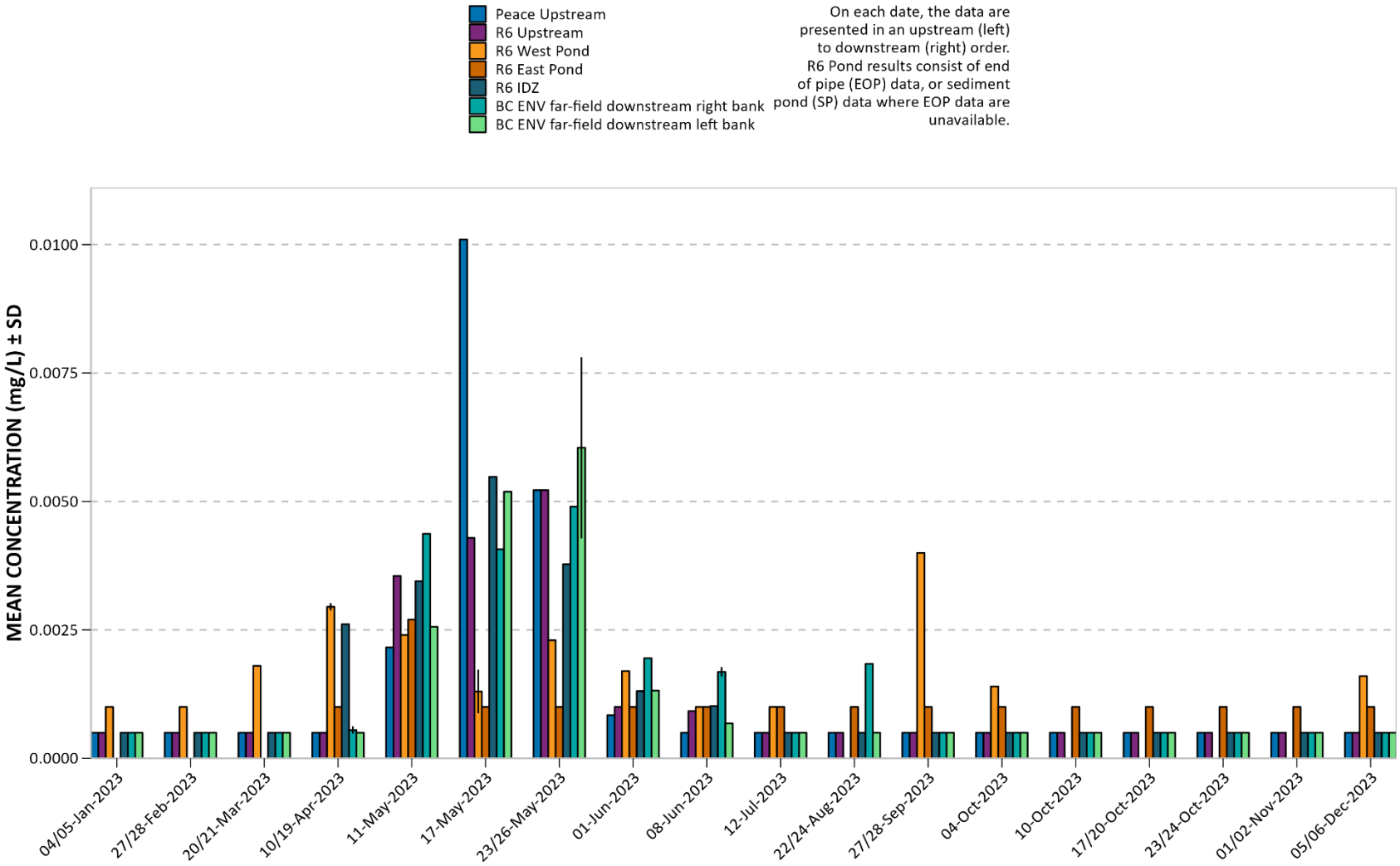


Figure 31. 2023 Peace River and RSEM R6 pond total cobalt (Co).

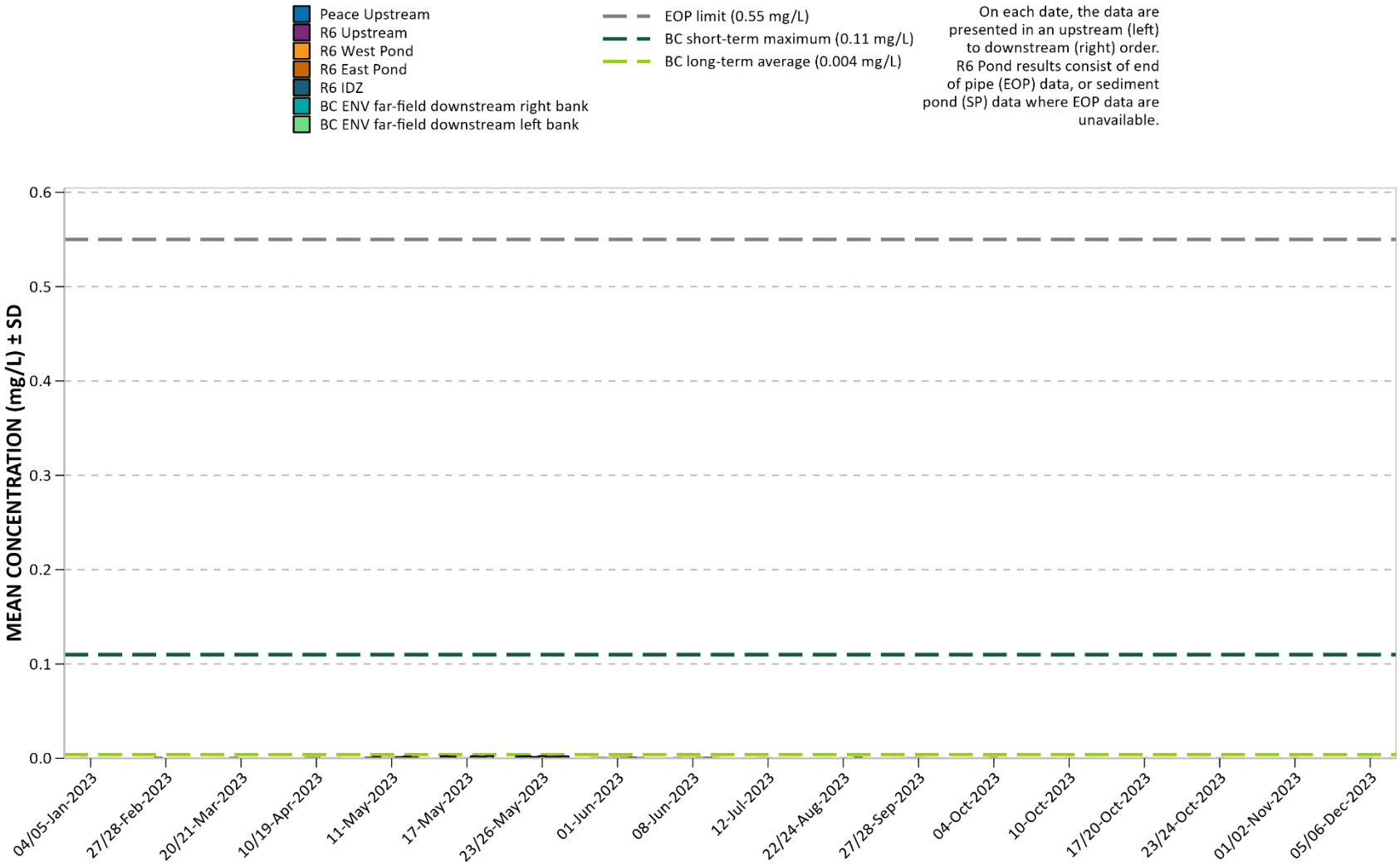


Figure 32. 2023 Peace River and RSEM R6 pond total copper (Cu).

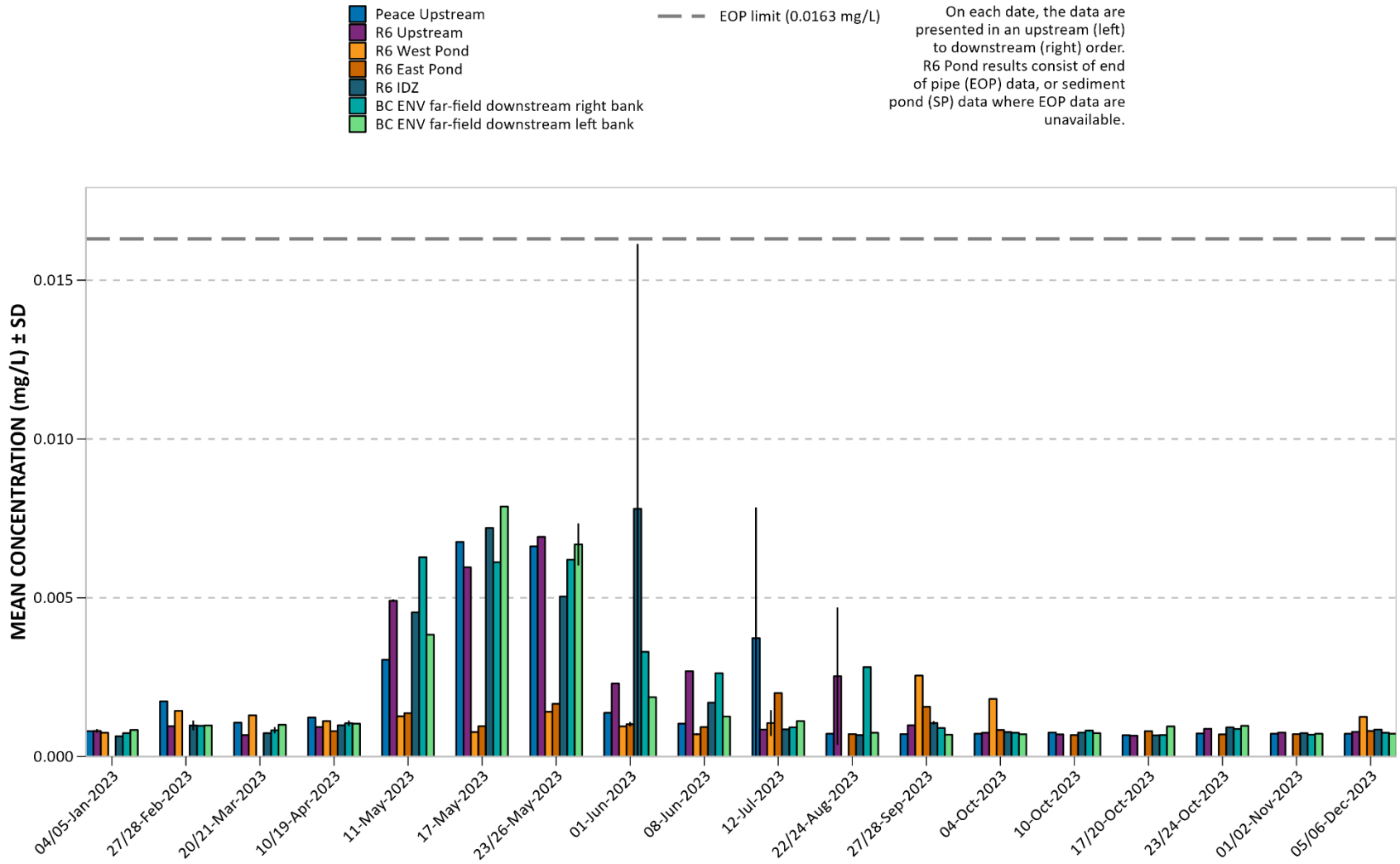


Figure 33. 2023 Peace River and RSEM R6 pond total iron (Fe).

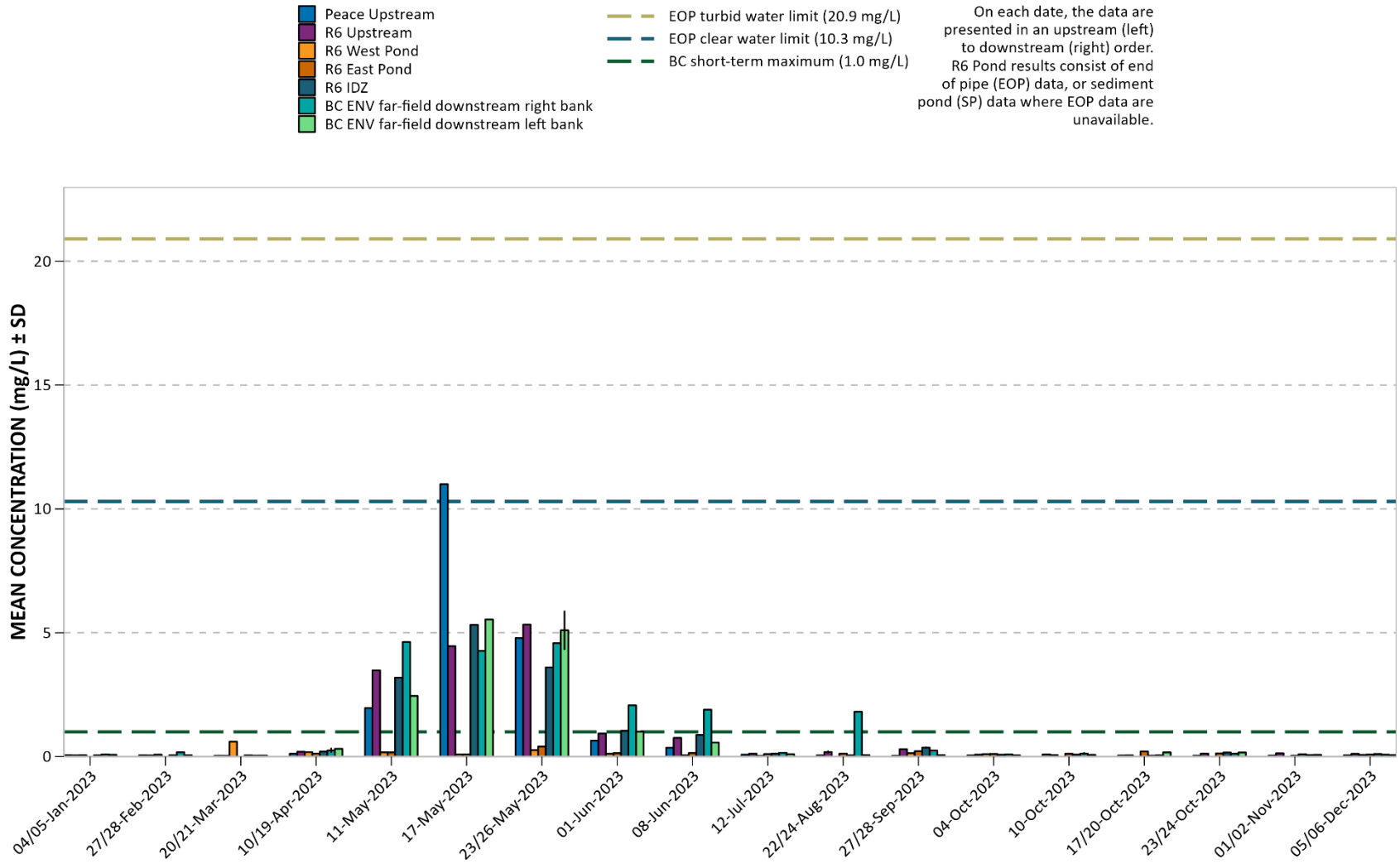
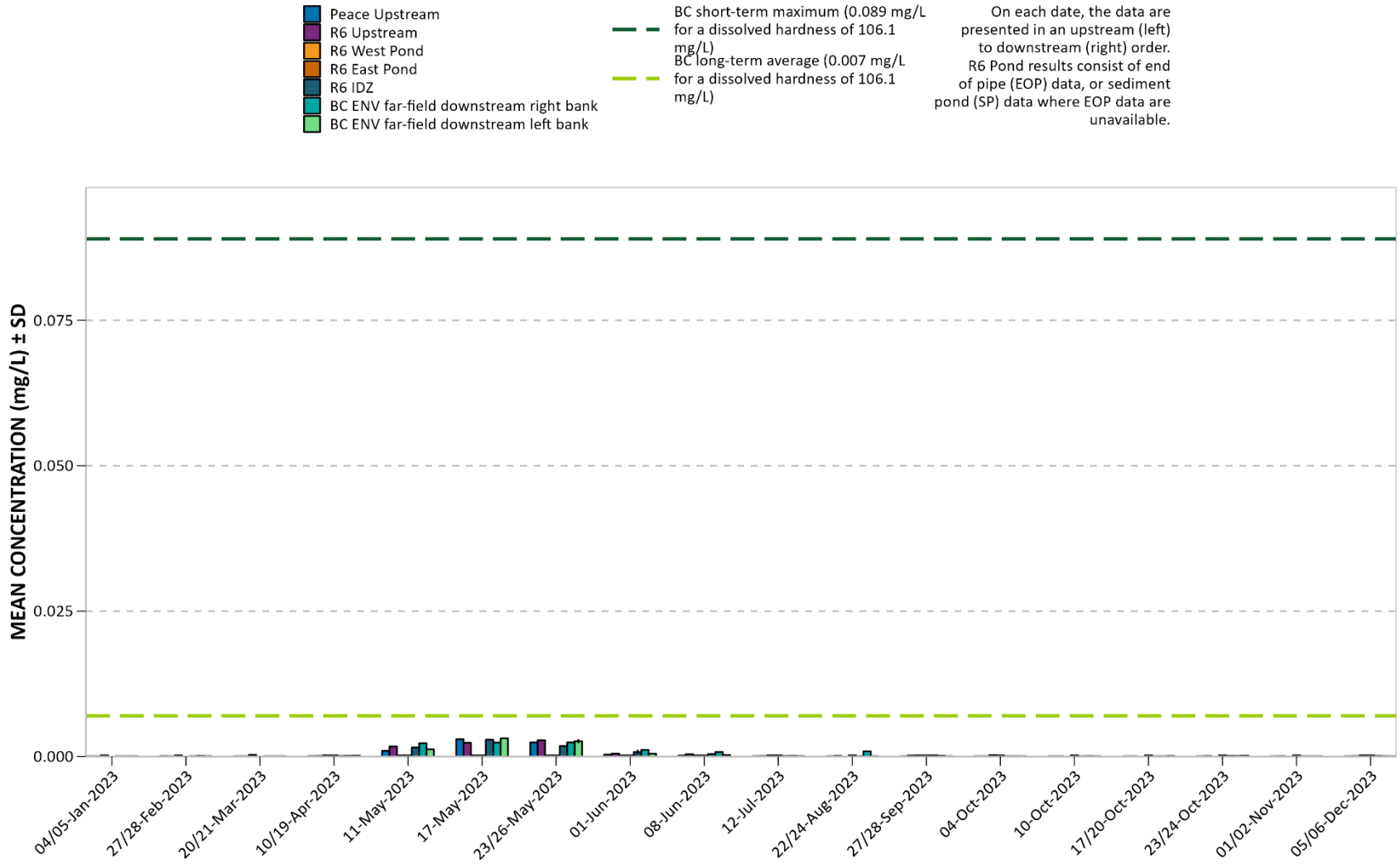


Figure 34. 2023 Peace River and RSEM R6 pond total lead (Pb).



Note: BC WQGs for total lead are dissolved hardness dependent. An average Peace River dissolved hardness of 106.1 mg/L (based on 26 samples collected between April 2007 – Jan. 2017; BC Hydro 2017b) was used in the plot to depict the maximum and 30-day guidelines for ease of interpretation. Sample specific dissolved hardness was used to screen individual sample results against guidelines in the data tables (Appendix A).

Figure 35. 2023 Peace River and RSEM R6 pond total lithium (Li).

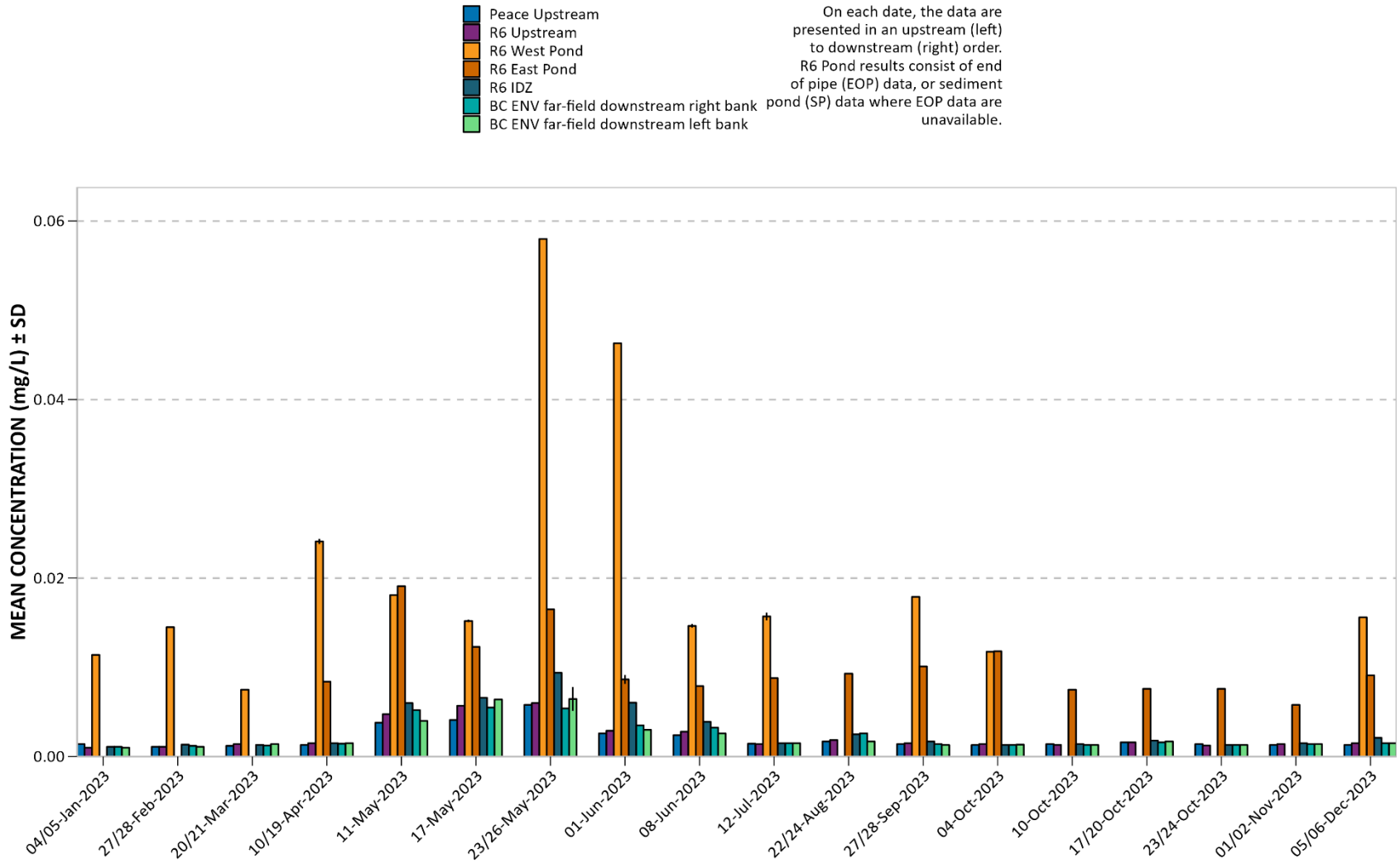


Figure 36. 2023 Peace River and RSEM R6 pond total magnesium (Mg).

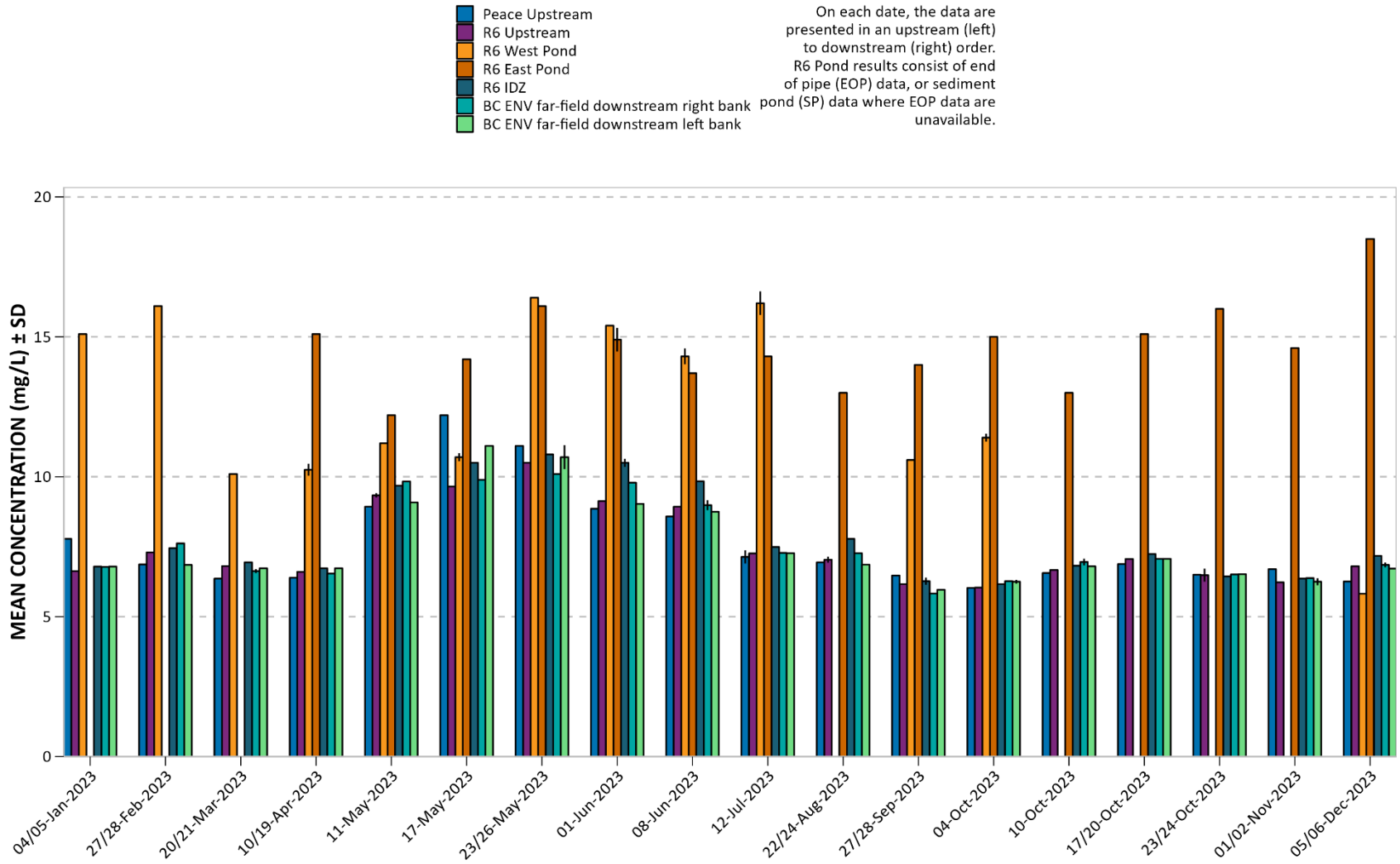
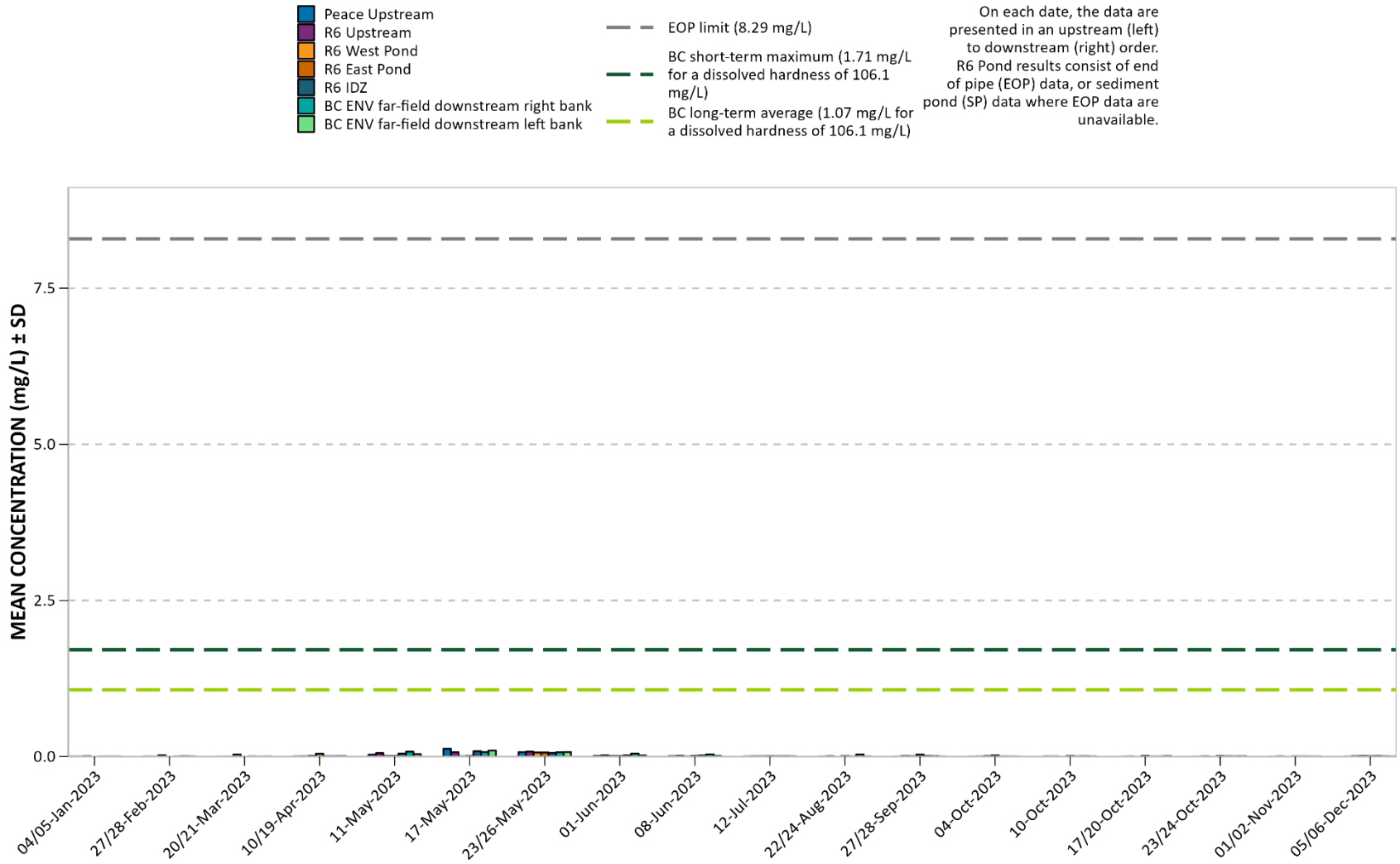


Figure 37. 2023 Peace River and RSEM R6 pond total manganese (Mn).



Note: BC WQGs for total manganese are dissolved hardness dependent. An average Peace River dissolved hardness of 106.1 mg/L (based on 26 samples collected between April 2007 – Jan. 2017; BC Hydro 2017b) was used in the plot to depict the maximum and 30-day guidelines for ease of interpretation. Sample specific dissolved hardness was used to screen individual sample results against guidelines in the data tables (Appendix A).

Figure 38. 2023 Peace River and RSEM R6 pond total mercury (Hg).

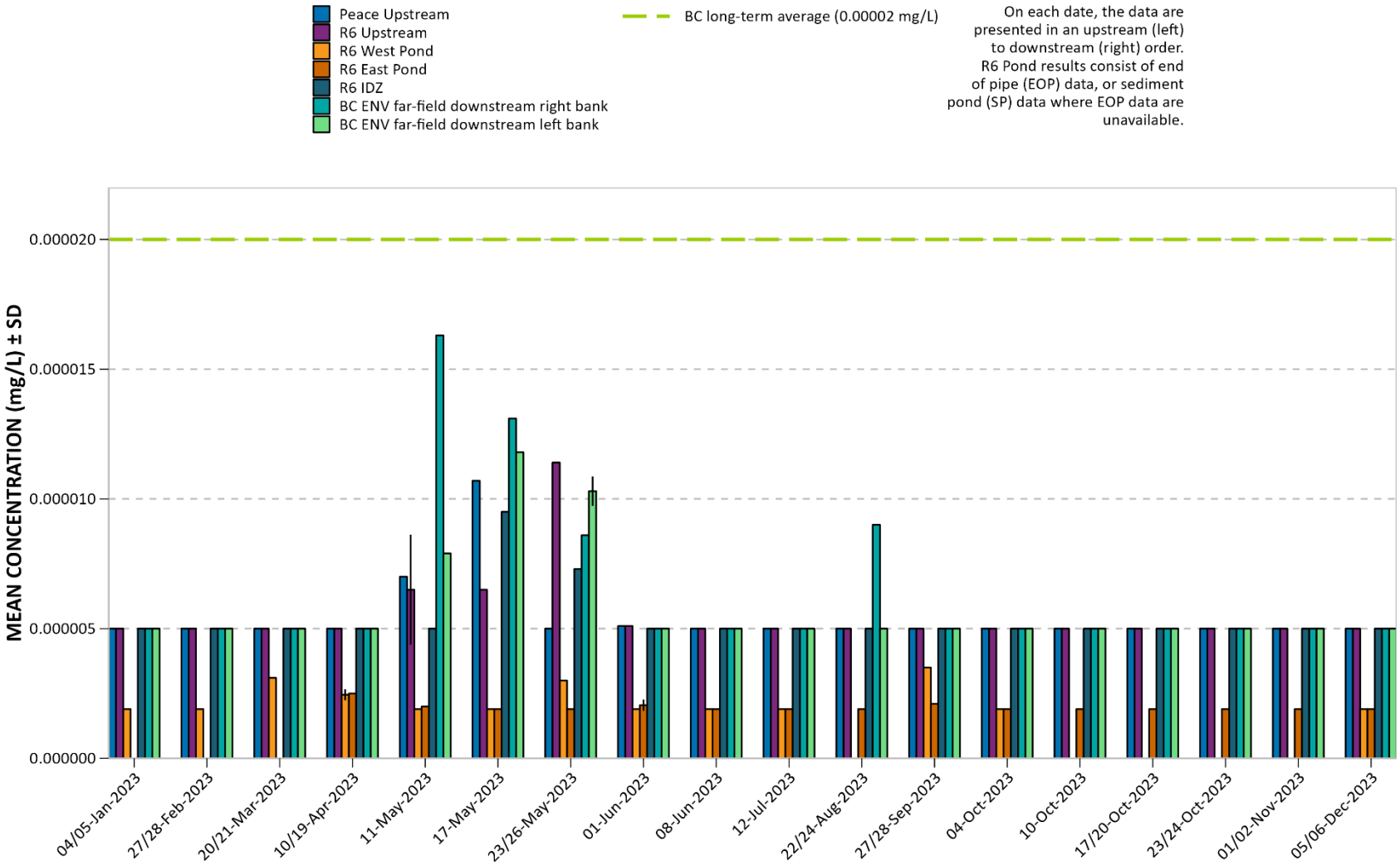


Figure 39. 2023 Peace River and RSEM R6 pond total molybdenum (Mo). Note that sample results are very low compared to guidelines and as a result the data are not visible on the plot.

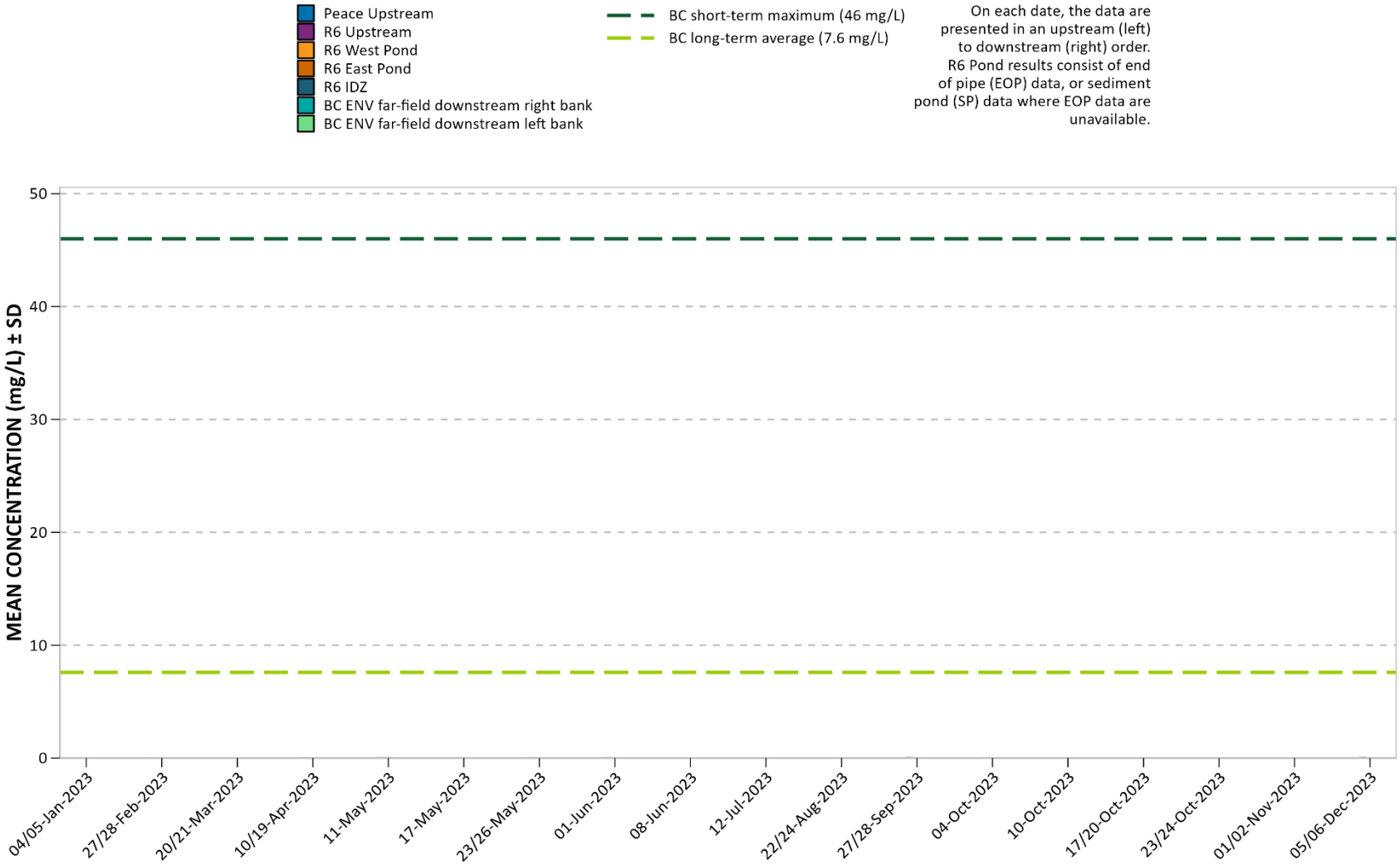


Figure 40. 2023 Peace River and RSEM R6 pond total nickel (Ni).

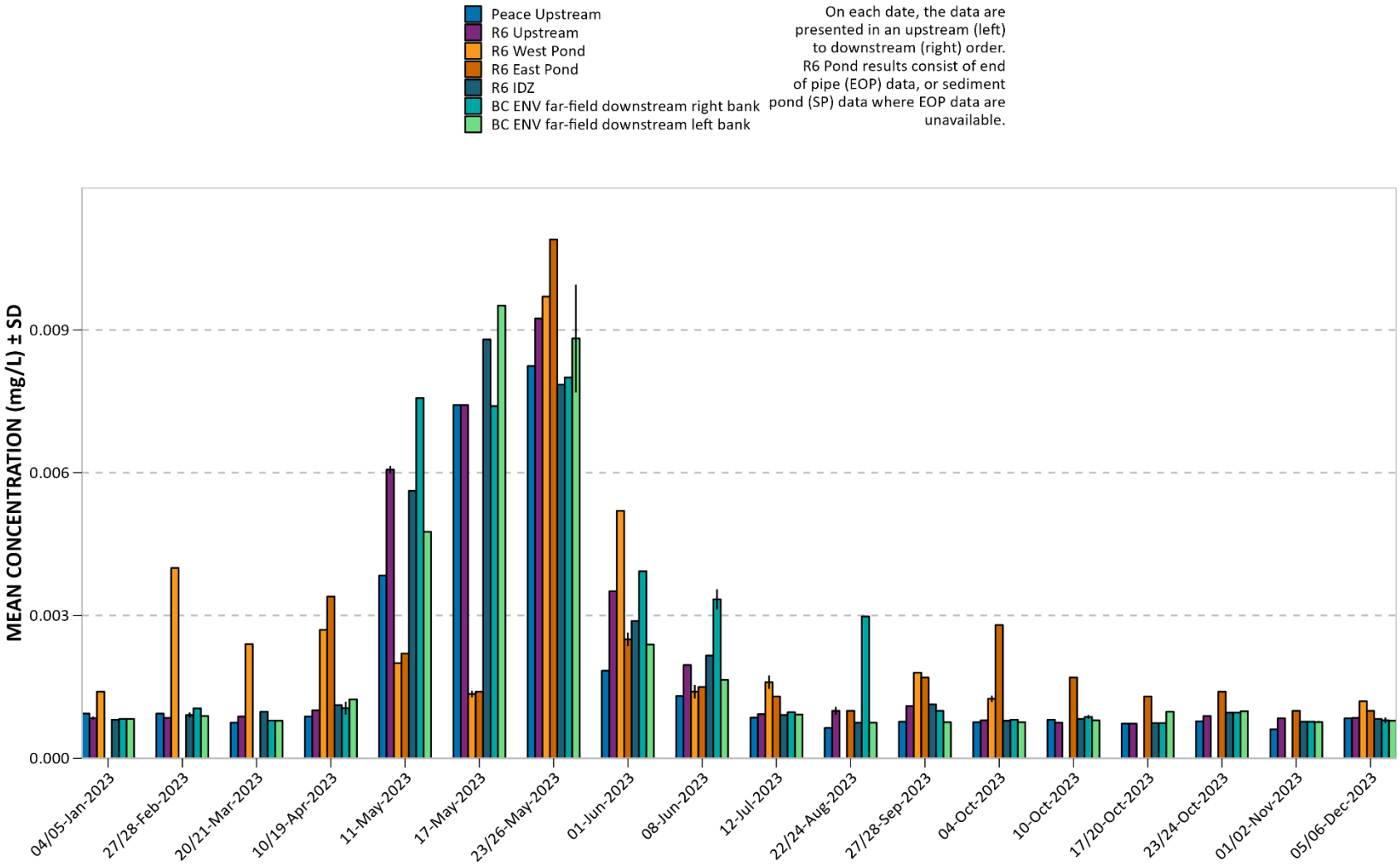


Figure 41. 2023 Peace River and RSEM R6 pond total potassium (K).

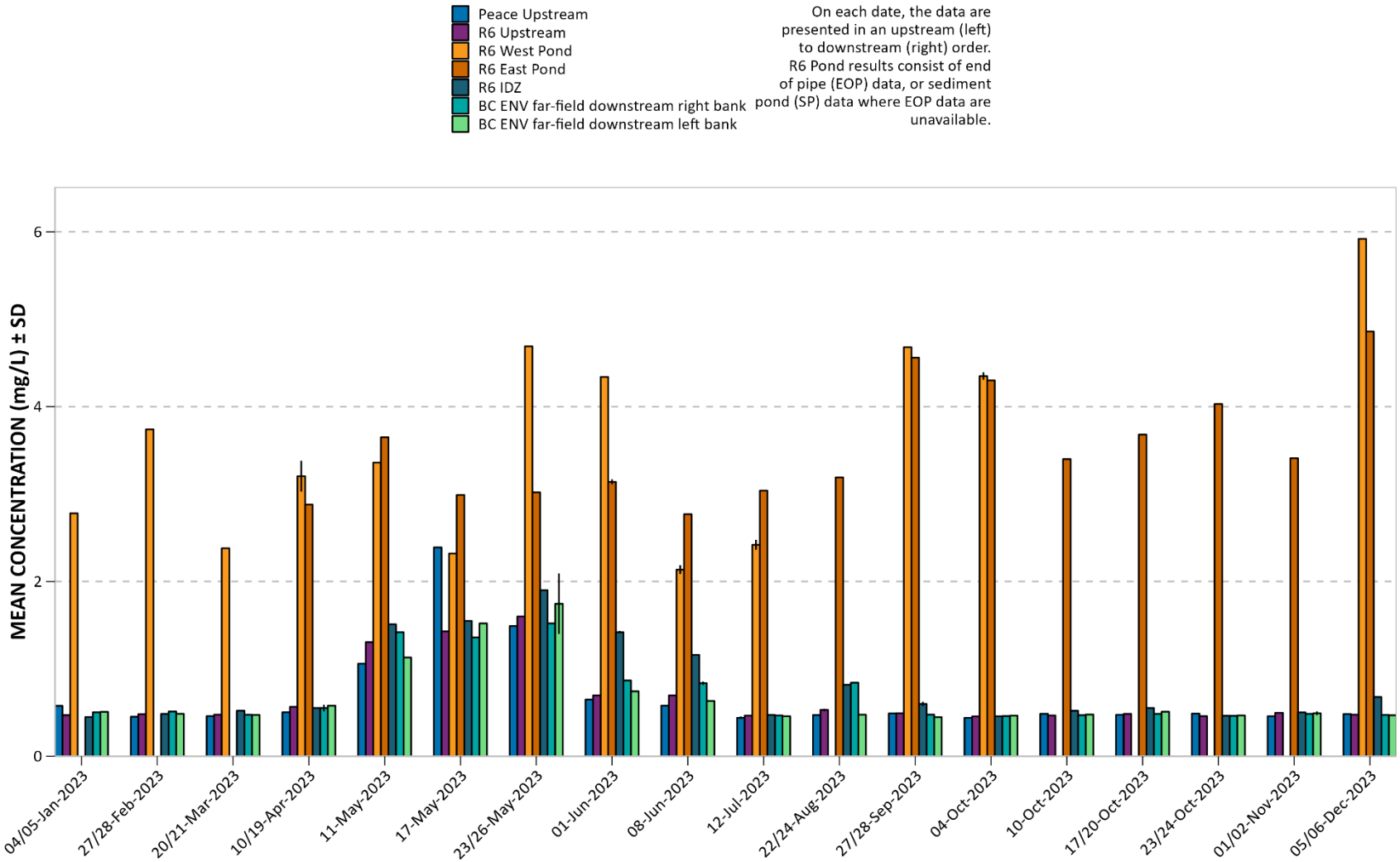


Figure 42. 2023 Peace River and RSEM R6 pond total selenium (Se).

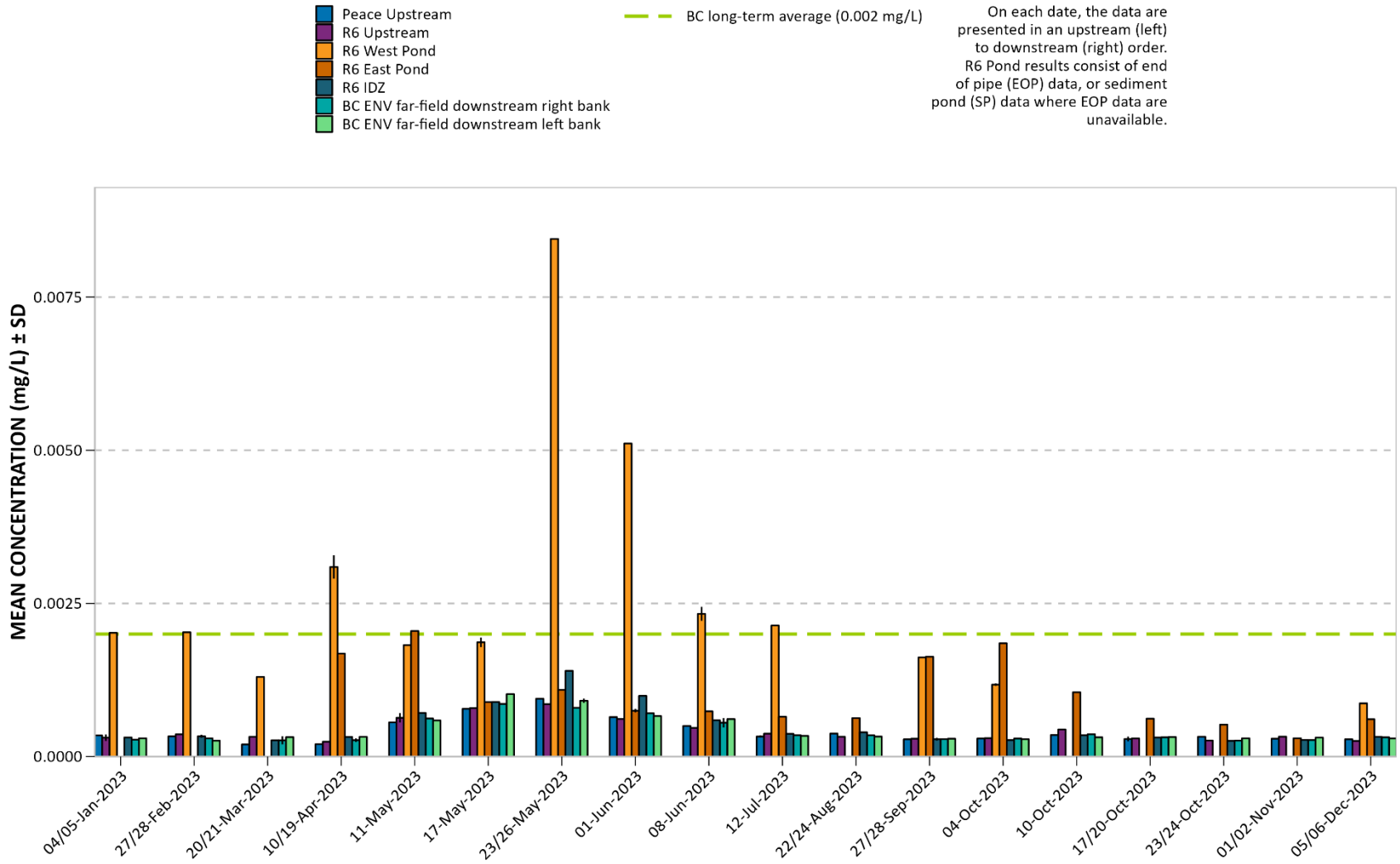


Figure 43. 2023 Peace River and RSEM R6 pond total silicon (Si).

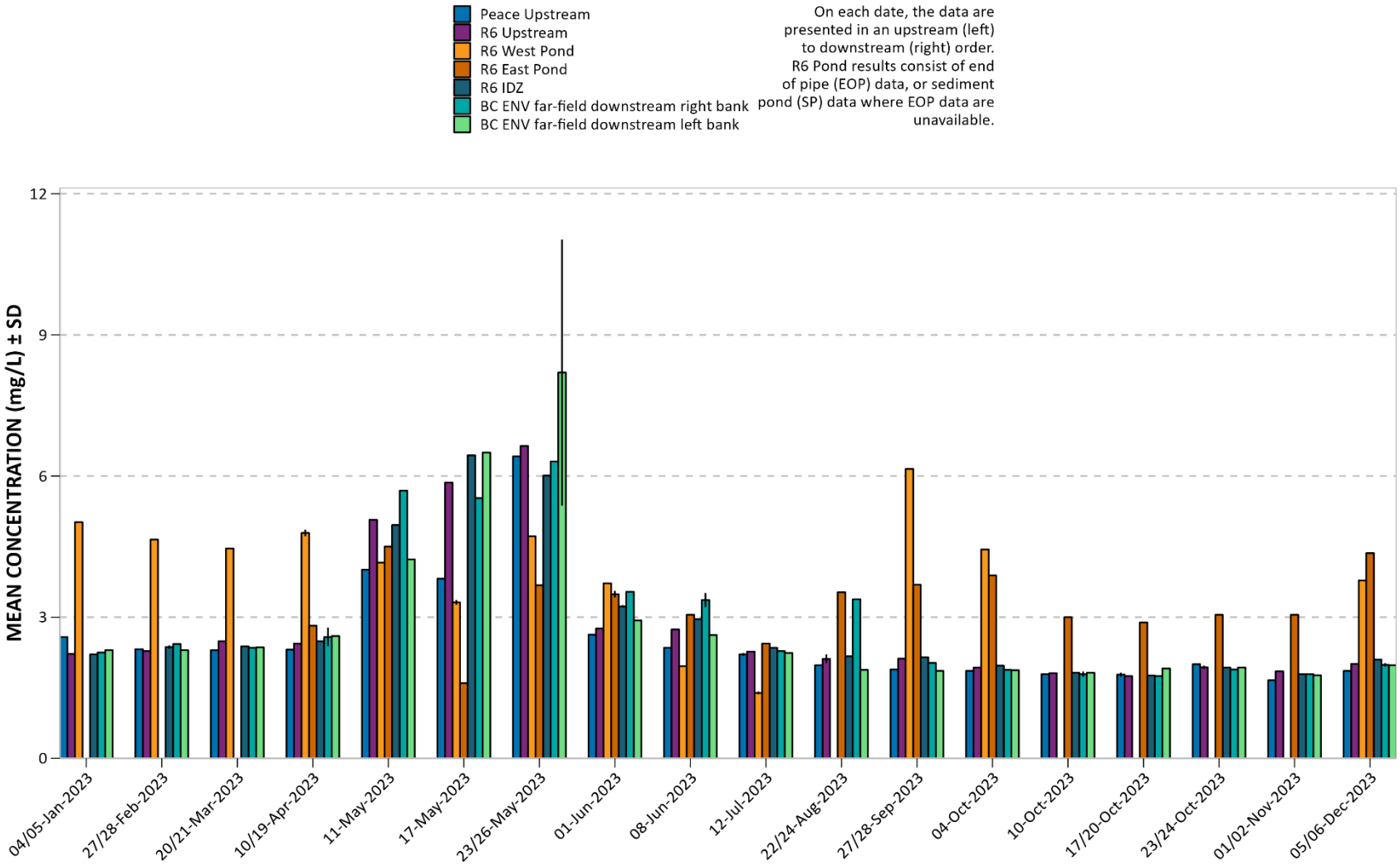
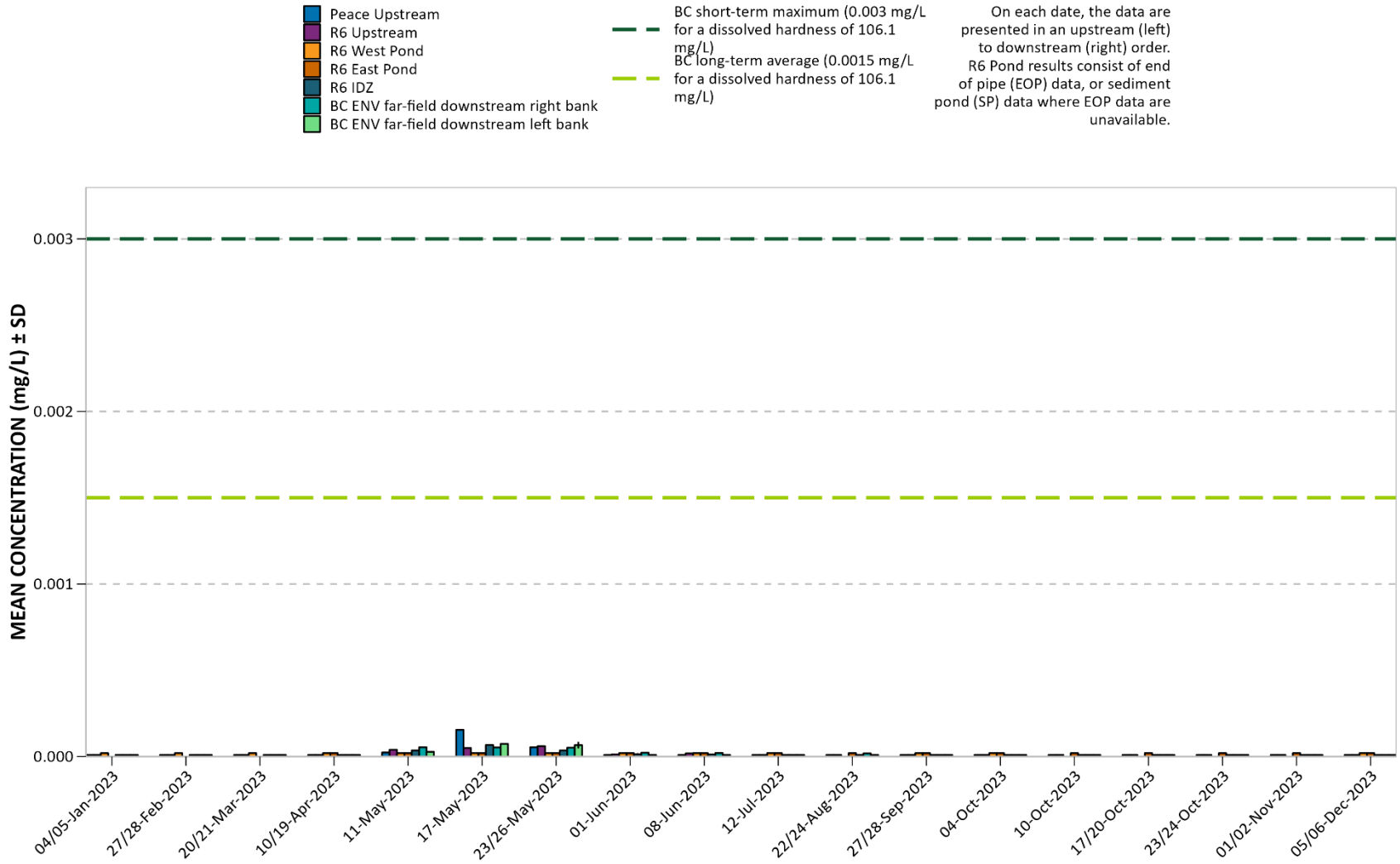


Figure 44. 2023 Peace River and RSEM R6 pond total silver (Ag).



Note: BC WQGs for total silver are dissolved hardness dependent. An average Peace River dissolved hardness of 106.1 mg/L (based on 26 samples collected between April 2007 – Jan. 2017; BC Hydro 2017b) was used in the plot to depict the maximum and 30-day guidelines for ease of interpretation. Sample specific dissolved hardness was used to screen individual sample results against guidelines in the data tables (Appendix A).

Figure 45. 2023 Peace River and RSEM R6 pond total sodium (Na).

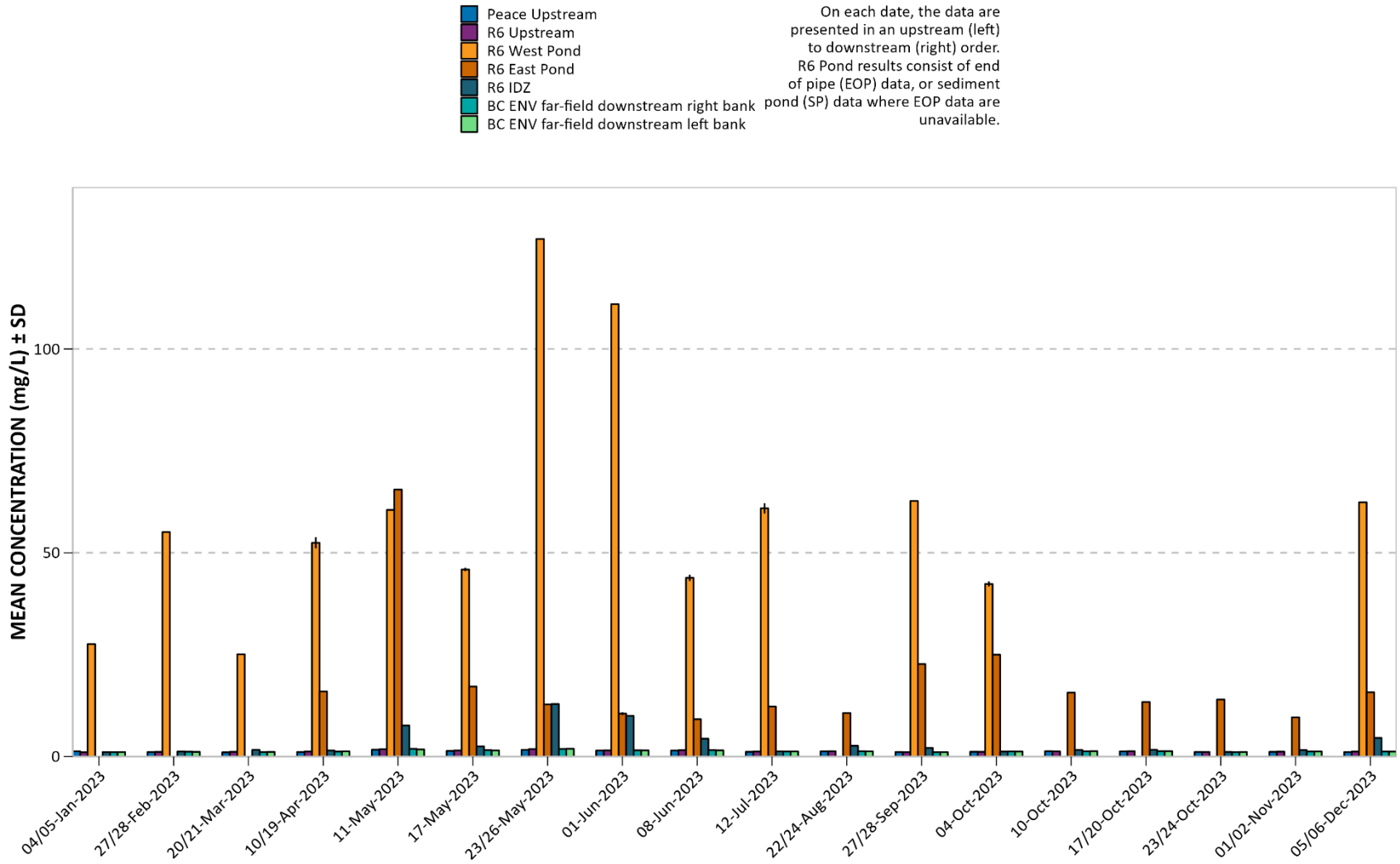


Figure 46. 2023 Peace River and RSEM R6 pond total strontium (Sr).

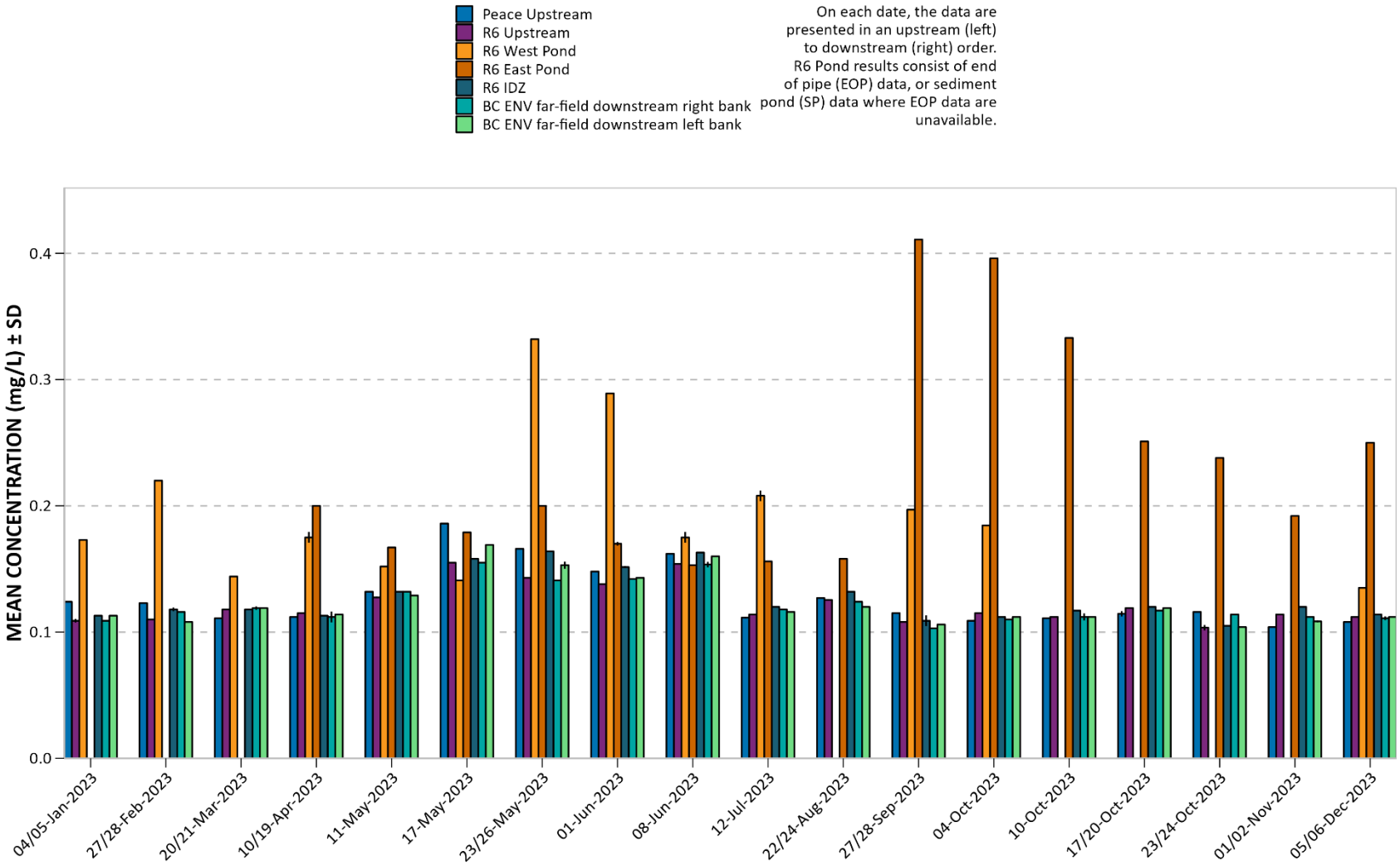


Figure 47. 2023 Peace River and RSEM R6 pond total sulfur (S).

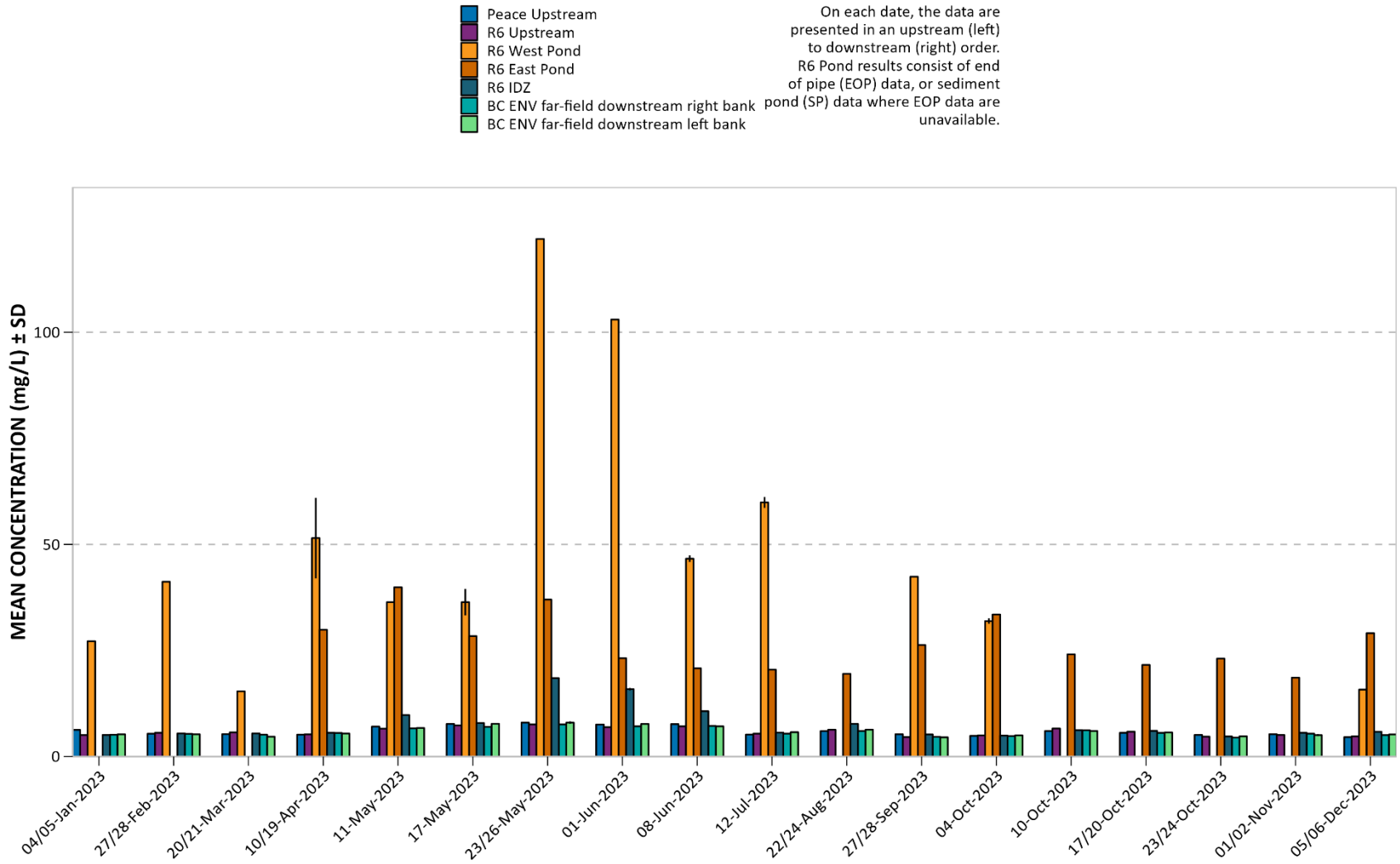


Figure 48. 2023 Peace River and RSEM R6 pond total thallium (Tl).

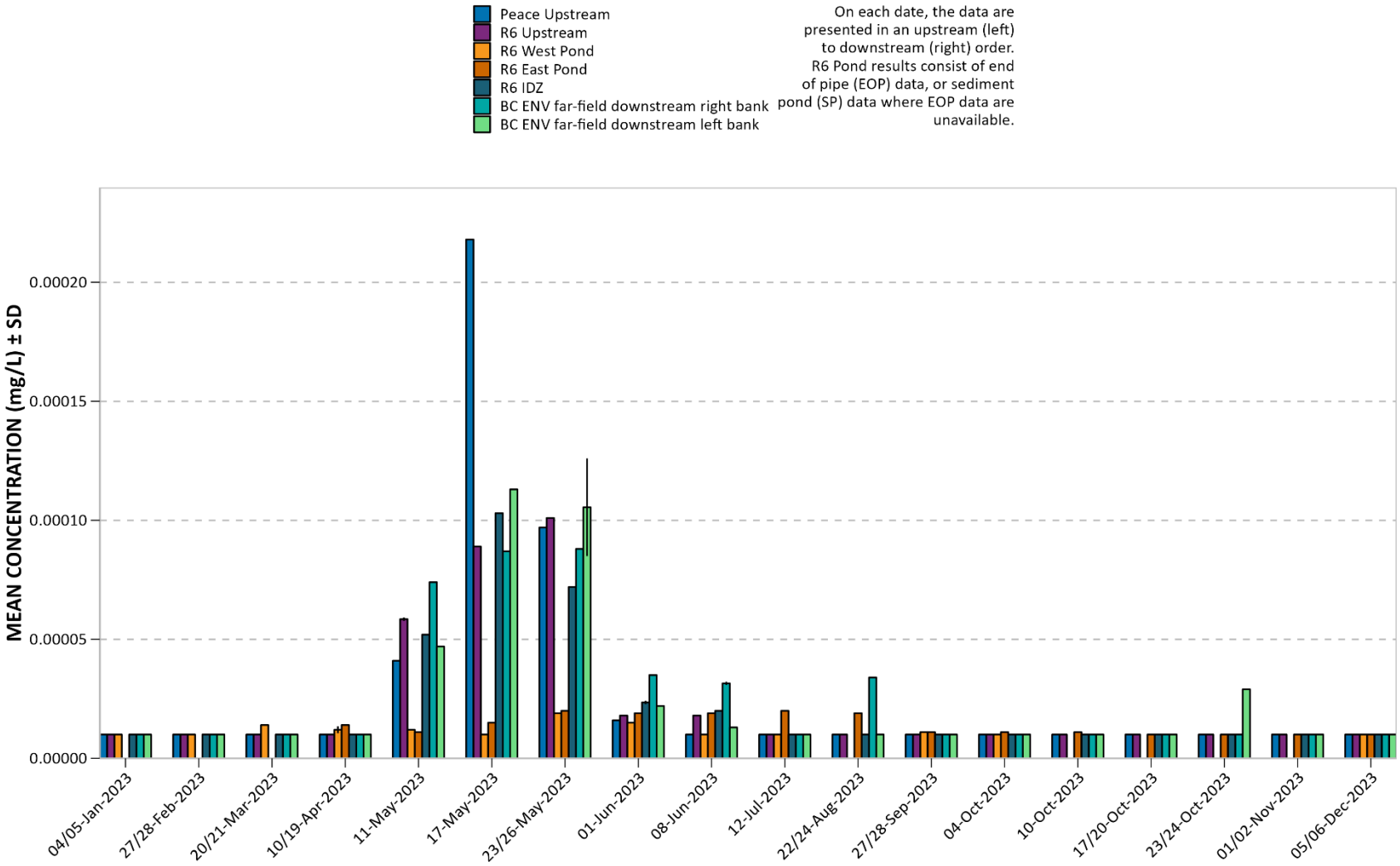


Figure 49. 2023 Peace River and RSEM R6 pond total tin (Sn).

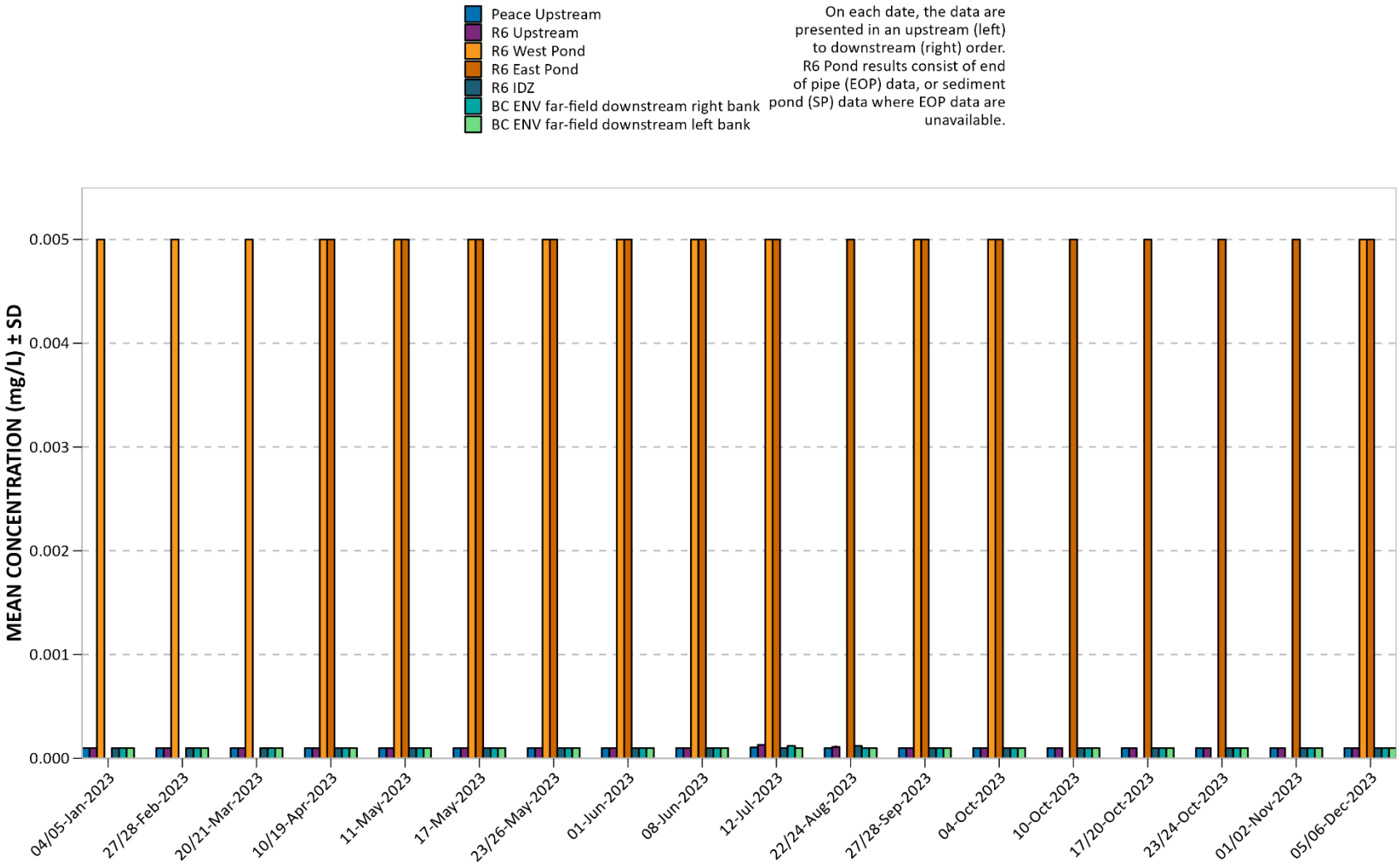


Figure 50. 2023 Peace River and RSEM R6 pond total titanium (Ti).

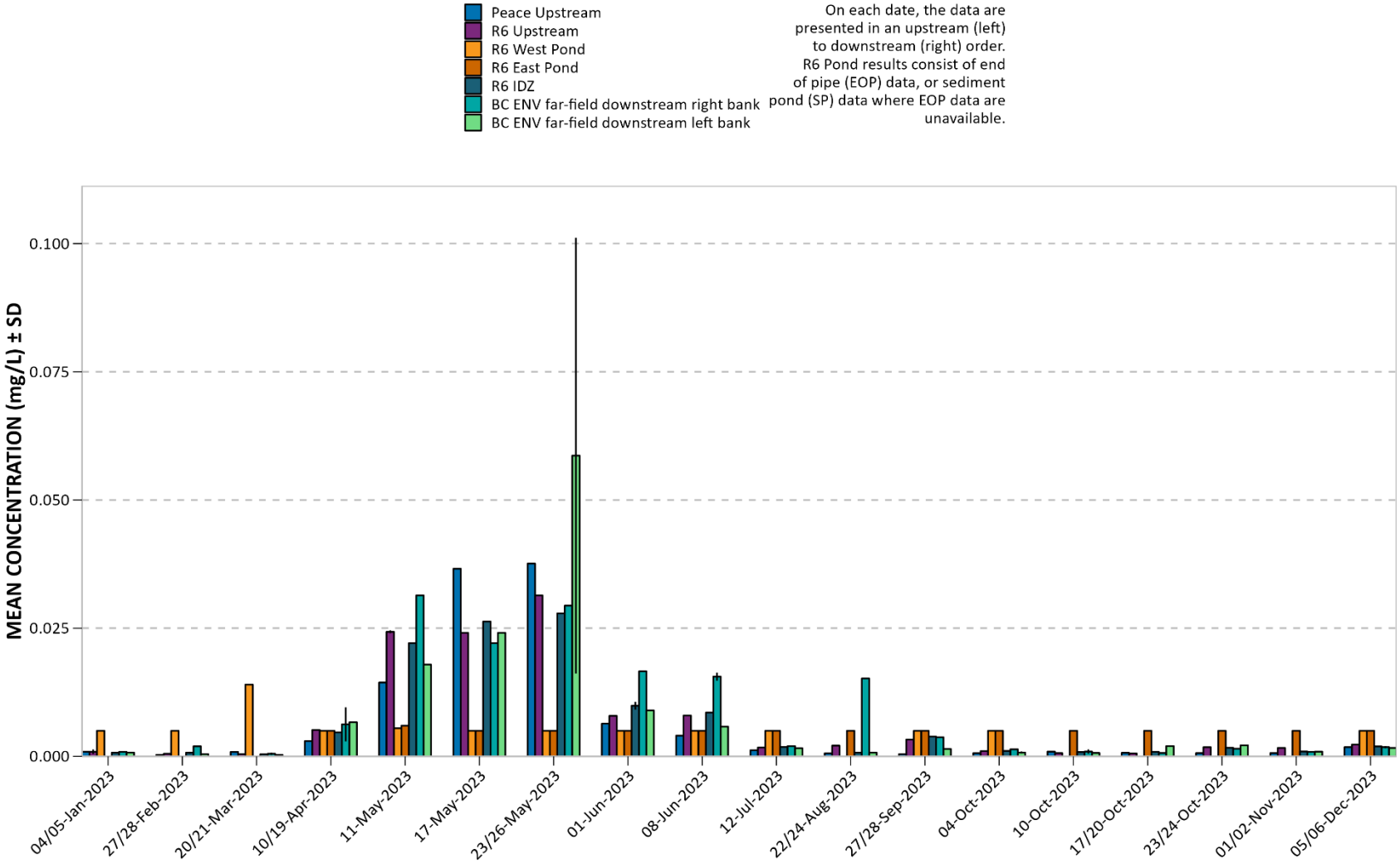


Figure 51. 2023 Peace River and RSEM R6 pond total uranium (U).

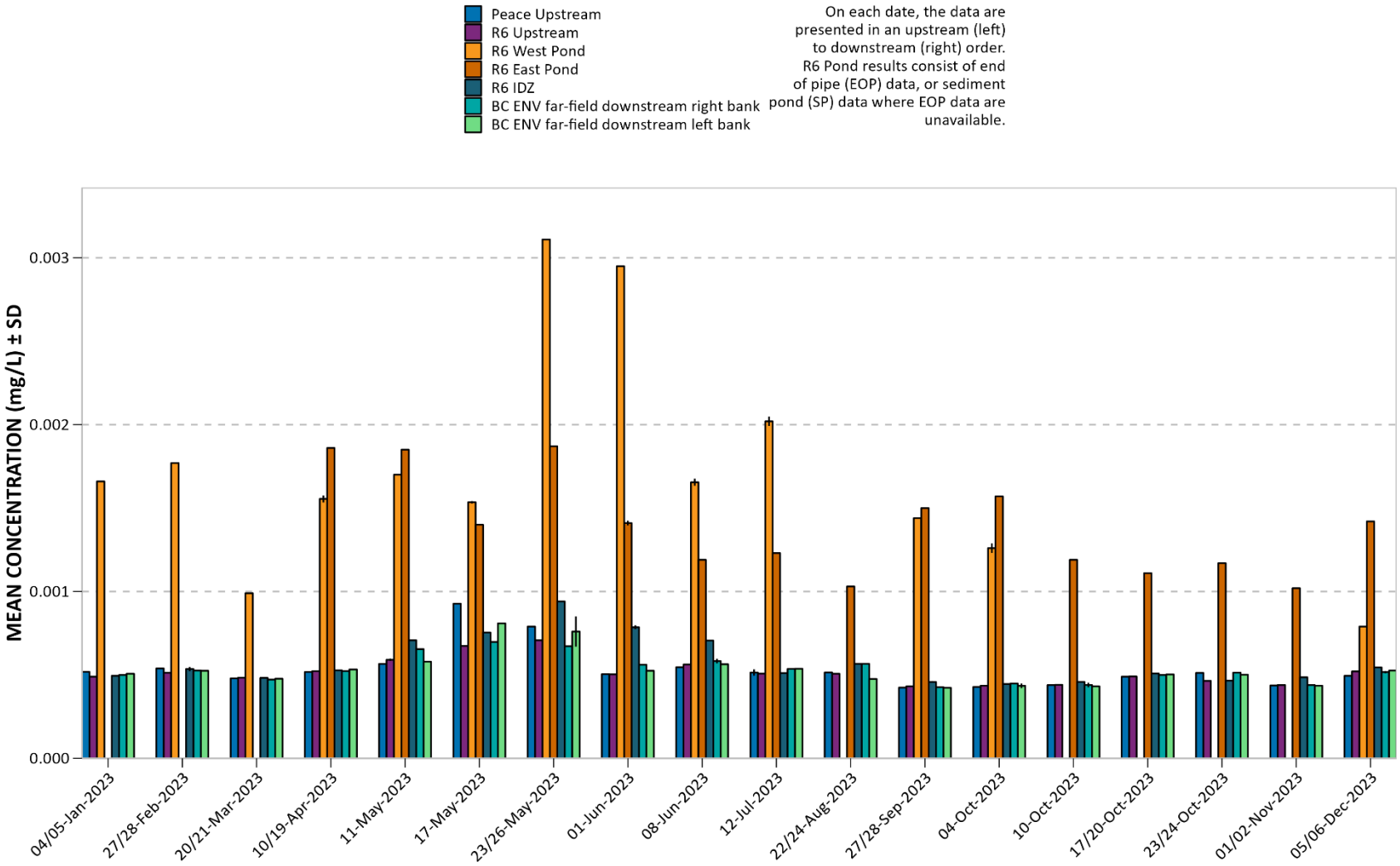


Figure 52. 2023 Peace River and RSEM R6 pond total vanadium (V).

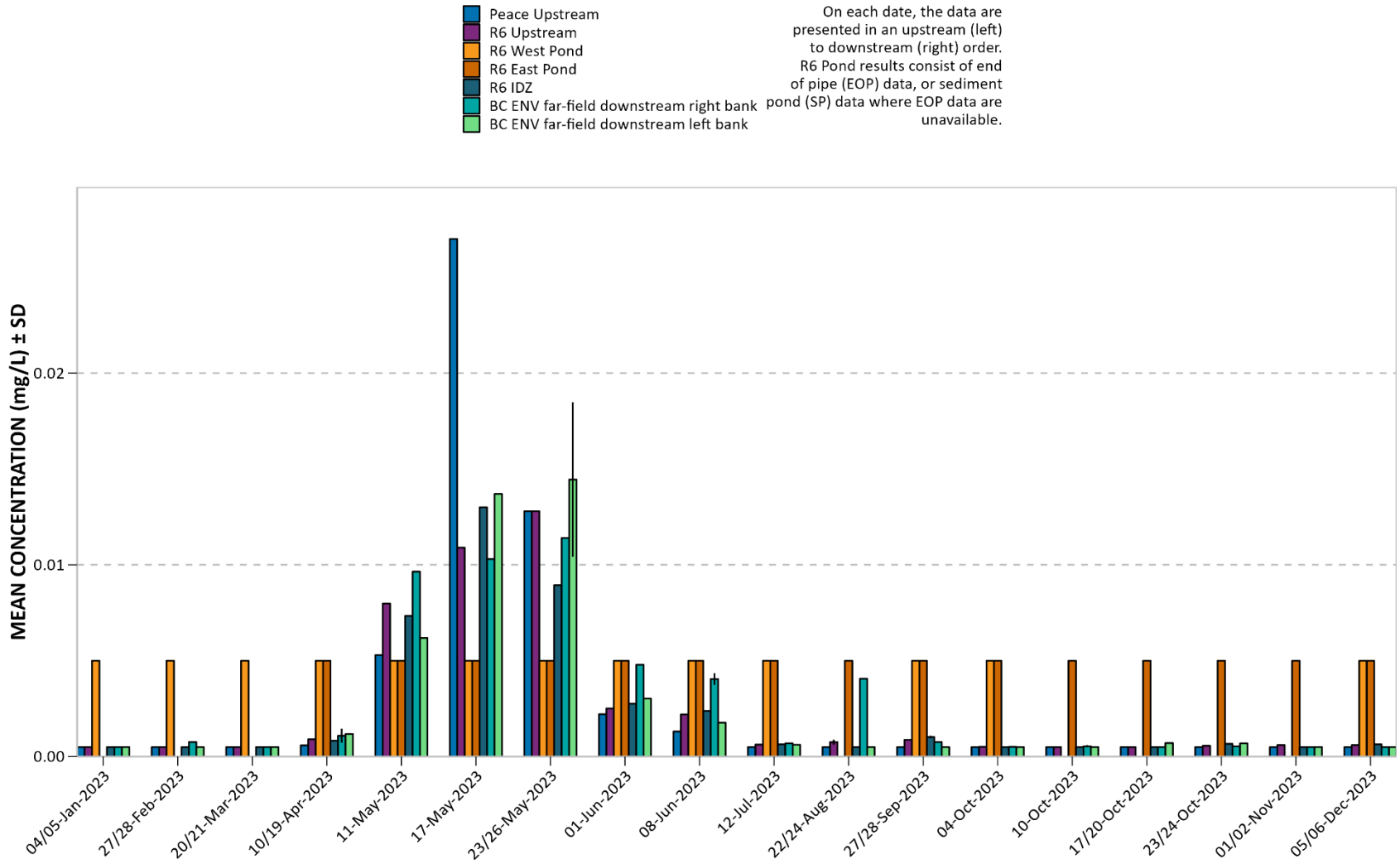


Figure 53. 2023 Peace River and RSEM R6 pond total zinc (Zn).

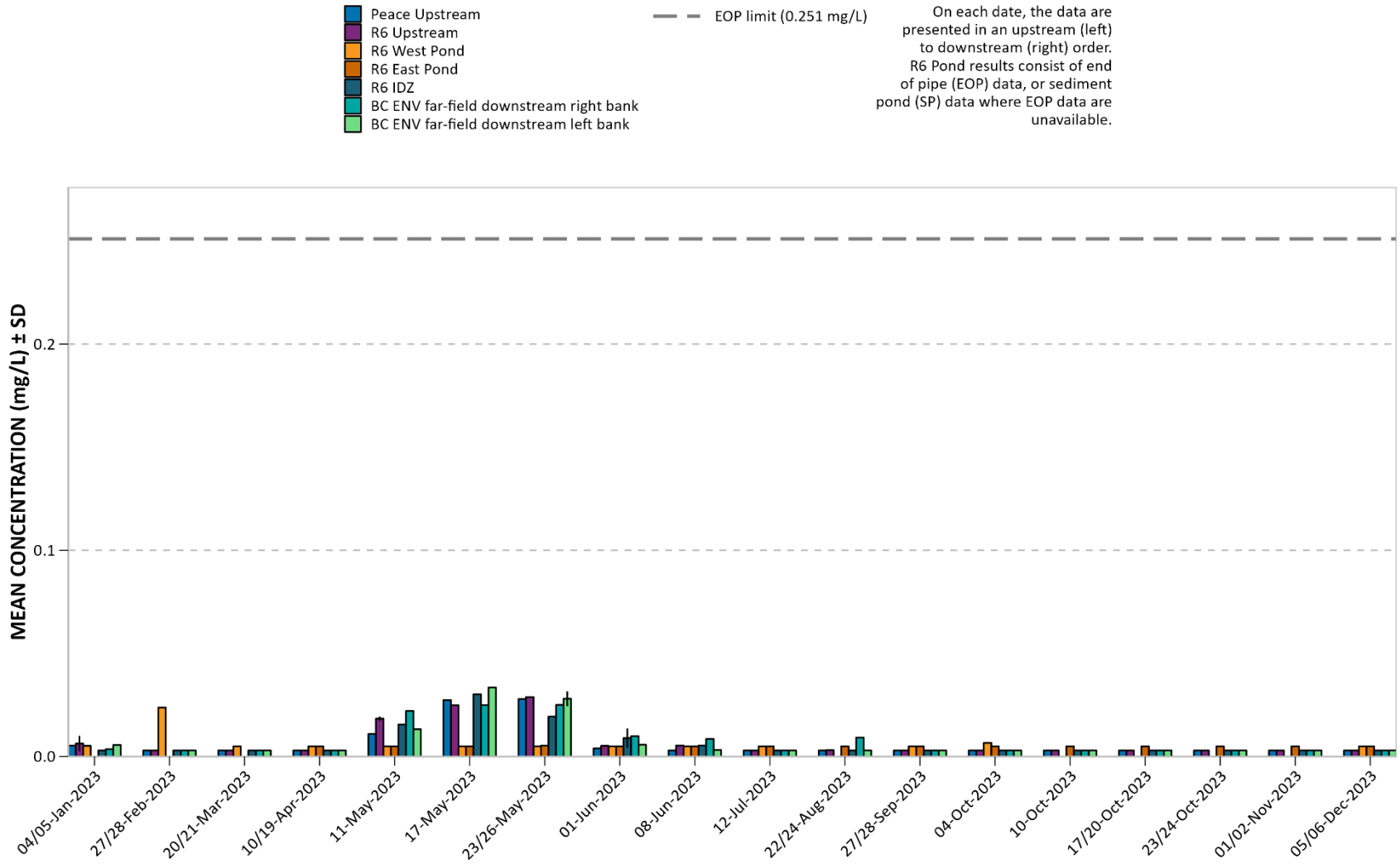


Figure 54. 2023 Peace River and RSEM R6 pond total zirconium (Zr).

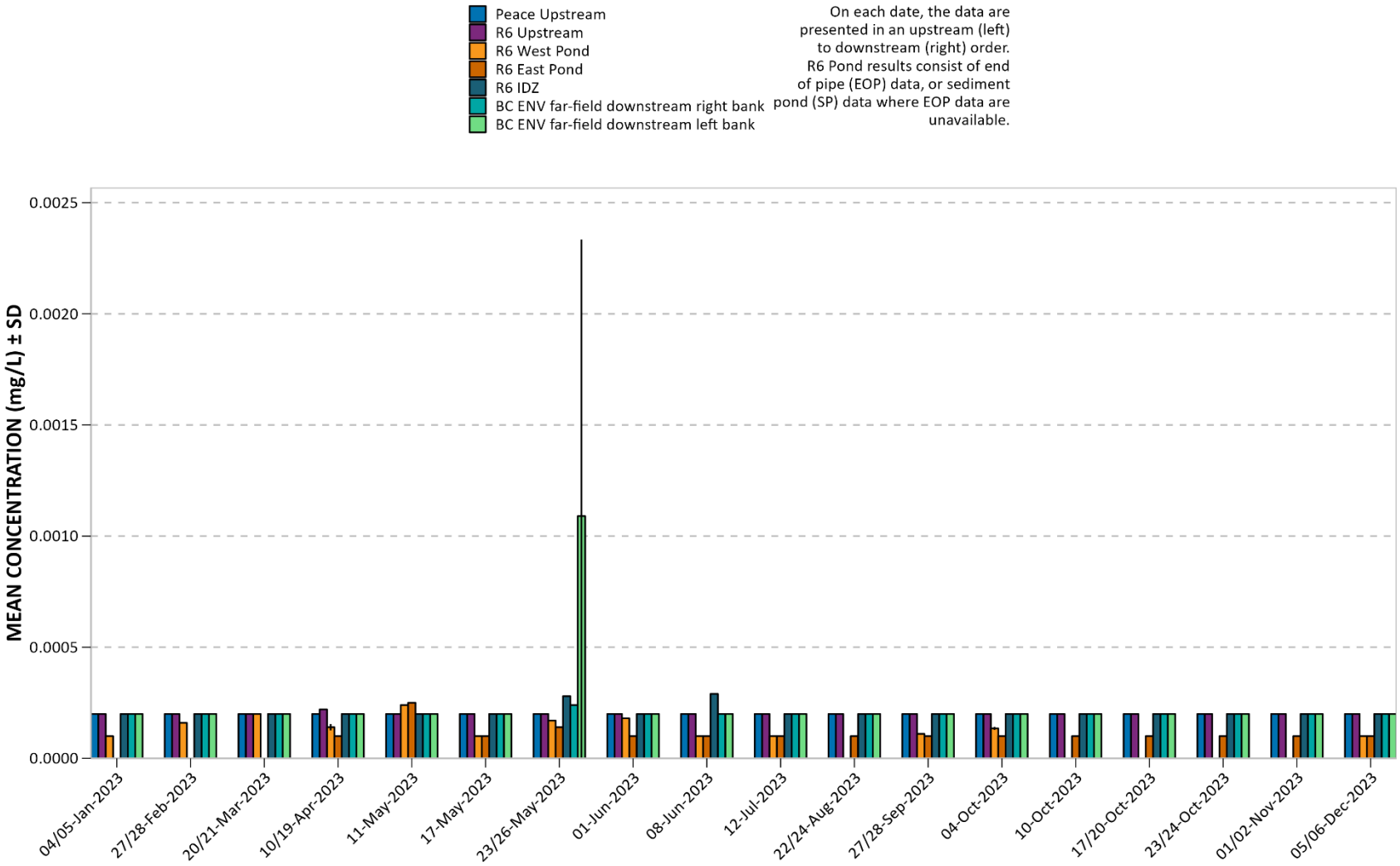


Figure 55. 2023 Peace River and RSEM R6 pond dissolved aluminum (Al).

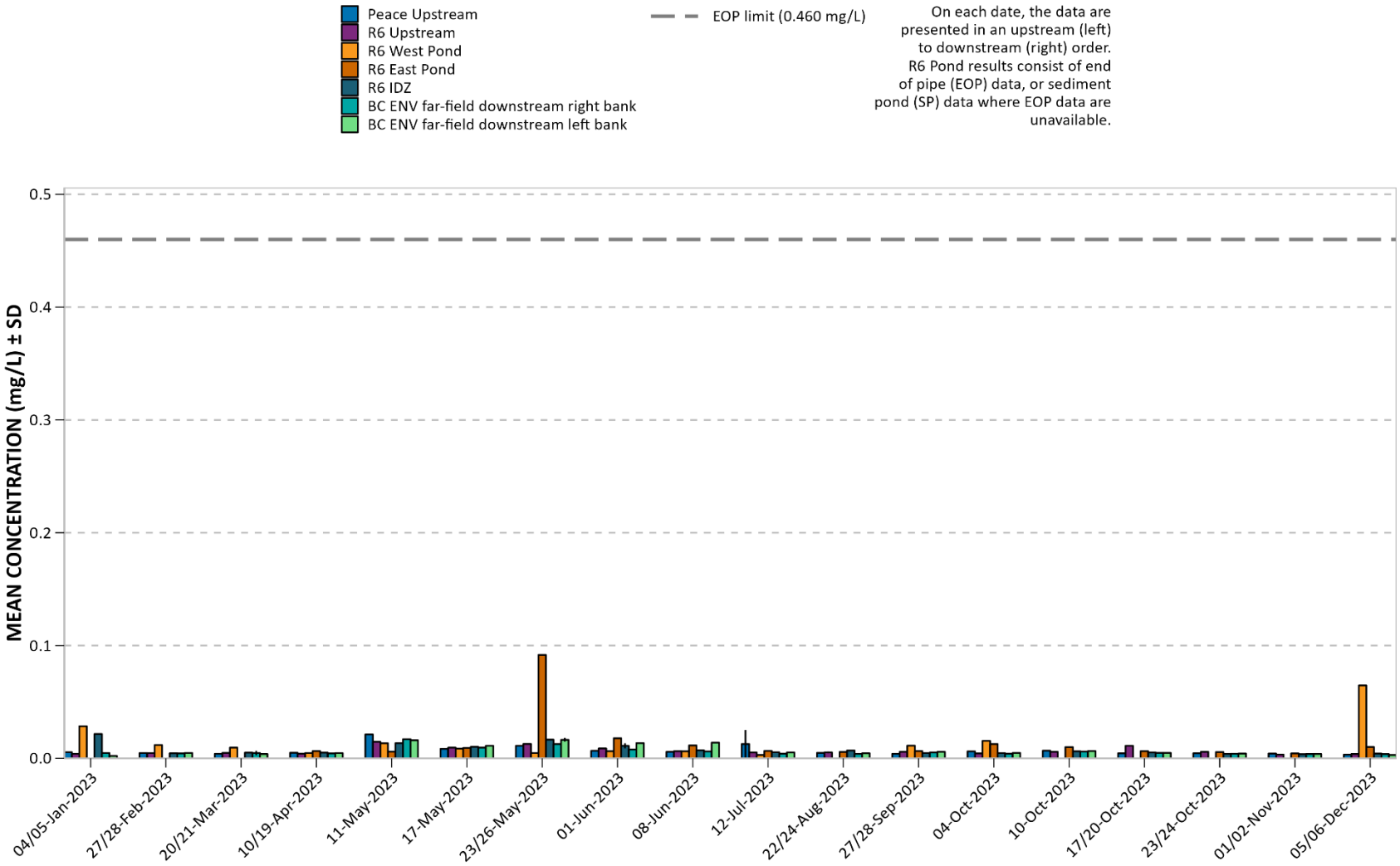


Figure 56. 2023 Peace River and RSEM R6 pond dissolved antimony (Sb).

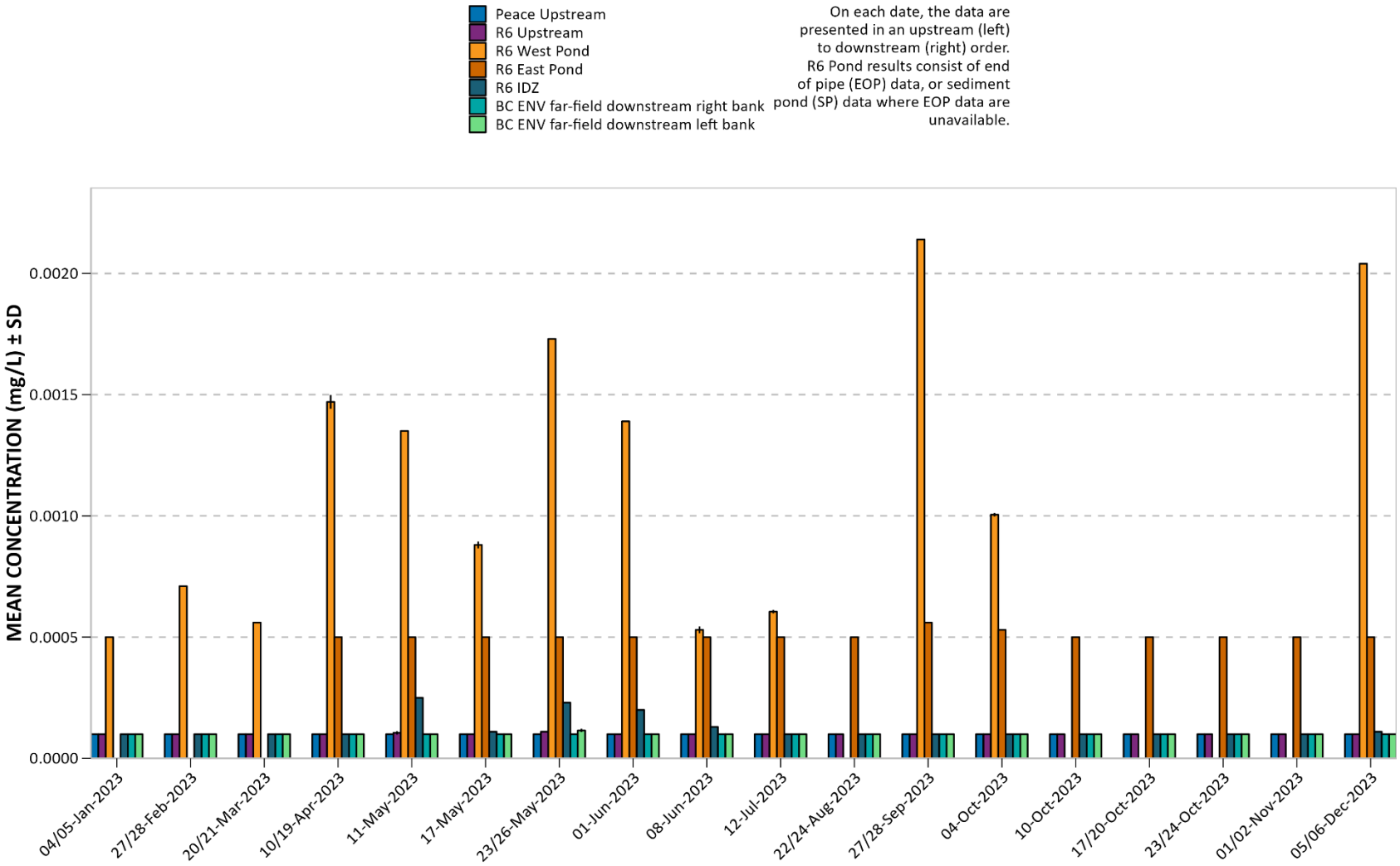


Figure 57. 2023 Peace River and RSEM R6 pond dissolved arsenic (As).

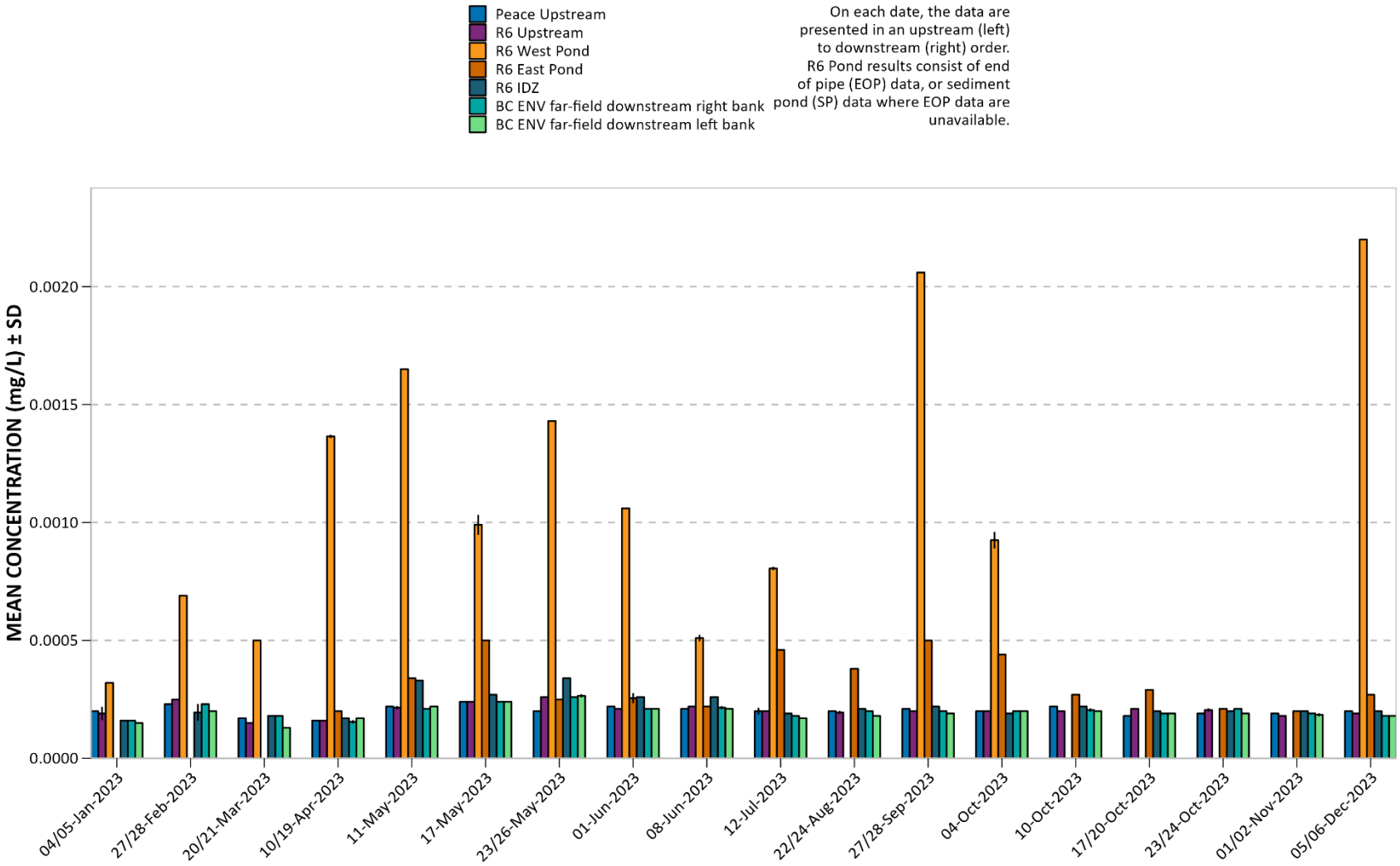


Figure 58. 2023 Peace River and RSEM R6 pond dissolved barium (Ba).

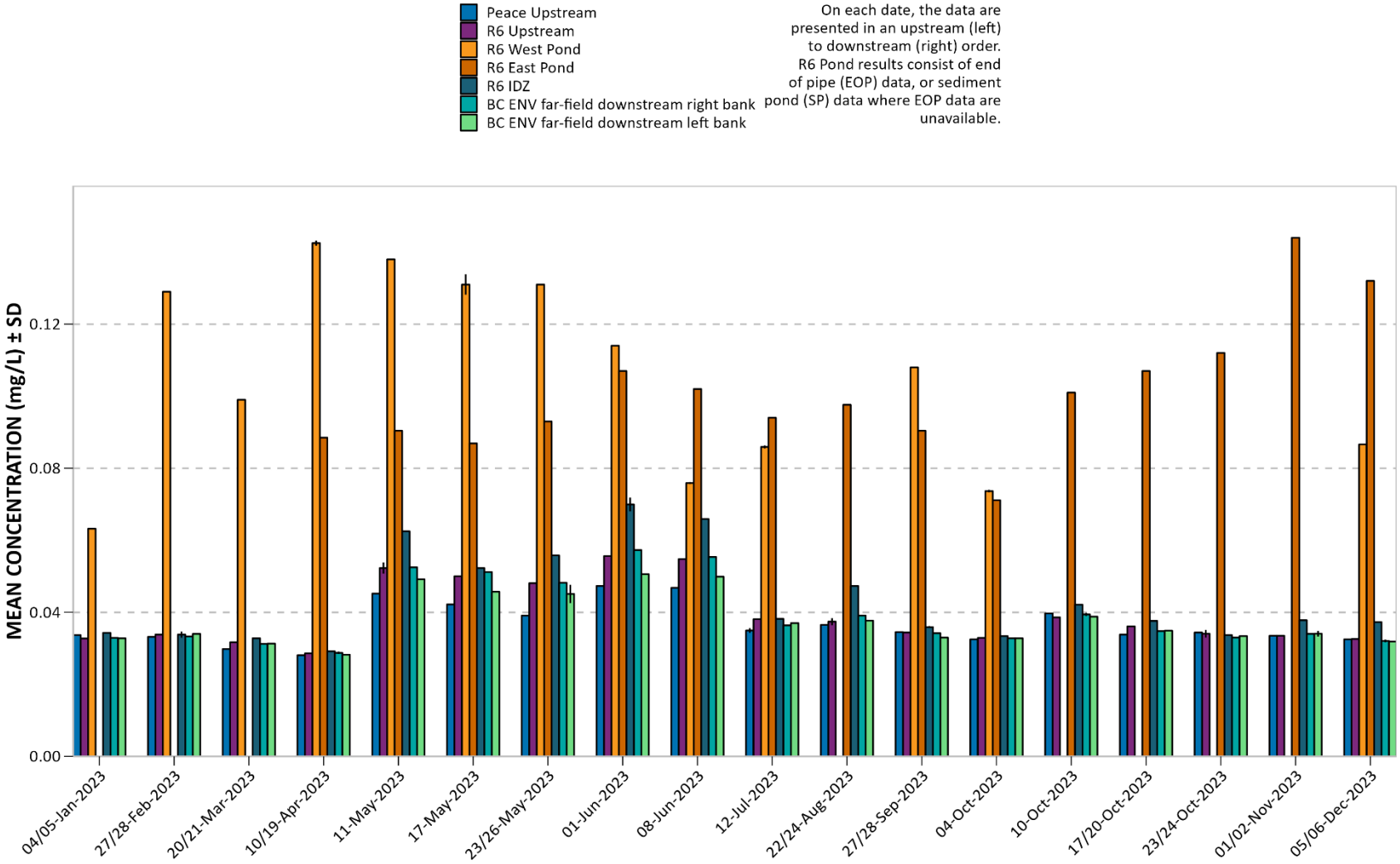


Figure 59. 2023 Peace River and RSEM R6 pond dissolved beryllium (Be).

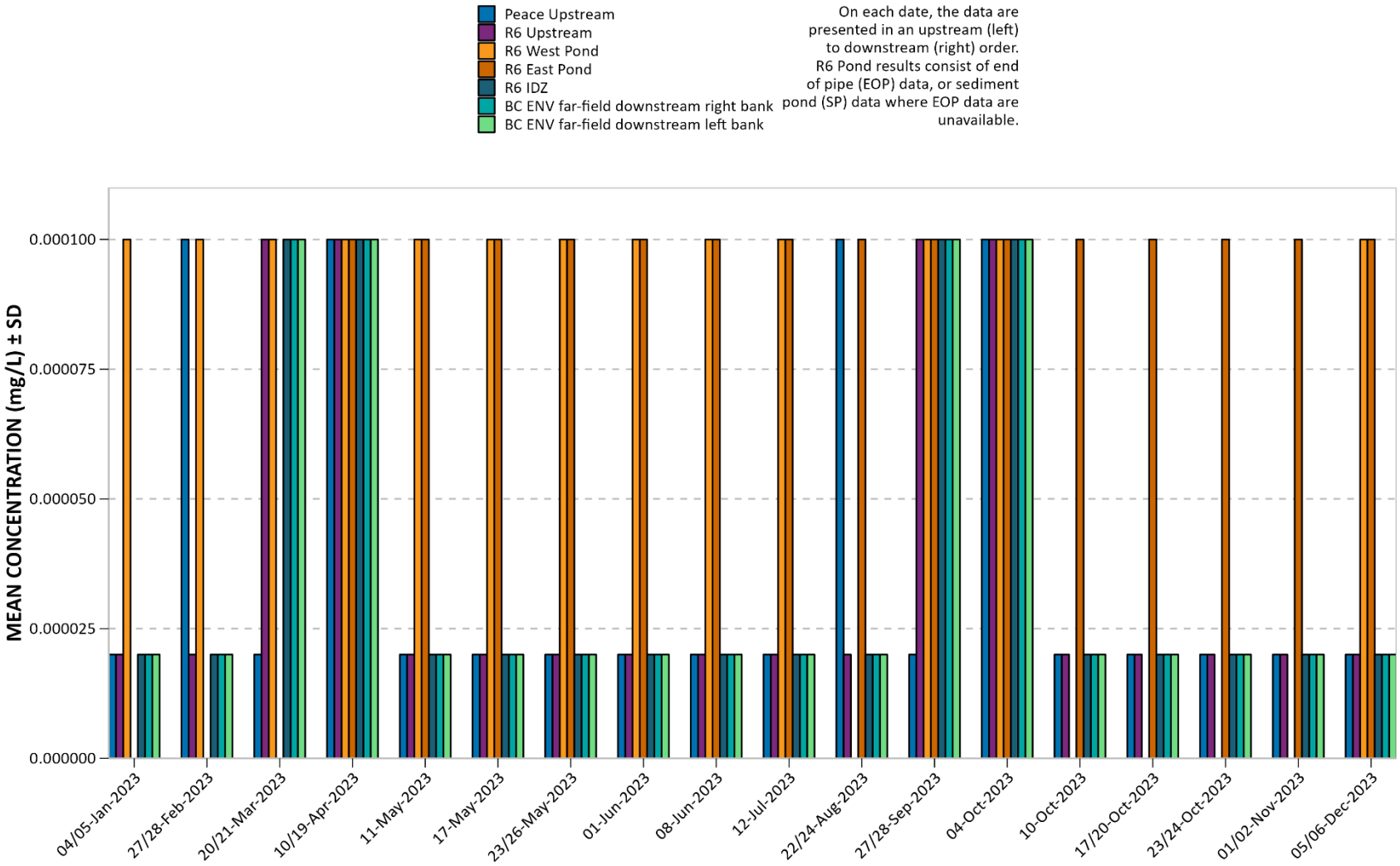


Figure 60. 2023 Peace River and RSEM R6 pond dissolved bismuth (Bi).

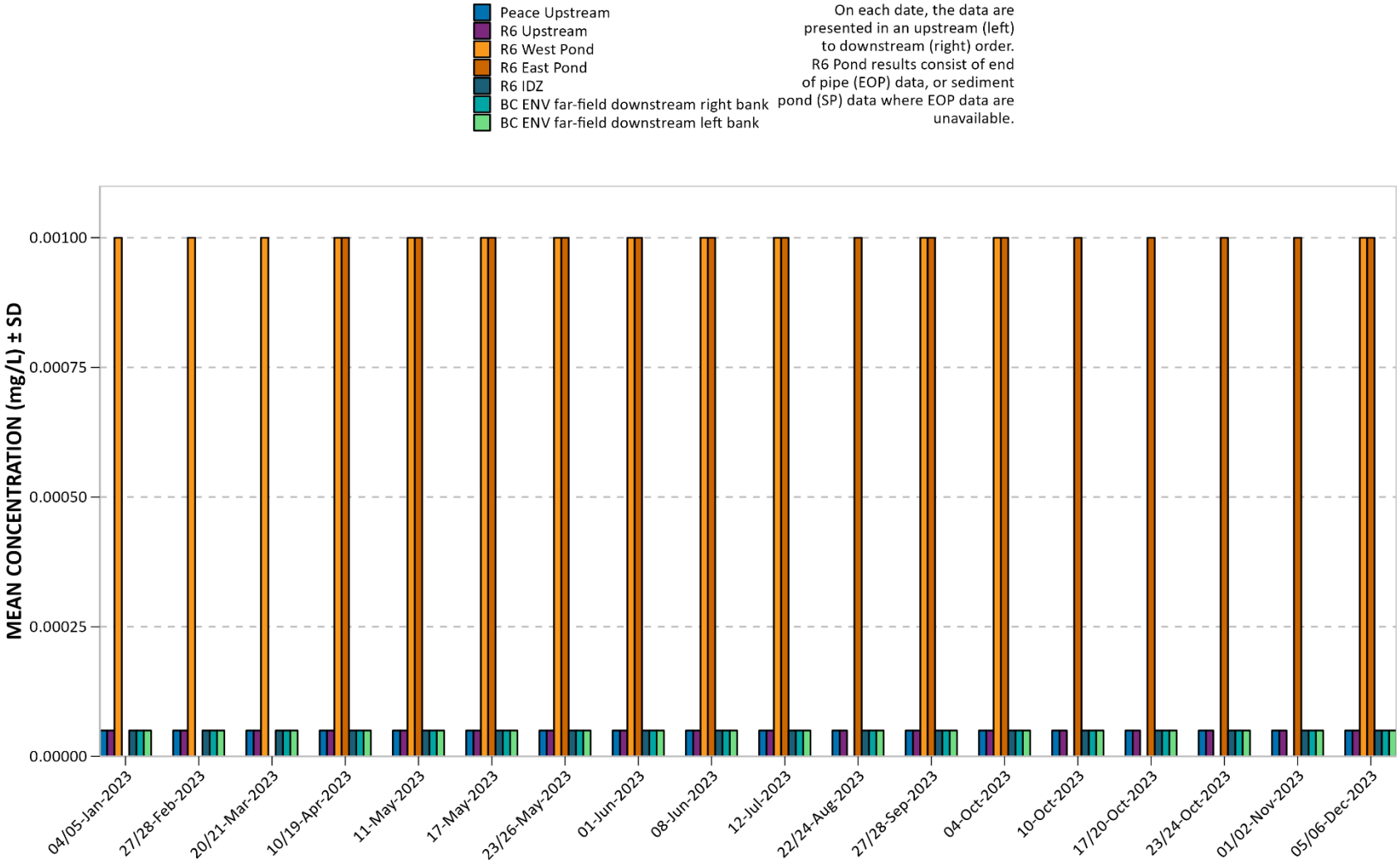


Figure 61. 2023 Peace River and RSEM R6 pond dissolved boron (B).

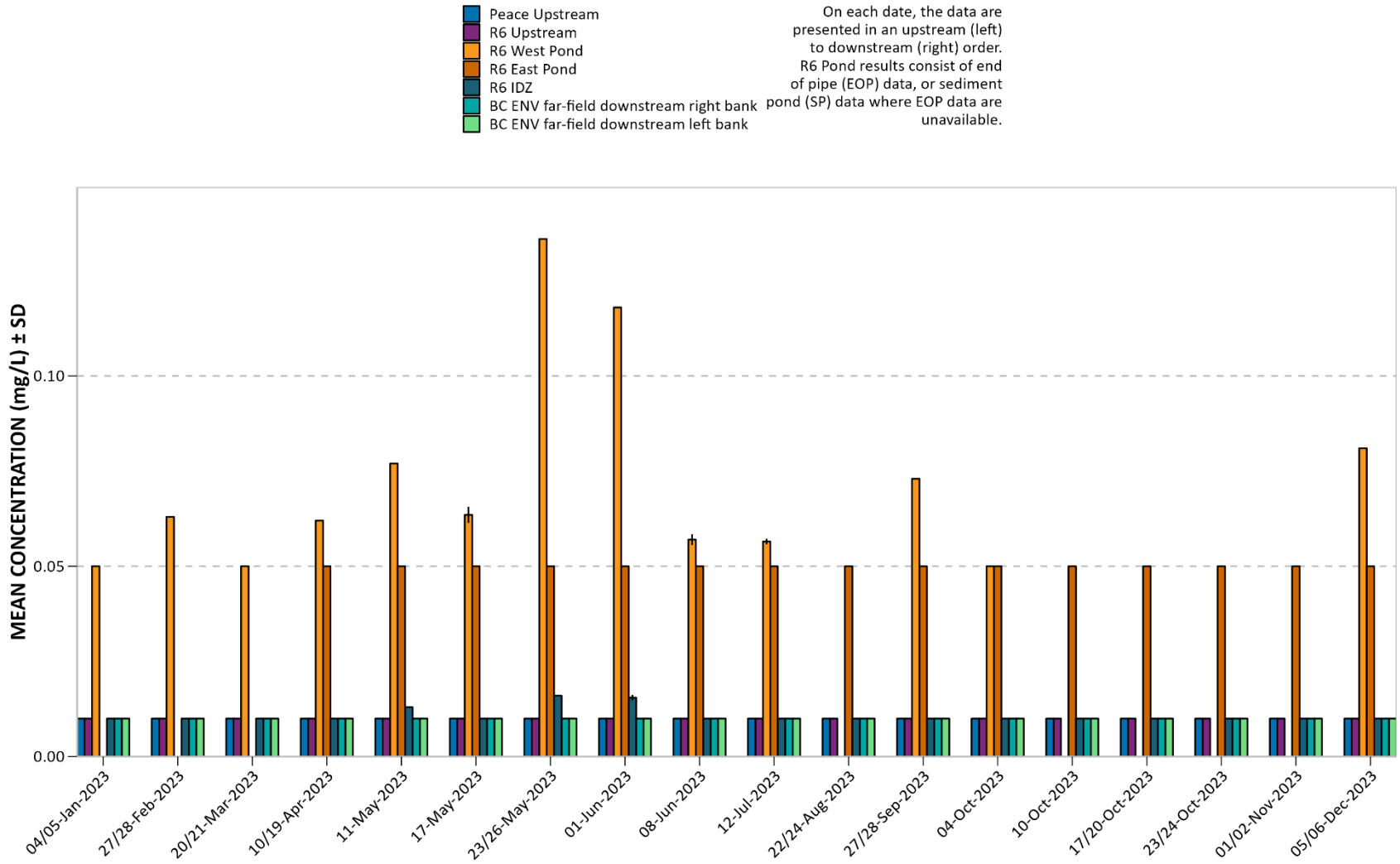
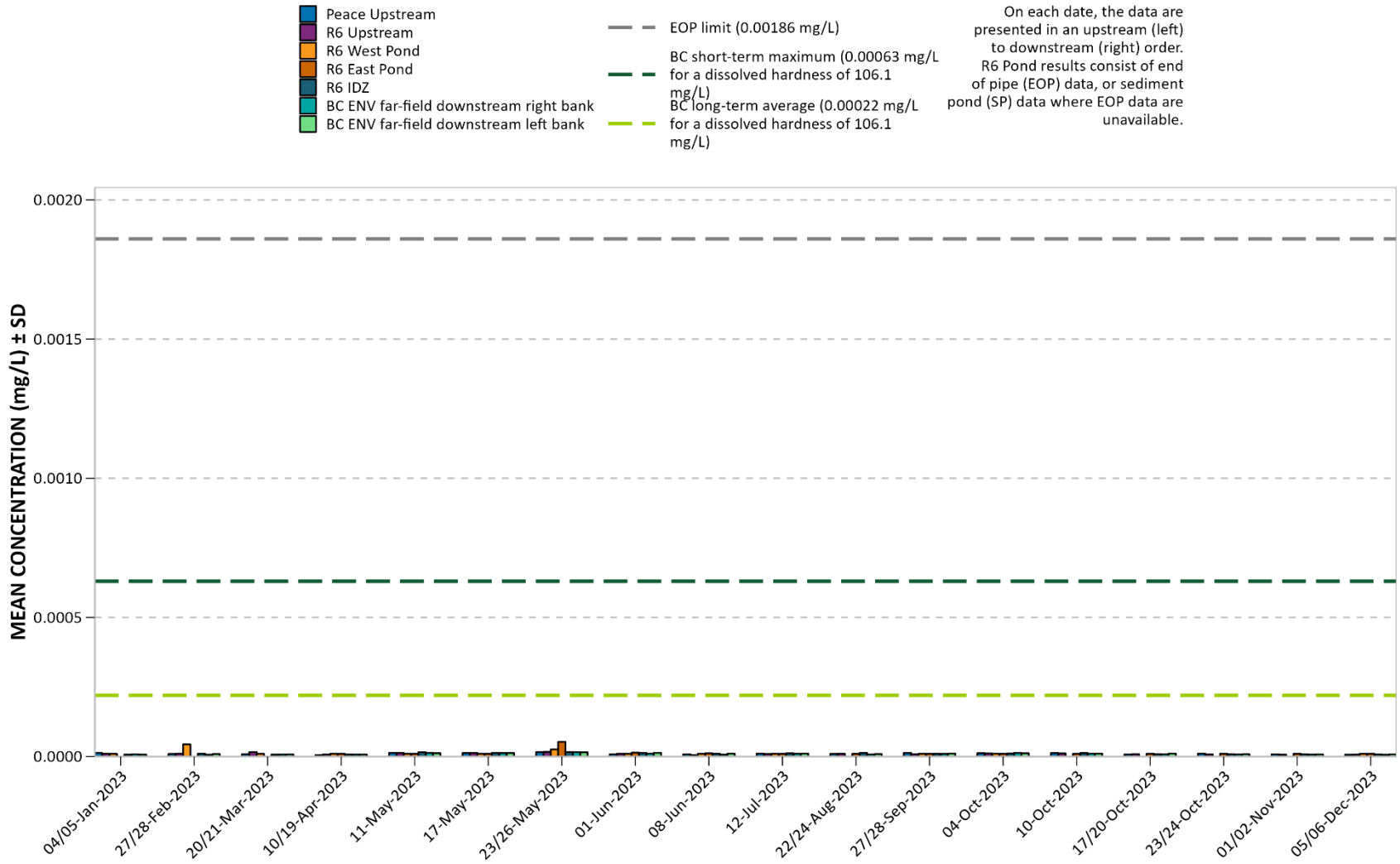


Figure 62. 2023 Peace River and RSEM R6 pond dissolved cadmium (Cd).



Note: BC WQGs for dissolved cadmium are dissolved hardness dependent. An average Peace River dissolved hardness of 106.1 mg/L (based on 26 samples collected between April 2007 – Jan. 2017; BC Hydro 2017b) was used in the plot to depict the maximum and 30-day guidelines for ease of interpretation. Sample specific dissolved hardness was used to screen individual sample results against guidelines in the data tables (Appendix A).

Figure 63. 2023 Peace River and RSEM R6 pond dissolved calcium (Ca).

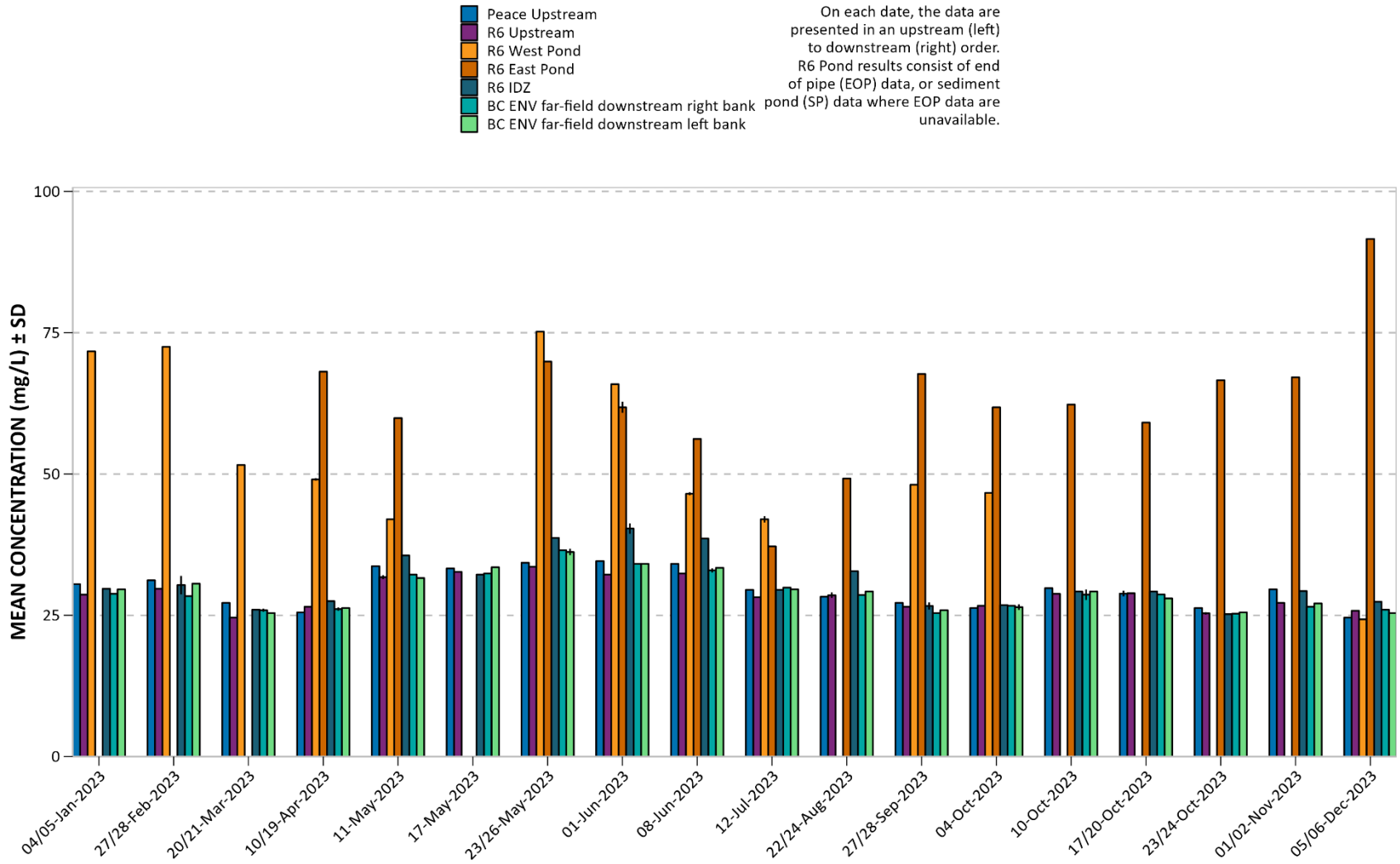


Figure 64. 2023 Peace River and RSEM R6 pond dissolved chromium (Cr).

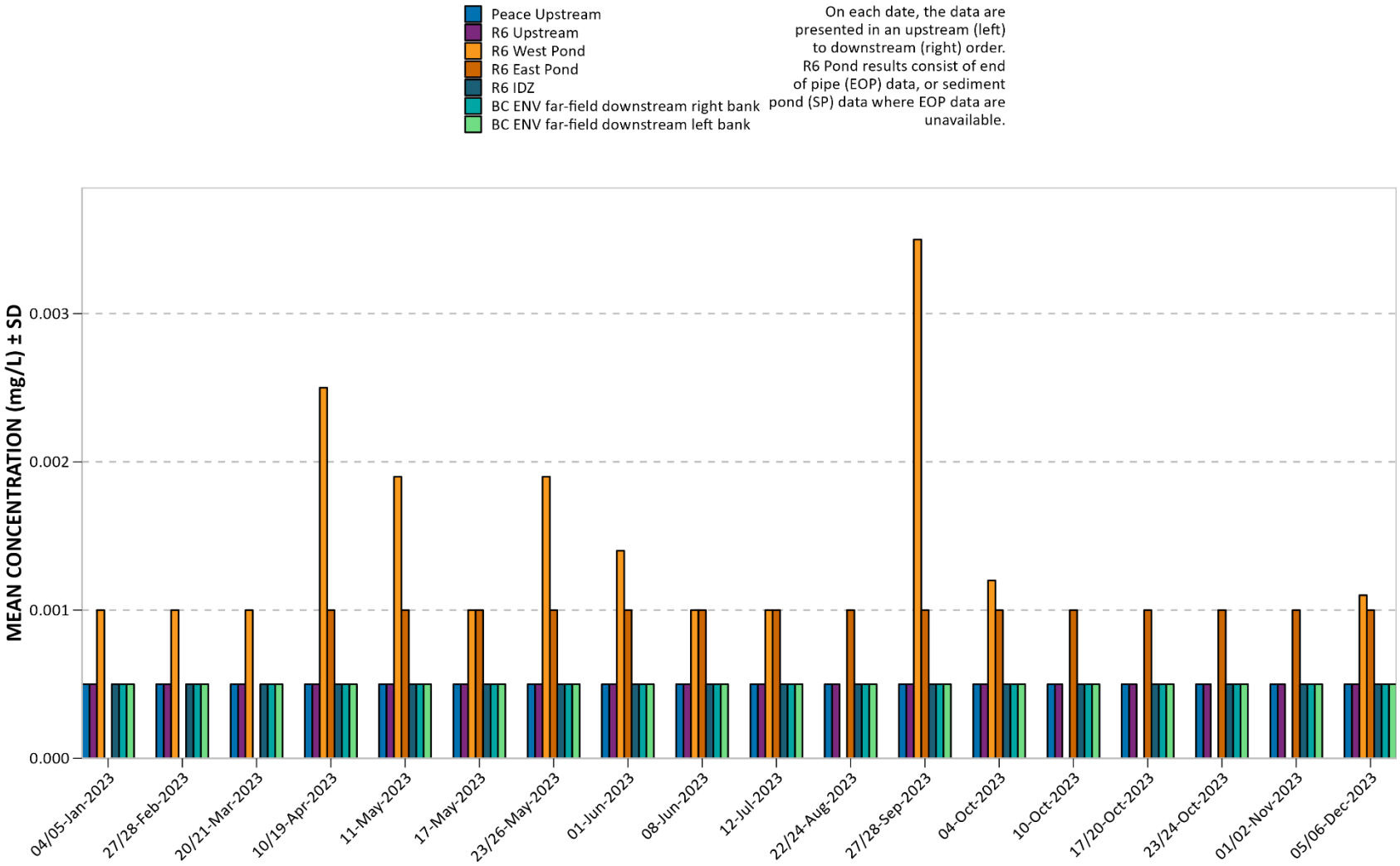


Figure 65. 2023 Peace River and RSEM R6 pond dissolved cobalt (Co).

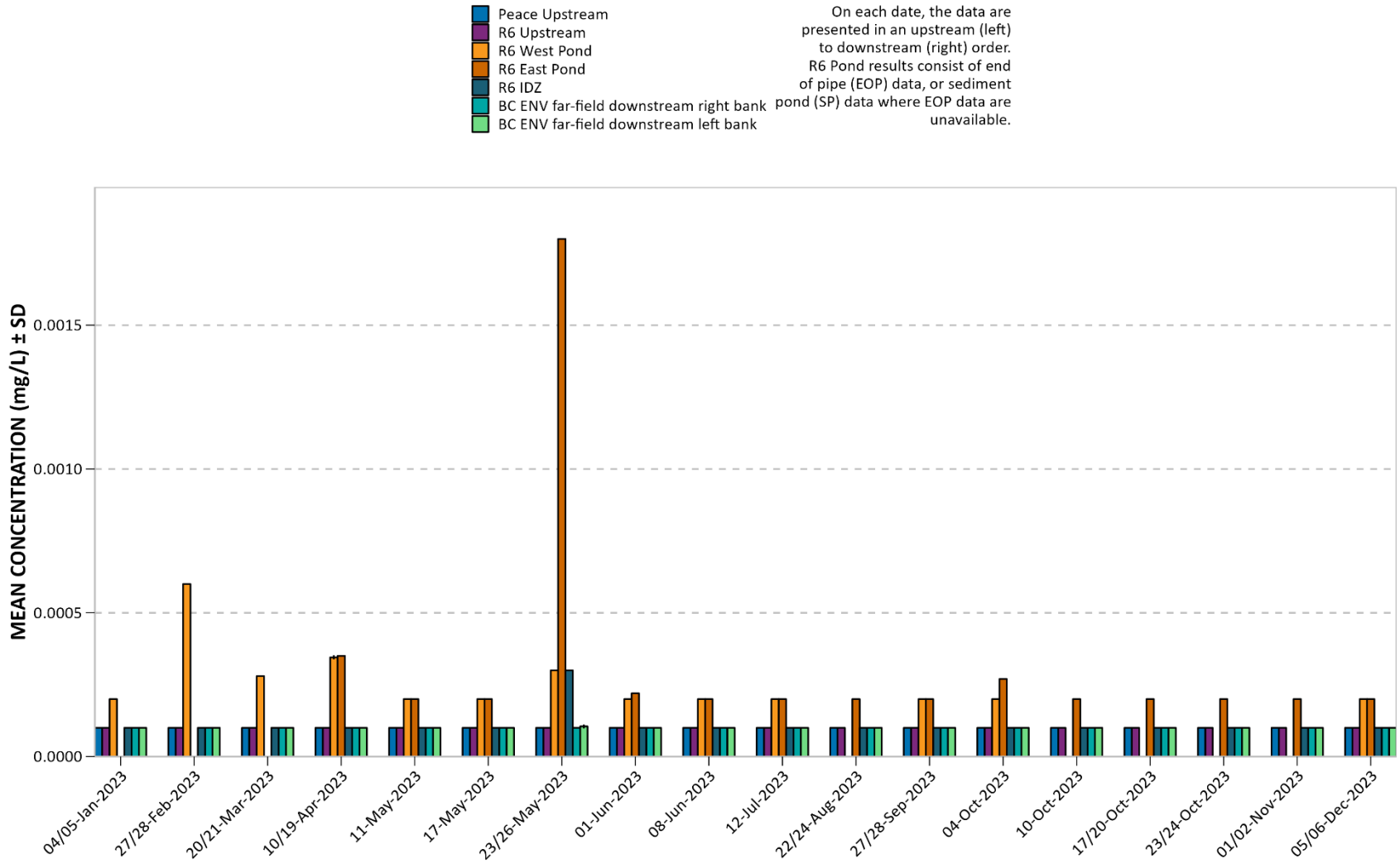
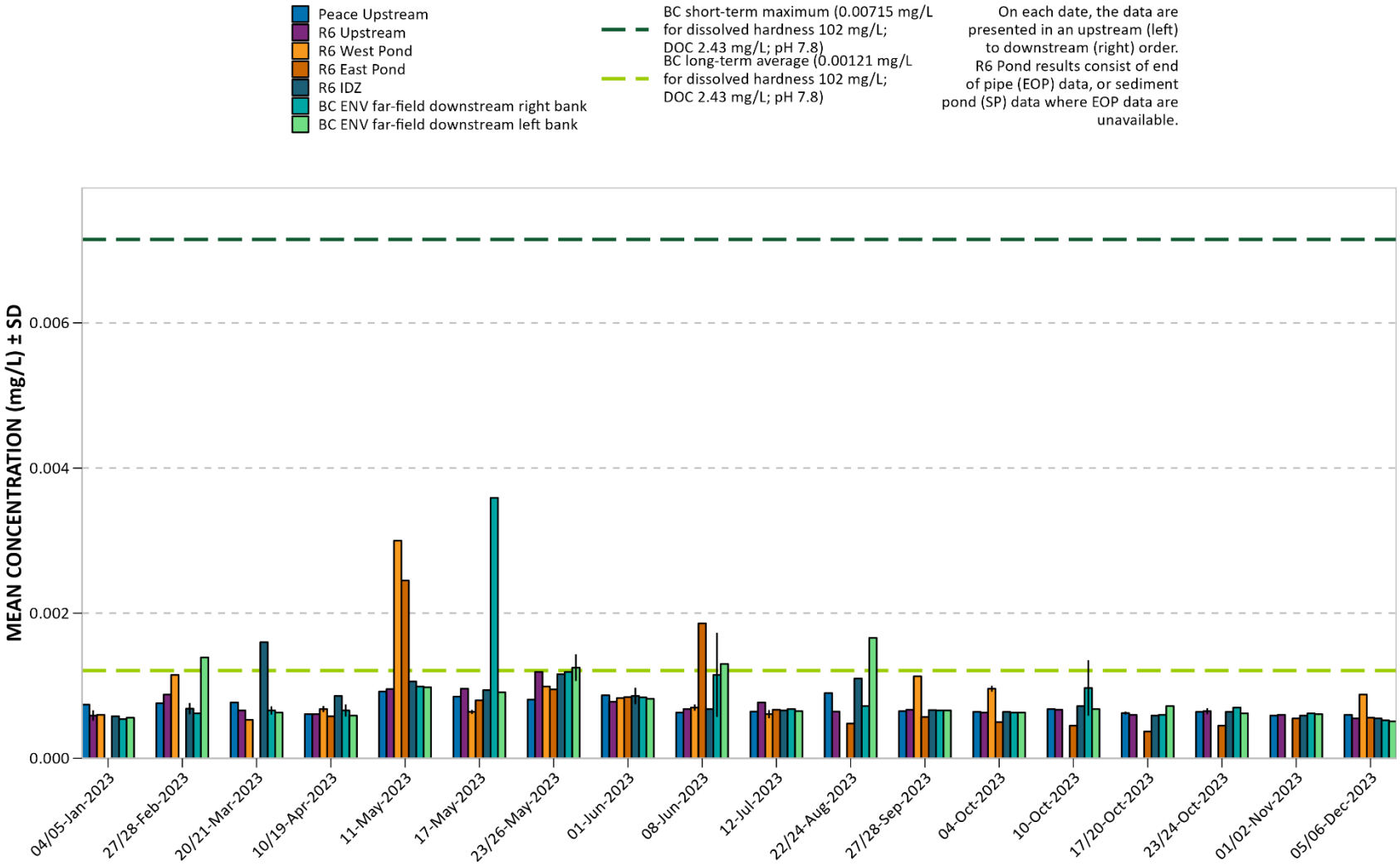


Figure 66. 2023 Peace River and RSEM R6 pond dissolved copper (Cu).



Note: BC WQGs for dissolved copper are dissolved hardness, DOC, and pH dependent, and therefore guidelines depicted in the plot are applicable for Peace River sites only. Based on the range of dissolved hardness, DOC, and pH values observed in the Peace River, the applicable BC maximum and 30-day guidelines are 0.00715 mg/L and 0.00121 mg/L, respectively.

Figure 67. 2023 Peace River and RSEM R6 pond dissolved iron (Fe).

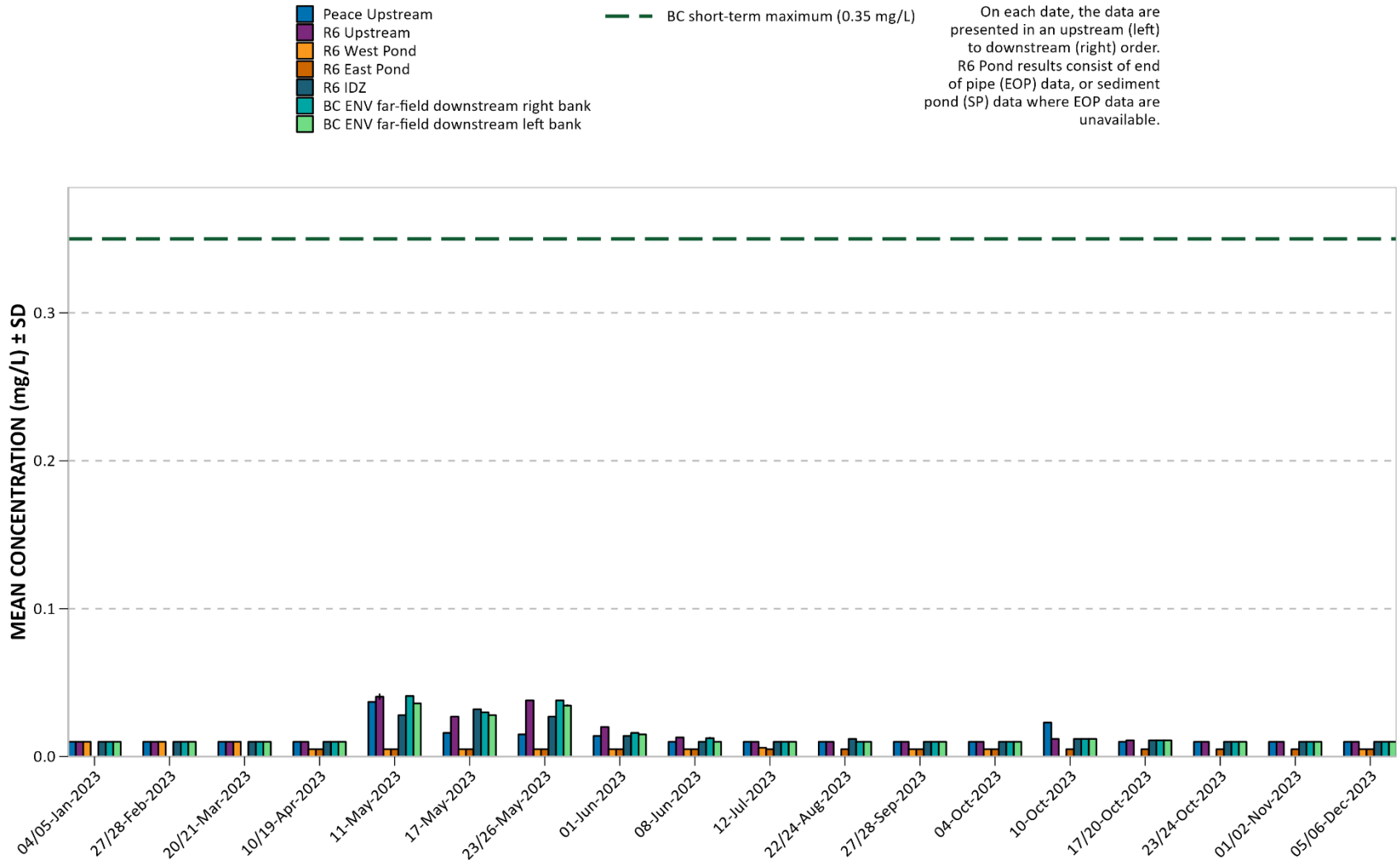


Figure 68. 2023 Peace River and RSEM R6 pond dissolved lead (Pb).

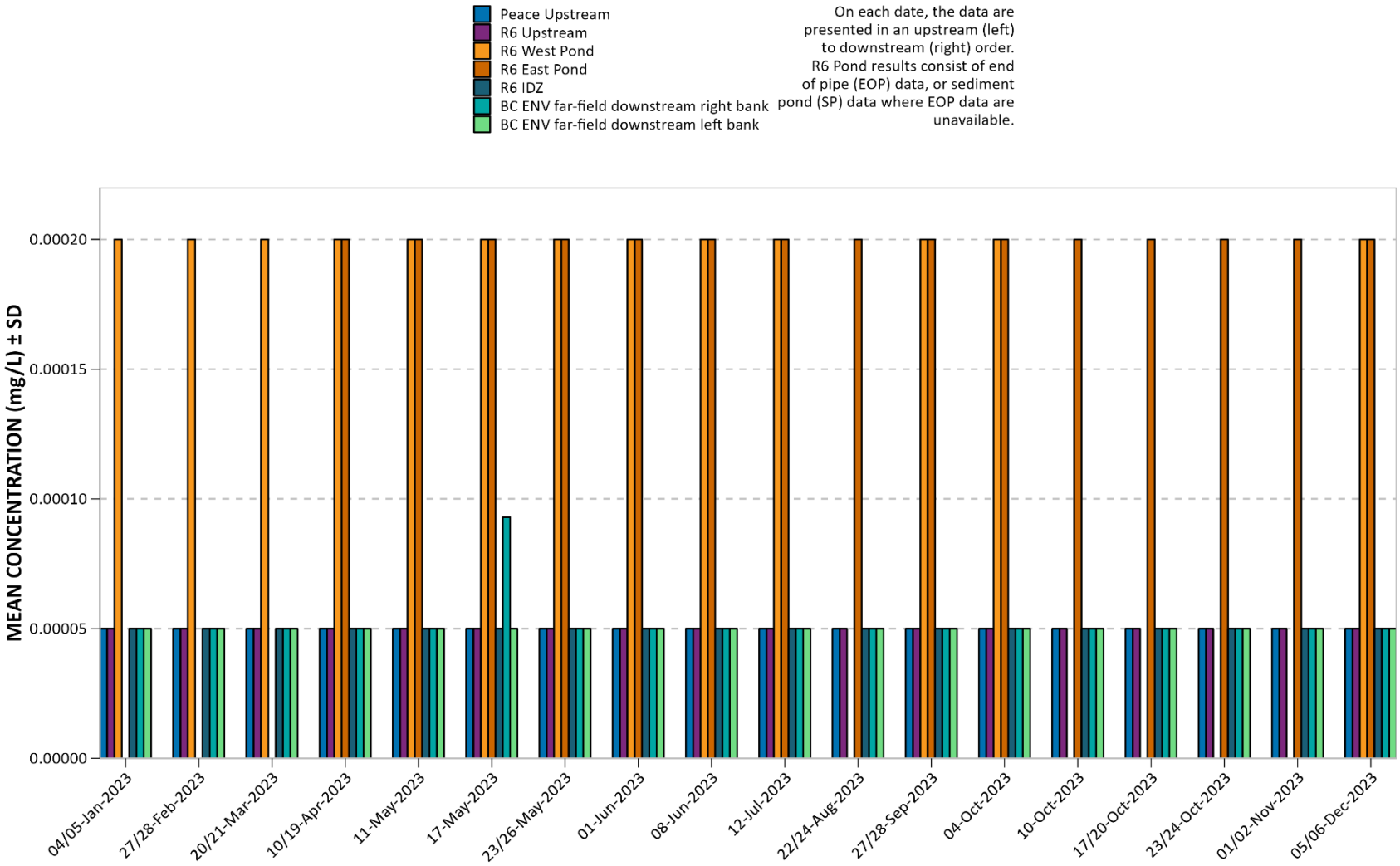


Figure 69. 2023 Peace River and RSEM R6 pond dissolved lithium (Li).

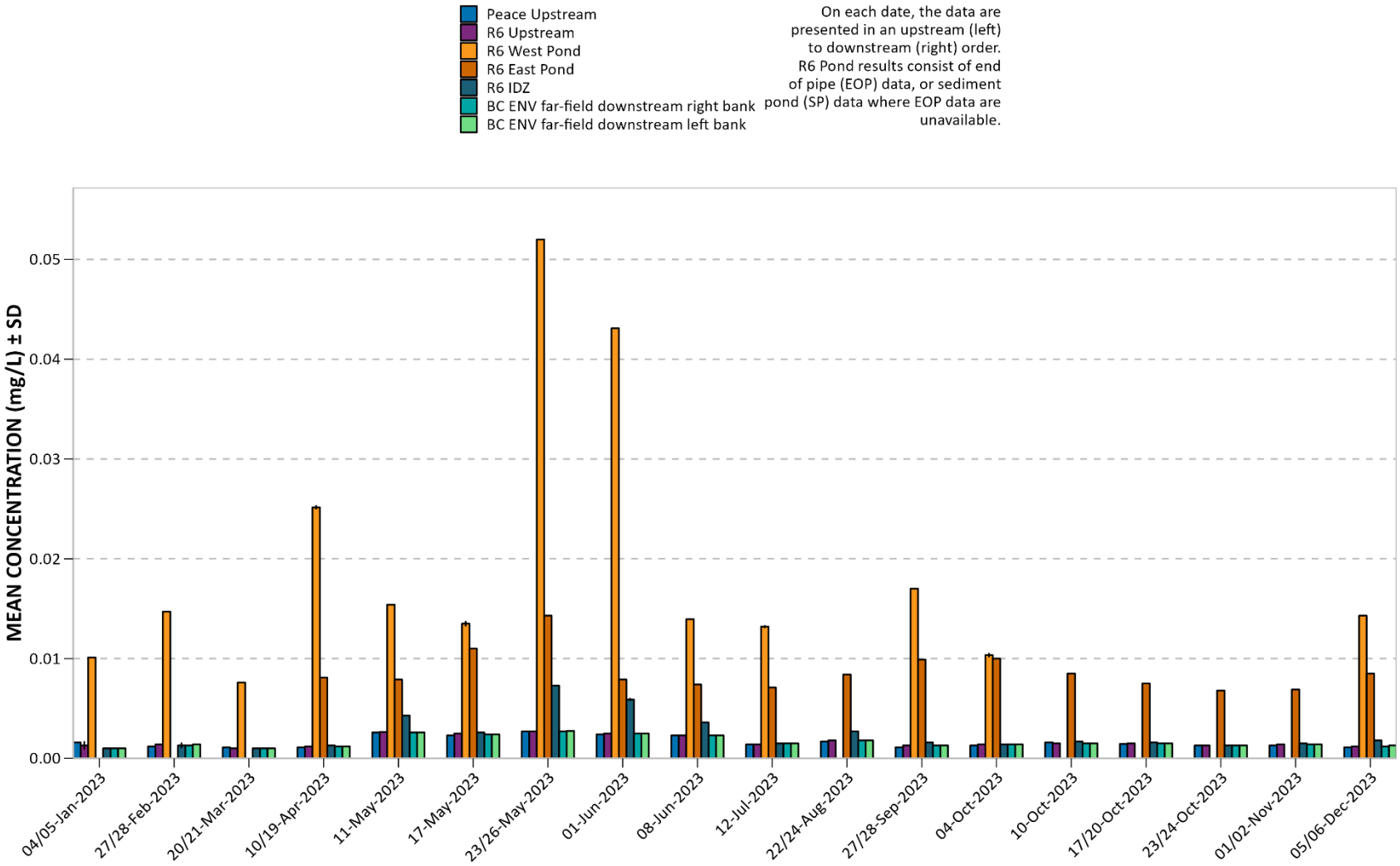


Figure 70. 2023 Peace River and RSEM R6 pond dissolved magnesium (Mg).

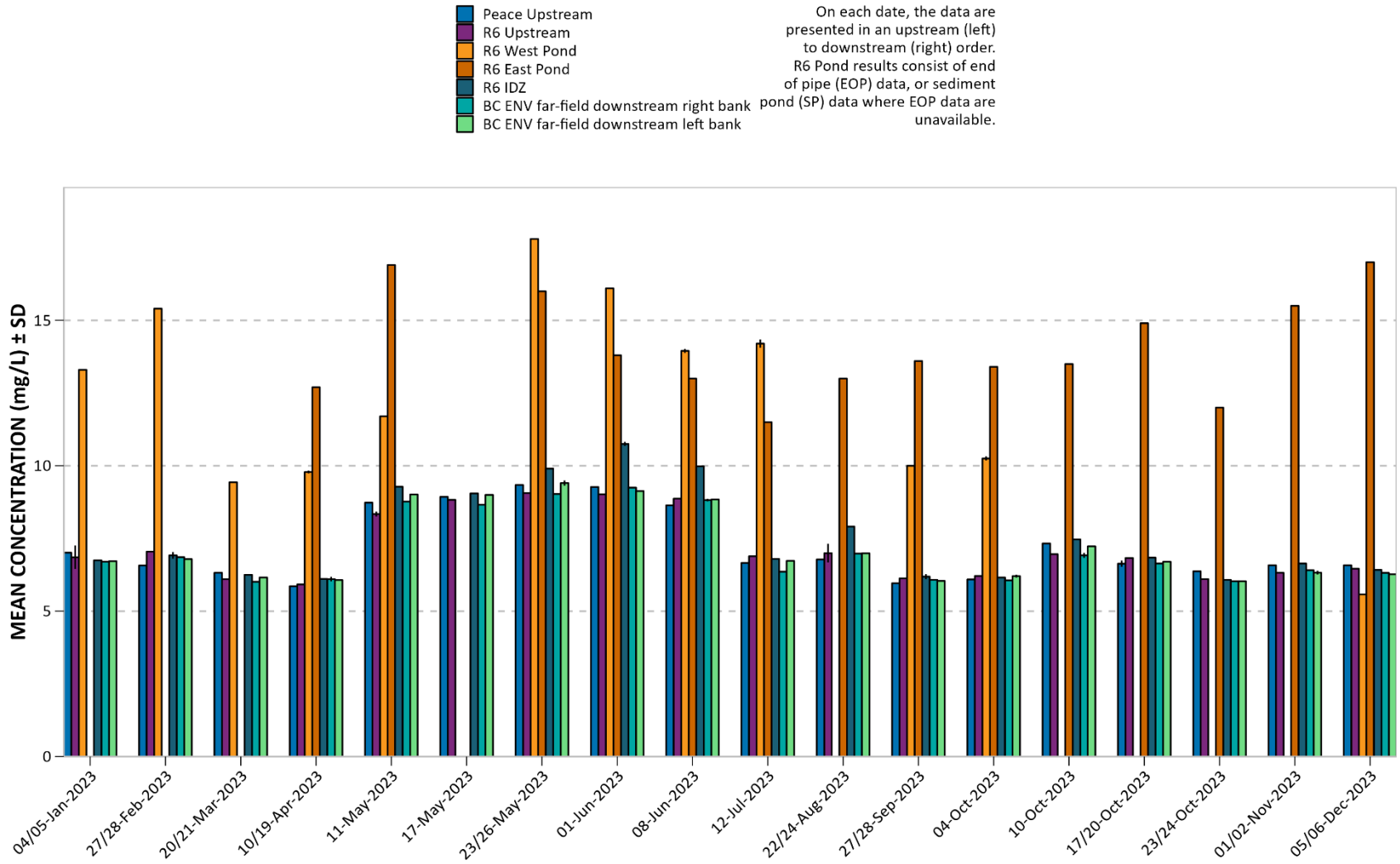


Figure 71. 2023 Peace River and RSEM R6 pond dissolved manganese (Mn).

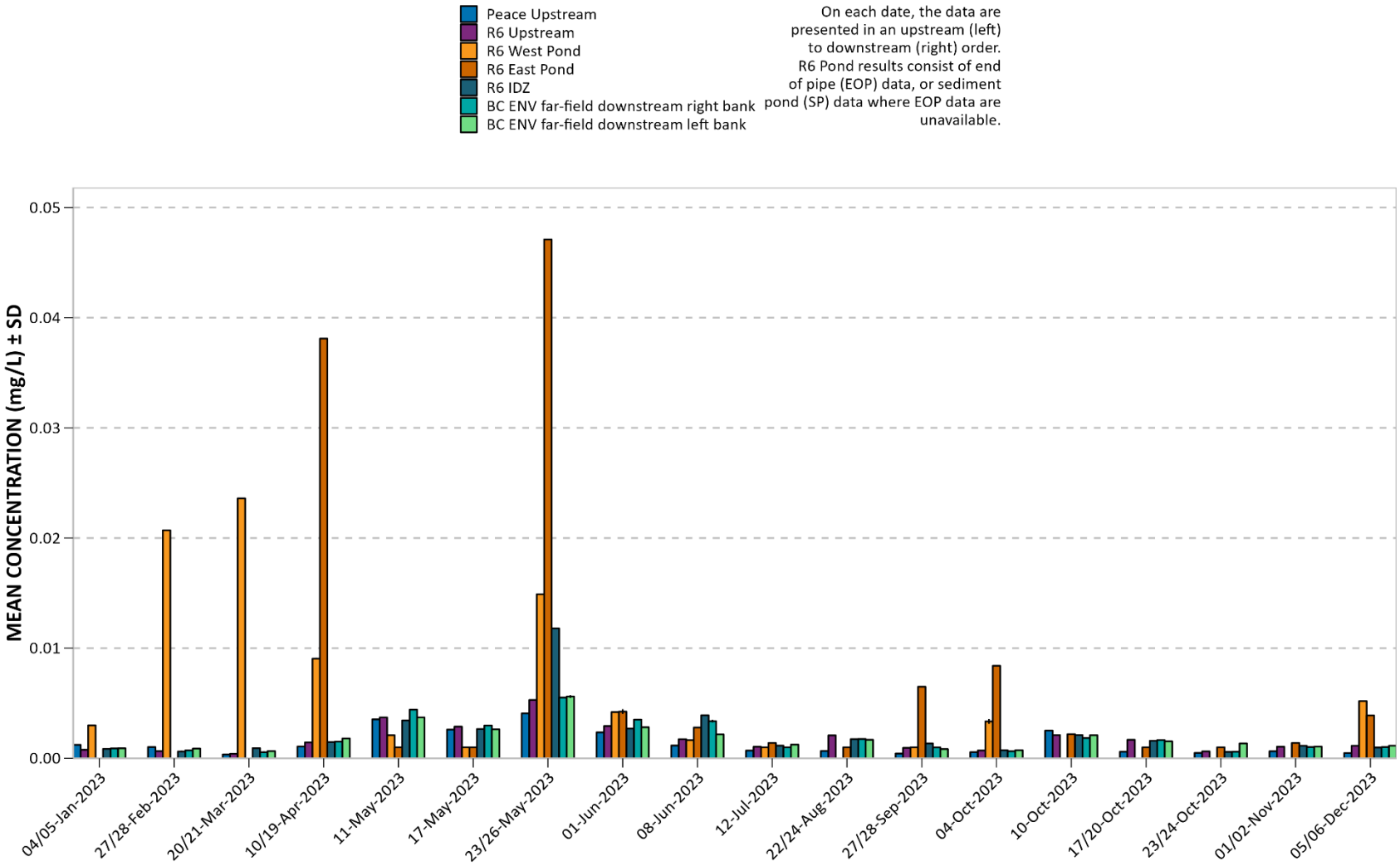


Figure 72. 2023 Peace River and RSEM R6 pond dissolved mercury (Hg).

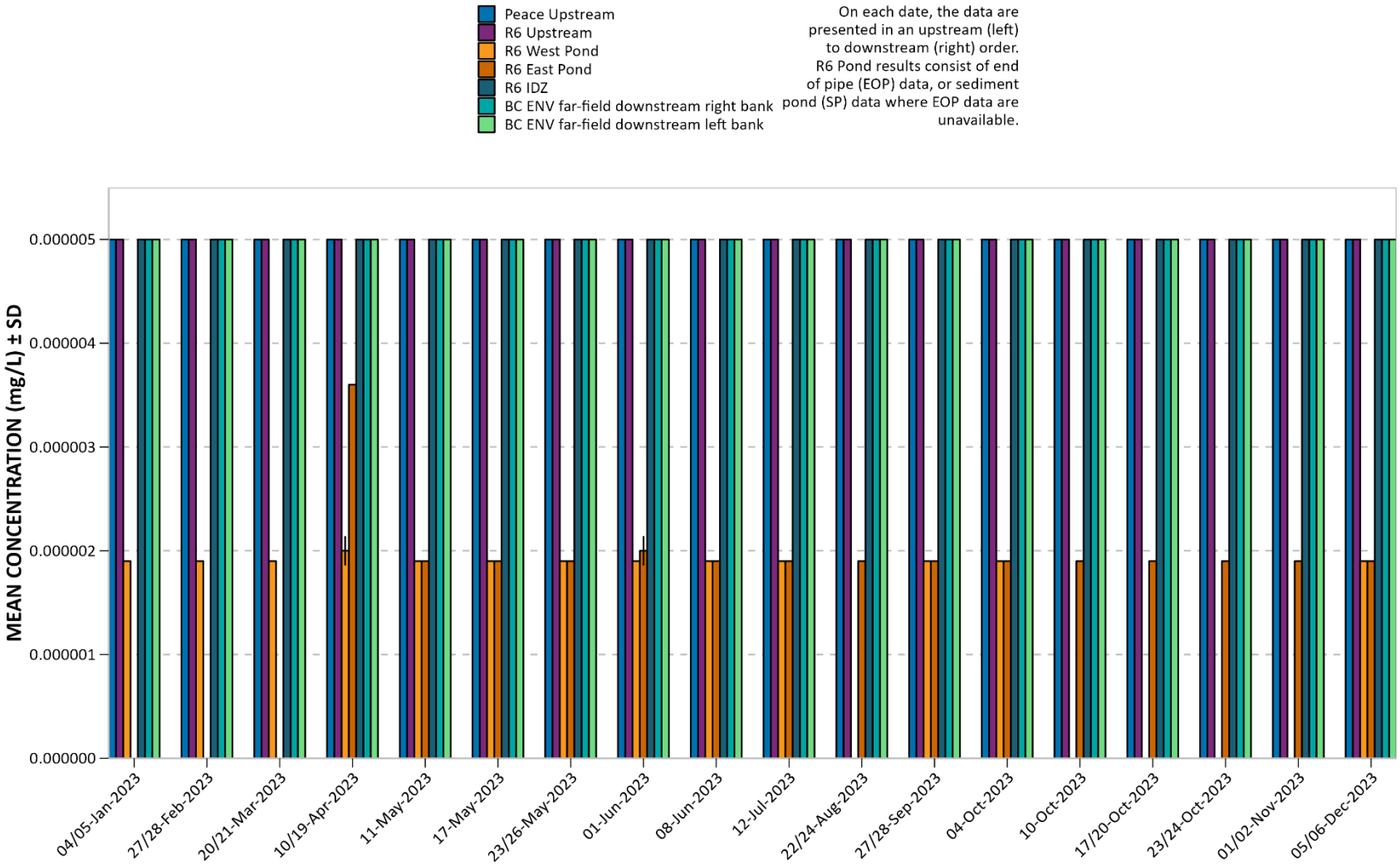


Figure 73. 2023 Peace River and RSEM R6 pond dissolved molybdenum (Mo).

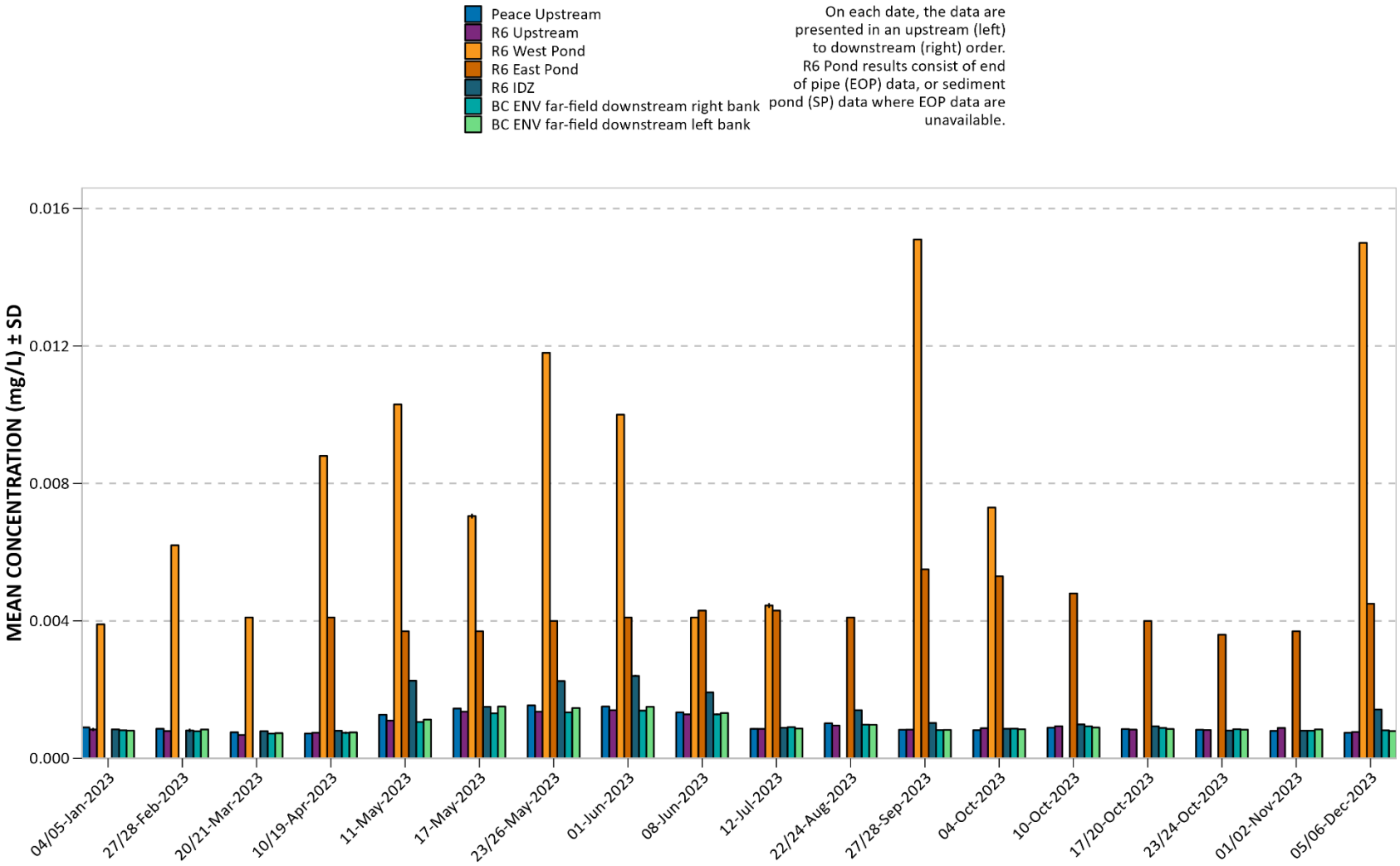


Figure 74. 2023 Peace River and RSEM R6 pond dissolved nickel (Ni).

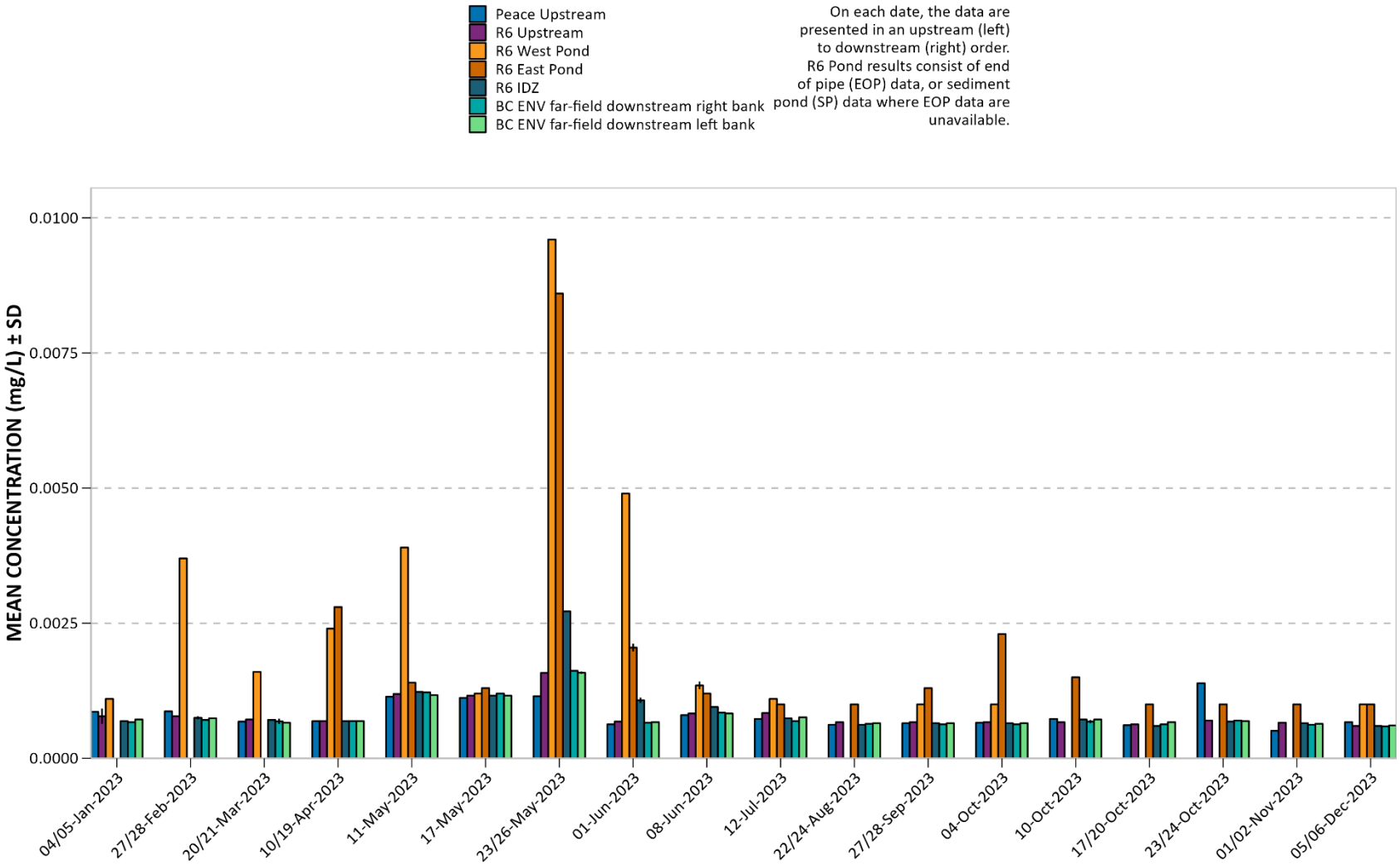


Figure 75. 2023 Peace River and RSEM R6 pond dissolved potassium (K).

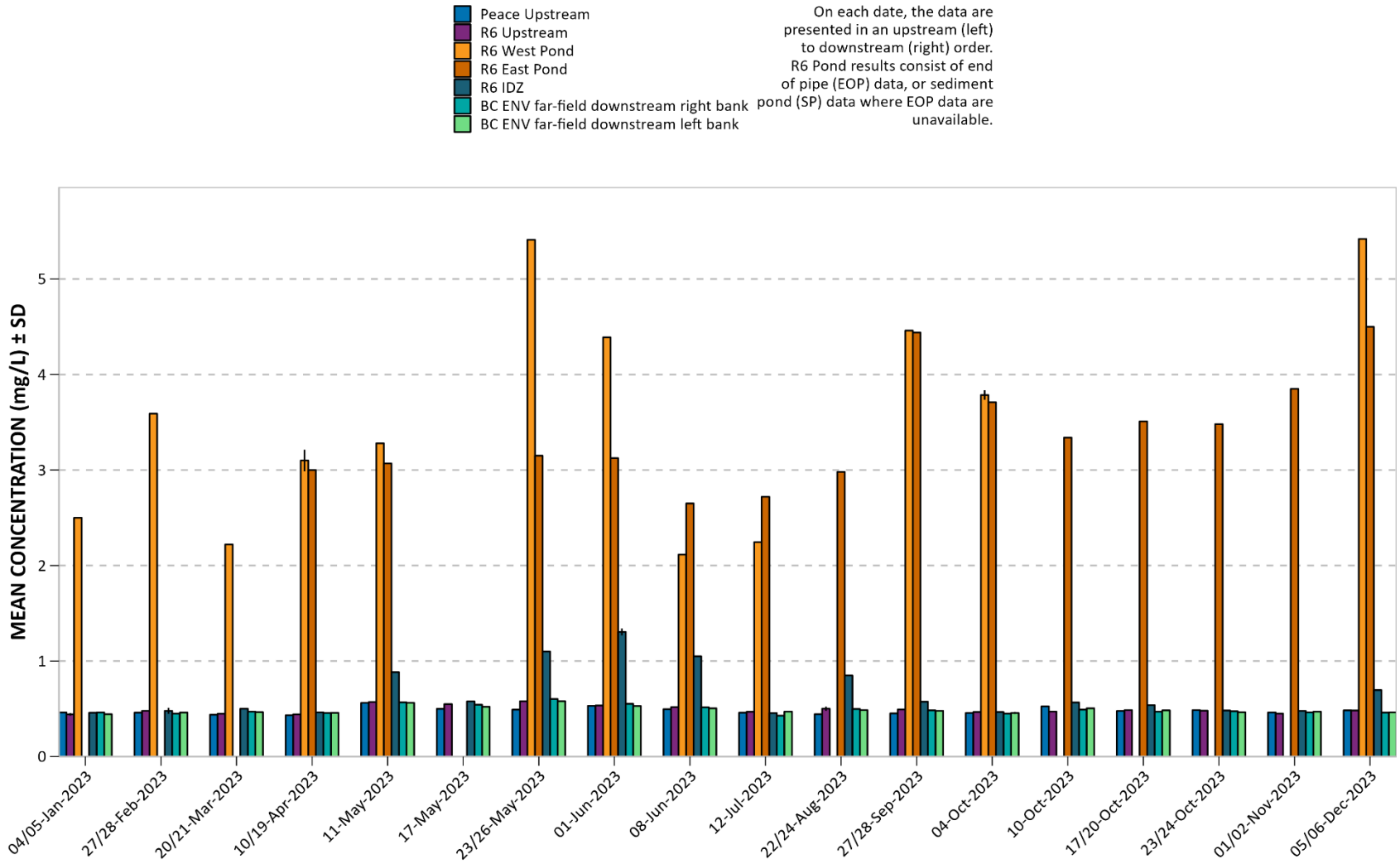


Figure 76. 2023 Peace River and RSEM R6 pond dissolved selenium (Se).

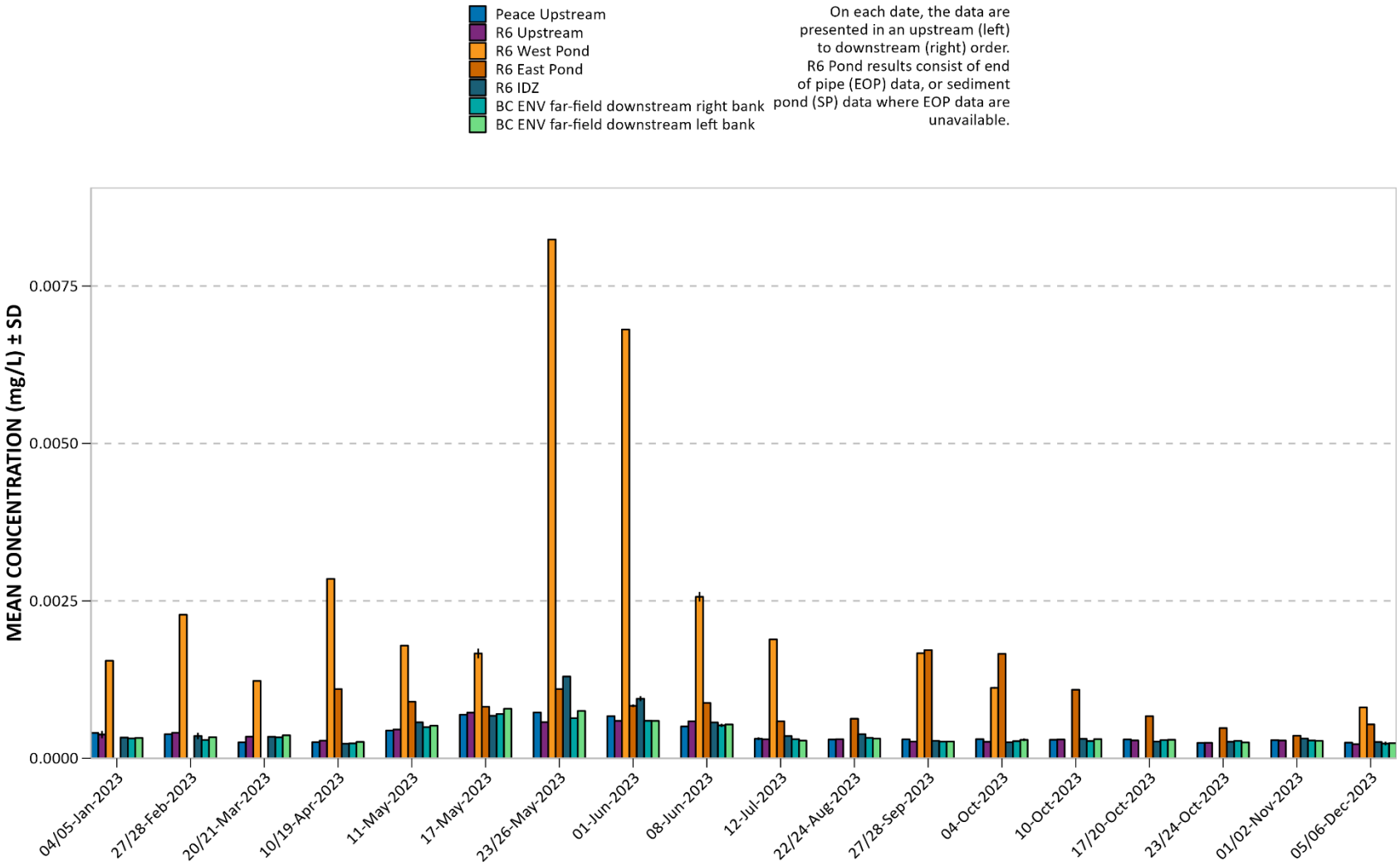


Figure 77. 2023 Peace River and RSEM R6 pond dissolved silicon (Si).

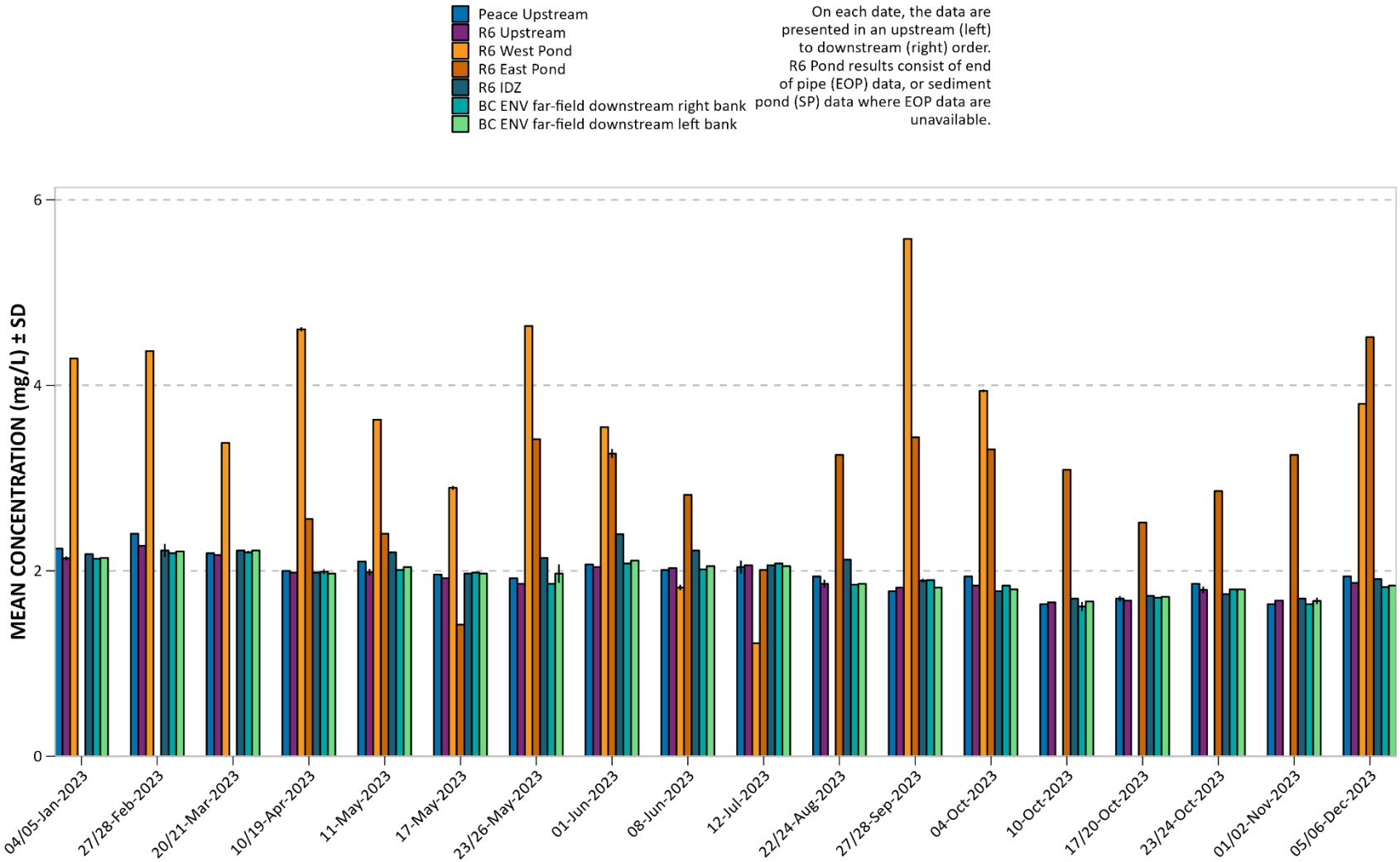


Figure 78. 2023 Peace River and RSEM R6 pond dissolved silver (Ag).

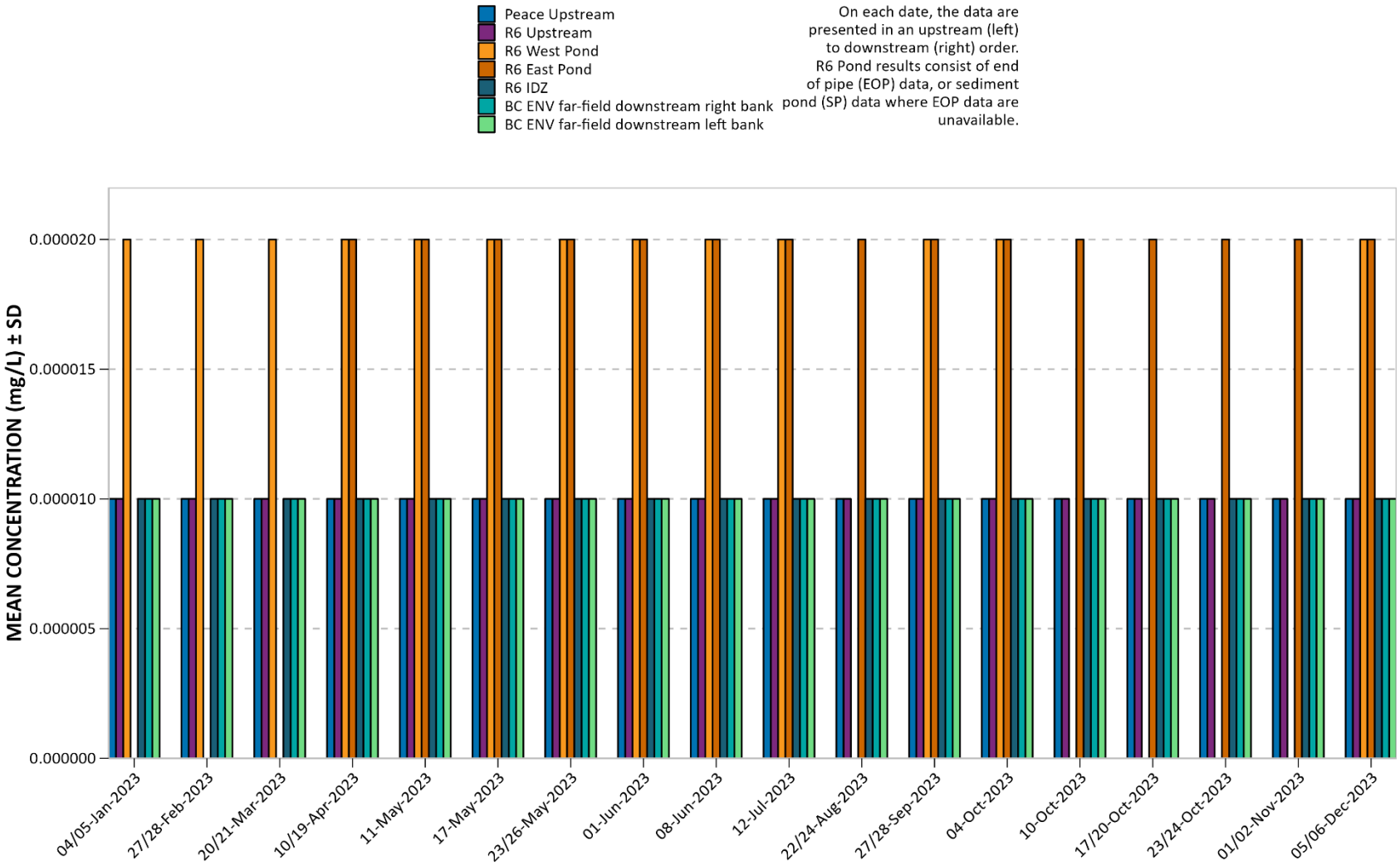


Figure 79. 2023 Peace River and RSEM R6 pond dissolved sodium (Na).

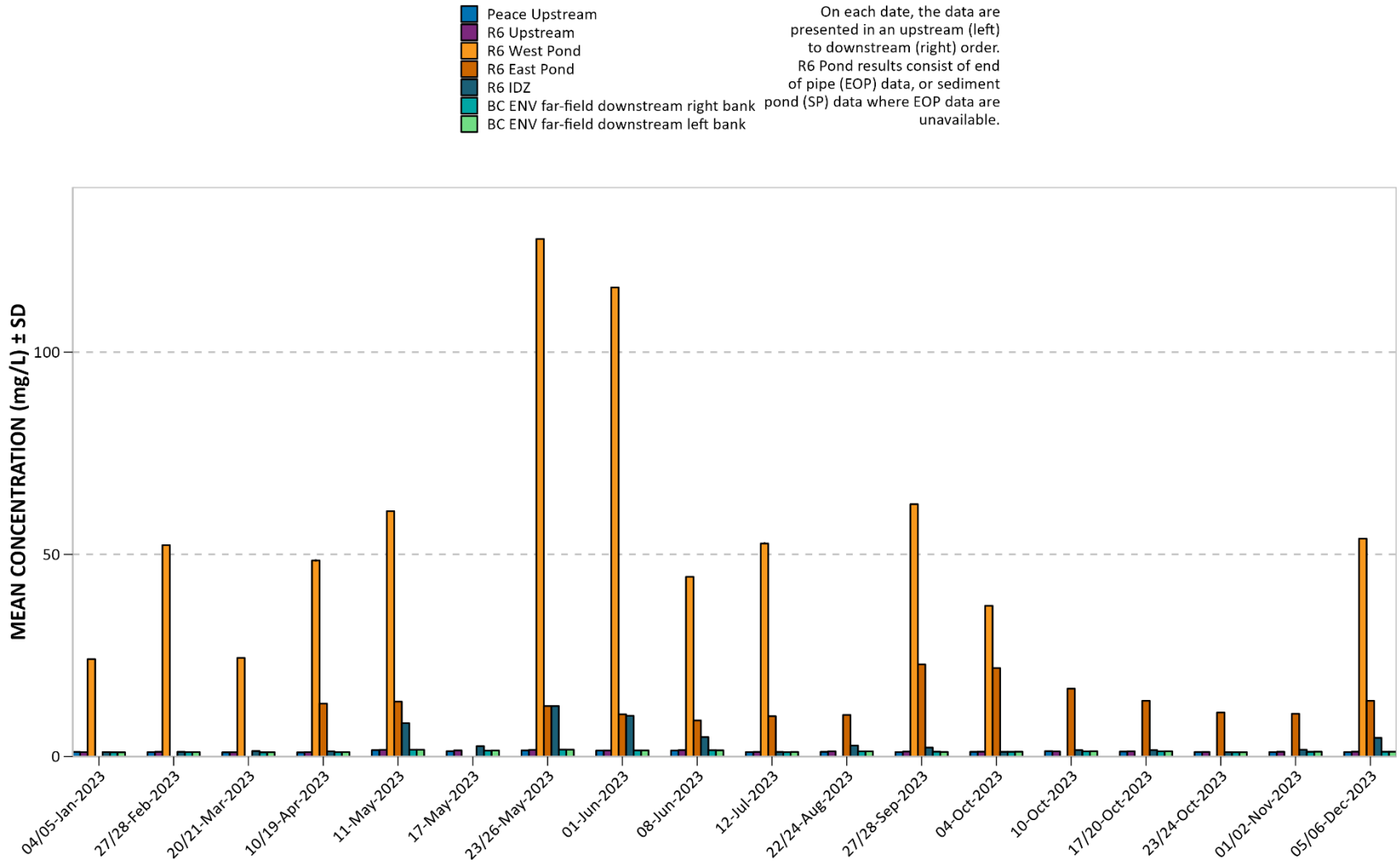


Figure 80. 2023 Peace River and RSEM R6 pond dissolved strontium (Sr).

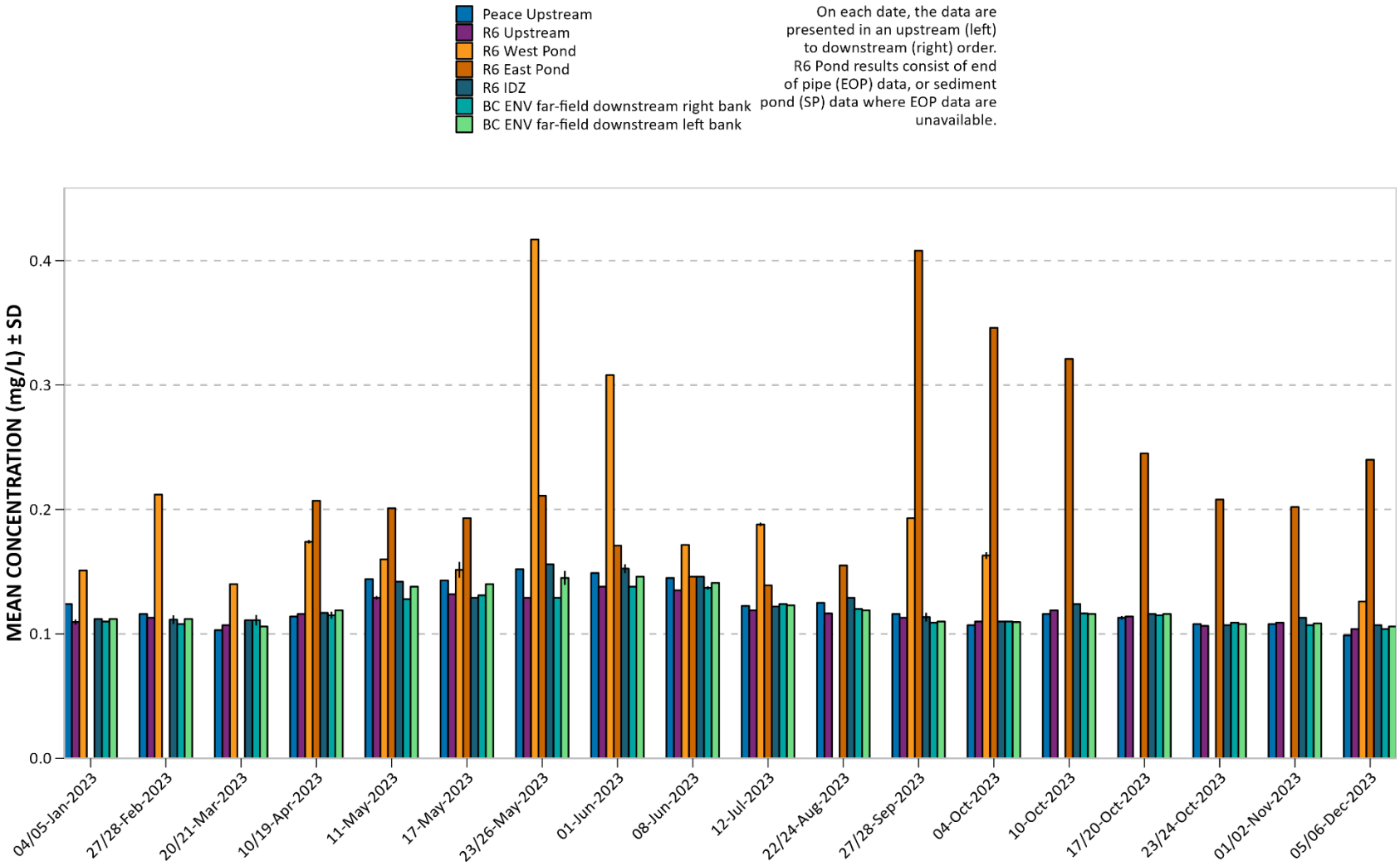


Figure 81. 2023 Peace River and RSEM R6 pond dissolved sulfur (S).

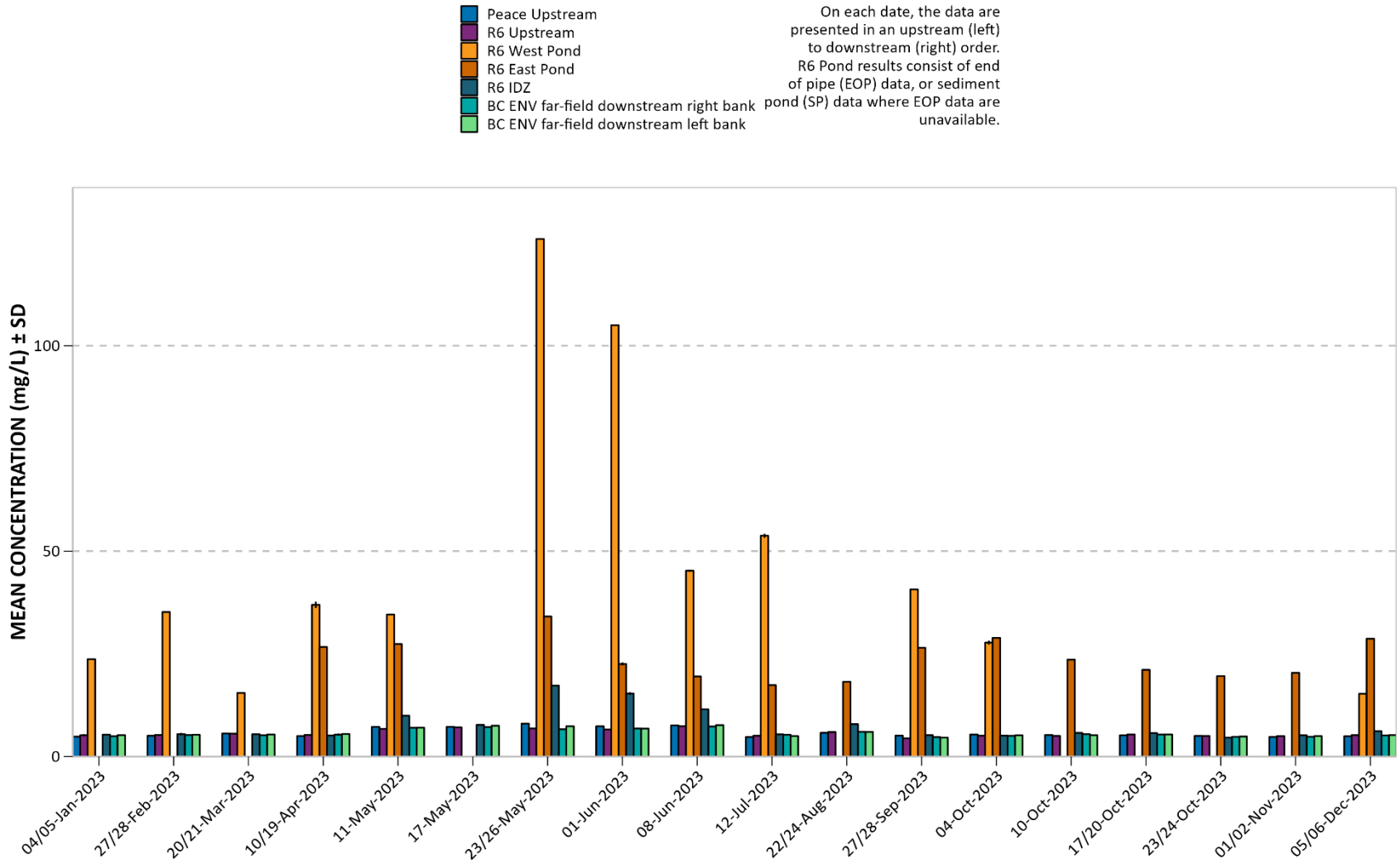


Figure 82. 2023 Peace River and RSEM R6 pond dissolved thallium (Tl).

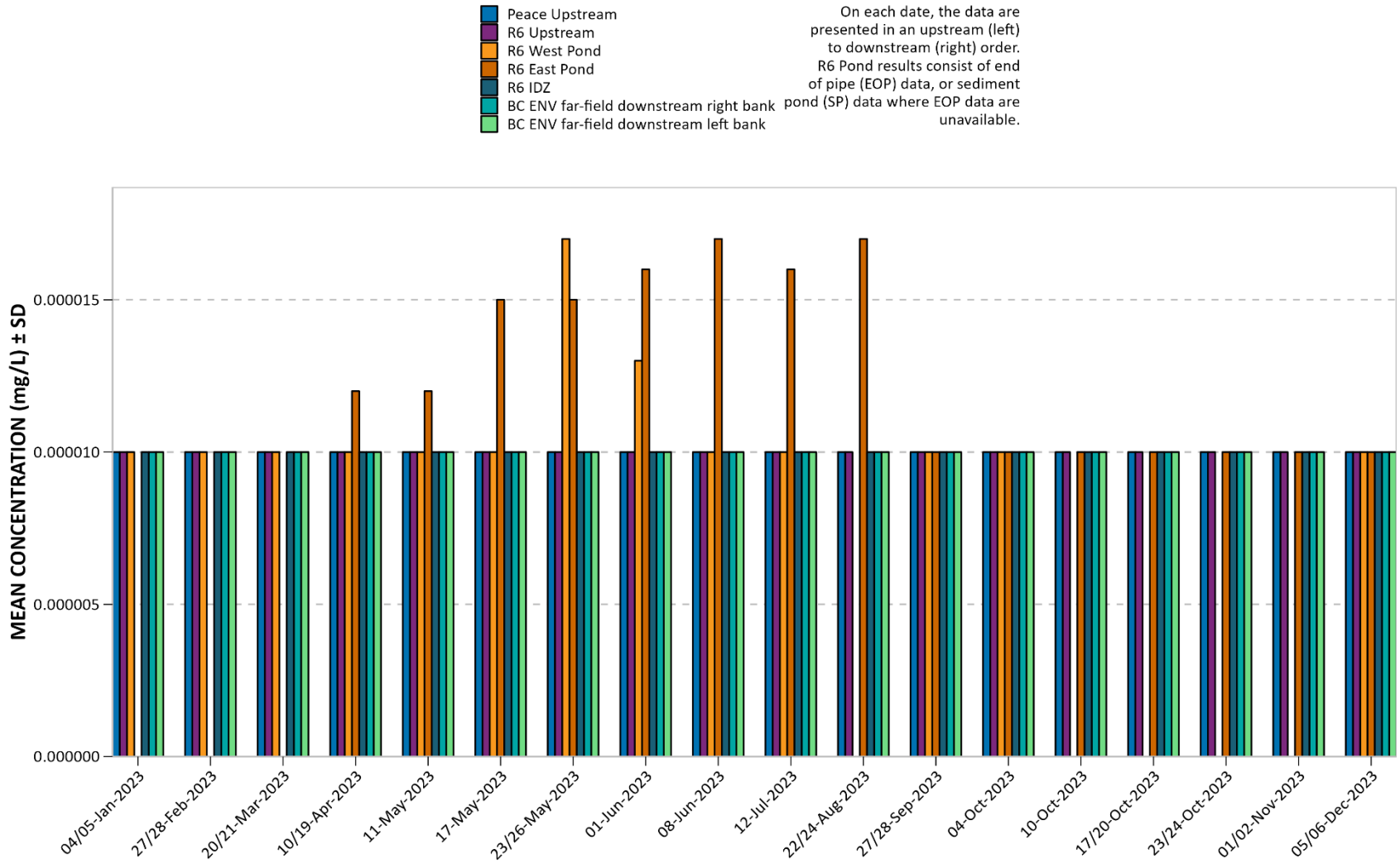


Figure 83. 2023 Peace River and RSEM R6 pond dissolved tin (Sn).

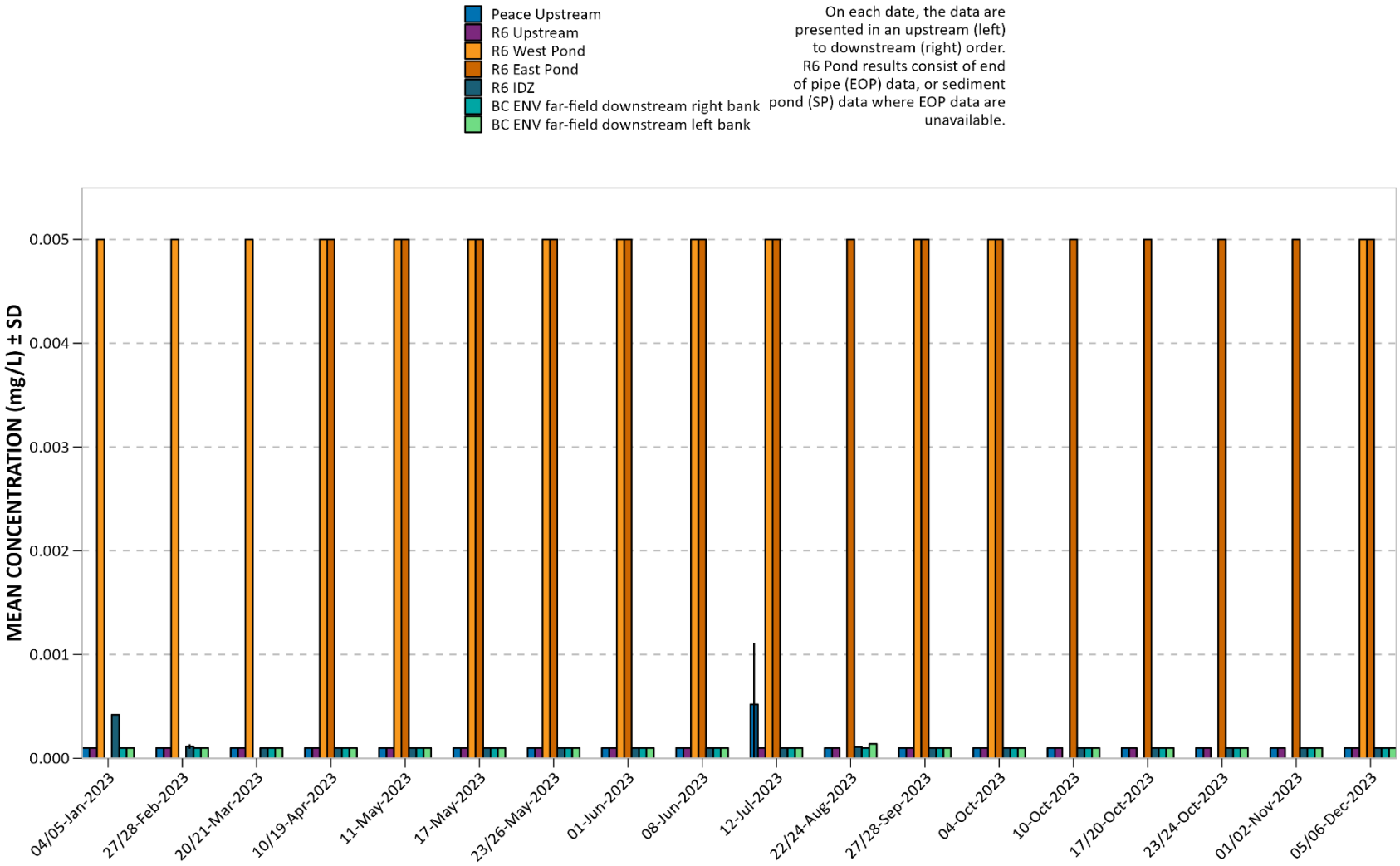


Figure 84. 2023 Peace River and RSEM R6 pond dissolved titanium (Ti).

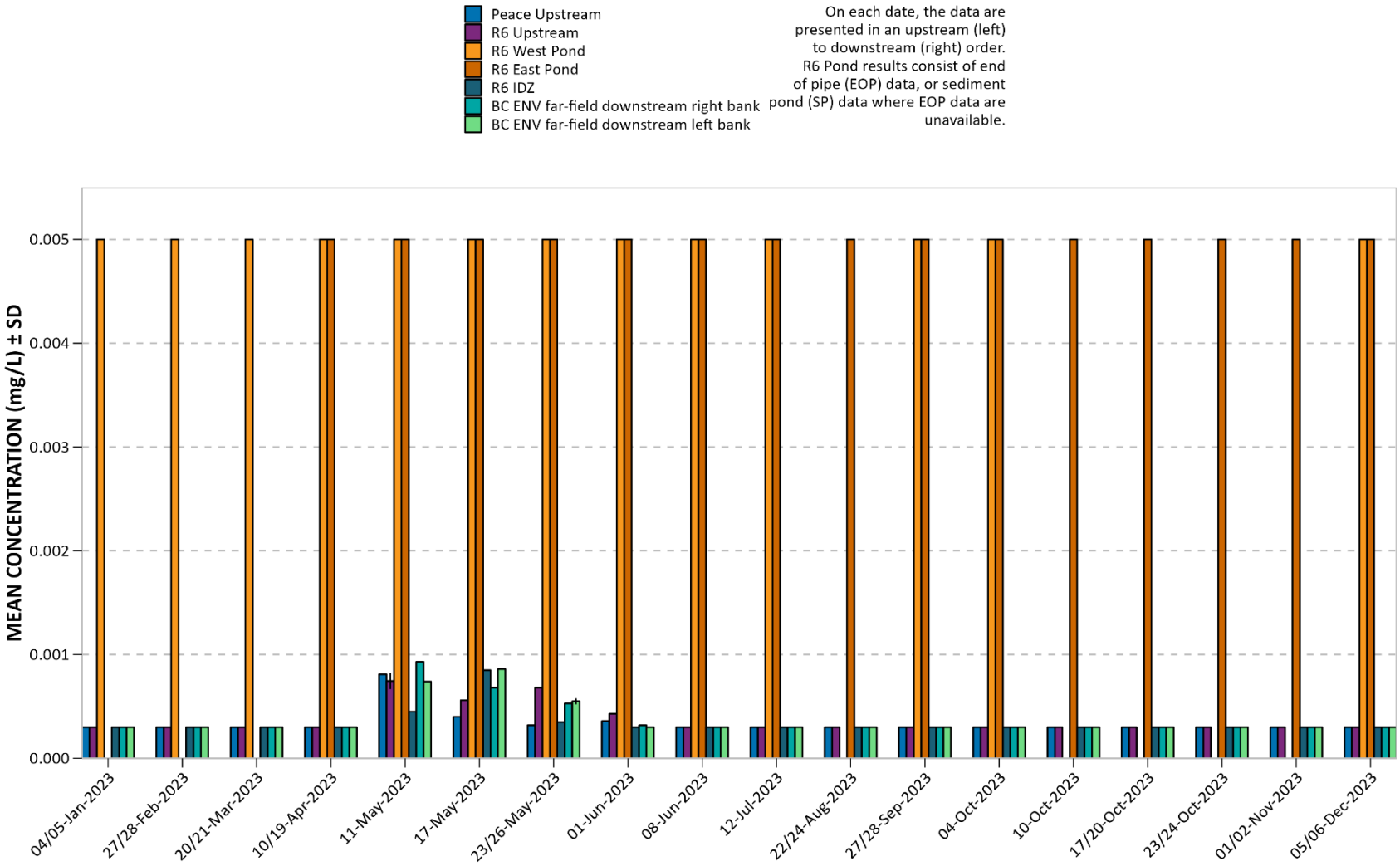


Figure 85. 2023 Peace River and RSEM R6 pond dissolved uranium (U).

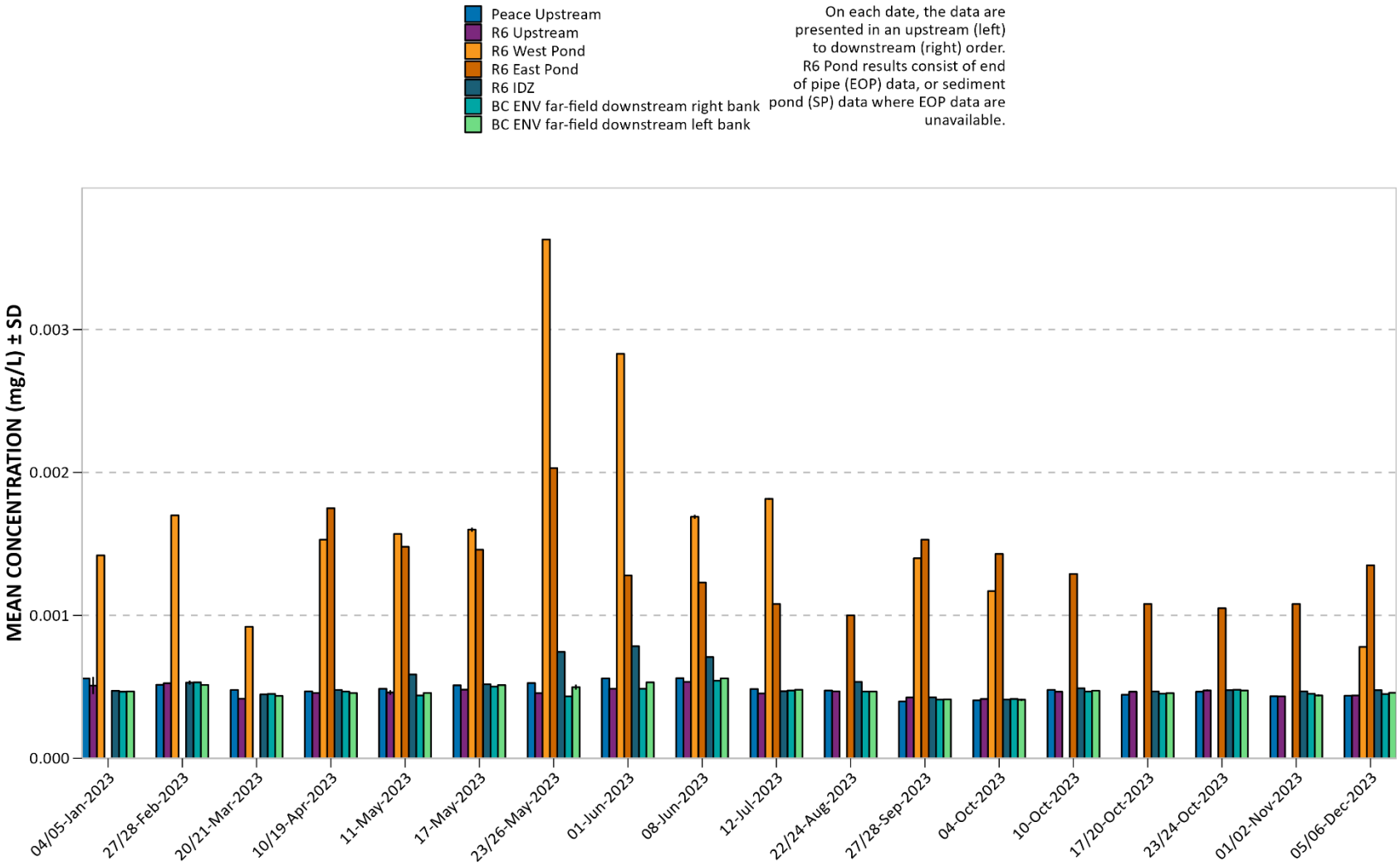


Figure 86. 2023 Peace River and RSEM R6 pond dissolved vanadium (V).

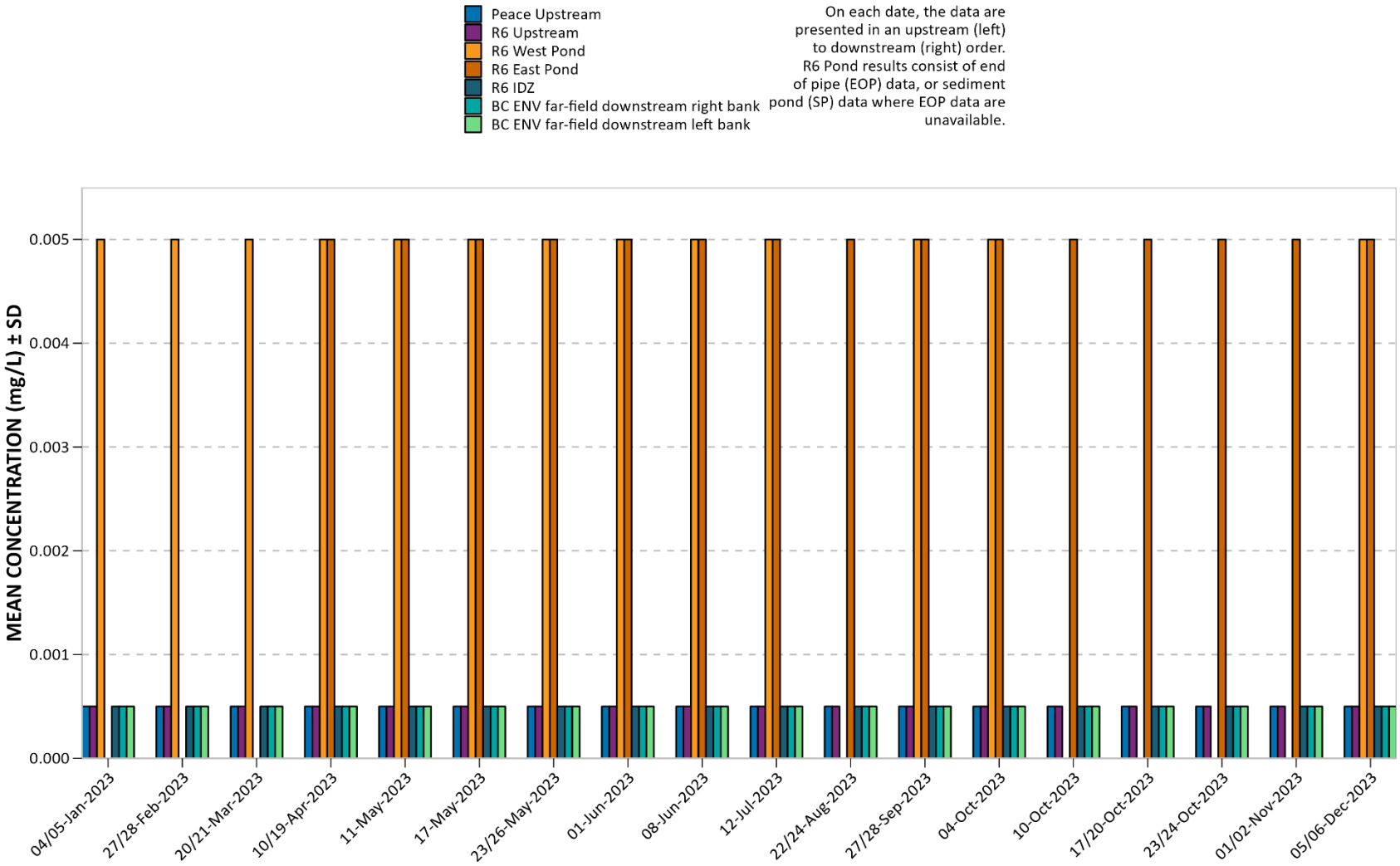
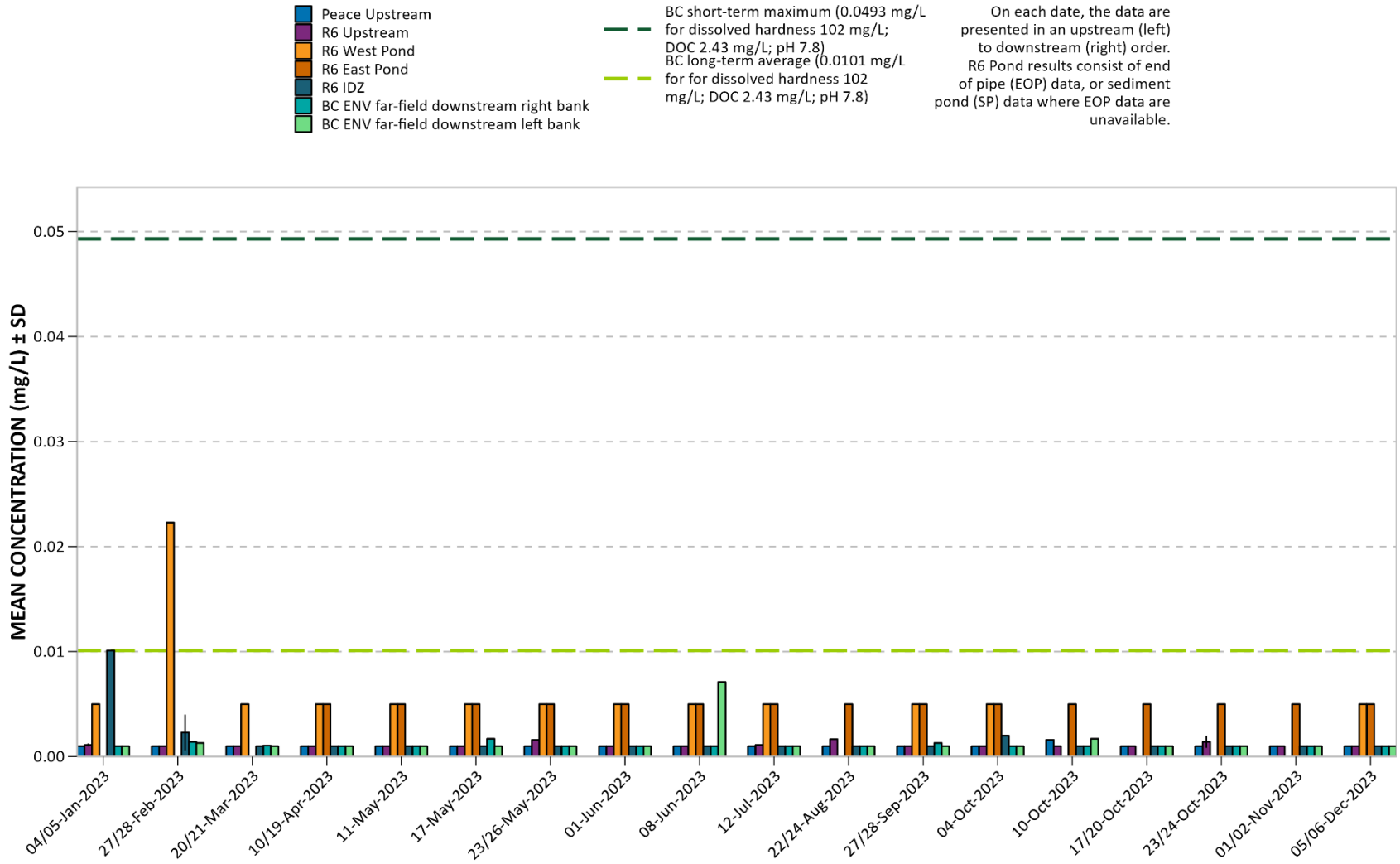
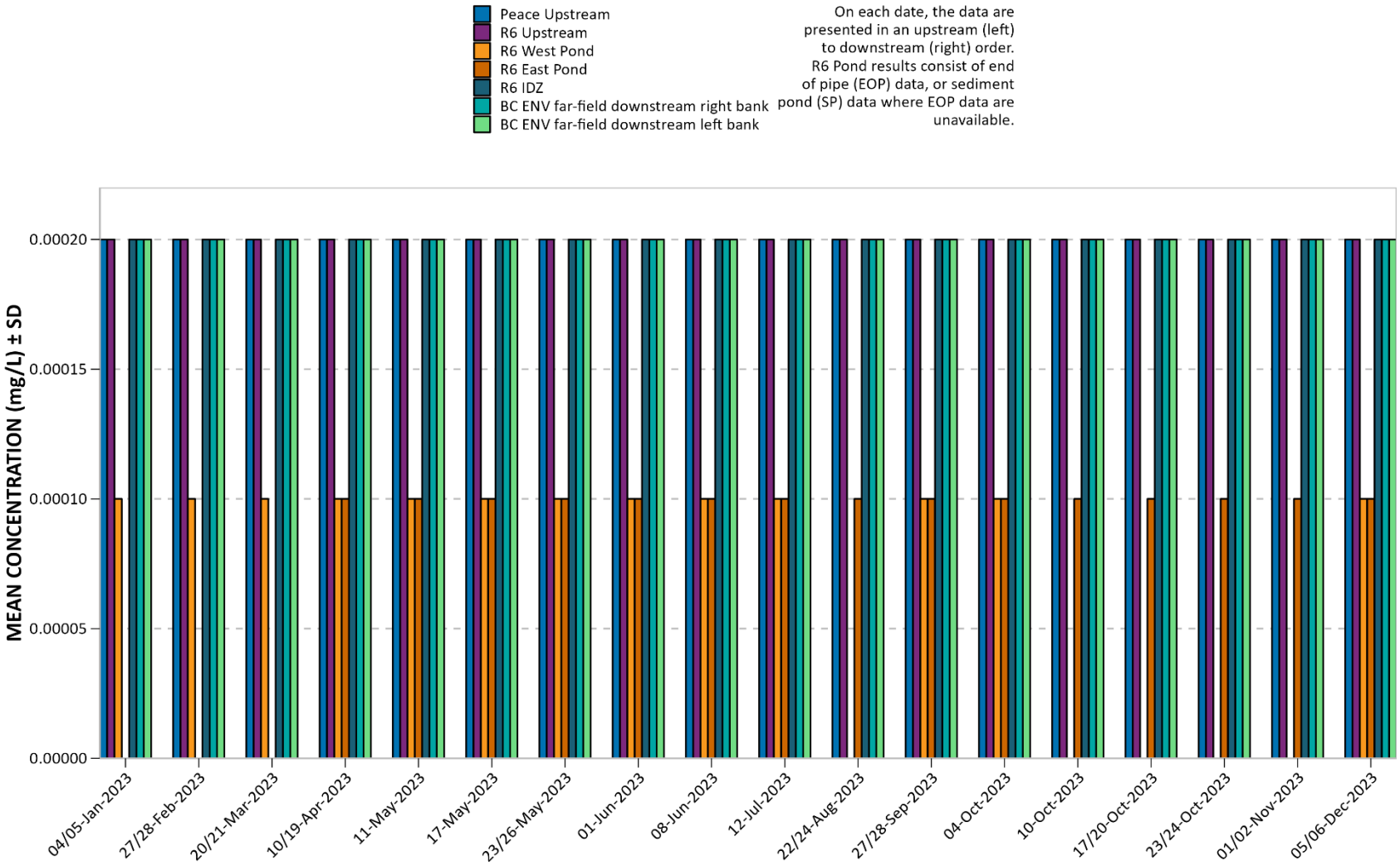


Figure 87. 2023 Peace River and RSEM R6 pond dissolved zinc (Zn).



Note: BC WQGs for dissolved zinc are dissolved hardness, DOC, and pH dependent, and therefore guidelines depicted in the plot are applicable for Peace River sites only. Based on the range of dissolved hardness, DOC, and pH values observed in the Peace River, the applicable BC maximum and 30-day guidelines are 0.0493 mg/L and 0.0101 mg/L, respectively.

Figure 88. 2023 Peace River and RSEM R6 pond dissolved zirconium (Zr).



Appendix C. Site C PAG Contact RSEM Surface Water Quality Monitoring Time Series Plots – L6 Monthly Data

L6 does not normally discharge to the Peace River; from April 10 – 11, 2023 and October 20 – 22, 2023, L6 was dewatered by pumping the water in the pond to the Peace River. The following time series plots depict data collected on April 10, 2023 and October 20, 2023 for each parameter at the PAG-contact RSEM pond L6 and the corresponding Peace River monitoring sites. Unless otherwise specified, all data are laboratory analytical results. Peace River samples were collected by Ecofish and included a field blank, travel blank and duplicate sample for QA/QC purposes. RSEM pond data were provided by PRHP. Error bars are included when duplicate samples are collected for laboratory data and are also included for all in situ data where triplicate readings are recorded (error bars for in situ data are generally too small to be visible on the plots). The location of duplicate sampling is varied with each sampling date. Similarly pond sampling duplicates are collected periodically, and error bars are included when duplicate sampling in the pond has occurred.

Figure 89. 2023 Peace River (in situ) and RSEM L6 pond (lab) specific conductivity.

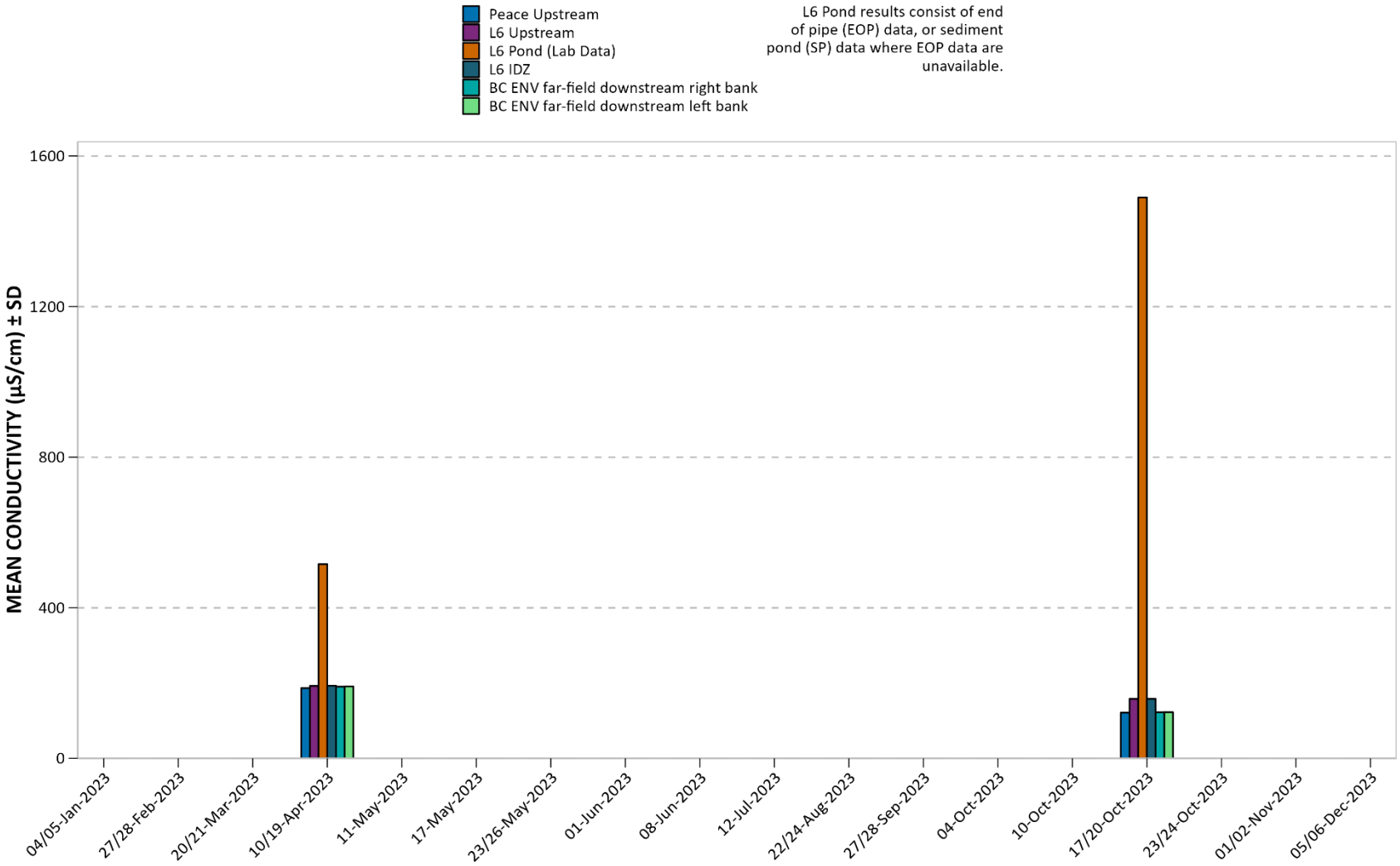


Figure 90. 2023 Peace River and RSEM L6 pond lab specific conductivity.

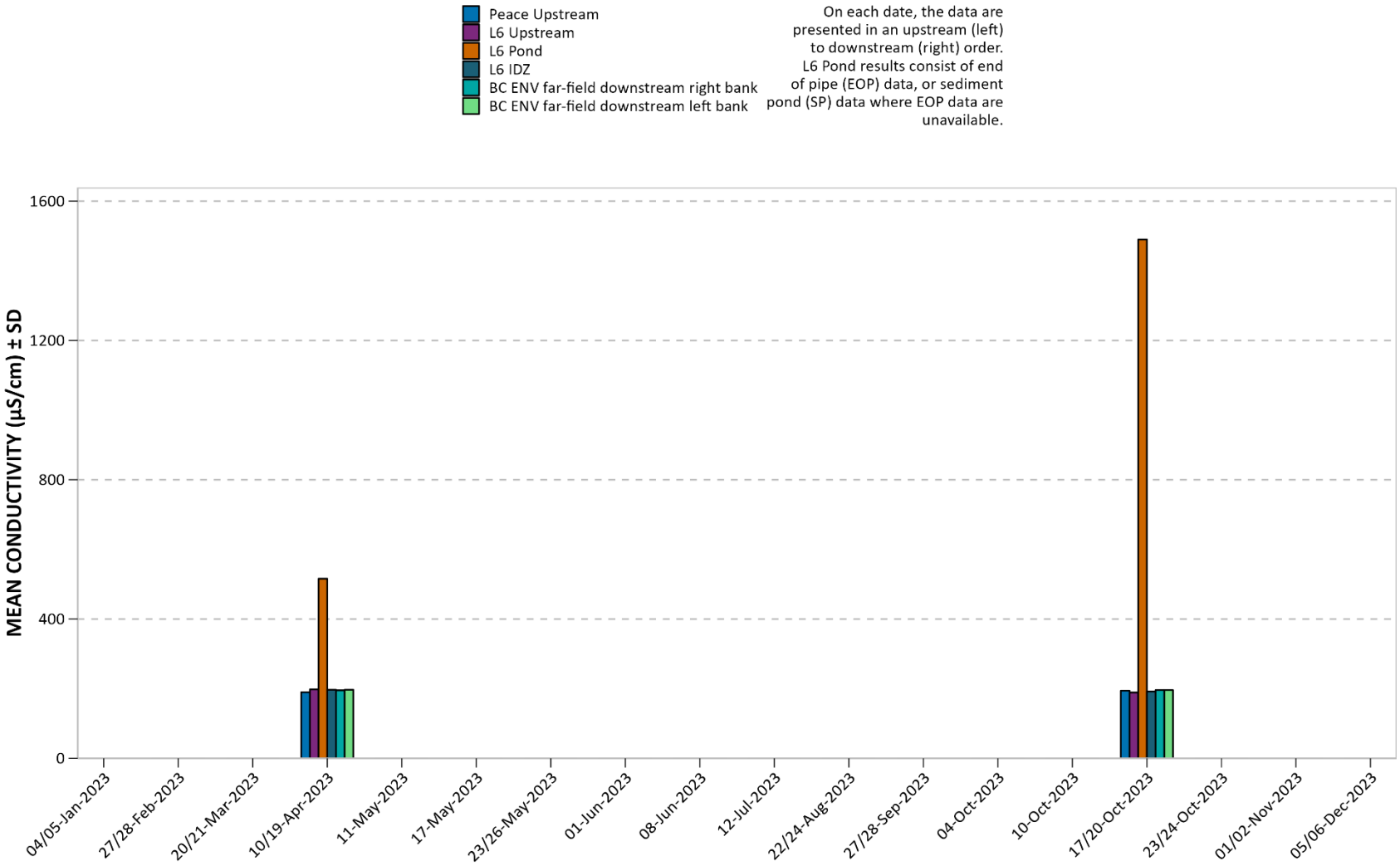


Figure 91. 2023 Peace River and RSEM L6 pond dissolved hardness (as $CaCO_3$).

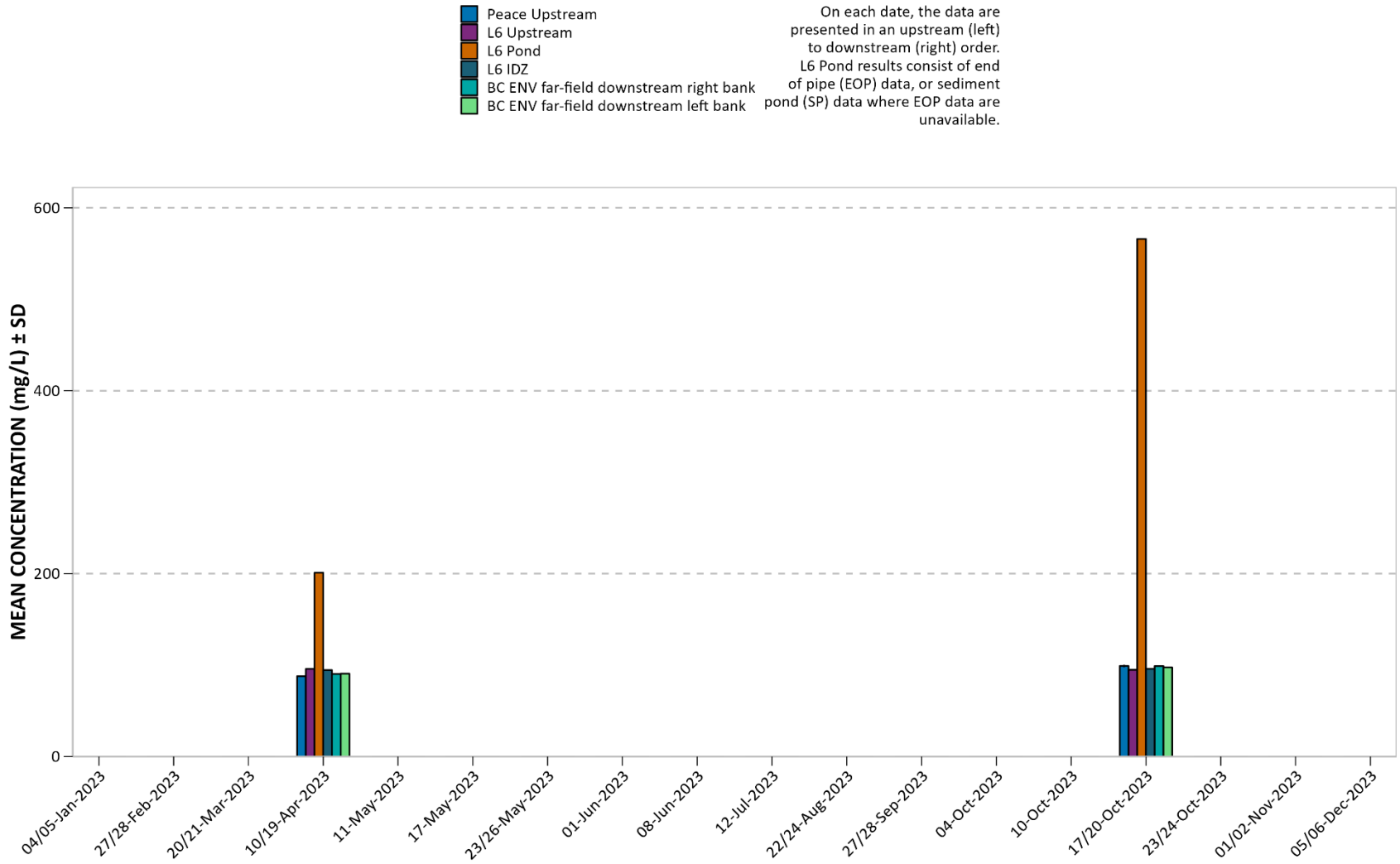


Figure 92. 2023 Peace River and RSEM L6 pond total dissolved solids (TDS).

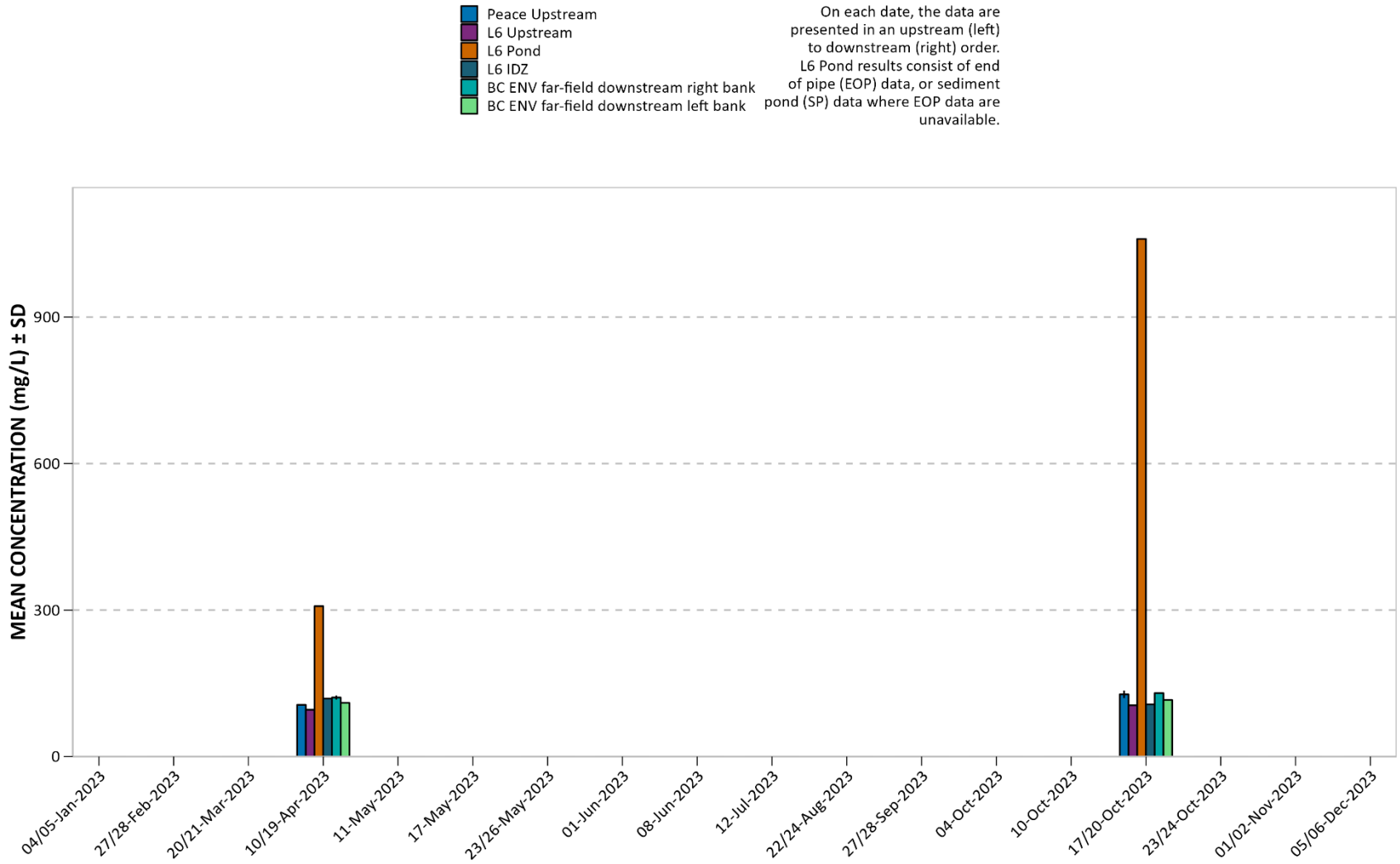


Figure 93. 2023 Peace River and RSEM L6 pond total suspended solids (TSS).

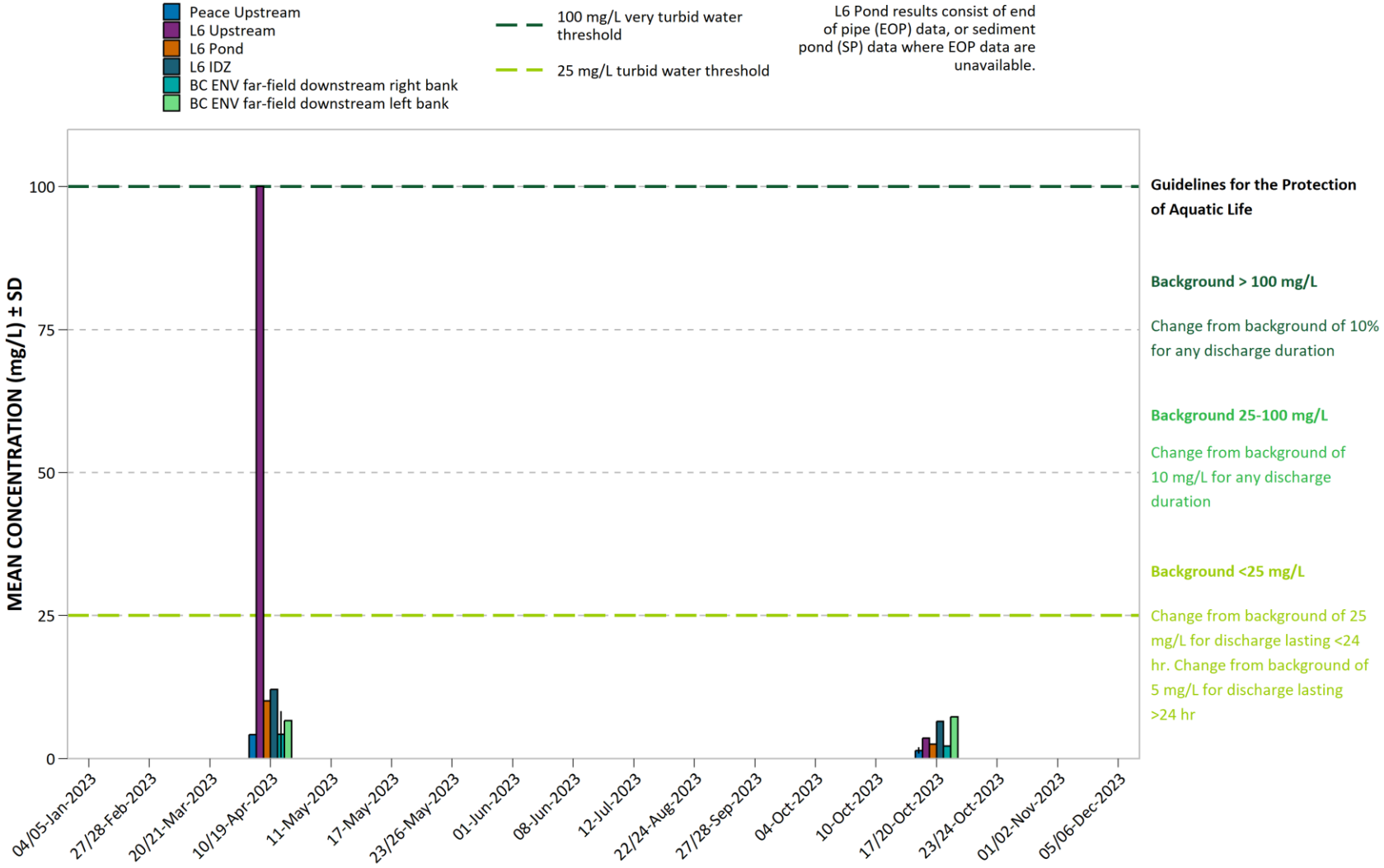


Figure 94. 2023 Peace River (in situ) and RSEM L6 pond (lab) turbidity.

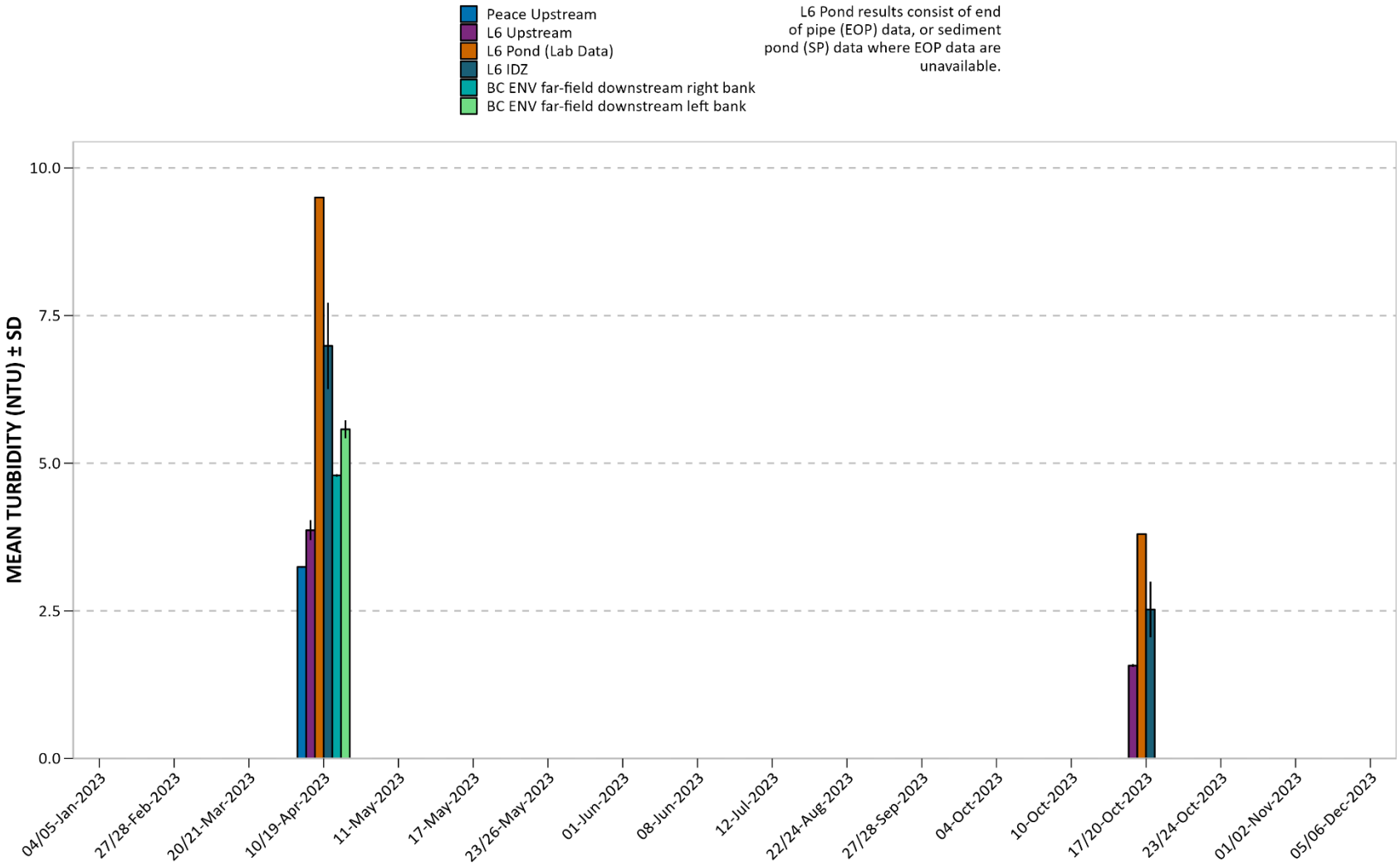


Figure 95. 2023 Peace River (in situ) and RSEM L6 pond (lab) pH.

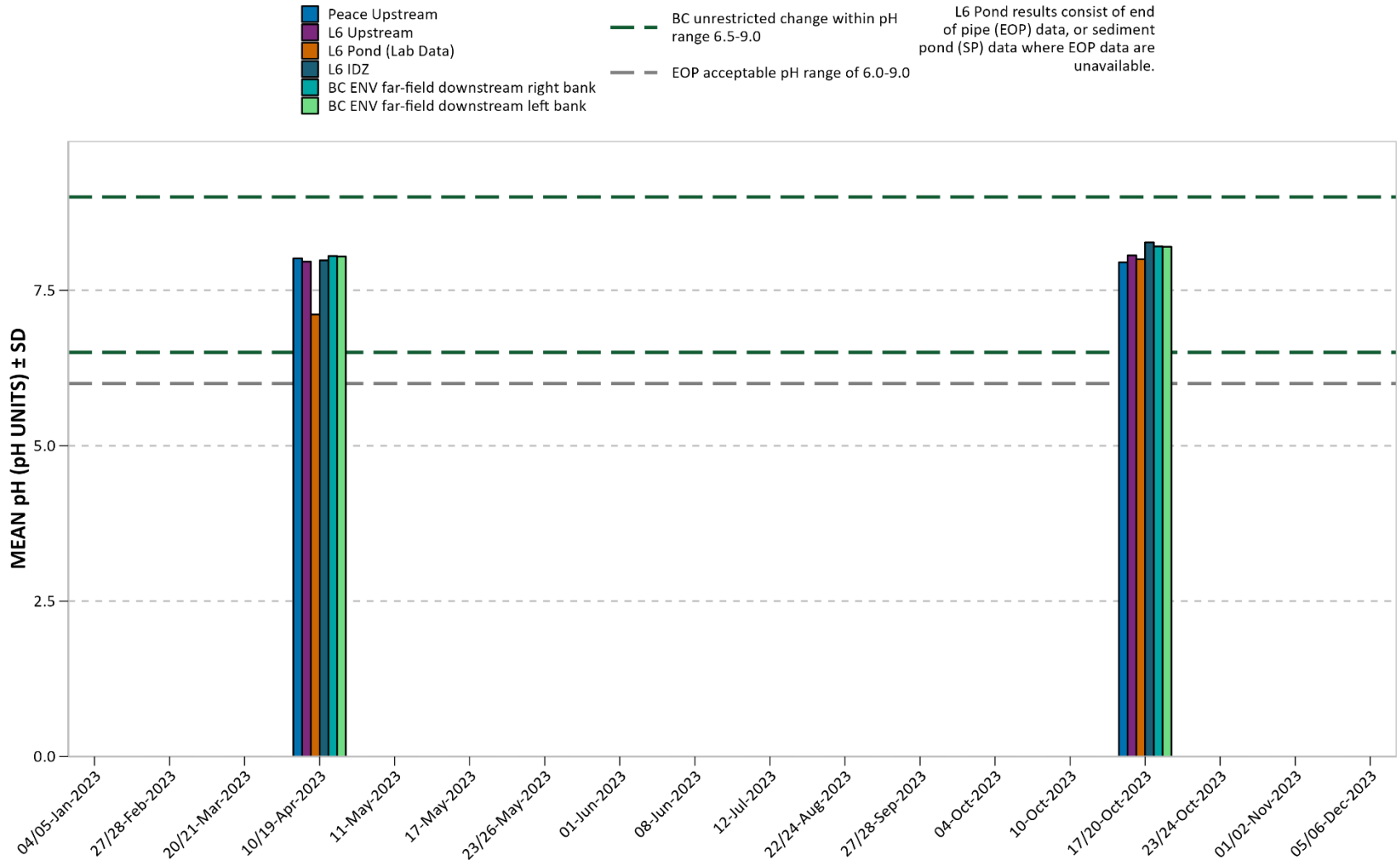


Figure 96. 2023 Peace River and RSEM L6 pond lab pH.

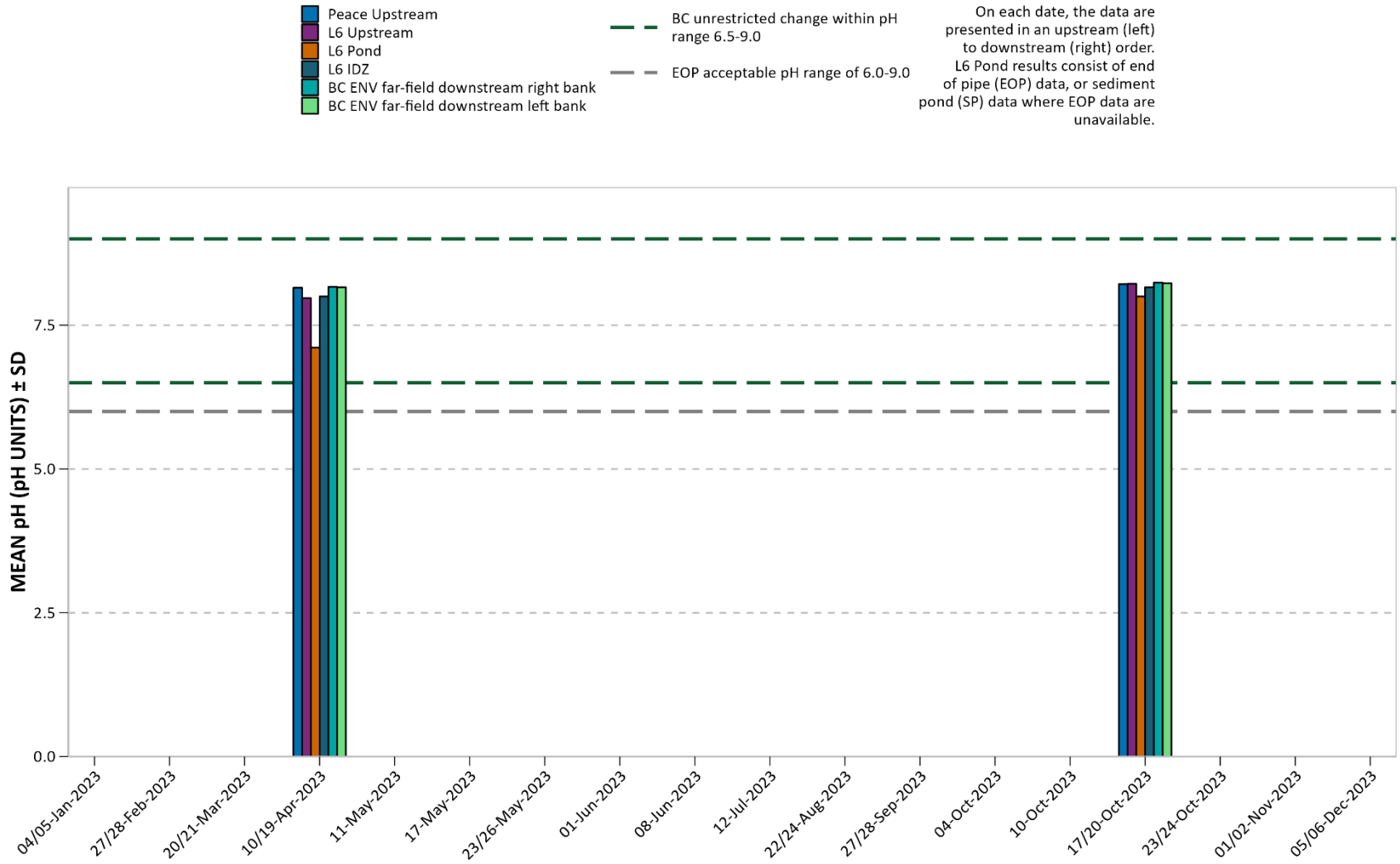


Figure 97. 2023 Peace River and RSEM L6 pond total alkalinity (as $CaCO_3$).

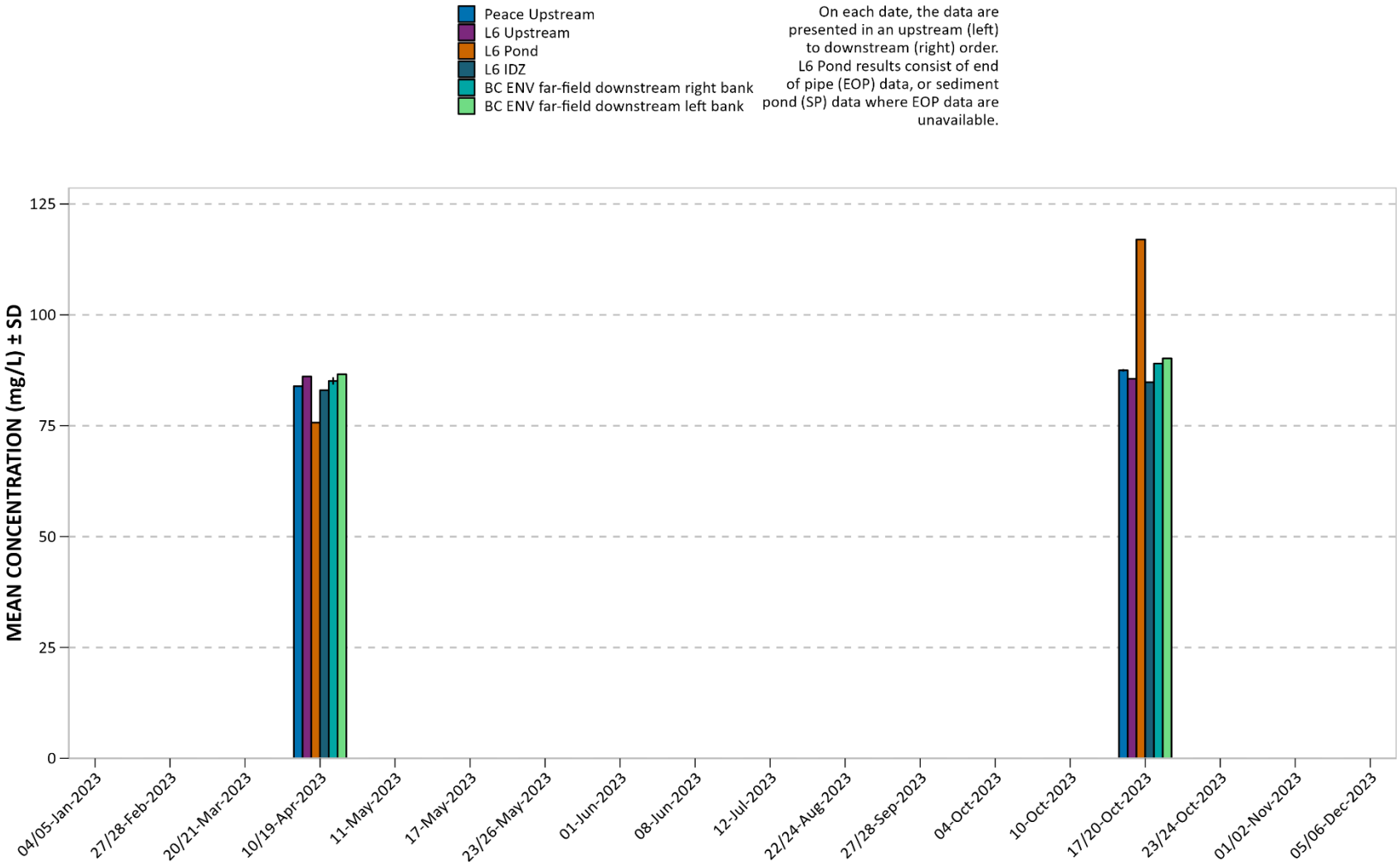
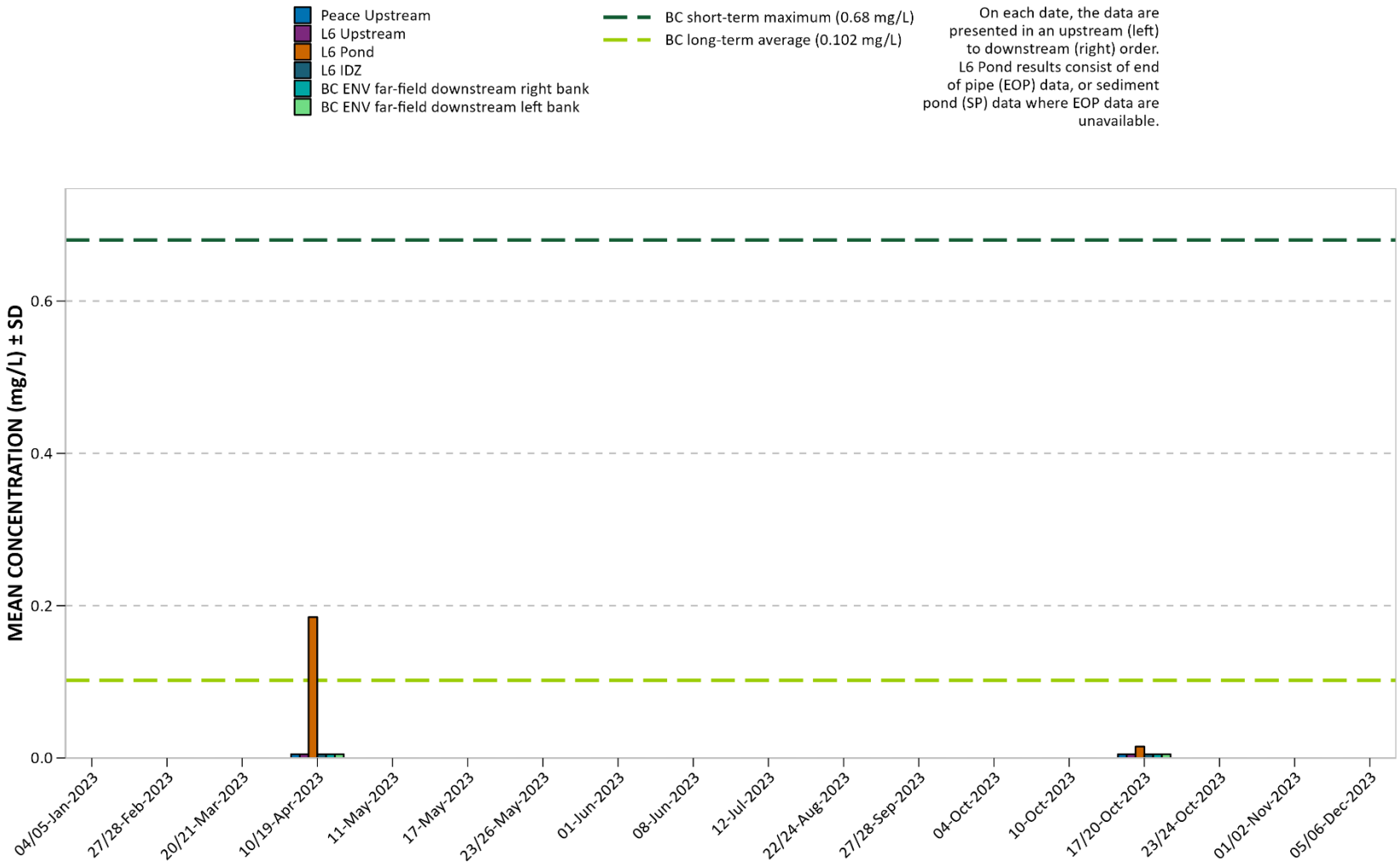


Figure 98. 2023 Peace River and RSEM L6 pond total ammonia (as N).



Note: BC WQG for total ammonia are pH and temperature dependent; guidelines used are the most conservative.

Figure 99. 2023 Peace River and RSEM L6 pond bromide (Br).

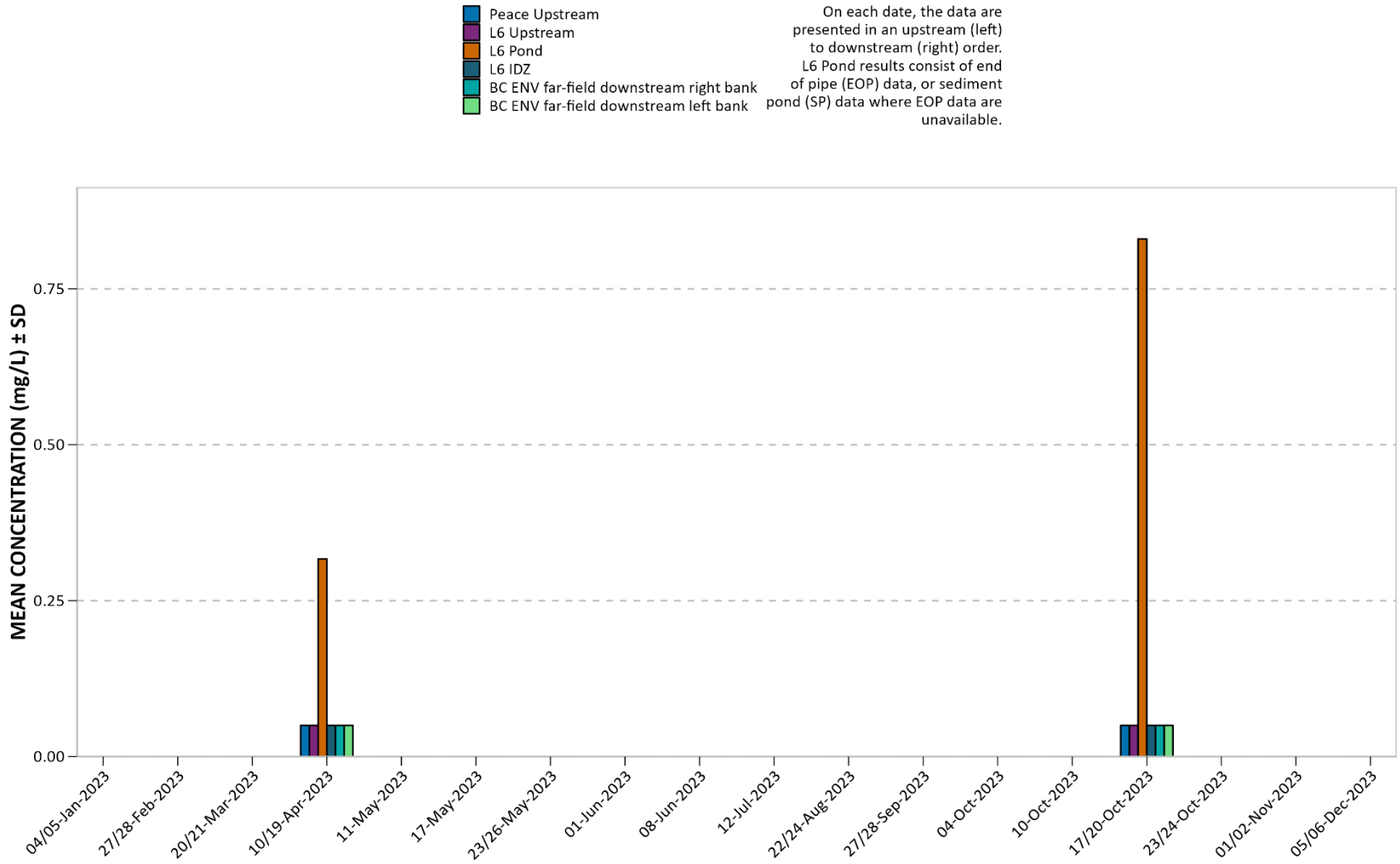


Figure 100. 2023 Peace River and RSEM L6 pond chloride (Cl).

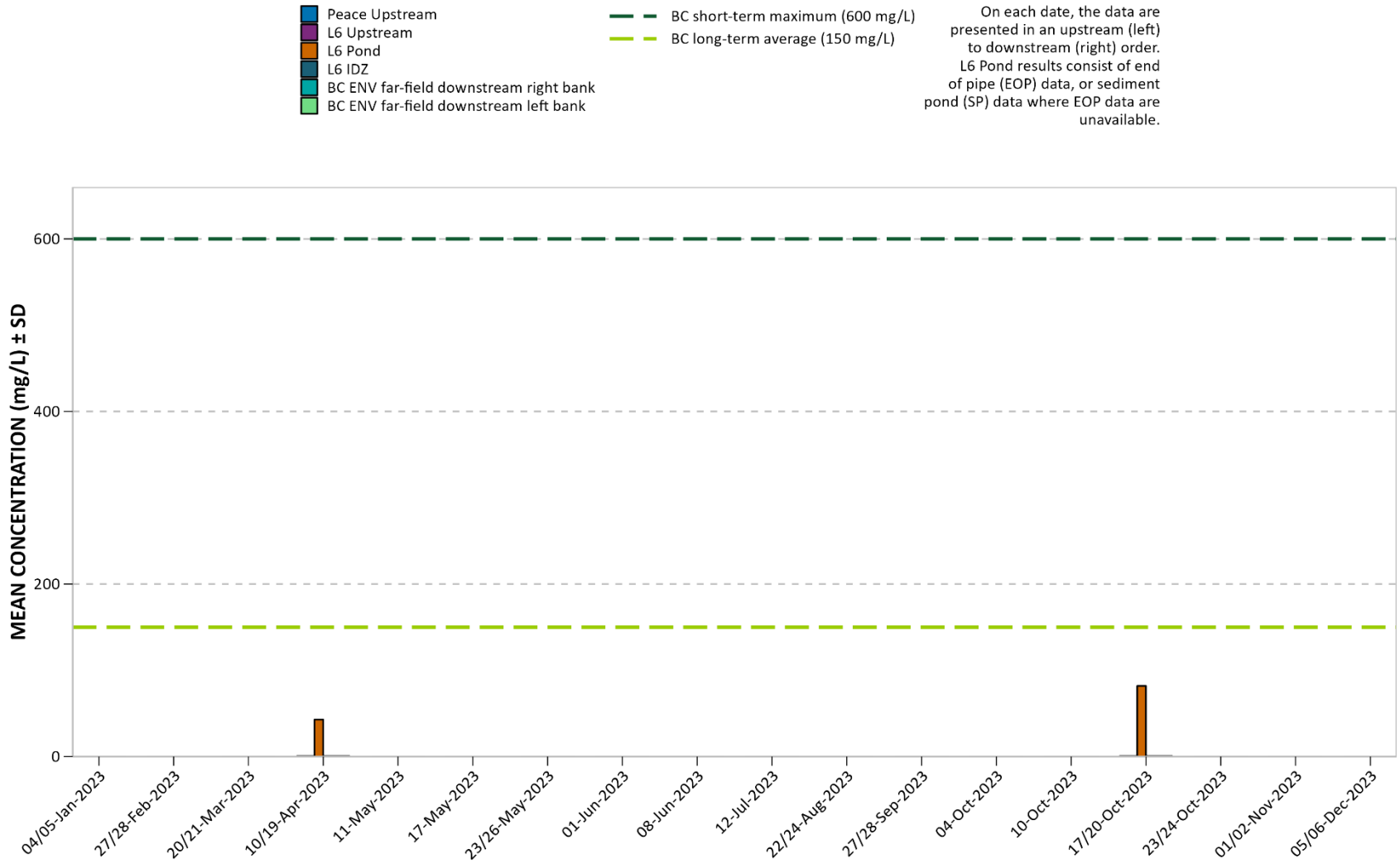


Figure 101. 2023 Peace River and RSEM L6 pond dissolved orthophosphate.

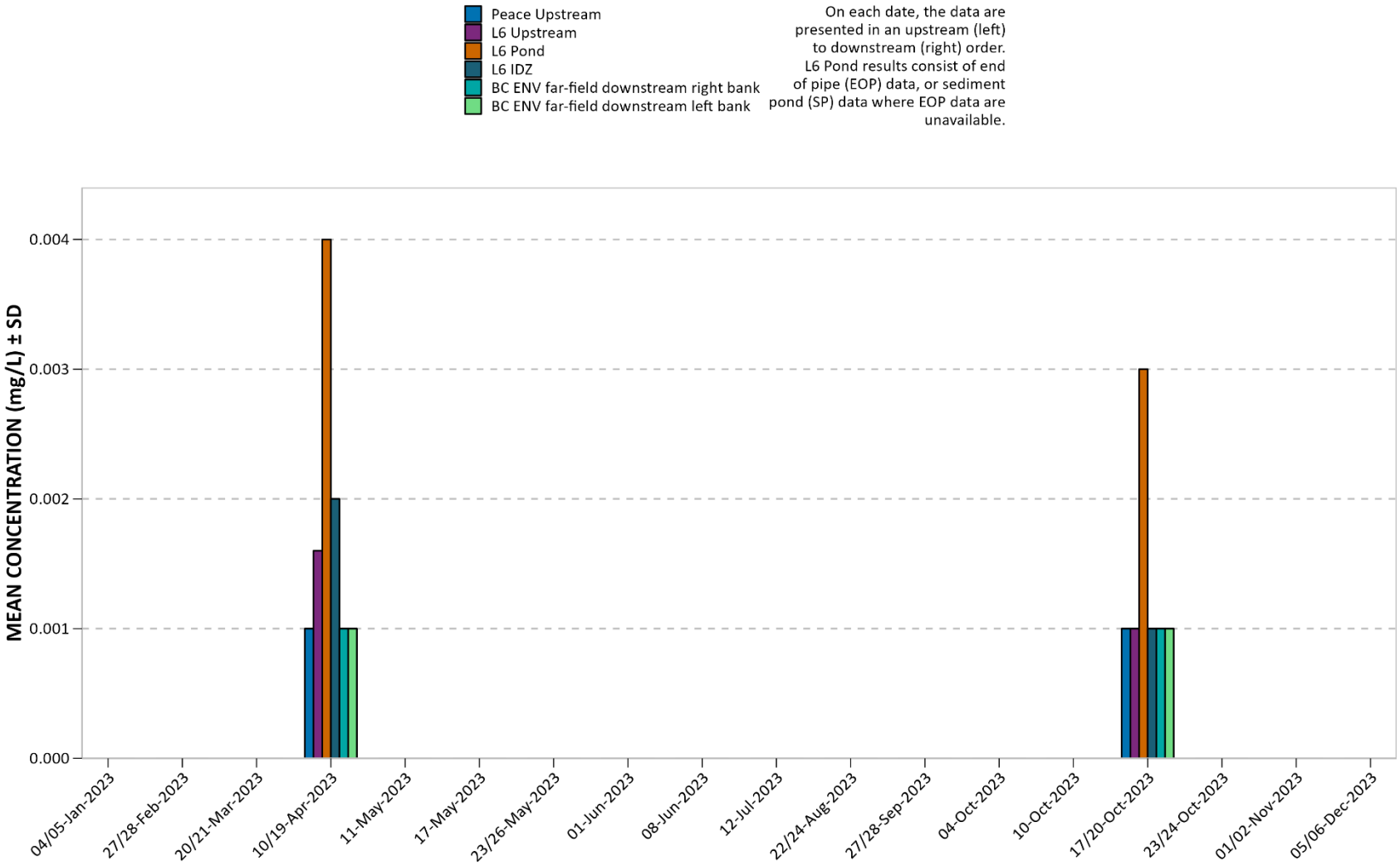
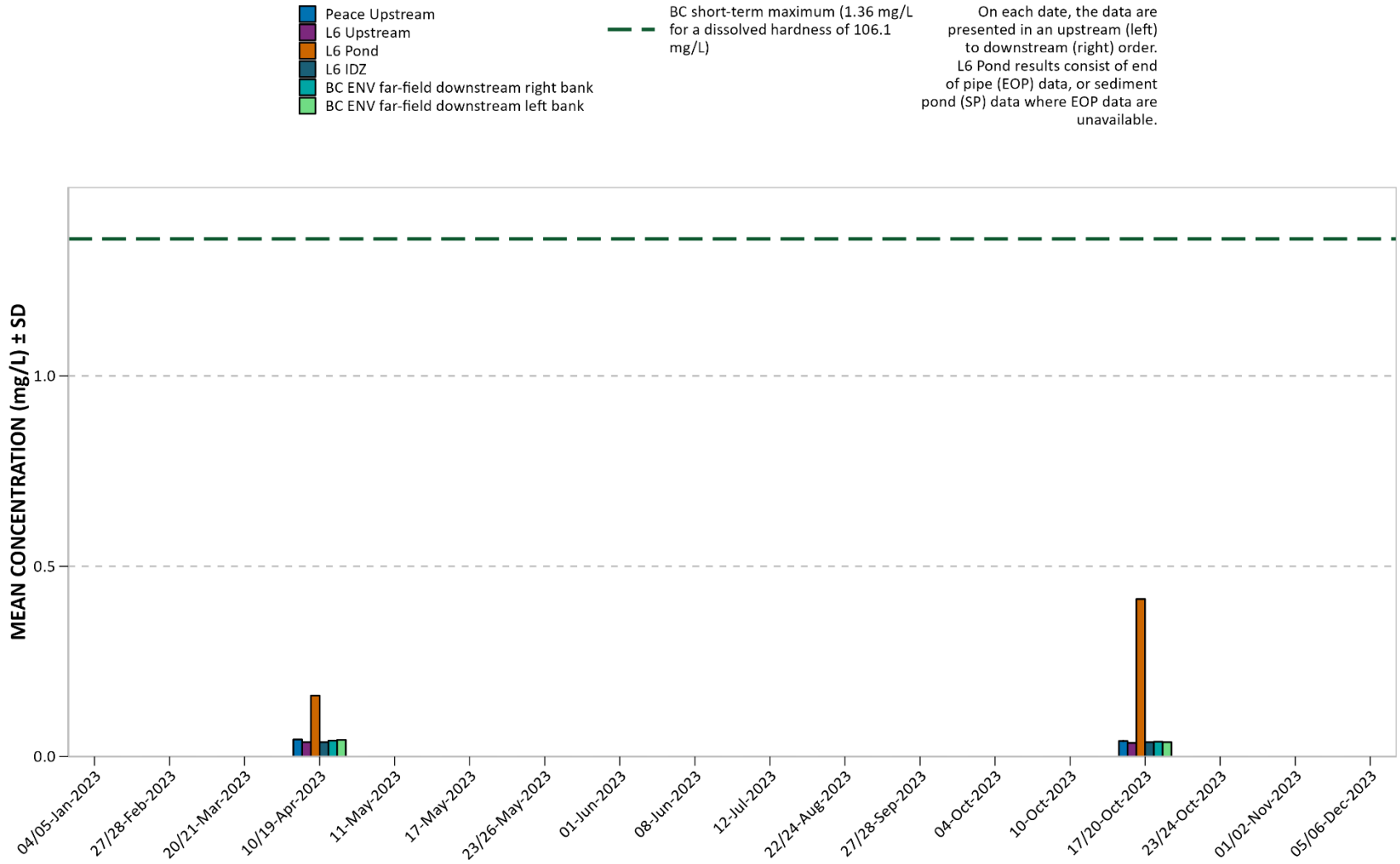


Figure 102. 2023 Peace River and RSEM L6 pond fluoride (F).



Note: BC short-term WQG for fluoride is dissolved hardness dependent. An average Peace River dissolved hardness of 106.1 mg/L (based on 26 samples collected between April 2007 – Jan. 2017; BC Hydro 2017b) was used in the plot to depict the maximum guidelines for ease of interpretation. Sample specific dissolved hardness was used to screen individual sample results against the guideline in the data tables (Appendix A).

Figure 103. 2023 Peace River and RSEM L6 pond nitrate (as N).

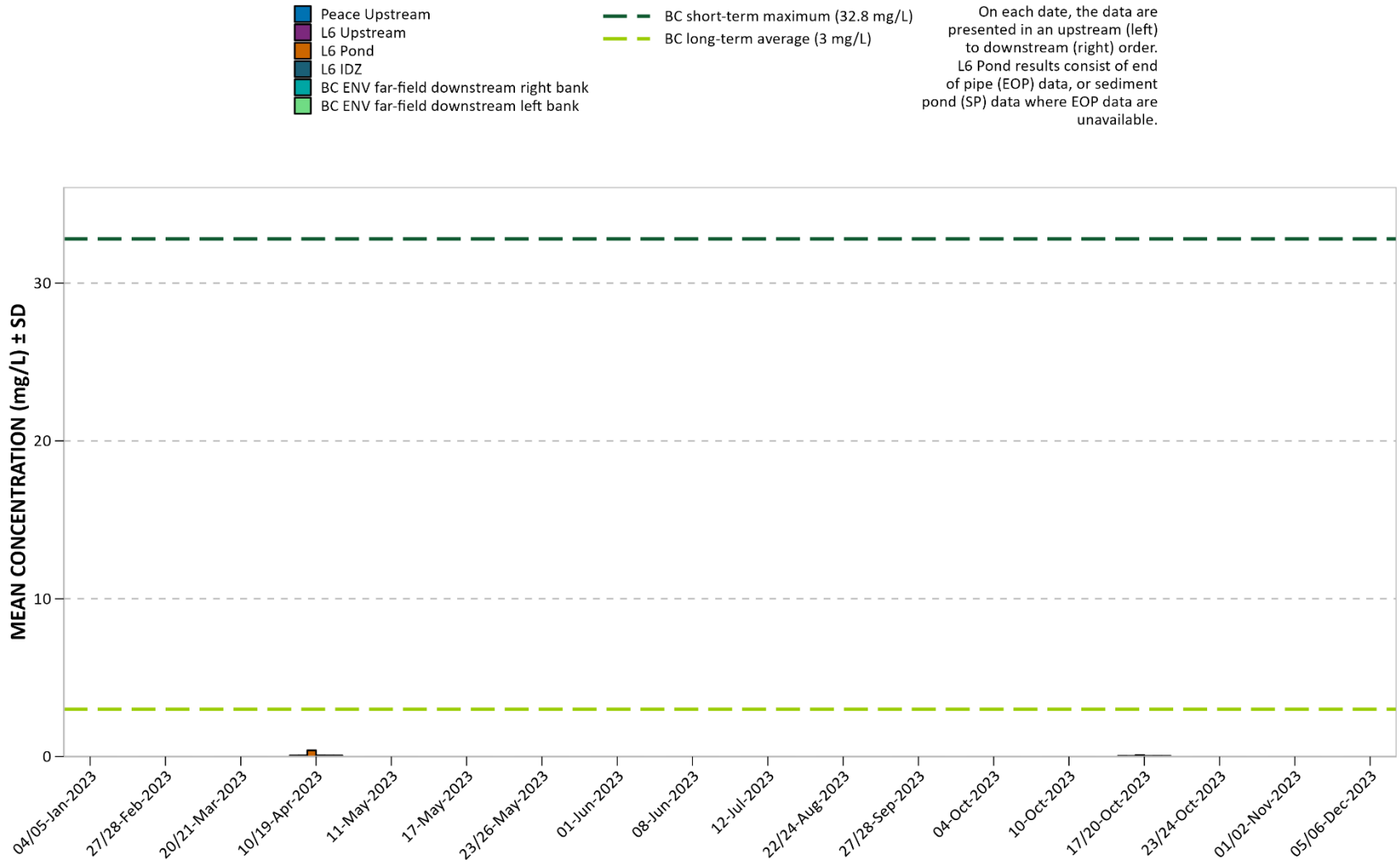
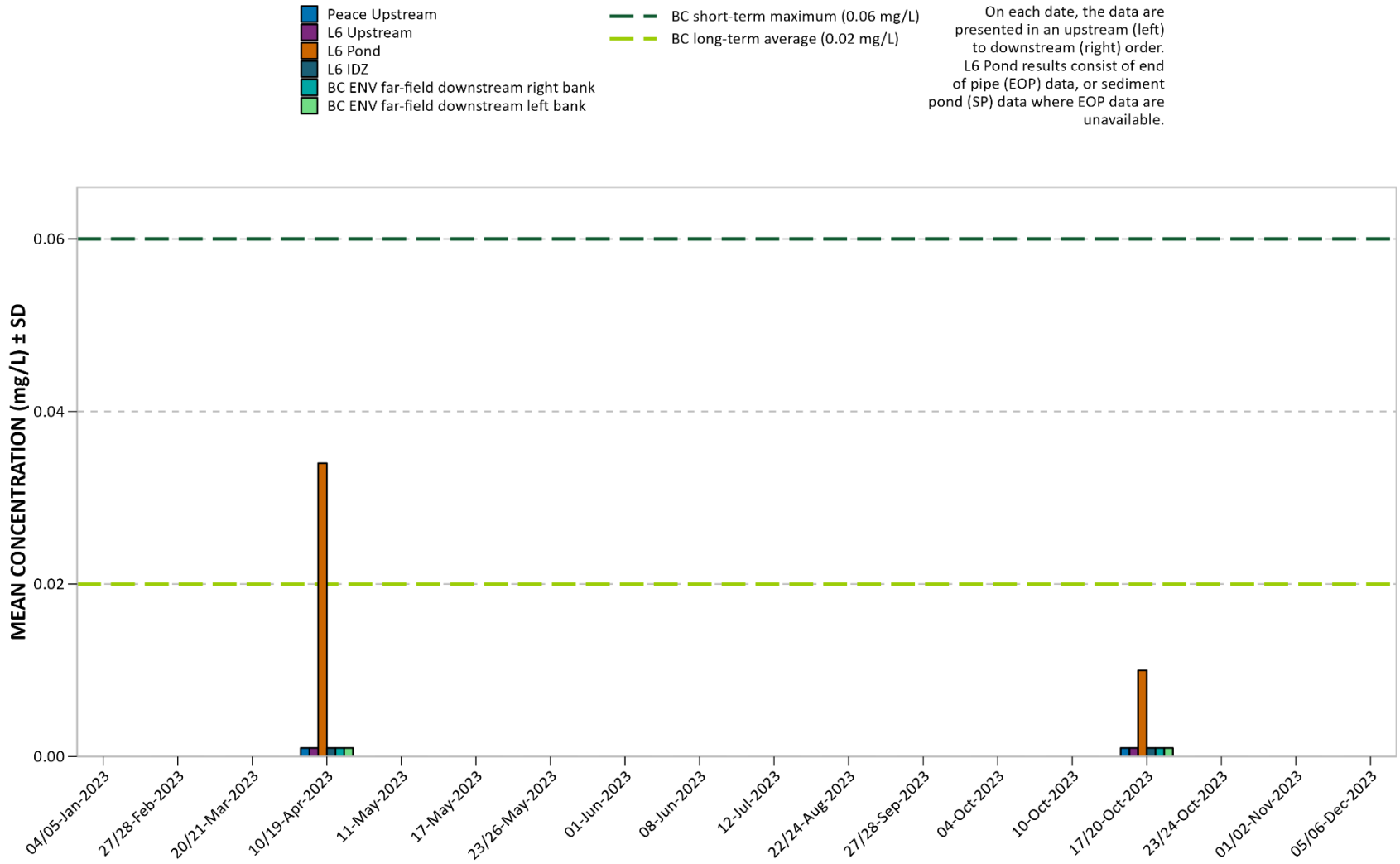
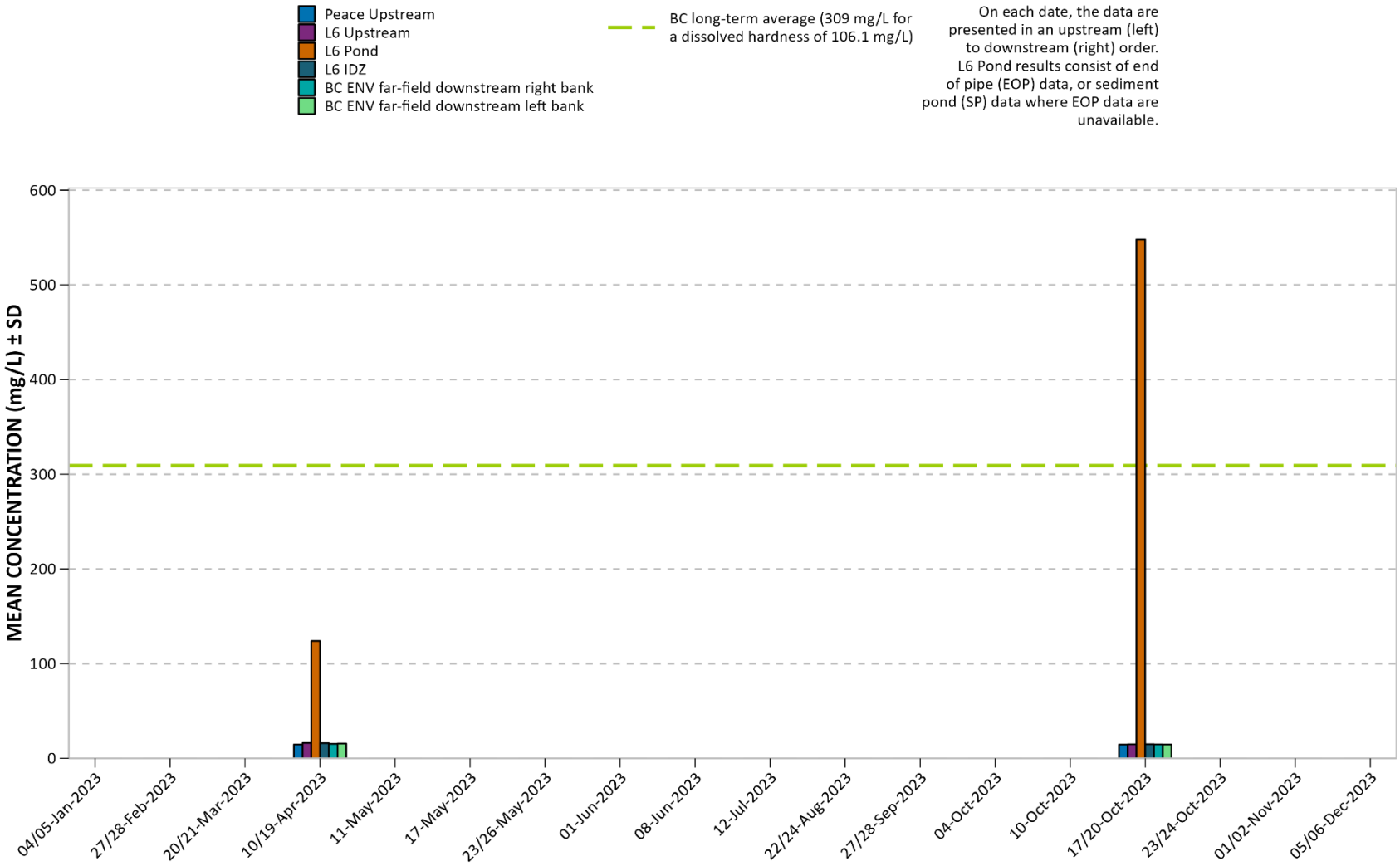


Figure 104. 2023 Peace River and RSEM L6 pond nitrite (as N).



Note: BC WQG for nitrite are chloride dependent, and therefore guidelines depicted in the plot are applicable for Peace River sites only. Based on the range of chloride values observed in the Peace River, the applicable BC Maximum and 30-day guidelines are 0.06 mg/L and 0.02 mg/L, respectively.

Figure 105. 2023 Peace River and RSEM L6 pond sulfate (SO_4).



Note: BC long-term WQG for sulfate is dissolved hardness dependent. An average Peace River dissolved hardness of 106.1 mg/L (based on 26 samples collected between April 2007 – Jan. 2017; BC Hydro 2017b) was used in the plot to depict the 30-day guidelines for ease of interpretation. Sample specific dissolved hardness was used to screen individual sample results against the guideline in the data tables (Appendix A).

Figure 106. 2023 Peace River and RSEM L6 pond dissolved organic carbon (DOC).

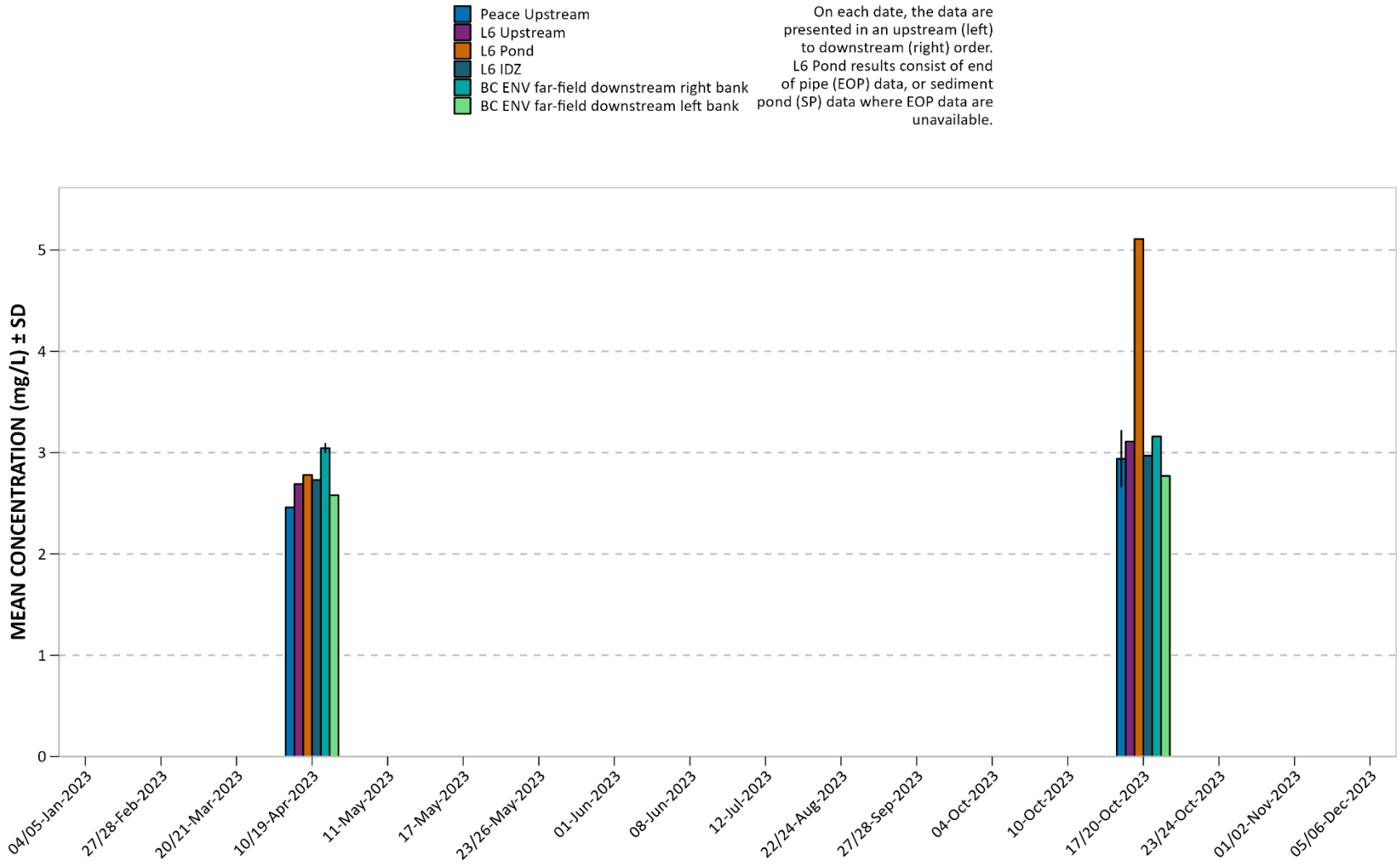


Figure 107. 2023 Peace River and RSEM L6 pond total organic carbon (TOC).

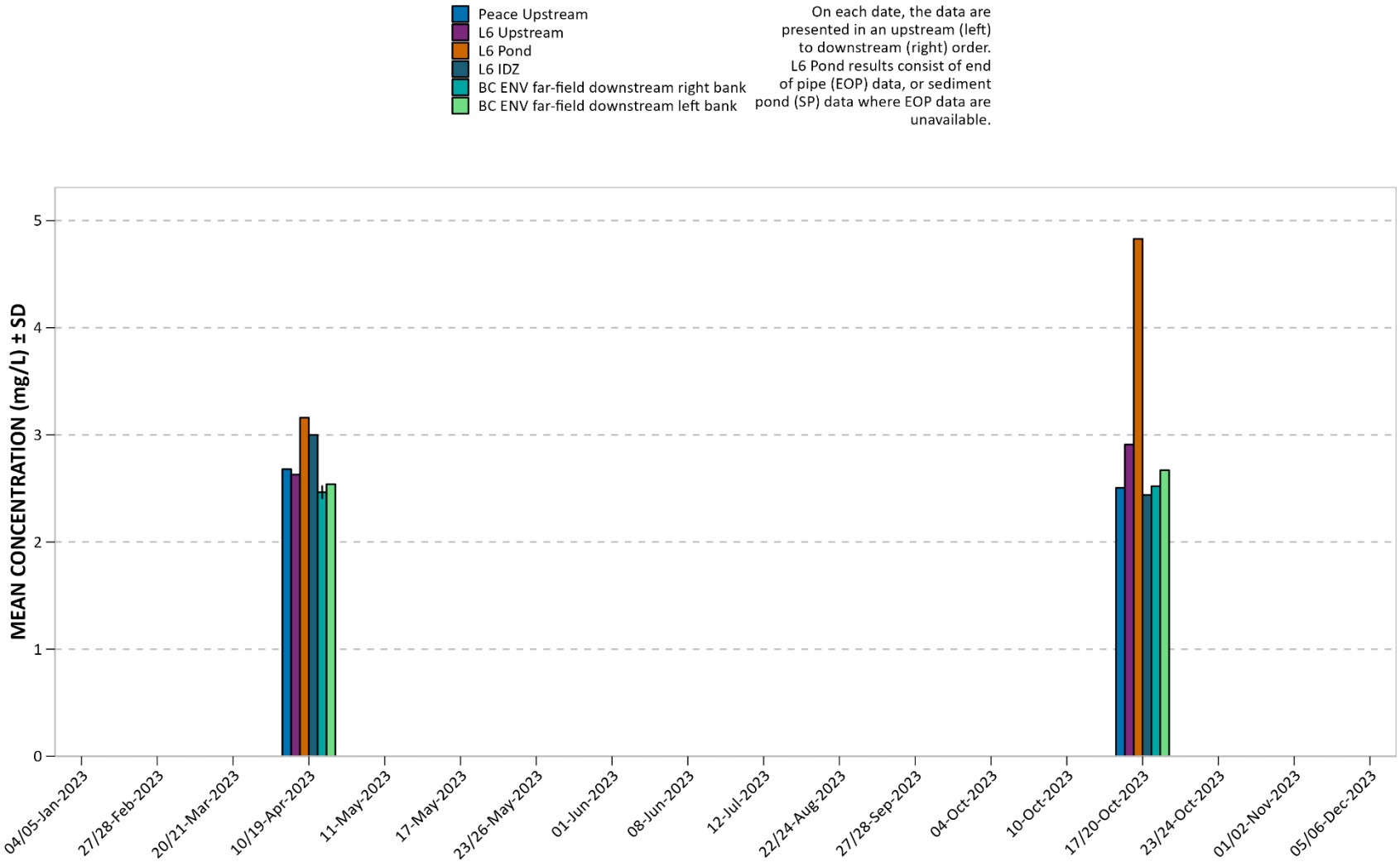
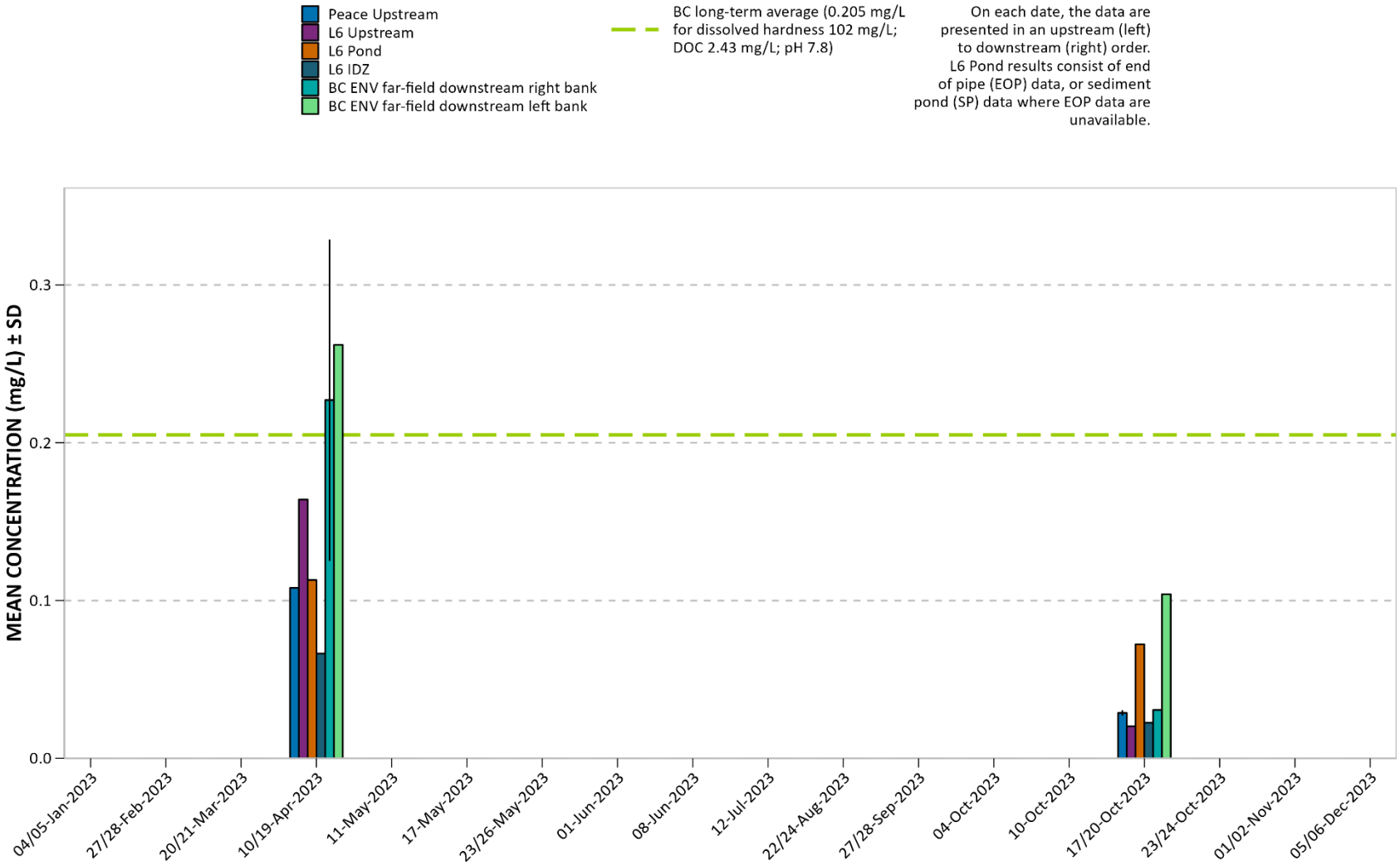


Figure 108. 2023 Peace River and RSEM L6 pond total aluminum (Al).



Note: BC long-term WQG for total aluminum is dissolved hardness, DOC, and pH dependent, and therefore guidelines depicted in the plot are applicable for Peace River sites only. Based on the range of dissolved hardness, DOC, and pH values observed in the Peace River, the applicable BC 30-day guideline is 0.205 mg/L.

Figure 109. 2023 Peace River and RSEM L6 pond total antimony (Sb).

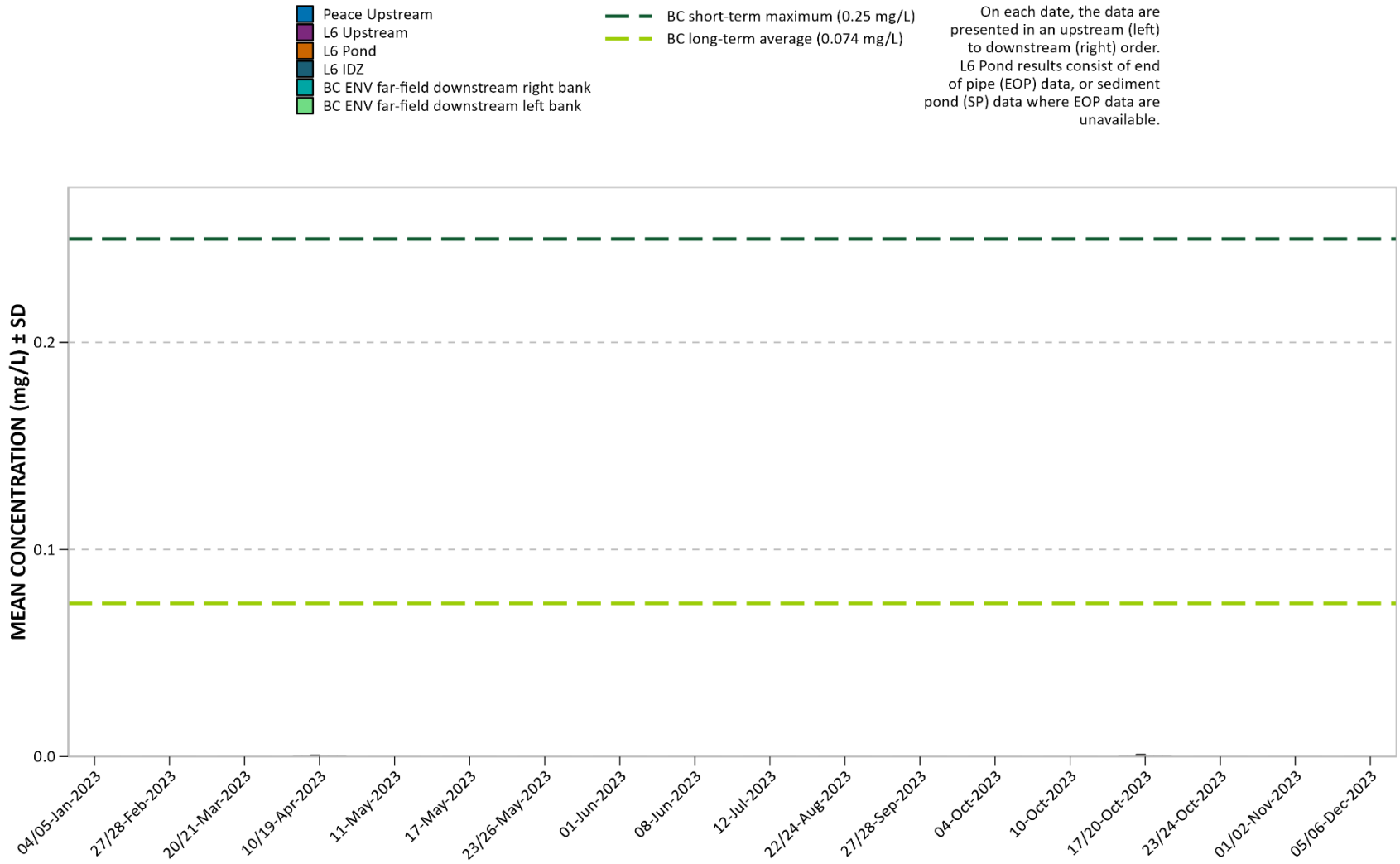


Figure 110. 2023 Peace River and RSEM L6 pond total arsenic (As).

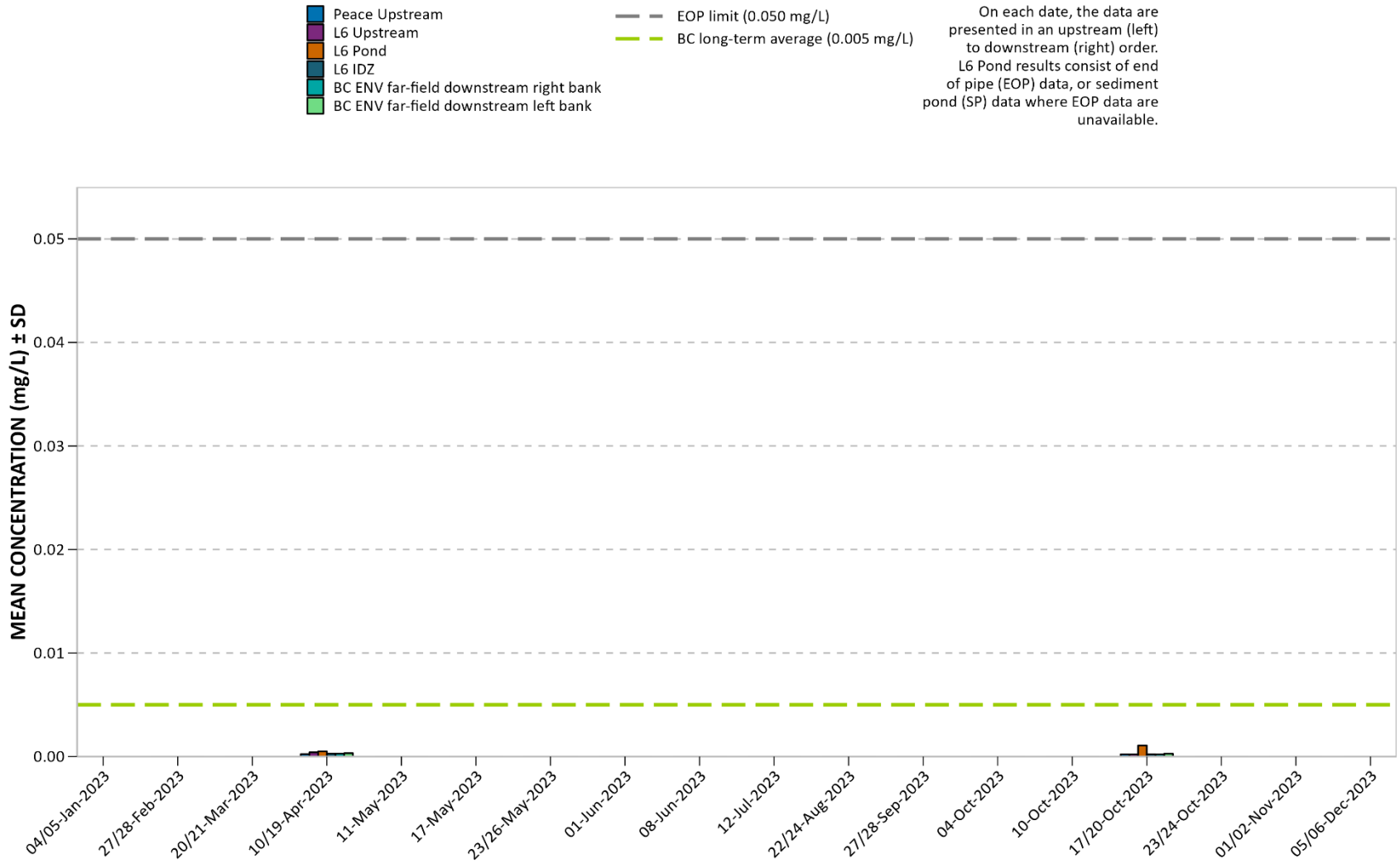


Figure 111. 2023 Peace River and RSEM L6 pond total barium (Ba).

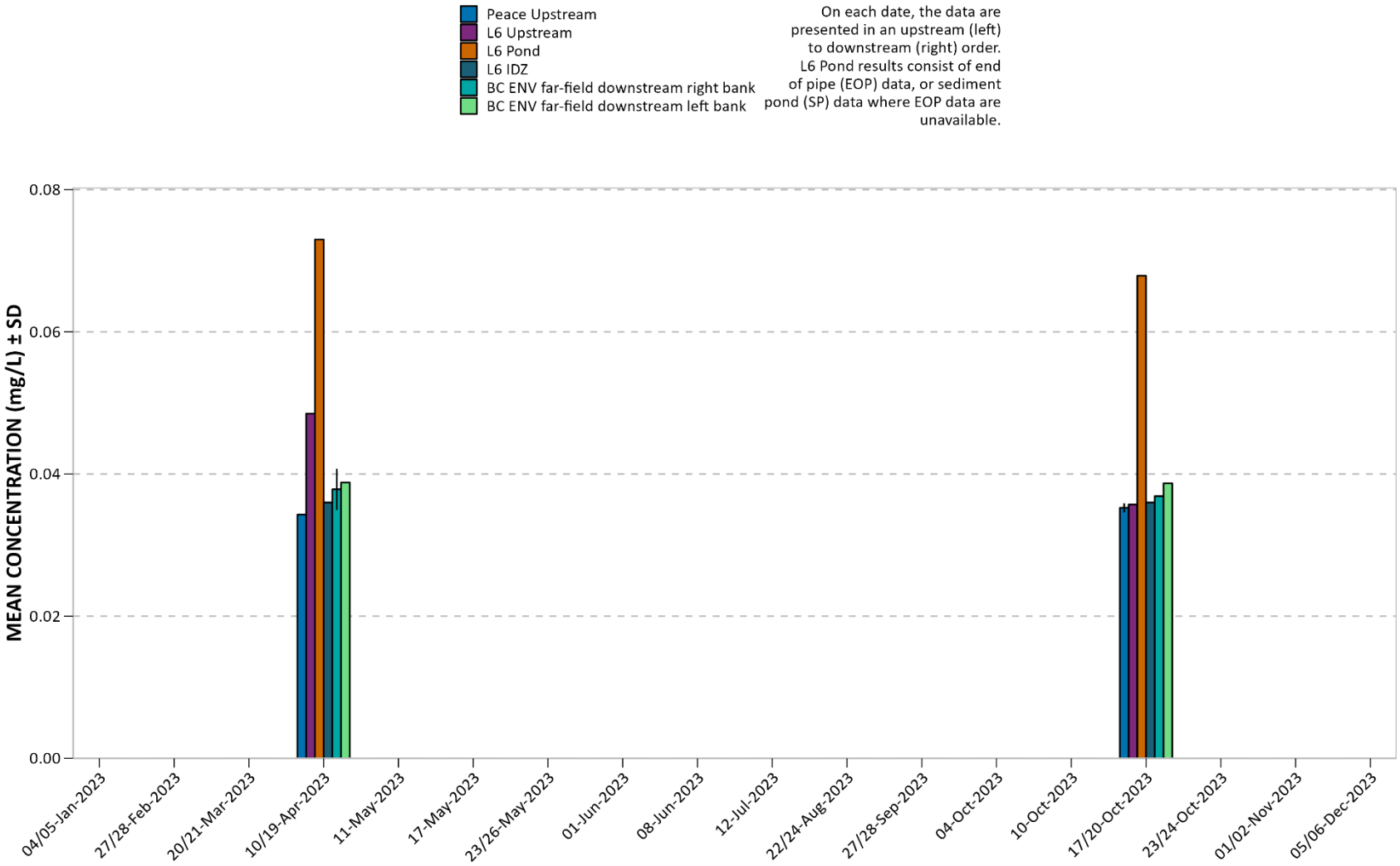


Figure 112. 2023 Peace River and RSEM L6 pond total beryllium (Be).

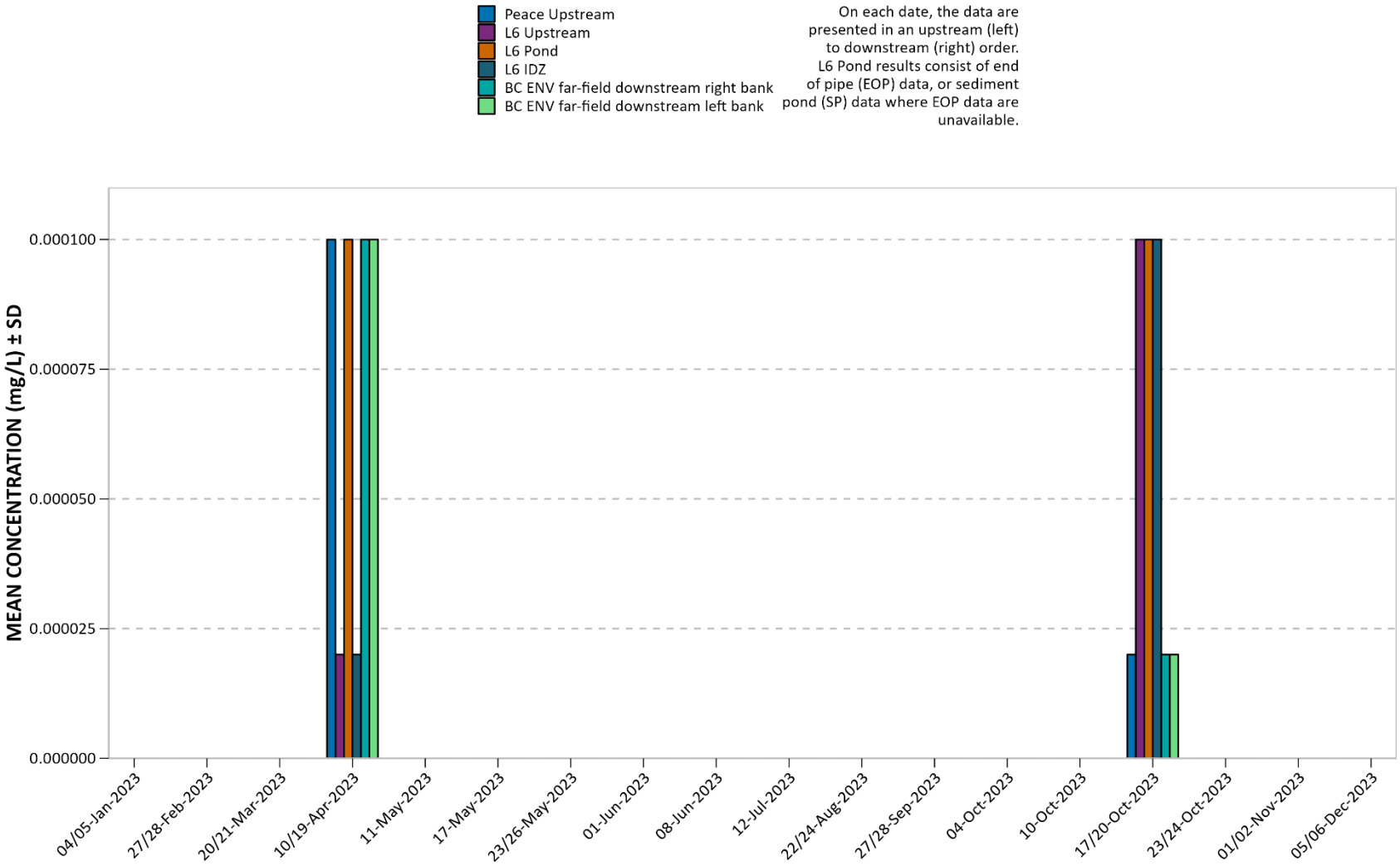


Figure 113. 2023 Peace River and RSEM L6 pond total bismuth (Bi).

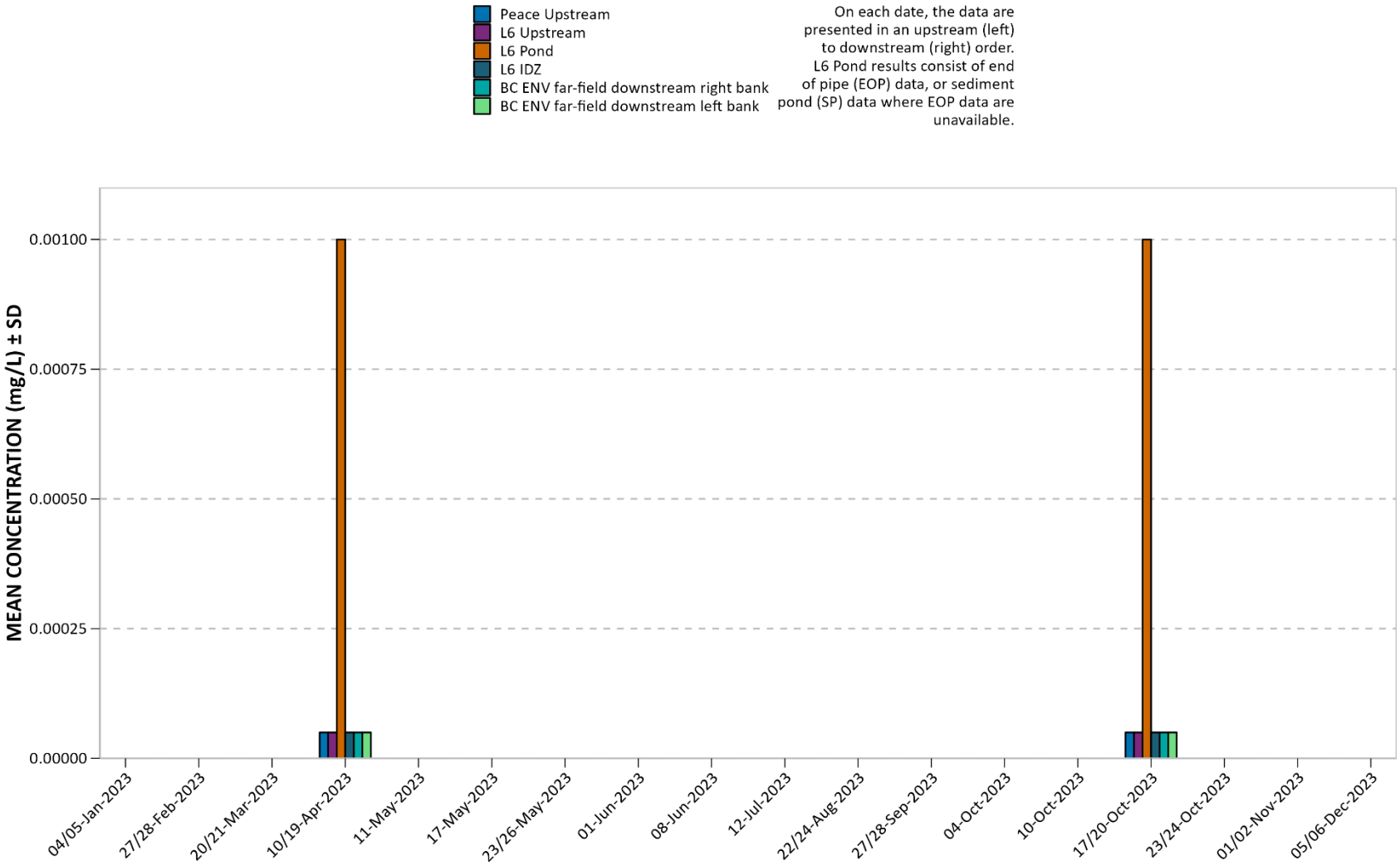


Figure 114. 2023 Peace River and RSEM L6 pond total boron (B).

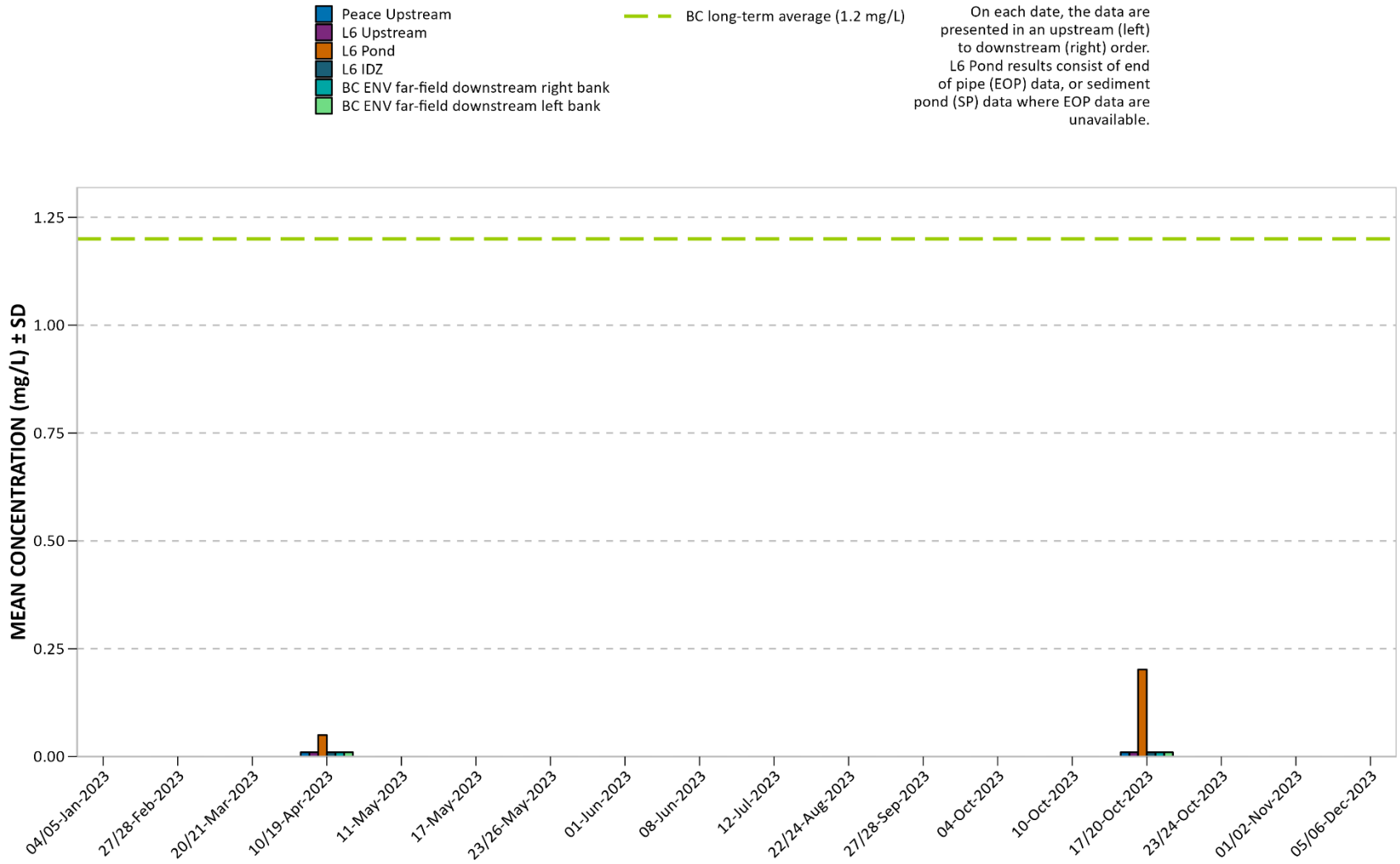


Figure 115. 2023 Peace River and RSEM L6 pond total cadmium (Cd).

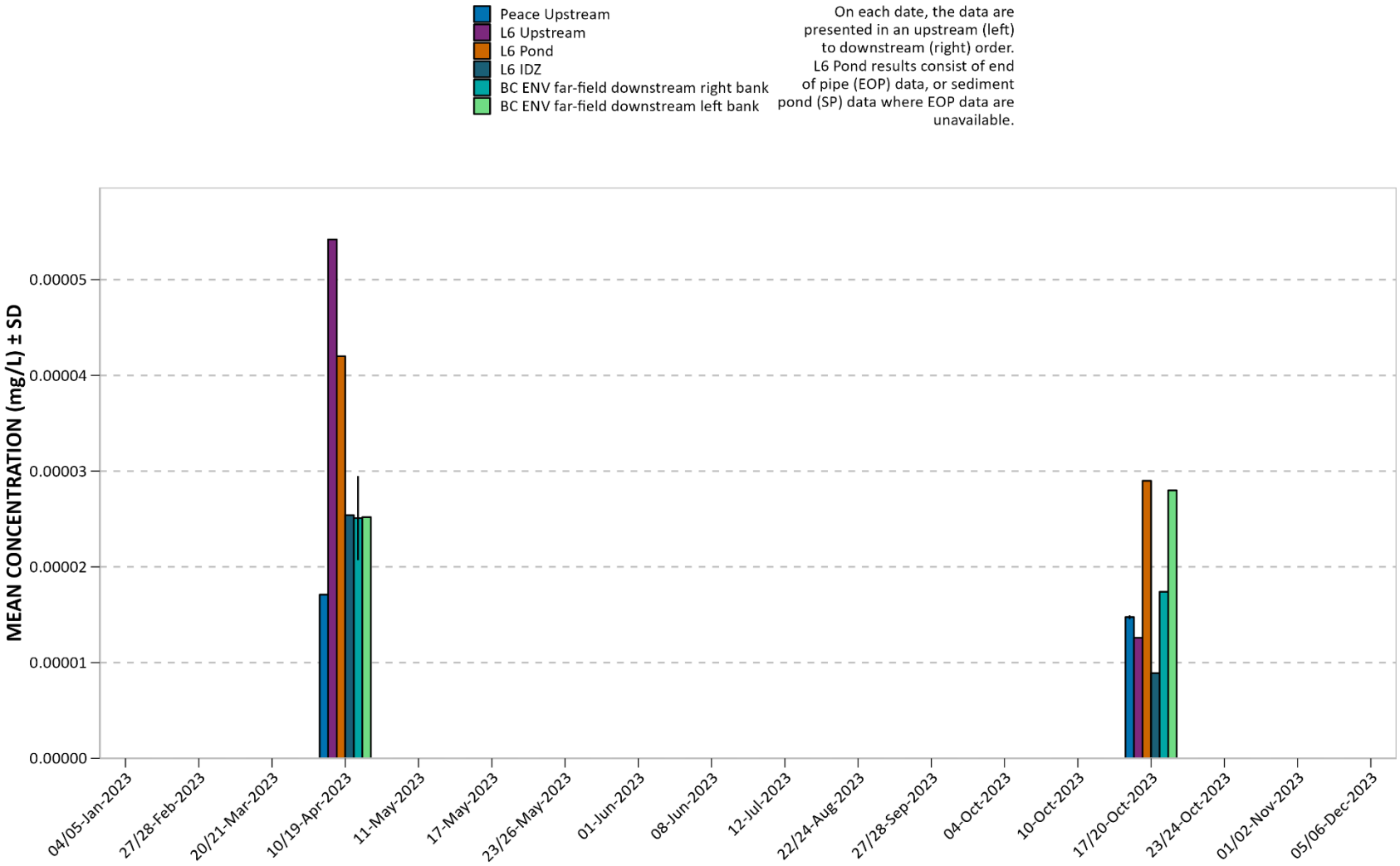


Figure 116. 2023 Peace River and RSEM L6 pond total calcium (Ca).

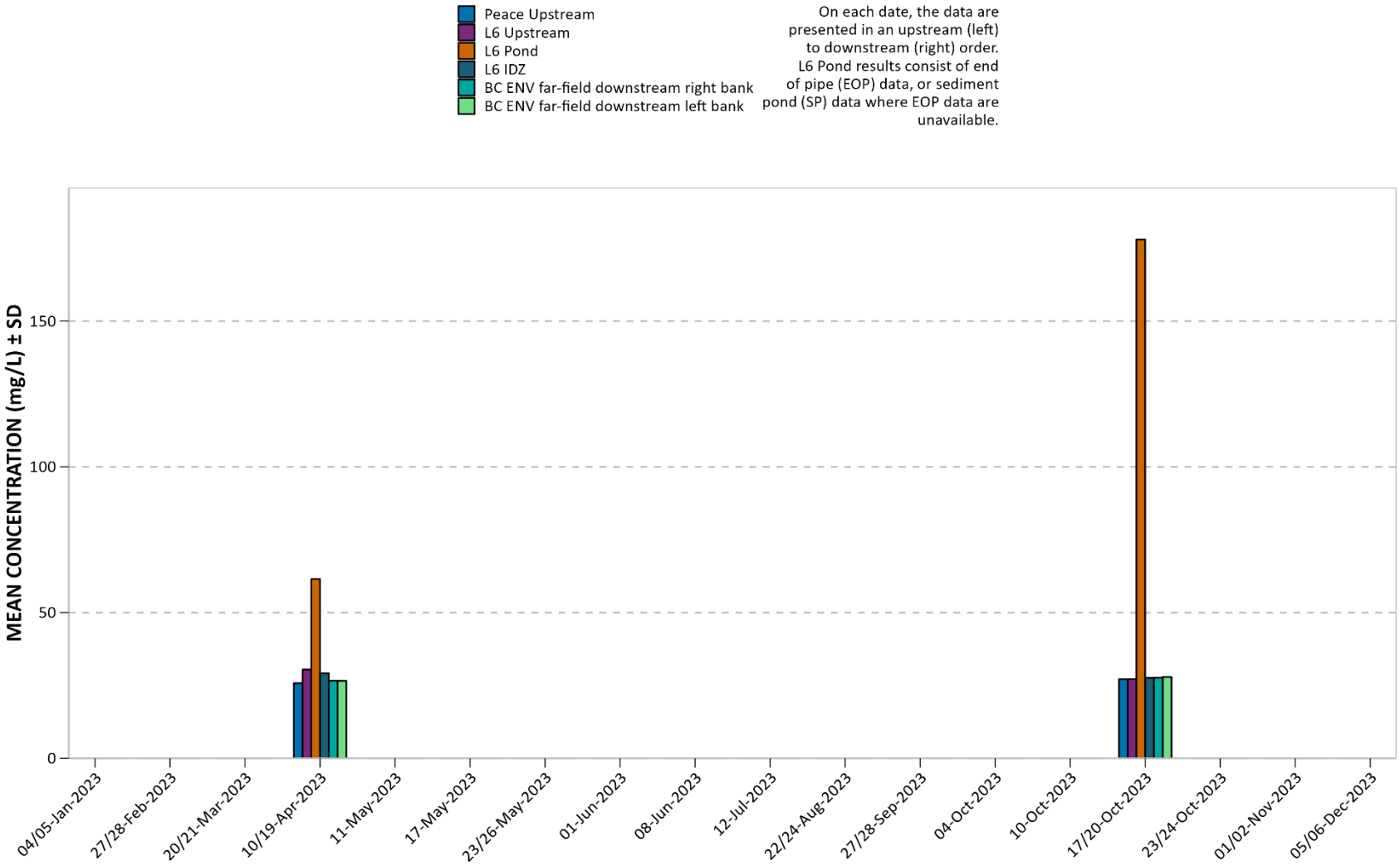


Figure 117. 2023 Peace River and RSEM L6 pond total chromium (Cr).

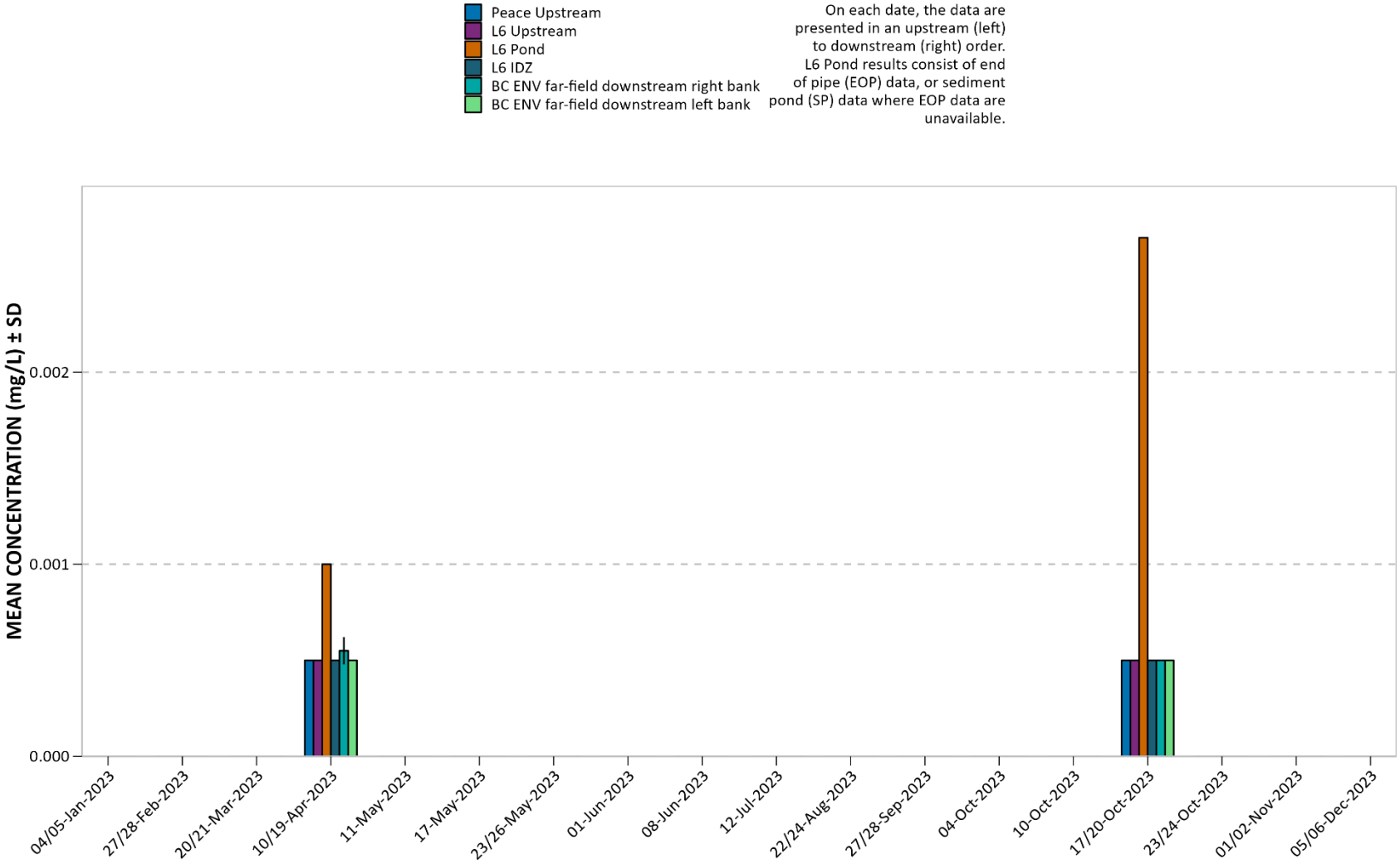


Figure 118. 2023 Peace River and RSEM L6 pond total cobalt (Co). Note that sample results are very low compared to guidelines and as a result the data are not visible on the plot.

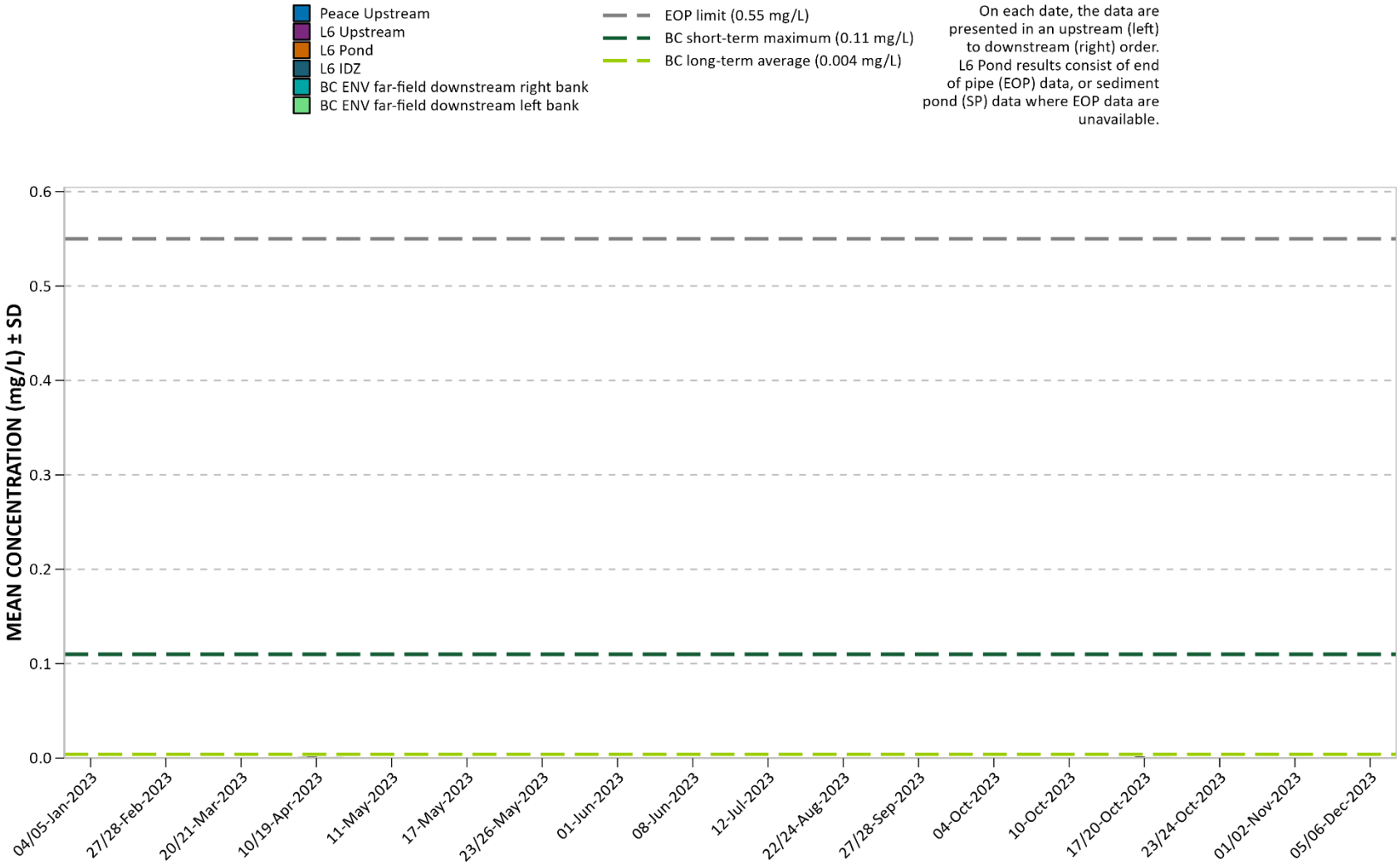


Figure 119. 2023 Peace River and RSEM L6 pond total copper (Cu).

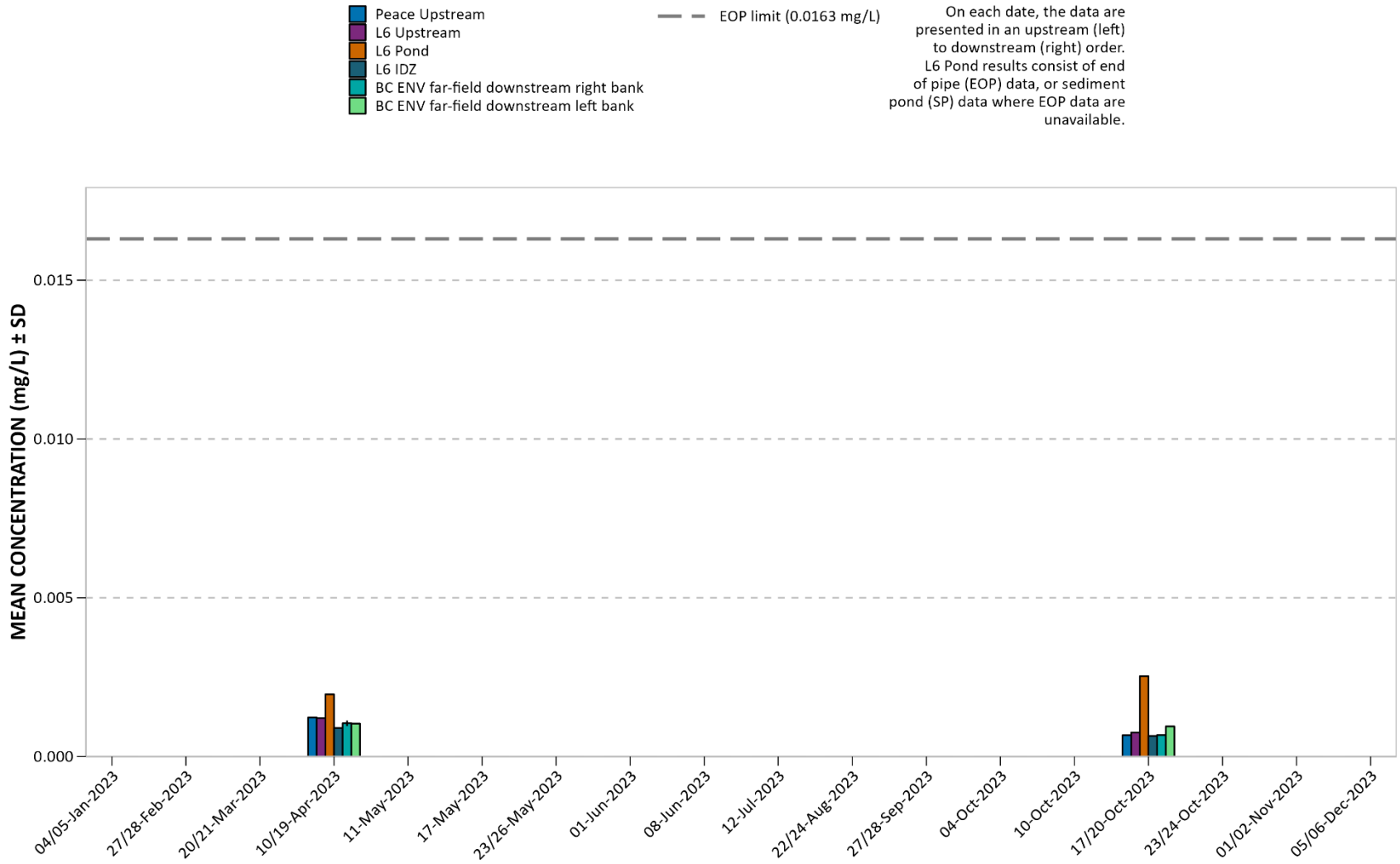


Figure 120. 2023 Peace River and RSEM L6 pond total iron (Fe).

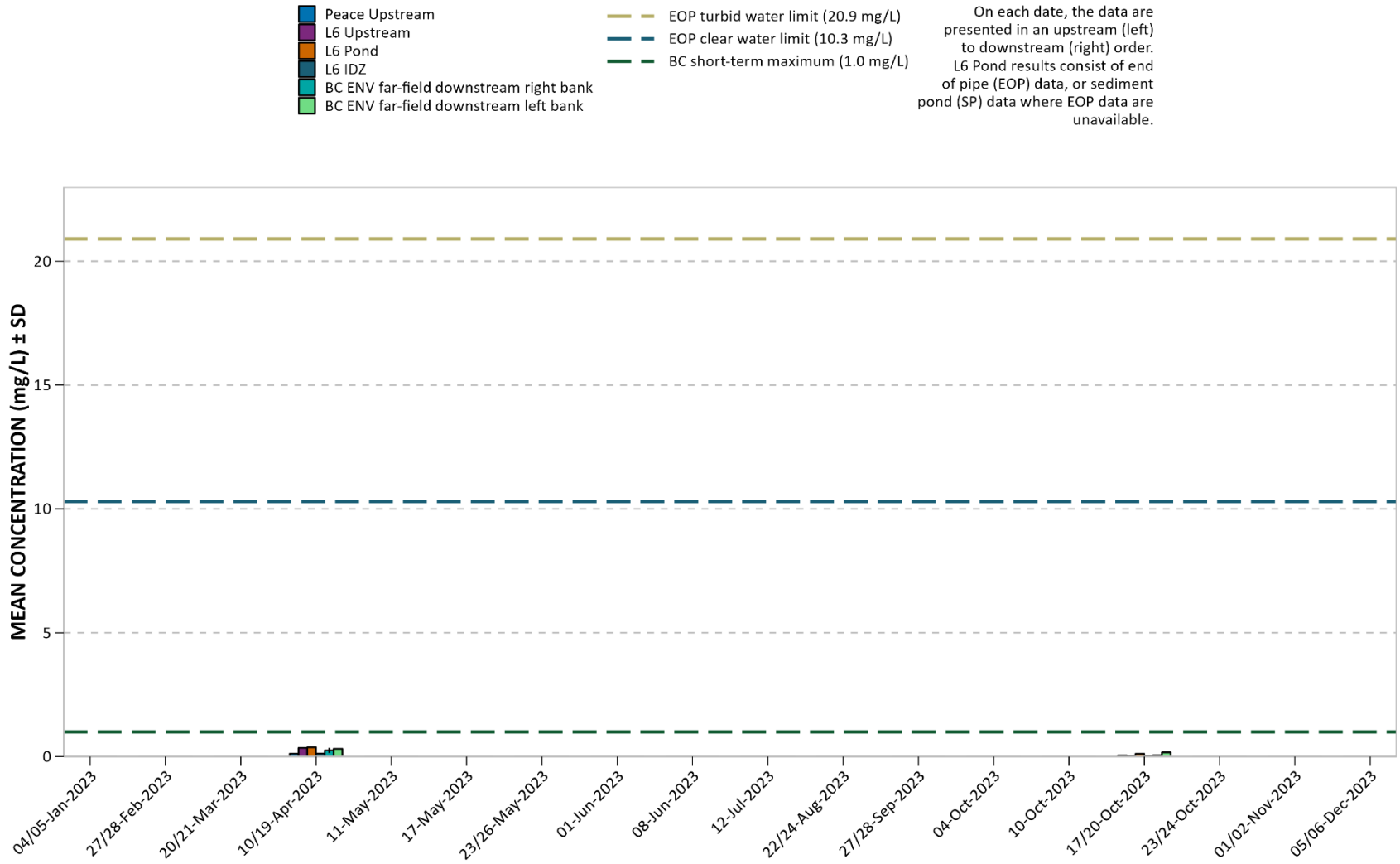
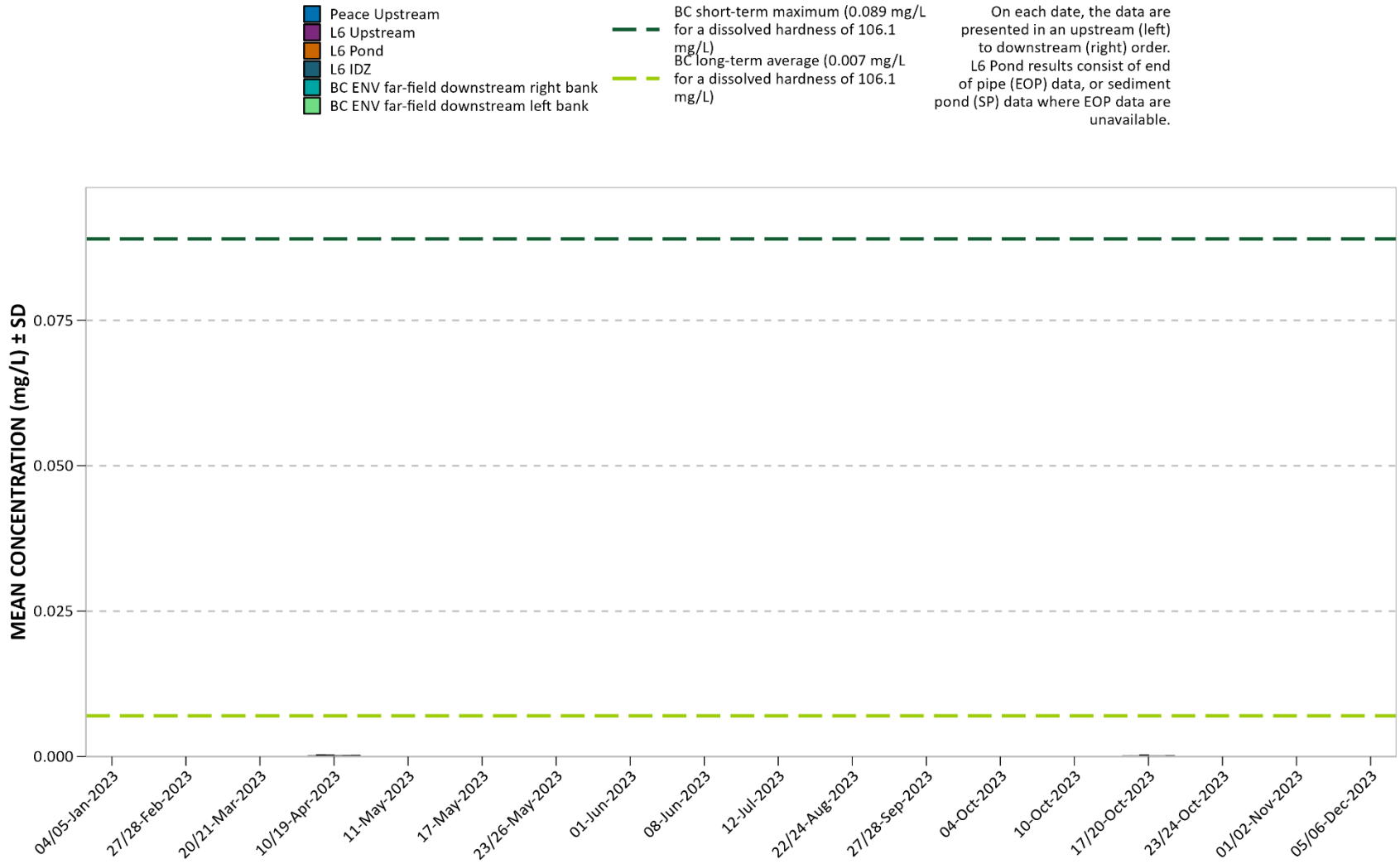


Figure 121. 2023 Peace River and RSEM L6 pond total lead (Pb).



Note: BC WQGs for total lead are dissolved hardness dependent. An average Peace River dissolved hardness of 106.1 mg/L (based on 26 samples collected between April 2007 – Jan. 2017; BC Hydro 2017b) was used in the plot to depict the maximum and 30-day guidelines for ease of interpretation. Sample specific dissolved hardness was used to screen individual sample results against guidelines in the data tables (Appendix A).

Figure 122. 2023 Peace River and RSEM L6 pond total lithium (Li).

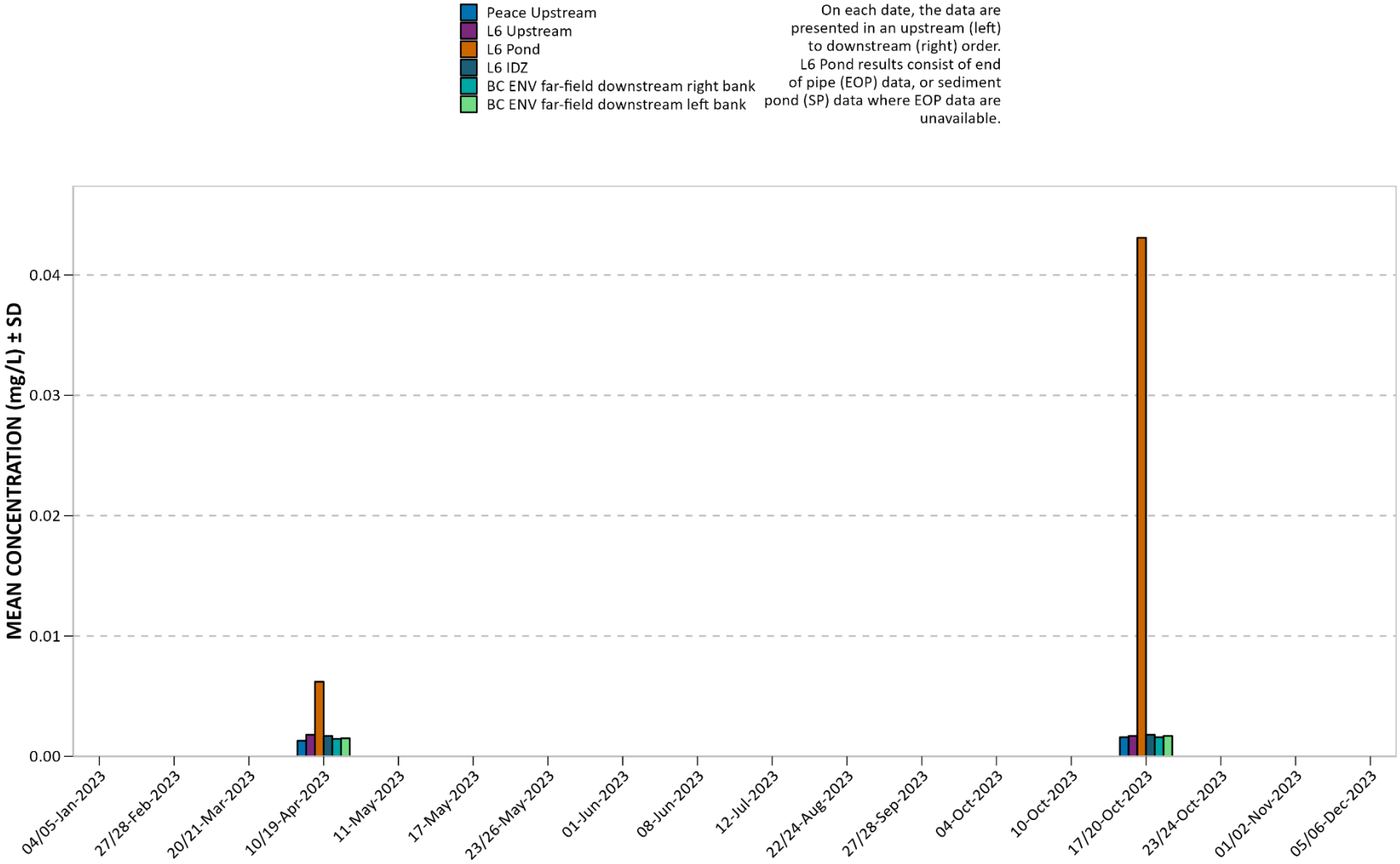


Figure 123. 2023 Peace River and RSEM L6 pond total magnesium (Mg).

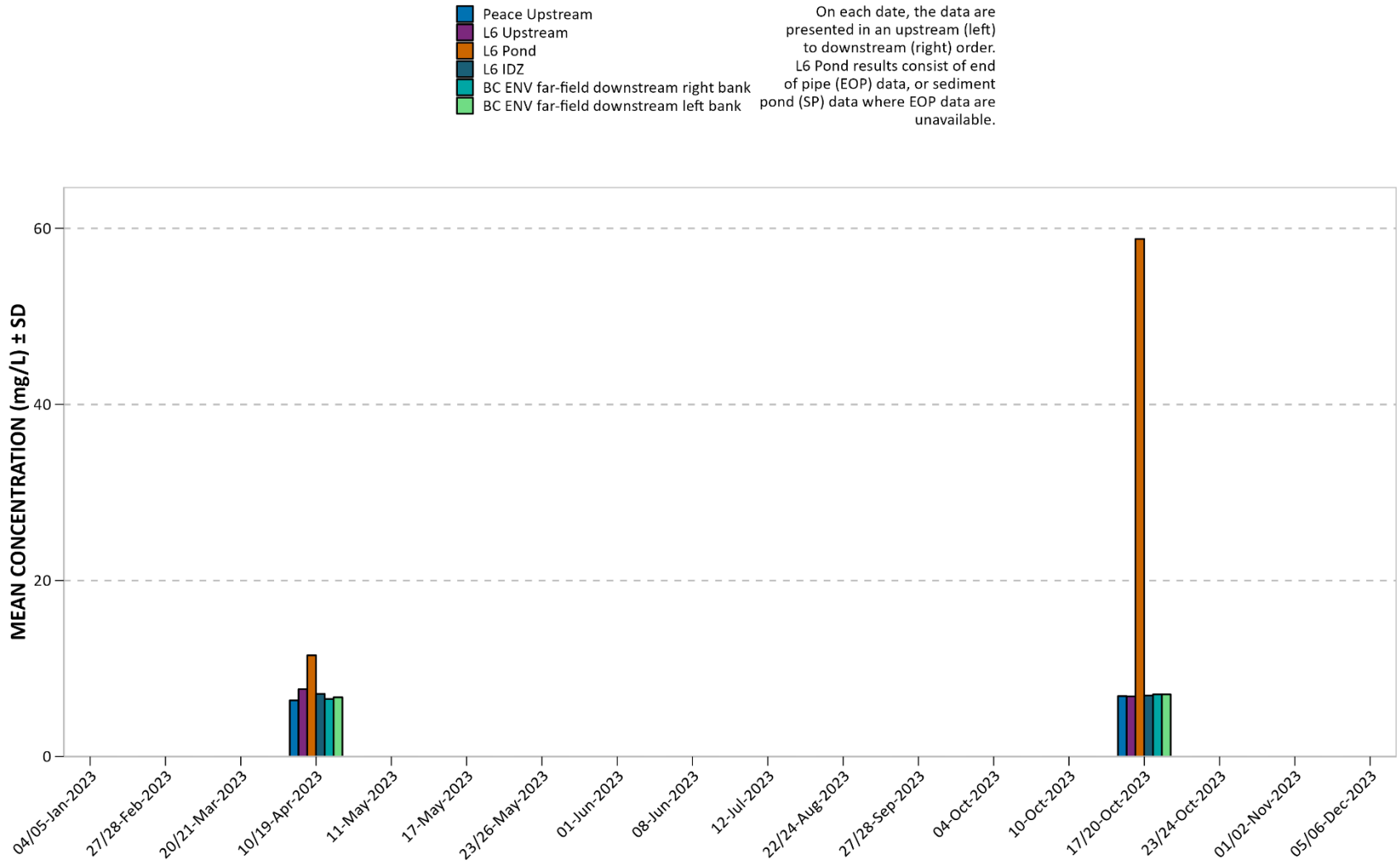
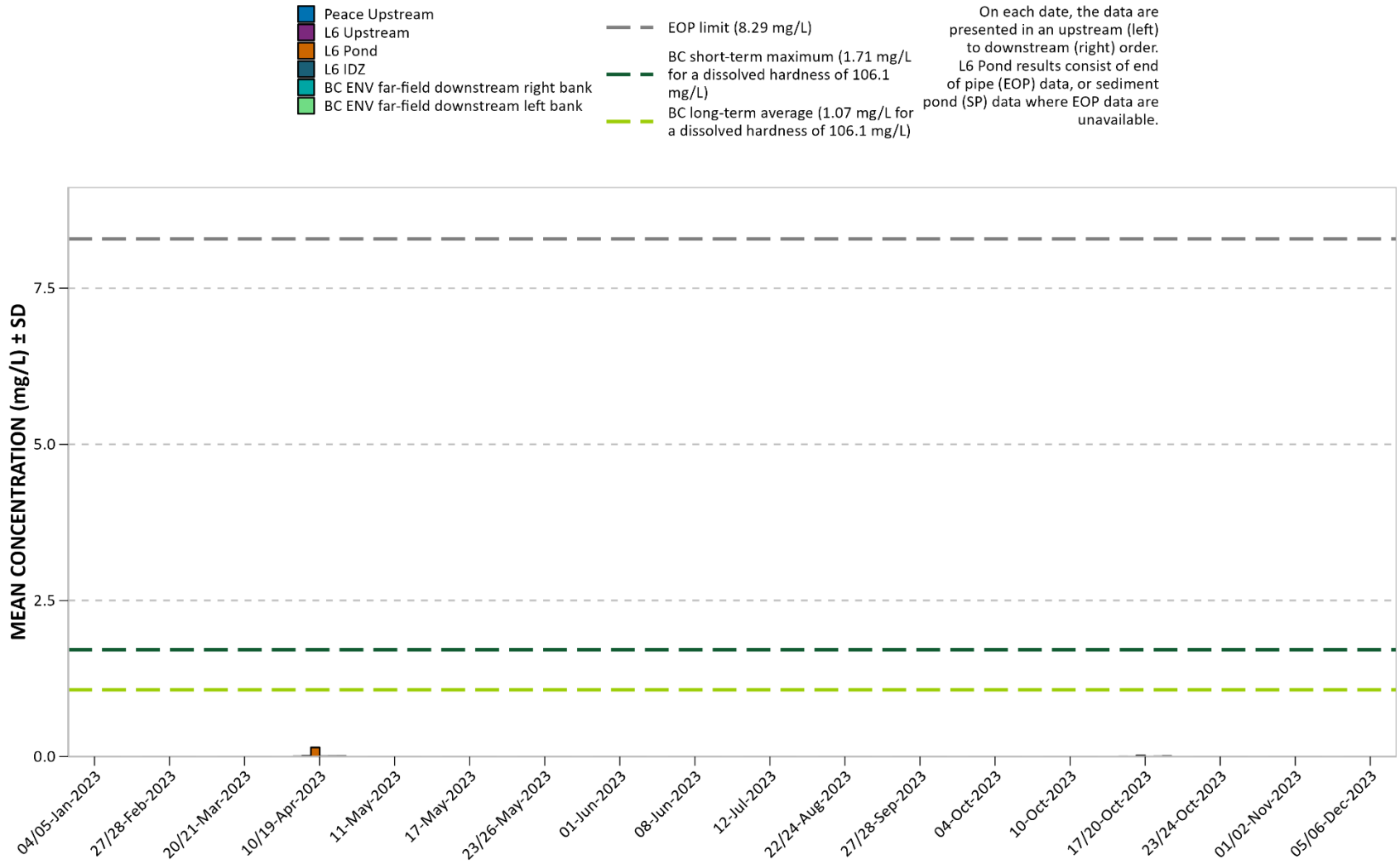


Figure 124. 2023 Peace River and RSEM L6 pond total manganese (Mn).



Note: BC WQGs for total manganese are dissolved hardness dependent. An average Peace River dissolved hardness of 106.1 mg/L (based on 26 samples collected between April 2007 – Jan. 2017; BC Hydro 2017b) was used in the plot to depict the maximum and 30-day guidelines for ease of interpretation. Sample specific dissolved hardness was used to screen individual sample results against guidelines in the data tables (Appendix A).

Figure 125. 2023 Peace River and RSEM L6 pond total mercury (Hg).

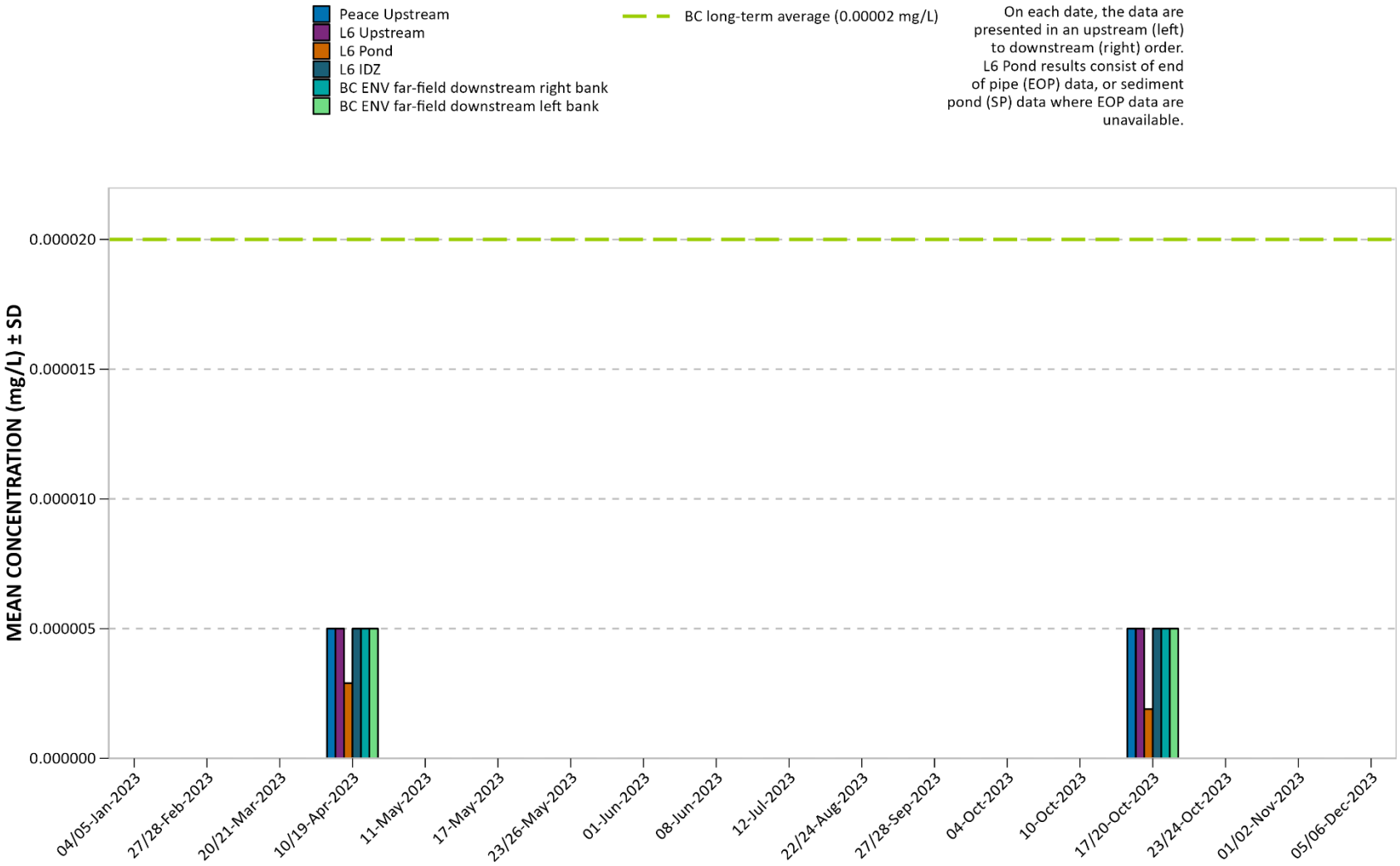


Figure 126. 2023 Peace River and RSEM L6 pond total molybdenum (Mo). Note that sample results are very low compared to guidelines and as a result the data are not visible on the plot.

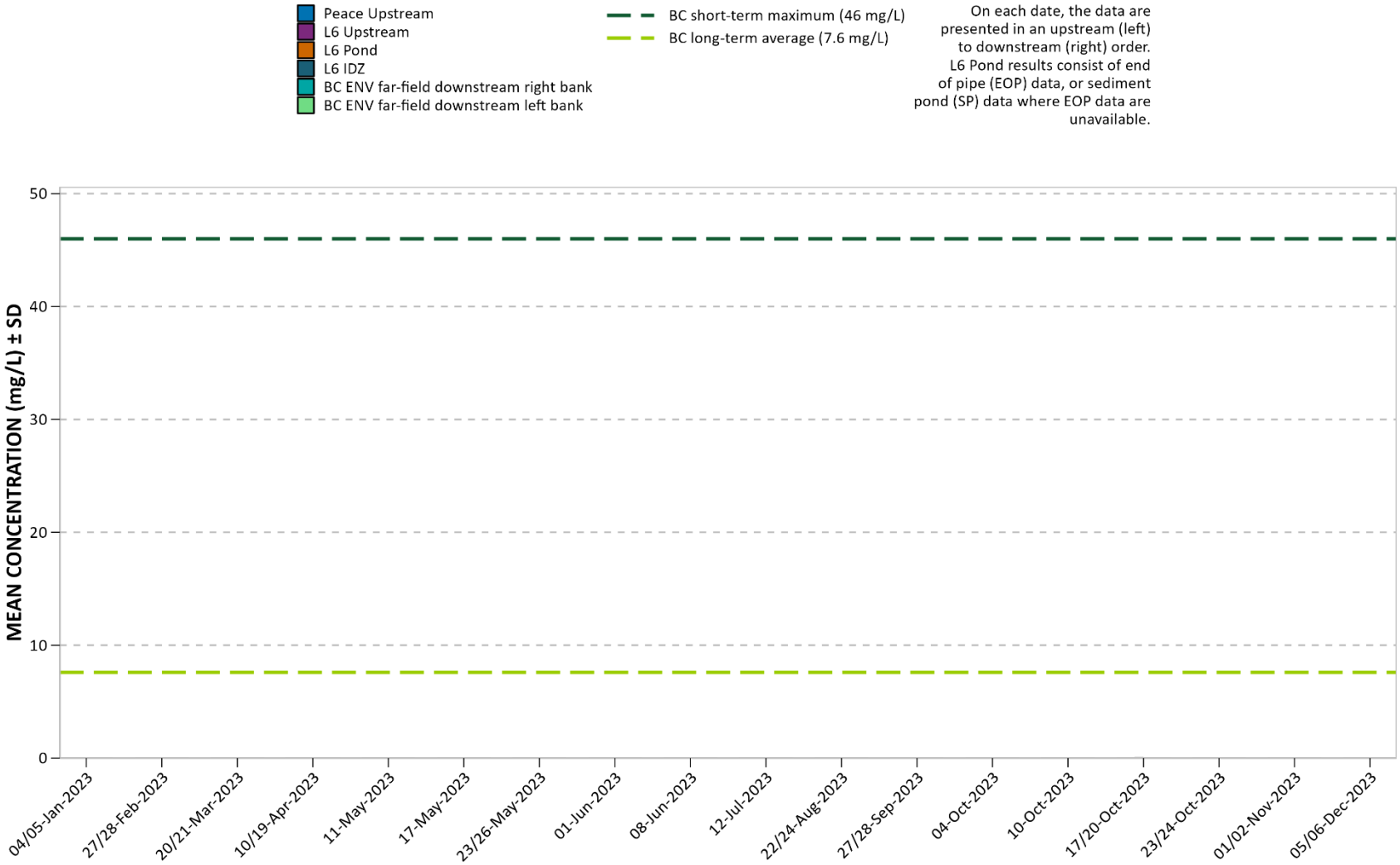


Figure 127. 2023 Peace River and RSEM L6 pond total nickel (Ni).

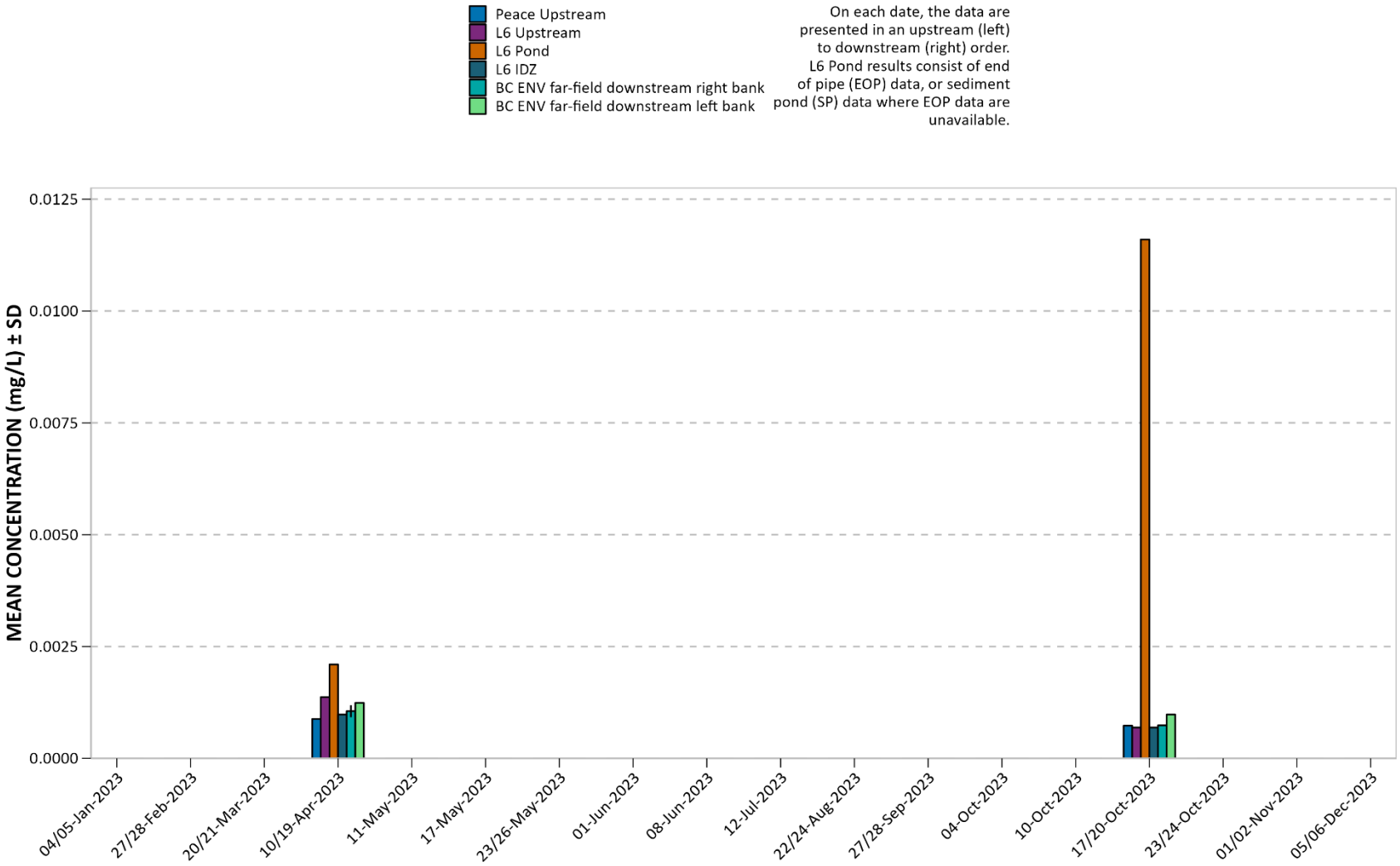


Figure 128. 2023 Peace River and RSEM L6 pond total potassium (K).

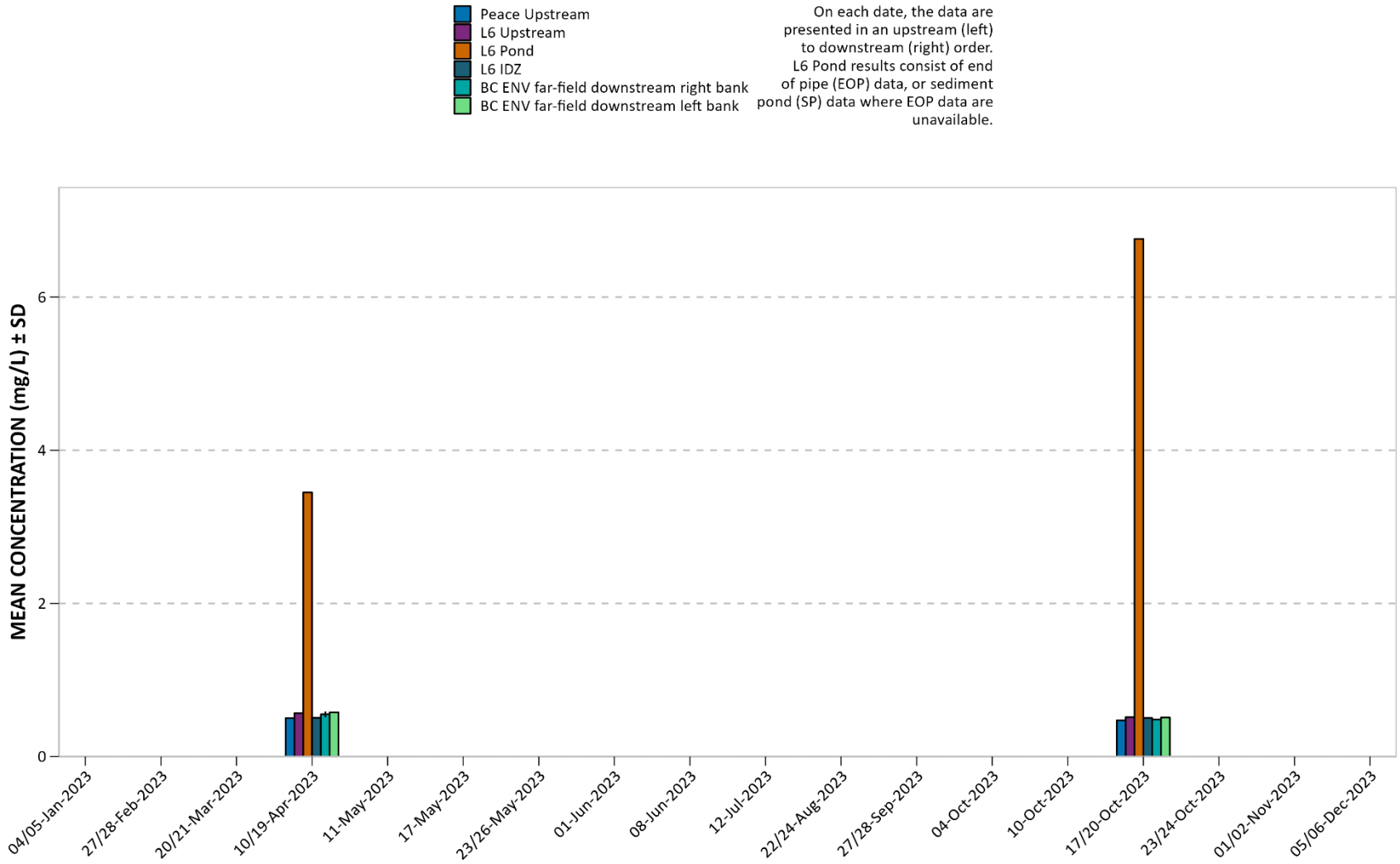


Figure 129. 2023 Peace River and RSEM L6 pond total selenium (Se).

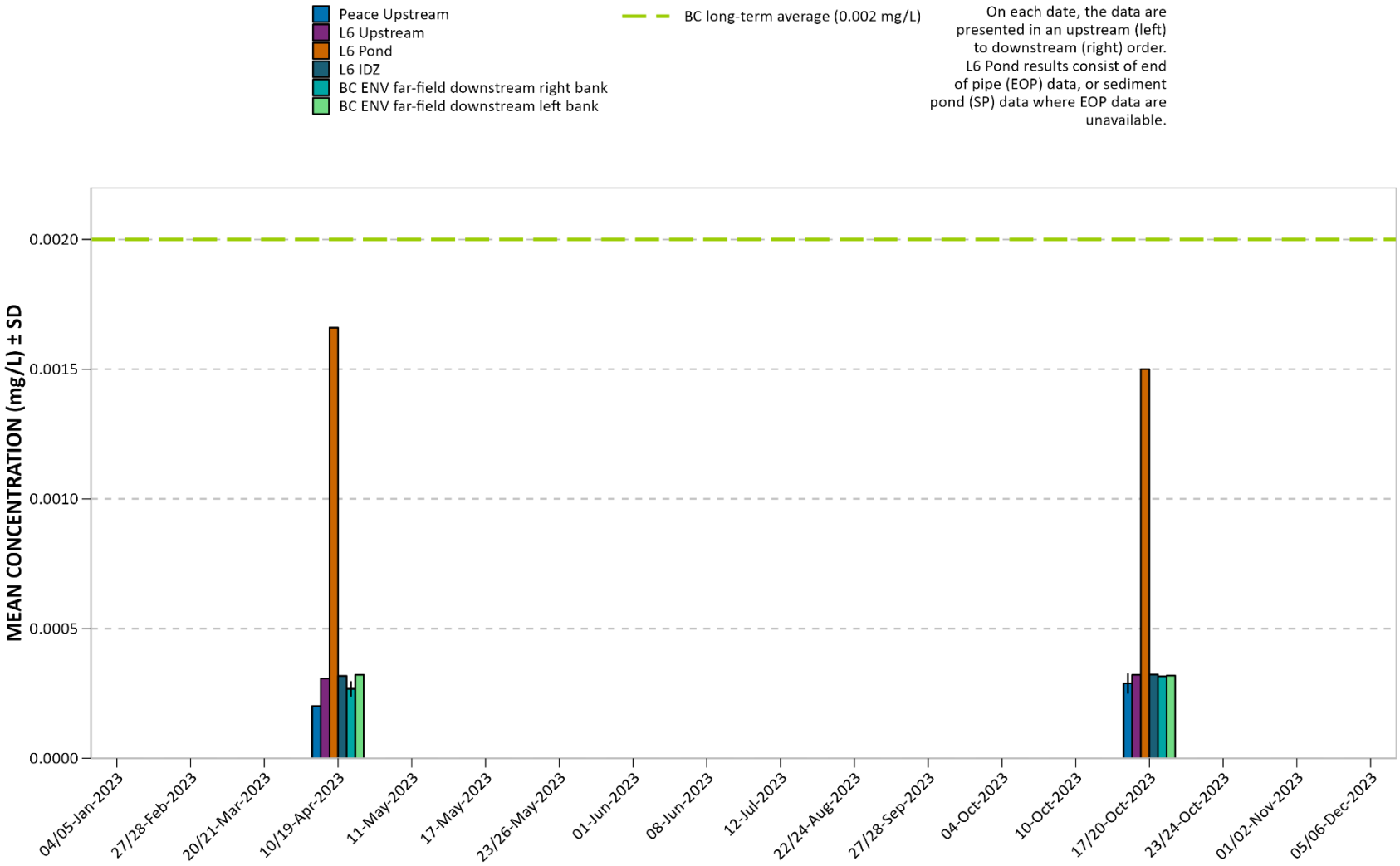


Figure 130. 2023 Peace River and RSEM L6 pond total silicon (Si).

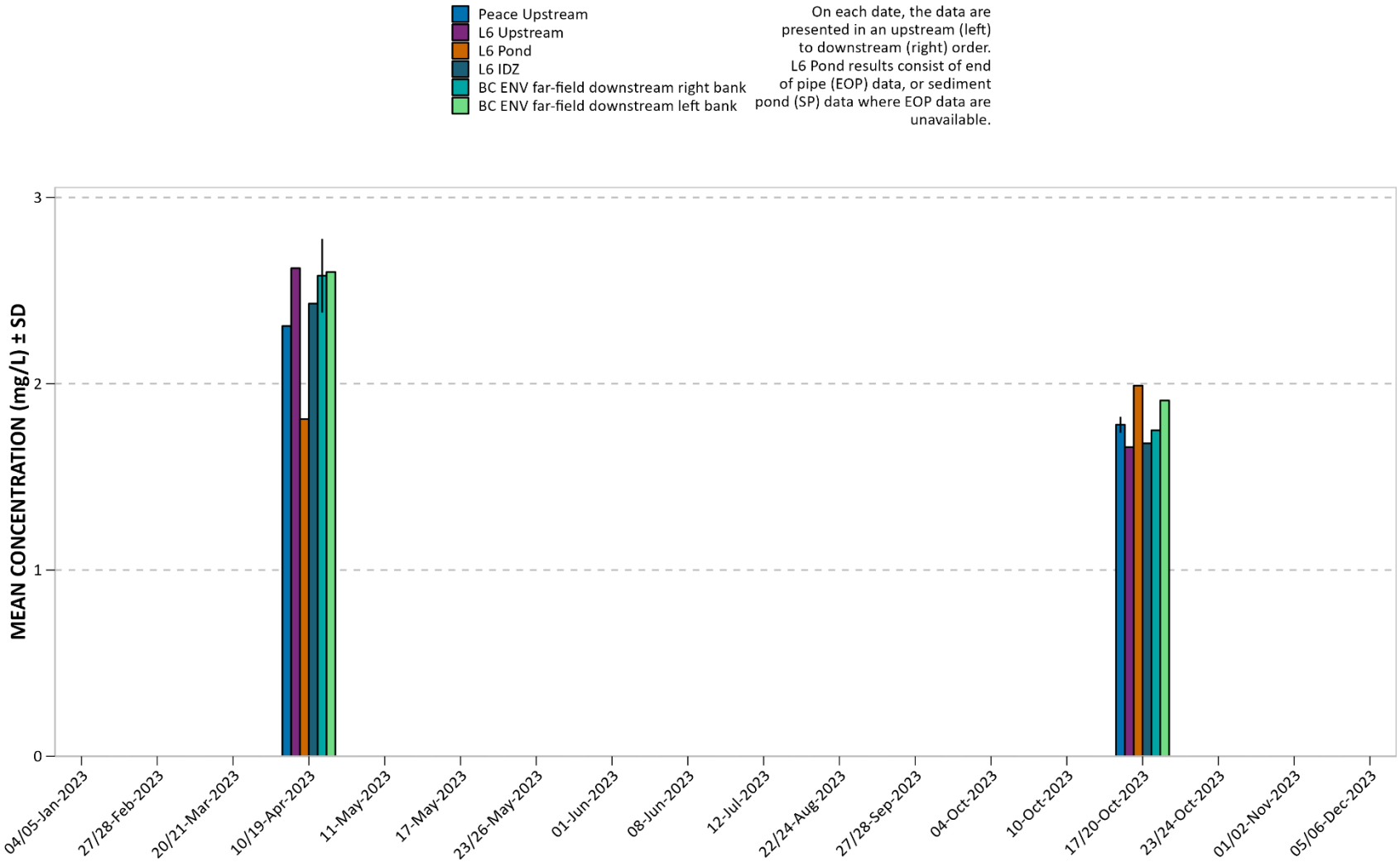
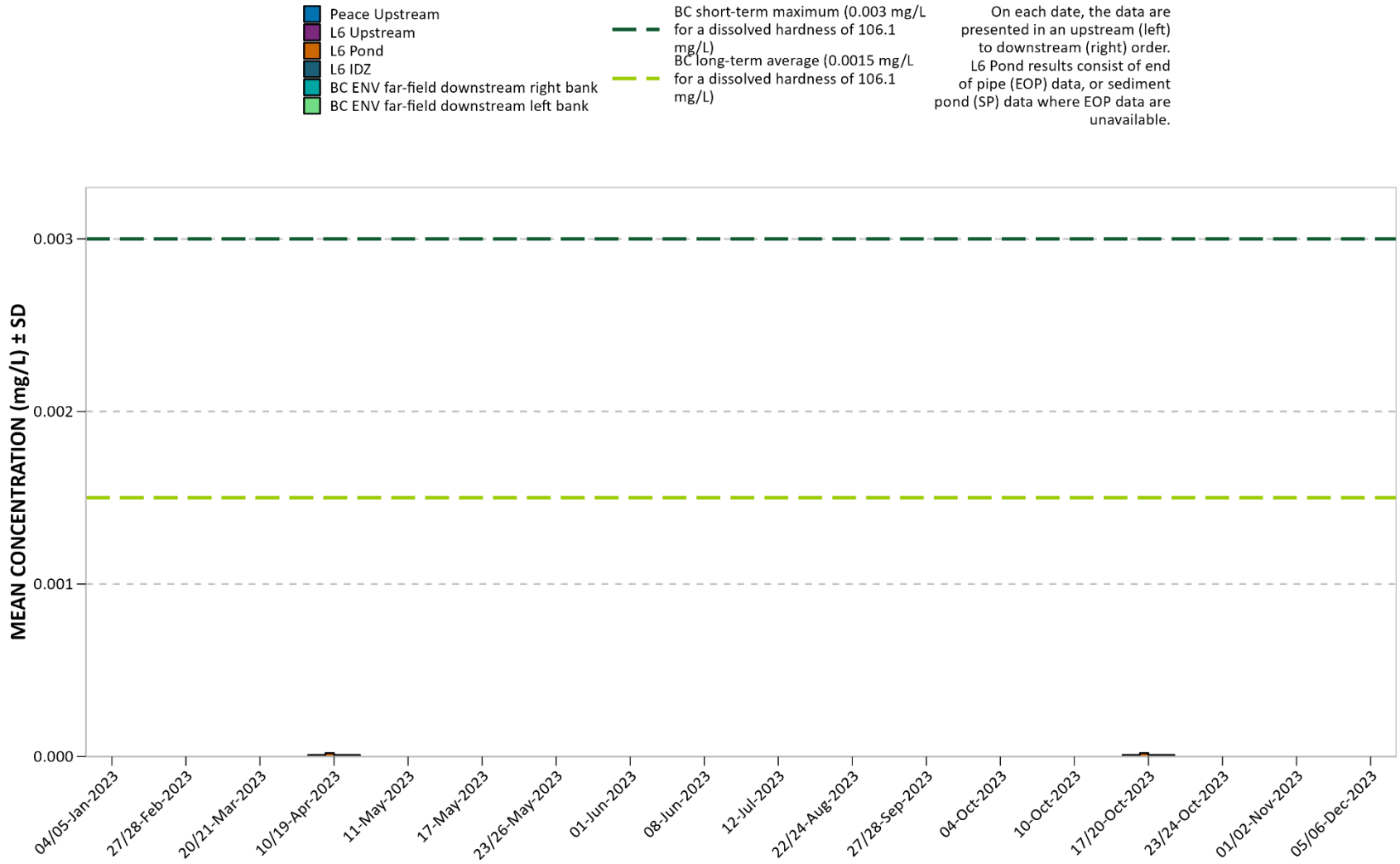


Figure 131. 2023 Peace River and RSEM L6 pond total silver (Ag).



Note: BC WQGs for total silver are dissolved hardness dependent. An average Peace River dissolved hardness of 106.1 mg/L (based on 26 samples collected between April 2007 – Jan. 2017; BC Hydro 2017b) was used in the plot to depict the maximum and 30-day guidelines for ease of interpretation. Sample specific dissolved hardness was used to screen individual sample results against guidelines in the data tables (Appendix A).

Figure 132. 2023 Peace River and RSEM L6 pond total sodium (Na).

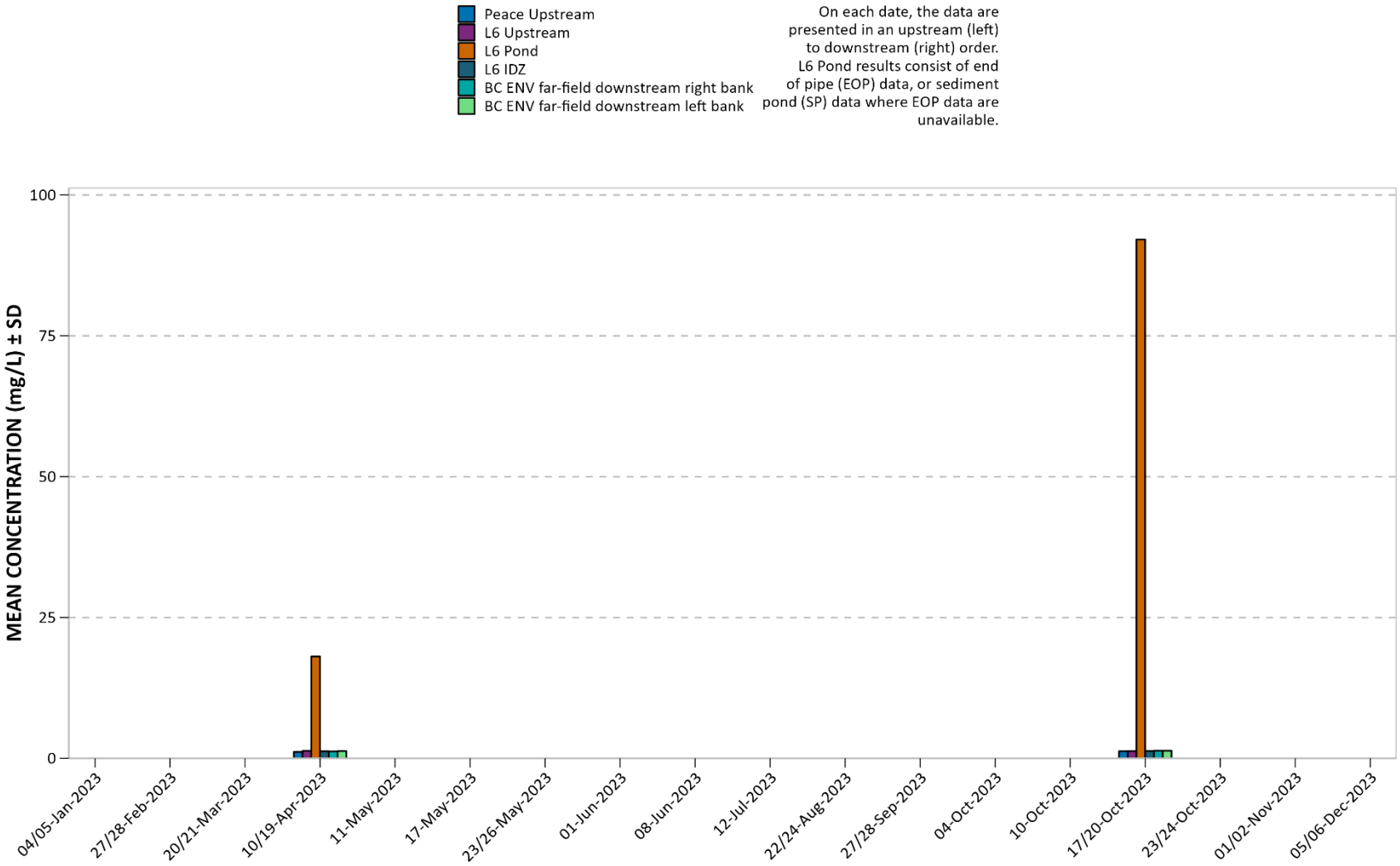


Figure 133. 2023 Peace River and RSEM L6 pond total strontium (Sr).

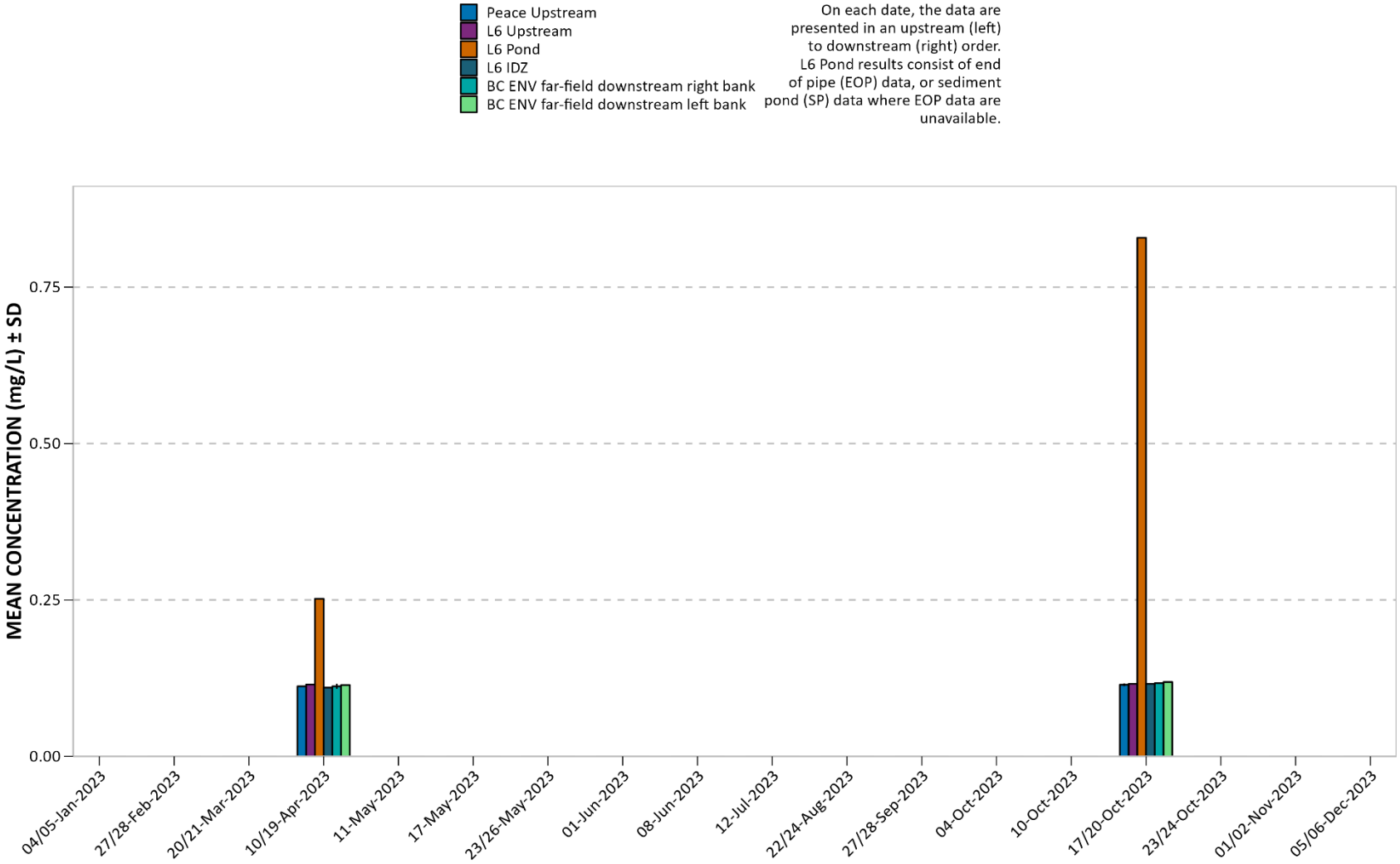


Figure 134. 2023 Peace River and RSEM L6 pond total sulfur (S).

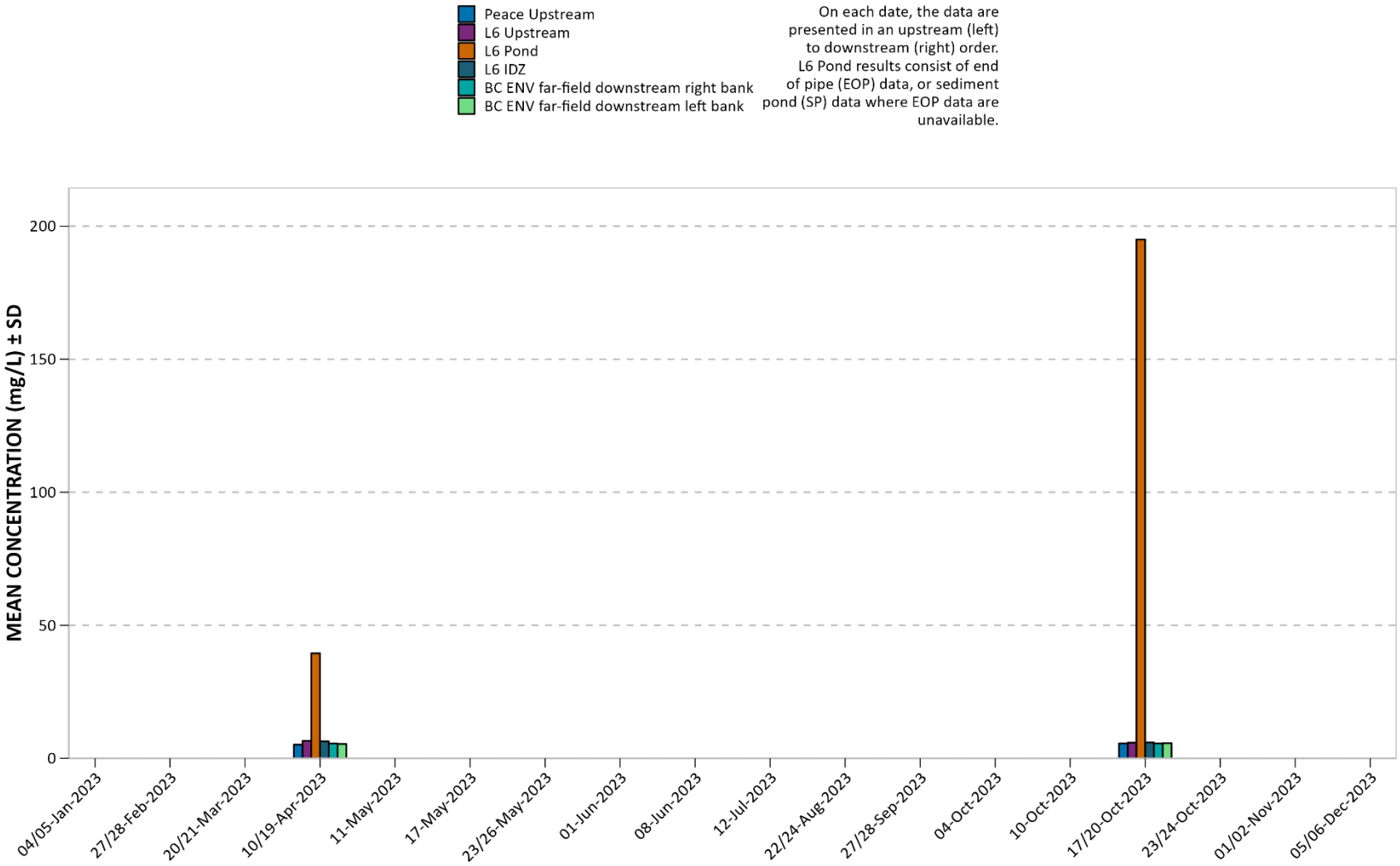


Figure 135. 2023 Peace River and RSEM L6 pond total thallium (Tl).

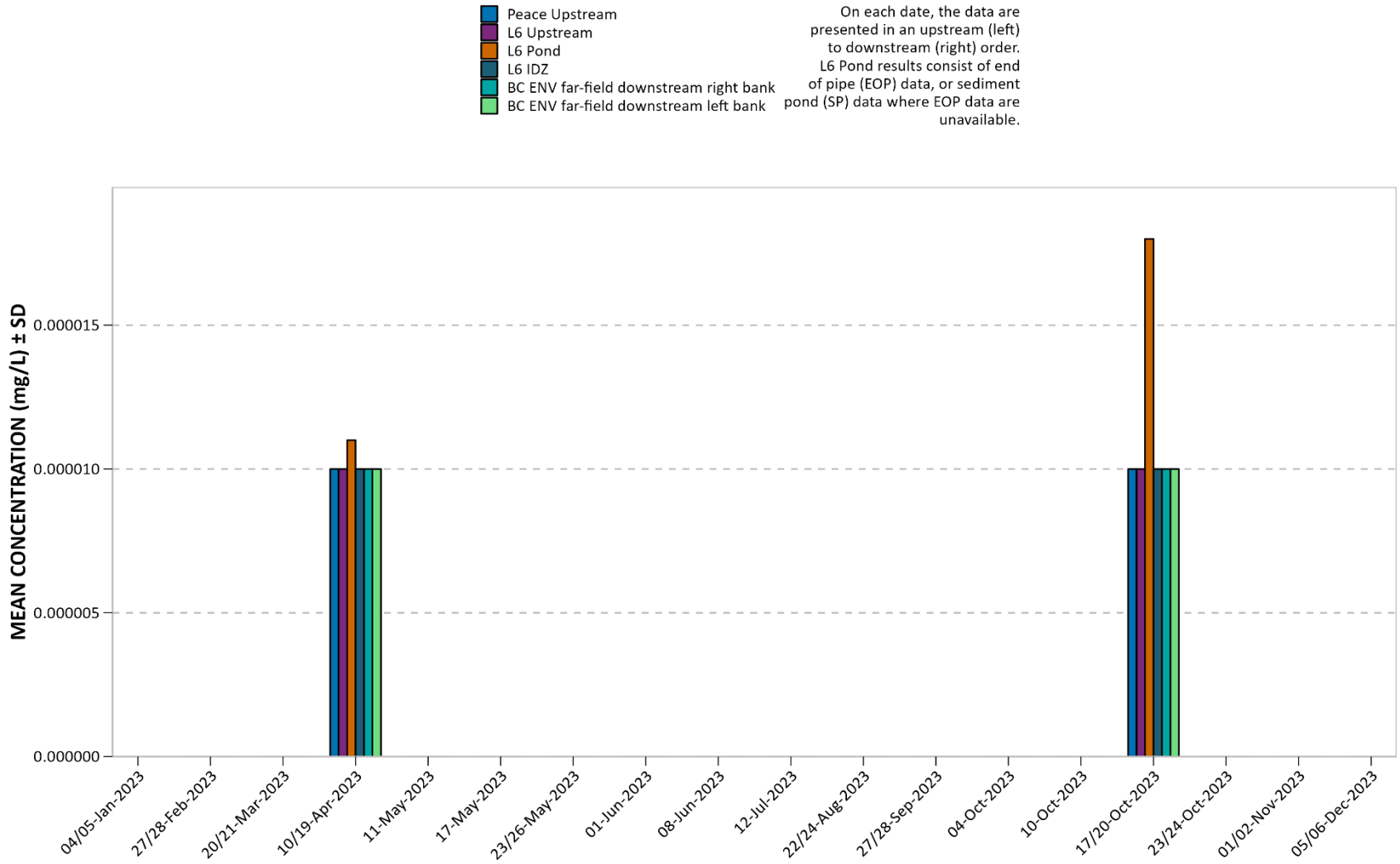


Figure 136. 2023 Peace River and RSEM L6 pond total tin (Sn).

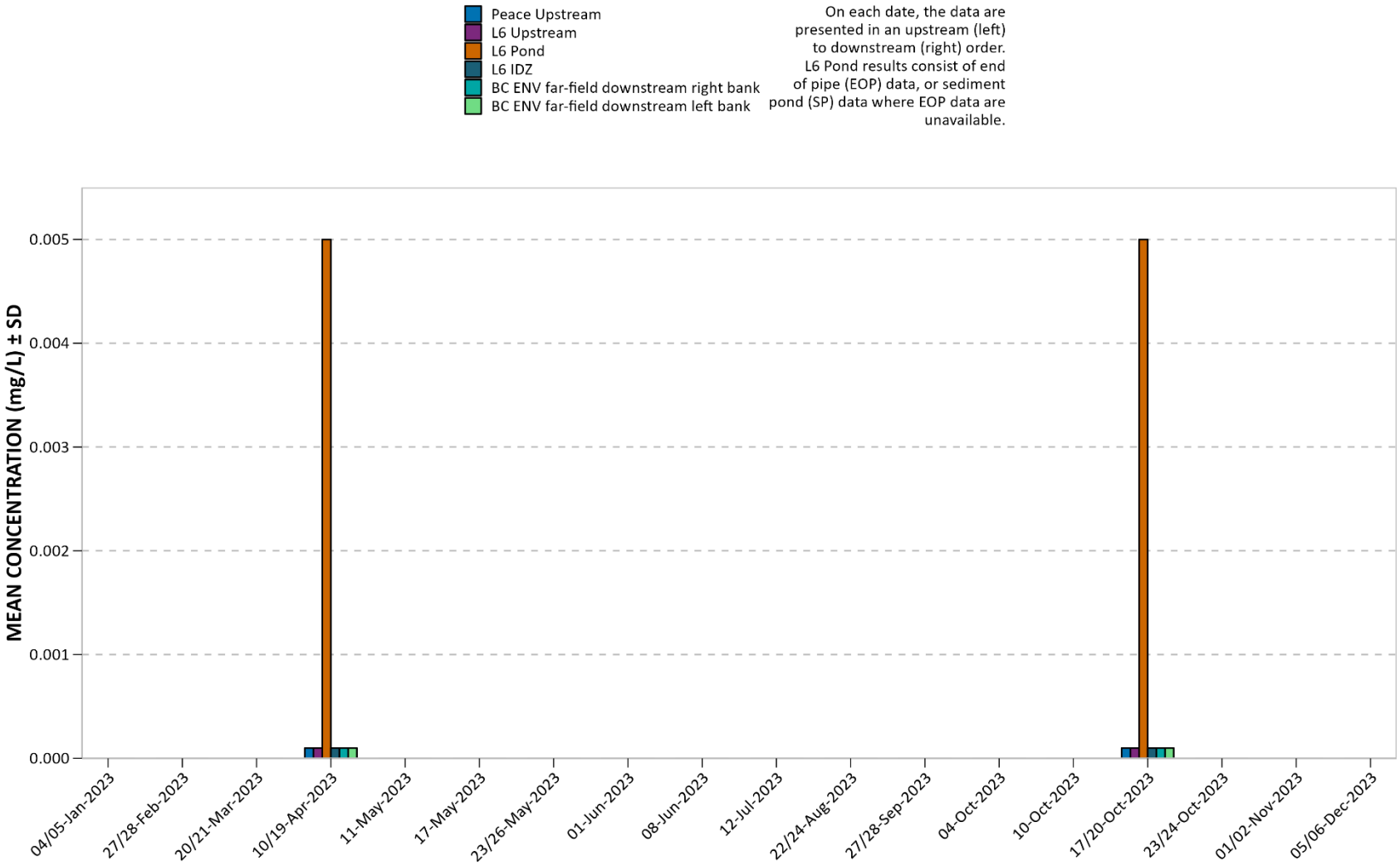


Figure 137. 2023 Peace River and RSEM L6 pond total titanium (Ti).

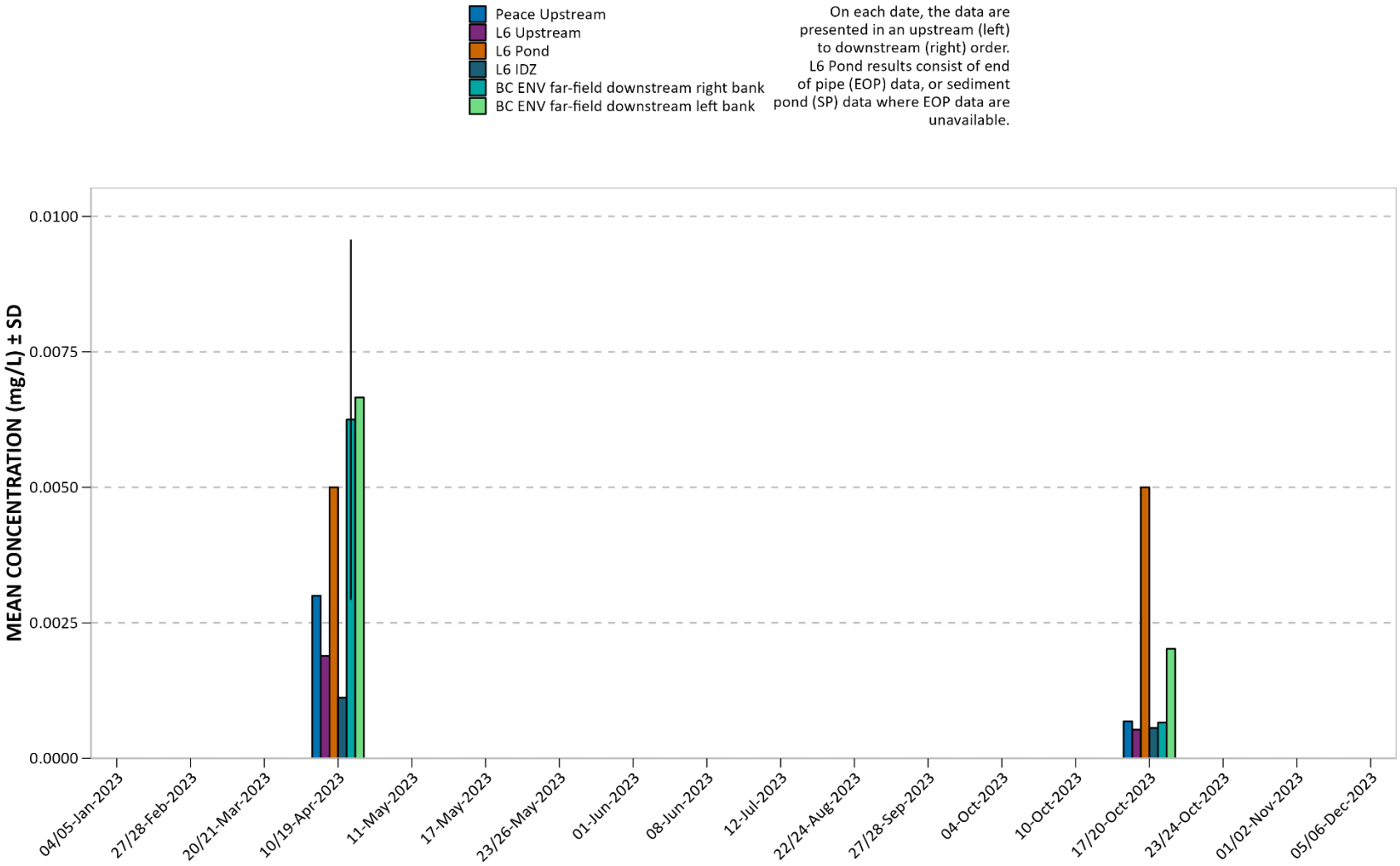


Figure 138. 2023 Peace River and RSEM L6 pond total uranium (U).

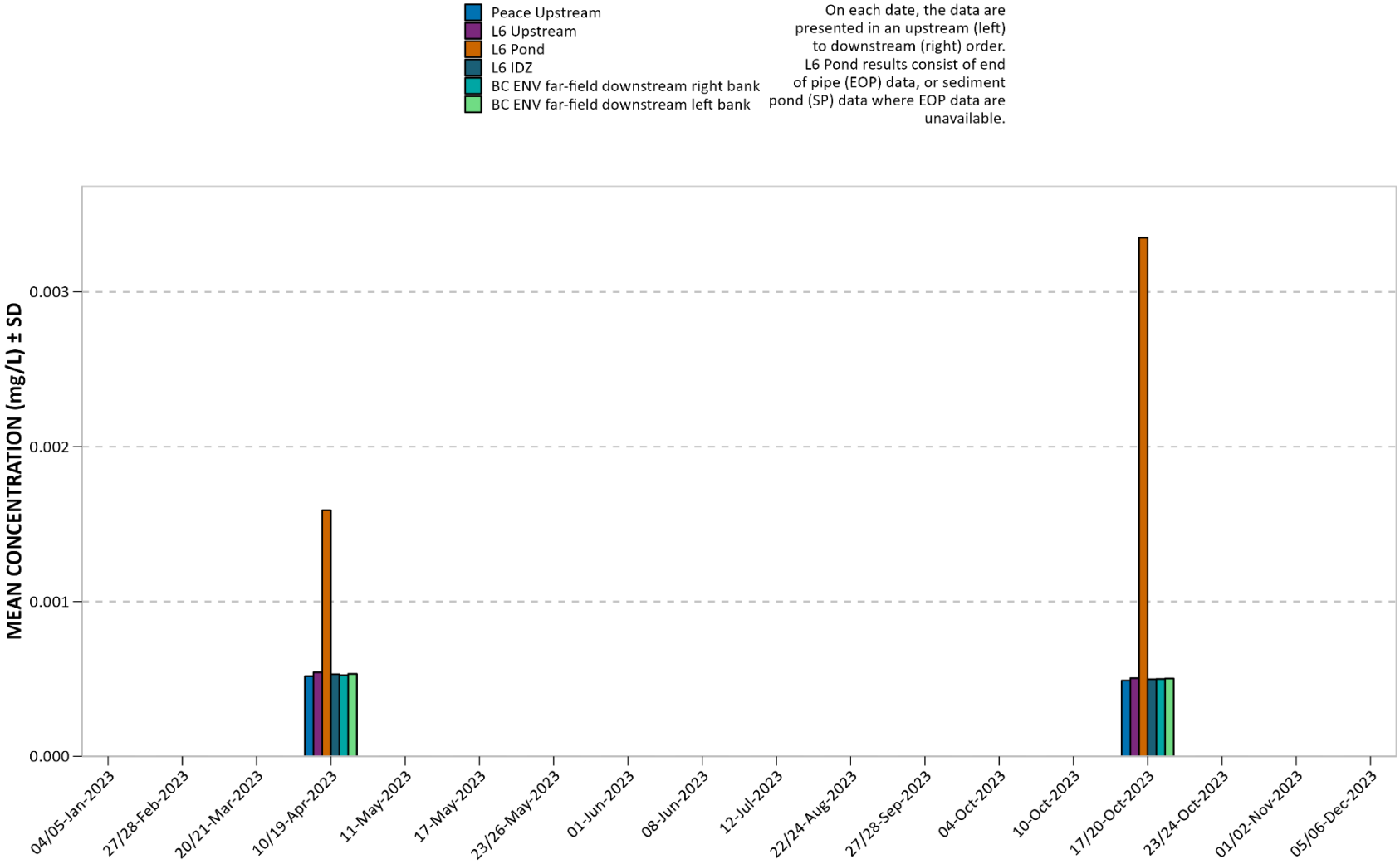


Figure 139. 2023 Peace River and RSEM L6 pond total vanadium (V).

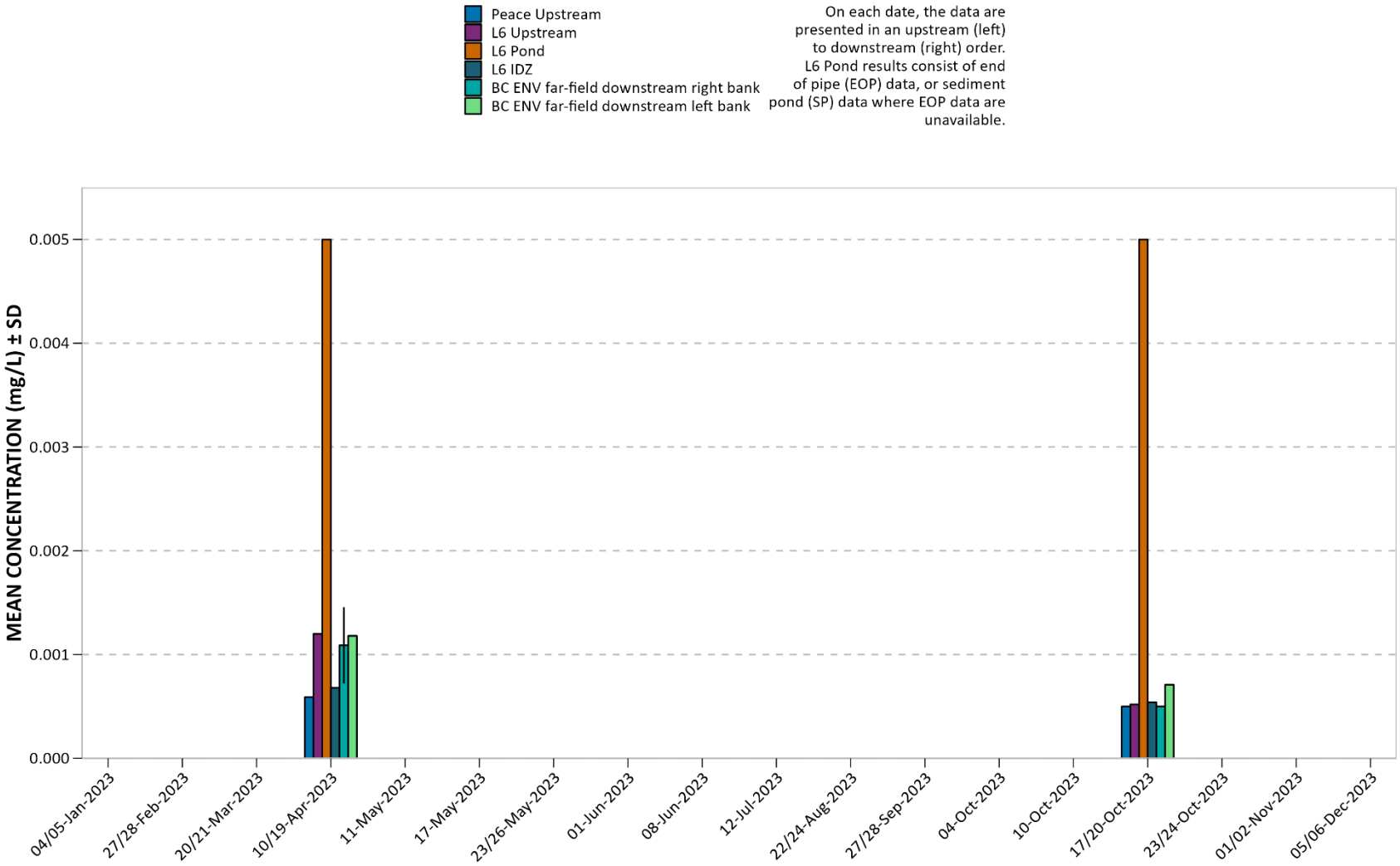


Figure 140. 2023 Peace River and RSEM L6 pond total zinc (Zn).

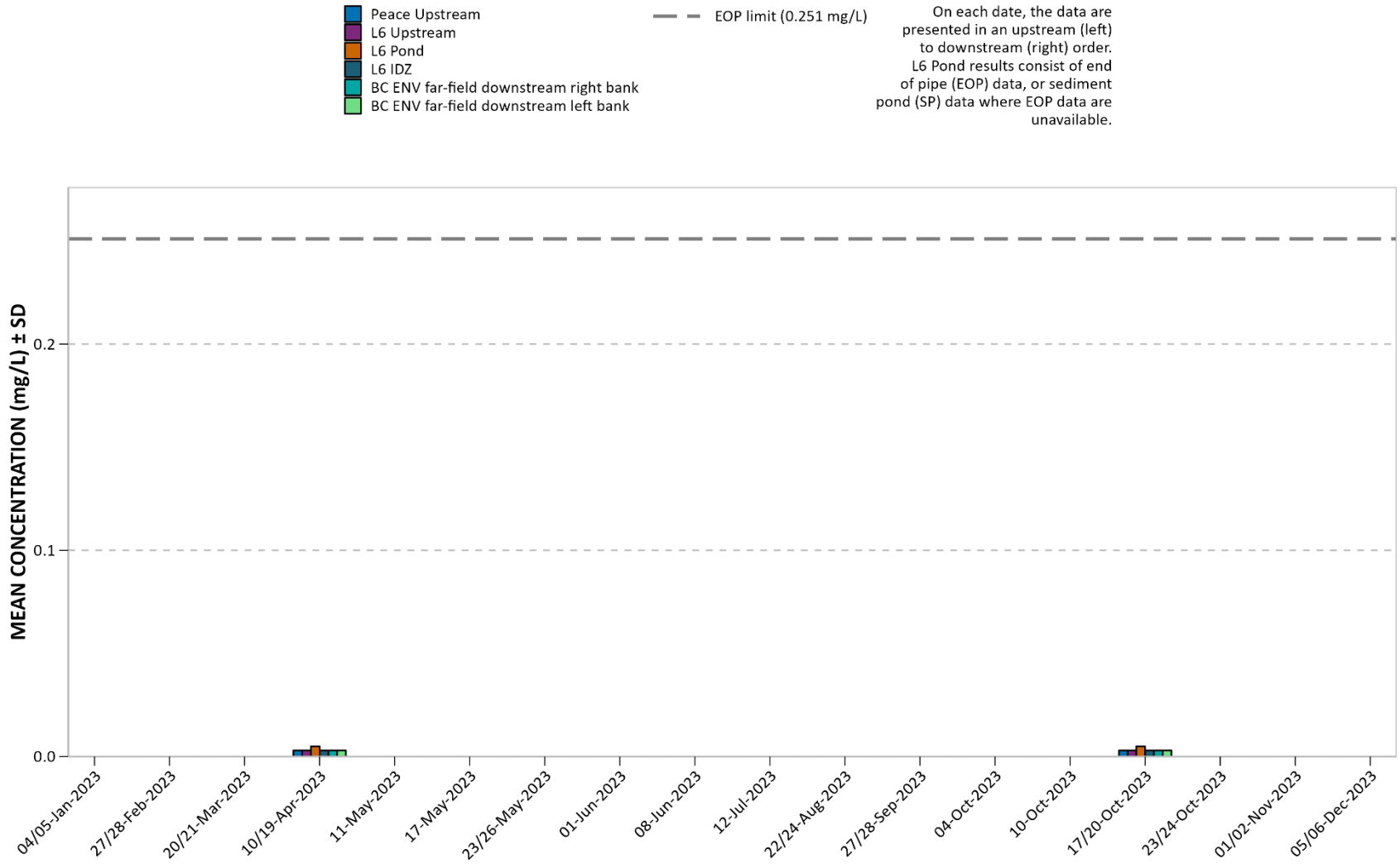


Figure 141. 2023 Peace River and RSEM L6 pond total zirconium (Zr).

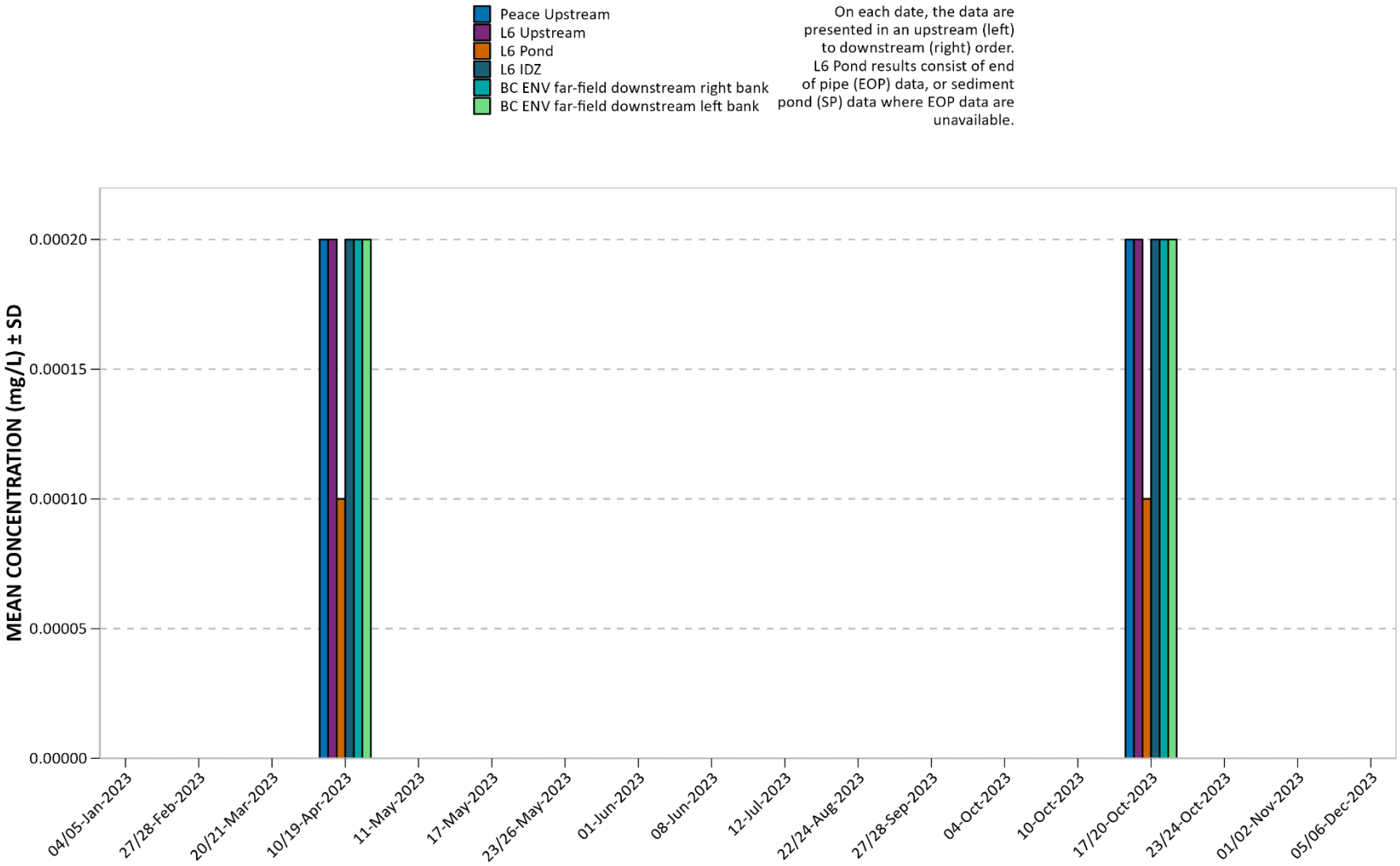


Figure 142. 2023 Peace River and RSEM L6 pond dissolved aluminum (Al).

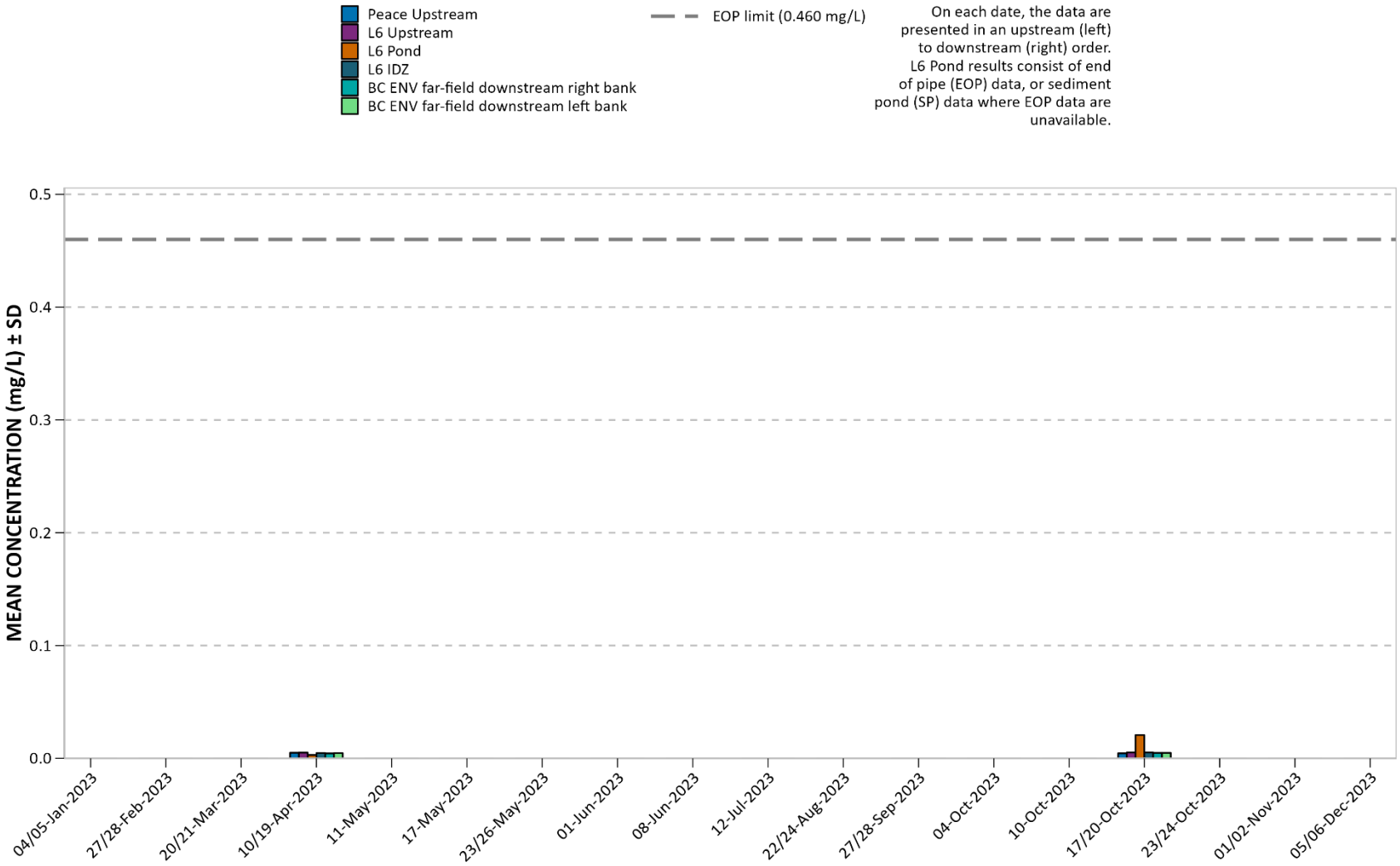


Figure 143. 2023 Peace River and RSEM L6 pond dissolved antimony (Sb).

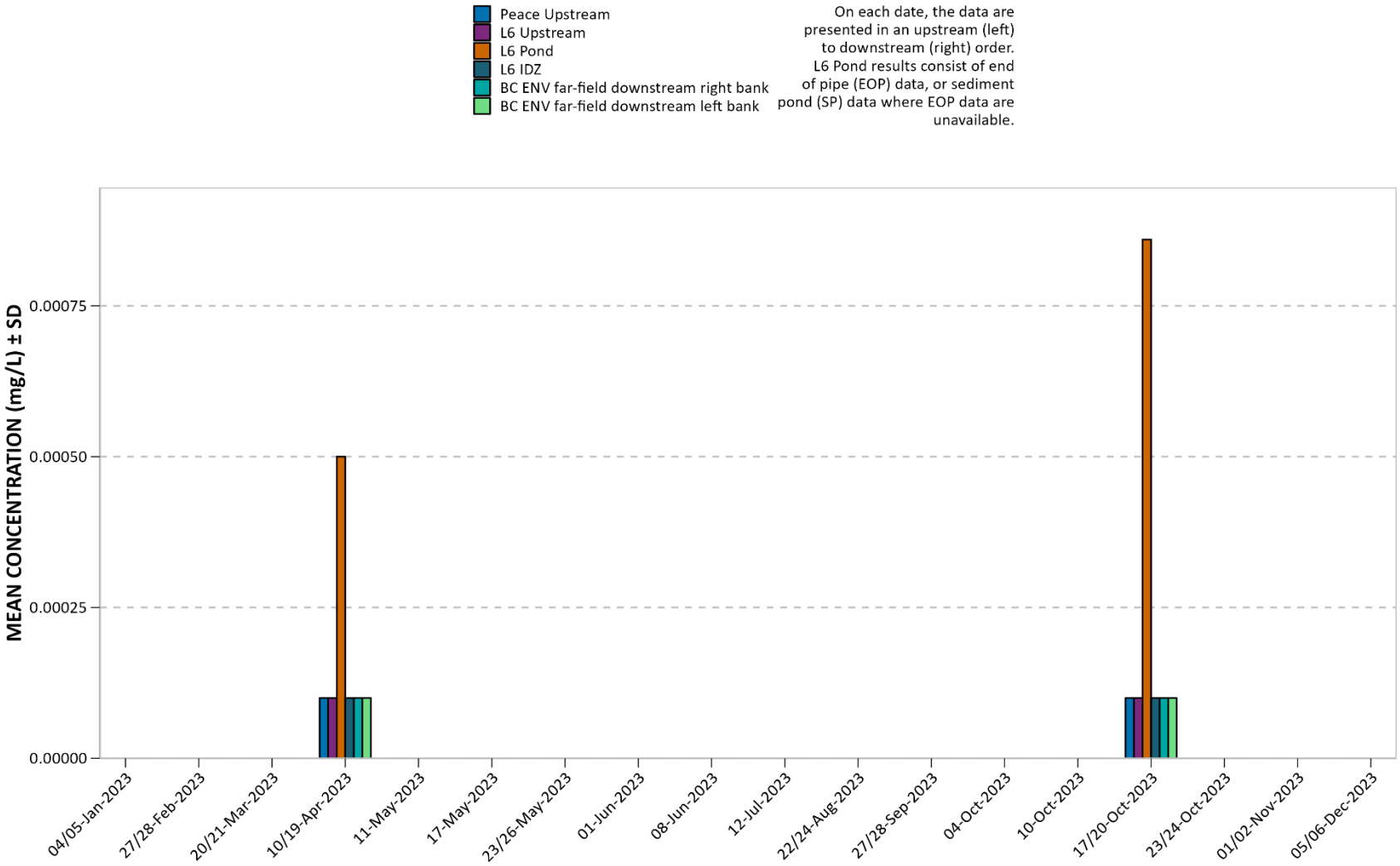


Figure 144. 2023 Peace River and RSEM L6 pond dissolved arsenic (As).

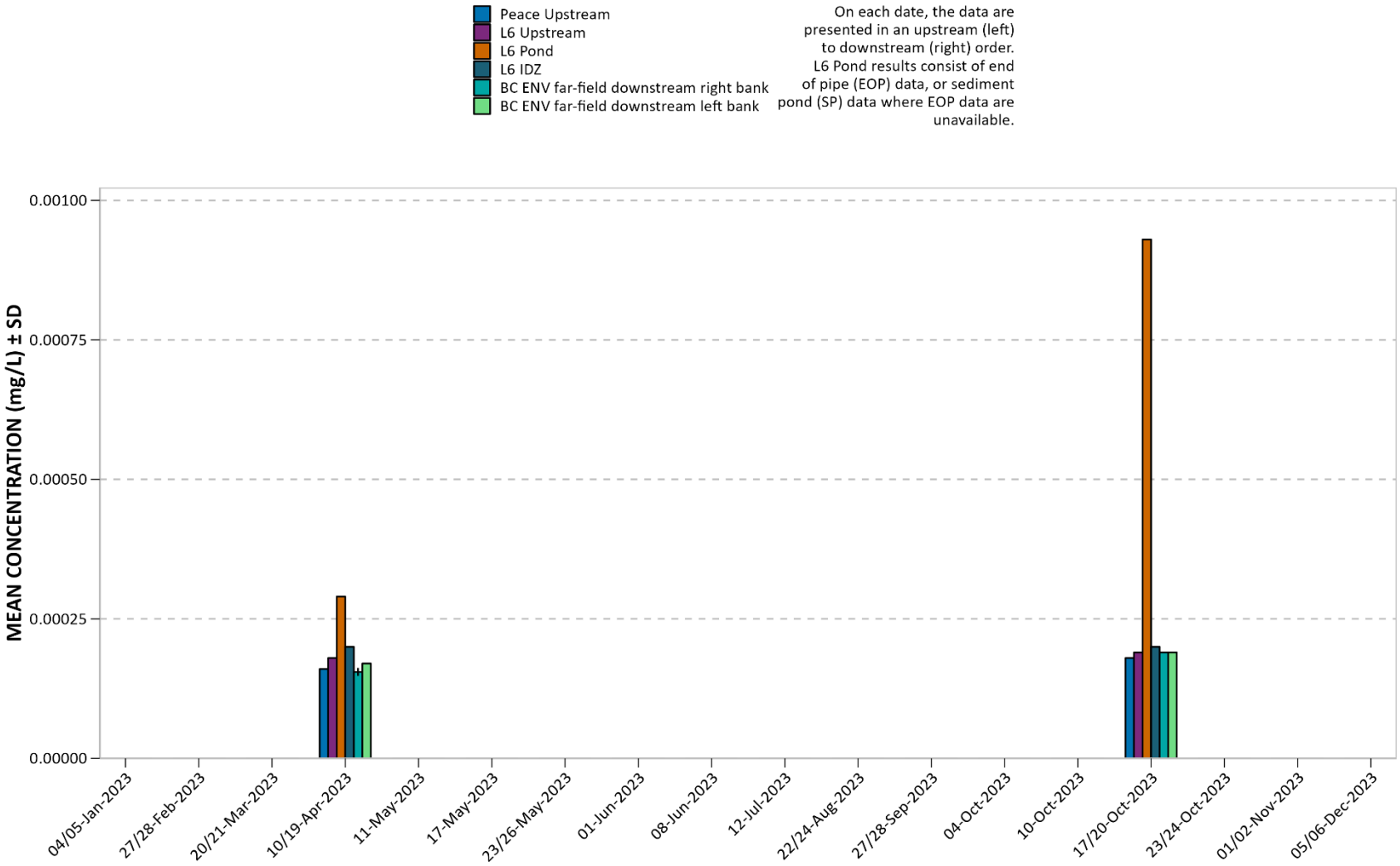


Figure 145. 2023 Peace River and RSEM L6 pond dissolved barium (Ba).

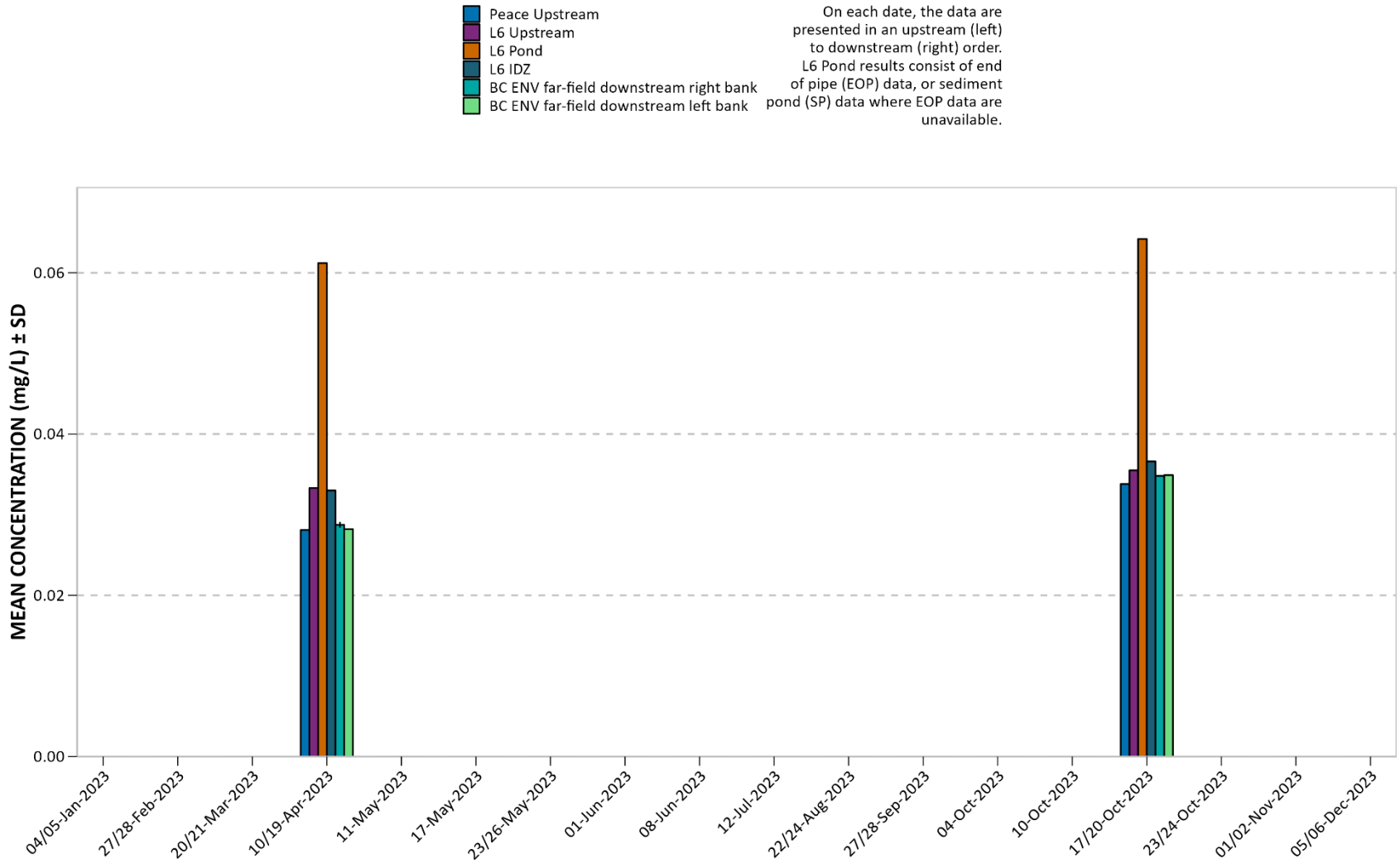


Figure 146. 2023 Peace River and RSEM L6 pond dissolved beryllium (Be).

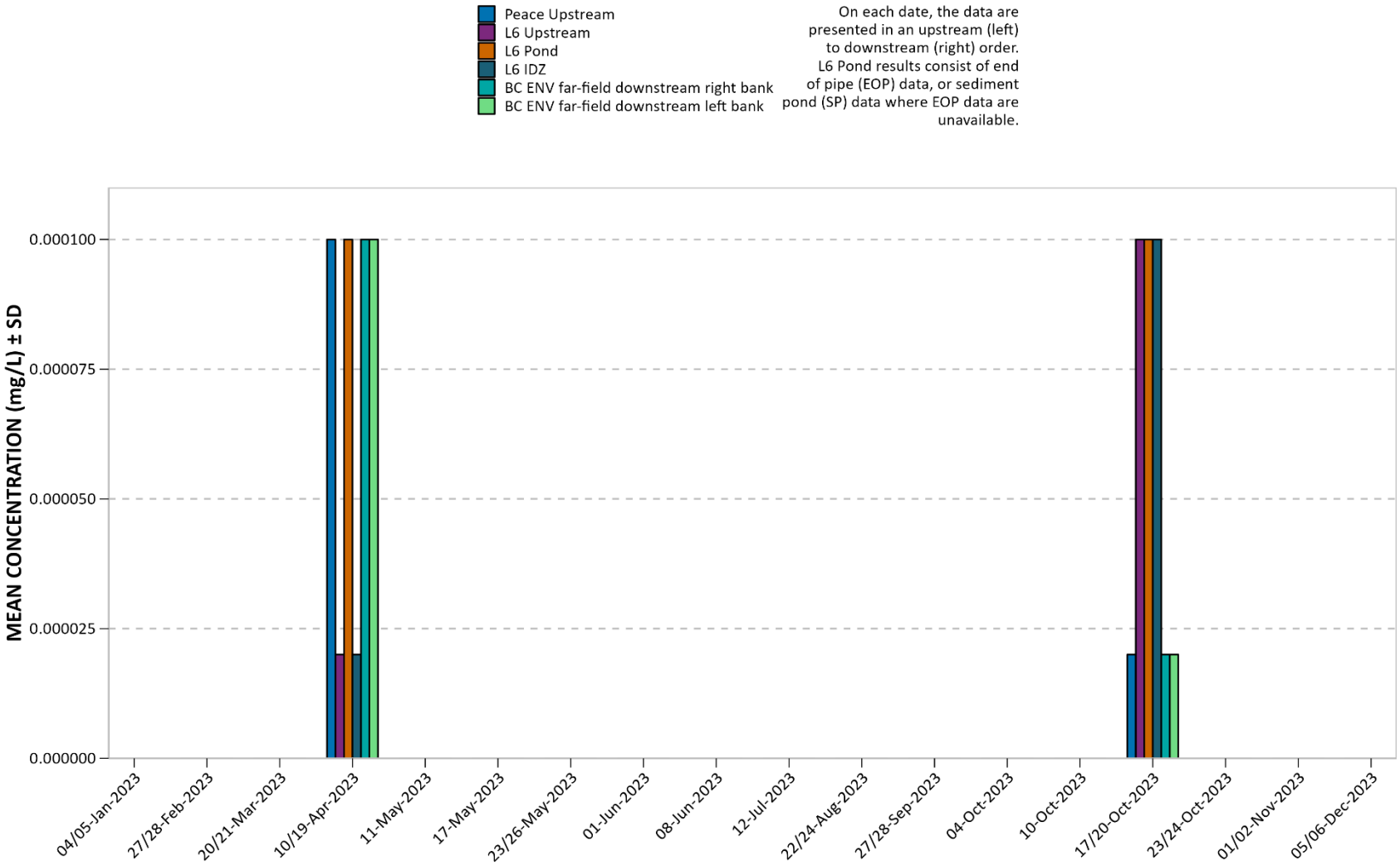


Figure 147. 2023 Peace River and RSEM L6 pond dissolved bismuth (Bi).

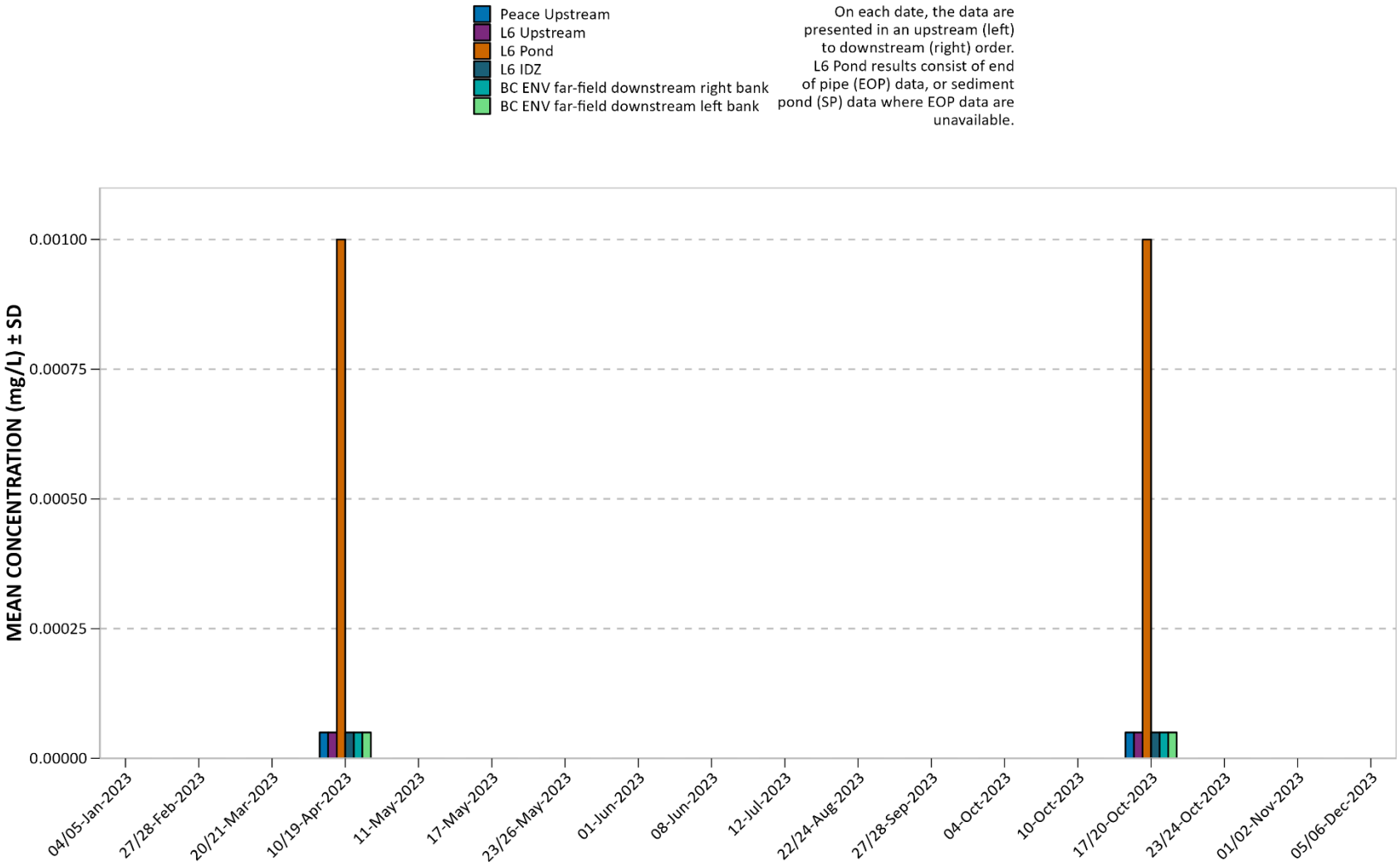


Figure 148. 2023 Peace River and RSEM L6 pond dissolved boron (B).

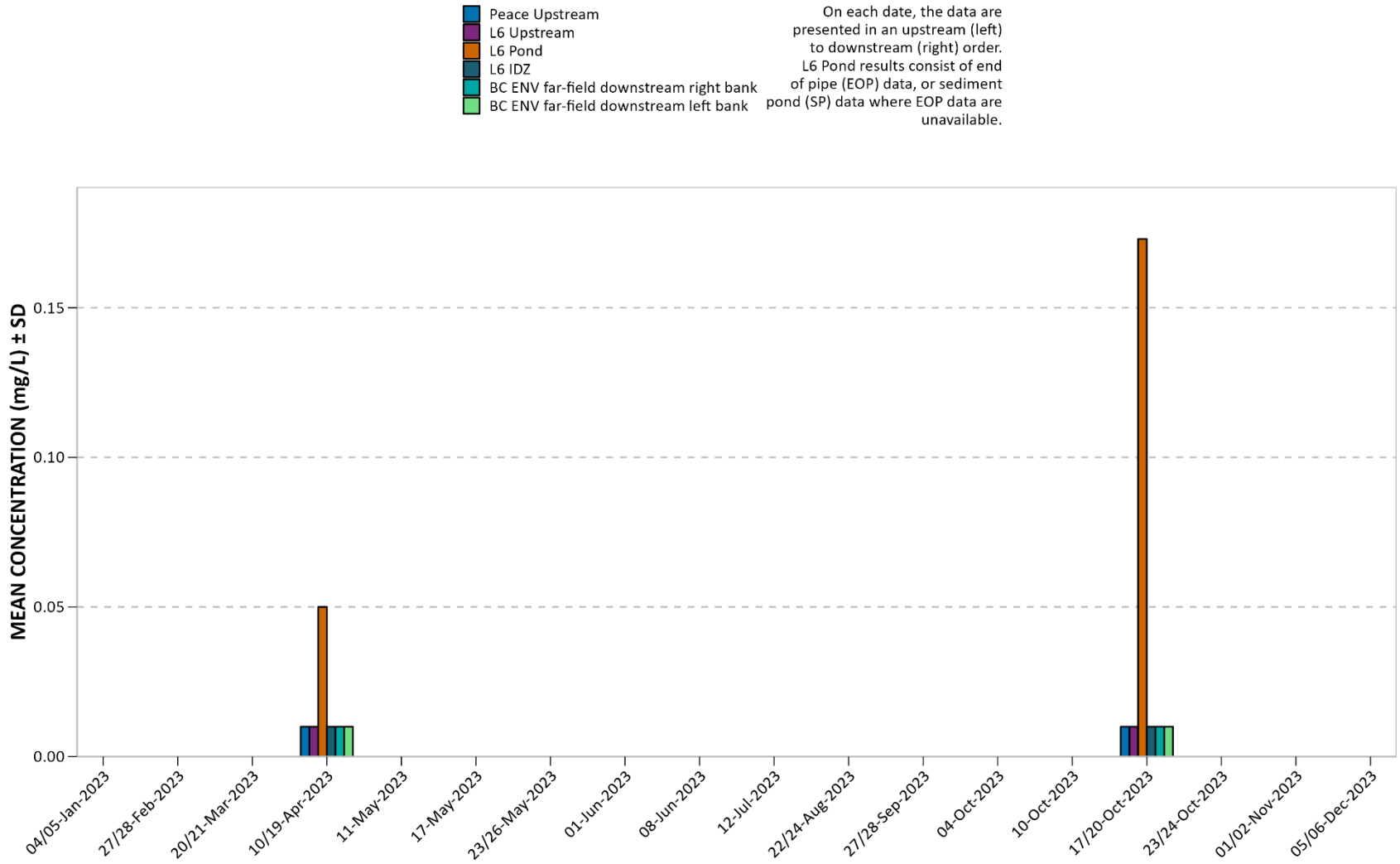
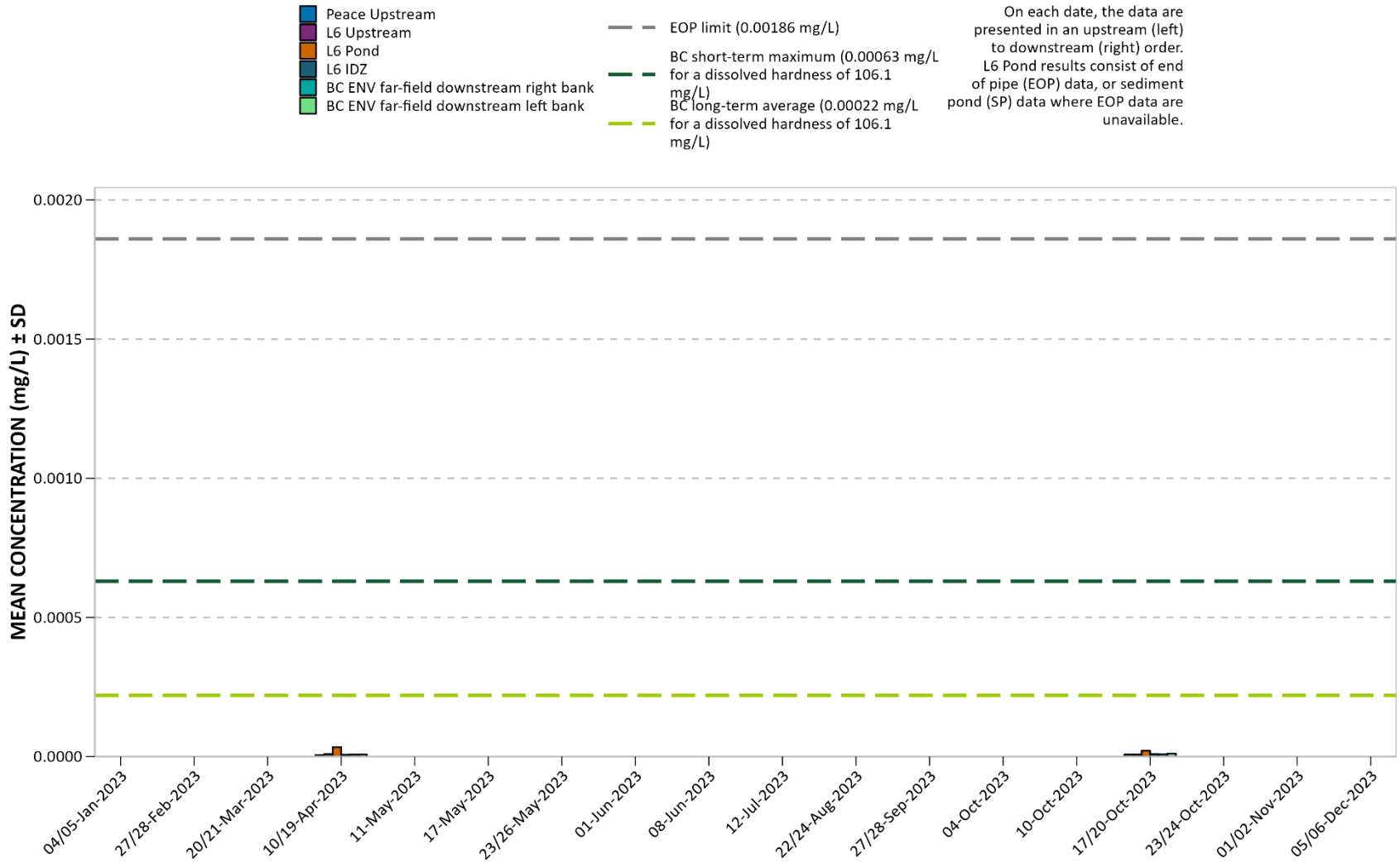


Figure 149. 2023 Peace River and RSEM L6 pond dissolved cadmium (Cd).



Note: BC WQGs for dissolved cadmium are dissolved hardness dependent. An average Peace River dissolved hardness of 106.1 mg/L (based on 26 samples collected between April 2007 – Jan. 2017; BC Hydro 2017b) was used in the plot to depict the maximum and 30-day guidelines for ease of interpretation. Sample specific dissolved hardness was used to screen individual sample results against guidelines in the data tables (Appendix A).

Figure 150. 2023 Peace River and RSEM L6 pond dissolved calcium (Ca).

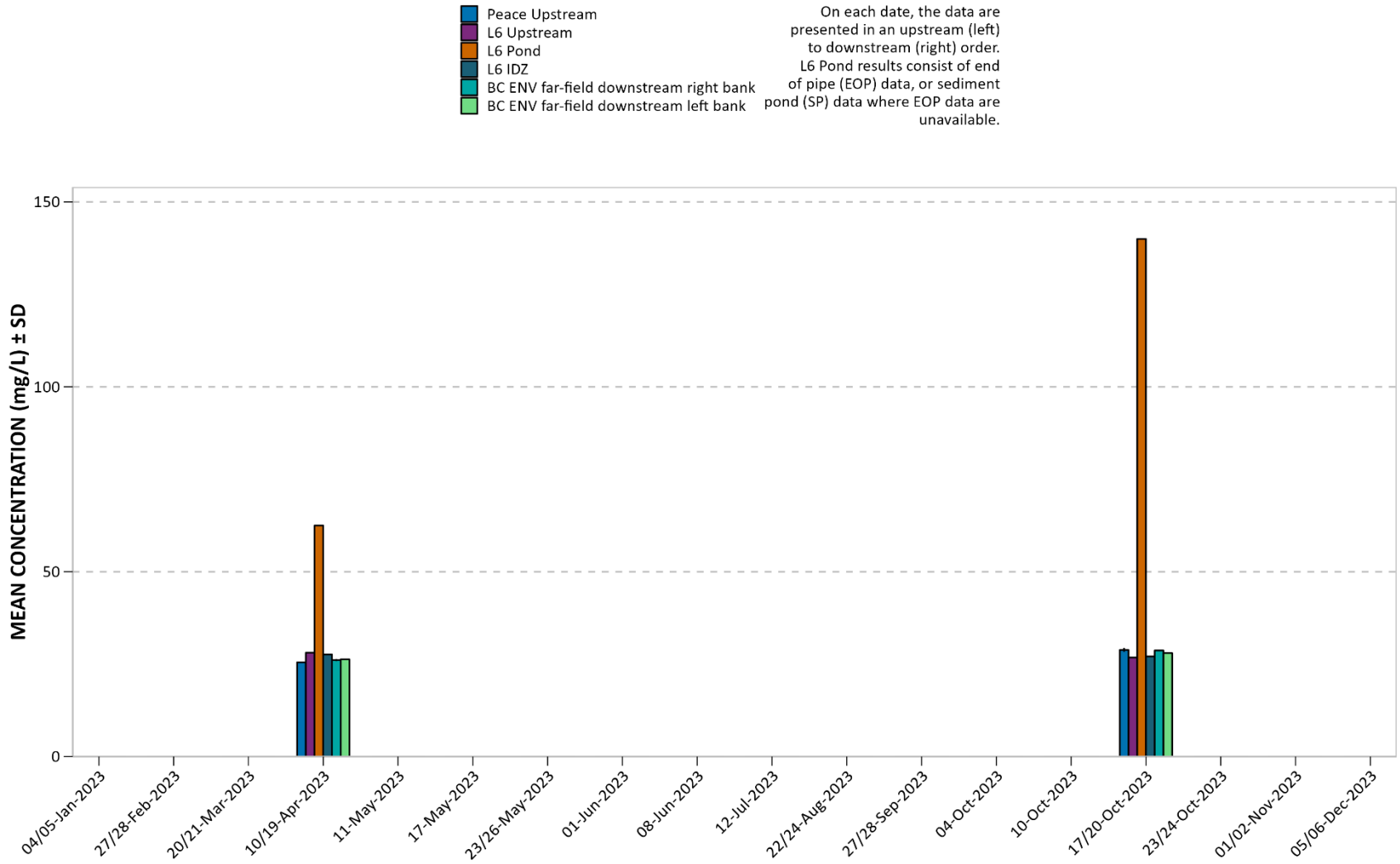


Figure 151. 2023 Peace River and RSEM L6 pond dissolved chromium (Cr).

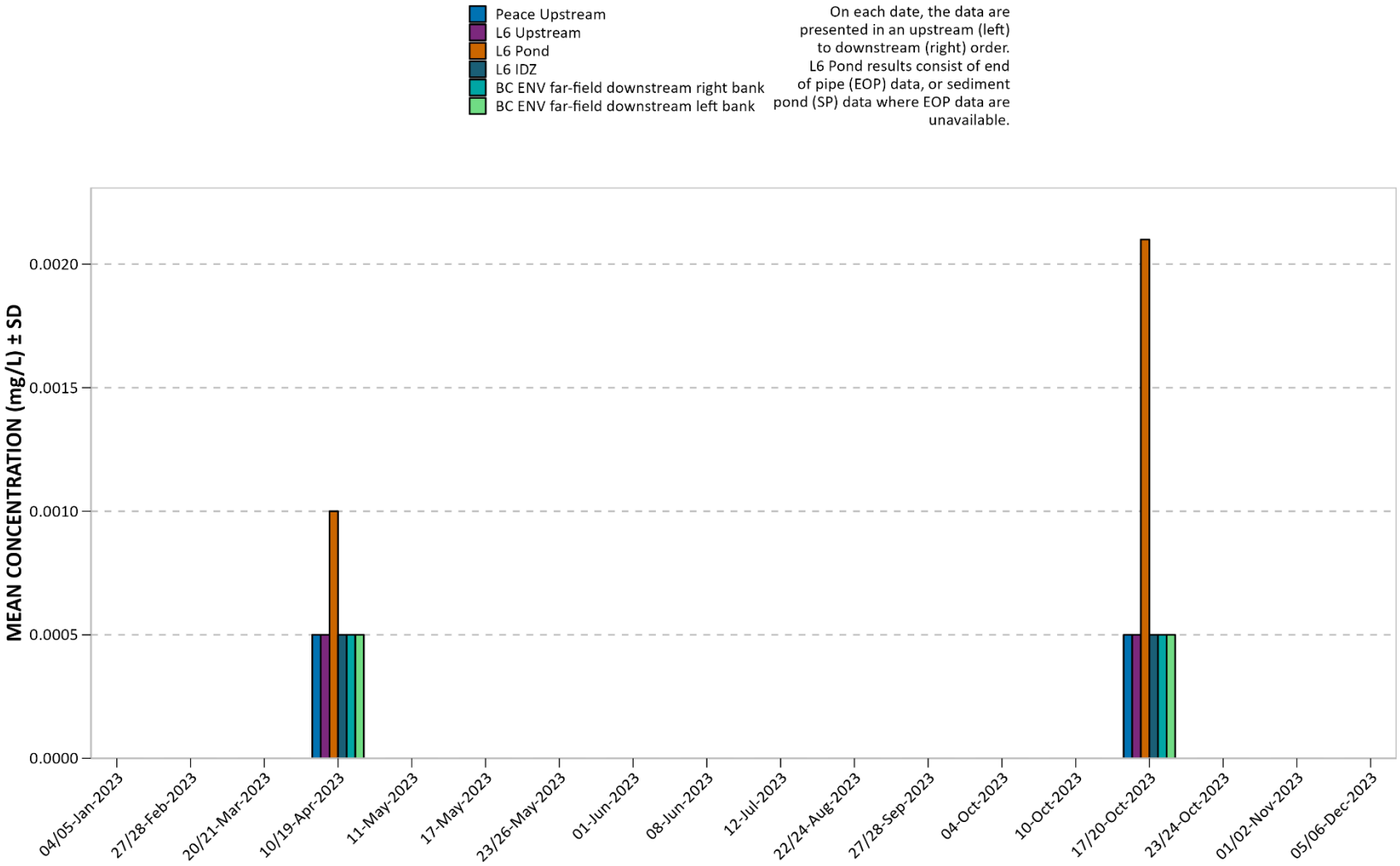


Figure 152. 2023 Peace River and RSEM L6 pond dissolved cobalt (Co).

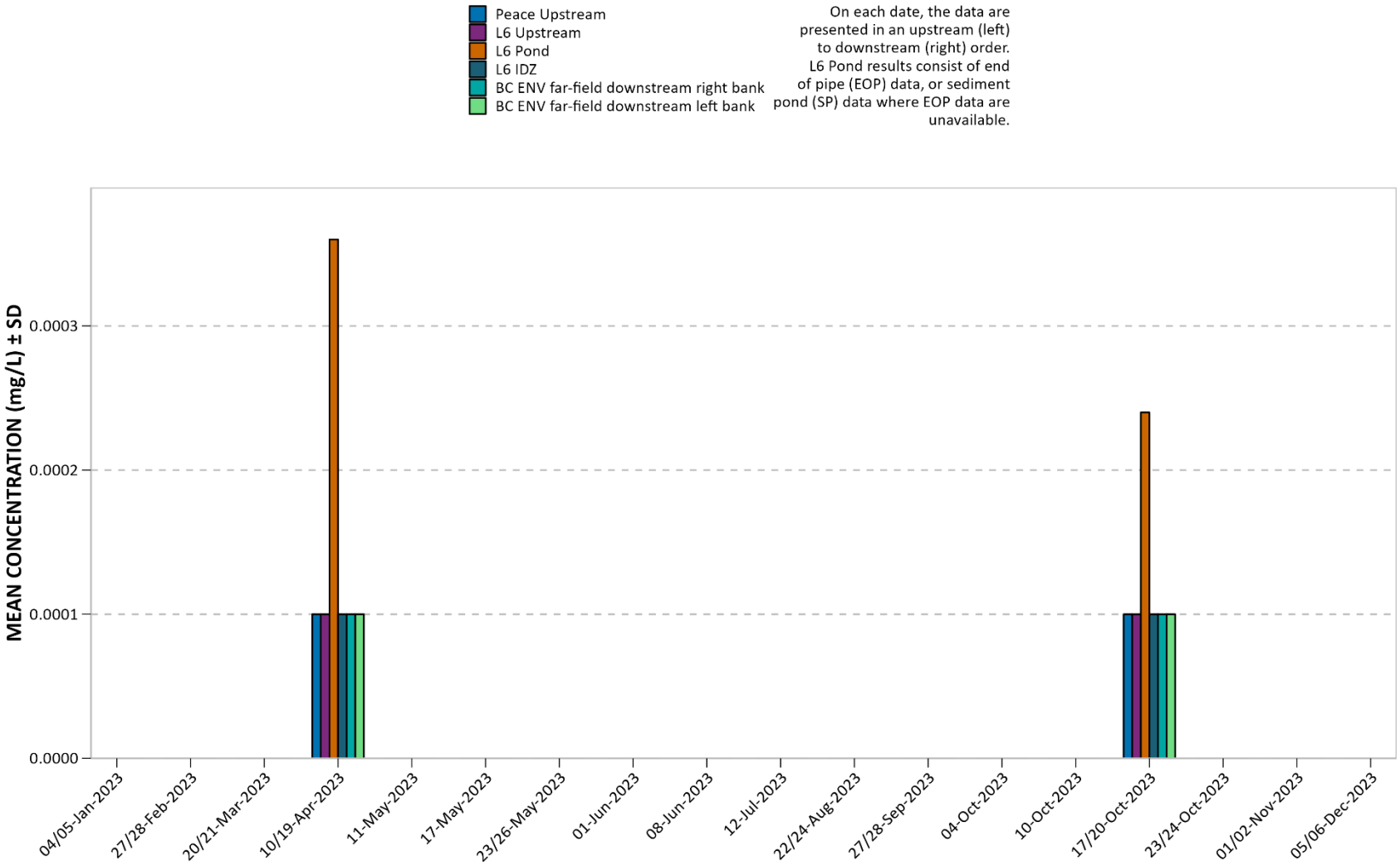
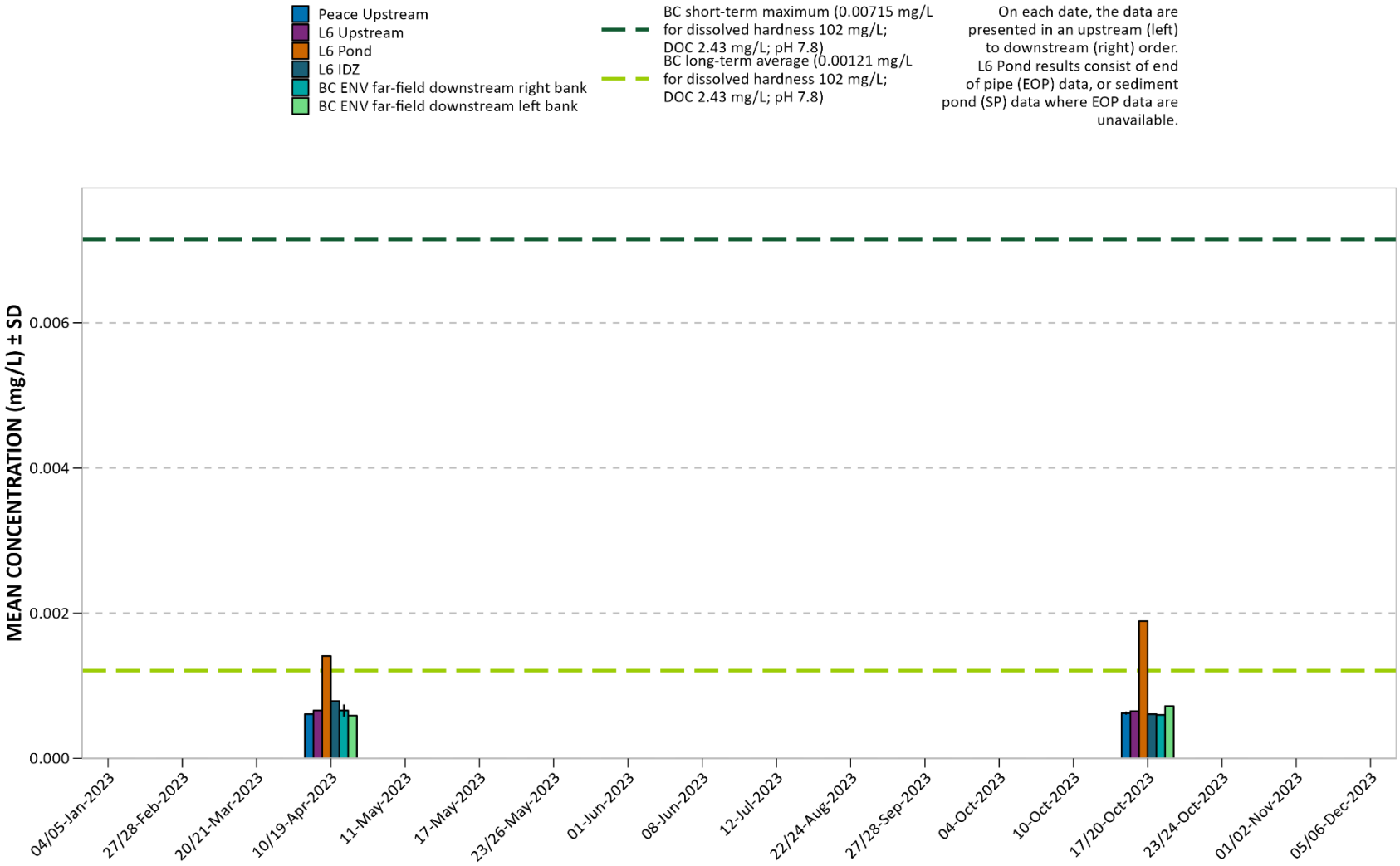


Figure 153. 2023 Peace River and RSEM L6 pond dissolved copper (Cu).



Note: BC WQGs for dissolved copper are dissolved hardness, DOC, and pH dependent, and therefore guidelines depicted in the plot are applicable for Peace River sites only. Based on the range of dissolved hardness, DOC, and pH values observed in the Peace River, the applicable BC maximum and 30-day guidelines are 0.00715 mg/L and 0.00121 mg/L, respectively.

Figure 154. 2023 Peace River and RSEM L6 pond dissolved iron (Fe).

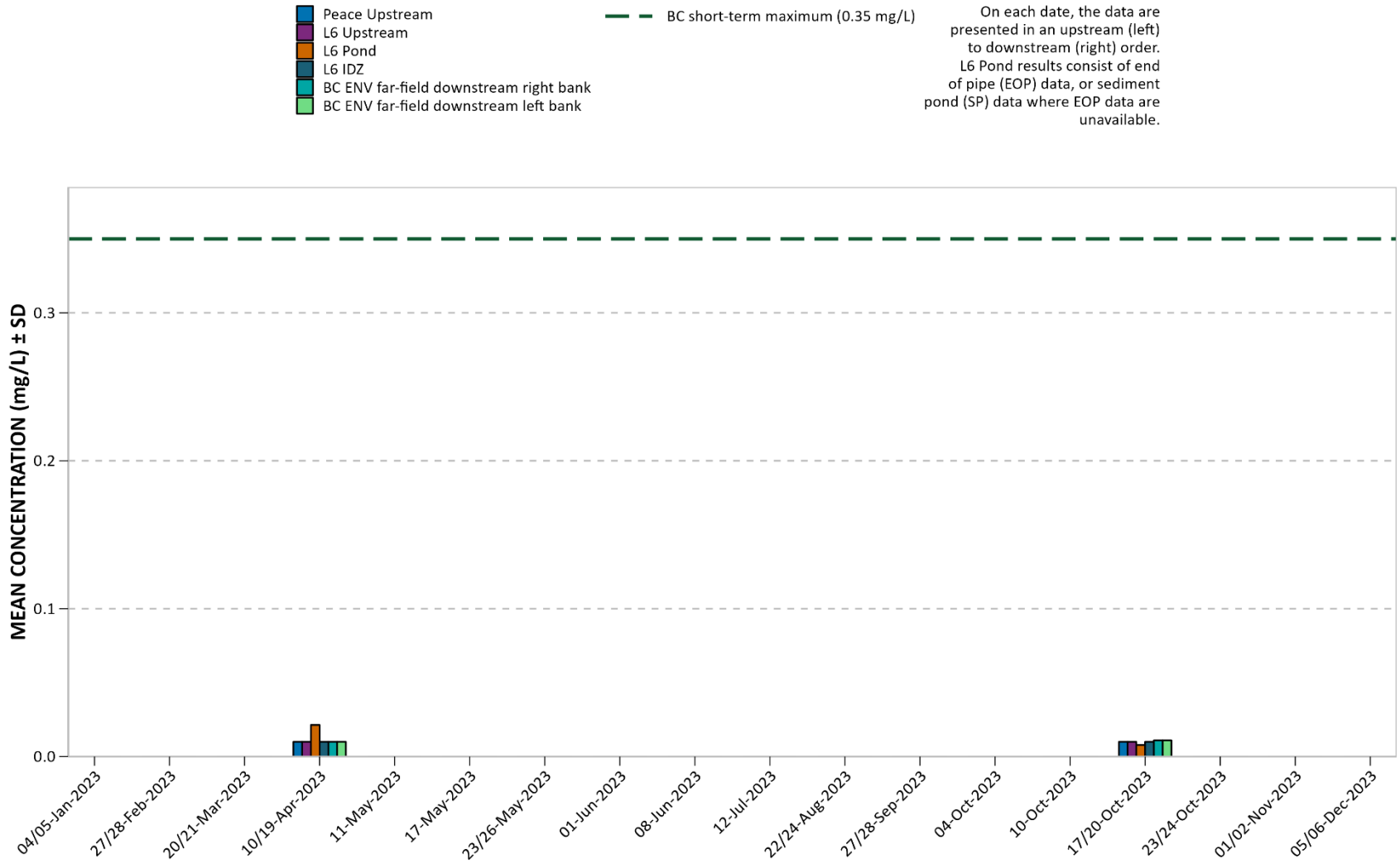


Figure 155. 2023 Peace River and RSEM L6 pond dissolved lead (Pb).

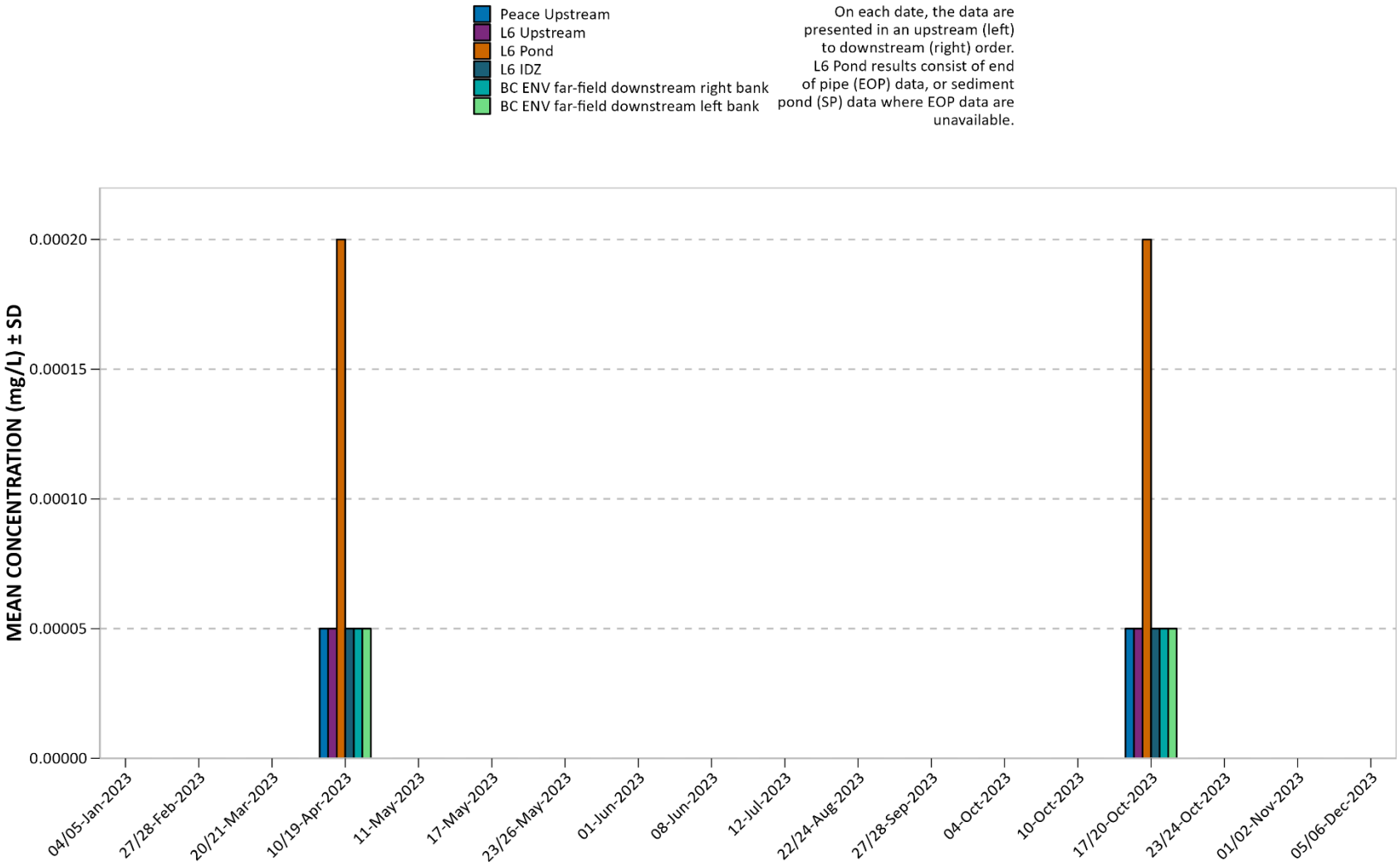


Figure 156. 2023 Peace River and RSEM L6 pond dissolved lithium (Li).

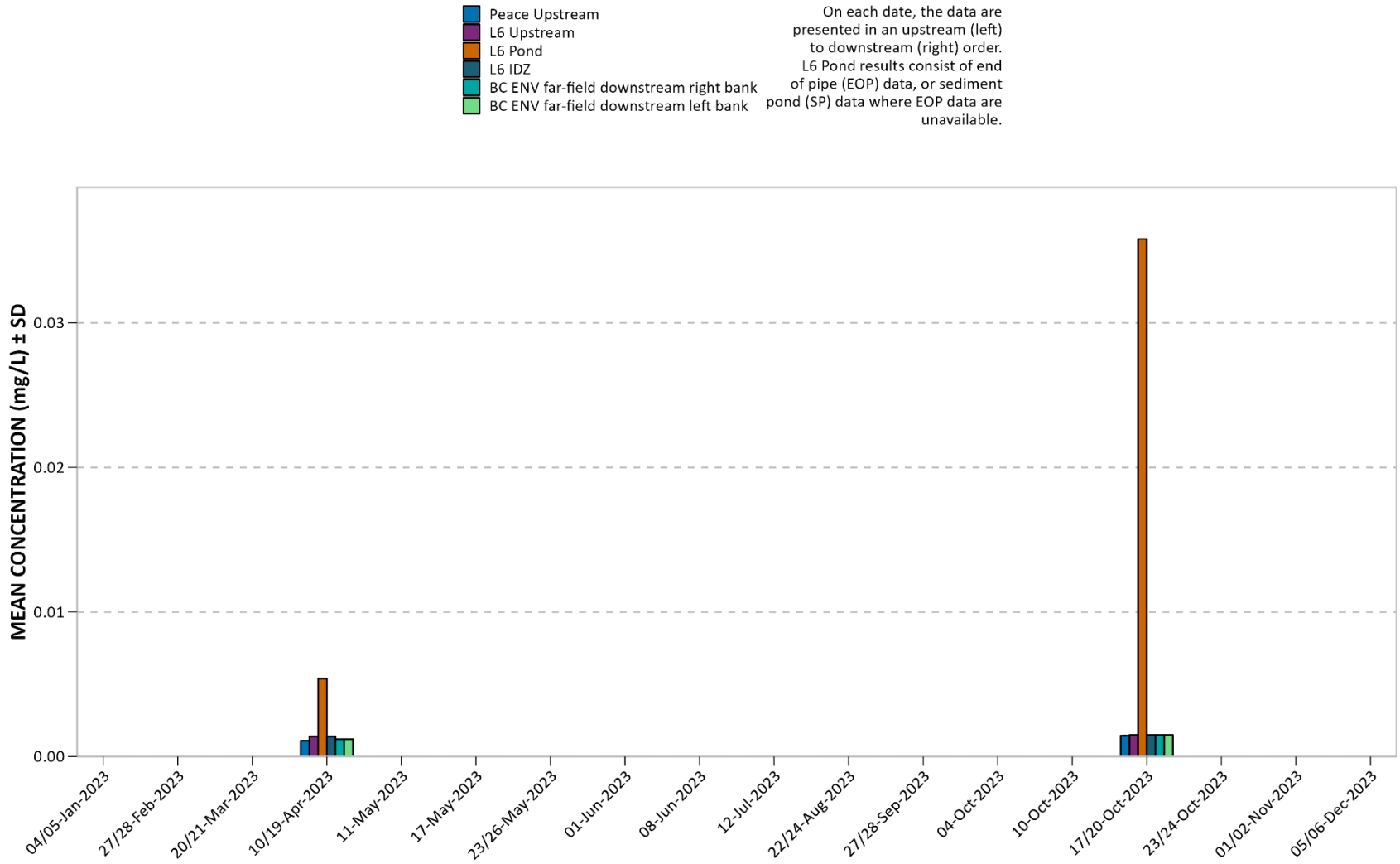


Figure 157. 2023 Peace River and RSEM L6 pond dissolved magnesium (Mg).

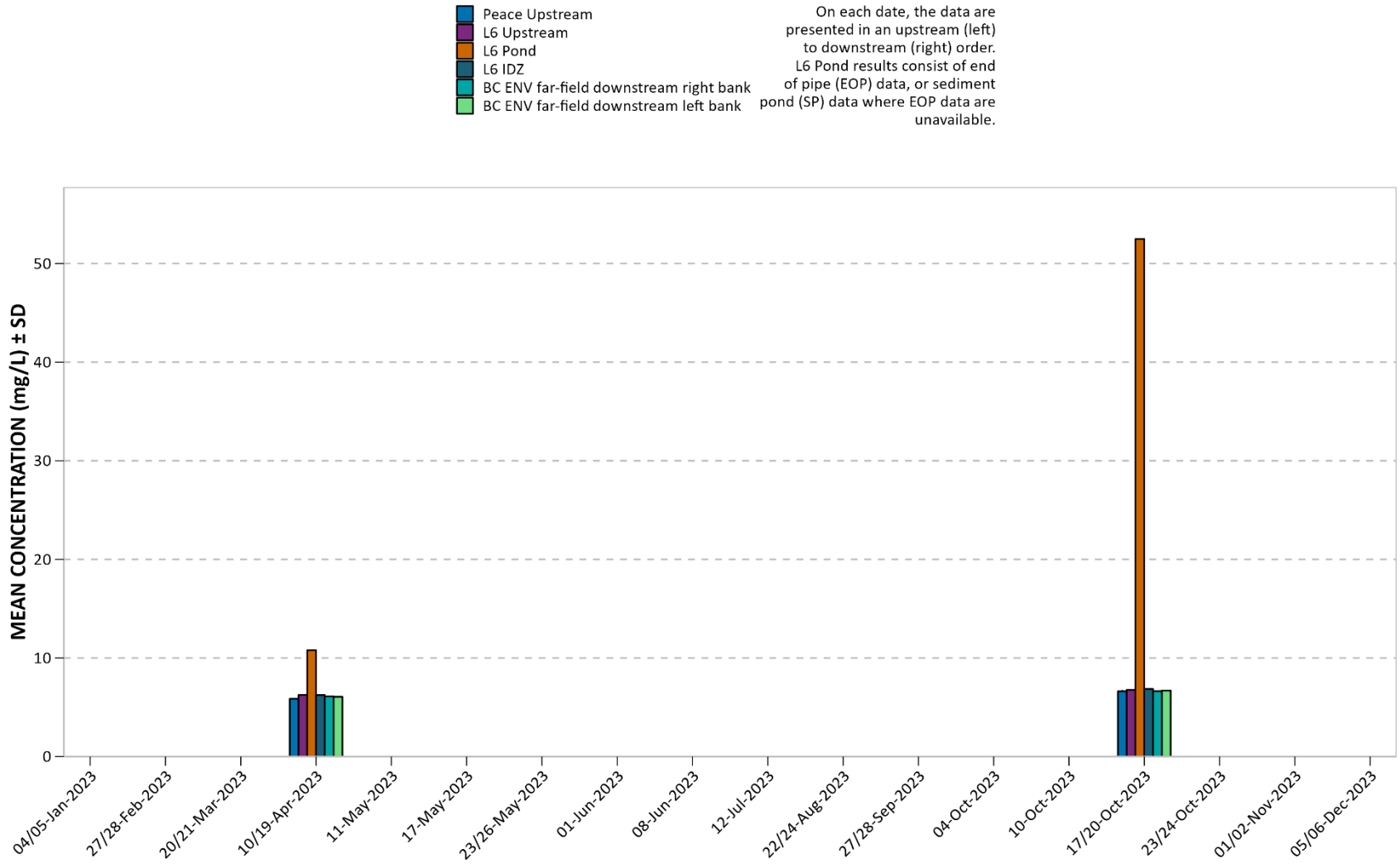


Figure 158. 2023 Peace River and RSEM L6 pond dissolved manganese (Mn).

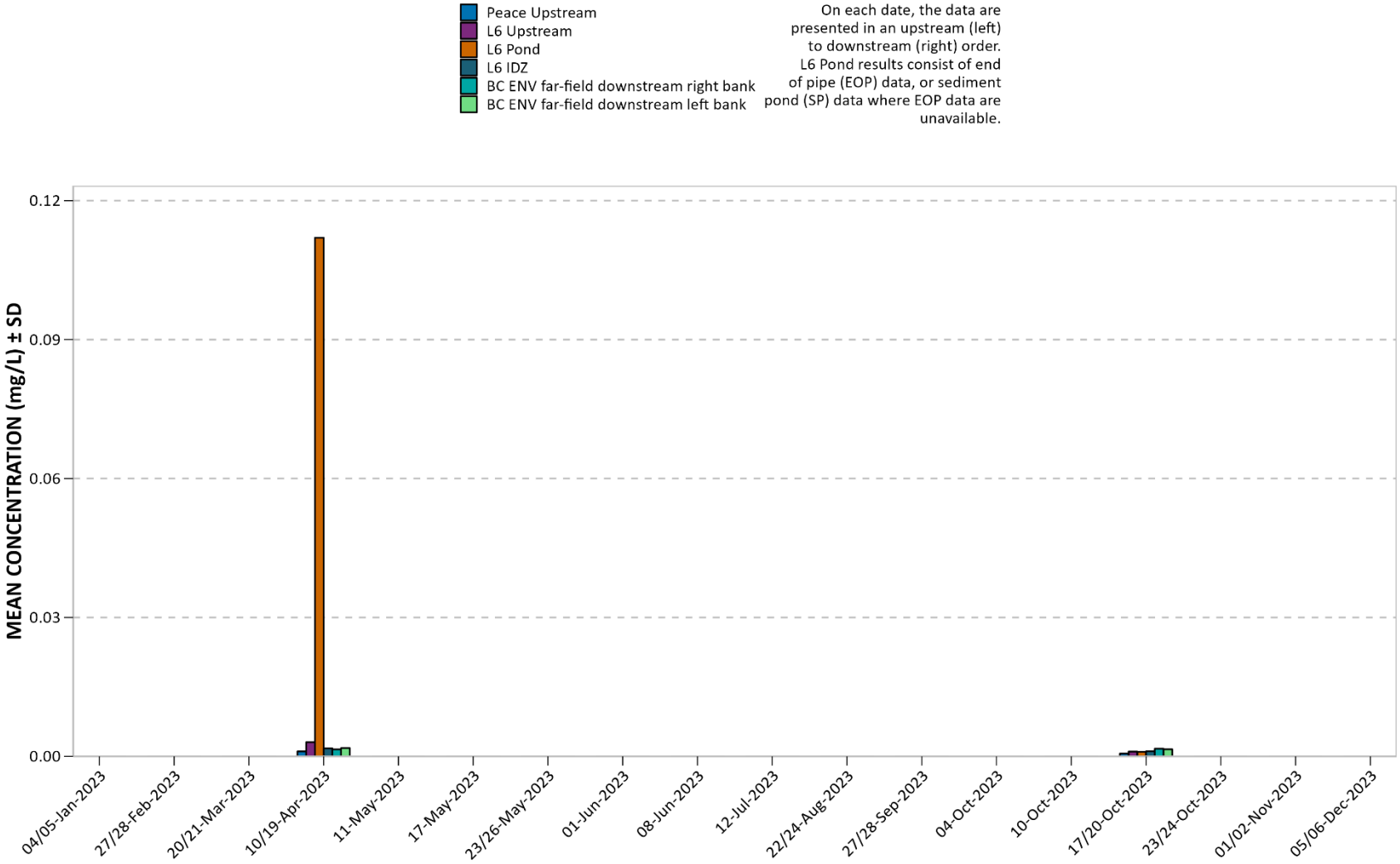


Figure 159. 2023 Peace River and RSEM L6 pond dissolved mercury (Hg).

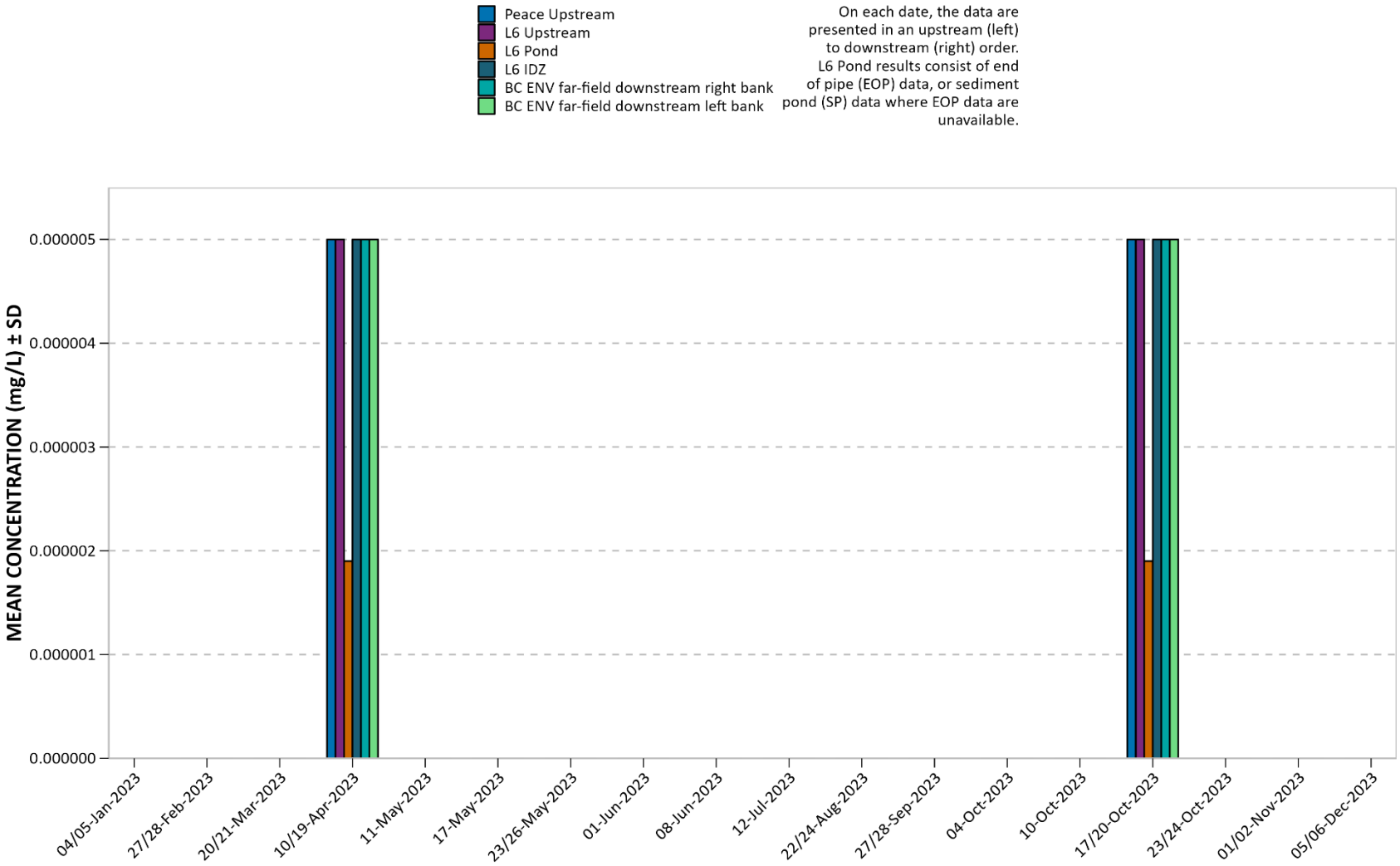


Figure 160. 2023 Peace River and RSEM L6 pond dissolved molybdenum (Mo).

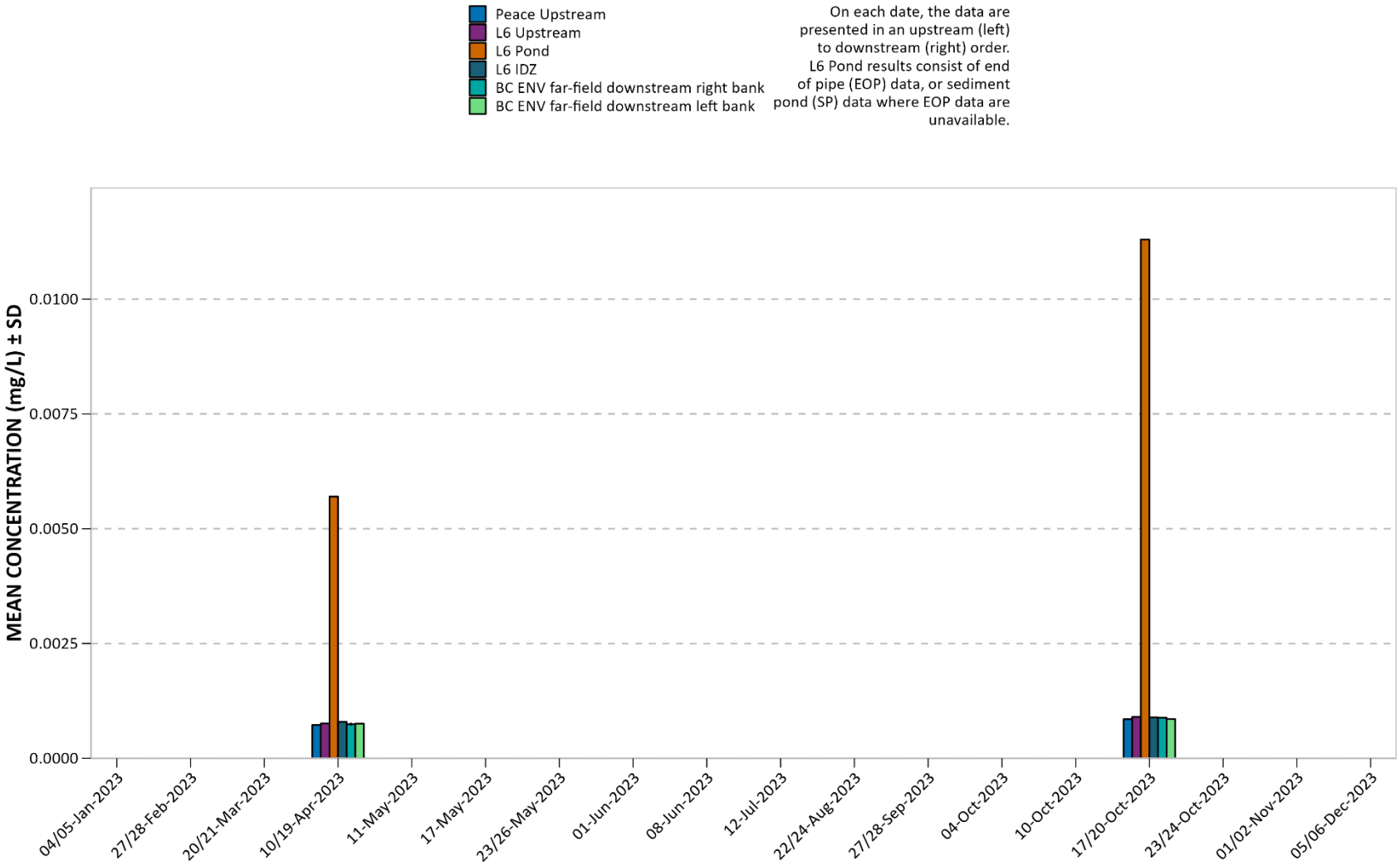


Figure 161. 2023 Peace River and RSEM L6 pond dissolved nickel (Ni).

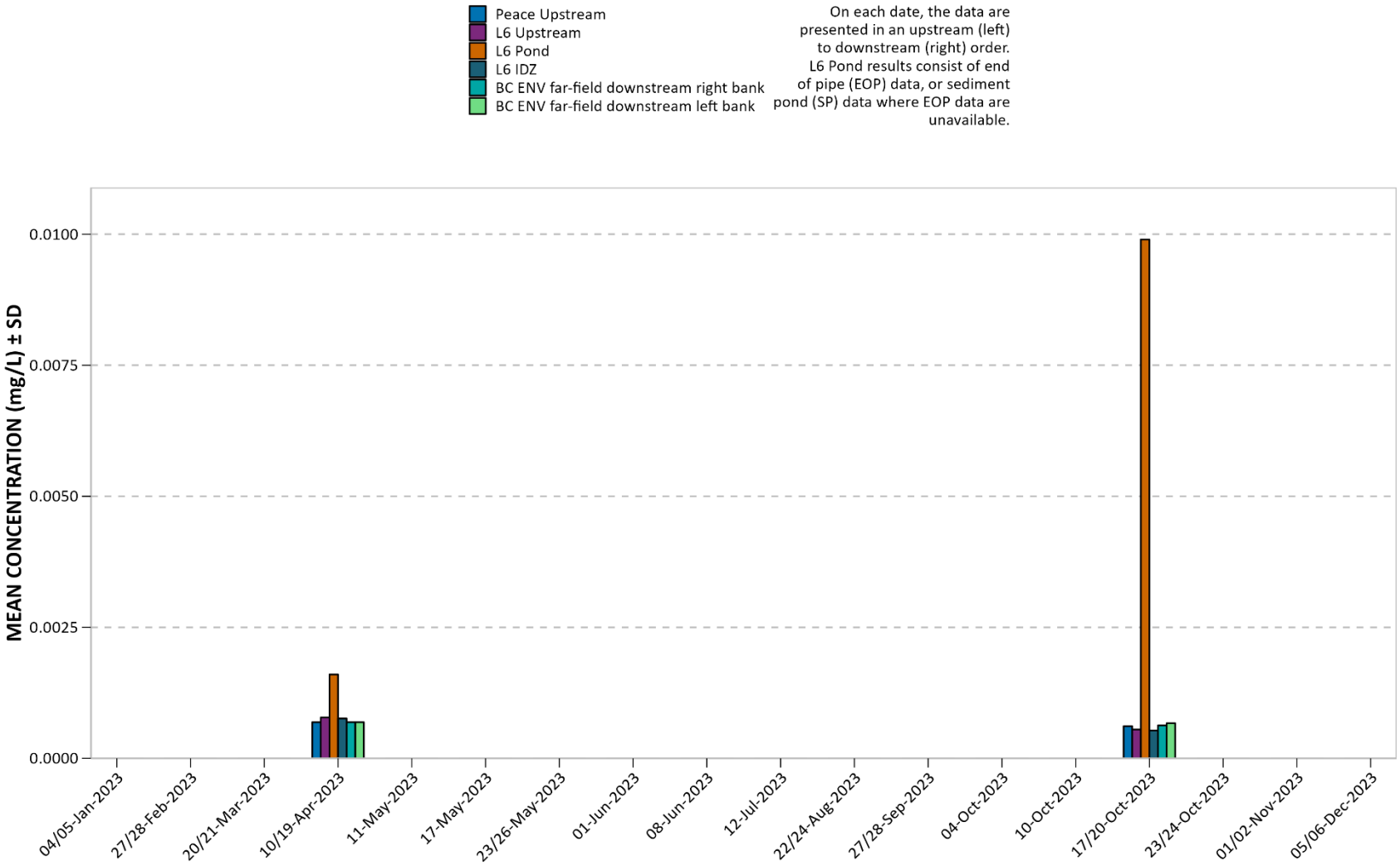


Figure 162. 2023 Peace River and RSEM L6 pond dissolved potassium (K).

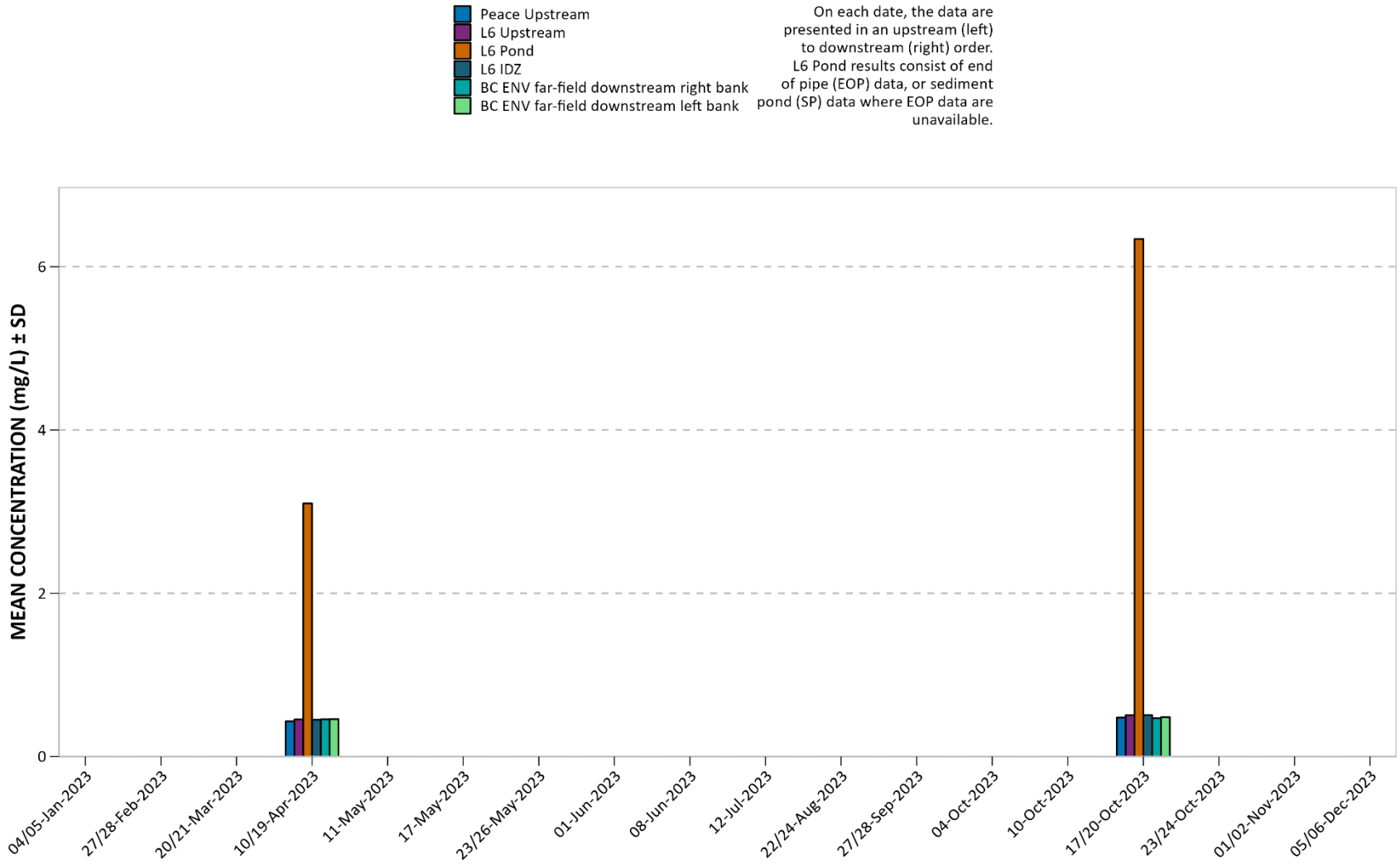


Figure 163. 2023 Peace River and RSEM L6 pond dissolved selenium (Se).

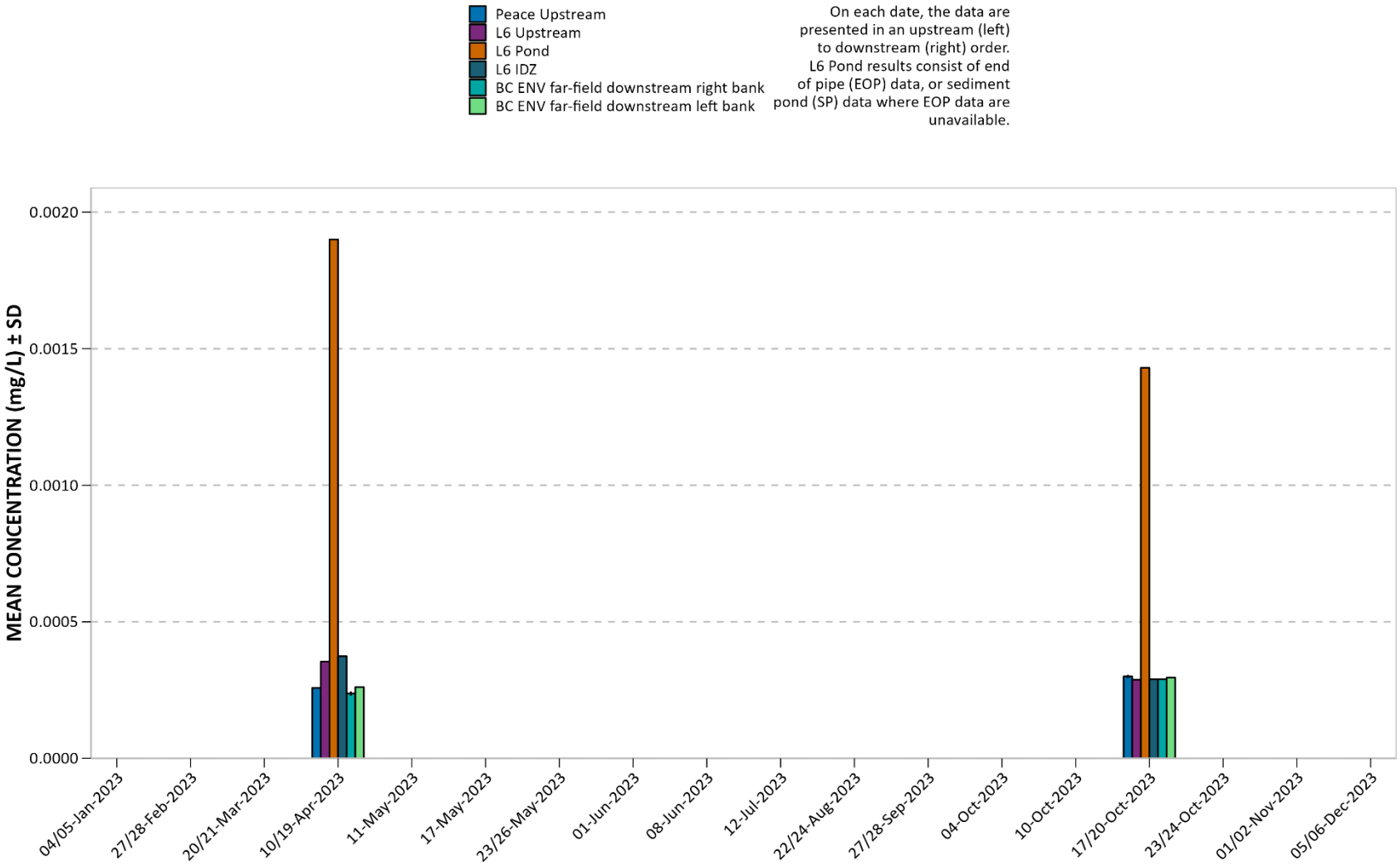


Figure 164. 2023 Peace River and RSEM L6 pond dissolved silicon (Si).

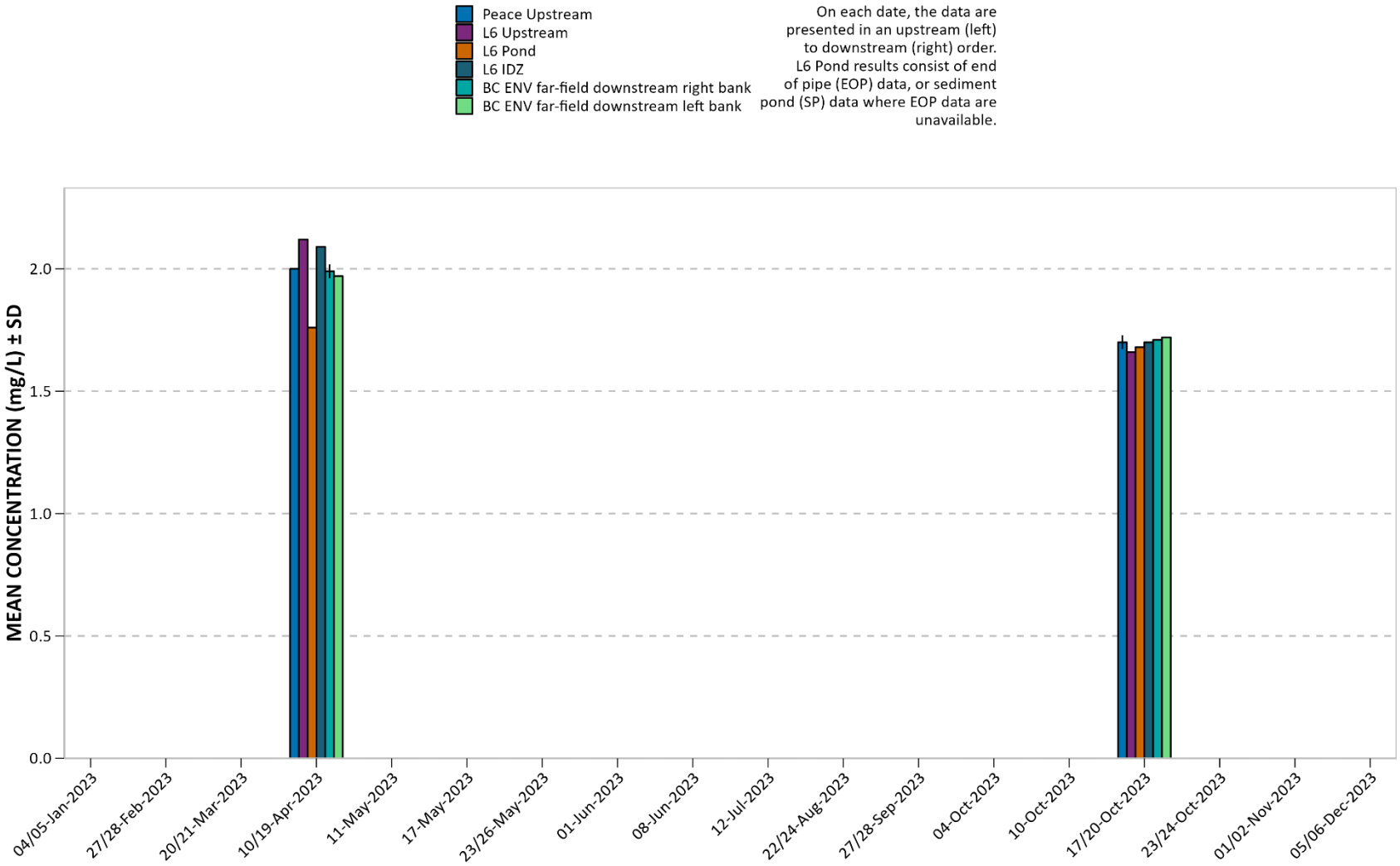


Figure 165. 2023 Peace River and RSEM L6 pond dissolved silver (Ag).

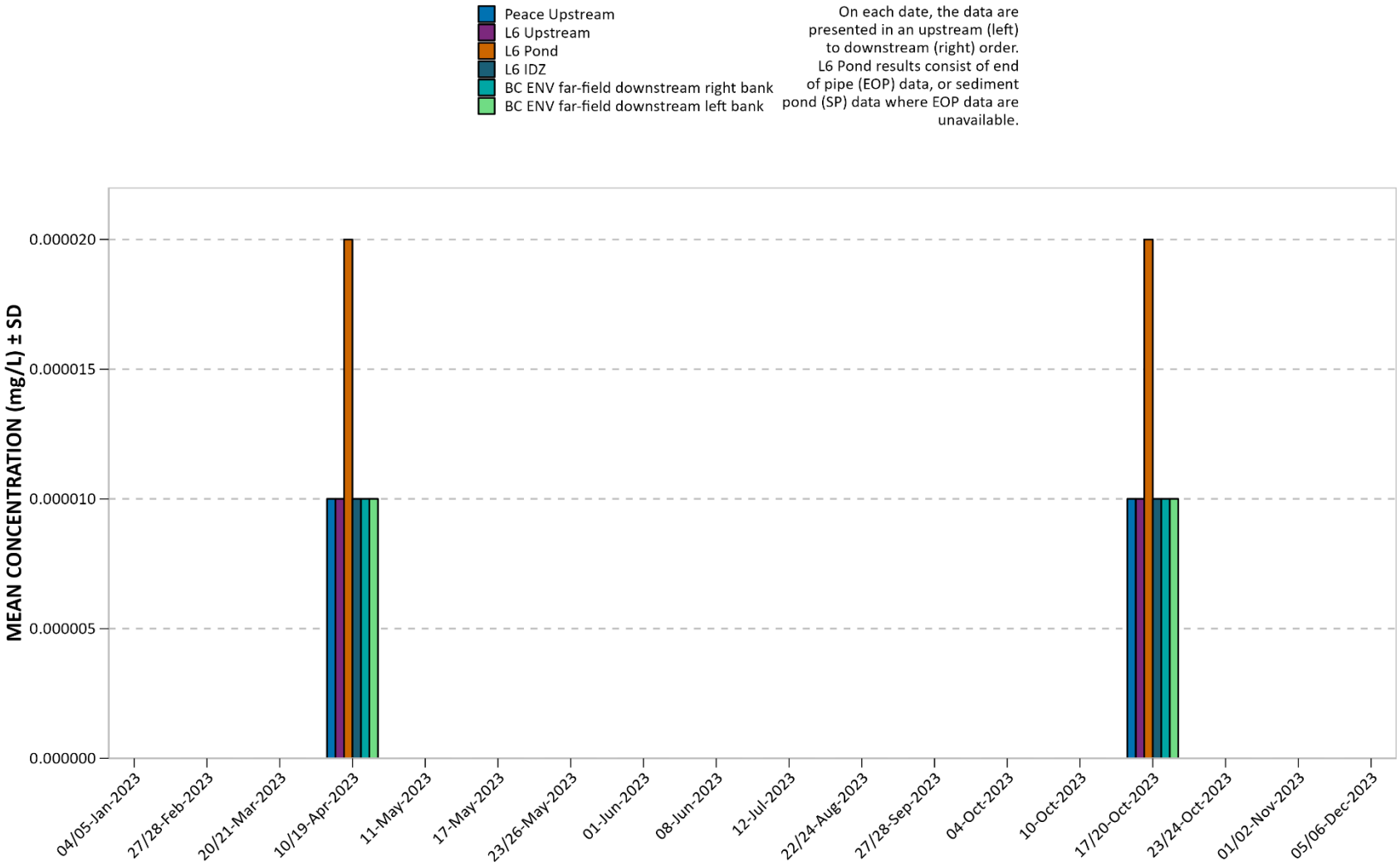


Figure 166. 2023 Peace River and RSEM L6 pond dissolved sodium (Na).

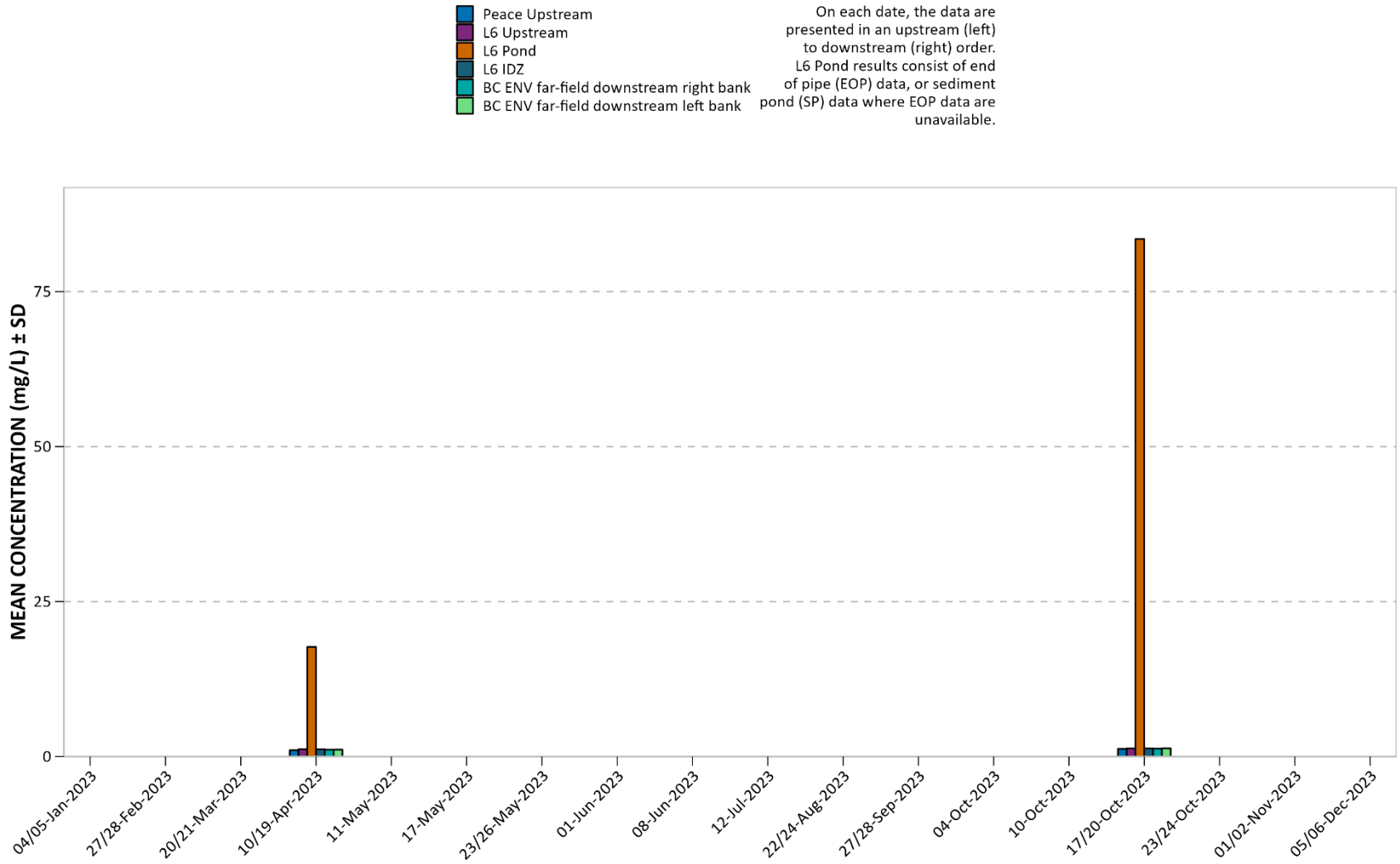


Figure 167. 2023 Peace River and RSEM L6 pond dissolved strontium (Sr).

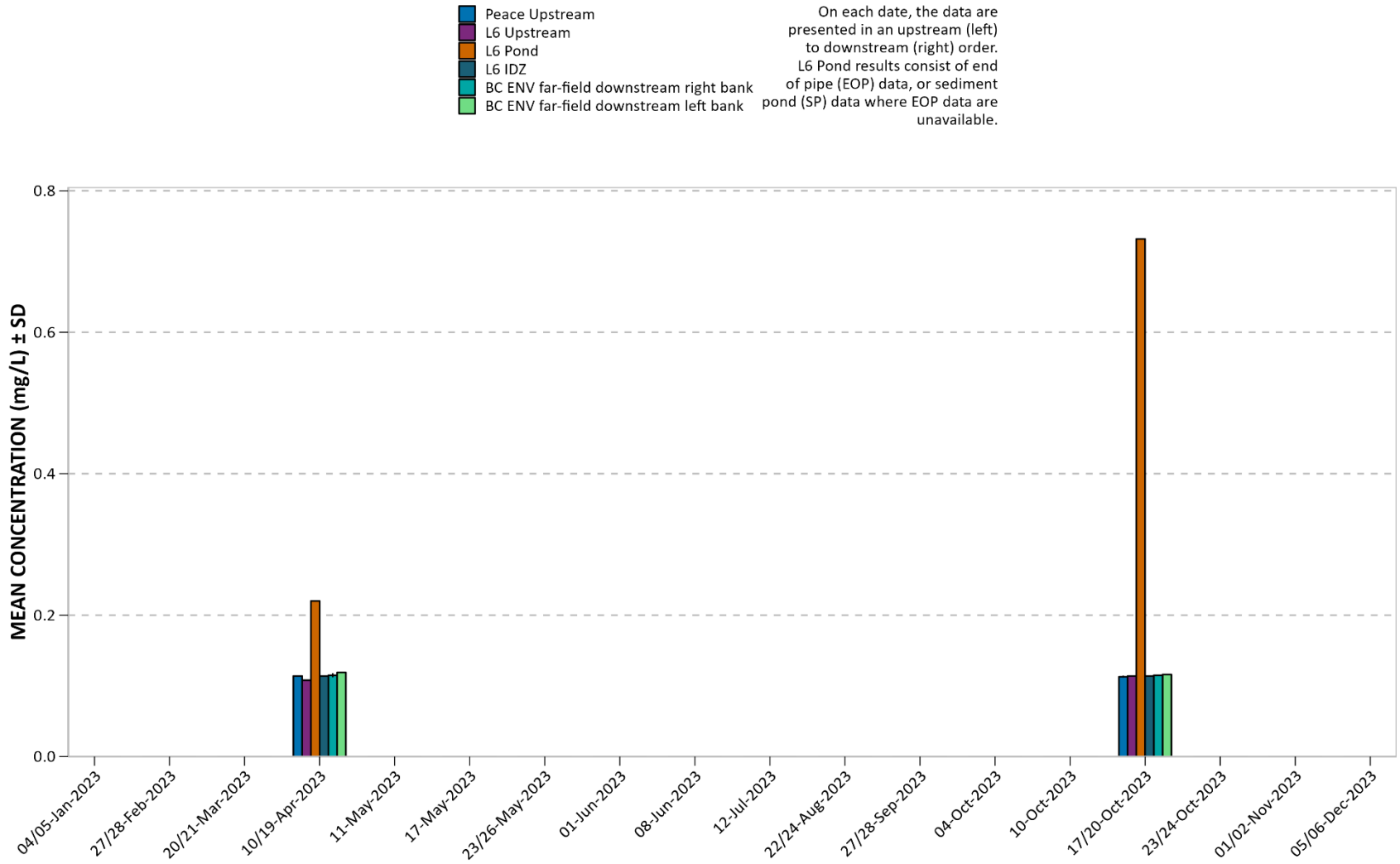


Figure 168. 2023 Peace River and RSEM L6 pond dissolved sulfur (S).

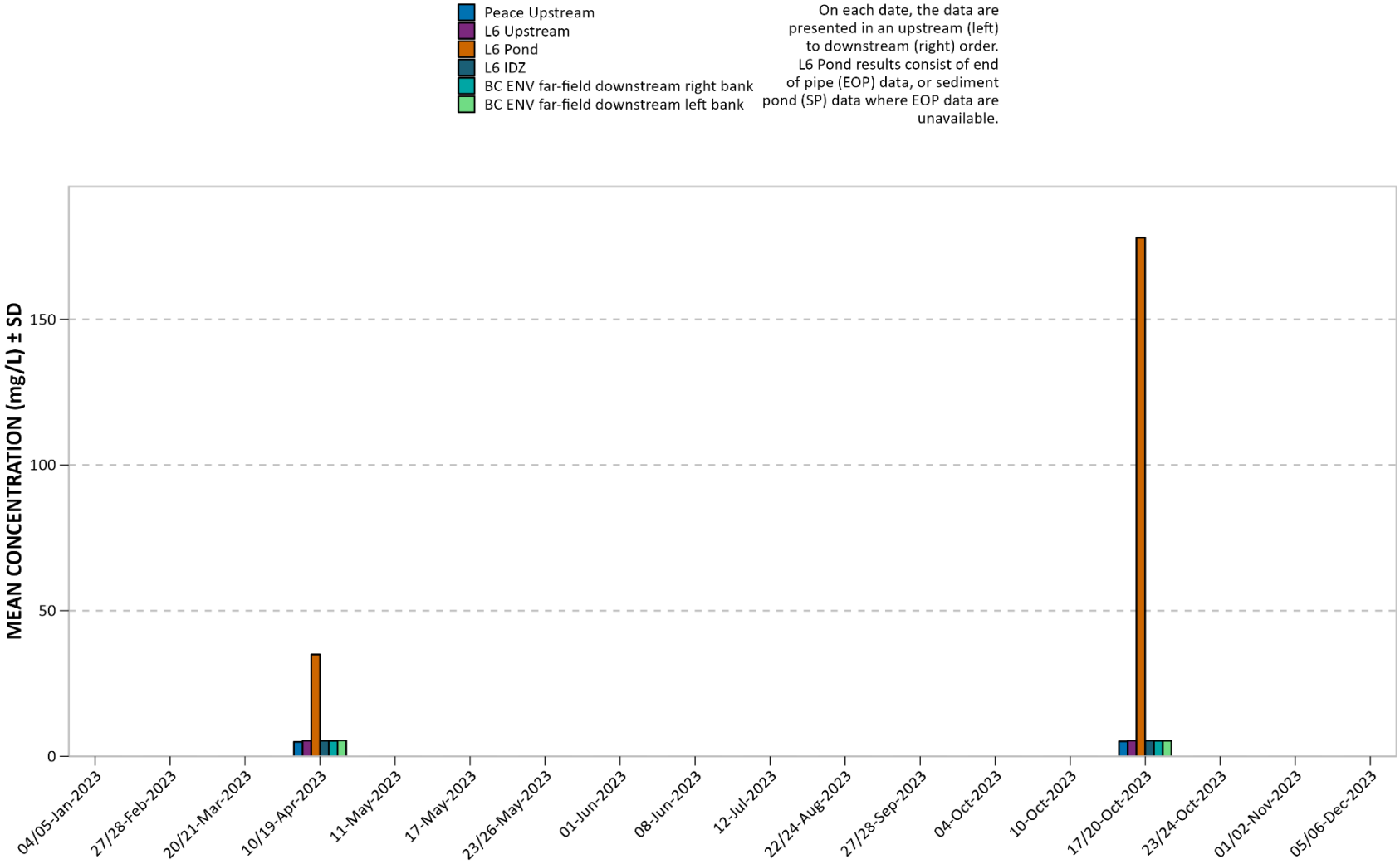


Figure 169. 2023 Peace River and RSEM L6 pond dissolved thallium (Tl).

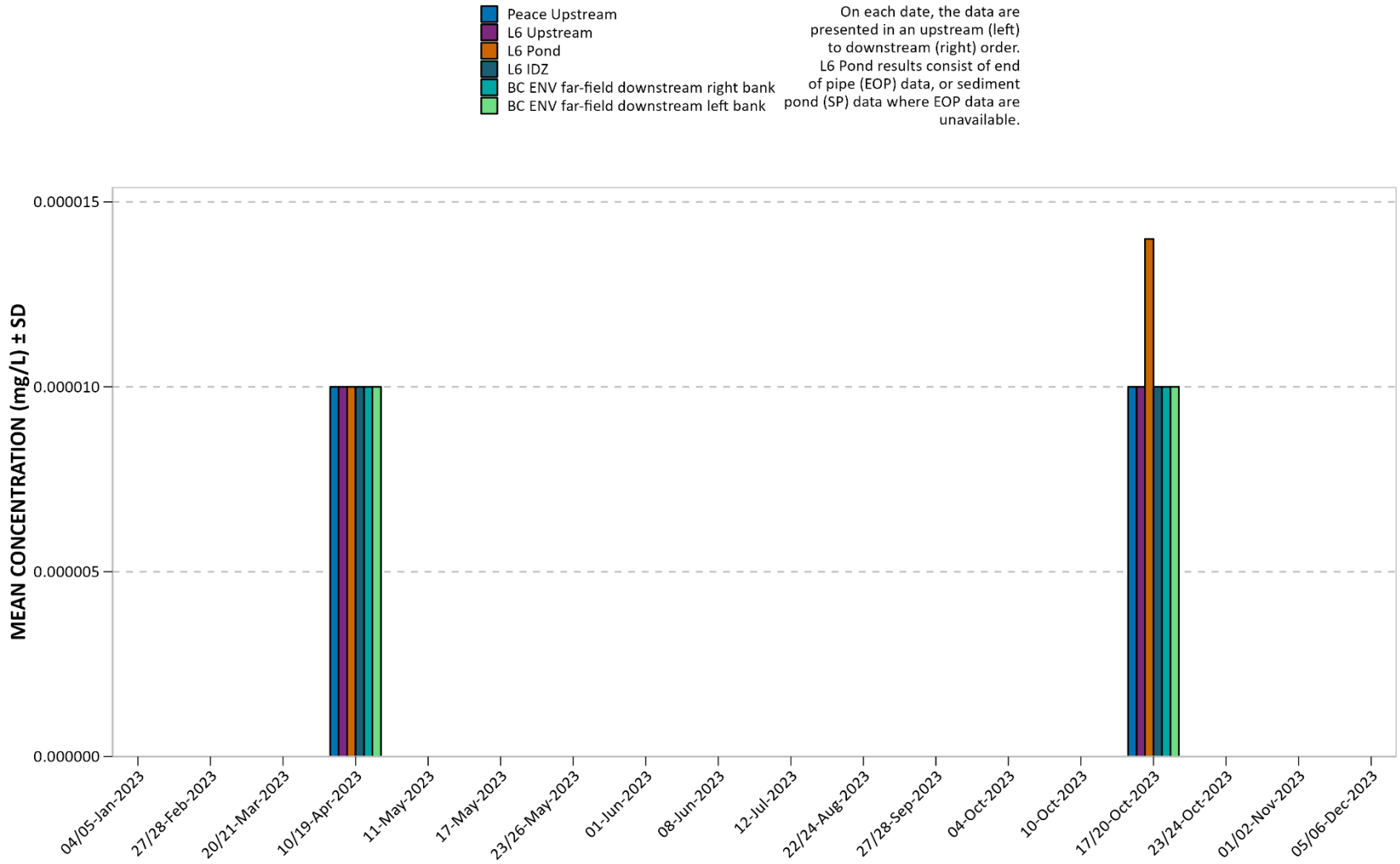


Figure 170. 2023 Peace River and RSEM L6 pond dissolved tin (Sn).

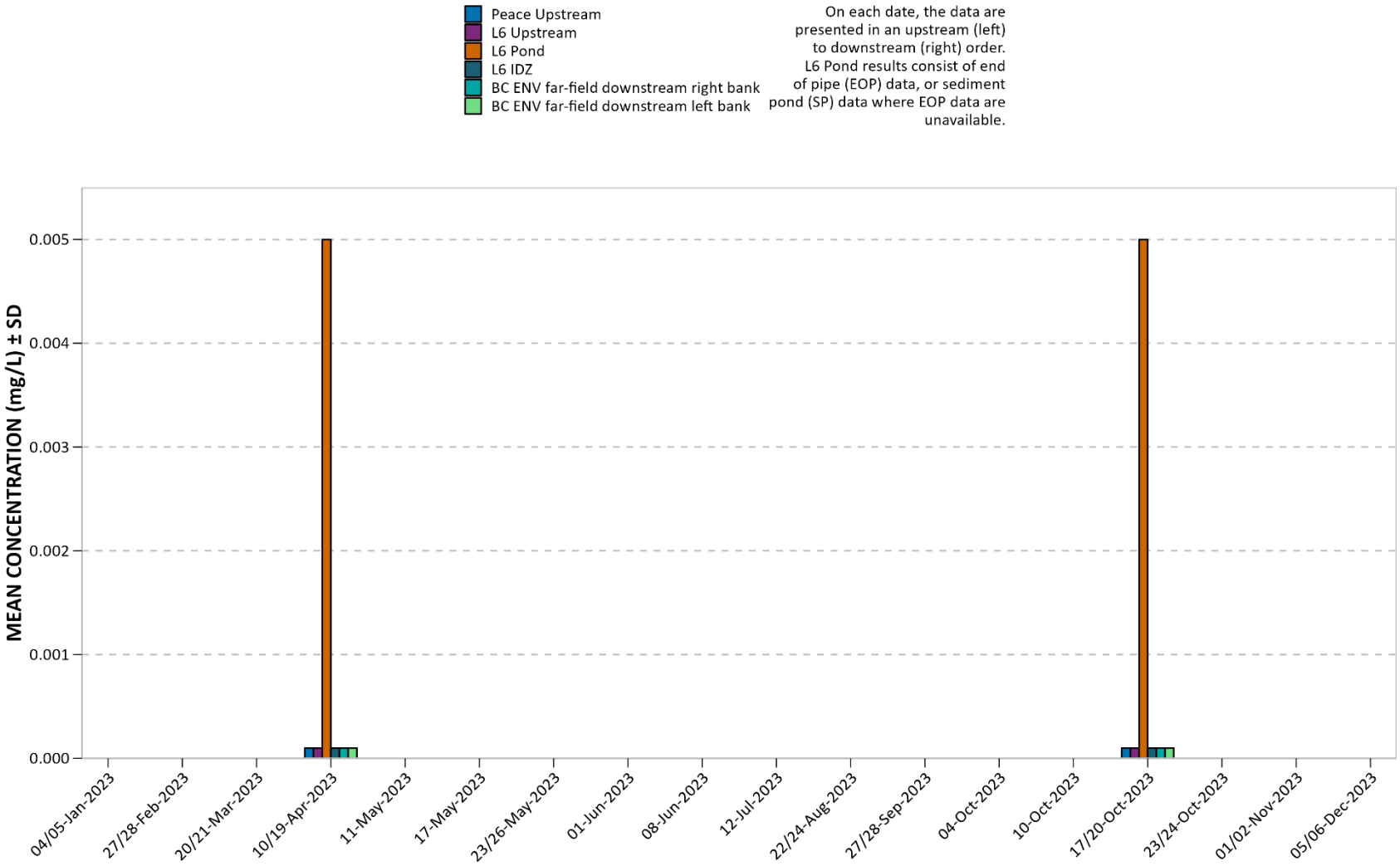


Figure 171. 2023 Peace River and RSEM L6 pond dissolved titanium (Ti).

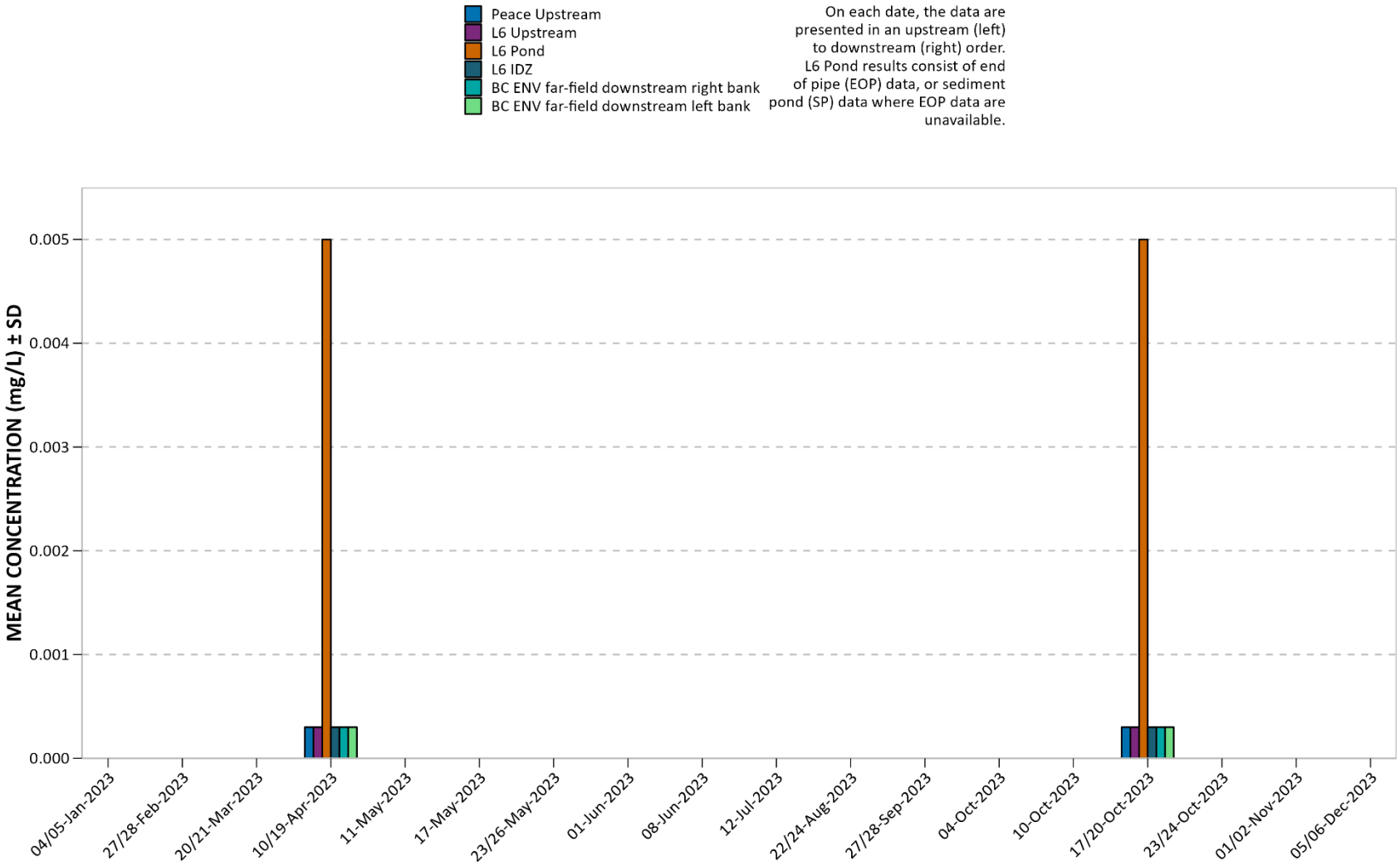


Figure 172. 2023 Peace River and RSEM L6 pond dissolved uranium (U).

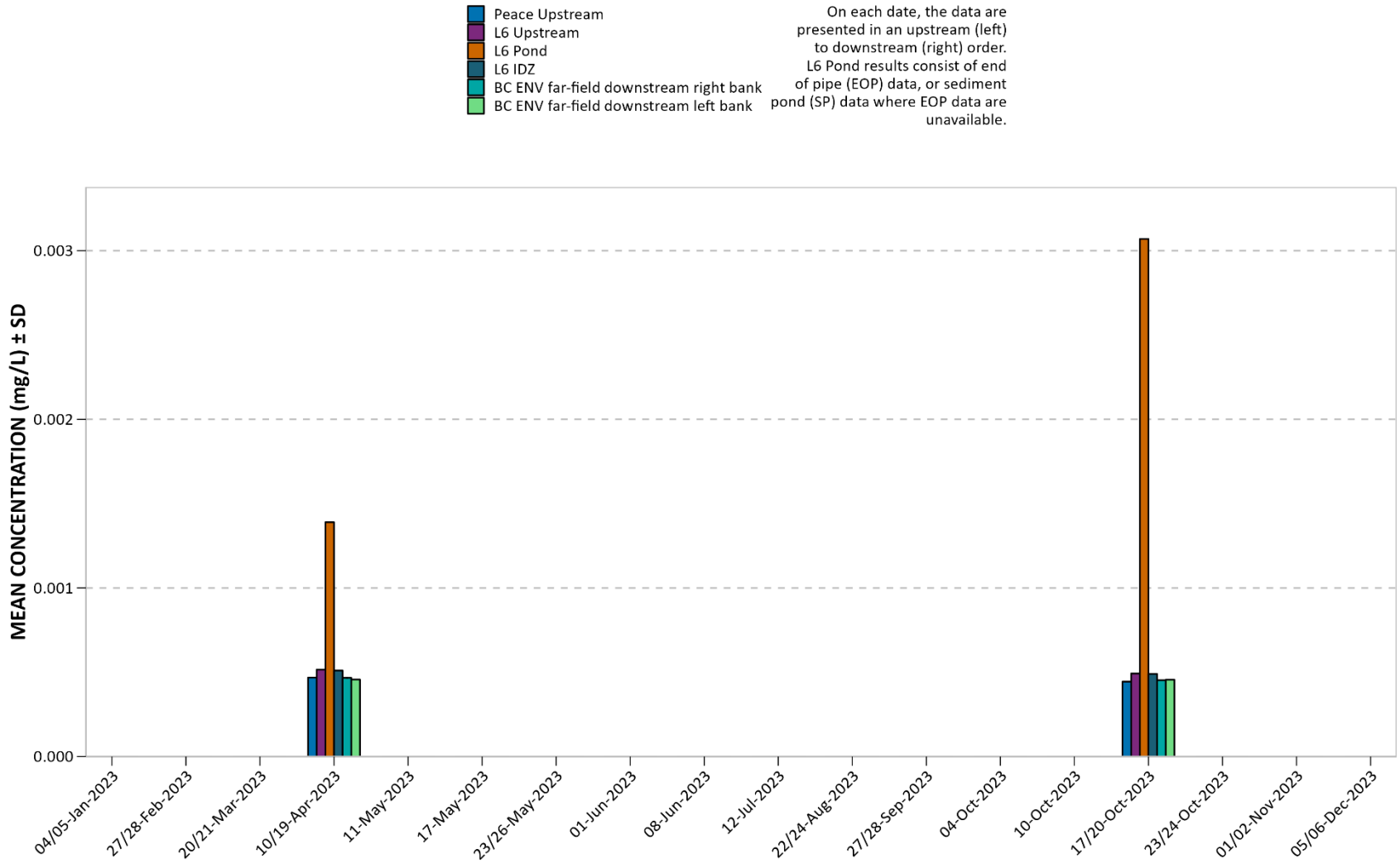


Figure 173. 2023 Peace River and RSEM L6 pond dissolved vanadium (V).

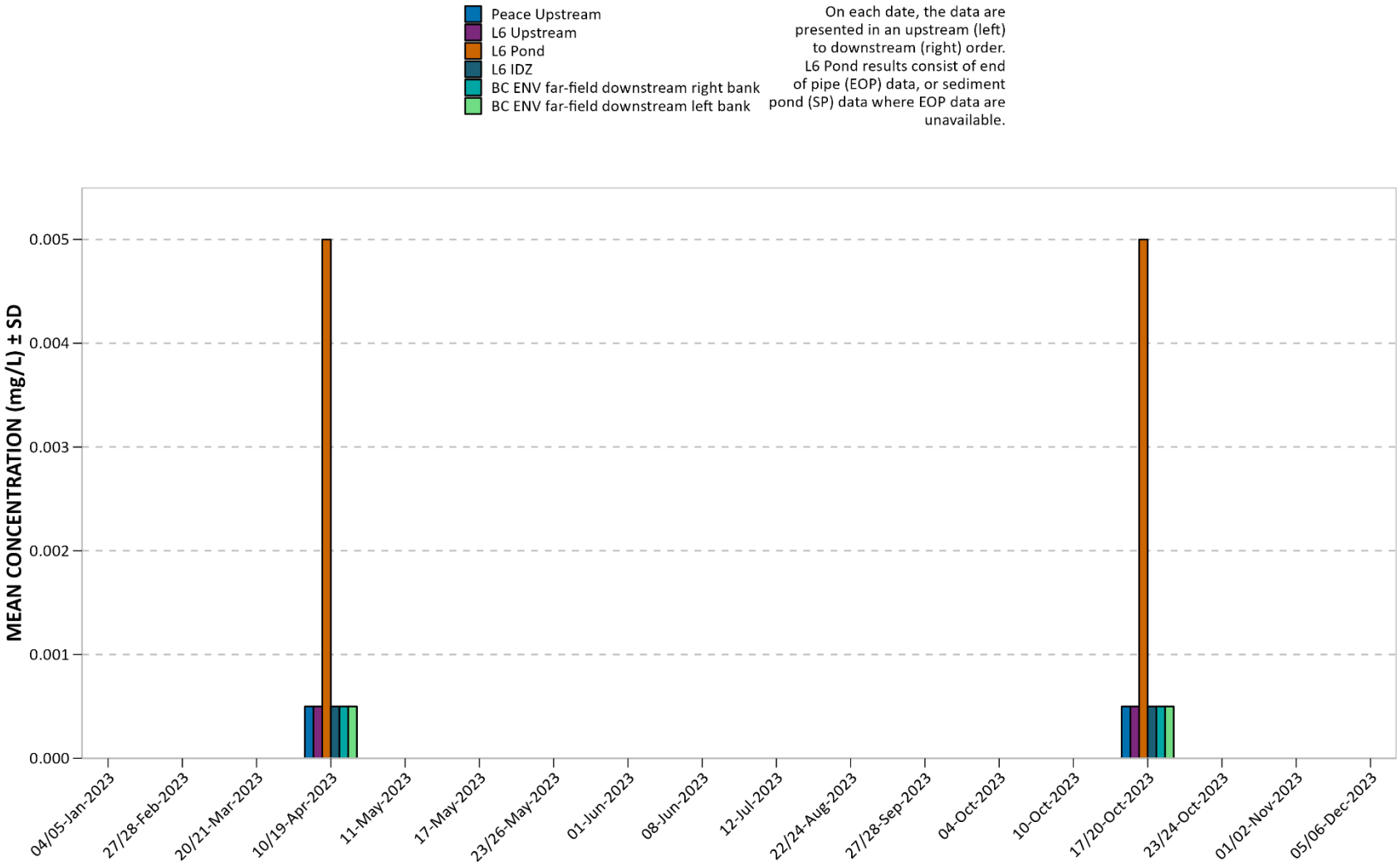
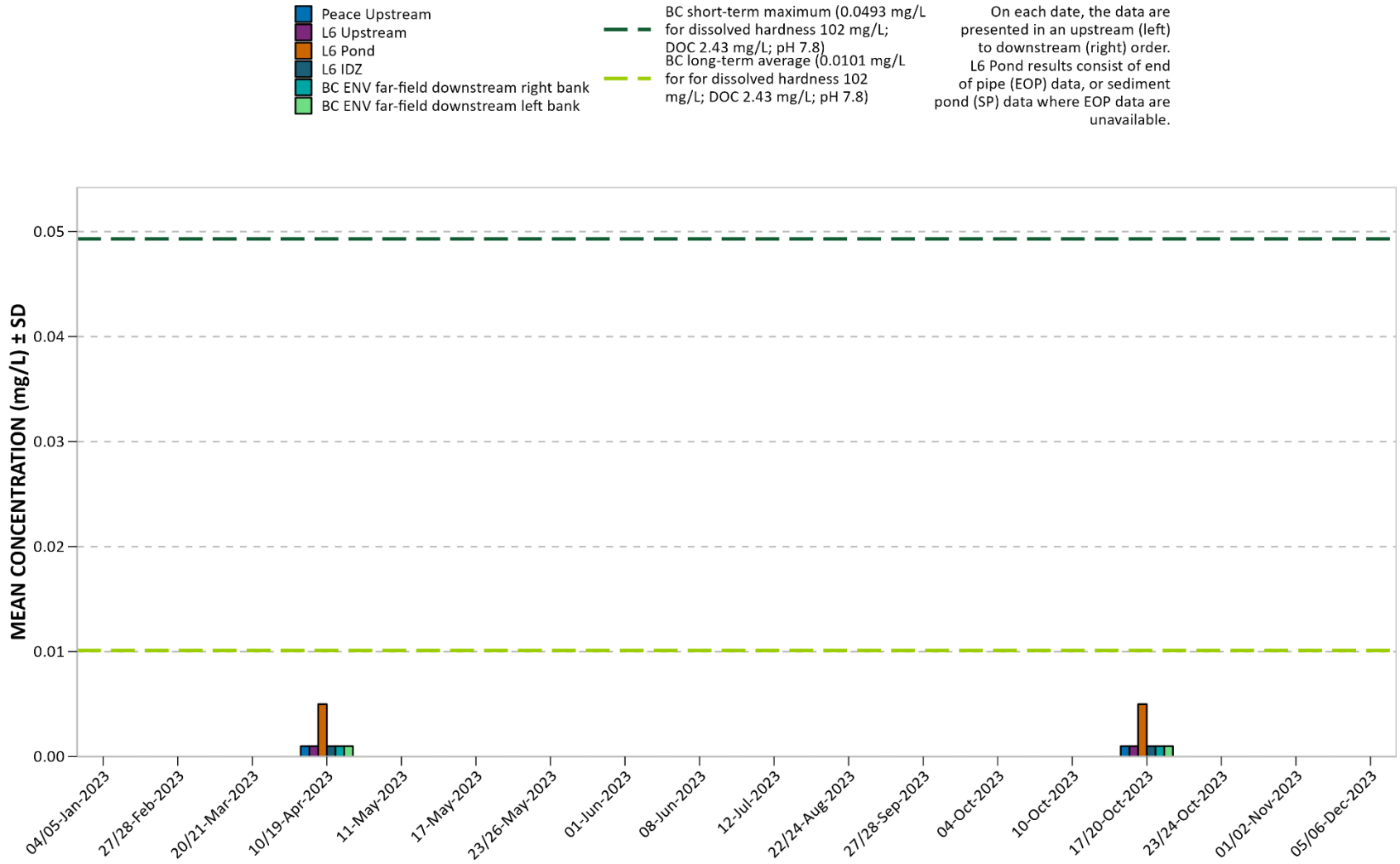
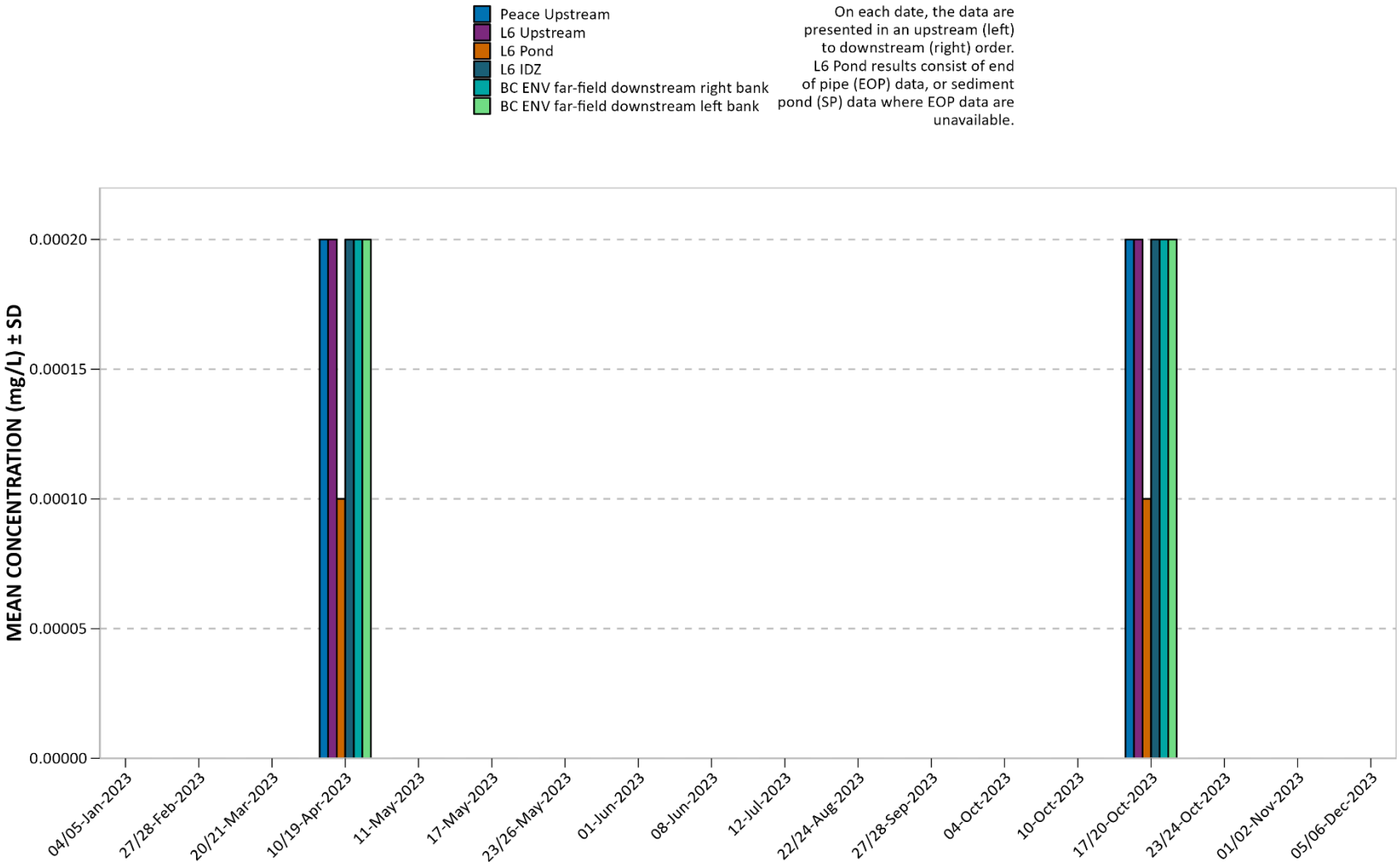


Figure 174. 2023 Peace River and RSEM L6 pond dissolved zinc (Zn).



Note: BC WQGs for dissolved zinc are dissolved hardness, DOC, and pH dependent, and therefore guidelines depicted in the plot are applicable for Peace River sites only. Based on the range of dissolved hardness, DOC, and pH values observed in the Peace River, the applicable BC maximum and 30-day guidelines are 0.0493 mg/L and 0.0101 mg/L, respectively.

Figure 175. 2023 Peace River and RSEM L6 pond dissolved zirconium (Zr).



Appendix D. 2023 Quality Assurance and Quality Control Summary

Table 26. ALS hold time exceedance summary for 2023.

Sampling Date	Description	Site	Preparation				Final			
			Recommended Holdtime	Actual Holdtime	Units	Qualifier	Recommended Holdtime	Actual Holdtime	Units	Qualifier
21-Mar-23	Orthophosphate - Dissolved (as P)	PR-2.81	-	-	-	-	3	4	days	EHT
23-May-23	Total Dissolved Solids	PR-2.81	-	-	-	-	7	10	days	EHT
	Total Suspended Solids	PR-2.81	-	-	-	-	7	11	days	EHT
01-Jun-23	Orthophosphate - Dissolved (as P)	LBPR-9.34	-	-	-	-	3	4	days	EHT
	Orthophosphate - Dissolved (as P)	RBPR-9.34	-	-	-	-	3	4	days	EHT
	Orthophosphate - Dissolved (as P)	RBPR-7.15-A	-	-	-	-	3	4	days	EHT
	Orthophosphate - Dissolved (as P)	RBPR-7.15-B	-	-	-	-	3	4	days	EHT
	Orthophosphate - Dissolved (as P)	RBPR-7.05	-	-	-	-	3	4	days	EHT
	Orthophosphate - Dissolved (as P)	LBPR-9.34-FB	-	-	-	-	3	4	days	EHT
	Orthophosphate - Dissolved (as P)	PR-2.81	-	-	-	-	3	5	days	EHT
	Nitrate (as N)	LBPR-9.34	-	-	-	-	3	4	days	EHT
	Nitrate (as N)	RBPR-9.34	-	-	-	-	3	4	days	EHT
	Nitrate (as N)	Travel Blank	-	-	-	-	3	4	days	EHT
	Nitrate (as N)	RBPR-7.15-A	-	-	-	-	3	4	days	EHT
	Nitrate (as N)	RBPR-7.15-B	-	-	-	-	3	4	days	EHT
	Nitrate (as N)	RBPR-7.05	-	-	-	-	3	4	days	EHT
	Nitrate (as N)	LBPR-9.34-FB	-	-	-	-	3	4	days	EHT
	Nitrate (as N)	PR-2.81	-	-	-	-	3	4	days	EHT
	Nitrite (as N)	LBPR-9.34	-	-	-	-	3	4	days	EHT
	Nitrite (as N)	RBPR-9.34	-	-	-	-	3	4	days	EHT
	Nitrite (as N)	Travel Blank	-	-	-	-	3	4	days	EHT
	Nitrite (as N)	RBPR-7.15-A	-	-	-	-	3	4	days	EHT
	Nitrite (as N)	RBPR-7.15-B	-	-	-	-	3	4	days	EHT
	Nitrite (as N)	RBPR-7.05	-	-	-	-	3	4	days	EHT
	Nitrite (as N)	LBPR-9.34-FB	-	-	-	-	3	4	days	EHT
	Nitrite (as N)	PR-2.81	-	-	-	-	3	4	days	EHT
	Turbidity (lab)	LBPR-9.34	-	-	-	-	3	4	days	EHT
	Turbidity (lab)	RBPR-9.34	-	-	-	-	3	4	days	EHT
	Turbidity (lab)	Travel Blank	-	-	-	-	3	5	days	EHT
	Turbidity (lab)	RBPR-7.15-A	-	-	-	-	3	4	days	EHT
	Turbidity (lab)	RBPR-7.15-B	-	-	-	-	3	4	days	EHT
	Turbidity (lab)	RBPR-7.05	-	-	-	-	3	4	days	EHT
	Turbidity (lab)	LBPR-9.34-FB	-	-	-	-	3	4	days	EHT
	Turbidity (lab)	PR-2.81	-	-	-	-	3	4	days	EHT
	Ammonia, Total (as N)	Travel Blank	3	4	days	EHT	28	0	days	
	Total Organic Carbon	Travel Blank	3	4	days	EHT	28	0	days	
	Phosphorus (P) - Total	Travel Blank	3	4	days	EHT	28	1	days	
24-Aug-23	Orthophosphate - Dissolved (as P)	LBPR-9.34	-	-	-	-	3	4	days	EHT
	Orthophosphate - Dissolved (as P)	RBPR-7.15	-	-	-	-	3	4	days	EHT
	Orthophosphate - Dissolved (as P)	RBPR-9.34	-	-	-	-	3	4	days	EHT
	Orthophosphate - Dissolved (as P)	RBPR-7.05-A	-	-	-	-	3	4	days	EHT
	Orthophosphate - Dissolved (as P)	RBPR-7.05-B	-	-	-	-	3	4	days	EHT
	Orthophosphate - Dissolved (as P)	RBPR-7.15-FB	-	-	-	-	3	4	days	EHT
	Orthophosphate - Dissolved (as P)	Travel Blank	-	-	-	-	3	4	days	EHT

Legend & Qualifier Definitions

EHT: Exceeded ALS recommended hold time prior to analysis.

"-" indicates not applicable.

Table 26. Continued (2 of 2).

Sampling Date	Description	Site	Preparation				Final			
			Recommended Holdtime	Actual Holdtime	Units	Qualifier	Recommended Holdtime	Actual Holdtime	Units	Qualifier
28-Sep-23	Orthophosphate - Dissolved (as P)	LBPR-9.34	-	-	-	-	3	7	days	EHT
	Orthophosphate - Dissolved (as P)	RBPR-9.34	-	-	-	-	3	7	days	EHT
	Orthophosphate - Dissolved (as P)	RBPR-7.15-A	-	-	-	-	3	7	days	EHT
	Orthophosphate - Dissolved (as P)	RBPR-7.15-B	-	-	-	-	3	7	days	EHT
	Orthophosphate - Dissolved (as P)	RBPR-7.05	-	-	-	-	3	7	days	EHT
	Orthophosphate - Dissolved (as P)	LBPR-9.34-FB	-	-	-	-	3	7	days	EHT
	Nitrate (as N)	LBPR-9.34	-	-	-	-	3	4	days	EHT
	Nitrate (as N)	RBPR-9.34	-	-	-	-	3	4	days	EHT
	Nitrate (as N)	RBPR-7.15-A	-	-	-	-	3	4	days	EHT
	Nitrate (as N)	RBPR-7.15-B	-	-	-	-	3	4	days	EHT
	Nitrate (as N)	RBPR-7.05	-	-	-	-	3	4	days	EHT
	Nitrate (as N)	LBPR-9.34-FB	-	-	-	-	3	4	days	EHT
	Nitrite (as N)	LBPR-9.34	-	-	-	-	3	4	days	EHT
	Nitrite (as N)	RBPR-9.34	-	-	-	-	3	4	days	EHT
	Nitrite (as N)	RBPR-7.15-A	-	-	-	-	3	4	days	EHT
	Nitrite (as N)	RBPR-7.15-B	-	-	-	-	3	4	days	EHT
	Nitrite (as N)	RBPR-7.05	-	-	-	-	3	4	days	EHT
	Nitrite (as N)	LBPR-9.34-FB	-	-	-	-	3	4	days	EHT
	Turbidity (lab)	LBPR-9.34	-	-	-	-	3	7	days	EHT
	Turbidity (lab)	RBPR-9.34	-	-	-	-	3	7	days	EHT
	Turbidity (lab)	RBPR-7.15-A	-	-	-	-	3	7	days	EHT
	Turbidity (lab)	RBPR-7.15-B	-	-	-	-	3	7	days	EHT
	Turbidity (lab)	RBPR-7.05	-	-	-	-	3	8	days	EHT
	Turbidity (lab)	LBPR-9.34-FB	-	-	-	-	3	7	days	EHT
	Mercury (Hg) - Total	RBPR-7.15-A	-	-	-	-	0	203	hrs	UCP
04-Oct-23	Orthophosphate - Dissolved (as P)	RBPR-9.34	-	-	-	-	3	4	days	EHT
	Orthophosphate - Dissolved (as P)	Travel Blank	-	-	-	-	3	5	days	EHT
	Orthophosphate - Dissolved (as P)	LBPR-9.34-FB	-	-	-	-	3	4	days	EHT
	Orthophosphate - Dissolved (as P)	LBPR-9.34-B	-	-	-	-	3	4	days	EHT
	Orthophosphate - Dissolved (as P)	PR-2.81	-	-	-	-	3	5	days	EHT
	Orthophosphate - Dissolved (as P)	LBPR-9.34-A	-	-	-	-	3	4	days	EHT
	Orthophosphate - Dissolved (as P)	RBPR-7.15	-	-	-	-	3	4	days	EHT
	Orthophosphate - Dissolved (as P)	RBPR-7.05	-	-	-	-	3	4	days	EHT
	Nitrate (as N)	Travel Blank	-	-	-	-	3	4	days	EHT
	Nitrate (as N)	PR-2.81	-	-	-	-	3	4	days	EHT
	Nitrate (as N)	RBPR-7.15	-	-	-	-	3	4	days	EHT
	Nitrate (as N)	RBPR-7.05	-	-	-	-	3	4	days	EHT
	Nitrite (as N)	Travel Blank	-	-	-	-	3	4	days	EHT
	Nitrite (as N)	PR-2.81	-	-	-	-	3	4	days	EHT
	Nitrite (as N)	RBPR-7.15	-	-	-	-	3	4	days	EHT
	Nitrite (as N)	RBPR-7.05	-	-	-	-	3	4	days	EHT
	Total Dissolved Solids	LBPR-9.34-FB	-	-	-	-	7	8	days	EHT
	Total Suspended Solids	LBPR-9.34-FB	-	-	-	-	7	8	days	EHT
17-Oct-23	Orthophosphate - Dissolved (as P)	PR-2.81-A	-	-	-	-	3	4	days	EHT
	Orthophosphate - Dissolved (as P)	PR-2.81-B	-	-	-	-	3	4	days	EHT
20-Oct-23	Orthophosphate - Dissolved (as P)	LBPR-6.83	-	-	-	-	3	5	days	EHT
	Orthophosphate - Dissolved (as P)	LBPR-7.21	-	-	-	-	3	5	days	EHT
	Nitrate (as N)	LBPR-6.83	-	-	-	-	3	5	days	EHT
	Nitrate (as N)	LBPR-7.21	-	-	-	-	3	5	days	EHT
	Nitrite (as N)	LBPR-6.83	-	-	-	-	3	5	days	EHT
	Nitrite (as N)	LBPR-7.21	-	-	-	-	3	5	days	EHT
	Turbidity (lab)	LBPR-6.83	-	-	-	-	3	6	days	EHT
	Turbidity (lab)	LBPR-7.21	-	-	-	-	3	6	days	EHT

Legend & Qualifier Definitions

EHT: Exceeded ALS recommended hold time prior to analysis.

UCP: Unsuitable Container and/or Preservative used (invalidates standard hold time). Maximum hold time of zero applied. Test results may be biased low / unreliable, and may not meet regulatory requirements.

"-" indicates not applicable.

Table 27. Summary of cases with relative percent difference (RPD) >20% for duplicate samples in 2023.

Date	Site	Parameter	Replicate A (mg/L)	Replicate B (mg/L)	MDL (mg/L)	RPD (%)
4-Jan-23	RBPR-7.05	Selenium (Se) - Dissolved	0.000337	0.000419	0.000050	21.7
		Total Suspended Solids	3.7	7.5	1.0	67.9
		Cadmium (Cd) - Total	0.0000156	0.0000261	0.0000050	50.4
		Manganese (Mn) - Total	0.00250	0.00308	0.00010	20.8
		Selenium (Se) - Total	0.000346	0.000271	0.000050	24.3
28-Feb-23	RBPR-7.15	Total Suspended Solids	1.0	5.4	1.0	138
		Turbidity (lab, NTU)	2.84	1.94	0.10	37.7
		Selenium (Se) - Dissolved	0.000320	0.000391	0.000050	20.0
20-Mar-23	RBPR-9.34	Aluminum (Al) - Dissolved	0.00610	0.00340	0.0010	56.8
		Manganese (Mn) - Dissolved	0.000490	0.000620	0.00010	23.4
		Selenium (Se) - Total	0.000312	0.000219	0.000050	35.0
19-Apr-23	RBPR-9.34	Total Suspended Solids	1.4	7.1	1.0	134
		Turbidity (lab, NTU)	4.68	5.80	0.10	21.4
		Aluminum (Al) - Total	0.1550	0.2990	0.0030	63.4
		Cadmium (Cd) - Total	0.0000220	0.0000282	0.0000050	24.7
		Iron (Fe) - Total	0.174	0.325	0.010	60.5
		Manganese (Mn) - Total	0.00532	0.00760	0.00010	35.3
		Titanium (Ti) - Total	0.00390	0.00860	0.00030	75.2
		Phosphorus (P) - Total	0.0090	0.0120	0.0020	28.6
26-May-23	LBPR-9.34	Copper (Cu) - Dissolved	0.00138	0.00112	0.00020	20.8
		Aluminum (Al) - Total	4.30	2.57	0.0030	50.4
		Beryllium (Be) - Total	0.000229	0.000153	0.000020	39.8
		Chromium (Cr) - Total	0.00729	0.00480	0.00050	41.2
		Iron (Fe) - Total	5.66	4.54	0.010	22.0
		Lithium (Li) - Total	0.0074	0.0055	0.0010	29.5
		Phosphorus (P) - Total	0.258	0.181	0.050	35.1
		Potassium (K) - Total	1.99	1.50	0.100	28.1
		Silicon (Si) - Total	10.2	6.20	0.10	48.8
		Silver (Ag) - Total	0.000080	0.000053	0.000010	40.6
		Thallium (Tl) - Total	0.000120	0.000091	0.000010	27.5
		Titanium (Ti) - Total	0.08870	0.02860	0.00030	102
		Vanadium (V) - Total	0.0173	0.0116	0.00050	39.4
		Zirconium (Zr) - Total	0.00197	0.00021	0.00020	161
1-Jun-23	RBPR-7.15	Aluminum (Al) - Dissolved	0.0095	0.0127	0.0010	28.8
		Copper (Cu) - Total	0.01370	0.00191	0.00050	151
		Phosphorus (P) - Total	0.0298	<0.0020	0.0020	175
		Lead (Pb) - Total	0.00108	0.000494	0.000050	74.5
8-Jun-23	RBPR-9.34	Copper (Cu) - Dissolved	0.00074	0.00156	0.00020	71.3
		Total Suspended Solids	120	90.9	1.0	27.6
		Turbidity (lab, NTU)	51.0	41.6	0.10	20.3

Shading indicates that the replicate is less than 5 times the MDL.

Table 27. Continued (2 of 2).

Date	Site	Parameter	Replicate A (mg/L)	Replicate B (mg/L)	MDL (mg/L)	RPD (%)
12-Jul-23	PR-2.81	Aluminum (Al) - Dissolved	0.0215	0.0039	0.0010	139
		Total Suspended Solids	7.4	5.6	1.0	27.7
		Copper (Cu) - Total	0.00664	0.00082	0.00050	156
24-Aug-23	RBPR-7.05	Aluminum (Al) - Dissolved	0.0047	0.0058	0.0010	21.0
		Total Suspended Solids	5.2	7.6	1.0	37.5
		Turbidity (lab, NTU)	1.53	2.87	0.10	60.9
		Aluminum (Al) - Total	0.1370	0.0981	0.0030	33.1
		Cadmium (Cd) - Total	0.0000272	0.0000220	0.0000050	21.1
		Copper (Cu) - Total	0.00100	0.00406	0.00050	121
		Iron (Fe) - Total	0.230	0.144	0.010	46.0
		Manganese (Mn) - Total	0.00737	0.00595	0.00010	21.3
28-Sep-23	RBPR-7.15	Dissolved Organic Carbon	3.29	2.67	0.50	20.8
4-Oct-23	LBPR-9.34	Total Dissolved Solids	108	88.0	13.0	20.4
10-Oct-23	RBPR-9.34	Phosphorus (P) - Total	0.0134	0.0069	0.0020	64.0
		Copper (Cu) - Dissolved	0.00124	0.00070	0.00020	55.7
		Turbidity (lab, NTU)	2.09	4.08	0.10	64.5
		Aluminum (Al) - Total	0.0376	0.0747	0.0030	66.1
		Iron (Fe) - Total	0.090	0.158	0.010	54.8
24-Oct-23	RBPR-7.05	Turbidity (lab, NTU)	2.22	3.73	0.10	50.8
2-Nov-23	LBPR-9.34	Total Suspended Solids	6.1	3.8	1.0	46.5
6-Dec-23	RBPR-9.34	Turbidity (lab, NTU)	5.60	4.27	0.10	27.0

Shading indicates that the replicate is less than 5 times the MDL.

Table 28. Summary of cases with a relative standard deviation (RSD) >18% for triplicate samples in 2023.

Date	Site	Parameter	Replicate A	Replicate B	Replicate C	RSD (%)
20-Oct-23	LBPR-7.21	Turbidity (in situ, NTU)	2.80	2.79	1.98	18.7
2-Nov-23	RBPR-7.15	Turbidity (in situ, NTU)	4.26	3.55	2.60	23.9
6-Dec-23	LBPR-9.34	Turbidity (in situ, NTU)	0.94	0.55	0.29	55.9

Table 29. Field blank and travel blank detections in 2023.

Sample Type	No. of Sampling Dates (2023)	Field and Travel Blank Detections		
		No. of Parameter Results (n)[1]	No. of Detectable Results (>MDL)	% Detectable Results
Field Blanks	18	1,620	22	1.4%
Travel Blanks	18	920	15	1.6%

[1]n refers to the total number of parameters analyzed in the field and travel blanks (non-detectable and detectable).
pH and cation-anion balance is not included in the calculation of detectable results.

Table 30. Summary of cases where the dissolved/total concentration ratio was >1.2 in 2023.

Date	Parameter	Site	Total Concentration (mg/L)	Dissolved Concentration (mg/L)	Total MDL (mg/L)	Dissolved MDL (mg/L)	Ratio Dissolved/Total Concentration
4-Jan-23	Organic Carbon	RBPR-7.15	2.53	3.42	0.50	0.50	1.35
	Selenium (Se)	RBPR-7.05	0.000271	0.000419	0.000050	0.000050	1.55
	Barium (Ba)	Field Blank	<0.00010	0.00141	0.00010	0.00010	14.1
28-Feb-23	Copper (Cu)	LBPR-9.34	0.00098	0.00139	0.00050	0.00020	1.42
	Selenium (Se)	LBPR-9.34	0.00026	0.000336	0.000050	0.000050	1.29
	Organic Carbon	RBPR-9.34	2.27	3.05	0.50	0.50	1.34
20-Mar-23	Copper (Cu)	RBPR-7.15	0.000740	0.00160	0.00050	0.00020	2.16
	Selenium (Se)	RBPR-7.15	0.000266	0.000343	0.000050	0.000050	1.29
	Selenium (Se)	RBPR-9.34	0.000219	0.000328	0.000050	0.000050	1.50
21-Mar-23	Selenium (Se)	PR-2.81	0.000199	0.000256	0.000050	0.000050	1.29
19-Apr-23	Organic Carbon	RBPR-9.34	2.42	3.08	0.50	0.50	1.27
	Selenium (Se)	PR-2.81[1]	0.000202	0.000258	0.000050	0.000050	1.28
17-May-23	Molybdenum (Mo)	PR-2.81	0.00116	0.00145	0.000050	0.000050	1.25
8-Jun-23	Zinc (Zn)	LBPR-9.34	0.00320	0.00710	0.00300	0.00100	2.22
	Selenium (Se)	RBPR-7.05	0.000468	0.000590	0.000050	0.000050	1.26
24-Aug-23	Copper (Cu)	LBPR-9.34	0.000750	0.00166	0.00050	0.00020	2.21
	Copper (Cu)	RBPR-7.15	0.000680	0.00110	0.00050	0.00020	1.62
	Organic Carbon	RBPR-7.05	2.77	3.50	0.50	0.50	1.26

Shading indicates that the replicate is less than 5 times the MDL. Precision of the analytical result decreases when the concentration is close to the MDL.

[1] Water quality sampling on April 19, 2023 was conducted at PR-4.00, and occurred by foot access from shore (right bank) just downstream of the Phase 1 Peace River Upstream site (PR-3.88) because the boat launch site for the Phase 2 Peace River Upstream site (PR-2.81) was inaccessible.

Table 30. Continued (2 of 2).

Date	Parameter	Site	Total Concentration (mg/L)	Dissolved Concentration (mg/L)	Total MDL (mg/L)	Dissolved MDL (mg/L)	Ratio Dissolved/Total Concentration
28-Sep-23	Organic Carbon	RBPR-7.15	2.72	3.29	0.50	0.50	1.21
4-Oct-23	Organic Carbon	PR-2.81	2.93	3.58	0.50	0.50	1.22
10-Oct-23	Copper (Cu)	RBPR-9.34	0.00080	0.00124	0.00050	0.00020	1.55
17-Oct-23	Organic Carbon	RBPR-9.34	2.52	3.16	0.50	0.50	1.25
	Organic Carbon	PR-2.81	2.51	3.14	0.50	0.50	1.25
20-Oct-23	Organic Carbon	LBPR-7.21	2.44	2.97	0.50	0.50	1.22
23-Oct-23	Organic Carbon	PR-2.81	2.39	3.02	0.50	0.50	1.26
24-Oct-23	Organic Carbon	RBPR-7.15	2.48	3.35	0.50	0.50	1.35
2-Nov-23	Organic Carbon	RBPR-7.15	2.72	3.34	0.50	0.50	1.23
	Organic Carbon	RBPR-7.05	2.47	3.04	0.50	0.50	1.23

Shading indicates that the replicate is less than 5 times the MDL. Precision of the analytical result decreases when the concentration is close to the MDL.