Appendix B

Site C Clean Energy Project

PAG Contact RSEM Pond Monitoring: Peace River Surface Water Quality and Pond Toxicity 2020 Annual Report



Prepared for:

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EXECUTIVE SUMMARY

Ecofish Research Ltd. (Ecofish) and Aski Reclamation LP (Aski) were retained by BC Hydro to conduct surface water quality monitoring 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.

This report summarizes the monitoring results for the 2020 calendar year[1]. In 2020 during Phase 1 of construction (i.e., prior to diversion of the Peace River), the RSEM R5b pond, the RSEM R6E and R6W ponds, and the RSEM L5E and L5W ponds passively discharged water to the Peace River. The four Phase 1 R5a ponds were managed to avoid discharge to the Peace River and the ponds did not discharge in 2020 with the exception of discrete events in June and July due to water accumulations associated with heavy rainfall events. On June 30 and from July 4 – 6 water was pumped directly from R5a-A to the Peace River in accordance with the RSEM R5a pumping plan (Appendix C of PRHP 2019). Small volumes of passive discharge occurred on July 3 from R5a-B (9 m^3) and on July 4 from R5a-C (1.2 m^3). The RSEM L6 pond did not discharge in 2020.

Phase 2 of Project construction commenced on October 3, 2020, following completion of the Peace River diversion tunnels and full diversion of the river. In September 2020, RSEM R5b was no longer used for water management and the Phase 1 RSEM R5a and Phase 1 RSEM L5 ponds were decommissioned. New Phase 2 ponds RSEM R5a-P2 (single pond) and RSEM L5-P2 (four ponds), were constructed in 2020 but they did not discharge any water to the Peace River. The RSEM R6E and R6W ponds were the only ponds to discharge to the Peace River during Phase 2 of Project construction.

In 2020, 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 2020). 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

[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 2020. Annual and monthly reports were also prepared for the 2017, 2018, and 2019 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.

downstream edge of the 100 m long initial dilution zone (IDZ) in the Peace River. A summary of each monitoring component is provided below.

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 2020). In 2020, 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 44 toxicity samples were collected in 2020 and all the tests passed (>100% v/v). Three samples were collected from each of RSEM R5a-B, R5a-C, and R5a-D and four samples were collected from RSEM R5a-A. Five samples were collected from the RSEM R5b pond, seven from the RSEM R6W pond, six from the RSEM R6E pond, three from the RSEM L5W pond, three from the RSEM L5E pond, and six from the RSEM L6 pond.

RSEM Discharge/Peace River Surface Water Quality Monitoring

The ARD ML Management Plan (BC Hydro 2020) 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) were 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 2020 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 2020 were similar to those measured in 2017, 2018, and 2019, and were within historical water quality data ranges observed in the Peace River.

The RSEM ponds have EOP limits for total suspended solids (TSS), and the 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 (2017). In order to estimate the background Peace River TSS that are provided in the automated emails, 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. In total 170 samples collected over 25 dates between December 15, 2017 to

December 31, 2020 were used to develop the current TSS:turbidity relationship. These data encompassed a wide range of turbidity (4 NTU to 2,365 NTU) and TSS (3 mg/L to 1,535 mg/L) observations. The 2020 background TSS data are reported by PRHP and are not included in this report.

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1. INTRODUCTION

Ecofish Research Ltd. (Ecofish) and Aski Reclamation LP (Aski) were retained by BC Hydro to conduct sediment pond discharge surface water quality monitoring and to conduct acute toxicity monitoring for the Site C Clean Energy Project (the "Project", Map 1, Map 2) as it relates to sediment ponds at five relocated surplus excavated material (RSEM) areas containing potentially acid generating (PAG) material and/or PAG contact water potentially discharging to the Peace River.

Phase 1 (pre-diversion, 2015 to September 2020, Map 1) and Phase 2 (post-diversion, October 2020 – ongoing, Map 2) of Project construction works include management of excavated PAG shale bedrock. The excavated shale bedrock is placed in up to five PAG contact RSEM areas (RSEM R5a, R5b, R6, L5, L6) over the construction period. 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 2020) for the Project. Section 7.2 of the ARD ML Management Plan specifies compliance requirements related to the 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 RSEM (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 and therefore are not included in this report.

On September 30, 2020 the diversion tunnels were opened, and by October 3, 2020, the Peace River was fully diverted through the diversion tunnels, marking the commencement of Phase 2 of Project construction. Table 1 provides a summary of PAG contact RSEM pond construction and discharge history. In 2020 during Phase 1 of construction, the RSEM R5b pond, the RSEM R6E and R6W ponds, and the RSEM L5E and L5W ponds passively discharged water to the Peace River. The four Phase 1 R5a ponds were managed to avoid discharge to the Peace River and the ponds did not discharge in 2020 with the exception of discrete events in June and July due to water accumulations associated with heavy rainfall events. On June 30 and from July 4 – 6 water was pumped directly from R5a-A to the Peace River in accordance with the RSEM R5a pumping plan (Appendix C of PRHP 2019). Small volumes of passive discharge occurred on July 3 from R5a-B (9 m^3) and on July 4 from R5a-C (1.2 m^3).

During Phase 2 of construction in 2020, only the RSEM R6W and R6E ponds discharged to the Peace River. The Phase 2 RSEM R5a/REM R5a-P2 ponds are managed to avoid discharge to the Peace River and they did not discharge to the Peace River in 2020, nor did the Phase 2 L5 pond. The RSEM L6 pond is managed to avoid un-controlled passive discharge to the Peace River and did not discharge to the Peace River in 2020; the RSEM L6 pond has only discharged once on September 5, 2019.

This report fulfils the annual reporting requirement outlined in Section 7.5 of the ARD ML Management Plan (CEMP; Appendix E BC Hydro 2020) 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 2020.

Table 1. PAG contact RSEM pond construction and discharge history as of the end of 2020.

RSEM Pond	RSEM Pond Construction Completed	Discharge to the Peace River Commenced	Status
R5a[1]	July 2017	No planned discharge	The four R5a Phase 1 ponds were managed to avoid discharge to the Peace River. The ponds were decommissioned on September 20, 2020 and were replaced by Phase 2 ponds (R5a-P2). Unplanned discharge from the Phase 1 R5a ponds occurred in March 2019, beginning on March 18 from R5a-A and on March 19 from R5a-B and R5a-C. Discharge from these three cells ended on March 22, 2019. The Phase 1 R5a ponds did not discharge in 2020 with the exception of discrete events in June and July due to water accumulations associated with heavy rainfall events. On June 30 and from July 4 - 6 water was pumped directly from R5a-A to the Peace River in accordance with the RSEM R5a pumping plan (Appendix C of PRHP 2019). Small volumes of passive discharge occurred on July 3 from R5a-B (9 m^3) and on July 4 from R5a-C (1.2 m^3).
R5a-P2[1]	September 2020	Not yet commissioned for discharge	Four ponds, active in Phase 2 of construction.
R5b	November 2016	January 2017	Single pond, only used in Phase 1 of contruction. Ceased to be used for water management as of September 1, 2020. Mobile Water Treatment Facility (MWTF) moved from R5b to R6 on April 29, 2020.
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 MWTF since May 9, 2020.
L5	December 2018	March 2019	Two Phase 1 ponds, both decommissioned on September 20, 2020; replaced by a single Phase 2 pond (L5-P2).
L5-P2	September 2020	Not yet commissioned for discharge	Single pond, active in Phase 2 of construction.
L6[2]	March 2019	No planned discharge	Unchanged between Phase 1 and Phase 2 of construction.

[1]Water from the four RSEM R5a/R5a-P2 ponds is managed to avoid discharge to the Peace River by pumping water between R5a ponds and, if necessary, by dewatering to the RSEM R5b sediment control pond (for Phase 1 R5a ponds only), or by dewatering to the R6 sediment control ponds (for Phase 2 R5a ponds only), or by dewatering to the MWTF.

[2]Water stored in RSEM L6 is managed to prevent discharge into the Peace River; discharge to the Peace River only occurred on September 5, 2019 when water was pumped to the Peace River.

SITE C CLEAN ENERGY PROJECT

Phase 1 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

Sediment Ponds

- RSEM Pond constructed and discharge has commenced
- RSEM Pond constructed but discharge is not anticipated
- RSEM Pond catchment area

MAP SHOULD NOT BE USED FOR LEGAL OR NAVIGATIONAL PURPOSES

0 75 150 300 450 600 750 Meters

Scale: 1:17,000

NO.	DATE	REVISION	BY
1	2021-02-04	1200_Phase1_RSEM_WQ_Annual_4093_20210204	
2			
3			
4			
5			

Date Saved: 2021-02-04
Coordinate System: NAD 1983 UTM Zone 10N

ECOFISH RESEARCH

Map 1

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628000 629000 630000 631000 632000

6232000 6231000 6230000 6229000

N

PAM-LB
PAM-RB
Peace Upstream
RSEM-R5A-P2-D
RSEM-R5A-P2-C
RSEM R5a
L5-2 SP Toxicity
RSEM-L5-P2-SP
RSEM-R5A-P2-B
RSEM-R5A-P2-A
RSEM L5
Peace River
Moberly River
RSEM R5b

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 IDZ
R6 Discharge
R6 Upstream
R6E EOP Toxicity
R6W EOP Toxicity
R6W SP Toxicity
R6E SP Toxicity
0 25 50 m

Inset 1
RSEM L6
L6 SP Toxicity
L6 Upstream
L6 IDZ
L6 Back Eddy
L6 Discharge
L6 Discharge
MOE site (far-field downstream, left bank)
Peace River
Inset 2
R6 Upstream
R6 Discharge
R6 IDZ
R6W EOP Toxicity
R6E EOP Toxicity
R6W SP Toxicity
R6E SP Toxicity
RSEM R6
MOE site (far-field downstream, right bank)

Inset 3
PAM-LB2
Peace River
0 100 200 m
PAM-RB2

SITE C CLEAN ENERGY PROJECT

Phase 2 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
- Area of New Cofferdam
- Restricted Watercraft Operating Areas (No-Go Zones)

Sediment Ponds

- RSEM Pond constructed and discharge has commenced
- RSEM Pond constructed but discharge is not anticipated
- Phase 2 RSEM Pond constructed but not yet discharging
- Decommissioned RSEM Pond
- RSEM Pond catchment area

MAP SHOULD NOT BE USED FOR LEGAL OR NAVIGATIONAL PURPOSES

0 75 150 300 450 600 750 Meters

Scale: 1:17,000

NO.	DATE	REVISION	BY
1	2021-02-04	1200_Phase2_RSEM_WQ_Annual_4093_20210204	
2			
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4			
5			

Date Saved: 2021-02-04
Coordinate System: NAD 1983 UTM Zone 10N

ECOFISH RESEARCH

Map 2

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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 2020). 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 2020), 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 BC Hydro (2020) switched to a bi-monthly schedule for all RSEM ponds (i.e., RSEM R5a, RSEM R5b, RSEM R6, RSEM L5 and RSEM L6). Prior to February 27, 2019, the acute toxicity testing sampling schedule occurred in three stages, as described in Table 2.

The current toxicity monitoring approach specifies that regular 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 sample 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 discharge limit of 6.0 (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 2020 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 were available. A high-level summary of the methods and results of the RSEM pond acute toxicity monitoring conducted in 2020 are provided herein and data summary tables are provided in Appendix A.

Table 2. 96 hour LC50 Rainbow Trout acute toxicity sampling frequency for each RSEM pond, applicable up to February 27, 2019.

Frequency[1]	Sampling Requirements[2]
Bi-weekly	3 consecutive passes prior to moving to monthly sampling
Monthly	12 consecutive passes (one year) prior to moving to quarterly sampling
Quarterly	Sampling will be conducted quarterly (every 3 months) for the duration of the construction phase

[1] The sampling frequency will revert back to bi-weekly sampling in the event that a test failure occurs (results are positive for acute toxicity), or the RSEM pond has not discharged for a period of 30 days.

[2] >100% (v/v) for the 96 hr LC 50 toxicity test indicates the test passed.

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 2020). 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 ponds' discharge plume area, and confirming discharge plume dynamics under a range of river flows and discharge rates in order to confirm plume modeling predictions. For RSEM R5b, RSEM R6, and RSEM L5 these compliance requirements were met in 2017, 2018, and 2019, respectively, as summarized in Ganshorn *et al.* (2018), Ganshorn *et al.* (2019a), and Ganshorn *et al.* (2020), respectively. In 2019, RSEM L6 was pumped into the Peace River on one date only (September 5, 2019). Discharge plume characterization for the RSEM L6 discharge was completed on this date; the methods and detailed results of the L6 characterization study are presented in Ganshorn *et al.* (2019b). No discharge from L6 occurred in 2020 as the pond is managed to not discharge to the Peace River.

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)) as specified in Table 2 of the ARD ML Management Plan (BC Hydro 2020). 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 and once during turbid flow).

Water quality monitoring within the RSEM ponds is monitored daily by PRHP. Pond data for the dates corresponding to monthly and 5 in 30-day sampling in the Peace River as described above are included for reference in this report in the time series graphs of each water quality parameter for RSEM R5b (Appendix B), RSEM R6 (Appendix C) and RSEM L5 (Appendix D).

It is a compliance requirement (for PRHP), to meet end of end-of-pipe (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 is responsible for developing and maintaining the TSS:turbidity relationships for these stations. Two additional continuous turbidity gauges were installed on August 24, 2020, upstream of the existing locations for Diversion Phase 2 when the headpond will inundate the existing locations (Map 2). To date, only data from the new station on the left bank has been used in determining Peace River background TSS data, and this was done when the further downstream station became damaged in December 2020.

Detailed monthly reports were issued for each month of 2020[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 2020). In accordance with Section 7.3.4 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 RSEM pond. There were no exceedance reports issued in 2020. A high-level summary of the methods and results of the Peace River and RSEM IDZ surface water quality sampling conducted in 2020 are provided herein.

3. METHODS

3.1. RSEM Pond Acute Toxicity

Four sterile 10 L plastic carboys (or two 20 L carboys) are provided by 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 in Burnaby or Calgary (under subcontract to ALS Environmental). Sample carboys are delivered to ALS in Fort St. John shortly after sampling (on the same day) and the samples are shipped to Nautilus Environmental 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.

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

3.1.1. RSEM R5a

Construction of the Phase 1 RSEM R5a ponds was completed mid-July 2017 with a pond design consisting of four individual cells (A, B, C, and D). In 2020, sampling was not completed in January or February as the ponds were frozen. Starting in March 2020, all four cells were sampled on a bi-monthly sampling schedule until the ponds were decommissioned on September 20, 2020 (only one pond had sufficient water for sampling in September prior to decommissioning).

3.1.2. RSEM R5a-P2

No toxicity sampling of the Phase 2 RSEM R5a-A ponds (R5a-P2A, R5a-P2B, R5a-P2C, R5a-P2D) was conducted in 2020 as the ponds did not contain sufficient water for sampling. Toxicity sampling for the Phase 2 RSEM R5a-A ponds will begin once sufficient water is available in the ponds for sample collection.

3.1.3. RSEM R5b

Acute toxicity sampling of RSEM R5b pond water commenced on November 30, 2016. In 2020, toxicity samples were collected from RSEM R5b on a bi-monthly basis from January until September, after which sampling ceased as the pond was no longer used for water management.

3.1.4. RSEM R6

The two RSEM R6 ponds (RSEM R6E and RSEM R6W) are divided by a berm, and acute toxicity samples are collected from each pond provided there is sufficient water for sample collection. Acute toxicity sampling began in March 2017 for R6W and in April 2017 for R6E. In 2020, RSEM R6 toxicity samples were collected on a bi-monthly sampling schedule starting in January. As a precautionary measure, a targeted toxicity sample was collected from RSEM R6W in June 2020 following human error whereby water was briefly discharged directly to the Peace River without prior treatment in the MWTF.

3.1.5. RSEM L5

The two Phase 1 RSEM L5 ponds were divided by a berm (RSEM L5E and RSEM L5W), and construction of the two ponds was completed in December 2018. In 2020, toxicity samples were collected from both RSEM L5 ponds on a bi-monthly basis from March (the ponds were frozen in January and February) through July. The ponds had insufficient water for sample in September 2020 prior to their decommissioning on September 20.

3.1.6. RSEM L5-P2

The Phase 2 RSEM L5-P2 pond was constructed in September 2020; acute toxicity sampling began in October 2020 once there was sufficient water in the pond for sample collection. No further sampling took place in 2020 as the pond was frozen in December.

3.1.7. RSEM L6

Construction of the RSEM L6 pond was completed in 2019. Bi-monthly toxicity sample collection in RSEM L6 commenced in March 2019. In 2020, sampling was done on a bi-monthly basis beginning in January.

3.1.8. Acute Toxicity Test Failure Notification and Evaluation

In the event that a toxicity sample is determined to be acutely toxic, the LC_{50} (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 2020) 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, and corresponding water quality samples were 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 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.* 2017). 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. IDZ characterization relies on measurements of *in-situ* specific conductivity, as conductivity in the RSEM ponds is reliably higher (approximately seven fold greater) than the Peace River, allowing use of this parameter as a natural tracer to map the discharge plume. *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. There was no discharge plume characterization work done in 2020. This work is considered to be complete for the R5b, R6, and L5 (Phase 1) RSEM sediment ponds (Ganshorn *et al.* 2017, 2019a, and 2020). Discharge plume characterization in the RSEM L6 IDZ was completed during discharge on September 5, 2019. The detailed methods of the characterization study are presented in Ganshorn *et al.* (2019b).

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 2020 (Table 3). 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 in Section 0. 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 2020) (physical parameters, nutrients, anions, 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, and wherever possible, 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 sampling site locations were sampled in the Peace River to monitor discharge from each of the RSEM R5b, RSEM R6, and RSEM L5 (Phase 1) ponds: a control site upstream of the Site C instream works in the Peace River (Peace 03 during Phase 1 of construction, Map 1; and Peace Upstream during Phase 2 of construction, Map 2), two far-field locations downstream of the construction footprint on the right bank and left bank of the Peace River (MOE far-field downstream sites), and for each discharging RSEM pond an additional 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 5, Map 1, Map 2). The RSEM R5b 5 m upstream site, and the RSEM L5 5 m upstream site, are occasionally relocated to an alternate site as required to capture representative background conditions in the Peace River (Table 5, 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 03 and the Peace upstream site which replaced Peace 03 following diversion. Samples were collected mid-channel at the Peace 03 and Peace Upstream sites 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 3). In 2020 monthly sampling during discharge was completed for RSEM R5b (eight months; January through August), RSEM R6 (monthly), and RSEM L5 (four months; April through July) (Table 3). L6 did not discharge to the Peace River in 2020.

The 5 in 30-day sampling for RSEM R5b, RSEM R6, and RSEM L5 was completed during turbid flows from April 21, 2020 to May 19, 2020 and for RSEM R6 during clear flows from October 14 to November 11, 2020. On May 5 and May 19, 2020 RSEM R5b pond was not discharging therefore only three sampling dates were used for the 5 in 30 day turbid flow period for this pond (Table 3).

Detailed monthly reports were issued for each month of 2020; 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 2020). For the purpose of this annual report, 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 2020. 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 2020 annual summary statistics tables, the annual average, minimum, and maximum values for each parameter were screened against the applicable short-term maximum BC WQG for the protection of aquatic life (MOE 2019, Appendix A). The annual average values for each parameter were also screened against the applicable long-term BC WQG (MOE 2019, Appendix A). The 5 in 30 day monitoring results were screened against the applicable long-term 5 in 30 day BC WQG in the May and November 2020 monthly reports.

A number of water quality parameters have BC WQG that are calculated based on an equation, or the Biotic Ligand Model as is required for dissolved copper, (denoted by "EQ" in the summary tables) that depends on the value of other stream chemistry parameters (e.g., pH, hardness (as $CaCO_3$), dissolved organic carbon (DOC), chloride). These guidelines can be calculated based on the water chemistry associated with each sampling site/date or the guidelines can be calculated using the annual average water chemistry. To apply the short-term BC WQG, the annual minimum and maximum values are screened against the short-term BC WQG calculated based on the site chemistry as measured on each site/date that is associated with the minimum or maximum values. In addition, the total number of short-term BC WQG exceedances considering all sites and sampling dates over the 2020 monitoring period is provided in the summary tables.

To apply the long-term BC WQGs, when the guideline is an equation the annual average parameter values are screened against the long-term BC WQG calculated using the average pH, hardness, DOC or chloride values based on all data collected at a sampling site in 2020. In the summary statistics tables, blue shading indicates an exceedance of the short-term maximum BC WQG, and 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 2020 were completed for the RSEM ponds that discharged in 2020 (i.e., RSEM R5b, RSEM R6, and RSEM L5; Appendix B, Appendix C, and Appendix D, respectively). RSEM pond water quality results (sampled by PRHP, analyzed by Bureau Veritas) 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 (pond water quality analyses contracted by PRHP to Bureau Veritas, whereas Peace River water quality analyses contracted by Ecofish on behalf of BC Hydro to ALS Environmental).

Table 3. 2020 monthly and 5 in 30-day water quality sampling dates and Peace River background TSS (clear/turbid/very turbid).

Month (2020)	Date	Sampling Type	RSEM Area	Background Clear/Turbid Flow at each RSEM Pond Upstream Site[1,2]	Background Clear/Turbid Flow at Peace River 03/Peace Upstream[3]
Jan	22-Jan	Monthly	RSEM R6	Clear	Clear
			RSEM R5b	Clear	
Feb	28-Feb	Monthly	RSEM R6	Clear	Clear
			RSEM R5b	Clear	
Mar	19-Mar	Monthly	RSEM R5b	Clear	Clear
Apr	21-Apr	5 in 30 day/ Monthly	RSEM R6	Very Turbid	Very Turbid
			RSEM R5b	Very Turbid	
			RSEM L5	Very Turbid	
	28-Apr	5 in 30 day	RSEM R6	Turbid	Turbid
			RSEM R5b	Very Turbid	
			RSEM L5	Very Turbid	
May	5-May	5 in 30 day	RSEM R6	Turbid	Turbid
			RSEM L5	Very Turbid	
	12-May	5 in 30 day/ Monthly	RSEM R6	Turbid	Turbid
			RSEM R5b	Very Turbid	
			RSEM L5	Turbid	
	19-May	5 in 30 day	RSEM R6	Turbid	Turbid
			RSEM L5	Turbid	
Jun	25-Jun	Monthly	RSEM R6	Very Turbid	Very Turbid
			RSEM R5b	Very Turbid	
			RSEM L5	Very Turbid	
Jul	20-Jul	Monthly	RSEM R6	Turbid	Turbid
			RSEM R5b	Very Turbid	
	21-Jul	Monthly	RSEM L5	Turbid	
Aug	19-Aug	Monthly	RSEM R6	Turbid	Clear
			RSEM R5b	Clear	
Sep	10-Sep	Monthly	RSEM R6	Clear	Clear
Oct	14-Oct	5 in 30 day	RSEM R6	Clear	Turbid
	20-Oct	5 in 30 day/ Monthly	RSEM R6	Clear	Clear
	27-Oct	5 in 30 day	RSEM R6	Clear	Clear
Nov	5-Nov	5 in 30 day	RSEM R6	Clear	Clear
	11-Nov	5 in 30 day/ Monthly	RSEM R6	Clear	Clear
Dec	3-Dec	Monthly	RSEM R6	Clear	Clear

[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] RSEM L5 upstream (LBPR-4.50), RSEM R5b upstream (RBPR-5.69 and 5.70), R6 upstream (RBPR-7.05) TSS is obtained from ALS laboratory data for each sampling date.

[3] Peace River upstream background TSS is obtained from the daily average turbidity recorded from two continuous turbidity gauges installed on the left and right bank of the Peace River and the site specific TSS:Turbidity relationship.

3.2.2.2. Peace River Background TSS

The RSEM ponds have EOP limits for TSS. Until December 9, 2020, the continuous turbidity gauges installed on the left and right bank of the Peace River upstream of the confluence with the Moberly River (PAM-LB and PAM-RB respectively, (Map 1) were used to inform PRHP of the Peace River background TSS twice daily via automated email as per Section 2.1 in BC Hydro (2017). New continuous turbidity gauges were installed on August 24, 2020, upstream of the existing locations for Diversion Phase 2 when the headpond will inundate the existing locations (Map 2). Beginning December 9, 2020 data from PAM-LB2 replaced the data from PAM-LB station due to damage that occurred at PAM-LB.

After both left and right bank gauges have transmitted data logged at 06:00 MST, the average of all of the turbidity data collected over the previous 12 hours from both the left and right bank PAM turbidity gauges is used to estimate the Peace River background TSS, which is automatically emailed to PRHP, BC Hydro, and Ecofish personnel. Similarly, this is done for the previous 12 hours after both gauges have transmitted data logged at 18:00 MST.

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, as well as hydrology related changes in the sediment carrying capacity of the Peace River (MOE 2019). 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 additional *in-situ* turbidity measurements and laboratory analysed TSS samples to ensure the relationship reflects current conditions.

In 2020, a total of 52 water samples were collected from April 22 to May 19, 2020 in the Peace River for laboratory analysis of TSS. These samples were collected across six monitoring sites where continuous turbidity loggers are present. These lab-analyzed TSS data were paired with turbidity data from the real stations to determine the TSS:turbidity ratio of each paired sample. The TSS:turbidity ratios of these individual samples were then plotted over time 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:

1. 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.
2. The IDZ monitoring result is compared to the Peace River upstream location data (i.e., RSEM R5b upstream, RSEM R6 upstream, RSEM L5 upstream, RSEM L6 upstream).
3. The IDZ monitoring result is compared to the RSEM pond data (pond data are provided by PRHP/Bureau Veritas (formerly Maxxam Analytics).
4. If the IDZ monitoring result is higher than the RSEM pond data, then it is assumed that the exceedance was naturally occurring.
5. 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 2020), an Exceedance Notification memorandum is issued to BC Hydro within 24 hours:
    a. Prior to composing the Exceedance Notification memorandum, BC Hydro will be notified immediately following identification of the exceedance.
    b. In the Exceedance Notification memorandum, the data are evaluated in the context of the corresponding water quality monitoring results for the Peace 03 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, Ganshorn *et al.* 2019a, Ganshorn *et al.* 2020).
    c. 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 and Office of the Comptroller of Water Rights), PRHP, and PRHP's ARD Qualified Professional (Lorax Environmental).
    d. Exceedance Notification summary tables including the distribution list, are also provided as required in the applicable monthly report that Ecofish prepares for BC Hydro.

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 sample analysis is completed by ALS Environmental[4], an accredited analytical laboratory with an ISO 9001:2008 and Canadian Association for Laboratory Accreditation certification. 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, our 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 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 detections (value greater than the ALS method detection limit (MDL)) should not exceed 5% of all parameter results, not including pH which is detectable in both samples and blanks.
- Precision between duplicates is expected to meet the 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 or mixing between the Moberly River and Peace River flows may cause variability):
    - Relative percent deviation (RPD) between duplicates should be <20%;
    - This metric is only calculated if at least one of the replicates was >5 x MDL.
- Precision between triplicates is expected to meet the 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 or mixing between the Moberly River and Peace River flows may cause variability):
    - Relative standard deviation (RSD) between triplicates should be <18%;
    - This metric is only calculated if at least one of the replicates was >5 x MDL.

[4] RSEM pond water quality data provided by PRHP were analyzed by Bureau Veritas (formerly Maxxam Analytics) using their own analysis and QA/QC protocols.

- The cation - anion balance (%) should be <10% for 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 2017).
- Considering the paired dissolved and total metals parameters, the dissolved metals (D-metals) concentration should be <1.2 * the total metals (T-metals) concentration. This metric was calculated if the D-metal concentration was at least 5 x >MDL.

Additional QA/QC checks and procedures in 2020 included:

- Review of field data sheets, QA/QC of *in-situ* and toxicity data manually entered into EcoDAT;
- Review of electronically uploaded ALS Environmental 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 field samples; and
- Review of *in-situ* measurements and corresponding laboratory results for pH, turbidity and specific conductivity. Date 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 lab 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 2020 monthly sampling reports. Duplicate laboratory results were provided individually in the monthly report summary tables for each sampling date for transparency; 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[5] (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 was recently incorporated into the latest revision (Rev 7) of the CEMP (BC Hydro 2020). The updated toxicity testing program for

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

PAG containing RSEM sediment ponds consists of two components: routine monitoring and targeted monitoring.

4.1.1. RSEM R5a

In 2020, all 13 samples collected from the four RSEM R5a ponds (four from pond A, three from ponds B, C and D) passed the acute toxicity test. The ponds were decommissioned by September 2020.

4.1.2. RSEM R5a-P2

In 2020, no toxicity samples were collected from the four RSEM R5a-P2 ponds (A, B, C and D) due to lack of water in the ponds. Samples will be collected once a sufficient volume of water is available.

4.1.3. RSEM R5b

In 2020, all five samples collected from the RSEM R5b pond passed the acute toxicity test. As of September 2020, this pond was no longer used for water management.

4.1.4. RSEM R6

In 2020, all 13 samples collected from the two RSEM R6 ponds (seven samples from RSEM R6W and six from RSEM R6E) passed the acute toxicity test.

4.1.5. RSEM L5

In 2020, all six samples collected from the two Phase 1 RSEM L5 ponds (three samples from RSEM L5W and three from RSEM L5E) passed the acute toxicity test. These ponds were decommissioned by September 2020.

4.1.6. RSEM L5-P2

In 2020, one sample collected from the single RSEM L5-P2 pond passed the acute toxicity test.

4.1.7. RSEM L6

In 2020, all six samples collected from the RSEM L6 pond passed the acute toxicity test.

4.1.8. Acute Toxicity Test Failure Notification and Evaluation

In 2020, there were no acute toxicity test failures (Appendix A).

4.2. Peace River Water Quality

4.2.1. RSEM Pond Discharge Plume Characterization

There was no RSEM pond discharge plume characterization work done in 2020. The discharge plume characterization work is considered to be complete for the R5b, R6, and Phase 1 L5 RSEM sediment ponds (Ganshorn *et al.* 2017, 2019a, and 2020). IDZ characterization will be completed for the Phase 2 RSEM R5a-P2 and RSEM-L5-P2 ponds following commissioning of the ponds for passive discharge into the Peace River.

The results and conclusions of the RSEM L6 discharge plume study (September 2019) are provided in detail in Ganshorn *et al.* 2019b. If the RSEM L6 discharges to the Peace River in the future,

additional plume characterization work will be conducted. IDZ plume characterization was not conducted for this pond in 2020 as there was no discharge from this pond in 2020.

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 for monthly and 5 in 30-day sampling in 2020 are provided in Appendix A; separate tables are provided for each sampling site (Peace 03, Peace Upstream (Peace 03 was moved upstream in 2020), RSEM R5b upstream, RSEM R5b IDZ, RSEM R6 upstream, RSEM R6 IDZ, RSEM L5 upstream, RSEM L5 IDZ and two far-field downstream sites; Map 1 and Map 2). 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. Exceedances are discussed in Section 4.2.2.3.

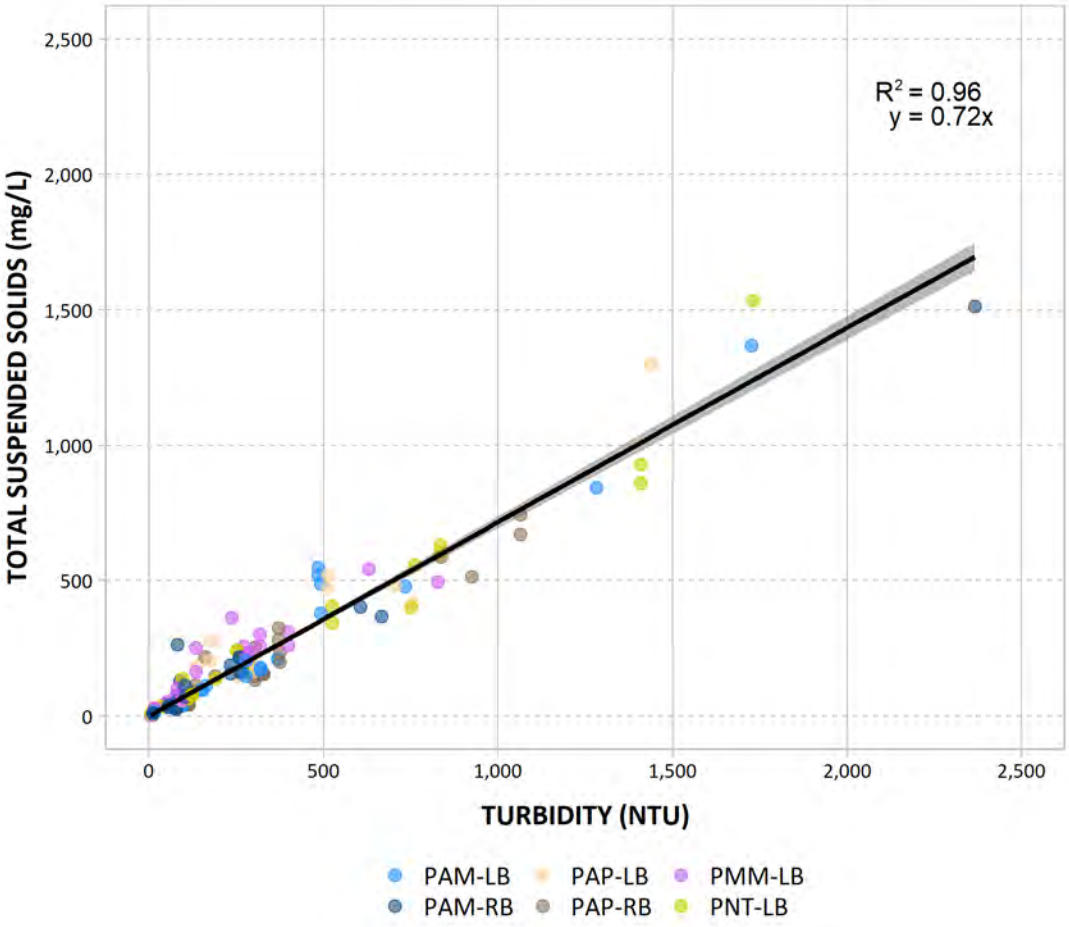
Annual time series bar plots for each water quality parameter based on data collected for monthly and 5 in 30-day sampling in 2020 are provided for RSEM R5b in Appendix B, for RSEM R6 in Appendix C, and for RSEM L5 in Appendix D. Applicable BC WQG and Site C EOP limits for each parameter are shown in 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 2020.

4.2.2.2. Peace River Background TSS

The TSS:Turbidity Relationship applied to calculate TSS from turbidity data in 2020 was either 0.72:1 (January 1, 2020 to June 19, 2020 and from November 4, 2020 to December 31, 2020) or 0.73:1 (June 19, 2020 to November 4, 2020). In total 170 samples collected over 25 dates between December 15, 2017 to December 31, 2020 were used to develop the updated TSS:turbidity relationship. These data encompassed a wide range of turbidity (4 NTU to 2,365 NTU) and TSS (3 mg/L to 1,535 mg/L) observations (Figure 1).

The relationship in use at the end of 2020 is shown in Figure 1. Proceeding with a linear model common to all sites in the Peace River including data from 2020, a combined TSS:turbidity relationship of 0.72:1 was found (i.e., TSS = 0.72*Turbidity). This relationship has good agreement amongst the data (R^2 = 0.96) (Figure 1), and was very similar to the prior TSS:turbidity relationship of 0.73:1 (R^2 = 0.97).

Figure 1. Combined relationship for TSS:turbidity in the Peace River using data collected from 2017 to 2020. Shaded areas are 95% confidence intervals.



4.2.2.3. BC WQG Exceedances

In the monitoring conducted in 2020, there were no observations of exceedances in the Peace River of the BC WQG for the protection of aquatic life that were related to discharge of water from the RSEM ponds. Similar to annual monitoring in 2017 (Ganshorn *et al.* 2018), 2018 (Ganshorn *et al.* 2019a), 2019 (Ganshorn *et al.* 2020), 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. Peace Upstream (PR-2.81) did not exhibit any natural exceedances, however this site was only established in October 2020, during the clear flow season (Appendix A). The BC WQG exceedances shown on the tables in Appendix A and on the graphs shown in Appendix B, Appendix C, and Appendix D are all naturally occurring exceedances.

4.2.3. QA/QC

Overall QA/QC objectives were met in 2020. All QA/QC issues were reviewed and no data were excluded due to QA/QC failures in 2020.

The results of the QA/QC checks and procedures completed in 2020 are provided in summary tables in Appendix E. The number of QA/QC laboratory samples (17 replicates, 17 field blanks, and 20 travel blanks) comprised 41.5% (54 of 130 samples) of the overall sampling program based on the total number of monthly and 5 in 30-day samples collected in 2020. The number of QA/QC *in-situ* measurements is 66% (2/3) based on the triplicate measurement for each parameter. Overall, sampling in 2020 has surpassed the QA/QC objective of at least 10% QA/QC effort.

On occasion, hold times were exceeded for filtering and preserving of samples (one sample date), and for sample analysis for orthophosphate (one sample date), nitrite (two sample dates), nitrate (two sample dates), and turbidity (one sample date) in 2020 due to field sampling logistics and shipping delays. Where hold times were exceeded, results were reviewed to ensure parameter values were consistent with previous sampling results, and no data were flagged in 2020 due to hold time exceedances. The number of samples affected by hold time exceedances which occurred in 2020 are summarized in Table 42 in Appendix E, with the exception of pH which has a hold time of only 15 minutes (laboratory analysis within this time frame is not practical).

The 2020 field blank and travel blank results were non-detectable (below the MDL) for 98.0% of the field blank data (29/1432) and 98.9% of the travel blank data (11/1032) set thereby meeting the QA/QC objective of >95% non-detectable results for field and travel blanks (Table 43 in Appendix E). On May 5 and May 12, 2020, travel blanks and deionized water provided by ALS for field blanks were contaminated and these QA/QC samples were removed from the data set (McKenzie, pers. comm 2020).

Elevated variability between duplicate laboratory samples (RPD > 20%) and triplicate *in-situ* measurements (RSD > 18%) was observed on a number of occasions for TSS, turbidity, total phosphorus, organic carbon, hardness, and select total and dissolved metals, during turbid and clear flow conditions (Table 44 and Table 45 in Appendix E). Variability in excess of the QA/QC objective thresholds occurred on 95 of 1,557 occasions (6.1%) for duplicate samples and 3 of 372 occasions (0.8%) for *in-situ* samples. These results are thought to reflect real heterogeneity in the Peace River. No substantial effect on data quality is expected.

The cation-anion balance was less than 10% in all samples. The majority of dissolved/total metal parameter pairs (99.45% or 5,465 out of a total of 5,495 parameter pairs), met the QA/QC objective: the concentration of D-metals was <1.2 * the concentration of T-metals (Table 46 in Appendix E).

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Personal Communications

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APPENDICES

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

Table 4. Peace River continuous turbidity gauge site description and coordinates, data from PAM-LB and PAM-RB gauges were used to estimate background TSS concentrations in the Peace River commencing in September 2017. On December 9, 2020 PAM-LB2 replaced PAM-LB.

Site Name	Description	UTM Coordinates (Zone 10V)	
		Easting (m)	Northing (m)
PAM-LB	Continuous turbidity gauge installed in the Peace River above Moberly River - Left Bank	627,684	6,232,396
PAM-RB	Continuous turbidity gauge installed in the Peace River above Moberly River - Right Bank	627,221	6,232,276
PAM-LB2	Continuous turbidity gauge installed in the Peace River above Moberly River - Left Bank, upstream of PAM-LB	611,723	6,237,142
PAM-RB2	Continuous turbidity gauge installed in the Peace River above Moberly River - Right Bank, upstream of PAM-RB	612,201	6,236,528

Table 5. Peace River water quality monitoring site descriptions and coordinates, 2020.

Site Name[1]	Site Common Name	Description	UTM Coordinates (Zone 10V)	
			Easting (m)	Northing (m)
PR-2.81	Peace Upstream	Phase 2 upstream site, located in the Peace River upstream of the confluence with the Moberly River and upstream of the debris boom installed in September 2020.	627,372	6,232,207
PR-3.88	Peace 03	Phase 1 upstream site, located in the Peace River upstream of the confluence with the Moberly River. Active until September 30, 2020. Replaced by PR-2.81 (Peace Upstream) in October 2020.	628,027	6,231,374
LBPR-4.50	L5 Upstream	Phase 1 site, located in the Peace River, 5m upstream of the L5 discharge channel.	628,602	6,230,890
LBPR-4.50ALT	L5 Upstream Alternate #1	Phase 1 site, located in the Peace River, perpendicular to the primary monitoring site (LBPR-4.50), sampled during low flow.	628,571	6,230,873
LBPR-4.60	L5 IDZ	Phase 1 site, located in the Peace River, 100m downstream of the L5 discharge channel.	628,616	6,230,789
LBPR-4.60ALT	L5 IDZ Alternate #1	Phase 1 site, located in the Peace River, perpendicular to primary monitoring site (LBPR-4.60), sampled during low flow in the Peace River.	628,606	6,230,770
RBPR-5.69	R5b Upstream Alternate #2	In Peace River, downstream of the Moberly River confluence with the Peace River. Alternate R5b upstream location was sampled to avoid ice cover at the primary monitoring site (RBPR-5.70).	629,079	6,229,932
RBPR-5.70	R5b Upstream	In Peace River, downstream of the Moberly River confluence with the Peace River, 5m upstream of the R5b discharge channel.	629,056	6,229,883
RBPR-5.81	R5b IDZ	In the Peace River, 100m downstream of R5b discharge channel.	629,135	6,229,813
RBPR-7.05	R6 Upstream	In the Peace River, 5m upstream of the R6 discharge channel.	630,283	6,229,254
RBPR-7.15	R6 IDZ	In the Peace River, 100m downstream of the R6 discharge channel.	630,383	6,229,259
LBPR-9.34	MOE far-field downstream left bank	In the Peace River, downstream of the project.	632,498	6,229,678
RBPR-9.34	MOE far-field downstream right bank	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.

Table 6. RSEM R5a Phase 1 pond toxicity sampling results, 2020.

Year	Date	Site[1]	Sampling Schedule	96 hr LC50 % (v/v)
2020	26-Mar	RSEMR5aA-SPTOX	Bi-monthly	>100
	30-Mar	RSEMR5aB-SPTOX	Bi-monthly	>100
	26-Mar	RSEMR5aC-SPTOX	Bi-monthly	>100
	26-Mar	RSEMR5aD-SPTOX	Bi-monthly	>100
	13-May	RSEMR5aA-SPTOX	Bi-monthly	>100
		RSEMR5aB-SPTOX	Bi-monthly	>100
		RSEMR5aC-SPTOX	Bi-monthly	>100
		RSEMR5aD-SPTOX	Bi-monthly	>100
	15-Jul	RSEMR5aA-SPTOX	Bi-monthly	>100
		RSEMR5aB-SPTOX	Bi-monthly	>100
		RSEMR5aC-SPTOX	Bi-monthly	>100
		RSEMR5aD-SPTOX	Bi-monthly	>100
	8-Sep	RSEMR5aA-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).

Phase 1 R5a ponds were decommissioned in August and September 2020. Phase 2 RSEM R5a-P2 ponds will be sampled when sufficient water is available to allow collection of toxicity samples.

Table 7. RSEM R5b pond toxicity sampling results, 2020.

Year	Date	Site[1]	Sampling Schedule	96 hr LC50 % (v/v) [95% CI]
2020	8-Jan	RSEMR5B-EOPTOX	Bi-monthly	>100
	15-Mar	RSEMR5B-EOPTOX	Bi-monthly	>100
	13-May	RSEMR5B-SPTOX	Bi-monthly	>100
	15-Jul	RSEMR5B-SPTOX	Bi-monthly	>100
	8-Sep	RSEMR5B-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).

As of September 2020, RSEM R5b is no longer used for water management. No Phase 2 R5b pond will be commissioned.

Table 8. RSEM R6 pond toxicity sampling results, 2020.

Year	Date	Site[1]	Sampling Schedule	96 hr. LC50 % (v/v)
2020	8-Jan	RSEMR6E-EOPTOX	Bi-monthly	>100
	21-Jan	RSEMR6W-SPTOX	Bi-monthly	>100
	15-Mar	RSEMR6W-SPTOX	Bi-monthly	>100
		RSEMR6E-SPTOX	Bi-monthly	>100
	19-May	RSEMR6W-SPTOX	Bi-monthly	>100
		RSEMR6E-SPTOX	Bi-monthly	>100
	15-Jun	RSEMR6W-EOPTOX	[2]Targeted testing	>100
	21-Jul	RSEMR6W-SPTOX	Bi-monthly	>100
		RSEMR6E-SPTOX	Bi-monthly	>100
	8-Sep	RSEMR6W-SPTOX	Bi-monthly	>100
		RSEMR6E-SPTOX	Bi-monthly	>100
	11-Nov	RSEMR6W-SPTOX	Bi-monthly	>100
		RSEMR6E-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).

[2] As a precautionary measure, a targeted toxicity sample was collected in response to a human error which resulted in a brief discharge of RSEM R6W water directly to the Peace River, prior to treatment in the MWTF.

Table 9. RSEM L5 Phase 1 pond toxicity sampling results, 2020.

Year	Date	Site[1]	Sampling Schedule	96 hr LC50 % (v/v)
2020	30-Mar	RSEML5W-SPTOX	Bi-monthly	>100
		RSEML5E-SPTOX	Bi-monthly	>100
	19-May	RSEML5W-SPTOX	Bi-monthly	>100
		RSEML5E-SPTOX	Bi-monthly	>100
	21-Jul	RSEML5W-SPTOX	Bi-monthly	>100
		RSEML5E-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).

Phase 1 RSEM L5 ponds were decommissioned in August and September 2020. Phase 2 RSEM L5-P2 ponds will be sampled when sufficient water is available to allow collection of toxicity samples.

Table 10. RSEM L5-P2 Phase 2 pond toxicity sampling results, 2020.

Year	Date	Site[1]	Sampling Schedule	96 hr LC50 % (v/v)
2020	13-Oct	RSEM L5-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).

Phase 2 L5-P2 pond will be sampled bi-monthly if sufficient water is available. RSEM L5-P2 has not been commissioned for discharge to the Peace River.

Table 11. RSEM L6 pond toxicity sampling results, 2020.

Year	Date	Site[1]	Sampling Schedule	96 hr LC50 % (v/v)
2020	21-Jan	RSEML6-SPTOX	Bi-monthly	>100
	31-Mar	RSEML6-SPTOX	Bi-monthly	>100
	19-May	RSEML6-SPTOX	Bi-monthly	>100
	21-Jul	RSEML6-SPTOX	Bi-monthly	>100
	8-Sep	RSEML6-SPTOX	Bi-monthly	>100
	11-Nov	RSEML6-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 12. 2020 annual data summary statistics for lab and *in-situ* sampling (organic carbon, physical tests, anions and nutrients) collected at the PR-2.81 site (October 14 to December 3, 2020).

Parameters (mg/L) Date: 2020	MDL	PR-2.81							BC Long-Term WQG[1]	BC Short-Term Maximum	
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.		WQG[2]	# Exc
Organic Carbon											
Dissolved Organic Carbon	0.5	7	0	3.13	3.16	2.31	3.9	0.48			0
Total Organic Carbon	0.5	7	0	3.32	3.16	2.87	3.82	0.39			0
Physical Tests											
Hardness (as CaCO3)	0.5	7	0	90.9	90.5	86.5	98.5	4			0
Sp. Conductivity (In Situ, µS/cm)		17	0	181	181	175	187	3.5			0
Sp. Conductivity (lab, µS/cm)	2	7	0	176	175	170	187	6			0
Total Dissolved Solids	13	7	0	115	116	106	123	6			0
Total Suspended Solids	1	7	0	9.93	7.5	4	29.5	8.8			0
Turbidity (In Situ, NTU)		18	0	3.98	4.01	2.84	4.95	0.68			0
Turbidity (lab, NTU)	0.1	7	0	6.03	5.37	3.15	8.61	2.05			0
pH (In Situ, pH units)		18	0	8.09	8.1	7.86	8.26	0.13		6.5 to 9.0	0
pH (lab, pH units)	0.1	7	0	8.05	8.1	7.88	8.13	0.1		6.5 to 9.0	0
Anions and Nutrients											
Alkalinity, Total (as CaCO3)	1	7	0	83.1	83.7	78.9	84.9	2.2			0
Ammonia, Total (as N)	0.005	7	4	0.00953	0.005	0.005	0.0297	0.0091	0.102	0.68	0
Bromide (Br)	0.05	7	7	0.05	0.05	0.05	0.05	0			0
Chloride (Cl)	0.5	7	6	0.516	0.5	0.5	0.61	0.04	150	600	0
Fluoride (F)	0.02	7	0	0.0384	0.039	0.033	0.043	0.004		EQ	0
Nitrate (as N)	0.005	7	0	0.0701	0.0685	0.064	0.0883	0.0083	3	32.8	0
Nitrite (as N)	0.001	7	7	0.001	0.001	0.001	0.001	0	0.02	0.06	0
Orthophosphate-Dissolved (as P)	0.001	7	6	0.00101	0.001	0.001	0.0011	0			0
Sulfate (SO4)	0.3	7	0	14.5	14.3	13.6	15.3	0.7	309		0
Total Phosphorus (P)	0.002	7	0	0.00766	0.007	0.0051	0.0122	0.0024			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

Table 13 2020 annual data summary statistics for total metals collected at the PR-2.81 site (October 14 to December 3, 2020).

Parameters (mg/L) Date: 2020	MDL	PR-2.81							BC Long-Term WQG[1]	BC Short-Term Maximum	
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.		WQG[2]	# Exc
Total Metals											
Aluminum (Al)-Total	0.003	7	0	0.125	0.127	0.0612	0.22	0.0484			0
Antimony (Sb)-Total	0.0001	7	5	0.000139	0.0001	0.0001	0.00028	0.00007			0
Arsenic (As)-Total	0.0001	7	0	0.000319	0.00027	0.00026	0.00041	0.00007		0.005	0
Barium (Ba)-Total	0.0001	7	0	0.0362	0.0363	0.033	0.0394	0.002	1		0
Beryllium (Be)-Total	0.00002	7	5	0.000052	0.00002	0.00002	0.0001	0.00004	0.00013		0
Bismuth (Bi)-Total	0.00005	7	7	0.00005	0.00005	0.00005	0.00005	0			0
Boron (B)-Total	0.01	7	7	0.01	0.01	0.01	0.01	0		1.2	0
Cadmium (Cd)-Total	0.000005	7	0	0.0000503	0.0000329	0.0000263	0.000097	0.0000301			0
Calcium (Ca)-Total	0.05	7	0	26.3	26.8	22.8	28.8	2			0
Cesium (Cs)-Total		1	0	0.000012	0.000012	0.000012	0.000012	0			0
Chromium (Cr)-Total	0.0001	7	0	0.000321	0.00031	0.0002	0.00046	0.0001			0
Cobalt (Co)-Total	0.0001	7	4	0.000137	0.0001	0.0001	0.00021	0.00005	0.004	0.11	0
Copper (Cu)-Total	0.0005	7	0	0.000973	0.00095	0.00082	0.00114	0.00012			0
Iron (Fe)-Total	0.01	7	0	0.213	0.208	0.107	0.357	0.077		1	0
Lead (Pb)-Total	0.00005	7	0	0.000136	0.00012	0.00007	0.000201	0.000052	EQ	EQ	0
Lithium (Li)-Total	0.001	7	0	0.00136	0.0013	0.0012	0.0018	0.0002			0
Magnesium (Mg)-Total	0.005	7	0	6.33	6.46	6.02	6.64	0.28			0
Manganese (Mn)-Total	0.0001	7	0	0.00552	0.00553	0.00404	0.00797	0.00132	EQ	EQ	0
Mercury (Hg)-Total	0.000005	7	7	0.000005	0.000005	0.000005	0.000005	0	0.00002		0
Molybdenum (Mo)-Total	0.00005	7	0	0.000794	0.000813	0.000755	0.000833	0.000033	1	2	0
Nickel (Ni)-Total	0.0005	7	1	0.00101	0.001	0.0005	0.00125	0.00026	EQ		0
Phosphorus (P)-Total	0.05	7	7	0.05	0.05	0.05	0.05	0			0
Potassium (K)-Total	0.05	7	0	0.472	0.48	0.41	0.52	0.041			0
Rubidium (Rb)-Total		1	0	0.00042	0.00042	0.00042	0.00042	0			0
Selenium (Se)-Total	0.00005	7	0	0.000301	0.000293	0.000257	0.000383	0.00004	0.002		0
Silicon (Si)-Total	0.05	7	0	2.33	2.35	2.11	2.44	0.11			0
Silver (Ag)-Total	0.00001	7	7	0.00001	0.00001	0.00001	0.00001	0	0.00005	0.0001	0
Sodium (Na)-Total	0.05	7	0	1.31	1.36	1.14	1.45	0.12			0
Strontium (Sr)-Total	0.0002	7	0	0.105	0.104	0.1	0.11	0.004			0
Sulfur (S)-Total	0.5	7	0	4.62	4.91	3.81	5.16	0.52			0
Tellurium (Te)-Total		1	1	0.0002	0.0002	0.0002	0.0002	0			0
Thallium (Tl)-Total	0.00001	7	5	0.0000254	0.00001	0.00001	0.000064	0.000026			0
Thorium (Th)-Total		1	1	0.0001	0.0001	0.0001	0.0001	0			0
Tin (Sn)-Total	0.0001	7	7	0.0001	0.0001	0.0001	0.0001	0			0
Titanium (Ti)-Total	0.0003	7	0	0.0031	0.00276	0.00222	0.00596	0.00133			0
Tungsten (W)-Total		1	1	0.0001	0.0001	0.0001	0.0001	0			0
Uranium (U)-Total	0.00001	7	0	0.000472	0.000472	0.000411	0.000537	0.000048	0.0085		0
Vanadium (V)-Total	0.0005	7	0	0.00087	0.00083	0.00063	0.00129	0.00021			0
Zinc (Zn)-Total	0.003	7	7	0.003	0.003	0.003	0.003	0	EQ	EQ	0
Zirconium (Zr)-Total	0.0002	7	7	0.000286	0.0003	0.0002	0.0003	0.00004			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

Table 14 2020 annual data summary statistics for dissolved metals collected at the PR-2.81 site (October 14 to December 3, 2020).

Parameters (mg/L) Date: 2020	MDL	PR-2.81							BC Long-Term WQG[1]	BC Short-Term Maximum	
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.		WQG[2]	# Exc
Dissolved Metals											
Aluminum (Al)-Dissolved	0.001	7	0	0.00716	0.0072	0.0054	0.0091	0.0012	0.05	0.1	0
Antimony (Sb)-Dissolved	0.0001	7	7	0.0001	0.0001	0.0001	0.0001	0			0
Arsenic (As)-Dissolved	0.0001	7	0	0.000194	0.00019	0.00018	0.00021	0.00001			0
Barium (Ba)-Dissolved	0.0001	7	0	0.0341	0.0342	0.0334	0.0345	0.0004			0
Beryllium (Be)-Dissolved	0.00002	7	7	0.0000314	0.00002	0.00002	0.0001	0.00003			0
Bismuth (Bi)-Dissolved	0.00005	7	7	0.00005	0.00005	0.00005	0.00005	0			0
Boron (B)-Dissolved	0.01	7	7	0.01	0.01	0.01	0.01	0			0
Cadmium (Cd)-Dissolved	0.000005	7	0	0.0000108	0.0000098	0.0000092	0.000014	0.0000019	EQ	EQ	0
Calcium (Ca)-Dissolved	0.05	7	0	26	25.9	25	27.8	0.9			0
Cesium (Cs)-Dissolved		1	1	0.00001	0.00001	0.00001	0.00001	0			0
Chromium (Cr)-Dissolved	0.0001	7	7	0.0001	0.0001	0.0001	0.0001	0			0
Cobalt (Co)-Dissolved	0.0001	7	7	0.0001	0.0001	0.0001	0.0001	0			0
Copper (Cu)-Dissolved	0.0002	7	0	0.000623	0.00064	0.00056	0.00067	0.00004	EQ	EQ	0
Iron (Fe)-Dissolved	0.01	7	2	0.0119	0.012	0.01	0.013	0.001		0.35	0
Lead (Pb)-Dissolved	0.00005	7	7	0.00005	0.00005	0.00005	0.00005	0			0
Lithium (Li)-Dissolved	0.001	7	2	0.00119	0.0012	0.001	0.0014	0.0002			0
Magnesium (Mg)-Dissolved	0.005	7	0	6.14	6.1	5.87	6.68	0.29			0
Manganese (Mn)-Dissolved	0.0001	7	0	0.00084	0.00094	0.00029	0.00115	0.00036			0
Mercury (Hg)-Dissolved	0.000005	7	7	0.000005	0.000005	0.000005	0.000005	0			0
Molybdenum (Mo)-Dissolved	0.00005	7	0	0.000804	0.000825	0.000753	0.000844	0.000041			0
Nickel (Ni)-Dissolved	0.0005	7	0	0.00069	0.0007	0.00065	0.00072	0.00002			0
Phosphorus (P)-Dissolved	0.05	7	7	0.05	0.05	0.05	0.05	0			0
Potassium (K)-Dissolved	0.05	7	0	0.419	0.42	0.39	0.43	0.014			0
Rubidium (Rb)-Dissolved		1	0	0.00027	0.00027	0.00027	0.00027	0			0
Selenium (Se)-Dissolved	0.00005	7	0	0.000298	0.000297	0.00028	0.000324	0.000014			0
Silicon (Si)-Dissolved	0.05	7	0	2.12	2.14	2.05	2.16	0.04			0
Silver (Ag)-Dissolved	0.00001	7	7	0.00001	0.00001	0.00001	0.00001	0			0
Sodium (Na)-Dissolved	0.05	7	0	1.34	1.35	1.25	1.44	0.06			0
Strontium (Sr)-Dissolved	0.0002	7	0	0.106	0.105	0.102	0.109	0.003			0
Sulfur (S)-Dissolved	0.5	7	0	4.61	4.66	4.36	4.75	0.17			0
Tellurium (Te)-Dissolved		1	1	0.0002	0.0002	0.0002	0.0002	0			0
Thallium (Tl)-Dissolved	0.00001	7	7	0.00001	0.00001	0.00001	0.00001	0			0
Thorium (Th)-Dissolved		1	1	0.0001	0.0001	0.0001	0.0001	0			0
Tin (Sn)-Dissolved	0.0001	7	7	0.0001	0.0001	0.0001	0.0001	0			0
Titanium (Ti)-Dissolved	0.0003	7	7	0.0003	0.0003	0.0003	0.0003	0			0
Tungsten (W)-Dissolved		1	1	0.0001	0.0001	0.0001	0.0001	0			0
Uranium (U)-Dissolved	0.00001	7	0	0.000427	0.000426	0.000409	0.000455	0.000019			0
Vanadium (V)-Dissolved	0.0005	7	7	0.0005	0.0005	0.0005	0.0005	0			0
Zinc (Zn)-Dissolved	0.001	7	4	0.00129	0.001	0.001	0.0023	0.0005			0
Zirconium (Zr)-Dissolved	0.0002	7	7	0.000286	0.0003	0.0002	0.0003	0.00004			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

Table 15. 2020 annual data summary statistics for lab and *in-situ* sampling (organic carbon, physical tests, anions and nutrients) collected at the PR-3.88 site (Peace 03) (January 22 to September 10, 2020).

Parameters (mg/L) Date: 2020	MDL	PR-3.88							BC Long-Term WQG[1]	BC Short-Term Maximum	
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.		WQG[2]	# Exc
Organic Carbon											
Dissolved Organic Carbon	0.5	14	0	3.26	3.1	2.32	4.84	0.89			0
Total Organic Carbon	0.5	14	0	4.3	3.44	2.41	13.4	2.84			0
Physical Tests											
Hardness (as CaCO3)	0.5	14	0	103	99.7	85.5	129	12.7			0
Sp. Conductivity (In Situ, µS/cm)		35	0	200	194	169	255	23.3			0
Sp. Conductivity (lab, µS/cm)	2	14	0	193	194	168	236	19			0
Total Dissolved Solids	13	14	0	139	128	110	221	31			0
Total Suspended Solids	1	14	0	74.5	25	1.9	551	144.4			0
Turbidity (In Situ, NTU)		36	0	57.4	22.5	1.77	386	100.61			0
Turbidity (lab, NTU)	0.1	14	0	63.5	13.6	0.85	505	131.84			0
pH (In Situ, pH units)		36	0	7.7	7.67	7.43	8.13	0.22		6.5 to 9.0	0
pH (lab, pH units)	0.1	14	0	8.09	8.13	7.88	8.29	0.12		6.5 to 9.0	0
Anions and Nutrients											
Alkalinity, Total (as CaCO3)	1	14	0	90.6	89.7	81.1	118	9.8			0
Ammonia, Total (as N)	0.005	14	3	0.0133	0.00865	0.005	0.0564	0.0141	0.102	0.68	0
Bromide (Br)	0.05	14	14	0.05	0.05	0.05	0.05	0			0
Chloride (Cl)	0.5	14	12	0.525	0.5	0.5	0.7	0.06	150	600	0
Fluoride (F)	0.02	14	0	0.0435	0.041	0.028	0.069	0.01		EQ	0
Nitrate (as N)	0.005	14	0	0.0666	0.0658	0.0445	0.0919	0.0115	3	32.8	0
Nitrite (as N)	0.001	14	13	0.00104	0.001	0.001	0.0015	0.0001	0.02	0.06	0
Orthophosphate-Dissolved (as P)	0.001	14	5	0.00266	0.0013	0.001	0.0138	0.0033			0
Sulfate (SO4)	0.3	14	0	17.2	16.3	12.9	24.6	3.2	309		0
Total Phosphorus (P)	0.002	14	0	0.0842	0.0202	0.0041	0.653	0.1713			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

Table 16. 2020 annual data summary statistics for total metals collected at the PR-3.88 site (Peace 03) (January 22 to September 10, 2020).

Parameters (mg/L) Date: 2020	MDL	PR-3.88							BC Long-Term WQG[1]	BC Short-Term Maximum	
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.		WQG[2]	# Exc
Total Metals											
Aluminum (Al)-Total	0.003	14	0	0.916	0.28	0.0299	6.65	1.7399			0
Antimony (Sb)-Total	0.0001	14	8	0.000143	0.0001	0.0001	0.0004	0.00009			0
Arsenic (As)-Total	0.0001	14	0	0.000921	0.000415	0.00019	0.00576	0.00146		0.005	1
Barium (Ba)-Total	0.0001	14	0	0.0705	0.044	0.0317	0.301	0.0712	1		0
Beryllium (Be)-Total	0.00002	14	7	0.0000703	0.000023	0.00002	0.000457	0.000116	0.00013		0
Bismuth (Bi)-Total	0.00005	14	13	0.0000556	0.00005	0.00005	0.000128	0.000021			0
Boron (B)-Total	0.01	14	13	0.0103	0.01	0.01	0.014	0.001		1.2	0
Cadmium (Cd)-Total	0.000005	14	0	0.000106	0.0000453	0.0000097	0.000632	0.0001642			0
Calcium (Ca)-Total	0.05	14	0	31.4	29.6	25.1	40.8	5.2			0
Chromium (Cr)-Total	0.0001	14	0	0.0017	0.00059	0.00013	0.0119	0.0031			0
Cobalt (Co)-Total	0.0001	14	6	0.000818	0.000245	0.0001	0.00638	0.00165	0.004	0.11	0
Copper (Cu)-Total	0.0005	14	0	0.00307	0.00133	0.00072	0.0196	0.00492			0
Iron (Fe)-Total	0.01	14	0	1.73	0.493	0.039	14.3	3.743		1	4
Lead (Pb)-Total	0.00005	14	4	0.000971	0.000294	0.00005	0.00772	0.002014	EQ	EQ	0
Lithium (Li)-Total	0.001	14	0	0.00284	0.00175	0.0011	0.0117	0.0027			0
Magnesium (Mg)-Total	0.005	14	0	7.6	6.97	5.81	11.1	1.72			0
Manganese (Mn)-Total	0.0001	14	0	0.0321	0.0126	0.00188	0.242	0.06273	EQ	EQ	0
Mercury (Hg)-Total	0.000005	14	11	0.00000556	0.000005	0.000005	0.0000093	0.0000013	0.00002		0
Molybdenum (Mo)-Total	0.00005	14	0	0.00099	0.000893	0.000731	0.00195	0.000315	1	2	0
Nickel (Ni)-Total	0.0005	14	0	0.00344	0.00172	0.00071	0.0215	0.00543	EQ		0
Phosphorus (P)-Total	0.05	14	10	0.101	0.05	0.05	0.54	0.133			0
Potassium (K)-Total	0.1	14	0	0.815	0.525	0.42	3.07	0.7			0
Selenium (Se)-Total	0.00005	14	0	0.00037	0.000315	0.000202	0.000827	0.000188	0.002		0
Silicon (Si)-Total	0.05	14	0	3.51	2.51	2.23	11.8	2.53			0
Silver (Ag)-Total	0.00001	14	9	0.000026	0.00001	0.00001	0.000173	0.000043	0.0015	0.003	0
Sodium (Na)-Total	0.05	14	0	1.62	1.43	1.26	2.42	0.36			0
Strontium (Sr)-Total	0.0002	14	0	0.124	0.117	0.1	0.172	0.021			0
Sulfur (S)-Total	0.5	14	0	5.85	5.45	4.45	8.52	1.32			0
Thallium (Tl)-Total	0.00001	14	6	0.0000332	0.000012	0.00001	0.0002	0.000051			0
Tin (Sn)-Total	0.0001	14	13	0.000101	0.0001	0.0001	0.00011	0			0
Titanium (Ti)-Total	0.0003	14	0	0.0131	0.00526	0.00061	0.0718	0.01913			0
Uranium (U)-Total	0.00001	14	0	0.000577	0.000506	0.000409	0.00117	0.000202	0.0085		0
Vanadium (V)-Total	0.0005	14	4	0.00399	0.00142	0.0005	0.0244	0.00637			0
Zinc (Zn)-Total	0.003	14	6	0.0104	0.0037	0.003	0.0702	0.0178	EQ	EQ	1
Zirconium (Zr)-Total	0.0003	14	11	0.000329	0.0003	0.0003	0.0005	0.00006			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

Table 17. 2020 annual data summary statistics for dissolved metals collected at the PR-3.88 site (Peace 03) (January 22 to September 10, 2020).

Parameters (mg/L) Date: 2020	MDL	PR-3.88							BC Long-Term WQG[1]	BC Short-Term Maximum	
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.		WQG[2]	# Exc
Dissolved Metals											
Aluminum (Al)-Dissolved	0.001	14	0	0.0203	0.0085	0.002	0.138	0.035	0.05	0.1	1
Antimony (Sb)-Dissolved	0.0001	14	13	0.000102	0.0001	0.0001	0.00013	0.00001			0
Arsenic (As)-Dissolved	0.0001	14	0	0.00025	0.000235	0.00018	0.00042	0.00007			0
Barium (Ba)-Dissolved	0.0001	14	0	0.041	0.0372	0.0314	0.0576	0.0086			0
Beryllium (Be)-Dissolved	0.00002	14	13	0.0000201	0.00002	0.00002	0.000022	0.000001			0
Bismuth (Bi)-Dissolved	0.00005	14	14	0.00005	0.00005	0.00005	0.00005	0			0
Boron (B)-Dissolved	0.01	14	14	0.01	0.01	0.01	0.01	0			0
Cadmium (Cd)-Dissolved	0.000005	14	0	0.0000174	0.000013	0.000007	0.0000779	0.000018	EQ	EQ	0
Calcium (Ca)-Dissolved	0.05	14	0	29.5	28.7	24.6	36	3.3			0
Chromium (Cr)-Dissolved	0.0001	14	8	0.000119	0.0001	0.0001	0.00035	0.00007			0
Cobalt (Co)-Dissolved	0.0001	14	12	0.000118	0.0001	0.0001	0.00032	0.00006			0
Copper (Cu)-Dissolved	0.0002	14	0	0.000872	0.00079	0.00057	0.00154	0.00032	EQ	EQ	0
Iron (Fe)-Dissolved	0.01	14	7	0.0499	0.0145	0.01	0.35	0.089		0.35	0
Lead (Pb)-Dissolved	0.00005	14	11	0.0000772	0.00005	0.00005	0.000414	0.000097			0
Lithium (Li)-Dissolved	0.001	14	0	0.00161	0.00135	0.001	0.0029	0.0006			0
Magnesium (Mg)-Dissolved	0.005	14	0	7.11	6.7	5.87	9.7	1.14			0
Manganese (Mn)-Dissolved	0.0001	14	0	0.00323	0.00113	0.00035	0.0175	0.00526			0
Mercury (Hg)-Dissolved	0.000005	14	14	0.000005	0.000005	0.000005	0.000005	0			0
Molybdenum (Mo)-Dissolved	0.00005	14	0	0.000907	0.000809	0.000438	0.00187	0.000322			0
Nickel (Ni)-Dissolved	0.0005	14	0	0.000936	0.00077	0.00056	0.00161	0.00036			0
Phosphorus (P)-Dissolved	0.05	14	14	0.05	0.05	0.05	0.05	0			0
Potassium (K)-Dissolved	0.1	14	0	0.584	0.475	0.42	1.57	0.29			0
Selenium (Se)-Dissolved	0.00005	14	0	0.000343	0.000307	0.000206	0.000734	0.000136			0
Silicon (Si)-Dissolved	0.05	14	0	2.11	2.11	1.78	2.45	0.15			0
Silver (Ag)-Dissolved	0.00001	14	14	0.00001	0.00001	0.00001	0.00001	0			0
Sodium (Na)-Dissolved	0.05	14	0	1.6	1.44	1.3	2.26	0.32			0
Strontium (Sr)-Dissolved	0.0002	14	0	0.117	0.114	0.0981	0.153	0.0146			0
Sulfur (S)-Dissolved	0.5	14	0	5.63	5.45	3.36	8.03	1.14			0
Thallium (Tl)-Dissolved	0.00001	14	14	0.00001	0.00001	0.00001	0.00001	0			0
Tin (Sn)-Dissolved	0.0001	14	14	0.0001	0.0001	0.0001	0.0001	0			0
Titanium (Ti)-Dissolved	0.0003	14	7	0.00128	0.000345	0.0003	0.00382	0.00128			0
Uranium (U)-Dissolved	0.00001	14	0	0.00048	0.000483	0.000384	0.000637	0.000073			0
Vanadium (V)-Dissolved	0.0005	14	13	0.000526	0.0005	0.0005	0.00087	0.0001			0
Zinc (Zn)-Dissolved	0.001	14	11	0.00167	0.001	0.001	0.0067	0.0017			0
Zirconium (Zr)-Dissolved	0.0003	14	14	0.0003	0.0003	0.0003	0.0003	0			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

Table 18. 2020 annual data summary statistics for lab and *in-situ* sampling (organic carbon, physical tests, anions and nutrients) collected at the Phase 1 RSEM L5 upstream control site (LBPR-4.50/LBPR-4.50ALT).

Parameters (mg/L) Date: 2020	MDL	LBPR-4.50							BC Long-Term WQG[1]	BC Short-Term Maximum	
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.		WQG[2]	# Exc
Organic Carbon											
Dissolved Organic Carbon	0.5	8	0	4.77	4.25	3.22	6.88	1.26			0
Total Organic Carbon	0.5	8	0	6	4.97	3.08	11.4	2.82			0
Physical Tests											
Hardness (as CaCO3)	0.5	8	0	119	117	99.3	139	17.7			0
Sp. Conductivity (In Situ, µS/cm)		18	0	237	234	199	281	32.5			0
Sp. Conductivity (lab, µS/cm)	2	8	0	216	215	180	257	23			0
Total Dissolved Solids	20	8	0	168	170	129	214	27			0
Total Suspended Solids	1	8	0	222	109	50.8	893	283.4			0
Turbidity (In Situ, NTU)		18	0	154	75.6	46.7	576	183.65			0
Turbidity (lab, NTU)	0.1	8	0	175	76.7	39.2	808	258.5			0
pH (In Situ, pH units)		18	0	7.7	7.7	7.49	7.9	0.12		6.5 to 9.0	0
pH (lab, pH units)	0.1	8	0	8.15	8.17	7.93	8.21	0.09		6.5 to 9.0	0
Anions and Nutrients											
Alkalinity, Total (as CaCO3)	1	8	0	99.9	97.7	89.7	115	9.2			0
Ammonia, Total (as N)	0.005	8	0	0.0279	0.0139	0.0094	0.0703	0.0255	0.102	0.68	0
Bromide (Br)	0.05	8	8	0.05	0.05	0.05	0.05	0			0
Chloride (Cl)	0.5	8	3	0.663	0.59	0.5	1.03	0.21	150	600	0
Fluoride (F)	0.02	8	0	0.0533	0.0525	0.04	0.068	0.009		EQ	0
Nitrate (as N)	0.005	8	0	0.0691	0.0734	0.0458	0.0872	0.016	3	32.8	0
Nitrite (as N)	0.001	8	8	0.001	0.001	0.001	0.001	0	0.02	0.06	0
Orthophosphate-Dissolved (as P)	0.001	8	0	0.00426	0.00255	0.0016	0.0146	0.0043			0
Sulfate (SO4)	0.3	8	0	26.3	25.7	18.7	35.9	6.7	309		0
Total Phosphorus (P)	0.002	8	0	0.229	0.105	0.049	0.94	0.2974			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

BC WQG exceedances were not related to RSEM Pond discharge unless otherwise indicated.

Table 19. 2020 annual data summary statistics for total metals collected at the Phase 1 RSEM L5 upstream control site (LBPR-4.50/LBPR-4.50ALT).

Parameters (mg/L) Date: 2020	MDL	LBPR-4.50							BC Long-Term WQG[1]	BC Short-Term Maximum	
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.		WQG[2]	# Exc
Aluminum (Al)-Total	0.003	8	0	2.49	1.05	0.394	11.1	3.582			0
Antimony (Sb)-Total	0.0001	8	0	0.000223	0.00015	0.00013	0.00051	0.00014			0
Arsenic (As)-Total	0.0001	8	0	0.00221	0.00099	0.00067	0.00863	0.0027		0.005	1
Barium (Ba)-Total	0.0001	8	0	0.145	0.0828	0.0668	0.431	0.126	1		0
Beryllium (Be)-Total	0.00002	8	0	0.000171	0.000078	0.000035	0.000718	0.000229	0.00013		0
Bismuth (Bi)-Total	0.00005	8	6	0.0000703	0.00005	0.00005	0.000209	0.000056			0
Boron (B)-Total	0.01	8	6	0.0116	0.01	0.01	0.019	0.003		1.2	0
Cadmium (Cd)-Total	0.000005	8	0	0.00027	0.00013	0.0000934	0.000965	0.0002977			0
Calcium (Ca)-Total	0.05	8	0	39.9	39.5	31.7	50.5	6.6			0
Chromium (Cr)-Total	0.0001	8	0	0.00449	0.00202	0.0008	0.0192	0.00615			0
Cobalt (Co)-Total	0.0001	8	0	0.00235	0.000825	0.00054	0.0107	0.00346	0.004	0.11	0
Copper (Cu)-Total	0.0005	8	0	0.00763	0.00336	0.0024	0.0319	0.01004			0
Iron (Fe)-Total	0.01	8	0	5.04	1.8	0.76	23.1	7.537		1	7
Lead (Pb)-Total	0.00005	8	0	0.00287	0.001	0.000751	0.0126	0.004062	EQ	EQ	0
Lithium (Li)-Total	0.001	8	0	0.00571	0.00365	0.0026	0.0175	0.005			0
Magnesium (Mg)-Total	0.005	8	0	10.3	9.89	7.76	13.6	2.11			0
Manganese (Mn)-Total	0.0001	8	0	0.0911	0.0352	0.0268	0.397	0.1268	EQ	EQ	0
Mercury (Hg)-Total	0.000005	8	7	6.11E-06	0.000005	0.000005	0.0000139	0.0000031	0.00002		0
Molybdenum (Mo)-Total	0.00005	8	0	0.00124	0.0012	0.000854	0.00203	0.000383	1	2	0
Nickel (Ni)-Total	0.0005	8	0	0.00865	0.00381	0.00264	0.0347	0.01087	EQ		0
Phosphorus (P)-Total	0.05	8	0	0.217	0.095	0.064	0.868	0.275			0
Potassium (K)-Total	0.1	8	0	1.48	0.97	0.8	4.35	1.19			0
Selenium (Se)-Total	0.00005	8	0	0.000608	0.000454	0.000387	0.00108	0.00029	0.002		0
Silicon (Si)-Total	0.05	8	0	5.57	3.54	2.7	17.3	4.91			0
Silver (Ag)-Total	0.00001	8	2	0.0000603	0.0000235	0.00001	0.000265	0.000086	0.0015	0.003	0
Sodium (Na)-Total	0.05	8	0	3.33	3.61	1.84	4.37	0.99			0
Strontium (Sr)-Total	0.0002	8	0	0.152	0.144	0.127	0.193	0.027			0
Sulfur (S)-Total	0.5	8	0	9.03	9.53	5.66	12	2.83			0
Thallium (Tl)-Total	0.00001	8	0	0.0000764	0.000036	0.000014	0.000297	0.000094			0
Tin (Sn)-Total	0.0001	8	7	0.000103	0.0001	0.0001	0.00012	0.00001			0
Titanium (Ti)-Total	0.0003	8	0	0.0258	0.0174	0.00491	0.093	0.02808			0
Uranium (U)-Total	0.00001	8	0	0.000854	0.000714	0.000565	0.00167	0.000365	0.0085		0
Vanadium (V)-Total	0.0005	8	0	0.00979	0.00463	0.00279	0.0368	0.01151			0
Zinc (Zn)-Total	0.003	8	0	0.0266	0.0107	0.006	0.113	0.0361	EQ	EQ	1
Zirconium (Zr)-Total	0.0003	8	6	0.000435	0.0003	0.0003	0.00114	0.0003			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

BC WQG exceedances were not related to RSEM Pond discharge unless otherwise indicated.

Table 20. 2020 annual data summary statistics for dissolved metals collected at the Phase 1 RSEM L5 upstream control site (LBPR-4.50/LBPR-4.50ALT).

Parameters (mg/L)	MDL	LBPR-4.50							BC Long-Term WQG[1]	BC Short-Term Maximum	
Date: 2020		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.		WQG[2]	# Exc
Dissolved Metals											
Aluminum (Al)-Dissolved	0.001	8	0	0.0205	0.0181	0.0133	0.0353	0.007	0.05	0.1	0
Antimony (Sb)-Dissolved	0.0001	8	6	0.000105	0.0001	0.0001	0.00013	0.00001			0
Arsenic (As)-Dissolved	0.0001	8	0	0.000301	0.00027	0.00024	0.00047	0.00008			0
Barium (Ba)-Dissolved	0.0001	8	0	0.0482	0.0476	0.0438	0.056	0.0046			0
Beryllium (Be)-Dissolved	0.00002	8	8	0.00002	0.00002	0.00002	0.00002	0			0
Bismuth (Bi)-Dissolved	0.00005	8	8	0.00005	0.00005	0.00005	0.00005	0			0
Boron (B)-Dissolved	0.01	8	8	0.01	0.01	0.01	0.01	0			0
Cadmium (Cd)-Dissolved	0.000005	8	0	0.0000173	0.0000156	0.000011	0.0000269	0.000006	EQ	EQ	0
Calcium (Ca)-Dissolved	0.05	8	0	33.3	32.9	27	39.1	4.7			0
Chromium (Cr)-Dissolved	0.0001	8	2	0.000113	0.000105	0.0001	0.00015	0.00002			0
Cobalt (Co)-Dissolved	0.0001	8	6	0.000108	0.0001	0.0001	0.00015	0.00002			0
Copper (Cu)-Dissolved	0.0002	8	0	0.00114	0.00105	0.00076	0.00176	0.00031	EQ	EQ	1
Iron (Fe)-Dissolved	0.01	8	0	0.052	0.044	0.022	0.092	0.022		0.35	0
Lead (Pb)-Dissolved	0.00005	8	6	0.0000548	0.00005	0.00005	0.000071	0.000009			0
Lithium (Li)-Dissolved	0.001	8	0	0.00243	0.00265	0.0017	0.0032	0.0006			0
Magnesium (Mg)-Dissolved	0.005	8	0	8.8	8.43	7.3	10.6	1.44			0
Manganese (Mn)-Dissolved	0.0001	8	0	0.00458	0.00247	0.00174	0.014	0.00414			0
Mercury (Hg)-Dissolved	0.000005	8	8	0.000005	0.000005	0.000005	0.000005	0			0
Molybdenum (Mo)-Dissolved	0.00005	8	0	0.00115	0.00108	0.000777	0.00189	0.000348			0
Nickel (Ni)-Dissolved	0.0005	8	0	0.00137	0.00134	0.00101	0.00179	0.00025			0
Phosphorus (P)-Dissolved	0.05	8	8	0.05	0.05	0.05	0.05	0			0
Potassium (K)-Dissolved	0.1	8	0	0.859	0.695	0.52	2.12	0.52			0
Selenium (Se)-Dissolved	0.00005	8	0	0.000488	0.000456	0.000344	0.0009	0.000177			0
Silicon (Si)-Dissolved	0.05	8	0	2.16	2.18	2.01	2.24	0.08			0
Silver (Ag)-Dissolved	0.00001	8	8	0.00001	0.00001	0.00001	0.00001	0			0
Sodium (Na)-Dissolved	0.05	8	0	3.29	3.46	1.86	4.44	0.96			0
Strontium (Sr)-Dissolved	0.0002	8	0	0.129	0.127	0.107	0.157	0.019			0
Sulfur (S)-Dissolved	0.5	8	0	8.83	9.07	5.95	10.9	2.14			0
Thallium (Tl)-Dissolved	0.00001	8	8	0.00001	0.00001	0.00001	0.00001	0			0
Tin (Sn)-Dissolved	0.0001	8	8	0.0001	0.0001	0.0001	0.0001	0			0
Titanium (Ti)-Dissolved	0.0003	8	1	0.00267	0.00269	0.0003	0.00501	0.00128			0
Uranium (U)-Dissolved	0.00001	8	0	0.000573	0.00058	0.00047	0.000712	0.000084			0
Vanadium (V)-Dissolved	0.0005	8	8	0.0005	0.0005	0.0005	0.0005	0			0
Zinc (Zn)-Dissolved	0.001	8	7	0.00143	0.001	0.001	0.0044	0.0012			0
Zirconium (Zr)-Dissolved	0.0003	8	8	0.0003	0.0003	0.0003	0.0003	0			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

BC WQG exceedances were not related to RSEM Pond discharge unless otherwise indicated.

Table 21. 2020 annual data summary statistics for lab and *in-situ* sampling (organic carbon, physical tests, anions and nutrients) collected at the Phase 1 RSEM L5 IDZ site (LBPR-4.60/LBPR-4.60ALT).

Parameters (mg/L) Date: 2020	MDL	LBPR-4.60							BC Long-Term WQG[1]	BC Short-Term Maximum	
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.		WQG[2]	# Exc
Organic Carbon											
Dissolved Organic Carbon	0.5	8	0	4.68	4.23	3.16	6.71	1.18			0
Total Organic Carbon	0.5	8	0	5.99	4.88	3.07	10.6	2.73			0
Physical Tests											
Hardness (as CaCO3)	0.5	8	0	118	117	98.4	141	15.6			0
Sp. Conductivity (In Situ, µS/cm)		18	0	235	231	200	273	29.2			0
Sp. Conductivity (lab, µS/cm)	2	8	0	219	219	182	260	26			0
Total Dissolved Solids	20	8	0	170	160	144	253	35			0
Total Suspended Solids	1	8	0	187	127	37.1	743	231.3			0
Turbidity (In Situ, NTU)		15	0	153	78.2	47.4	504	180.86			0
Turbidity (lab, NTU)	0.1	8	0	164	92.7	25.5	703	221.5			0
pH (In Situ, pH units)		18	0	7.69	7.65	7.55	7.89	0.14		6.5 to 9.0	0
pH (lab, pH units)	0.1	8	0	8.14	8.19	7.94	8.22	0.1		6.5 to 9.0	0
Anions and Nutrients											
Alkalinity, Total (as CaCO3)	1	8	0	101	96.3	88.4	119	12.5			0
Ammonia, Total (as N)	0.005	8	0	0.0252	0.0128	0.0081	0.0864	0.0278	0.102	0.68	0
Bromide (Br)	0.05	8	8	0.05	0.05	0.05	0.05	0			0
Chloride (Cl)	0.5	8	5	0.821	0.5	0.5	2.77	0.79	150	600	0
Fluoride (F)	0.02	8	0	0.0533	0.054	0.021	0.07	0.017		EQ	0
Nitrate (as N)	0.005	8	0	0.071	0.0612	0.0379	0.12	0.0266	3	32.8	0
Nitrite (as N)	0.001	8	8	0.001	0.001	0.001	0.001	0	0.02	0.06	0
Orthophosphate-Dissolved (as P)	0.001	8	1	0.00456	0.0032	0.001	0.0143	0.0043			0
Sulfate (SO4)	0.3	8	0	26.3	24.3	20.3	40	6.8	309		0
Total Phosphorus (P)	0.002	8	0	0.203	0.119	0.0415	0.842	0.2646			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

BC WQG exceedances were not related to RSEM Pond discharge unless otherwise indicated.

Table 22. 2020 annual data summary statistics for total metals collected at the Phase 1 RSEM L5 IDZ site (LBPR-4.60/LBPR-4.60ALT).

Parameters (mg/L) Date: 2020	MDL	LBPR-4.60							BC Long-Term WQG[1]	BC Short-Term Maximum	
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.		WQG[2]	# Exc
Total Metals											
Aluminum (Al)-Total	0.003	8	0	2.37	1.54	0.481	10.3	3.247			0
Antimony (Sb)-Total	0.0001	8	0	0.000235	0.000175	0.00014	0.00056	0.00014			0
Arsenic (As)-Total	0.0001	8	0	0.00212	0.00144	0.00063	0.00864	0.00267		0.005	1
Barium (Ba)-Total	0.0001	8	0	0.135	0.112	0.067	0.388	0.1058	1		0
Beryllium (Be)-Total	0.00002	8	0	0.000166	0.000105	0.000041	0.00067	0.000208	0.00013		0
Bismuth (Bi)-Total	0.00005	8	7	0.0000676	0.00005	0.00005	0.000191	0.00005			0
Boron (B)-Total	0.01	8	5	0.0116	0.01	0.01	0.022	0.004		1.2	0
Cadmium (Cd)-Total	0.000005	8	0	0.000243	0.000174	0.0000895	0.000829	0.0002432			0
Calcium (Ca)-Total	0.05	8	0	38.4	38.3	32.1	46.5	5.2			0
Chromium (Cr)-Total	0.0001	8	0	0.00425	0.00279	0.00085	0.0183	0.00576			0
Cobalt (Co)-Total	0.0001	8	0	0.00214	0.00128	0.00054	0.00945	0.00299	0.004	0.11	0
Copper (Cu)-Total	0.0005	8	0	0.007	0.00442	0.00221	0.0284	0.00878			0
Iron (Fe)-Total	0.01	8	0	4.69	2.86	0.842	21.6	6.91		1	7
Lead (Pb)-Total	0.00005	8	0	0.0026	0.00157	0.000683	0.0113	0.003568	EQ	EQ	0
Lithium (Li)-Total	0.001	8	0	0.00558	0.00395	0.0026	0.0177	0.005			0
Magnesium (Mg)-Total	0.005	8	0	9.98	9.77	8.34	13.7	1.76			0
Manganese (Mn)-Total	0.0001	8	0	0.0819	0.0507	0.0245	0.346	0.1082	EQ	EQ	0
Mercury (Hg)-Total	0.000005	8	5	7.44E-06	0.000005	0.000005	0.0000138	0.0000036	0.00002		0
Molybdenum (Mo)-Total	0.00005	8	0	0.00139	0.00115	0.000683	0.00215	0.00058	1	2	0
Nickel (Ni)-Total	0.0005	8	0	0.00802	0.00541	0.0027	0.0314	0.00959	EQ		0
Phosphorus (P)-Total	0.05	8	0	0.195	0.136	0.064	0.735	0.222			0
Potassium (K)-Total	0.1	8	0	1.47	1.1	0.76	4.47	1.23			0
Selenium (Se)-Total	0.00005	8	0	0.000659	0.000607	0.000402	0.00121	0.000293	0.002		0
Silicon (Si)-Total	0.05	8	0	5.52	4.37	2.77	16.7	4.6			0
Silver (Ag)-Total	0.00001	8	0	0.0000568	0.000036	0.000011	0.000233	0.000073	0.0015	0.003	0
Sodium (Na)-Total	0.05	8	0	3.64	2.84	2.02	9.95	2.67			0
Strontium (Sr)-Total	0.0002	8	0	0.151	0.143	0.126	0.19	0.024			0
Sulfur (S)-Total	0.5	8	0	8.85	8.55	5.6	13.4	2.72			0
Thallium (Tl)-Total	0.00001	8	0	0.0000738	0.0000535	0.00002	0.000273	0.000083			0
Tin (Sn)-Total	0.0001	8	7	0.000115	0.0001	0.0001	0.00022	0.00004			0
Titanium (Ti)-Total	0.0003	8	0	0.0263	0.0189	0.00825	0.0948	0.02826			0
Uranium (U)-Total	0.00001	8	0	0.00083	0.000756	0.000561	0.00164	0.000345	0.0085		0
Vanadium (V)-Total	0.0005	8	0	0.00939	0.00635	0.00322	0.0354	0.01072			0
Zinc (Zn)-Total	0.003	8	0	0.0245	0.0156	0.0064	0.101	0.0315	EQ	EQ	1
Zirconium (Zr)-Total	0.0003	8	5	0.000364	0.0003	0.0003	0.00057	0.00012			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

BC WQG exceedances were not related to RSEM Pond discharge unless otherwise indicated.

Table 23. 2020 annual data summary statistics for dissolved metals collected at the Phase 1 RSEM L5 IDZ site (LBPR-4.60/LBPR-4.60ALT).

Parameters (mg/L) Date: 2020	MDL	LBPR-4.60							BC Long-Term WQG[1]	BC Short-Term Maximum	
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.		WQG[2]	# Exc
Dissolved Metals											
Aluminum (Al)-Dissolved	0.001	8	0	0.0213	0.019	0.0156	0.0364	0.0069	0.05	0.1	0
Antimony (Sb)-Dissolved	0.0001	8	5	0.000113	0.0001	0.0001	0.00014	0.00002			0
Arsenic (As)-Dissolved	0.0001	8	0	0.000295	0.000285	0.0002	0.00045	0.00007			0
Barium (Ba)-Dissolved	0.0001	8	0	0.0482	0.0456	0.0423	0.0561	0.0055			0
Beryllium (Be)-Dissolved	0.00002	8	8	0.00002	0.00002	0.00002	0.00002	0			0
Bismuth (Bi)-Dissolved	0.00005	8	8	0.00005	0.00005	0.00005	0.00005	0			0
Boron (B)-Dissolved	0.01	8	8	0.01	0.01	0.01	0.01	0			0
Cadmium (Cd)-Dissolved	0.000005	8	0	0.0000171	0.0000154	0.00001	0.0000267	0.0000055	EQ	EQ	0
Calcium (Ca)-Dissolved	0.05	8	0	33.2	32.6	27.1	39.1	4.3			0
Chromium (Cr)-Dissolved	0.0001	8	1	0.000126	0.000115	0.0001	0.00017	0.00003			0
Cobalt (Co)-Dissolved	0.0001	8	6	0.000108	0.0001	0.0001	0.00015	0.00002			0
Copper (Cu)-Dissolved	0.0002	8	0	0.00114	0.00103	0.00078	0.00172	0.00031	EQ	EQ	0
Iron (Fe)-Dissolved	0.01	8	0	0.0543	0.0465	0.025	0.095	0.023		0.35	0
Lead (Pb)-Dissolved	0.00005	8	6	0.0000568	0.00005	0.00005	0.000077	0.000012			0
Lithium (Li)-Dissolved	0.001	8	0	0.00254	0.0027	0.0018	0.0034	0.0006			0
Magnesium (Mg)-Dissolved	0.005	8	0	8.65	8.52	7.11	10.6	1.23			0
Manganese (Mn)-Dissolved	0.0001	8	0	0.00475	0.00238	0.00151	0.0163	0.00495			0
Mercury (Hg)-Dissolved	0.000005	8	8	0.000005	0.000005	0.000005	0.000005	0			0
Molybdenum (Mo)-Dissolved	0.00005	8	0	0.00128	0.00116	0.000798	0.00191	0.000433			0
Nickel (Ni)-Dissolved	0.0005	8	0	0.00137	0.00137	0.00103	0.00181	0.00026			0
Phosphorus (P)-Dissolved	0.05	8	8	0.05	0.05	0.05	0.05	0			0
Potassium (K)-Dissolved	0.1	8	0	0.856	0.665	0.54	2.22	0.56			0
Selenium (Se)-Dissolved	0.00005	8	0	0.000564	0.000533	0.000356	0.000866	0.000203			0
Silicon (Si)-Dissolved	0.05	8	0	2.18	2.18	2.07	2.29	0.08			0
Silver (Ag)-Dissolved	0.00001	8	8	0.00001	0.00001	0.00001	0.00001	0			0
Sodium (Na)-Dissolved	0.05	8	0	3.73	2.98	1.93	10	2.67			0
Strontium (Sr)-Dissolved	0.0002	8	0	0.133	0.132	0.105	0.156	0.019			0
Sulfur (S)-Dissolved	0.5	8	0	8.98	8.38	6.2	13.7	2.45			0
Thallium (Tl)-Dissolved	0.00001	8	8	0.00001	0.00001	0.00001	0.00001	0			0
Tin (Sn)-Dissolved	0.0001	8	8	0.0001	0.0001	0.0001	0.0001	0			0
Titanium (Ti)-Dissolved	0.0003	8	1	0.00257	0.00261	0.0003	0.00438	0.00118			0
Uranium (U)-Dissolved	0.00001	8	0	0.000583	0.000562	0.000472	0.000754	0.000103			0
Vanadium (V)-Dissolved	0.0005	8	8	0.0005	0.0005	0.0005	0.0005	0			0
Zinc (Zn)-Dissolved	0.001	8	7	0.00103	0.001	0.001	0.0012	0.0001			0
Zirconium (Zr)-Dissolved	0.0003	8	8	0.0003	0.0003	0.0003	0.0003	0			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

BC WQG exceedances were not related to RSEM Pond discharge unless otherwise indicated.

Table 24. 2020 annual data summary statistics for lab and *in-situ* sampling (organic carbon, physical tests, anions and nutrients) collected at the RSEM R5b upstream sites (RBPR-5.69 and RBPR 5.70).

Parameters (mg/L) Date: 2020	MDL	RBPR-5.69/RBPR-5.70							BC Long-Term WQG[1]	BC Short-Term Maximum	
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.		WQG[2]	# Exc
Organic Carbon											
Dissolved Organic Carbon	0.5	11	0	5.34	4.79	2.19	9.27	2.43			0
Total Organic Carbon	0.5	11	0	6.8	5.45	2.55	14.2	4.62			0
Physical Tests											
Hardness (as CaCO3)	0.5	11	0	108	113	80.9	121	11.8			0
Sp. Conductivity (In Situ, µS/cm)		30	0	211	213	170	235	17.5			0
Sp. Conductivity (lab, µS/cm)	2	11	0	201	204	166	216	13			0
Total Dissolved Solids	20	11	0	164	162	116	241	45			0
Total Suspended Solids	1	11	0	180	222	5.1	546	185.6			0
Turbidity (In Situ, NTU)		30	0	121	108	2.67	351	114.18			0
Turbidity (lab, NTU)	0.1	11	0	147	159	2.36	394	152.9			0
pH (In Situ, pH units)		30	0	7.76	7.81	7.34	8.13	0.23		6.5 to 9.0	0
pH (lab, pH units)	0.1	11	0	8.08	8.11	7.91	8.31	0.13		6.5 to 9.0	0
Anions and Nutrients											
Alkalinity, Total (as CaCO3)	1	11	0	101	102	81	118	11.1			0
Ammonia, Total (as N)	0.005	11	3	0.019	0.0155	0.005	0.0563	0.0147	0.102	0.68	0
Bromide (Br)	0.05	11	11	0.05	0.05	0.05	0.05	0			0
Chloride (Cl)	0.5	11	7	0.596	0.5	0.5	0.91	0.15	150	600	0
Fluoride (F)	0.02	11	0	0.0556	0.047	0.027	0.088	0.02		EQ	0
Nitrate (as N)	0.005	11	0	0.078	0.0663	0.0251	0.174	0.0406	3	32.8	0
Nitrite (as N)	0.001	11	9	0.00109	0.001	0.001	0.0018	0.0002	0.02	0.06	0
Orthophosphate-Dissolved (as P)	0.001	11	4	0.0041	0.0032	0.001	0.0178	0.005			0
Sulfate (SO4)	0.3	11	0	14.1	15.9	9.85	18.5	2.9	309		0
Total Phosphorus (P)	0.002	11	0	0.185	0.175	0.0056	0.678	0.2134			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

BC WQG exceedances were not related to RSEM Pond discharge unless otherwise indicated.

Table 25. 2020 annual data summary statistics for total metals collected at the RSEM R5b upstream sites (RBPR-5.69 and RBPR 5.70).

Parameters (mg/L) Date: 2020	MDL	RBPR-5.69/RBPR-5.70							BC Long-Term WQG[1]	BC Short-Term Maximum WQG[2]	BC Short-Term Maximum # Exc
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.			
Total Metals											
Aluminum (Al)-Total	0.003	11	0	2	2.55	0.0398	6.02	2.0573			0
Antimony (Sb)-Total	0.0001	11	5	0.000202	0.00023	0.0001	0.00042	0.00011			0
Arsenic (As)-Total	0.0001	11	0	0.00175	0.00211	0.0002	0.00557	0.00172		0.005	1
Barium (Ba)-Total	0.0001	11	0	0.157	0.169	0.0295	0.321	0.1189	1		0
Beryllium (Be)-Total	0.00002	11	5	0.000146	0.000159	0.00002	0.000419	0.000137	0.00013		0
Bismuth (Bi)-Total	0.00005	11	7	0.0000599	0.00005	0.00005	0.000121	0.000021			0
Boron (B)-Total	0.01	11	6	0.0106	0.01	0.01	0.015	0.002		1.2	0
Cadmium (Cd)-Total	0.000005	11	0	0.000189	0.000215	0.0000085	0.000555	0.0001853			0
Calcium (Ca)-Total	0.05	11	0	35	37.9	24.9	44.2	6.3			0
Chromium (Cr)-Total	0.0001	11	0	0.00357	0.00429	0.0001	0.0108	0.00366			0
Cobalt (Co)-Total	0.0001	11	4	0.00187	0.00201	0.0001	0.00605	0.00197	0.004	0.11	0
Copper (Cu)-Total	0.0005	11	0	0.00614	0.00646	0.00078	0.0178	0.00581			0
Iron (Fe)-Total	0.01	11	0	4.18	4.85	0.043	13.8	4.54		1	6
Lead (Pb)-Total	0.00005	11	2	0.00236	0.0025	0.00005	0.00768	0.002563	EQ	EQ	0
Lithium (Li)-Total	0.001	11	0	0.00506	0.0061	0.0014	0.0118	0.0037			0
Magnesium (Mg)-Total	0.005	11	0	8.96	10.4	5.76	12	2.3			0
Manganese (Mn)-Total	0.0001	11	0	0.08	0.0796	0.00209	0.273	0.08758	EQ	EQ	0
Mercury (Hg)-Total	0.000005	11	9	6.95E-06	0.000005	0.000005	0.000024	0.0000057	0.00002		0
Molybdenum (Mo)-Total	0.00005	11	0	0.000846	0.000779	0.000482	0.00136	0.000238	1	2	0
Nickel (Ni)-Total	0.0005	11	0	0.00716	0.00806	0.00076	0.0204	0.00675	EQ		0
Phosphorus (P)-Total	0.05	11	5	0.189	0.2	0.05	0.562	0.164			0
Potassium (K)-Total	0.1	11	0	1.33	1.43	0.43	3.66	1.01			0
Selenium (Se)-Total	0.00005	11	0	0.000395	0.000397	0.000208	0.000689	0.000167	0.002		0
Silicon (Si)-Total	0.05	11	0	4.77	5.14	2.21	10.2	2.72			0
Silver (Ag)-Total	0.00001	11	5	0.0000523	0.000051	0.00001	0.000166	0.00005	0.0015	0.003	0
Sodium (Na)-Total	0.05	11	0	1.84	1.82	1.35	2.39	0.37			0
Strontium (Sr)-Total	0.0002	11	0	0.115	0.109	0.0993	0.145	0.0155			0
Sulfur (S)-Total	0.5	11	0	4.77	5.13	2.83	6.32	1.21			0
Thallium (Tl)-Total	0.00001	11	5	0.0000624	0.000072	0.00001	0.000181	0.000057			0
Tin (Sn)-Total	0.0001	11	9	0.000106	0.0001	0.0001	0.00015	0.00002			0
Titanium (Ti)-Total	0.0003	11	0	0.0185	0.025	0.00091	0.057	0.01839			0
Uranium (U)-Total	0.00001	11	0	0.00059	0.000523	0.000425	0.000999	0.000161	0.0085		0
Vanadium (V)-Total	0.0005	11	4	0.00757	0.00948	0.0005	0.0221	0.00745			0
Zinc (Zn)-Total	0.003	11	5	0.0217	0.0239	0.003	0.0642	0.0207	EQ	EQ	1
Zirconium (Zr)-Total	0.0003	11	8	0.000395	0.0003	0.0003	0.00098	0.00021			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

BC WQG exceedances were not related to RSEM Pond discharge unless otherwise indicated.

Table 26. 2020 annual data summary statistics for dissolved metals collected at the RSEM R5b upstream sites (RBPR-5.69 and RBPR-5.70).

Parameters (mg/L)	MDL	RBPR-5.69/RBPR-5.70							BC Long-Term	BC Short-Term Maximum	
Date: 2020		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.	WQG[1]	WQG[2]	# Exc
Dissolved Metals											
Aluminum (Al)-Dissolved	0.001	11	0	0.0116	0.0149	0.0031	0.0209	0.0069	0.05	0.1	0
Antimony (Sb)-Dissolved	0.0001	11	6	0.000105	0.0001	0.0001	0.00013	0.00001			0
Arsenic (As)-Dissolved	0.0001	11	0	0.000285	0.00028	0.00019	0.00045	0.00008			0
Barium (Ba)-Dissolved	0.0001	11	0	0.0702	0.0679	0.0332	0.126	0.0335			0
Beryllium (Be)-Dissolved	0.00002	11	11	0.00002	0.00002	0.00002	0.00002	0			0
Bismuth (Bi)-Dissolved	0.00005	11	11	0.00005	0.00005	0.00005	0.00005	0			0
Boron (B)-Dissolved	0.01	11	11	0.01	0.01	0.01	0.01	0			0
Cadmium (Cd)-Dissolved	0.000005	11	0	0.0000115	0.0000095	0.0000059	0.0000254	0.0000057	EQ	EQ	0
Calcium (Ca)-Dissolved	0.05	11	0	30.3	31.2	23.6	33.8	2.8			0
Chromium (Cr)-Dissolved	0.0001	11	9	0.000102	0.0001	0.0001	0.00011	0			0
Cobalt (Co)-Dissolved	0.0001	11	9	0.000111	0.0001	0.0001	0.0002	0.00003			0
Copper (Cu)-Dissolved	0.0002	11	0	0.00115	0.00119	0.0006	0.00198	0.00054	EQ	EQ	0
Iron (Fe)-Dissolved	0.01	11	3	0.0549	0.058	0.01	0.154	0.05		0.35	0
Lead (Pb)-Dissolved	0.00005	11	5	0.0000661	0.000052	0.00005	0.000113	0.000024			0
Lithium (Li)-Dissolved	0.001	11	0	0.00215	0.0026	0.0011	0.0033	0.0008			0
Magnesium (Mg)-Dissolved	0.005	11	0	7.84	7.99	5.33	9.26	1.27			0
Manganese (Mn)-Dissolved	0.0001	11	0	0.00399	0.00102	0.00077	0.028	0.00808			0
Mercury (Hg)-Dissolved	0.000005	11	11	0.000005	0.000005	0.000005	0.000005	0			0
Molybdenum (Mo)-Dissolved	0.00005	11	0	0.000794	0.000751	0.000527	0.00134	0.000243			0
Nickel (Ni)-Dissolved	0.0005	11	0	0.00122	0.00135	0.00059	0.002	0.00057			0
Phosphorus (P)-Dissolved	0.05	11	11	0.05	0.05	0.05	0.05	0			0
Potassium (K)-Dissolved	0.1	11	0	0.823	0.69	0.4	2.21	0.52			0
Selenium (Se)-Dissolved	0.00005	11	0	0.000303	0.000293	0.000218	0.000569	0.000094			0
Silicon (Si)-Dissolved	0.05	11	0	1.98	2.02	1.67	2.18	0.17			0
Silver (Ag)-Dissolved	0.00001	11	11	0.00001	0.00001	0.00001	0.00001	0			0
Sodium (Na)-Dissolved	0.05	11	0	1.81	1.81	1.29	2.2	0.34			0
Strontium (Sr)-Dissolved	0.0002	11	0	0.102	0.102	0.0746	0.122	0.0175			0
Sulfur (S)-Dissolved	0.5	11	0	4.73	5.25	3.29	6.39	1.02			0
Thallium (Tl)-Dissolved	0.00001	11	11	0.00001	0.00001	0.00001	0.00001	0			0
Tin (Sn)-Dissolved	0.0001	11	11	0.0001	0.0001	0.0001	0.0001	0			0
Titanium (Ti)-Dissolved	0.0003	11	5	0.00181	0.00102	0.0003	0.00446	0.00166			0
Uranium (U)-Dissolved	0.00001	11	0	0.000421	0.000452	0.000274	0.000552	0.000098			0
Vanadium (V)-Dissolved	0.0005	11	11	0.0005	0.0005	0.0005	0.0005	0			0
Zinc (Zn)-Dissolved	0.001	11	9	0.00102	0.001	0.001	0.0011	0			0
Zirconium (Zr)-Dissolved	0.0003	11	10	0.000302	0.0003	0.0003	0.00032	0.00001			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

BC WQG exceedances were not related to RSEM Pond discharge unless otherwise indicated.

Table 27. 2020 annual data summary statistics for lab and *in-situ* sampling (organic carbon, physical tests, anions and nutrients) collected at the RSEM R5b IDZ site (RBPR-5.81).

Parameters (mg/L) Date: 2020	MDL	RBPR-5.81							BC Long-Term WQG[1]	BC Short-Term Maximum	
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.		WQG[2]	# Exc
Organic Carbon											
Dissolved Organic Carbon	0.5	12	0	5.98	5.97	2.74	9.5	2.38			0
Total Organic Carbon	0.5	12	0	8.89	6.05	2.67	22.5	6.64			0
Physical Tests											
Hardness (as CaCO3)	0.5	12	0	115	113	102	143	10			0
Sp. Conductivity (In Situ, µS/cm)		30	0	222	215	168	312	34.26			0
Sp. Conductivity (lab, µS/cm)	2	12	0	213	211	172	280	25			0
Total Dissolved Solids	20	12	0	175	176	123	244	41			0
Total Suspended Solids	1	12	0	220	225	6.7	819	240.3			0
Turbidity (In Situ, NTU)		30	0	153	142	3.65	467	148.53			0
Turbidity (lab, NTU)	0.1	12	0	169	190	2.99	588	178.22			0
pH (In Situ, pH units)		30	0	7.7	7.63	7.34	8.2	0.26		6.5 to 9.0	0
pH (lab, pH units)	0.1	12	0	8.11	8.12	7.9	8.27	0.13		6.5 to 9.0	0
Anions and Nutrients											
Alkalinity, Total (as CaCO3)	1	12	0	107	107	86.2	139	13.1			0
Ammonia, Total (as N)	0.005	12	3	0.0231	0.021	0.005	0.0776	0.0199	0.102	0.68	0
Bromide (Br)	0.05	12	12	0.05	0.05	0.05	0.05	0			0
Chloride (Cl)	0.5	12	6	0.654	0.52	0.5	1.13	0.23	150	600	0
Fluoride (F)	0.02	12	0	0.0597	0.065	0.03	0.078	0.016		EQ	0
Nitrate (as N)	0.005	12	0	0.0892	0.0714	0.0284	0.178	0.0482	3	32.8	0
Nitrite (as N)	0.001	12	8	0.00113	0.001	0.001	0.0015	0.0002	0.02	0.06	0
Orthophosphate-Dissolved (as P)	0.001	12	5	0.00503	0.00325	0.001	0.0253	0.0068			0
Sulfate (SO4)	0.3	12	0	14.2	14.3	9.89	17.9	2.79	309		0
Total Phosphorus (P)	0.002	12	0	0.228	0.218	0.0069	0.838	0.2483			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

BC WQG exceedances were not related to RSEM Pond discharge unless otherwise indicated.

Table 28. 2020 annual data summary statistics for total metals collected at the RSEM R5b IDZ site (RBPR-5.81).

Parameters (mg/L) Date: 2020	MDL	RBPR-5.81							BC Long-Term WQG[1]	BC Short-Term Maximum	
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.		WQG[2]	# Exc
Total Metals											
Aluminum (Al)-Total	0.003	12	0	2.32	2.77	0.0591	5.63	2.1308			0
Antimony (Sb)-Total	0.0001	12	4	0.000344	0.00023	0.0001	0.00188	0.00049			0
Arsenic (As)-Total	0.0001	12	0	0.00191	0.00225	0.00023	0.00546	0.00167		0.005	1
Barium (Ba)-Total	0.0001	12	0	0.189	0.209	0.0496	0.385	0.12	1		0
Beryllium (Be)-Total	0.00002	12	4	0.000163	0.000178	0.00002	0.000445	0.000143	0.00013		0
Bismuth (Bi)-Total	0.00005	12	6	0.0000611	0.0000515	0.00005	0.00012	0.00002			0
Boron (B)-Total	0.01	12	6	0.011	0.01	0.01	0.015	0.002		1.2	0
Cadmium (Cd)-Total	0.000005	12	0	0.000217	0.000251	0.0000117	0.000649	0.0002005			0
Calcium (Ca)-Total	0.05	12	0	37	37.8	25.8	49.5	6.3			0
Chromium (Cr)-Total	0.0001	12	0	0.00416	0.005	0.00015	0.0101	0.00374			0
Cobalt (Co)-Total	0.0001	12	2	0.00209	0.00238	0.0001	0.00632	0.00199	0.004	0.11	0
Copper (Cu)-Total	0.0005	12	0	0.00688	0.00752	0.00089	0.0186	0.00576			0
Iron (Fe)-Total	0.01	12	0	4.64	5.55	0.085	13.8	4.44		1	7
Lead (Pb)-Total	0.00005	12	0	0.00269	0.00287	0.000072	0.00832	0.002637	EQ	EQ	0
Lithium (Li)-Total	0.001	12	0	0.00571	0.0065	0.0015	0.0121	0.0036			0
Magnesium (Mg)-Total	0.005	12	0	9.77	10.4	6.88	12.8	1.94			0
Manganese (Mn)-Total	0.0001	12	0	0.0946	0.0955	0.00517	0.321	0.09559	EQ	EQ	0
Mercury (Hg)-Total	0.000005	12	7	6.98E-06	0.000005	0.000005	0.0000161	0.0000037	0.00002		0
Molybdenum (Mo)-Total	0.00005	12	0	0.000805	0.000745	0.00055	0.00149	0.000241	1	2	0
Nickel (Ni)-Total	0.0005	12	0	0.00801	0.00931	0.00097	0.0211	0.00669	EQ		0
Phosphorus (P)-Total	0.05	12	5	0.207	0.202	0.05	0.628	0.176			0
Potassium (K)-Total	0.1	12	0	1.54	1.62	0.53	4	1.05			0
Selenium (Se)-Total	0.00005	12	0	0.000412	0.000398	0.000233	0.000686	0.000147	0.002		0
Silicon (Si)-Total	0.05	12	0	5.44	5.36	2.25	12.4	3.2			0
Silver (Ag)-Total	0.00001	12	5	0.0000573	0.000059	0.00001	0.000168	0.00005	0.0015	0.003	0
Sodium (Na)-Total	0.05	12	0	2.45	2.18	1.62	4.12	0.8			0
Strontium (Sr)-Total	0.0002	12	0	0.113	0.108	0.0986	0.144	0.0135			0
Sulfur (S)-Total	0.5	12	0	4.68	4.97	3	6.05	1.14			0
Thallium (Tl)-Total	0.00001	12	4	0.000068	0.0000825	0.00001	0.000178	0.000057			0
Tin (Sn)-Total	0.0001	12	10	0.000111	0.0001	0.0001	0.00022	0.00003			0
Titanium (Ti)-Total	0.0003	12	1	0.0285	0.0206	0.00118	0.139	0.03827			0
Uranium (U)-Total	0.00001	12	0	0.000592	0.00055	0.000384	0.000988	0.000165	0.0085		0
Vanadium (V)-Total	0.0005	12	2	0.00857	0.00985	0.0005	0.0203	0.00764			0
Zinc (Zn)-Total	0.003	12	4	0.0241	0.0279	0.003	0.065	0.0209	EQ	EQ	1
Zirconium (Zr)-Total	0.0003	12	6	0.000406	0.00031	0.0003	0.00082	0.00018			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

Parameters with a concentration below the detection limit are assumed to have a concentration equal to the detection limit for calculation of the summary BC WQG exceedances were not related to RSEM Pond discharge unless otherwise indicated.

Table 29. 2020 annual data summary statistics for dissolved metals collected at the RSEM R5b IDZ site (RBPR-5.81).

Parameters (mg/L) Date: 2020	MDL	RBPR-5.81							BC Long-Term WQG[1]	BC Short-Term Maximum	
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.		WQG[2]	# Exc
Dissolved Metals											
Aluminum (Al)-Dissolved	0.001	12	0	0.0133	0.0152	0.0035	0.0224	0.0074	0.05	0.1	0
Antimony (Sb)-Dissolved	0.0001	12	5	0.000277	0.000105	0.0001	0.00212	0.00058			0
Arsenic (As)-Dissolved	0.0001	12	0	0.000306	0.000315	0.00017	0.0005	0.0001			0
Barium (Ba)-Dissolved	0.0001	12	0	0.0855	0.0887	0.045	0.128	0.0283			0
Beryllium (Be)-Dissolved	0.00002	12	12	0.00002	0.00002	0.00002	0.00002	0			0
Bismuth (Bi)-Dissolved	0.00005	12	12	0.00005	0.00005	0.00005	0.00005	0			0
Boron (B)-Dissolved	0.01	12	12	0.01	0.01	0.01	0.01	0			0
Cadmium (Cd)-Dissolved	0.000005	12	0	0.0000125	0.0000115	0.0000052	0.0000274	0.0000059	EQ	EQ	0
Calcium (Ca)-Dissolved	0.05	12	0	31.9	31	28.8	41.1	3.1			0
Chromium (Cr)-Dissolved	0.0001	12	7	0.000105	0.0001	0.0001	0.00013	0.00001			0
Cobalt (Co)-Dissolved	0.0001	12	10	0.000109	0.0001	0.0001	0.0002	0.00003			0
Copper (Cu)-Dissolved	0.0002	12	0	0.00127	0.00135	0.00061	0.00199	0.00052	EQ	EQ	0
Iron (Fe)-Dissolved	0.01	12	2	0.0711	0.073	0.01	0.184	0.056		0.35	0
Lead (Pb)-Dissolved	0.00005	12	5	0.0000761	0.000063	0.00005	0.00013	0.00003			0
Lithium (Li)-Dissolved	0.001	12	0	0.00259	0.0029	0.0015	0.0034	0.0007			0
Magnesium (Mg)-Dissolved	0.005	12	0	8.55	8.65	7.2	9.94	0.83			0
Manganese (Mn)-Dissolved	0.0001	12	0	0.00417	0.00222	0.00086	0.0214	0.00569			0
Mercury (Hg)-Dissolved	0.000005	12	10	5.35E-06	0.000005	0.000005	0.0000074	0.0000008			0
Molybdenum (Mo)-Dissolved	0.00005	12	0	0.000704	0.000648	0.000479	0.00139	0.00023			0
Nickel (Ni)-Dissolved	0.0005	12	0	0.00139	0.00145	0.0007	0.0024	0.00054			0
Phosphorus (P)-Dissolved	0.05	12	12	0.05	0.05	0.05	0.05	0			0
Potassium (K)-Dissolved	0.1	12	0	0.97	0.8	0.53	2.83	0.64			0
Selenium (Se)-Dissolved	0.00005	12	0	0.000305	0.000274	0.000234	0.000566	0.000087			0
Silicon (Si)-Dissolved	0.05	12	0	1.95	2.04	1.67	2.16	0.17			0
Silver (Ag)-Dissolved	0.00001	12	12	0.00001	0.00001	0.00001	0.00001	0			0
Sodium (Na)-Dissolved	0.05	12	0	2.45	2.19	1.72	3.68	0.72			0
Strontium (Sr)-Dissolved	0.0002	12	0	0.0977	0.0929	0.0789	0.12	0.0151			0
Sulfur (S)-Dissolved	0.5	12	0	4.69	4.78	3.18	5.88	0.89			0
Thallium (Tl)-Dissolved	0.00001	12	12	0.00001	0.00001	0.00001	0.00001	0			0
Tin (Sn)-Dissolved	0.0001	12	12	0.0001	0.0001	0.0001	0.0001	0			0
Titanium (Ti)-Dissolved	0.0003	12	4	0.00242	0.00295	0.0003	0.00561	0.00202			0
Uranium (U)-Dissolved	0.00001	12	0	0.000399	0.000382	0.00028	0.000548	0.000087			0
Vanadium (V)-Dissolved	0.0005	12	12	0.0005	0.0005	0.0005	0.0005	0			0
Zinc (Zn)-Dissolved	0.001	12	12	0.001	0.001	0.001	0.001	0			0
Zirconium (Zr)-Dissolved	0.0003	12	9	0.000315	0.0003	0.0003	0.00037	0.00003			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

BC WQG exceedances were not related to RSEM Pond discharge unless otherwise indicated.

Table 30. 2020 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).

Parameters (mg/L)	MDL	RBPR-7.05							BC Long-Term	BC Short-Term Maximum	
Date: 2020		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.	WQG[1]	WQG[2]	# Exc
Organic Carbon											
Dissolved Organic Carbon	0.5	19	0	3.56	3.22	2.55	5.53	0.89			0
Total Organic Carbon	0.5	19	0	4.02	3.04	2.5	9.8	1.88			0
Physical Tests											
Hardness (as CaCO3)	0.5	19	0	101	98.9	87.6	127	10.2			0
Sp. Conductivity (In Situ, µS/cm)		51	0	195	191	158	239	18.6			0
Sp. Conductivity (lab, µS/cm)	2	19	0	187	185	166	225	15			0
Total Dissolved Solids	13	19	0	134	124	106	196	26			0
Total Suspended Solids	1	19	0	69.2	12.5	2.4	462	109.7			0
Turbidity (In Situ, NTU)		51	0	41.3	8.62	1.92	278	66.56			0
Turbidity (lab, NTU)	0.1	19	0	48.3	11.4	0.94	356	82.7			0
pH (In Situ, pH units)		51	0	7.8	7.76	7.12	8.23	0.32		6.5 to 9.0	0
pH (lab, pH units)	0.1	19	0	8.1	8.12	7.91	8.26	0.1		6.5 to 9.0	0
Anions and Nutrients											
Alkalinity, Total (as CaCO3)	1	19	0	88.7	86.8	79.9	107	7.3			0
Ammonia, Total (as N)	0.005	19	6	0.0103	0.0083	0.005	0.0457	0.0093	0.102	0.68	0
Bromide (Br)	0.05	19	19	0.05	0.05	0.05	0.05	0			0
Chloride (Cl)	0.5	19	17	0.512	0.5	0.5	0.64	0.04	150	600	0
Fluoride (F)	0.02	19	0	0.0433	0.041	0.028	0.066	0.009		EQ	0
Nitrate (as N)	0.005	19	0	0.0663	0.0672	0.0513	0.0842	0.0075	3	32.8	0
Nitrite (as N)	0.001	19	17	0.00106	0.001	0.001	0.0016	0.0002	0.02	0.06	0
Orthophosphate-Dissolved (as P)	0.001	19	10	0.00223	0.001	0.001	0.0118	0.0025			0
Sulfate (SO4)	0.3	19	0	16	15.7	12.8	21.1	2.1	309		0
Total Phosphorus (P)	0.002	19	0	0.0693	0.0134	0.0044	0.517	0.119			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

BC WQG exceedances were not related to RSEM Pond discharge unless otherwise indicated.

Table 31. 2020 annual data summary statistics for total metals collected at the RSEM R6 upstream site (RBPR-7.05).

Parameters (mg/L) Date: 2020	MDL	RBPR-7.05							BC Long-Term WQG[1]	BC Short-Term Maximum	
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.		WQG[2]	# Exc
Total Metals											
Aluminum (Al)-Total	0.003	19	0	0.676	0.226	0.0403	4.16	1.0129			0
Antimony (Sb)-Total	0.0001	19	9	0.000135	0.00011	0.0001	0.00034	0.00006			0
Arsenic (As)-Total	0.0001	19	0	0.000766	0.0004	0.00022	0.00394	0.00088		0.005	0
Barium (Ba)-Total	0.0001	19	0	0.0687	0.0434	0.0317	0.245	0.0517	1		0
Beryllium (Be)-Total	0.00002	19	10	0.0000672	0.000047	0.00002	0.000318	0.000071	0.00013		0
Bismuth (Bi)-Total	0.00005	19	18	0.0000516	0.00005	0.00005	0.000081	0.000007			0
Boron (B)-Total	0.01	19	17	0.01	0.01	0.01	0.01	0		1.2	0
Cadmium (Cd)-Total	0.000005	19	0	0.0000971	0.000039	0.0000115	0.000505	0.0001145			0
Calcium (Ca)-Total	0.05	19	0	30.4	29	23.4	40.4	4.9			0
Cesium (Cs)-Total		2	0	0.0000115	0.0000115	0.000011	0.000012	0.000001			0
Chromium (Cr)-Total	0.0001	19	0	0.00126	0.00048	0.00014	0.00737	0.00177			0
Cobalt (Co)-Total	0.0001	19	6	0.000648	0.00021	0.0001	0.00446	0.00102	0.004	0.11	0
Copper (Cu)-Total	0.0005	19	0	0.00255	0.00116	0.00076	0.0139	0.00304			0
Iron (Fe)-Total	0.01	19	0	1.32	0.396	0.056	9.41	2.214		1	7
Lead (Pb)-Total	0.00005	19	1	0.000798	0.000232	0.00005	0.00552	0.00128	EQ	EQ	0
Lithium (Li)-Total	0.001	19	1	0.00244	0.0016	0.001	0.0081	0.0017			0
Magnesium (Mg)-Total	0.005	19	0	7.37	6.83	6.06	10.3	1.37			0
Manganese (Mn)-Total	0.0001	19	0	0.0282	0.0104	0.00238	0.189	0.04296	EQ	EQ	0
Mercury (Hg)-Total	0.000005	19	17	5.76E-06	0.000005	0.000005	0.0000134	0.0000023	0.00002		0
Molybdenum (Mo)-Total	0.00005	19	0	0.000883	0.000842	0.000626	0.00162	0.000212	1	2	0
Nickel (Ni)-Total	0.0005	19	2	0.00279	0.00131	0.0005	0.0148	0.00333	EQ		0
Phosphorus (P)-Total	0.05	19	11	0.0892	0.05	0.05	0.452	0.093			0
Potassium (K)-Total	0.05	19	0	0.73	0.51	0.42	2.43	0.478			0
Rubidium (Rb)-Total		2	0	0.00046	0.00046	0.00044	0.00048	0.00003			0
Selenium (Se)-Total	0.00005	19	0	0.000332	0.000291	0.000233	0.000699	0.000115	0.002		0
Silicon (Si)-Total	0.05	19	0	3.06	2.5	2.1	8.16	1.47			0
Silver (Ag)-Total	0.00001	19	12	0.0000203	0.00001	0.00001	0.000111	0.000024	0.0015	0.003	0
Sodium (Na)-Total	0.05	19	0	1.57	1.47	1.33	2.22	0.26			0
Strontium (Sr)-Total	0.0002	19	0	0.117	0.11	0.0997	0.157	0.0159			0
Sulfur (S)-Total	0.5	19	0	5.29	5.04	3.96	7.76	1.01			0
Tellurium (Te)-Total		2	2	0.0002	0.0002	0.0002	0.0002	0			0
Thallium (Tl)-Total	0.00001	19	8	0.0000286	0.000012	0.00001	0.000135	0.000031			0
Thorium (Th)-Total		2	2	0.0001	0.0001	0.0001	0.0001	0			0
Tin (Sn)-Total	0.0001	19	17	0.000104	0.0001	0.0001	0.00015	0.00001			0
Titanium (Ti)-Total	0.0003	19	0	0.00933	0.00481	0.00104	0.0472	0.01145			0
Tungsten (W)-Total		2	2	0.0001	0.0001	0.0001	0.0001	0			0
Uranium (U)-Total	0.00001	19	0	0.00054	0.0005	0.0004	0.000991	0.000139	0.0085		0
Vanadium (V)-Total	0.0005	19	2	0.00305	0.00116	0.0005	0.0159	0.00385			0
Zinc (Zn)-Total	0.003	19	11	0.00855	0.003	0.003	0.0482	0.0109	EQ	EQ	1
Zirconium (Zr)-Total	0.0002	19	18	0.000297	0.0003	0.0002	0.00045	0.00005			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

BC WQG exceedances were not related to RSEM Pond discharge unless otherwise indicated.

Table 32. 2020 annual data summary statistics for dissolved metals collected at the RSEM R6 upstream site (RBPR-7.05).

Parameters (mg/L) Date: 2020	MDL	RBPR-7.05							BC Long-Term WQG[1]	BC Short-Term Maximum WQG[2]	BC Short-Term Maximum # Exc
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.			
Dissolved Metals											
Aluminum (Al)-Dissolved	0.001	19	0	0.0109	0.0087	0.0034	0.0225	0.0056	0.05	0.1	0
Antimony (Sb)-Dissolved	0.0001	19	18	0.000101	0.0001	0.0001	0.00011	0			0
Arsenic (As)-Dissolved	0.0001	19	0	0.000234	0.00023	0.00018	0.00037	0.00005			0
Barium (Ba)-Dissolved	0.0001	19	0	0.0436	0.0377	0.0337	0.0631	0.0094			0
Beryllium (Be)-Dissolved	0.00002	19	19	0.0000284	0.00002	0.00002	0.0001	0.000025			0
Bismuth (Bi)-Dissolved	0.00005	19	19	0.00005	0.00005	0.00005	0.00005	0			0
Boron (B)-Dissolved	0.01	19	19	0.01	0.01	0.01	0.01	0			0
Cadmium (Cd)-Dissolved	0.000005	19	0	0.0000117	0.0000114	0.0000057	0.0000215	0.0000034	EQ	EQ	0
Calcium (Ca)-Dissolved	0.05	19	0	28.7	28	25.4	35.1	2.7			0
Cesium (Cs)-Dissolved		2	2	0.00001	0.00001	0.00001	0.00001	0			0
Chromium (Cr)-Dissolved	0.0001	19	12	0.000106	0.0001	0.0001	0.00013	0.00001			0
Cobalt (Co)-Dissolved	0.0001	19	18	0.000102	0.0001	0.0001	0.00013	0.00001			0
Copper (Cu)-Dissolved	0.0002	19	0	0.000791	0.00076	0.00055	0.00133	0.00021	EQ	EQ	0
Iron (Fe)-Dissolved	0.01	19	6	0.0256	0.014	0.01	0.074	0.02		0.35	0
Lead (Pb)-Dissolved	0.00005	19	17	0.0000508	0.00005	0.00005	0.000064	0.000003			0
Lithium (Li)-Dissolved	0.001	19	1	0.00156	0.0014	0.001	0.0026	0.0005			0
Magnesium (Mg)-Dissolved	0.005	19	0	6.96	6.62	5.9	9.47	0.99			0
Manganese (Mn)-Dissolved	0.0001	19	0	0.00201	0.00108	0.00035	0.0155	0.00342			0
Mercury (Hg)-Dissolved	0.000005	19	19	0.000005	0.000005	0.000005	0.000005	0			0
Molybdenum (Mo)-Dissolved	0.00005	19	0	0.000874	0.000862	0.000676	0.00147	0.000178			0
Nickel (Ni)-Dissolved	0.0005	19	0	0.000867	0.00076	0.00058	0.00147	0.00025			0
Phosphorus (P)-Dissolved	0.05	19	19	0.05	0.05	0.05	0.05	0			0
Potassium (K)-Dissolved	0.05	19	0	0.55	0.47	0.41	1.42	0.225			0
Rubidium (Rb)-Dissolved		2	0	0.00031	0.00031	0.00026	0.00036	0.00007			0
Selenium (Se)-Dissolved	0.00005	19	0	0.000343	0.000323	0.00026	0.000651	0.000085			0
Silicon (Si)-Dissolved	0.05	19	0	2.13	2.13	2.03	2.23	0.06			0
Silver (Ag)-Dissolved	0.00001	19	19	0.00001	0.00001	0.00001	0.00001	0			0
Sodium (Na)-Dissolved	0.05	19	0	1.59	1.54	1.32	2.11	0.23			0
Strontium (Sr)-Dissolved	0.0002	19	0	0.111	0.11	0.0958	0.132	0.0096			0
Sulfur (S)-Dissolved	0.5	19	0	5.33	5.11	4.18	7.23	0.8			0
Tellurium (Te)-Dissolved		2	2	0.0002	0.0002	0.0002	0.0002	0			0
Thallium (Tl)-Dissolved	0.00001	19	19	0.00001	0.00001	0.00001	0.00001	0			0
Thorium (Th)-Dissolved		2	2	0.0001	0.0001	0.0001	0.0001	0			0
Tin (Sn)-Dissolved	0.0001	19	19	0.0001	0.0001	0.0001	0.0001	0			0
Titanium (Ti)-Dissolved	0.0003	19	11	0.001	0.0003	0.0003	0.00292	0.00104			0
Tungsten (W)-Dissolved		2	2	0.0001	0.0001	0.0001	0.0001	0			0
Uranium (U)-Dissolved	0.00001	19	0	0.000458	0.000437	0.000382	0.000577	0.000056			0
Vanadium (V)-Dissolved	0.0005	19	19	0.0005	0.0005	0.0005	0.0005	0			0
Zinc (Zn)-Dissolved	0.001	19	17	0.00103	0.001	0.001	0.0015	0.0001			0
Zirconium (Zr)-Dissolved	0.0002	19	19	0.000289	0.0003	0.0002	0.0003	0.00003			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

BC WQG exceedances were not related to RSEM Pond discharge unless otherwise indicated.

Table 33. 2020 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).

Parameters (mg/L) Date: 2020	MDL	RBPR-7.15							BC Long-Term WQG[1]	BC Short-Term Maximum	
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.		WQG[2]	# Exc
Organic Carbon											
Dissolved Organic Carbon	0.5	20	0	3.65	3.23	2.53	5.63	0.98			0
Total Organic Carbon	0.5	20	0	4.05	3.27	2.43	10.3	1.85			0
Physical Tests											
Hardness (as CaCO3)	0.5	20	0	102	98.3	90.5	127	10.2			0
Sp. Conductivity (In Situ, µS/cm)		51	0	214	212	173	267	25.6			0
Sp. Conductivity (lab, µS/cm)	2	20	0	199	201	167	239	17			0
Total Dissolved Solids	13	20	0	141	139	109	206	22			0
Total Suspended Solids	1	20	0	59.5	10.7	3	294	87			0
Turbidity (In Situ, NTU)		51	0	37.1	8.58	2.55	234	56.67			0
Turbidity (lab, NTU)	0.1	20	0	45.7	12.8	1.87	255	68.01			0
pH (In Situ, pH units)		51	0	7.94	7.97	7.64	8.25	0.22		6.5 to 9.0	0
pH (lab, pH units)	0.1	20	0	8.09	8.13	7.92	8.25	0.11		6.5 to 9.0	0
Anions and Nutrients											
Alkalinity, Total (as CaCO3)	1	20	0	90.3	88.6	79.9	114	8			0
Ammonia, Total (as N)	0.005	20	4	0.016	0.0108	0.005	0.0641	0.0161	0.102	0.68	0
Bromide (Br)	0.05	20	19	0.0515	0.05	0.05	0.079	0.006			0
Chloride (Cl)	0.5	20	11	1.32	0.5	0.5	5.66	1.4	150	600	0
Fluoride (F)	0.02	20	0	0.0461	0.044	0.028	0.069	0.009		EQ	0
Nitrate (as N)	0.005	20	0	0.0755	0.0736	0.0539	0.11	0.0153	3	32.8	0
Nitrite (as N)	0.001	20	16	0.00116	0.001	0.001	0.0023	0.0004	0.02	0.06	0
Orthophosphate-Dissolved (as P)	0.001	20	10	0.00203	0.001	0.001	0.0103	0.0021			0
Sulfate (SO4)	0.3	20	0	20.2	19.5	13.1	33.7	5.6	309		0
Total Phosphorus (P)	0.002	20	1	0.0919	0.0103	0.002	0.86	0.206			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

BC WQG exceedances were not related to RSEM Pond discharge unless otherwise indicated.

Table 34. 2020 annual data summary statistics for total metals collected at the RSEM R6 IDZ site (RBPR-7.15).

Parameters (mg/L) Date: 2020	MDL	RBPR-7.15							BC Long-Term WQG[1]	BC Short-Term Maximum WQG[2]	BC Short-Term Maximum # Exc
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.			
Total Metals											
Aluminum (Al)-Total	0.003	20	0	0.758	0.192	0.0464	4.25	1.1456			0
Antimony (Sb)-Total	0.0001	20	8	0.000152	0.000125	0.0001	0.00036	0.00008			0
Arsenic (As)-Total	0.0001	20	0	0.000828	0.000425	0.00022	0.0039	0.00096		0.005	0
Barium (Ba)-Total	0.0001	20	0	0.071	0.0453	0.0322	0.22	0.0549	1		0
Beryllium (Be)-Total	0.00002	20	11	0.0000647	0.000034	0.00002	0.000297	0.000074	0.00013		0
Bismuth (Bi)-Total	0.00005	20	18	0.0000521	0.00005	0.00005	0.000081	0.000007			0
Boron (B)-Total	0.01	20	18	0.0103	0.01	0.01	0.014	0.001		1.2	0
Cadmium (Cd)-Total	0.000005	20	0	0.0000961	0.0000407	0.0000108	0.000439	0.0001137			0
Calcium (Ca)-Total	0.05	20	0	30.6	29	23.9	46.8	5.5			0
Cesium (Cs)-Total		1	0	0.000014	0.000014	0.000014	0.000014	0			0
Chromium (Cr)-Total	0.0001	20	0	0.00151	0.000575	0.00014	0.00752	0.00204			0
Cobalt (Co)-Total	0.0001	20	5	0.000675	0.000205	0.0001	0.00415	0.00104	0.004	0.11	0
Copper (Cu)-Total	0.0005	20	0	0.00269	0.00116	0.00081	0.0131	0.00316			0
Iron (Fe)-Total	0.01	20	0	1.46	0.372	0.047	9.03	2.369		1	8
Lead (Pb)-Total	0.00005	20	1	0.000834	0.000211	0.00005	0.00519	0.001331	EQ	EQ	0
Lithium (Li)-Total	0.001	20	0	0.00315	0.00295	0.001	0.0081	0.0019			0
Magnesium (Mg)-Total	0.005	20	0	7.71	7.24	6.09	12.1	1.51			0
Manganese (Mn)-Total	0.0001	20	0	0.028	0.0104	0.00248	0.169	0.04128	EQ	EQ	0
Mercury (Hg)-Total	0.000005	20	19	6.33E-06	0.000005	0.000005	0.0000316	0.0000059	0.00002		0
Molybdenum (Mo)-Total	0.00005	20	0	0.00106	0.000974	0.000739	0.00195	0.000299	1	2	0
Nickel (Ni)-Total	0.0005	20	1	0.00302	0.00141	0.0005	0.014	0.00352	EQ		0
Phosphorus (P)-Total	0.05	20	12	0.0904	0.05	0.05	0.361	0.086			0
Potassium (K)-Total	0.05	20	0	0.821	0.68	0.41	2.47	0.488			0
Rubidium (Rb)-Total		1	0	0.00048	0.00048	0.00048	0.00048	0			0
Selenium (Se)-Total	0.00005	20	0	0.000386	0.000363	0.000237	0.000918	0.00015	0.002		0
Silicon (Si)-Total	0.05	20	0	3.17	2.52	2.2	7.86	1.58			0
Silver (Ag)-Total	0.00001	20	12	0.0000221	0.00001	0.00001	0.000106	0.000026	0.0015	0.003	0
Sodium (Na)-Total	0.05	20	0	3.37	2.22	1.32	9.2	2.45			0
Strontium (Sr)-Total	0.0002	20	0	0.124	0.121	0.0995	0.179	0.0177			0
Sulfur (S)-Total	0.5	20	0	6.74	6.78	4.11	10.8	2			0
Tellurium (Te)-Total		1	1	0.0002	0.0002	0.0002	0.0002	0			0
Thallium (Tl)-Total	0.00001	20	10	0.00003	0.0000105	0.00001	0.000134	0.000034			0
Thorium (Th)-Total		1	1	0.0001	0.0001	0.0001	0.0001	0			0
Tin (Sn)-Total	0.0001	20	19	0.000101	0.0001	0.0001	0.00012	0			0
Titanium (Ti)-Total	0.0003	20	0	0.01	0.00407	0.00098	0.0514	0.01246			0
Tungsten (W)-Total		1	1	0.0001	0.0001	0.0001	0.0001	0			0
Uranium (U)-Total	0.00001	20	0	0.000572	0.000533	0.000395	0.000963	0.000147	0.0085		0
Vanadium (V)-Total	0.0005	20	2	0.00337	0.00124	0.0005	0.0159	0.00441			0
Zinc (Zn)-Total	0.003	20	11	0.00909	0.003	0.003	0.046	0.0117	EQ	EQ	1
Zirconium (Zr)-Total	0.0002	20	19	0.000296	0.0003	0.0002	0.00032	0.00002			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

Parameters with a concentration below the detection limit are assumed to have a concentration equal to the detection limit for calculation of the summary

BC WQG exceedances were not related to RSEM Pond discharge unless otherwise indicated.

Table 35. 2020 annual data summary statistics for dissolved metals collected at the RSEM R6 IDZ site (RBPR-7.15).

Parameters (mg/L) Date: 2020	MDL	RBPR-7.15							BC Long-Term WQG[1]	BC Short-Term Maximum	
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.		WQG[2]	# Exc
Dissolved Metals											
Aluminum (Al)-Dissolved	0.001	20	0	0.0111	0.0085	0.0029	0.0225	0.0059	0.05	0.1	0
Antimony (Sb)-Dissolved	0.0001	20	15	0.000104	0.0001	0.0001	0.00015	0.00001			0
Arsenic (As)-Dissolved	0.0001	20	0	0.000242	0.00023	0.00016	0.00037	0.00005			0
Barium (Ba)-Dissolved	0.0001	20	0	0.0436	0.0393	0.0332	0.0674	0.0097			0
Beryllium (Be)-Dissolved	0.00002	20	20	0.000024	0.00002	0.00002	0.0001	0.000018			0
Bismuth (Bi)-Dissolved	0.00005	20	20	0.00005	0.00005	0.00005	0.00005	0			0
Boron (B)-Dissolved	0.01	20	20	0.01	0.01	0.01	0.01	0			0
Cadmium (Cd)-Dissolved	0.000005	20	0	0.0000124	0.0000118	0.0000061	0.0000214	0.0000036	EQ	EQ	0
Calcium (Ca)-Dissolved	0.05	20	0	28.8	27.9	25.8	35.2	2.6			0
Cesium (Cs)-Dissolved		1	1	0.00001	0.00001	0.00001	0.00001	0			0
Chromium (Cr)-Dissolved	0.0001	20	4	0.000137	0.00012	0.0001	0.00028	0.00005			0
Cobalt (Co)-Dissolved	0.0001	20	19	0.000101	0.0001	0.0001	0.00012	0			0
Copper (Cu)-Dissolved	0.0002	20	0	0.000825	0.00071	0.00056	0.00138	0.00022	EQ	EQ	0
Iron (Fe)-Dissolved	0.01	20	6	0.0256	0.013	0.01	0.071	0.02		0.35	0
Lead (Pb)-Dissolved	0.00005	20	18	0.0000509	0.00005	0.00005	0.000065	0.000003			0
Lithium (Li)-Dissolved	0.001	20	0	0.00226	0.00235	0.0012	0.0044	0.0009			0
Magnesium (Mg)-Dissolved	0.005	20	0	7.25	6.99	6.04	9.66	1			0
Manganese (Mn)-Dissolved	0.0001	20	0	0.00199	0.000965	0.00035	0.0147	0.00315			0
Mercury (Hg)-Dissolved	0.000005	20	20	0.000005	0.000005	0.000005	0.000005	0			0
Molybdenum (Mo)-Dissolve	0.00005	20	0	0.00105	0.00097	0.000729	0.0017	0.000266			0
Nickel (Ni)-Dissolved	0.0005	20	0	0.000942	0.000895	0.00058	0.00145	0.00025			0
Phosphorus (P)-Dissolved	0.05	20	20	0.05	0.05	0.05	0.05	0			0
Potassium (K)-Dissolved	0.05	20	0	0.607	0.555	0.44	1.43	0.212			0
Rubidium (Rb)-Dissolved		1	0	0.00022	0.00022	0.00022	0.00022	0			0
Selenium (Se)-Dissolved	0.00005	20	0	0.000368	0.000337	0.000255	0.000734	0.00011			0
Silicon (Si)-Dissolved	0.05	20	0	2.11	2.15	1.68	2.22	0.12			0
Silver (Ag)-Dissolved	0.00001	20	20	0.00001	0.00001	0.00001	0.00001	0			0
Sodium (Na)-Dissolved	0.05	20	0	3.38	2.32	1.31	9.63	2.47			0
Strontium (Sr)-Dissolved	0.0002	20	0	0.118	0.118	0.0953	0.145	0.0137			0
Sulfur (S)-Dissolved	0.5	20	0	6.58	6.42	2.93	11.3	1.98			0
Tellurium (Te)-Dissolved		1	1	0.0002	0.0002	0.0002	0.0002	0			0
Thallium (Tl)-Dissolved	0.00001	20	20	0.00001	0.00001	0.00001	0.00001	0			0
Thorium (Th)-Dissolved		1	1	0.0001	0.0001	0.0001	0.0001	0			0
Tin (Sn)-Dissolved	0.0001	20	20	0.0001	0.0001	0.0001	0.0001	0			0
Titanium (Ti)-Dissolved	0.0003	20	11	0.00109	0.0003	0.0003	0.00295	0.00112			0
Tungsten (W)-Dissolved		1	1	0.0001	0.0001	0.0001	0.0001	0			0
Uranium (U)-Dissolved	0.00001	20	0	0.000485	0.000485	0.000381	0.000622	0.00006			0
Vanadium (V)-Dissolved	0.0005	20	20	0.0005	0.0005	0.0005	0.0005	0			0
Zinc (Zn)-Dissolved	0.001	20	17	0.00131	0.001	0.001	0.0038	0.0008			0
Zirconium (Zr)-Dissolved	0.0002	20	20	0.000295	0.0003	0.0002	0.0003	0.00002			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

Parameters with a concentration below the detection limit are assumed to have a concentration equal to the detection limit for calculation of the summary

BC WQG exceedances were not related to RSEM Pond discharge unless otherwise indicated.

Table 36. 2020 annual data summary statistics for lab and *in-situ* sampling (organic carbon, physical tests, anions and nutrients) collected at the MOE far-field downstream right bank site (RBPR-9.34).

Parameters (mg/L) Date: 2020	MDL	RBPR-9.34							BC Long-Term WQG[1]	BC Short-Term Maximum	
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.		WQG[2]	# Exc
Organic Carbon											
Dissolved Organic Carbon	0.5	20	0	3.62	3.4	2.63	5.27	0.78			0
Total Organic Carbon	0.5	20	0	4.07	3.71	2.48	7.5	1.36			0
Physical Tests											
Hardness (as CaCO3)	0.5	20	0	99.9	98.9	83.2	126	10.4			0
Sp. Conductivity (In Situ, µS/cm)		54	0	195	192	169	237	16.2			0
Sp. Conductivity (lab, µS/cm)	2	20	0	186	183	166	220	13			0
Total Dissolved Solids	13	20	0	132	125	108	219	25			0
Total Suspended Solids	1	20	0	86.1	46.2	4.1	529	118.3			0
Turbidity (In Situ, NTU)		54	0	44.4	18.7	2.17	307	69.59			0
Turbidity (lab, NTU)	0.1	20	0	47.9	23.8	1.11	298	67.54			0
pH (In Situ, pH units)		54	0	7.79	7.76	7.06	8.25	0.3		6.5 to 9.0	0
pH (lab, pH units)	0.1	20	0	8.09	8.13	7.92	8.23	0.09		6.5 to 9.0	0
Anions and Nutrients											
Alkalinity, Total (as CaCO3)	1	20	0	89	87.4	80.6	111	7.4			0
Ammonia, Total (as N)	0.005	20	8	0.0134	0.0066	0.005	0.0518	0.0141	0.102	0.68	0
Bromide (Br)	0.05	20	20	0.05	0.05	0.05	0.05	0			0
Chloride (Cl)	0.5	20	19	0.502	0.5	0.5	0.54	0.01	150	600	0
Fluoride (F)	0.02	20	0	0.0429	0.0405	0.028	0.066	0.008		EQ	0
Nitrate (as N)	0.005	20	0	0.0655	0.0664	0.0495	0.0777	0.0075	3	32.8	0
Nitrite (as N)	0.001	20	19	0.00102	0.001	0.001	0.0014	0.0001	0.02	0.06	0
Orthophosphate-Dissolved (as P)	0.001	20	8	0.00218	0.00125	0.001	0.0136	0.0028			0
Sulfate (SO4)	0.3	20	0	16	15.7	12.8	21	2.2	309		0
Total Phosphorus (P)	0.002	20	0	0.0682	0.023	0.0022	0.53	0.117			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 .

[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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

Parameters with a concentration below the detection limit are assumed to have a concentration equal to the detection limit for calculation of the summary .

BC WQG exceedances were not related to RSEM Pond discharge unless otherwise indicated.

Table 37. 2020 annual data summary statistics for total metals collected at the MOE far-field downstream right bank site (RBPR-9.34).

Parameters (mg/L) Date: 2020	MDL	RBPR-9.34							BC Long-Term WQG[1]	BC Short-Term Maximum	
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.		WQG[2]	# Exc
Total Metals											
Aluminum (Al)-Total	0.003	20	0	0.694	0.398	0.0405	5.24	1.1296			0
Antimony (Sb)-Total	0.0001	20	10	0.000126	0.0001	0.0001	0.00036	0.00006			0
Arsenic (As)-Total	0.0001	20	0	0.000797	0.000575	0.00023	0.00469	0.00096		0.005	0
Barium (Ba)-Total	0.0001	20	0	0.0694	0.051	0.0313	0.285	0.0556	1		0
Beryllium (Be)-Total	0.00002	20	7	0.0000608	0.000033	0.00002	0.000379	0.00008	0.00013		0
Bismuth (Bi)-Total	0.00005	20	19	0.0000522	0.00005	0.00005	0.000093	0.00001			0
Boron (B)-Total	0.01	20	19	0.0101	0.01	0.01	0.011	0		1.2	0
Cadmium (Cd)-Total	0.000005	20	0	0.000102	0.000063	0.0000084	0.00062	0.0001313			0
Calcium (Ca)-Total	0.05	20	0	30.4	29.5	24	44.5	5.1			0
Cesium (Cs)-Total		1	0	0.000124	0.000124	0.000124	0.000124	0			0
Chromium (Cr)-Total	0.0001	20	0	0.00128	0.000765	0.00016	0.00929	0.00198			0
Cobalt (Co)-Total	0.0001	20	4	0.000674	0.000375	0.0001	0.0054	0.00115	0.004	0.11	0
Copper (Cu)-Total	0.0005	20	0	0.00265	0.00173	0.00073	0.0166	0.00343			0
Iron (Fe)-Total	0.01	20	0	1.35	0.778	0.042	11.2	2.414		1	8
Lead (Pb)-Total	0.00005	20	1	0.000835	0.00045	0.00005	0.00653	0.001402	EQ	EQ	0
Lithium (Li)-Total	0.001	20	0	0.0024	0.0018	0.0011	0.0095	0.0018			0
Magnesium (Mg)-Total	0.005	20	0	7.35	6.96	5.77	11.3	1.43			0
Manganese (Mn)-Total	0.0001	20	0	0.0318	0.0221	0.00226	0.229	0.04836	EQ	EQ	0
Mercury (Hg)-Total	0.000005	20	18	5.45E-06	0.000005	0.000005	0.0000118	0.0000016	0.00002		0
Molybdenum (Mo)-Total	0.00005	20	0	0.000876	0.000838	0.000664	0.00137	0.000185	1	2	0
Nickel (Ni)-Total	0.0005	20	0	0.00282	0.00181	0.00071	0.0177	0.00369	EQ		0
Phosphorus (P)-Total	0.05	20	11	0.099	0.05	0.05	0.52	0.111			0
Potassium (K)-Total	0.05	20	0	0.732	0.609	0.41	2.66	0.489			0
Rubidium (Rb)-Total		1	0	0.0016	0.0016	0.0016	0.0016	0			0
Selenium (Se)-Total	0.00005	20	0	0.000345	0.00031	0.000236	0.000635	0.000107	0.002		0
Silicon (Si)-Total	0.05	20	0	3.1	2.75	2.16	9.38	1.57			0
Silver (Ag)-Total	0.00001	20	10	0.0000197	0.0000105	0.00001	0.000138	0.000028	0.00005	0.0001	0
Sodium (Na)-Total	0.05	20	0	1.55	1.43	1.25	2.27	0.29			0
Strontium (Sr)-Total	0.0002	20	0	0.118	0.112	0.0996	0.167	0.0162			0
Sulfur (S)-Total	0.5	20	0	5.33	4.99	4.09	7.76	1.06			0
Tellurium (Te)-Total		1	1	0.0002	0.0002	0.0002	0.0002	0			0
Thallium (Tl)-Total	0.00001	20	6	0.0000286	0.000017	0.00001	0.000161	0.000035			0
Thorium (Th)-Total		1	0	0.00013	0.00013	0.00013	0.00013	0			0
Tin (Sn)-Total	0.0001	20	18	0.000103	0.0001	0.0001	0.00013	0.00001			0
Titanium (Ti)-Total	0.0003	20	0	0.00986	0.00741	0.00085	0.0541	0.0117			0
Tungsten (W)-Total		1	1	0.0001	0.0001	0.0001	0.0001	0			0
Uranium (U)-Total	0.00001	20	0	0.000548	0.000508	0.000417	0.00109	0.000147	0.0085		0
Vanadium (V)-Total	0.0005	20	3	0.00312	0.00221	0.0005	0.0195	0.00414			0
Zinc (Zn)-Total	0.003	20	6	0.00808	0.0041	0.003	0.0558	0.0117	EQ	EQ	1
Zirconium (Zr)-Total	0.0002	20	17	0.000309	0.0003	0.0003	0.00039	0.00002			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 exceedances considering all sampling dates is provided in the "# Exc" column.

Yellow shading indicates an exceedance of the long-term BC WQG, and blue shading indicates an exceedance of the short-term max BC WQG.
Parameters with a concentration below the detection limit are assumed to have a concentration equal to the detection limit for calculation of the summary statistics.
BC WQG exceedances were not related to RSEM Pond discharge unless otherwise indicated.

Table 38. 2020 annual data summary statistics for dissolved metals collected at the MOE far-field downstream right bank site (RBPR-9.34).

Parameters (mg/L) Date: 2020	MDL	RBPR-9.34							BC Long-Term WQG[1]	BC Short-Term Maximum WQG[2]	BC Short-Term Maximum # Exc
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.			
Dissolved Metals											
Aluminum (Al)-Dissolved	0.001	20	0	0.0117	0.00795	0.0027	0.0323	0.0081	0.05	0.1	0
Antimony (Sb)-Dissolved	0.0001	20	19	0.000101	0.0001	0.0001	0.00011	0			0
Arsenic (As)-Dissolved	0.0001	20	0	0.000237	0.00022	0.00018	0.0004	0.00005			0
Barium (Ba)-Dissolved	0.0001	20	0	0.042	0.0378	0.0319	0.0607	0.0085			0
Beryllium (Be)-Dissolved	0.00002	20	20	0.000024	0.00002	0.00002	0.0001	0.000018			0
Bismuth (Bi)-Dissolved	0.00005	20	20	0.00005	0.00005	0.00005	0.00005	0			0
Boron (B)-Dissolved	0.01	20	20	0.01	0.01	0.01	0.01	0			0
Cadmium (Cd)-Dissolved	0.000005	20	1	0.0000104	9.85E-06	0.000005	0.0000184	0.0000027	EQ	EQ	0
Calcium (Ca)-Dissolved	0.05	20	0	28.4	28	24.2	34.8	2.6			0
Cesium (Cs)-Dissolved		1	1	0.00001	0.00001	0.00001	0.00001	0			0
Chromium (Cr)-Dissolved	0.0001	20	13	0.000112	0.0001	0.0001	0.00029	0.00004			0
Cobalt (Co)-Dissolved	0.0001	20	19	0.000101	0.0001	0.0001	0.00012	0			0
Copper (Cu)-Dissolved	0.0002	20	0	0.000791	0.000735	0.00056	0.00135	0.0002	EQ	EQ	0
Iron (Fe)-Dissolved	0.01	20	6	0.0272	0.0135	0.01	0.095	0.023		0.35	0
Lead (Pb)-Dissolved	0.00005	20	19	0.0000519	0.00005	0.00005	0.000088	0.000008			0
Lithium (Li)-Dissolved	0.001	20	1	0.0015	0.0013	0.001	0.0026	0.0005			0
Magnesium (Mg)-Dissolved	0.005	20	0	6.91	6.65	5.52	9.45	0.99			0
Manganese (Mn)-Dissolved	0.0001	20	0	0.00206	0.00143	0.00013	0.0108	0.00243			0
Mercury (Hg)-Dissolved	0.000005	20	20	0.000005	0.000005	0.000005	0.000005	0			0
Molybdenum (Mo)-Dissolved	0.00005	20	0	0.000884	0.000848	0.000673	0.0015	0.000186			0
Nickel (Ni)-Dissolved	0.0005	20	0	0.000866	0.00073	0.00059	0.0014	0.00026			0
Phosphorus (P)-Dissolved	0.05	20	20	0.05	0.05	0.05	0.05	0			0
Potassium (K)-Dissolved	0.05	20	0	0.534	0.465	0.4	1.41	0.222			0
Rubidium (Rb)-Dissolved		1	0	0.00031	0.00031	0.00031	0.00031	0			0
Selenium (Se)-Dissolved	0.00005	20	0	0.000322	0.0003	0.000246	0.000646	0.00009			0
Silicon (Si)-Dissolved	0.05	20	0	2.13	2.13	2.03	2.31	0.07			0
Silver (Ag)-Dissolved	0.00001	20	20	0.00001	0.00001	0.00001	0.00001	0			0
Sodium (Na)-Dissolved	0.05	20	0	1.54	1.42	1.29	2.08	0.25			0
Strontium (Sr)-Dissolved	0.0002	20	0	0.111	0.11	0.0941	0.132	0.0102			0
Sulfur (S)-Dissolved	0.5	20	0	5.31	5.1	4.29	6.96	0.78			0
Tellurium (Te)-Dissolved		1	1	0.0002	0.0002	0.0002	0.0002	0			0
Thallium (Tl)-Dissolved	0.00001	20	20	0.00001	0.00001	0.00001	0.00001	0			0
Thorium (Th)-Dissolved		1	1	0.0001	0.0001	0.0001	0.0001	0			0
Tin (Sn)-Dissolved	0.0001	20	20	0.0001	0.0001	0.0001	0.0001	0			0
Titanium (Ti)-Dissolved	0.0003	20	12	0.00109	0.0003	0.0003	0.00488	0.00131			0
Tungsten (W)-Dissolved		1	1	0.0001	0.0001	0.0001	0.0001	0			0
Uranium (U)-Dissolved	0.00001	20	0	0.000462	0.000456	0.000383	0.000583	0.000054			0
Vanadium (V)-Dissolved	0.0005	20	20	0.0005	0.0005	0.0005	0.0005	0			0
Zinc (Zn)-Dissolved	0.001	20	17	0.00105	0.001	0.001	0.0019	0.0002			0
Zirconium (Zr)-Dissolved	0.0002	20	19	0.000298	0.0003	0.0002	0.00035	0.00003			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

BC WQG exceedances were not related to RSEM Pond discharge unless otherwise indicated.

Table 39. 2020 annual data summary statistics for lab and *in-situ* sampling (organic carbon, physical tests, anions and nutrients) collected at the MOE far-field downstream left bank site (LBPR-9.34).

Parameters (mg/L) Date: 2020	MDL	LBPR-9.34							BC Long-Term WQG[1]	BC Short-Term Maximum	
		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.		WQG[2]	# Exc
Organic Carbon											
Dissolved Organic Carbon	0.5	20	0	3.71	3.44	2.41	6.09	1.13			0
Total Organic Carbon	0.5	20	0	4.22	3.42	2.41	9.03	2.08			0
Physical Tests											
Hardness (as CaCO3)	0.5	20	0	102	101	88.2	129	10.9			0
Sp. Conductivity (In Situ, µS/cm)		54	0	202	196	179	249	18.5			0
Sp. Conductivity (lab, µS/cm)	2	20	0	190	187	170	233	15			0
Total Dissolved Solids	13	20	0	139	131	109	213	30			0
Total Suspended Solids	1	20	0	145	19.9	4.9	917	261.4			0
Turbidity (In Situ, NTU)		54	0	54.7	7.44	2.86	509	115.02			0
Turbidity (lab, NTU)	0.1	20	0	104	17.7	0.89	749	223.22			0
pH (In Situ, pH units)		54	0	7.79	7.85	6.71	8.26	0.35		6.5 to 9.0	0
pH (lab, pH units)	0.1	20	0	8.1	8.12	7.93	8.23	0.09		6.5 to 9.0	0
Anions and Nutrients											
Alkalinity, Total (as CaCO3)	1	20	0	90.5	89.3	80.7	114	7.8			0
Ammonia, Total (as N)	0.005	20	8	0.0167	0.00875	0.005	0.0773	0.0208	0.102	0.68	0
Bromide (Br)	0.05	20	20	0.05	0.05	0.05	0.05	0			0
Chloride (Cl)	0.5	20	15	0.58	0.5	0.5	1.28	0.19	150	600	0
Fluoride (F)	0.02	20	0	0.0444	0.0415	0.029	0.076	0.012		EQ	0
Nitrate (as N)	0.005	20	0	0.0672	0.0678	0.0504	0.0984	0.0101	3	32.8	0
Nitrite (as N)	0.001	20	18	0.00135	0.001	0.001	0.0076	0.0015	0.02	0.06	0
Orthophosphate-Dissolved (as P)	0.001	20	9	0.00299	0.0011	0.001	0.0152	0.0042			0
Sulfate (SO4)	0.3	20	0	17.4	16.5	14.6	23.8	2.7	309		0
Total Phosphorus (P)	0.002	20	0	0.141	0.0301	0.002	0.936	0.2715			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

BC WQG exceedances were not related to RSEM Pond discharge unless otherwise indicated.

Table 40. 2020 annual data summary statistics for total metals collected at the MOE far-field downstream left bank site (LBPR-9.34).

Parameters (mg/L)	MDL	LBPR-9.34							BC Long-Term	BC Short-Term Maximum	
Date: 2020		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.	WQG[1]	WQG[2]	# Exc
Total Metals											
Aluminum (Al)-Total	0.003	20	0	1.22	0.287	0.0458	8.18	2.335			0
Antimony (Sb)-Total	0.0001	20	9	0.000235	0.000115	0.0001	0.00157	0.00033			0
Arsenic (As)-Total	0.0001	20	0	0.00125	0.000485	0.00025	0.00731	0.00201		0.005	2
Barium (Ba)-Total	0.0001	20	0	0.091	0.0524	0.0324	0.392	0.1024	1		0
Beryllium (Be)-Total	0.00002	20	9	0.000104	0.000045	0.00002	0.00059	0.000169	0.00013		0
Bismuth (Bi)-Total	0.00005	20	18	0.0000599	0.00005	0.00005	0.000158	0.000031			0
Boron (B)-Total	0.01	20	18	0.0106	0.01	0.01	0.016	0.002		1.2	0
Cadmium (Cd)-Total	0.000005	20	0	0.000161	0.0000775	0.0000156	0.000888	0.000252			0
Calcium (Ca)-Total	0.05	20	0	32.1	29.5	24.1	48.4	6.7			0
Cesium (Cs)-Total		1	0	0.000015	0.000015	0.000015	0.000015	0			0
Chromium (Cr)-Total	0.0001	20	0	0.00226	0.000595	0.00013	0.0149	0.00417			0
Cobalt (Co)-Total	0.0001	20	5	0.00125	0.00028	0.0001	0.00866	0.0025	0.004	0.11	0
Copper (Cu)-Total	0.0005	20	0	0.00427	0.00141	0.00082	0.0257	0.00728			0
Iron (Fe)-Total	0.01	20	0	2.59	0.485	0.055	18.5	5.248		1	8
Lead (Pb)-Total	0.00005	20	0	0.00149	0.000332	0.000054	0.0101	0.002932	EQ	EQ	0
Lithium (Li)-Total	0.001	20	0	0.00329	0.00185	0.0012	0.0141	0.0037			0
Magnesium (Mg)-Total	0.005	20	0	7.94	7.06	6.08	13	1.99			0
Manganese (Mn)-Total	0.0001	20	0	0.0518	0.0143	0.00326	0.34	0.10023	EQ	EQ	0
Mercury (Hg)-Total	0.000005	20	17	5.95E-06	0.000005	0.000005	0.0000173	0.000003	0.00002		0
Molybdenum (Mo)-Total	0.00005	20	0	0.00176	0.000889	0.000786	0.0161	0.003384	1	2	0
Nickel (Ni)-Total	0.0005	20	1	0.00469	0.00175	0.0005	0.0278	0.00778	EQ		0
Phosphorus (P)-Total	0.05	20	10	0.141	0.0505	0.05	0.768	0.21			0
Potassium (K)-Total	0.05	20	0	0.937	0.575	0.42	3.53	0.911			0
Rubidium (Rb)-Total		1	0	0.00046	0.00046	0.00046	0.00046	0			0
Selenium (Se)-Total	0.00005	20	0	0.000406	0.000331	0.000242	0.000903	0.000197	0.002		0
Silicon (Si)-Total	0.05	20	0	3.86	2.54	2.12	13.4	3.24			0
Silver (Ag)-Total	0.00001	20	12	0.0000338	0.00001	0.00001	0.000207	0.000057	0.0015	0.003	0
Sodium (Na)-Total	0.05	20	0	1.7	1.49	1.29	2.73	0.43			0
Strontium (Sr)-Total	0.0002	20	0	0.127	0.116	0.107	0.187	0.023			0
Sulfur (S)-Total	0.5	20	0	5.78	5.3	4.49	8.33	1.18			0
Tellurium (Te)-Total		1	1	0.0002	0.0002	0.0002	0.0002	0			0
Thallium (Tl)-Total	0.00001	20	9	0.0000441	0.000016	0.00001	0.000234	0.000066			0
Thorium (Th)-Total		1	1	0.0001	0.0001	0.0001	0.0001	0			0
Tin (Sn)-Total	0.0001	20	16	0.000116	0.0001	0.0001	0.00035	0.00006			0
Titanium (Ti)-Total	0.0003	20	0	0.0147	0.00524	0.00123	0.0806	0.02327			0
Tungsten (W)-Total		1	1	0.0001	0.0001	0.0001	0.0001	0			0
Uranium (U)-Total	0.00001	20	0	0.000629	0.000524	0.000408	0.00146	0.000292	0.0085		0
Vanadium (V)-Total	0.0005	20	1	0.00508	0.0017	0.0005	0.0296	0.0084			0
Zinc (Zn)-Total	0.003	20	10	0.0146	0.00395	0.003	0.0912	0.0253	EQ	EQ	2
Zirconium (Zr)-Total	0.0002	20	17	0.000323	0.0003	0.0002	0.00062	0.00009			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

BC WQG exceedances were not related to RSEM Pond discharge unless otherwise indicated.

Table 41. 2020 annual data summary statistics for dissolved metals collected at the MOE far-field downstream left bank site (LBPR-9.34).

Parameters (mg/L)	MDL	LBPR-9.34							BC Long-Term	BC Short-Term Maximum	
Date: 2020		n.	n<MDL	Avg.	Median	Min.	Max.	S.D.	WQG[1]	WQG[2]	# Exc
Dissolved Metals											
Aluminum (Al)-Dissolved	0.001	20	0	0.0206	0.00915	0.0035	0.152	0.0329	0.05	0.1	1
Antimony (Sb)-Dissolved	0.0001	20	16	0.000198	0.0001	0.0001	0.00202	0.00043			0
Arsenic (As)-Dissolved	0.0001	20	0	0.000269	0.00022	0.00018	0.00061	0.00011			0
Barium (Ba)-Dissolved	0.0001	20	0	0.0433	0.0405	0.0321	0.0782	0.0112			0
Beryllium (Be)-Dissolved	0.00002	20	19	0.0000245	0.00002	0.00002	0.0001	0.000018			0
Bismuth (Bi)-Dissolved	0.00005	20	20	0.00005	0.00005	0.00005	0.00005	0			0
Boron (B)-Dissolved	0.01	20	20	0.01	0.01	0.01	0.01	0			0
Cadmium (Cd)-Dissolved	0.000005	20	1	0.000019	0.0000122	0.0000087	0.000118	0.0000238	EQ	EQ	0
Calcium (Ca)-Dissolved	0.05	20	0	29.2	28.9	25.4	35.8	2.9			0
Cesium (Cs)-Dissolved		1	1	0.00001	0.00001	0.00001	0.00001	0			0
Chromium (Cr)-Dissolved	0.0001	20	13	0.000122	0.0001	0.0001	0.00042	0.00007			0
Cobalt (Co)-Dissolved	0.0001	20	17	0.000127	0.0001	0.0001	0.00056	0.0001			0
Copper (Cu)-Dissolved	0.0002	20	0	0.000913	0.000685	0.00057	0.00201	0.00042	EQ	EQ	0
Iron (Fe)-Dissolved	0.01	20	6	0.0594	0.014	0.01	0.618	0.134		0.35	1
Lead (Pb)-Dissolved	0.00005	20	16	0.0000848	0.00005	0.00005	0.000697	0.000144			0
Lithium (Li)-Dissolved	0.001	20	1	0.00167	0.00155	0.001	0.0027	0.0005			0
Magnesium (Mg)-Dissolved	0.005	20	0	7.11	6.83	6.04	9.73	1			0
Manganese (Mn)-Dissolved	0.0001	20	0	0.00416	0.00146	0.00038	0.0305	0.00723			0
Mercury (Hg)-Dissolved	0.000005	20	20	0.000005	0.000005	0.000005	0.000005	0			0
Molybdenum (Mo)-Dissolved	0.00005	20	0	0.0016	0.000896	0.000598	0.0144	0.003017			0
Nickel (Ni)-Dissolved	0.0005	20	0	0.001	0.00077	0.0006	0.00204	0.00042			0
Phosphorus (P)-Dissolved	0.05	20	19	0.0539	0.05	0.05	0.128	0.017			0
Potassium (K)-Dissolved	0.05	20	0	0.638	0.48	0.4	1.84	0.42			0
Rubidium (Rb)-Dissolved		1	0	0.00025	0.00025	0.00025	0.00025	0			0
Selenium (Se)-Dissolved	0.00005	20	0	0.000357	0.000328	0.00024	0.000731	0.000103			0
Silicon (Si)-Dissolved	0.05	20	0	2.13	2.15	1.98	2.24	0.07			0
Silver (Ag)-Dissolved	0.00001	20	20	0.00001	0.00001	0.00001	0.00001	0			0
Sodium (Na)-Dissolved	0.05	20	0	1.67	1.49	1.33	2.56	0.39			0
Strontium (Sr)-Dissolved	0.0002	20	0	0.117	0.114	0.1	0.146	0.011			0
Sulfur (S)-Dissolved	0.5	20	0	5.76	5.42	4.66	8.42	1.05			0
Tellurium (Te)-Dissolved		1	1	0.0002	0.0002	0.0002	0.0002	0			0
Thallium (Tl)-Dissolved	0.00001	20	20	0.00001	0.00001	0.00001	0.00001	0			0
Thorium (Th)-Dissolved		1	1	0.0001	0.0001	0.0001	0.0001	0			0
Tin (Sn)-Dissolved	0.0001	20	20	0.0001	0.0001	0.0001	0.0001	0			0
Titanium (Ti)-Dissolved	0.0003	20	11	0.00129	0.0003	0.0003	0.00433	0.00135			0
Tungsten (W)-Dissolved		1	1	0.0001	0.0001	0.0001	0.0001	0			0
Uranium (U)-Dissolved	0.00001	20	0	0.00049	0.000476	0.000414	0.000629	0.000065			0
Vanadium (V)-Dissolved	0.0005	20	18	0.000549	0.0005	0.0005	0.00142	0.00021			0
Zinc (Zn)-Dissolved	0.001	20	16	0.00136	0.001	0.001	0.0063	0.0012			0
Zirconium (Zr)-Dissolved	0.0002	20	18	0.000298	0.0003	0.0002	0.00034	0.00003			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 exceedances considering all sampling dates is provided in the "# Exc" column.

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

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

BC WQG exceedances were not related to RSEM Pond discharge unless otherwise indicated.

Appendix B. Site C PAG Contact RSEM Surface Water Quality Monitoring Time Series Plots – R5b Monthly and 5 in 30-day Data.

Figure 2. 2020 Peace River (*in situ*) and RSEM R5b pond (lab) specific conductivity.

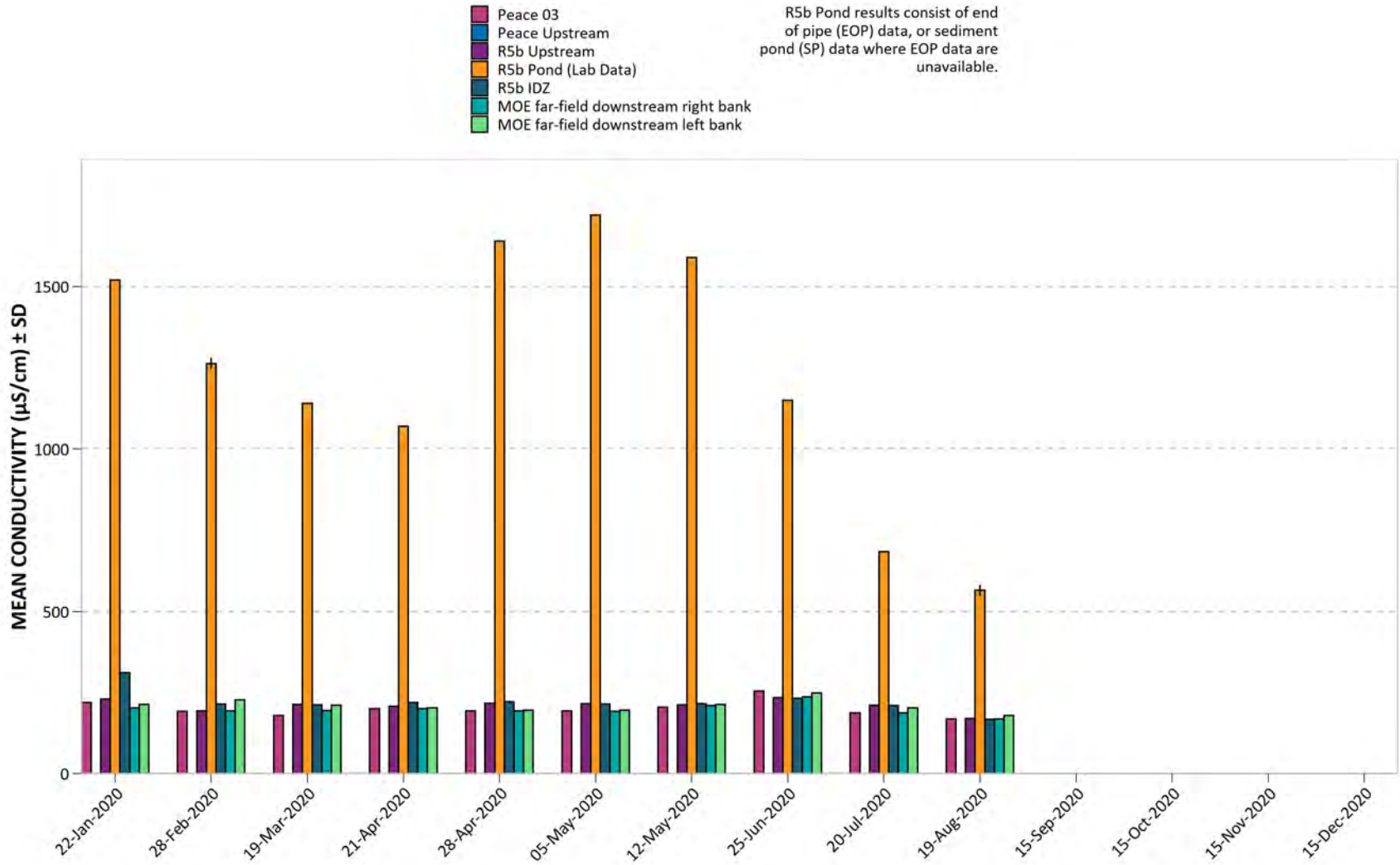


Figure 3. 2020 Peace River and RSEM R5b pond lab specific conductivity.

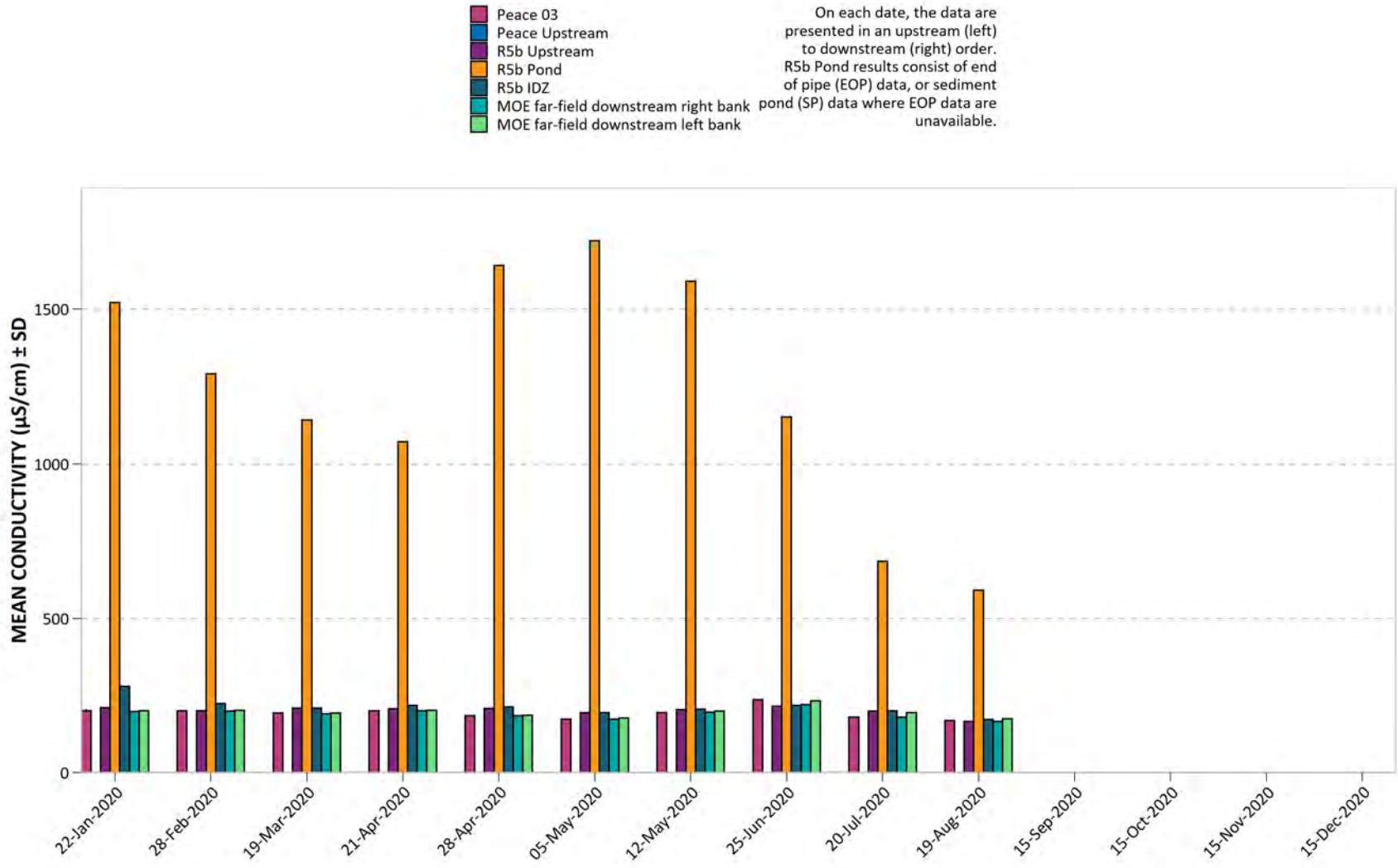


Figure 4. 2020 Peace River and RSEM R5b pond hardness (as $CaCO_3$).

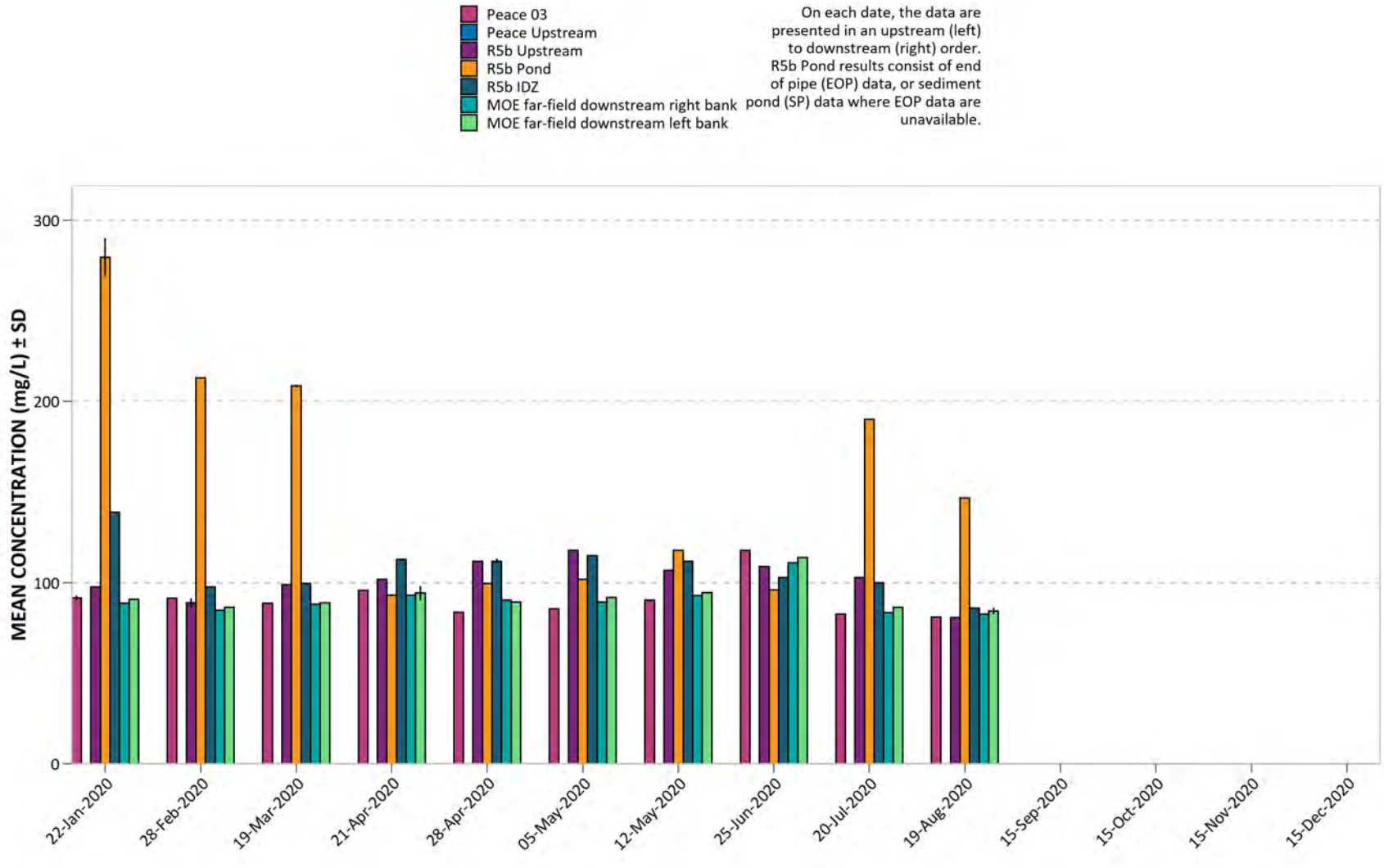


Figure 5. 2020 Peace River and RSEM R5b pond total dissolved solids (TDS).

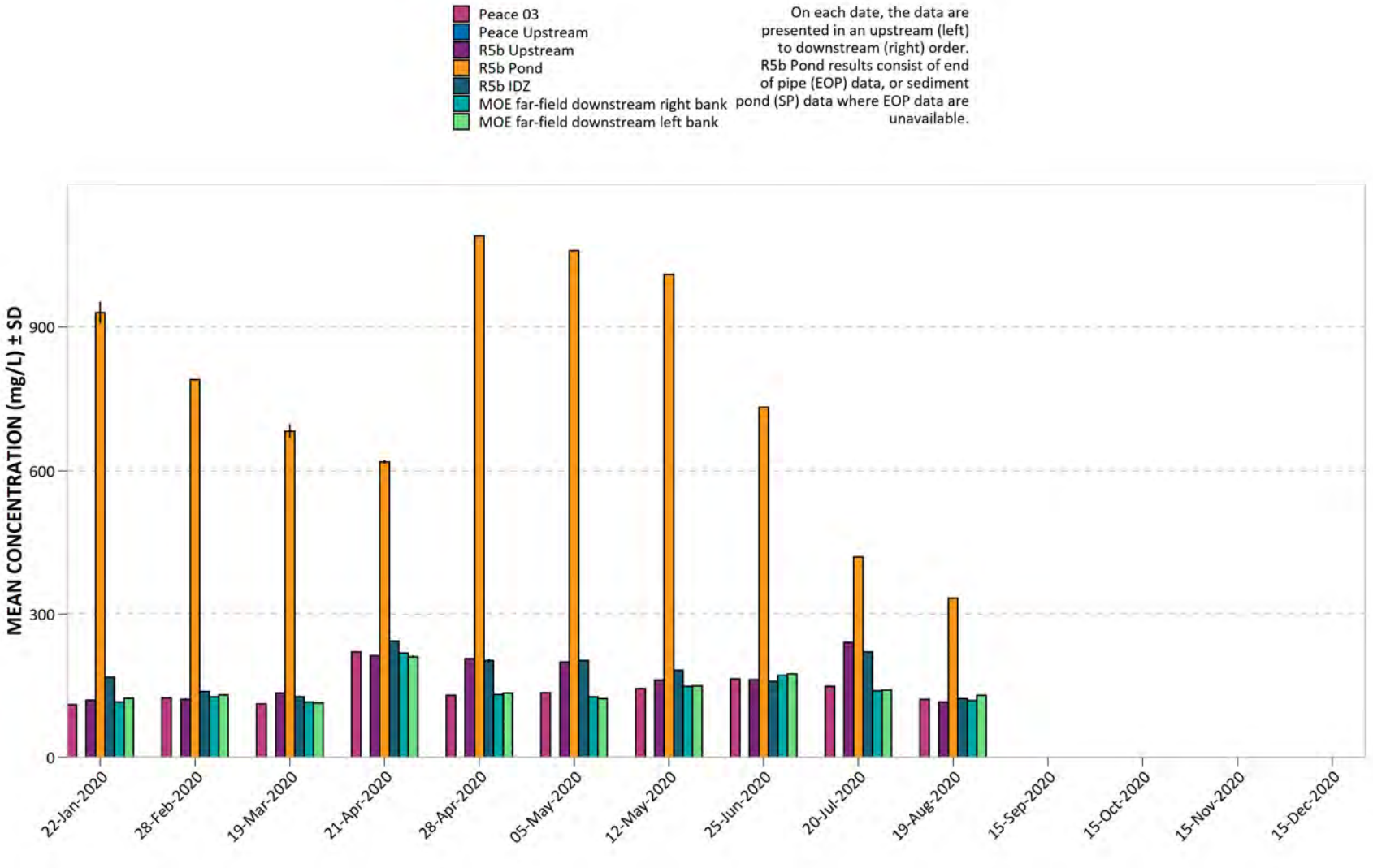


Figure 6. 2020 Peace River and RSEM R5b pond total suspended solids (TSS).

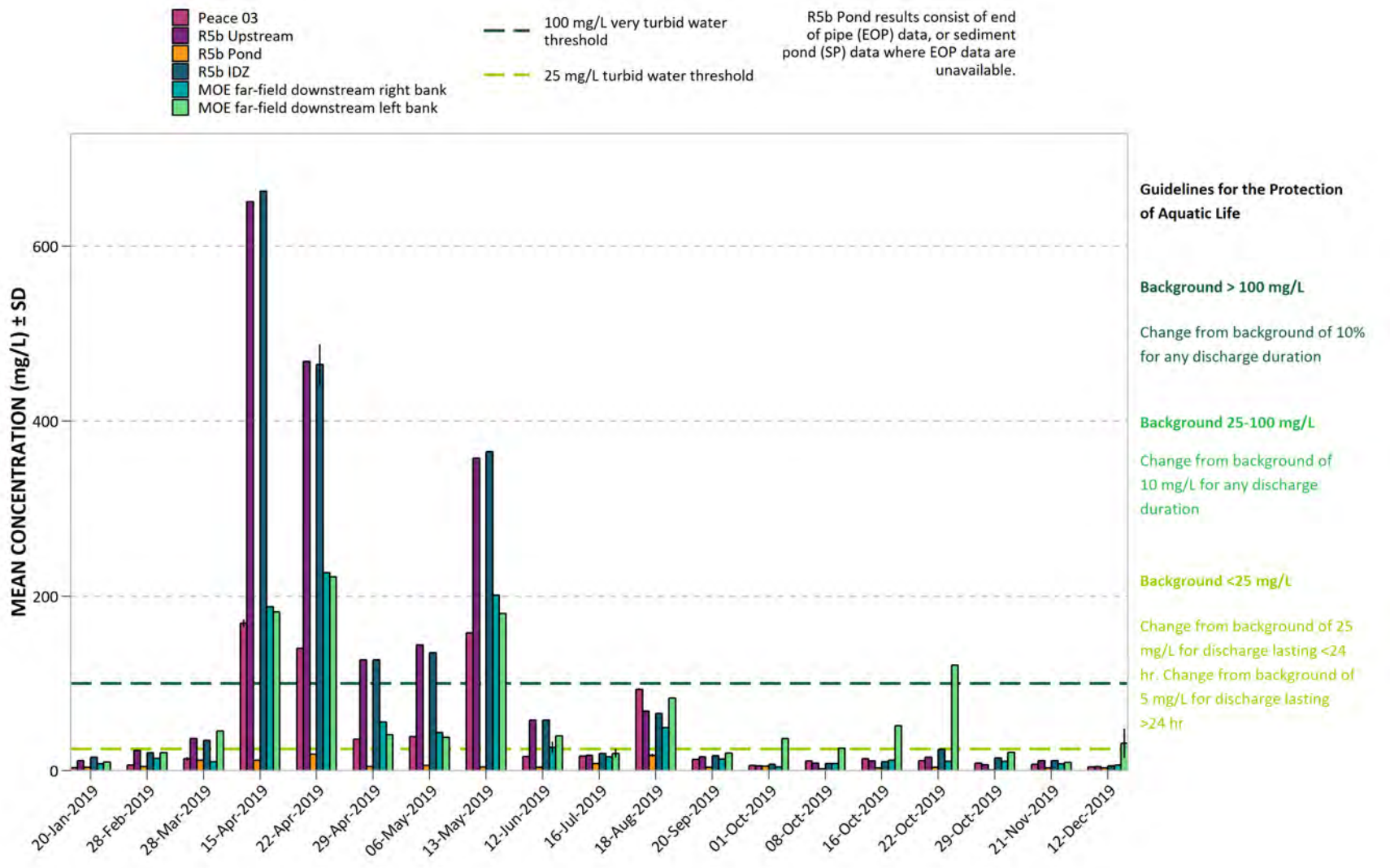


Figure 7. 2020 Peace River (*in-situ*) RSEM R5b pond (lab) turbidity.

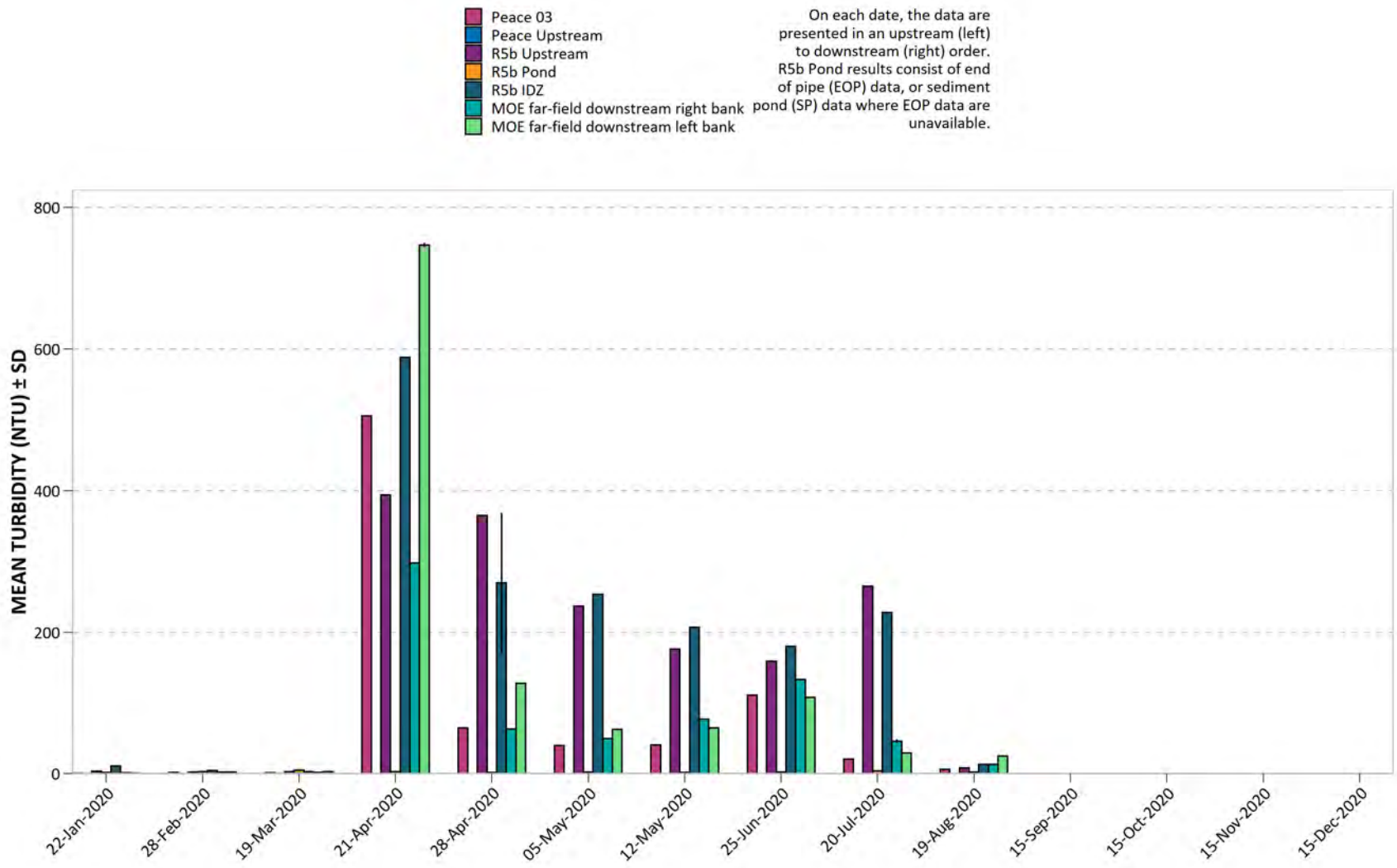


Figure 8. 2020 Peace River (*in*-situ) and RSEM R5b pond (lab) pH.

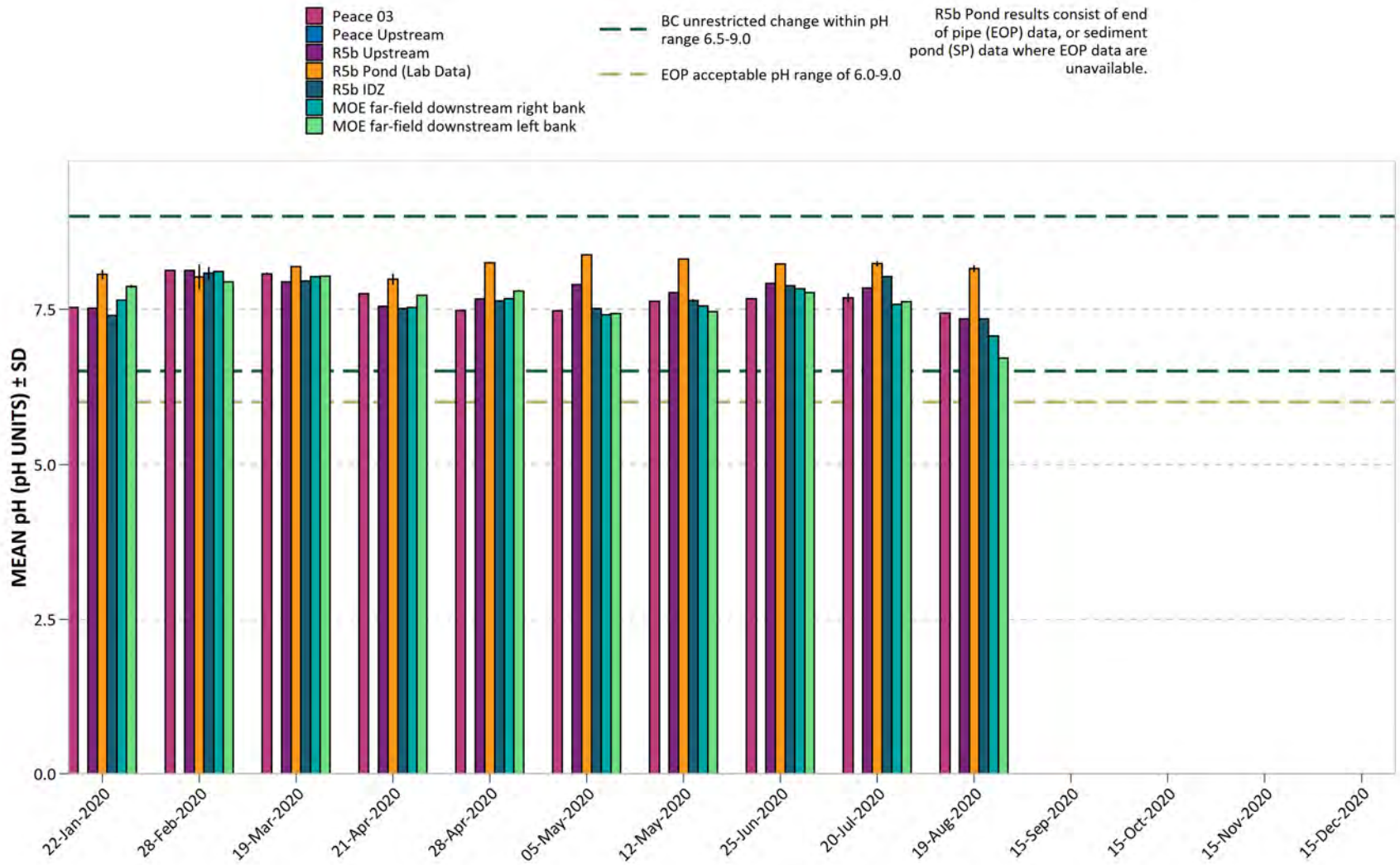


Figure 9. 2020 Peace River and RSEM R5b pond lab pH.

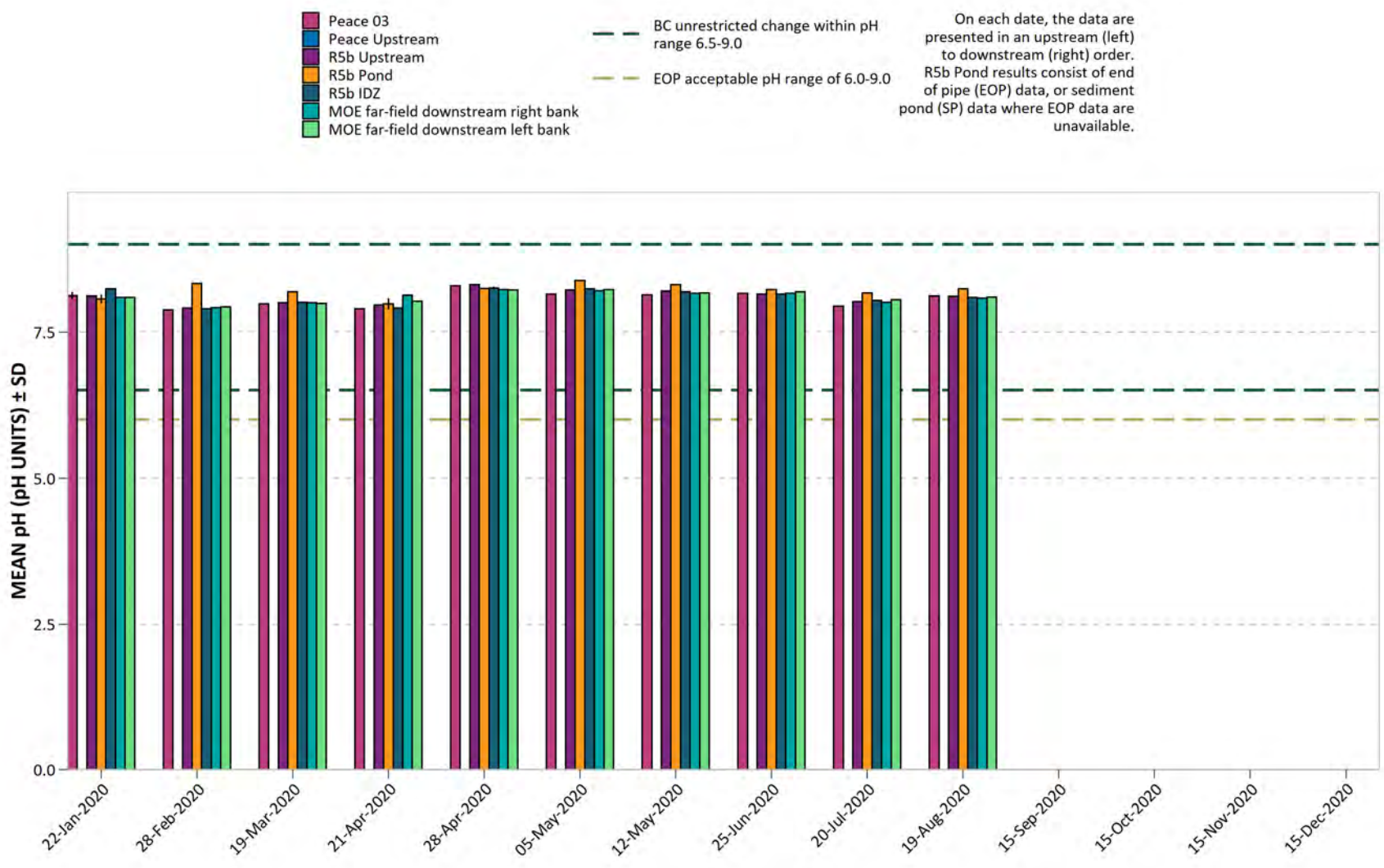


Figure 10. 2020 Peace River and RSEM R5b pond total alkalinity (as $CaCO_3$).

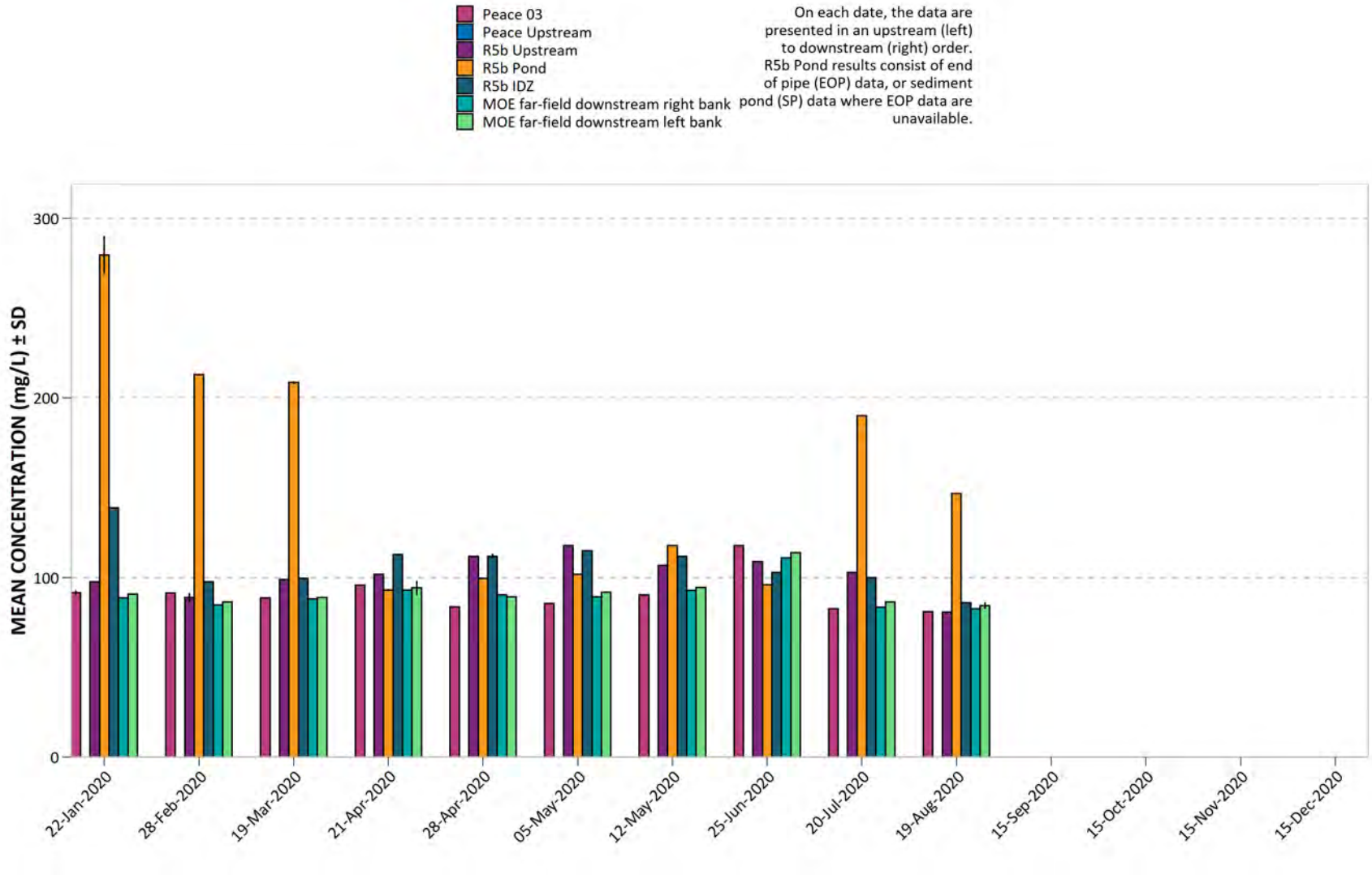


Figure 11. 2020 Peace River and RSEM R5b pond total ammonia (as N).

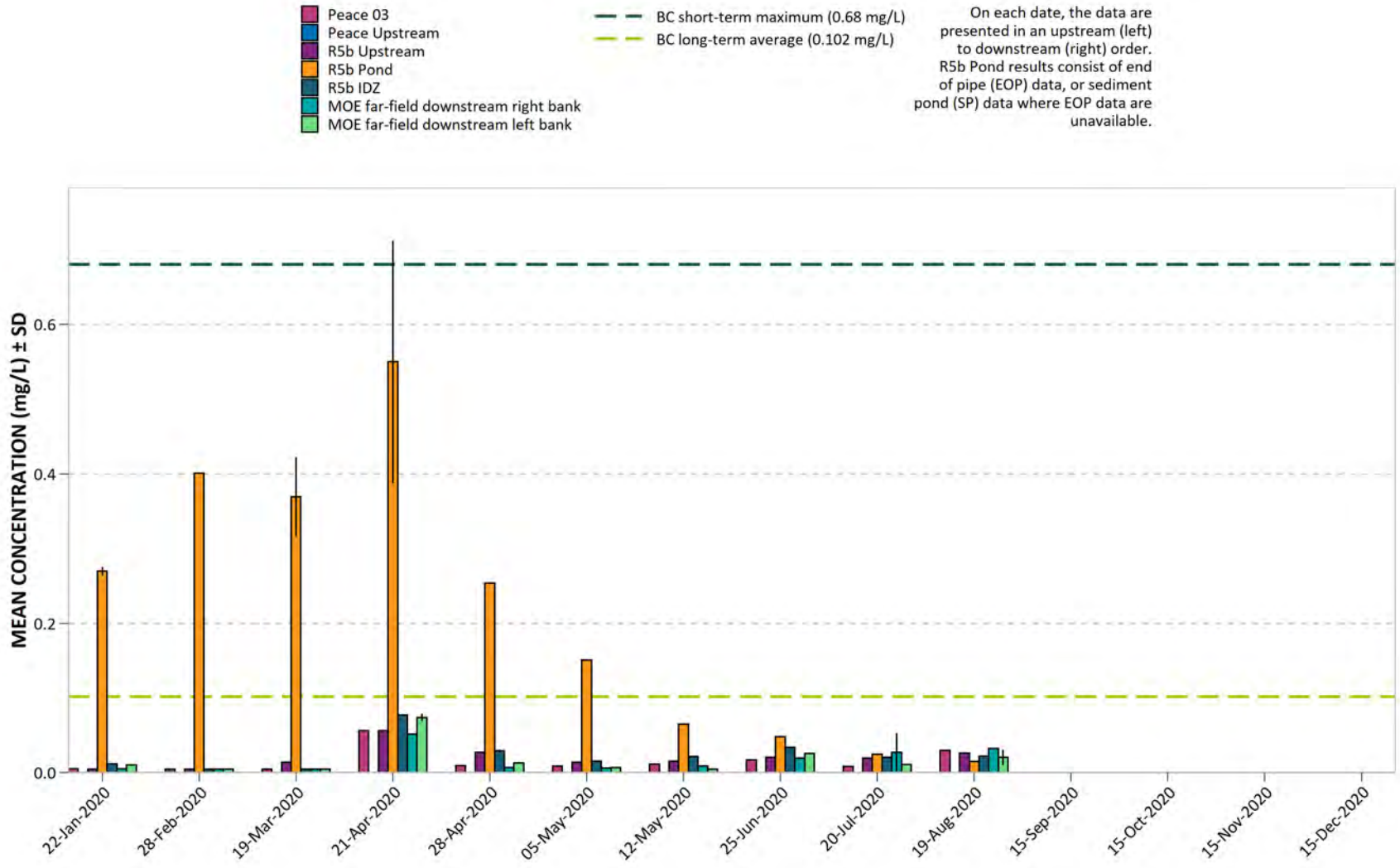


Figure 12. 2020 Peace River and RSEM R5b pond bromide (Br).

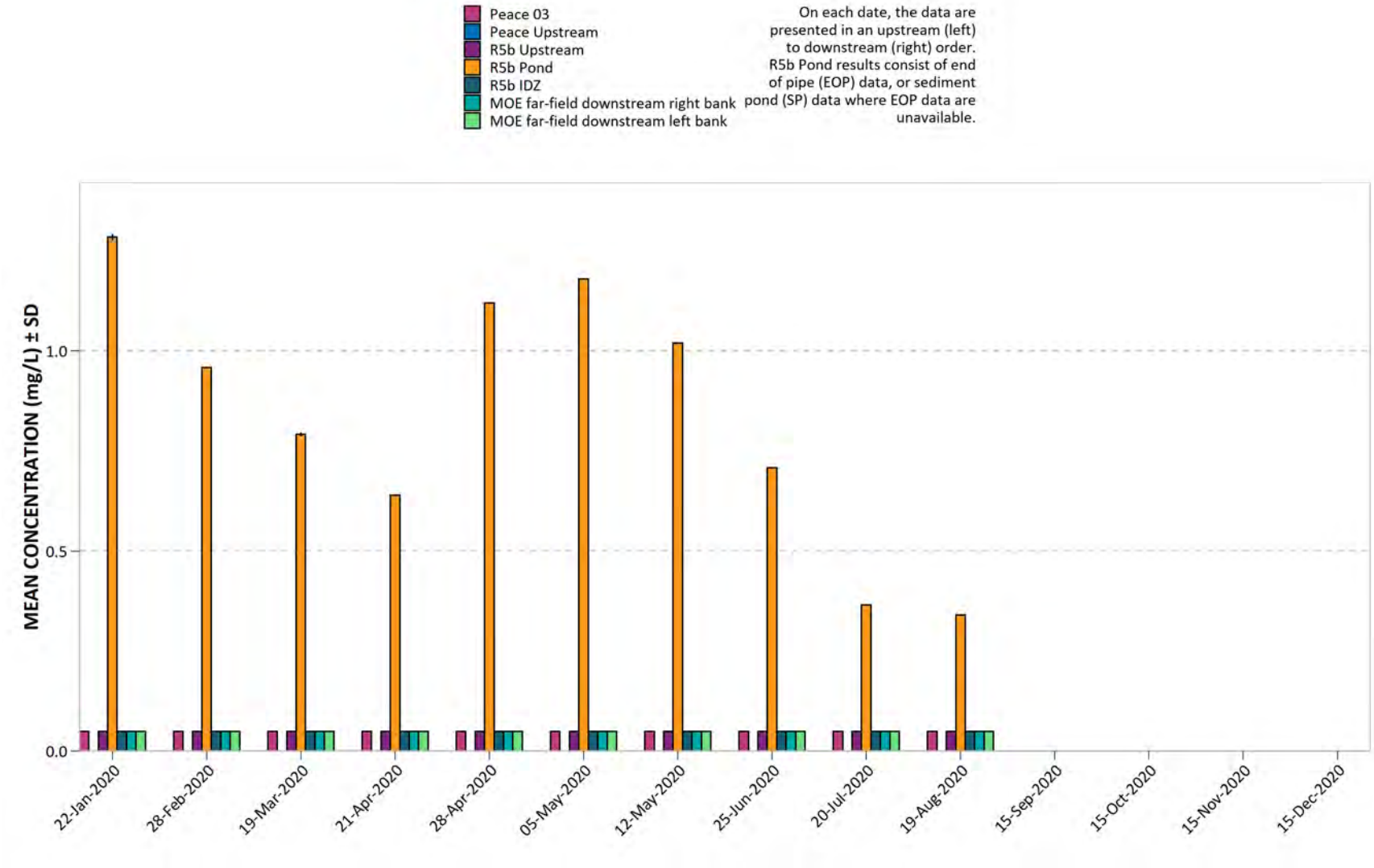


Figure 13. 2020 Peace River and RSEM R5b pond chloride (Cl).

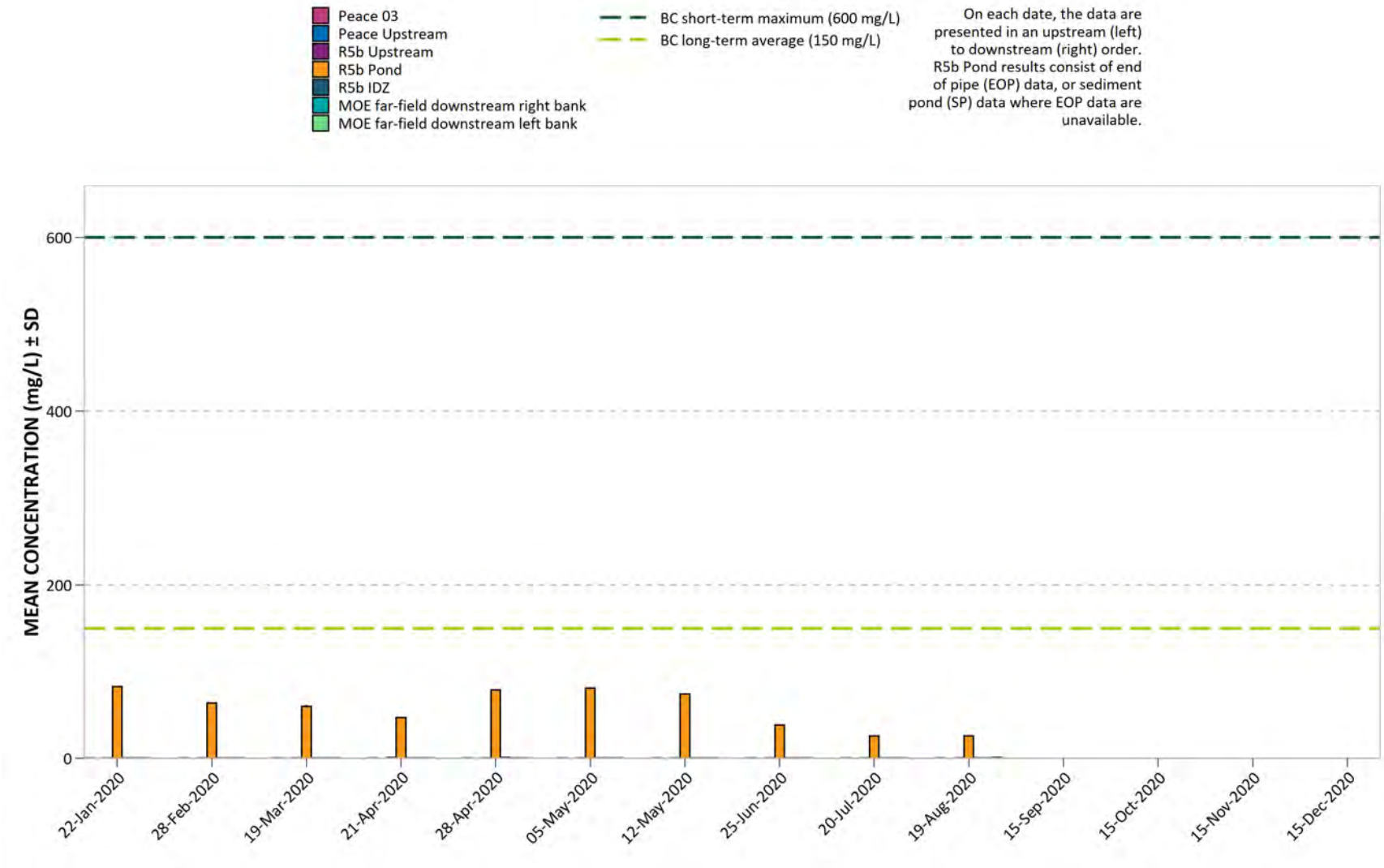


Figure 14. 2020 Peace River and RSEM R5b pond dissolved orthophosphate.

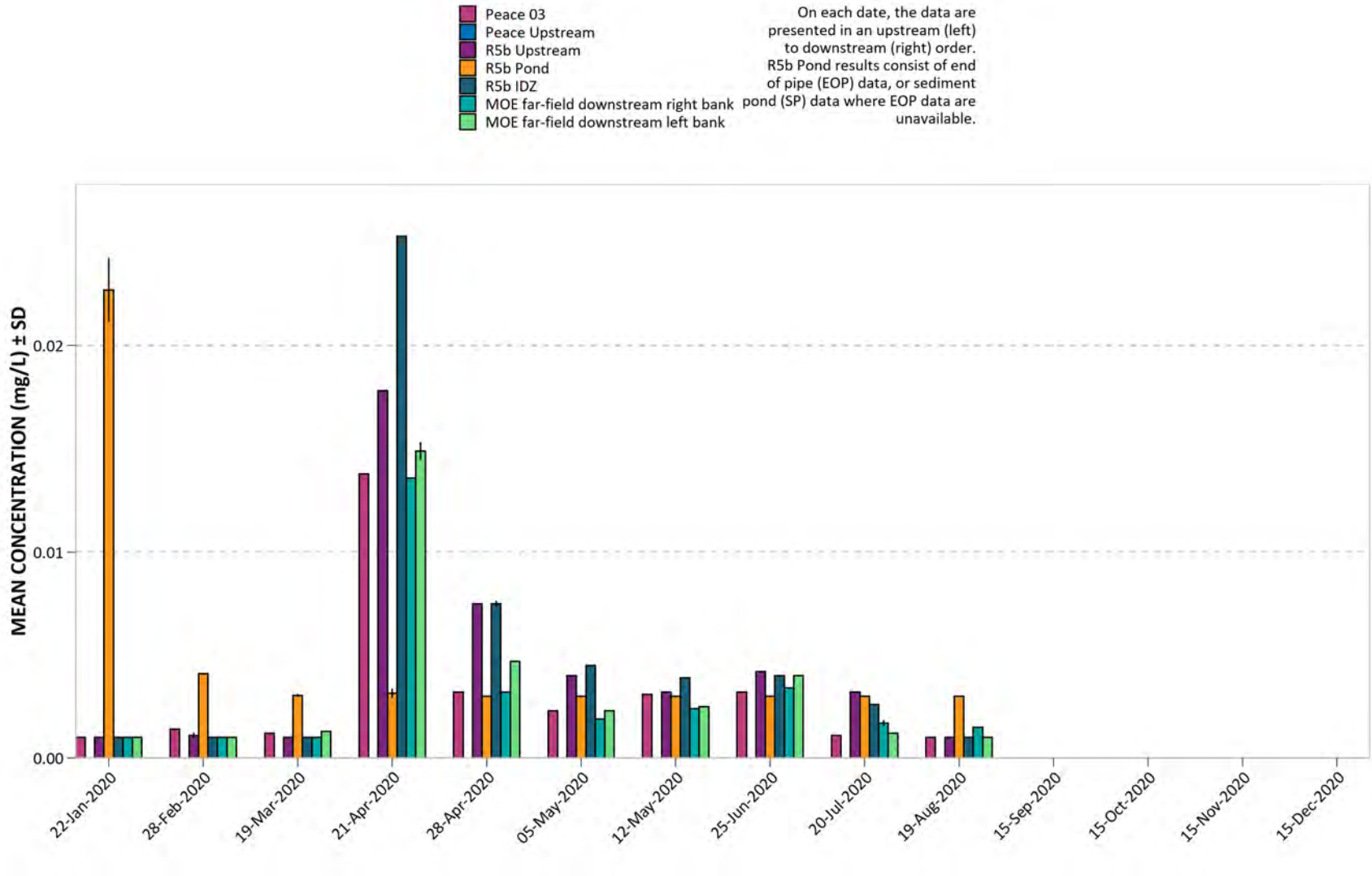


Figure 15. 2020 Peace River and RSEM R5b pond fluoride (F).

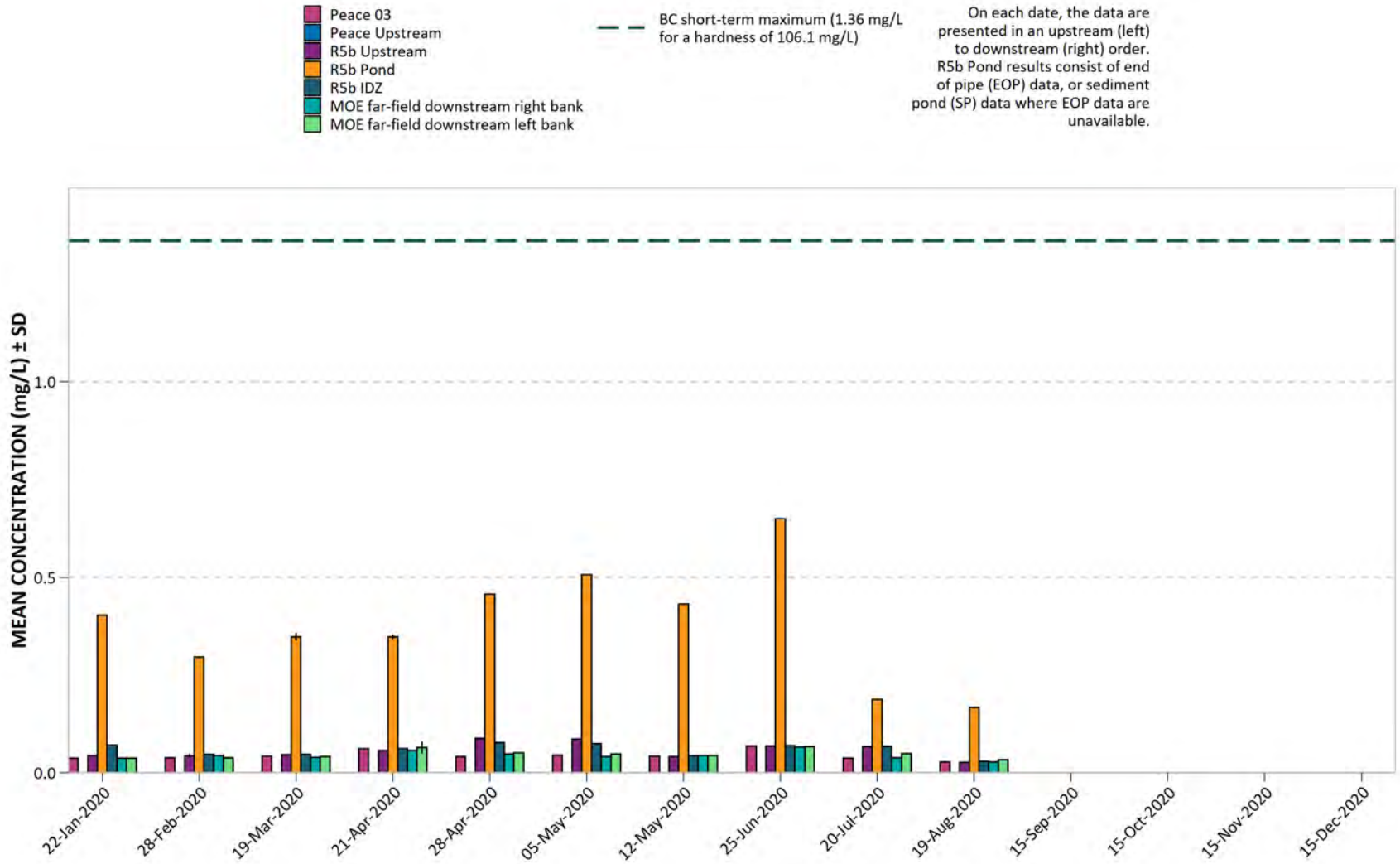


Figure 16. 2020 Peace River and RSEM R5b pond nitrate (as N).

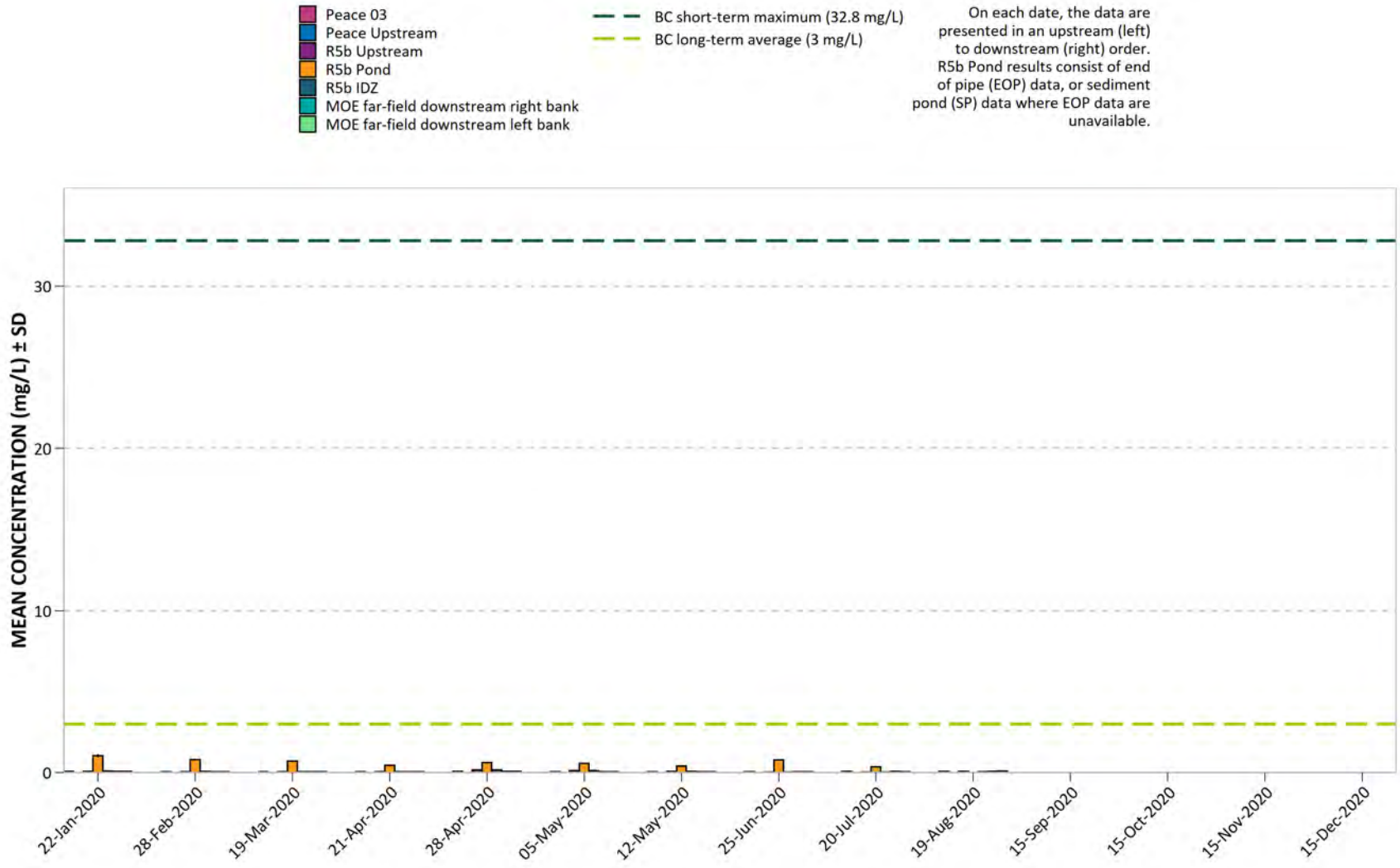
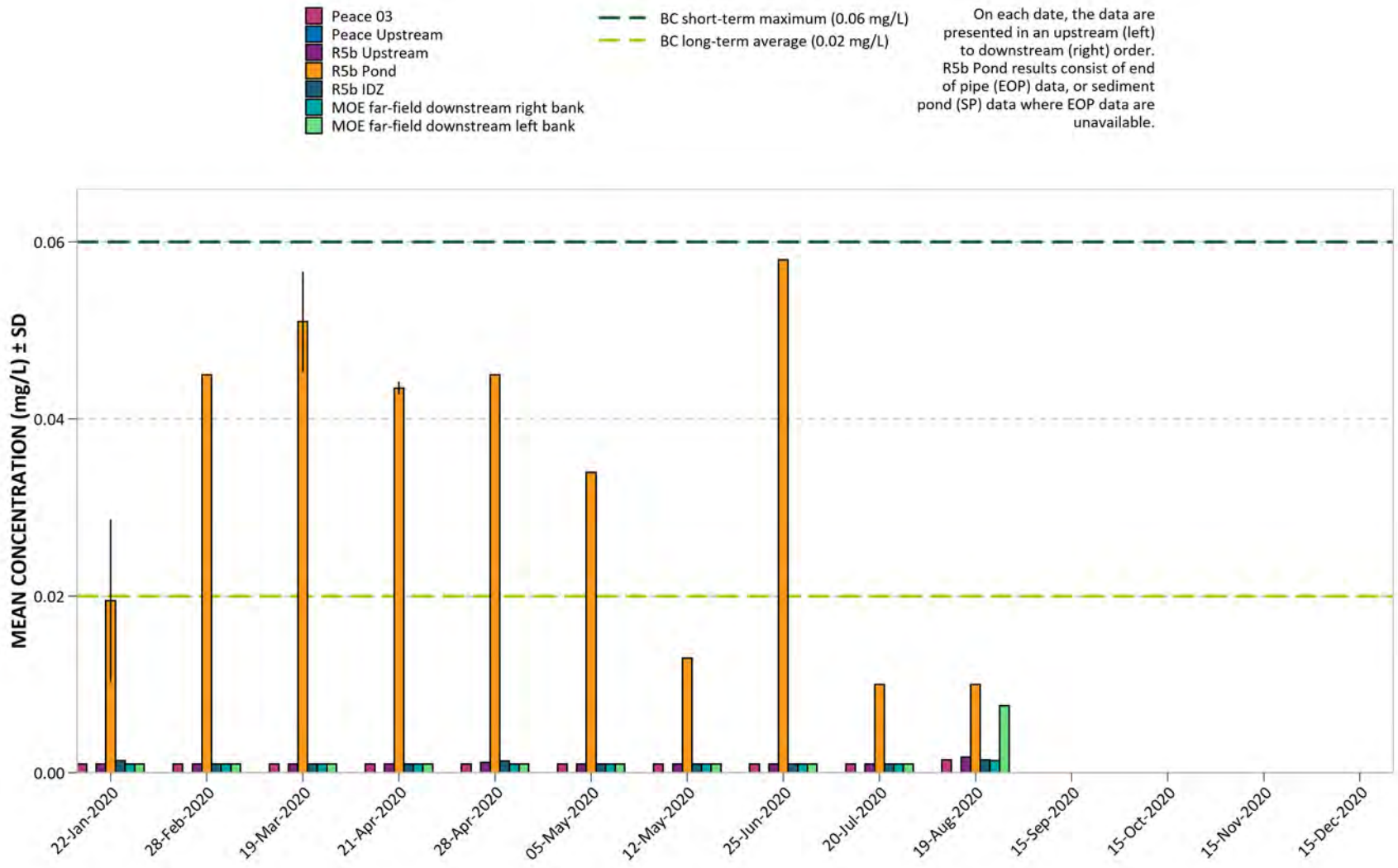


Figure 17. 2020 Peace River and RSEM R5b pond nitrite (as N).



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 R5b pond, the applicable BC Maximum and 30-day guidelines are 0.6 mg/L and 0.2 mg/L, respectively. Most of the Peace River data are <MDL.

Figure 18. 2020 Peace River and RSEM R5b pond sulfate (SO_4).

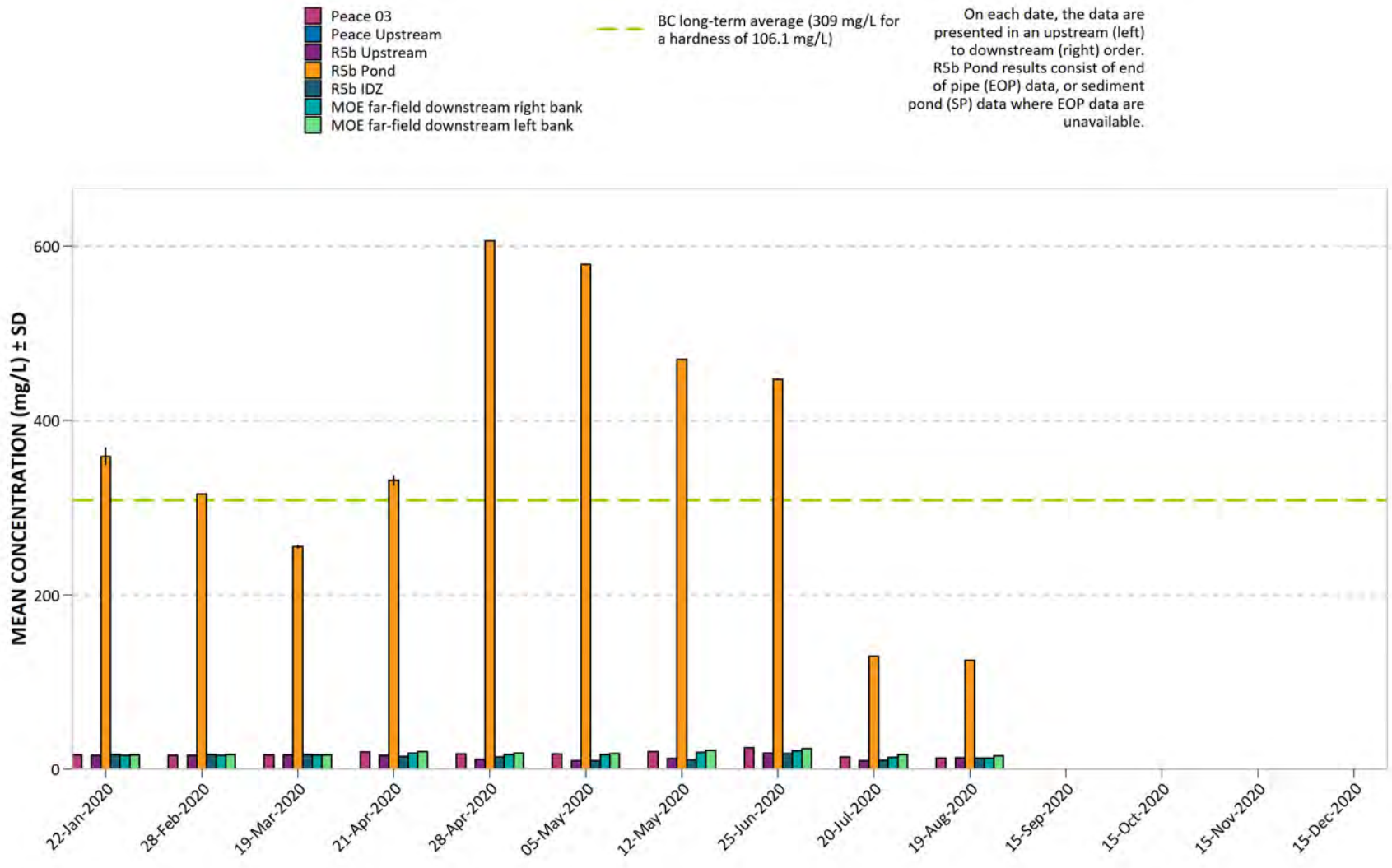


Figure 19. 2020 Peace River and RSEM R5b pond dissolved organic carbon (DOC).

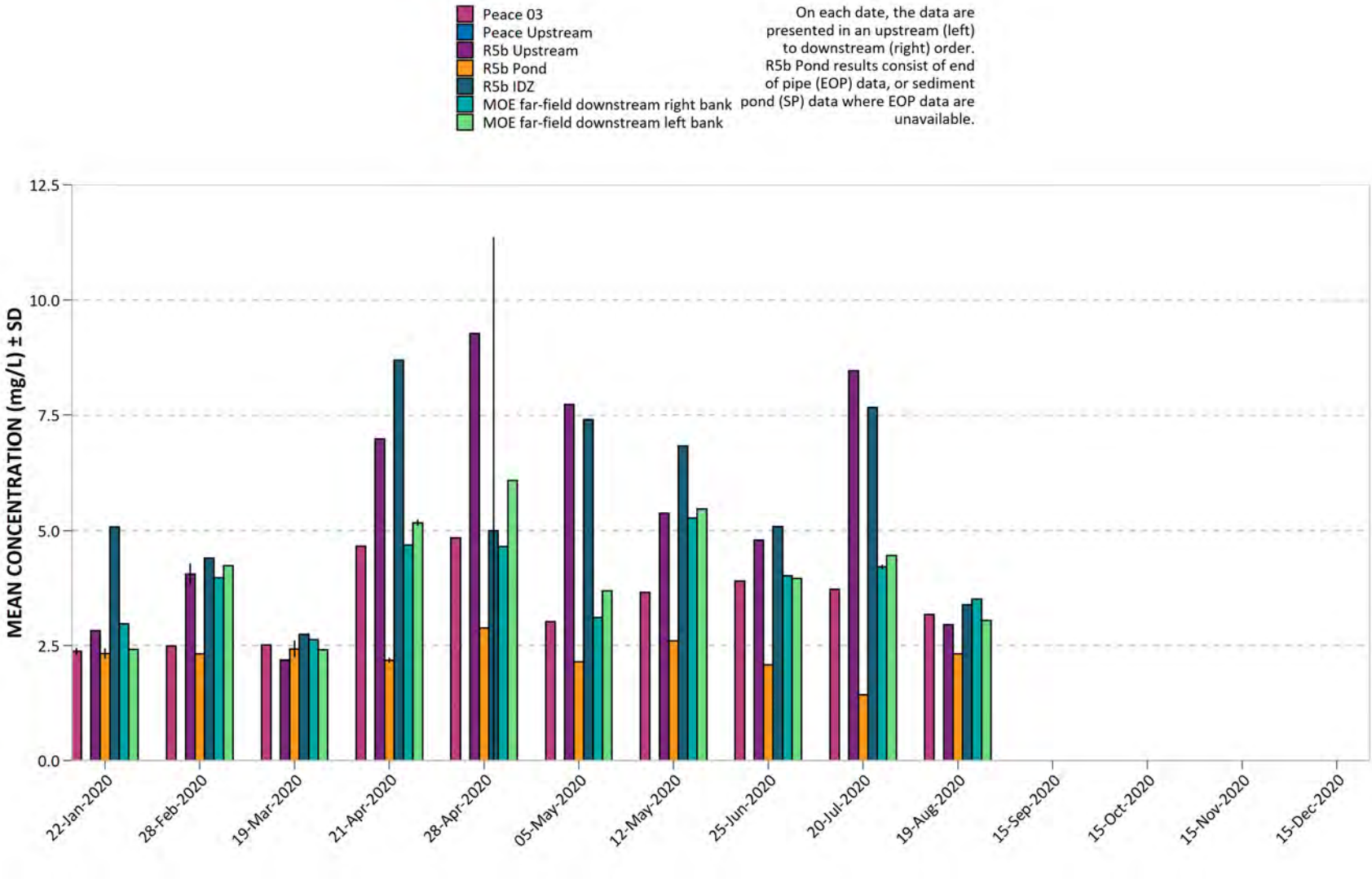


Figure 20. 2020 Peace River and RSEM R5b pond total organic carbon (TOC).

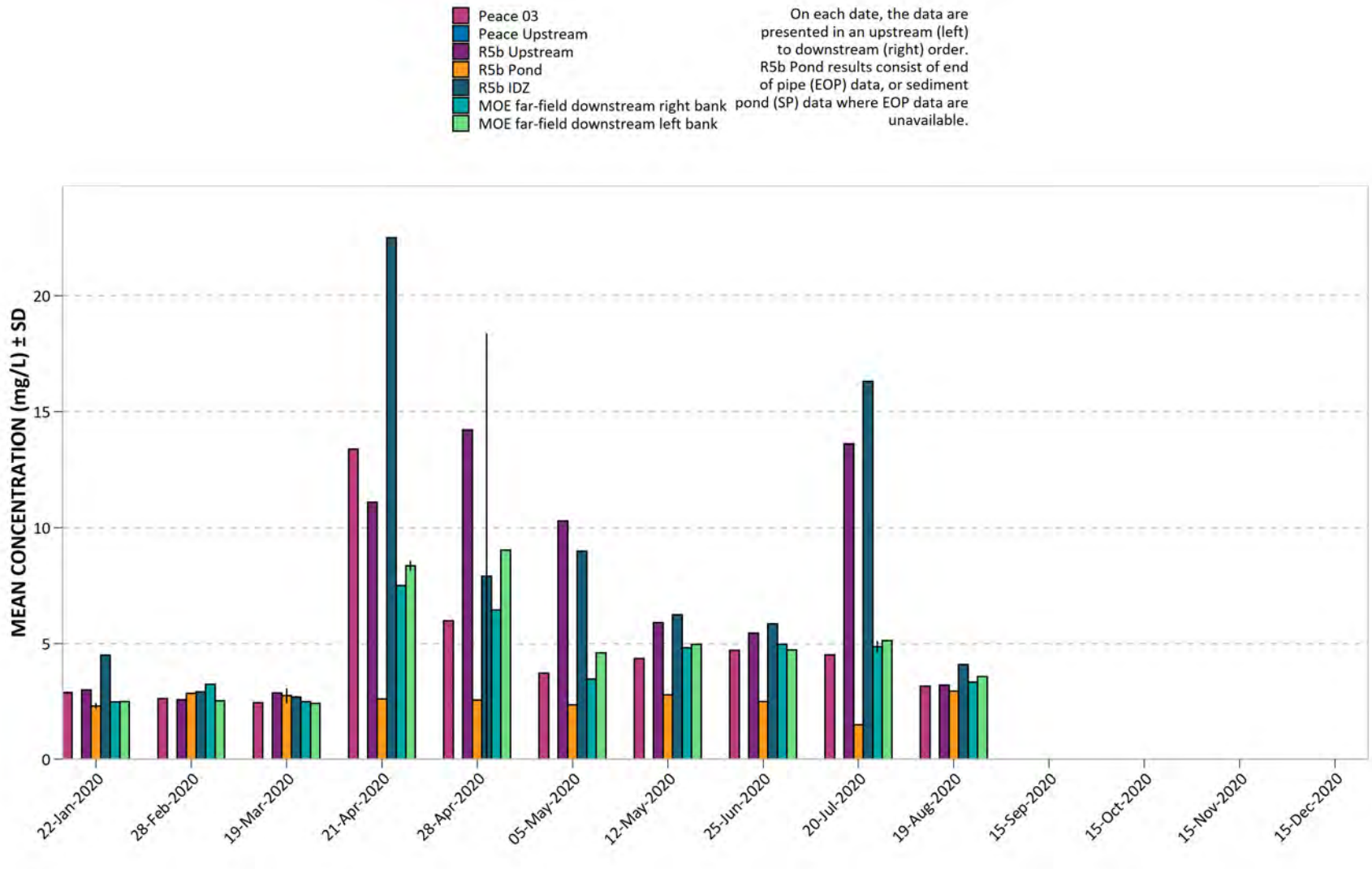


Figure 21. 2020 Peace River and RSEM R5b pond total aluminum (Al).

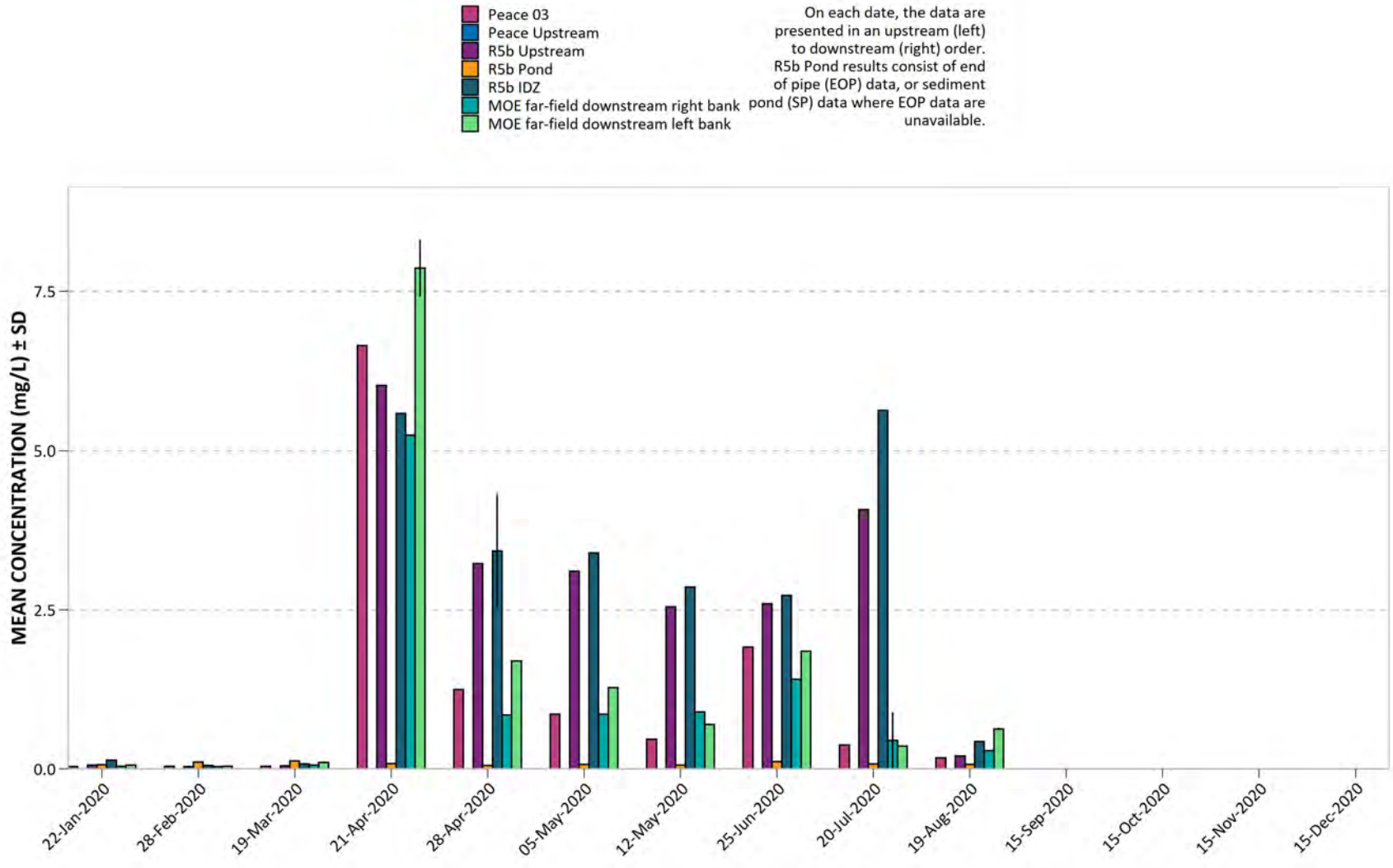


Figure 22. 2020 Peace River and RSEM R5b pond total antimony (Sb).

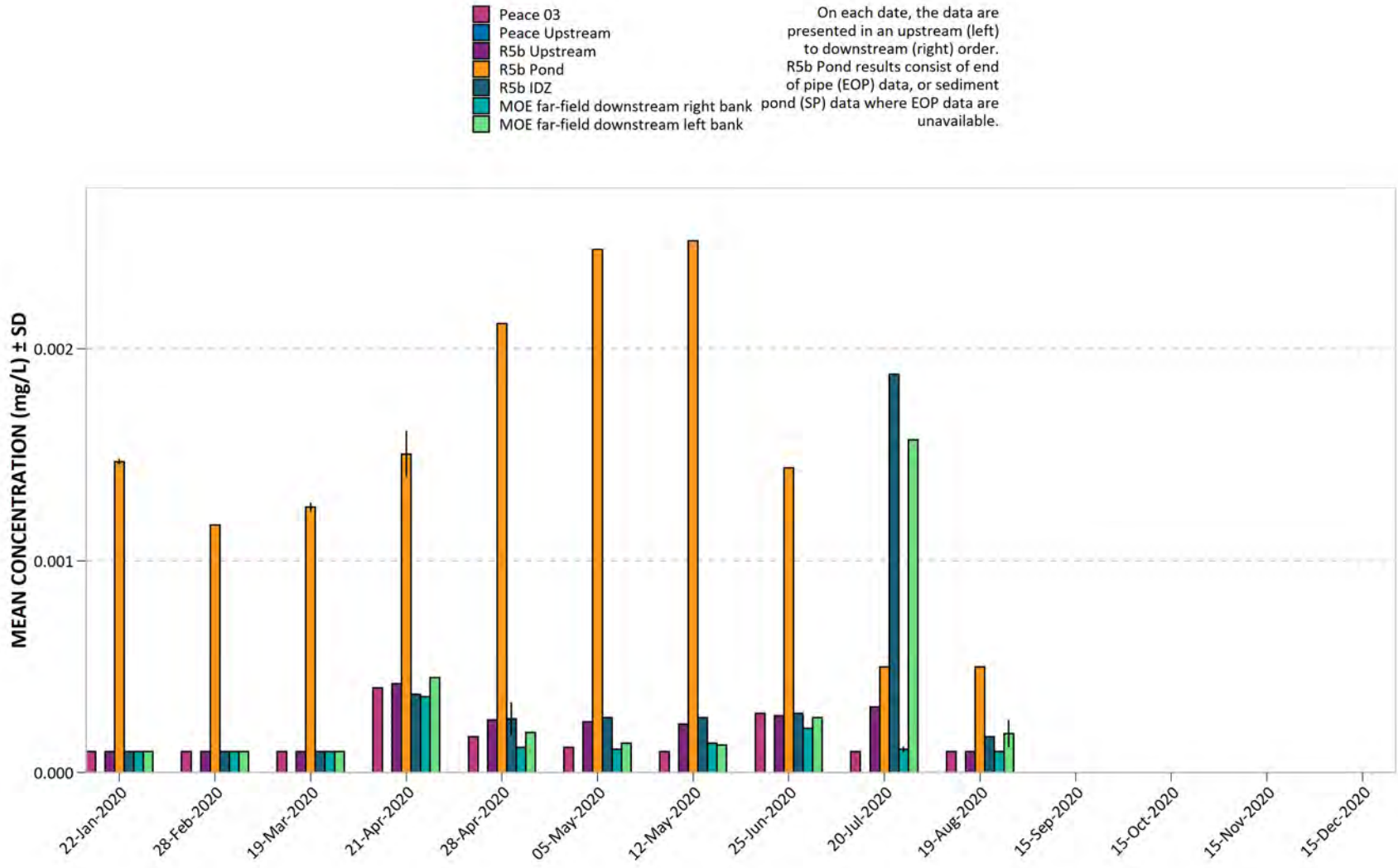


Figure 23. 2020 Peace River and RSEM R5b pond total arsenic (As).

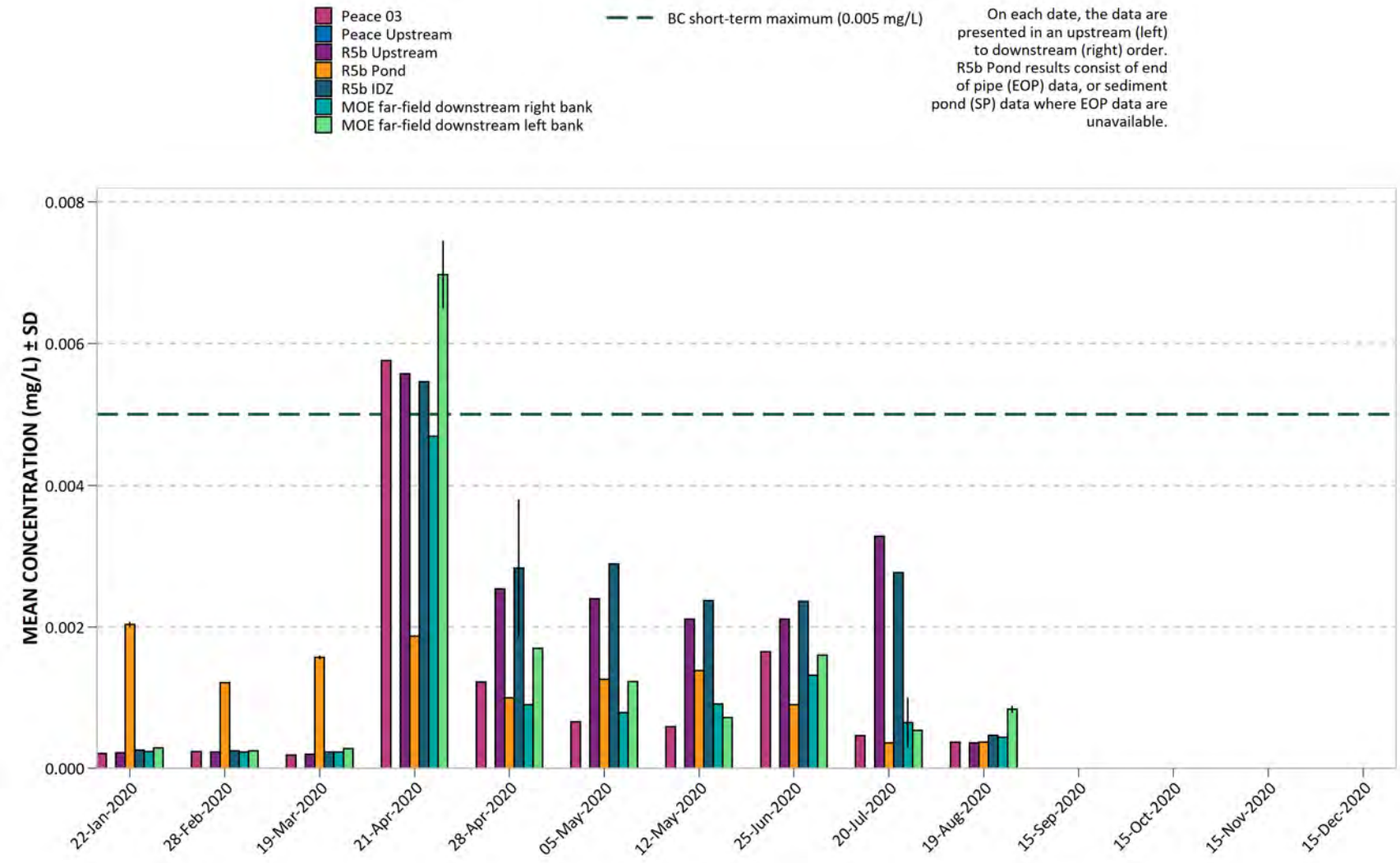


Figure 24. 2020 Peace River and RSEM R5b pond total barium (Ba).

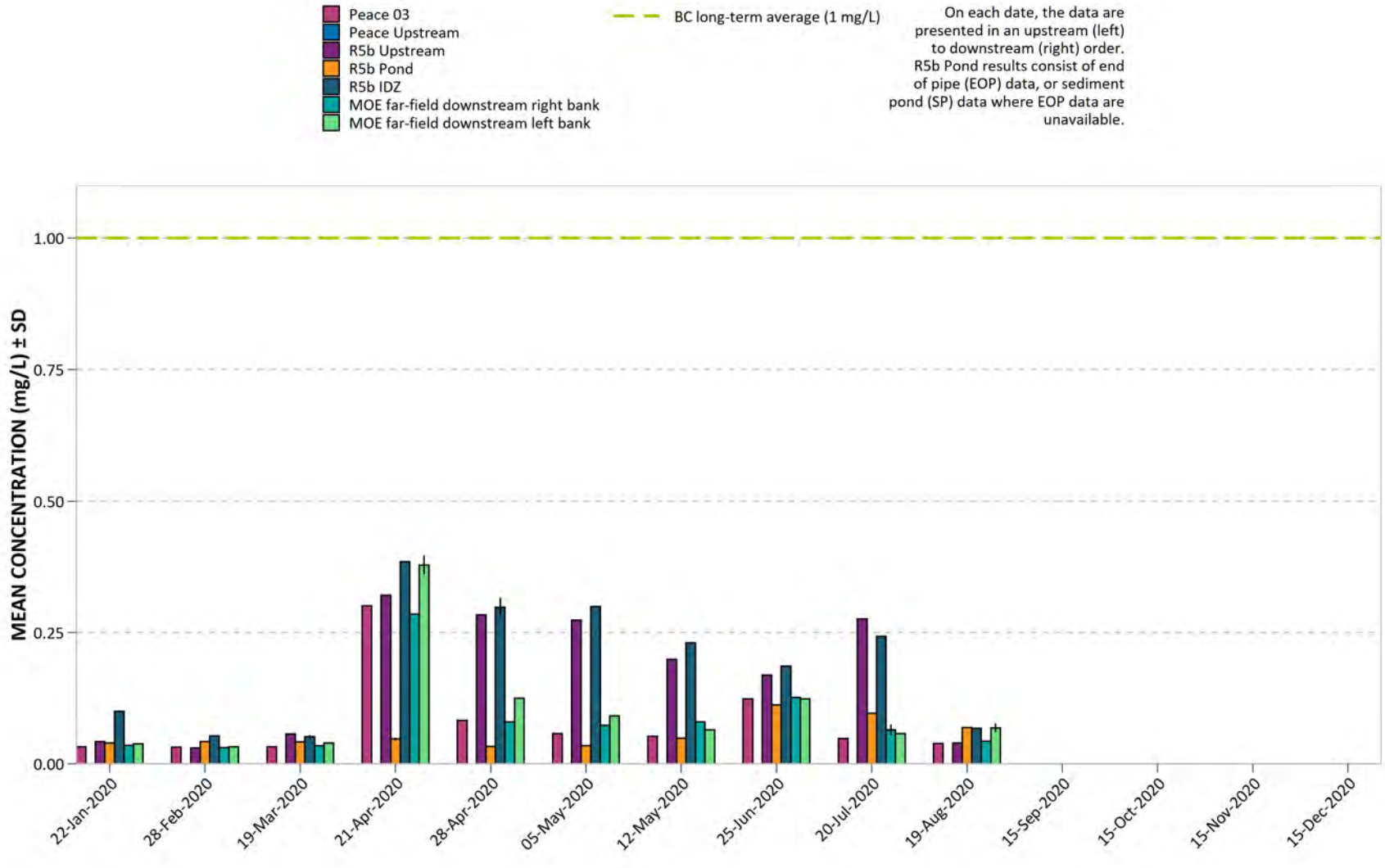


Figure 25. 2020 Peace River and RSEM R5b pond total beryllium (Be).

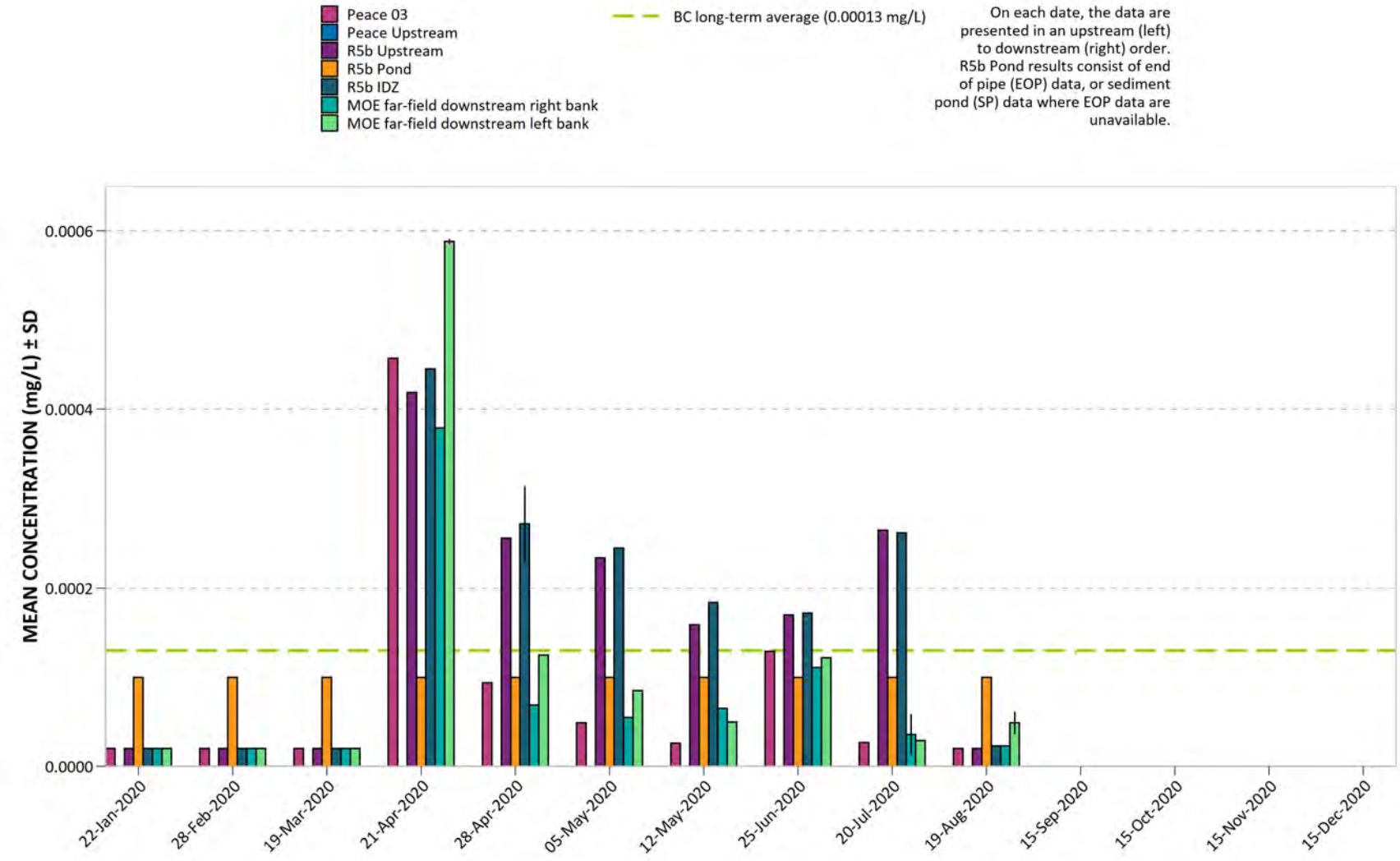


Figure 26. 2020 Peace River and RSEM R5b pond total bismuth (Bi).

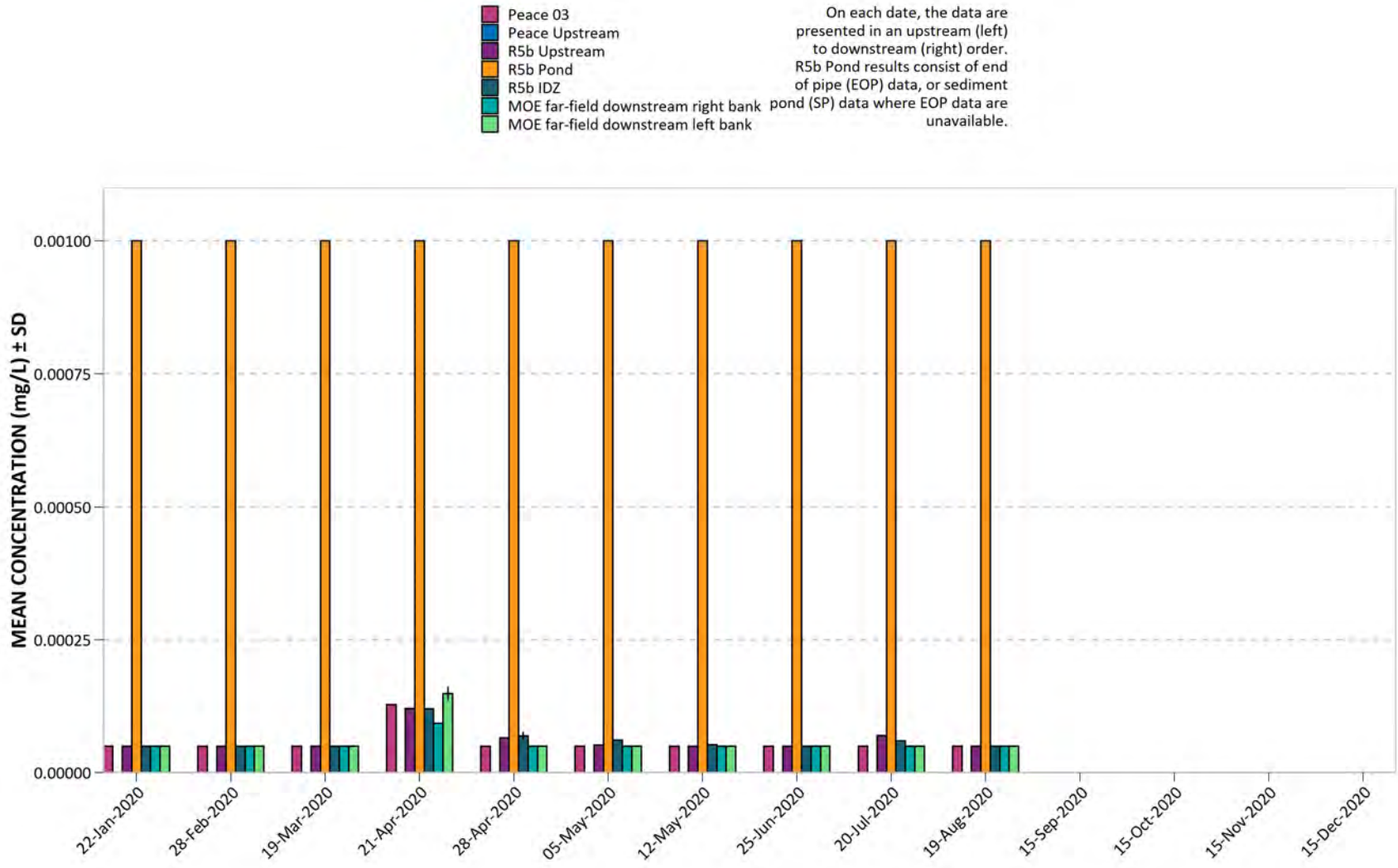


Figure 27. 2020 Peace River and RSEM R5b pond total boron (B).

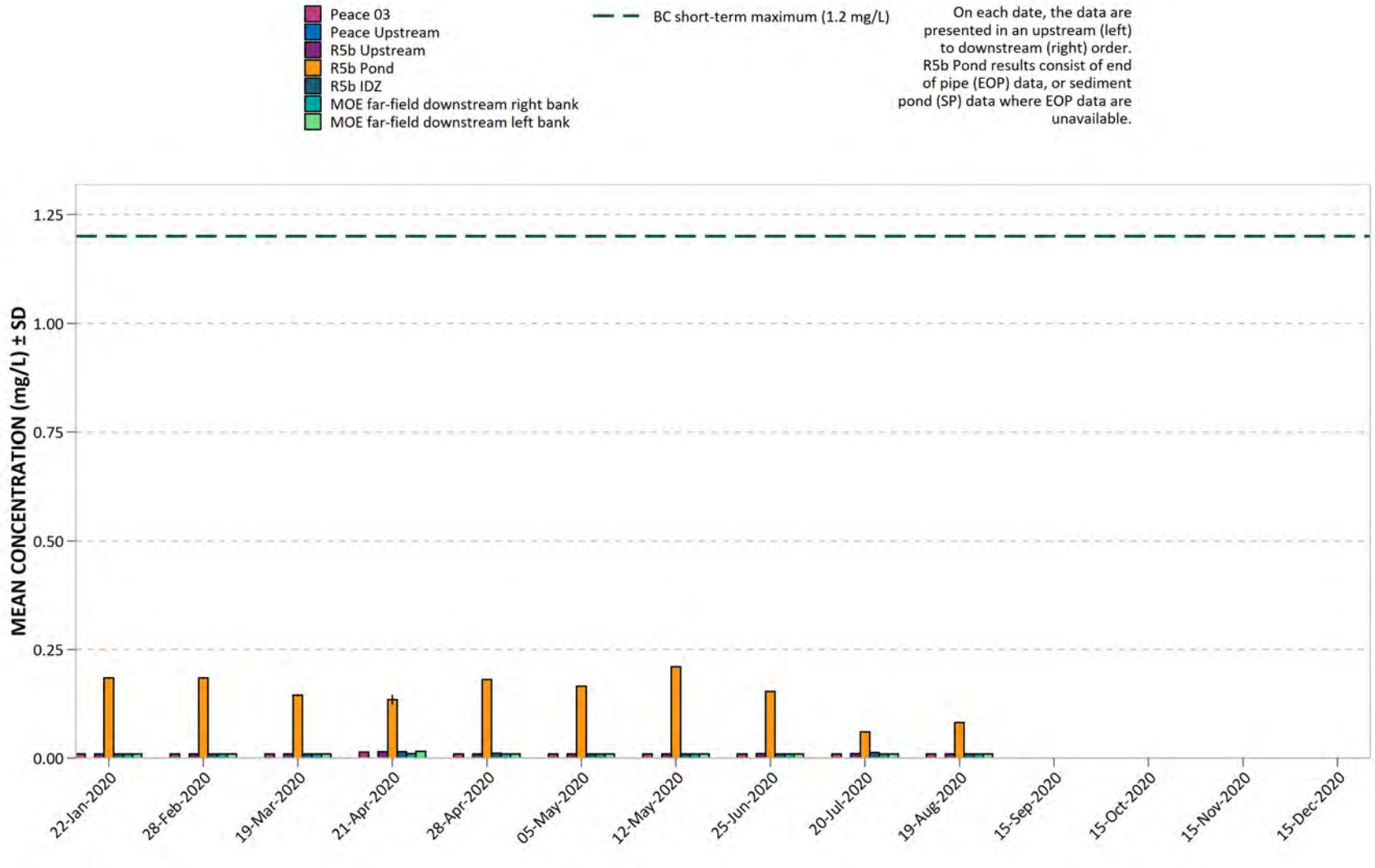


Figure 28. 2020 Peace River and RSEM R5b pond total cadmium (Cd).

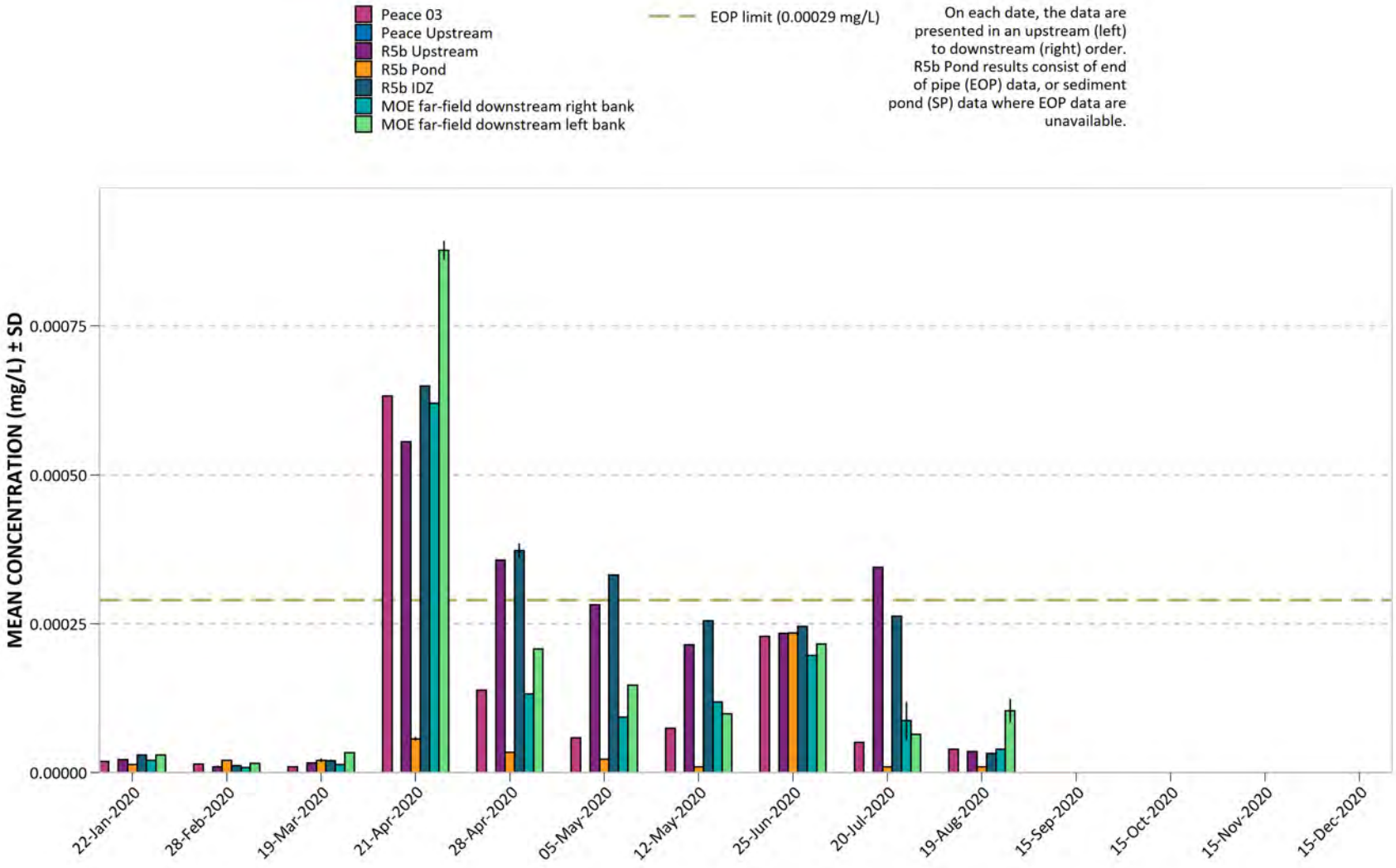


Figure 29. 2020 Peace River and RSEM R5b pond total calcium (Ca).

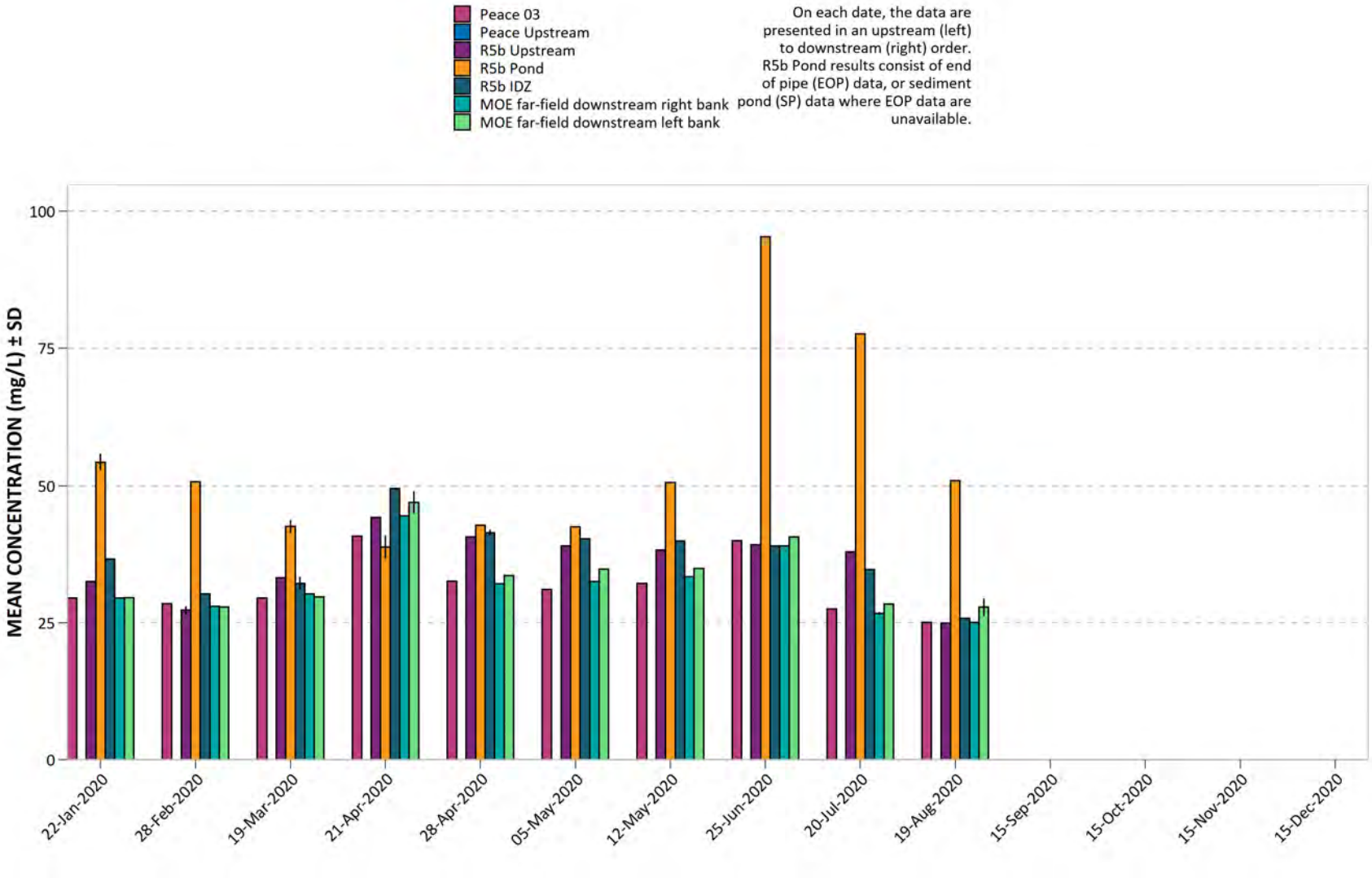


Figure 30. 2020 Peace River and RSEM R5b pond total chromium (Cr).

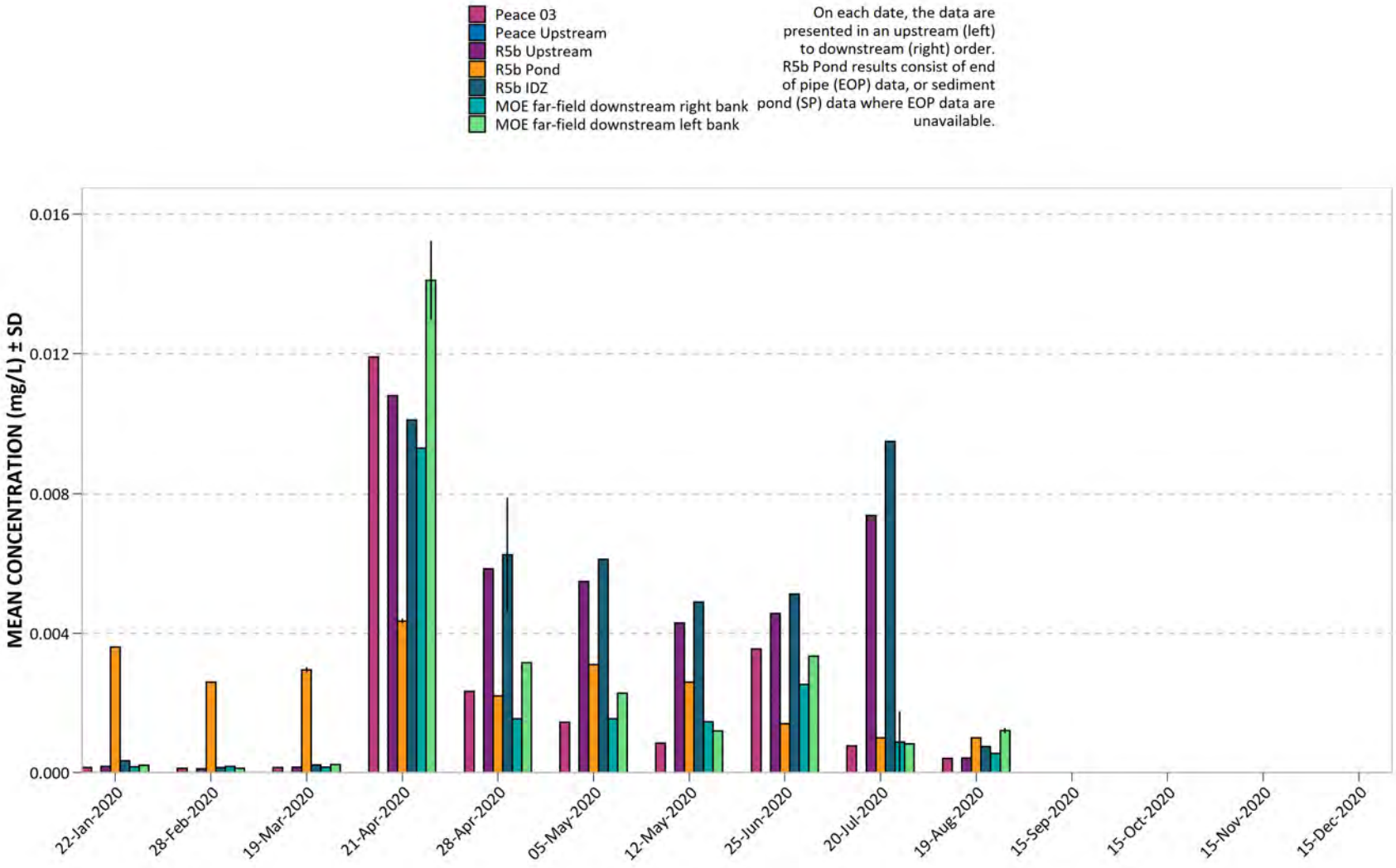


Figure 31. 2020 Peace River and RSEM R5b pond total cobalt (Co).

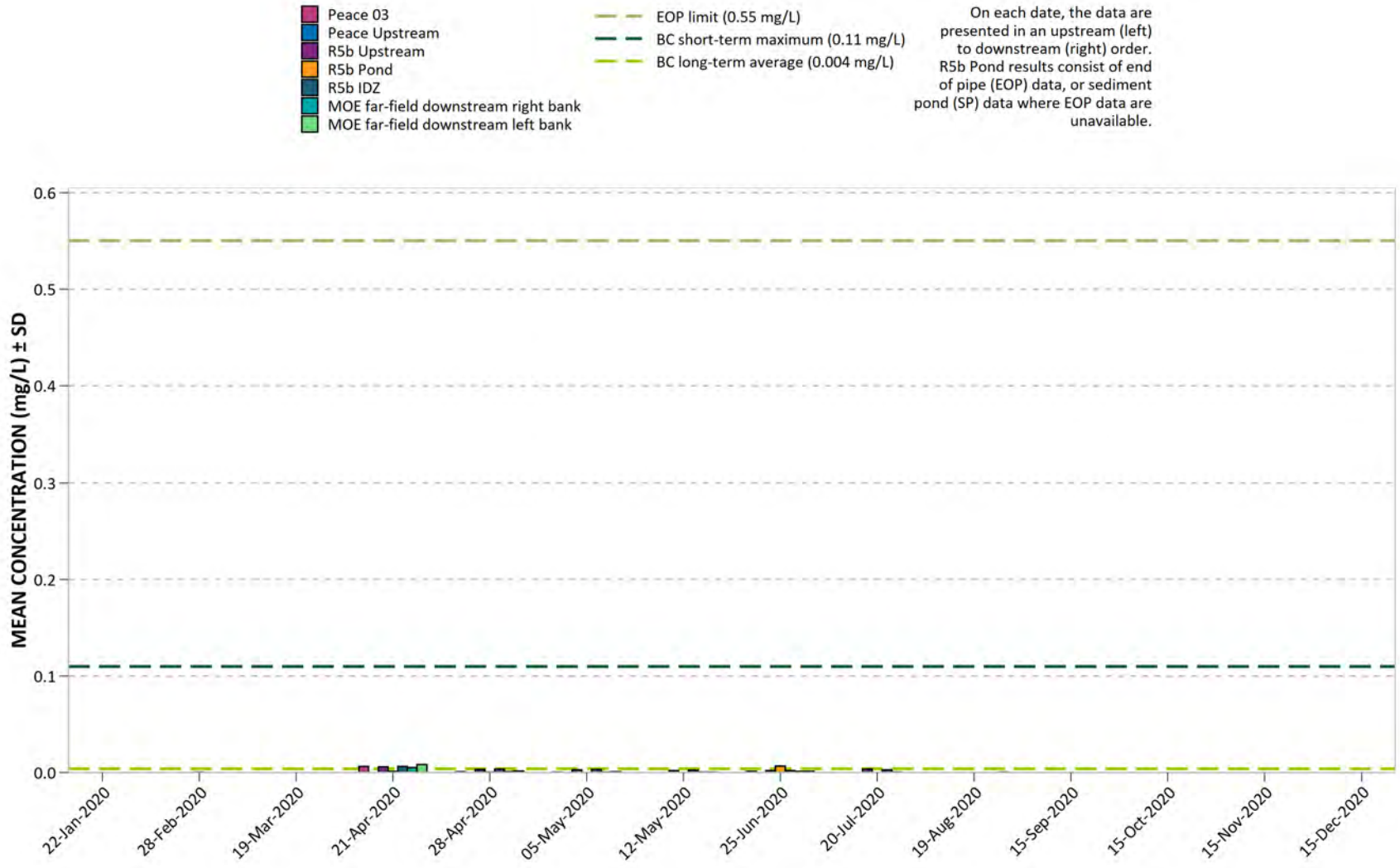


Figure 32. 2020 Peace River and RSEM R5b pond total copper (Cu).

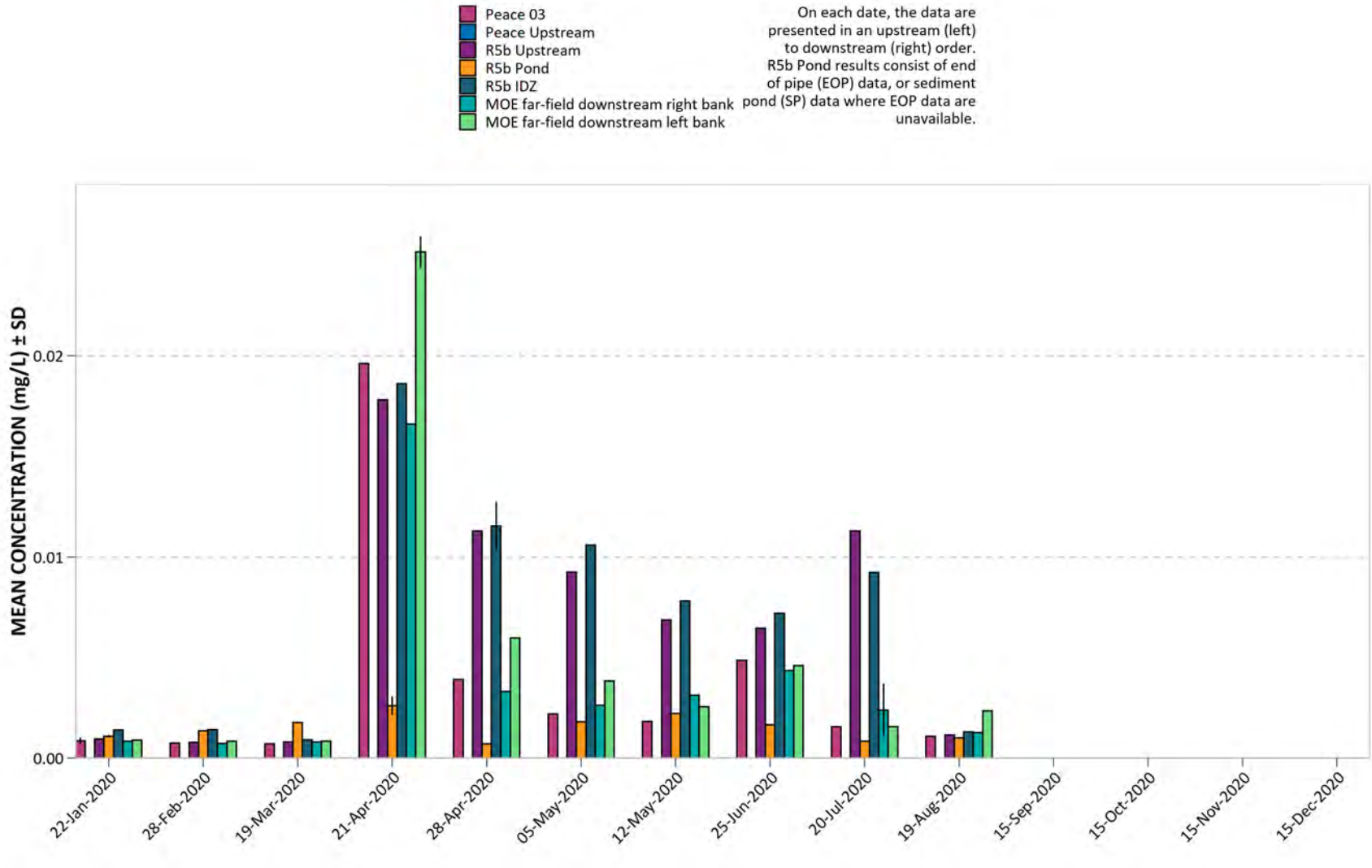


Figure 33. 2019 Peace River and RSEM R5b pond total iron (Fe).

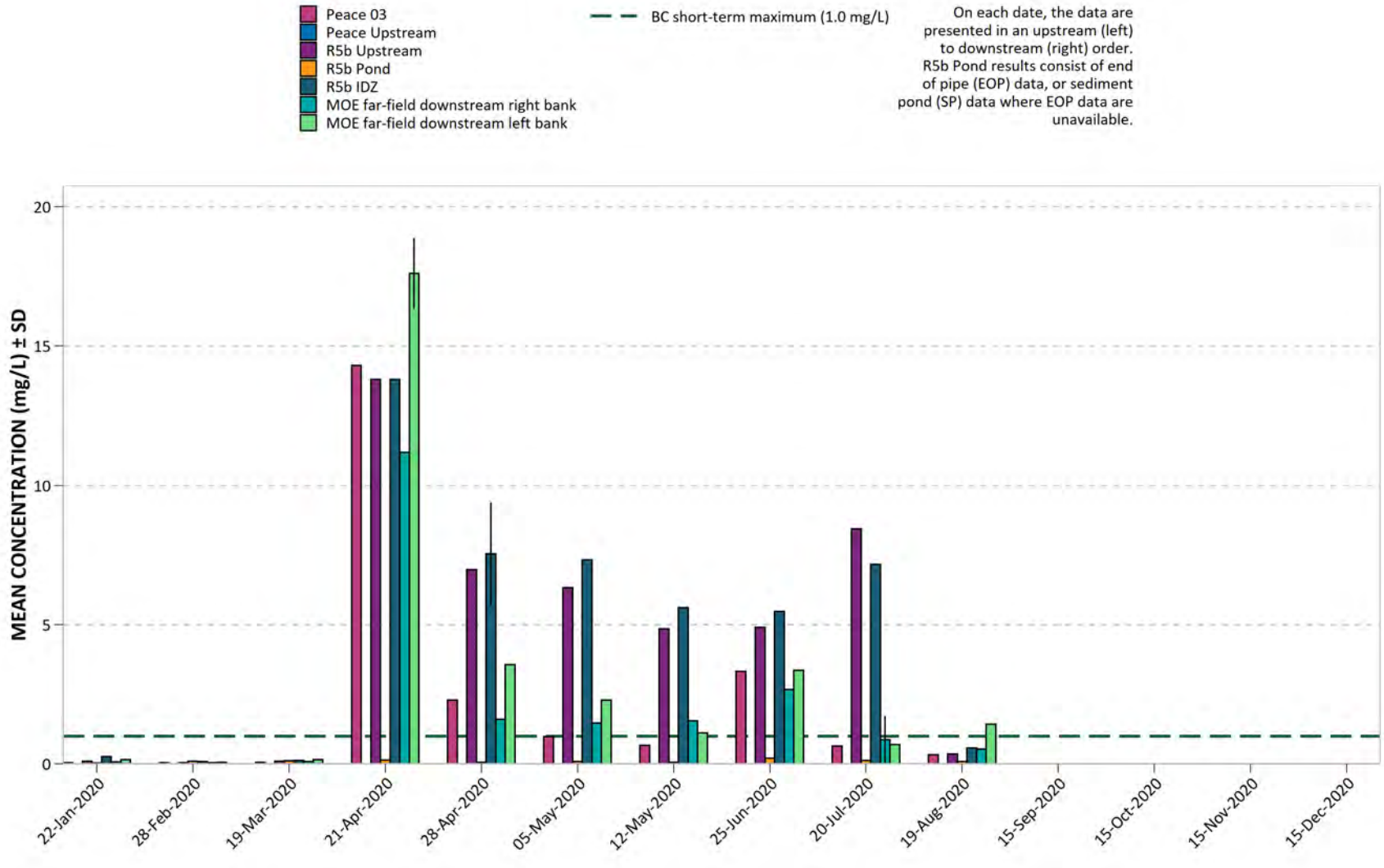


Figure 34. 2020 Peace River and RSEM R5b pond total lead (Pb).

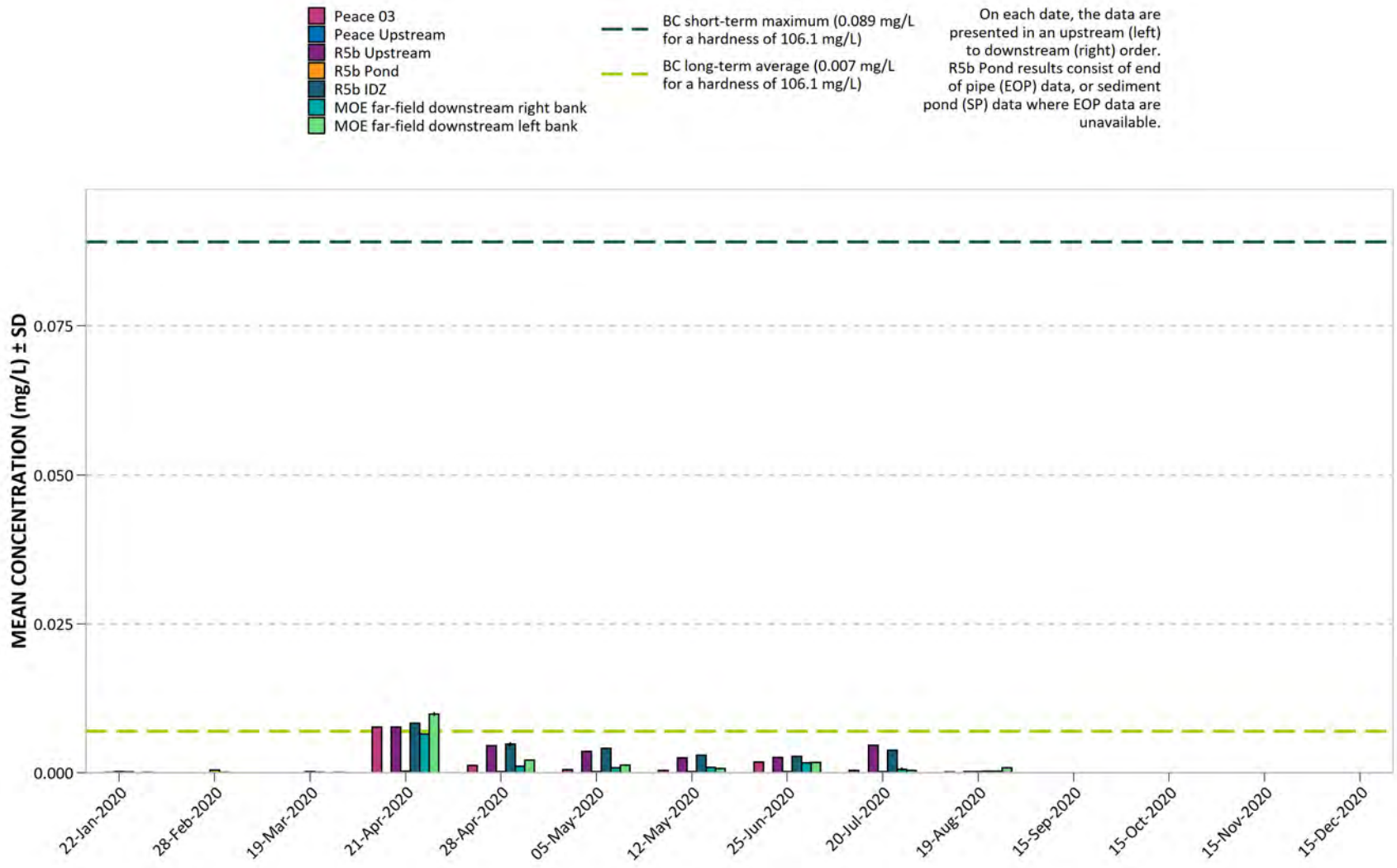


Figure 35. 2020 Peace River and RSEM R5b pond total lithium (Li).

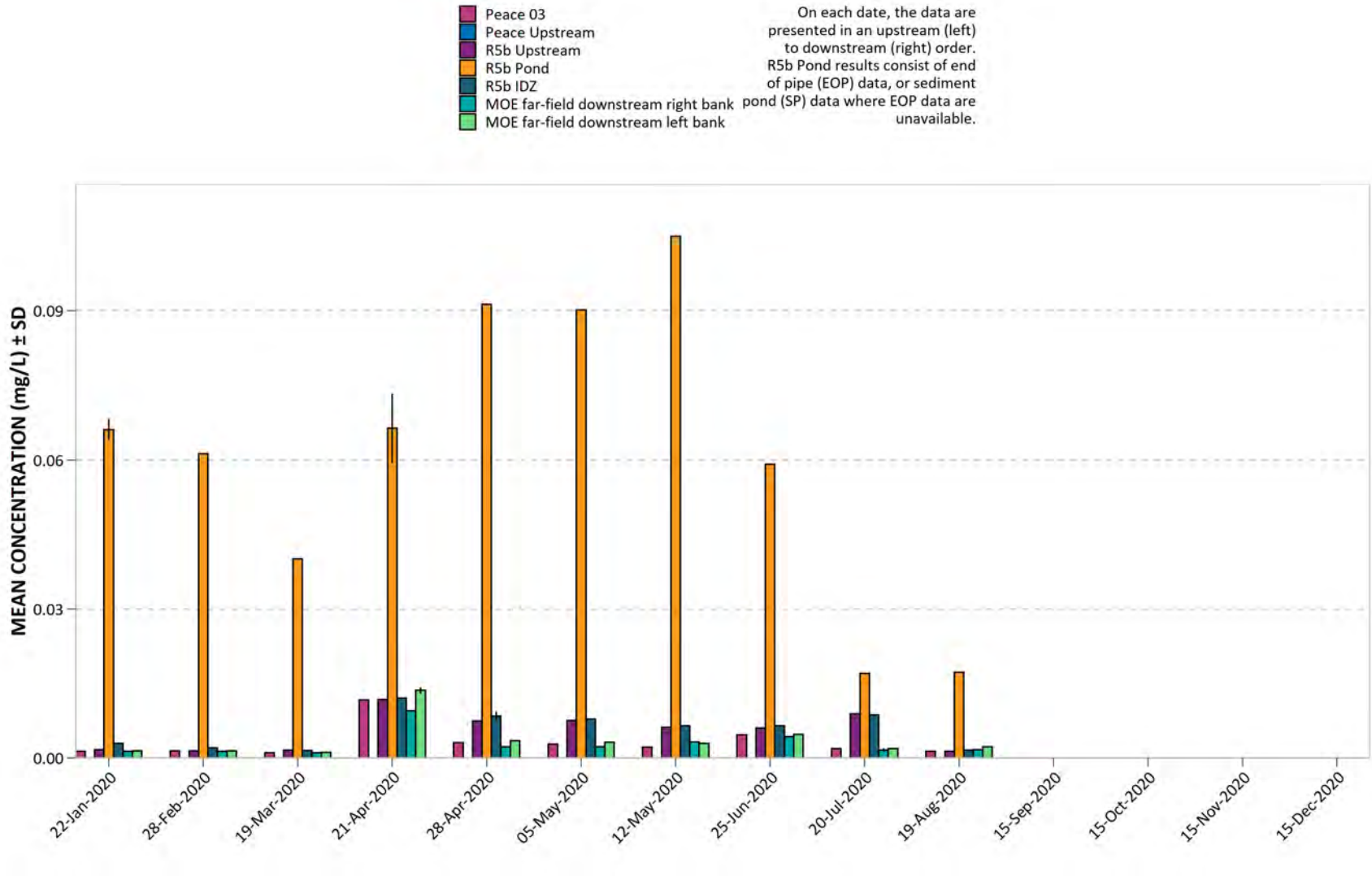


Figure 36. 2020 Peace River and RSEM R5b pond total magnesium (Mg).

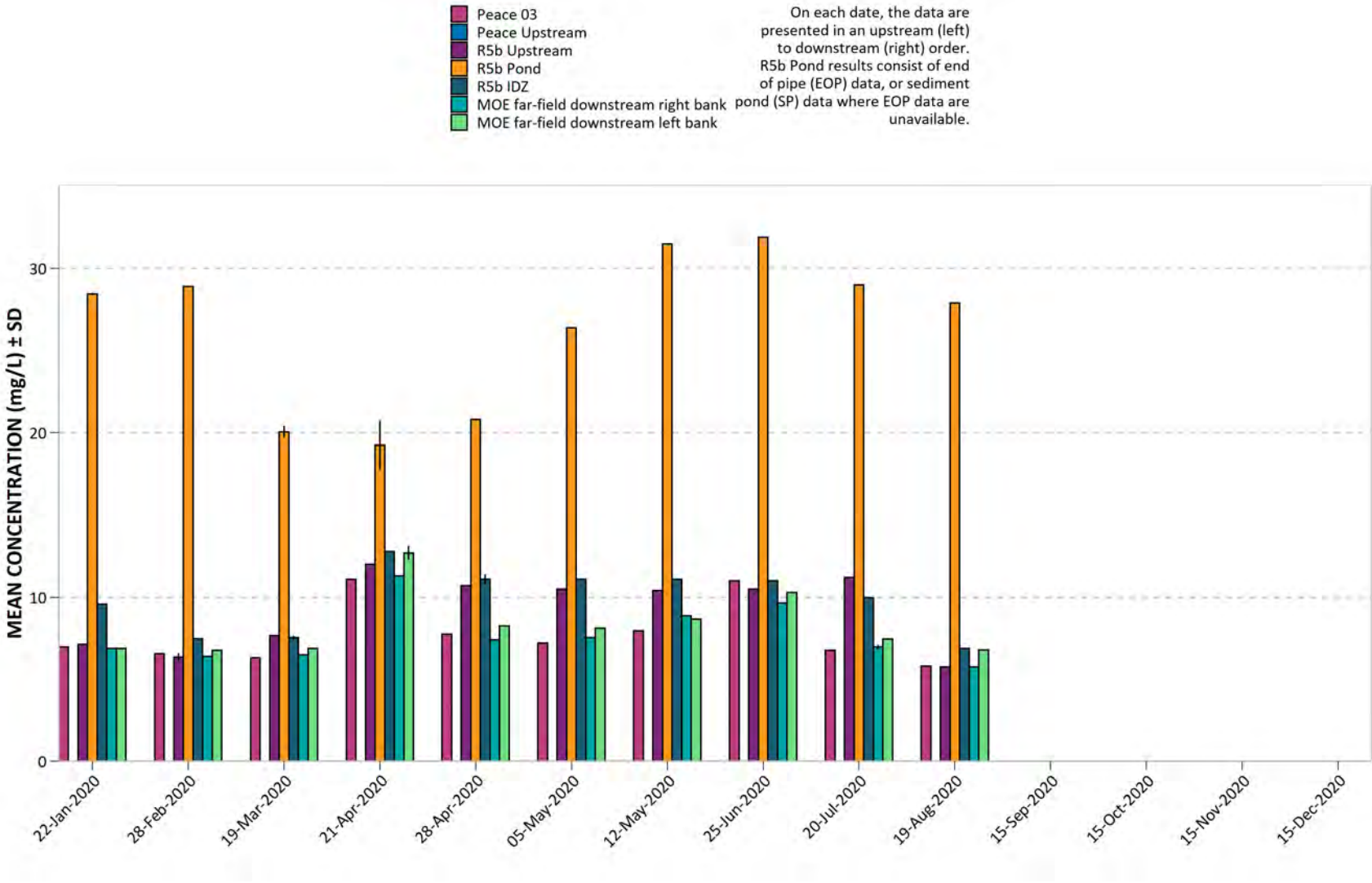


Figure 37. 2020 Peace River and RSEM R5b pond total manganese (Mn).

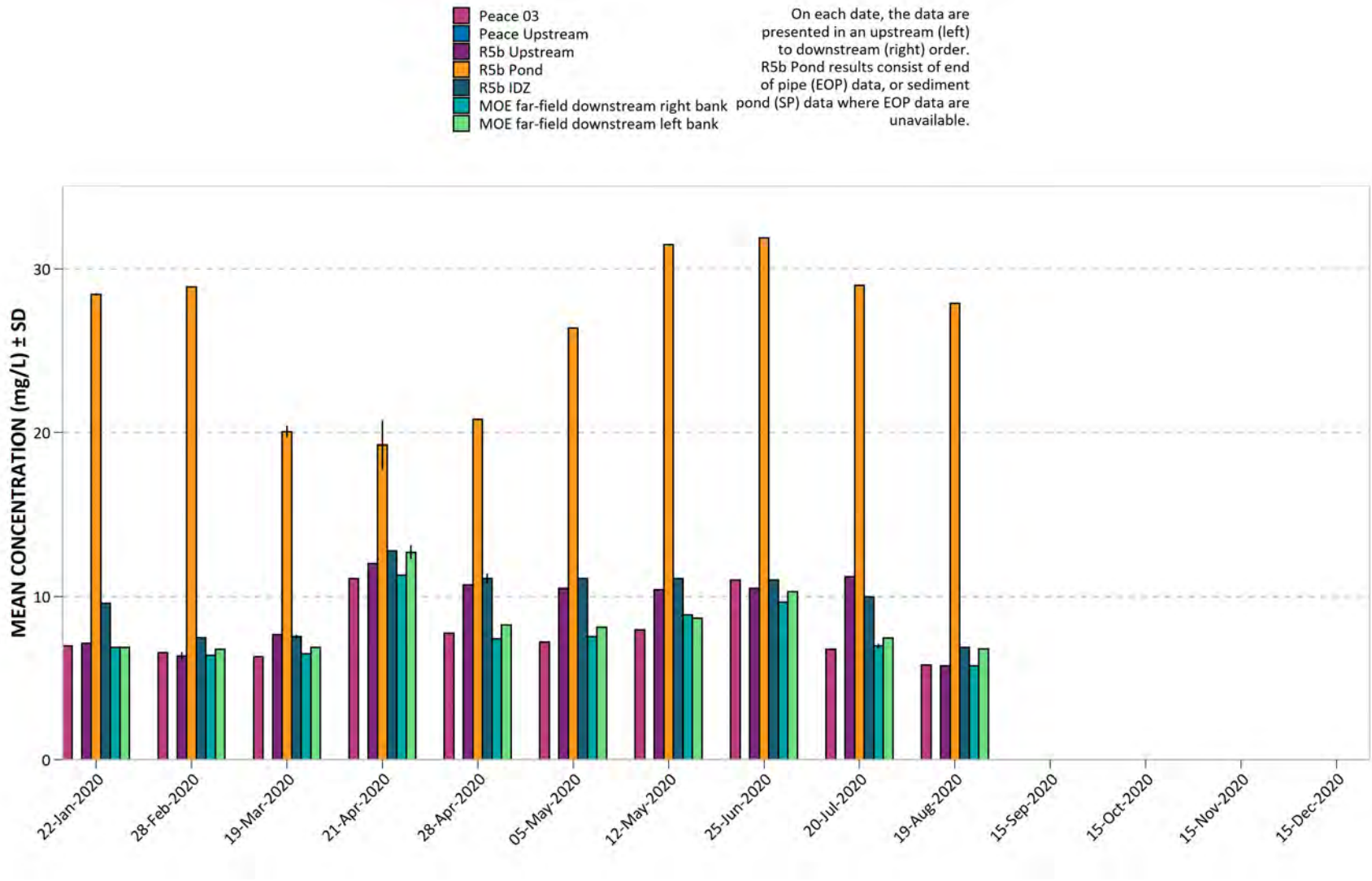


Figure 38. 2020 Peace River and RSEM R5b pond total mercury (Hg).

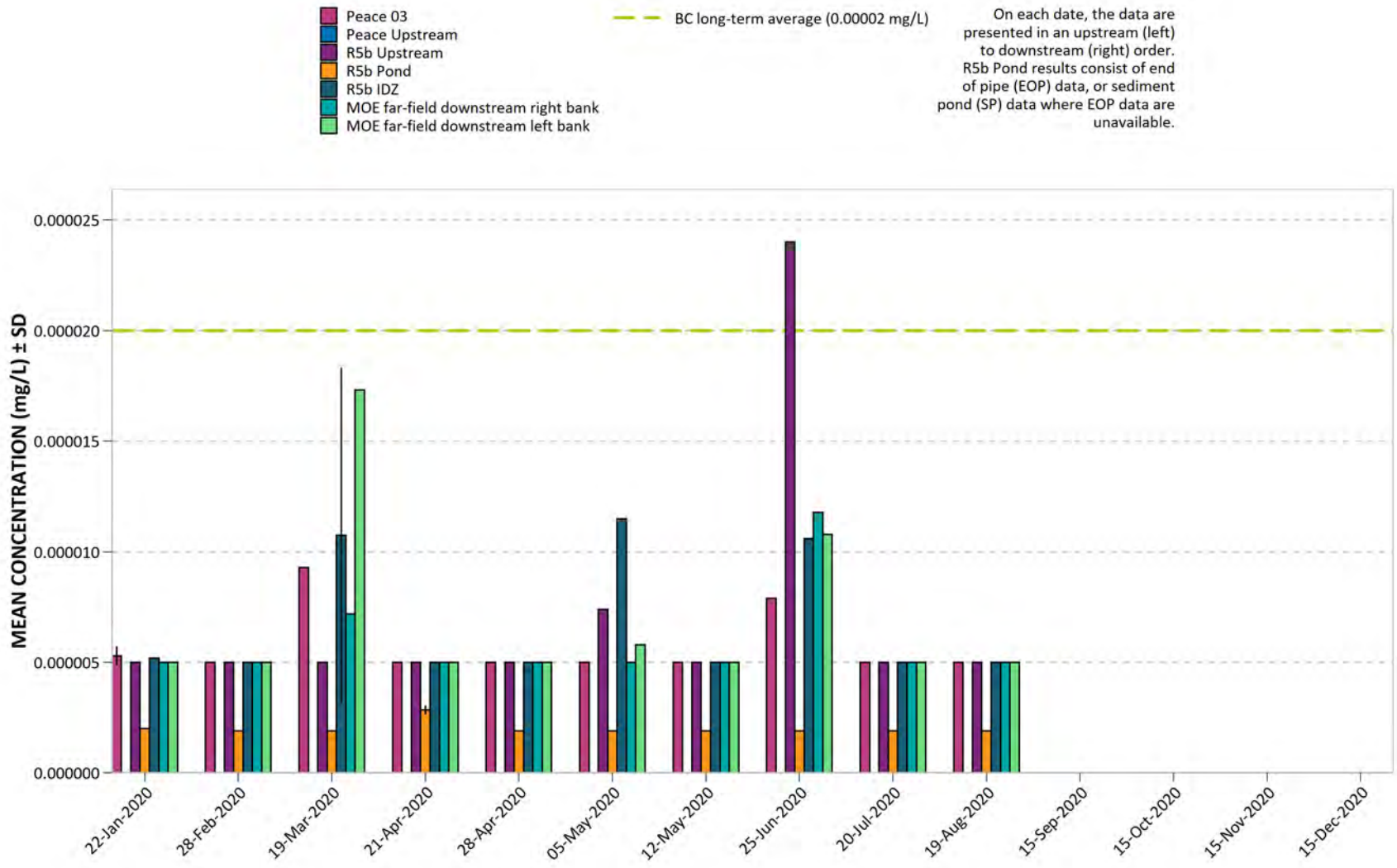


Figure 39. 2020 Peace River and RSEM R5b pond total molybdenum (Mo).

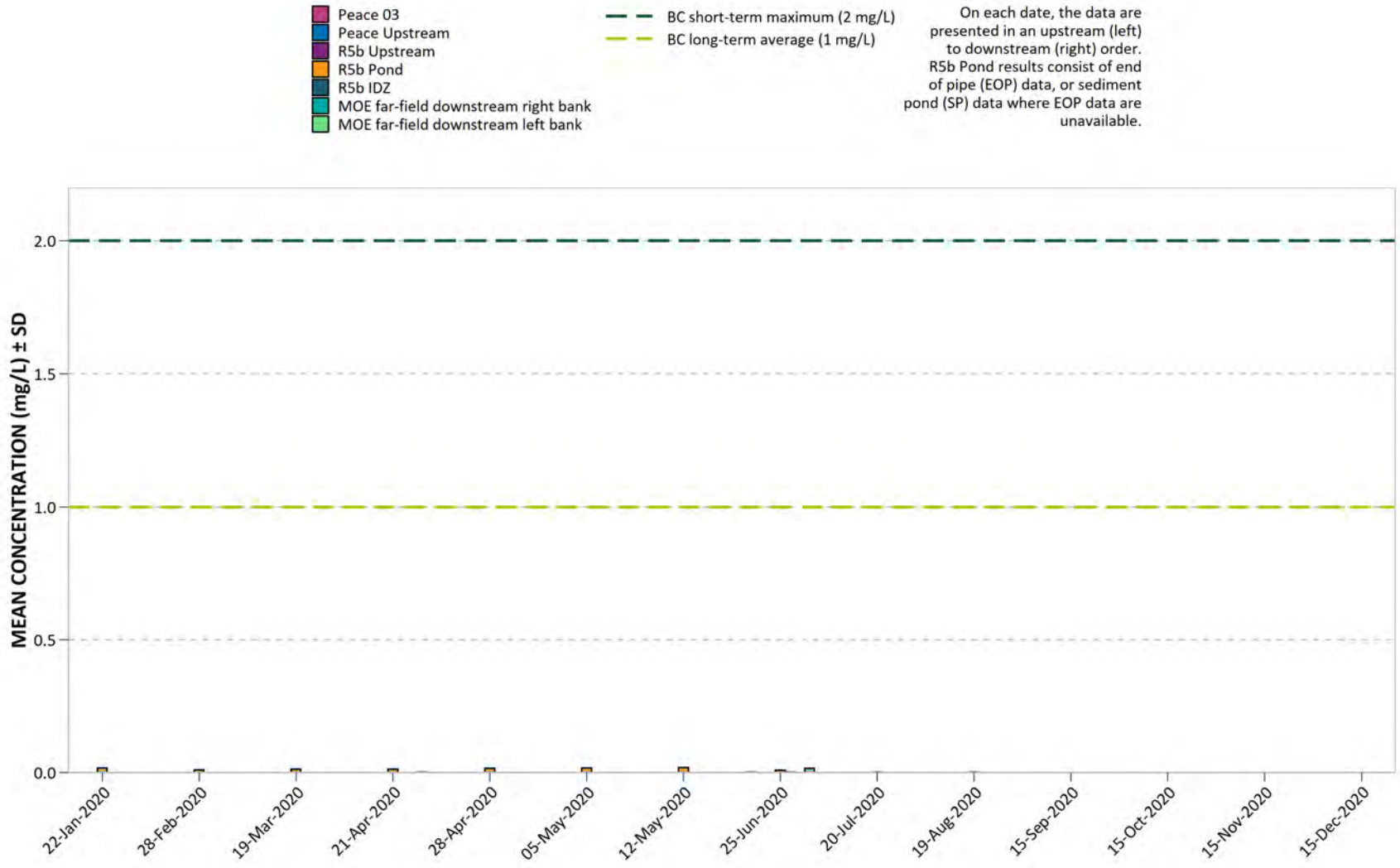


Figure 40. 2020 Peace River and RSEM R5b pond total nickel (Ni).

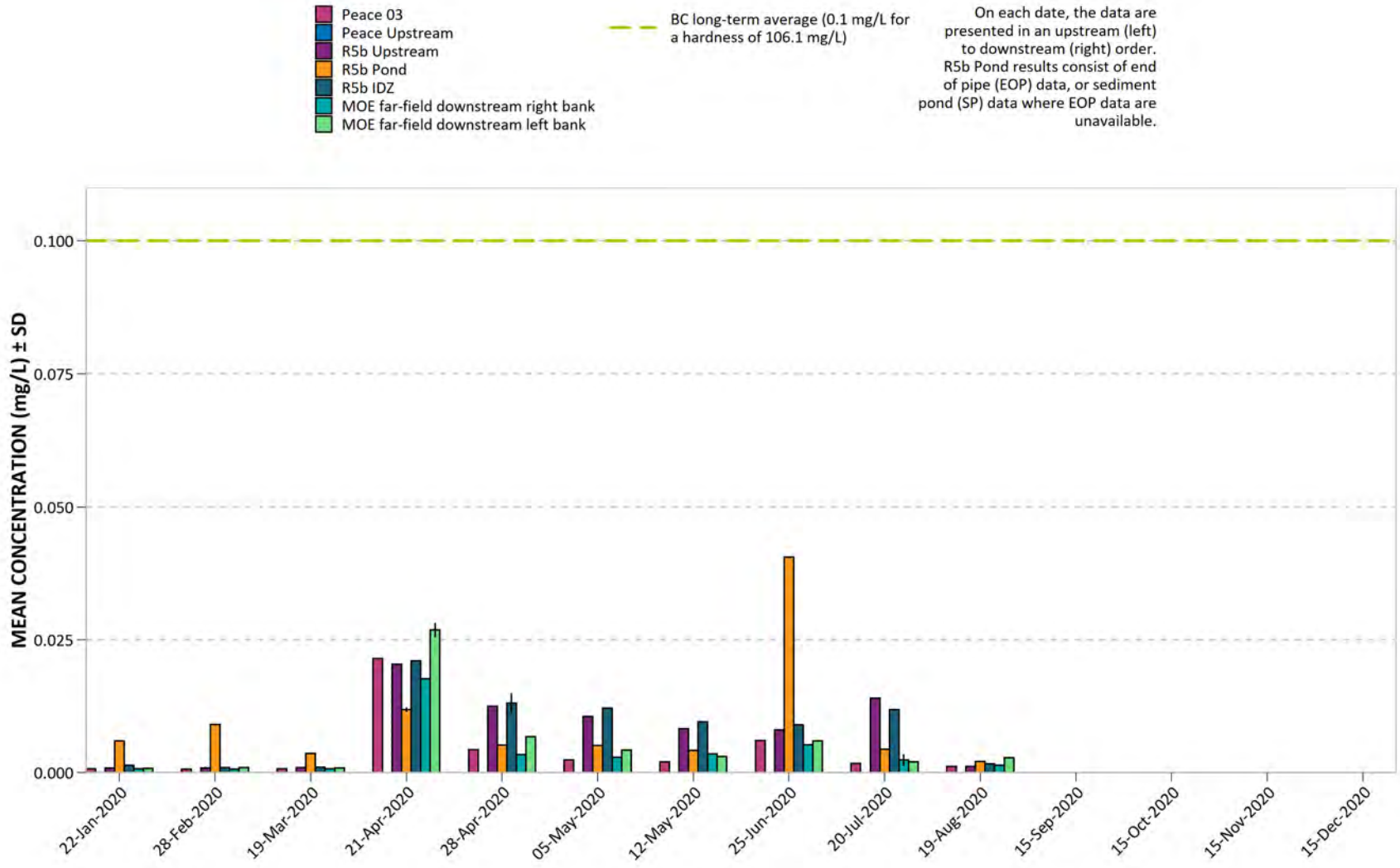


Figure 41. 2020 Peace River and RSEM R5b pond total potassium (K).

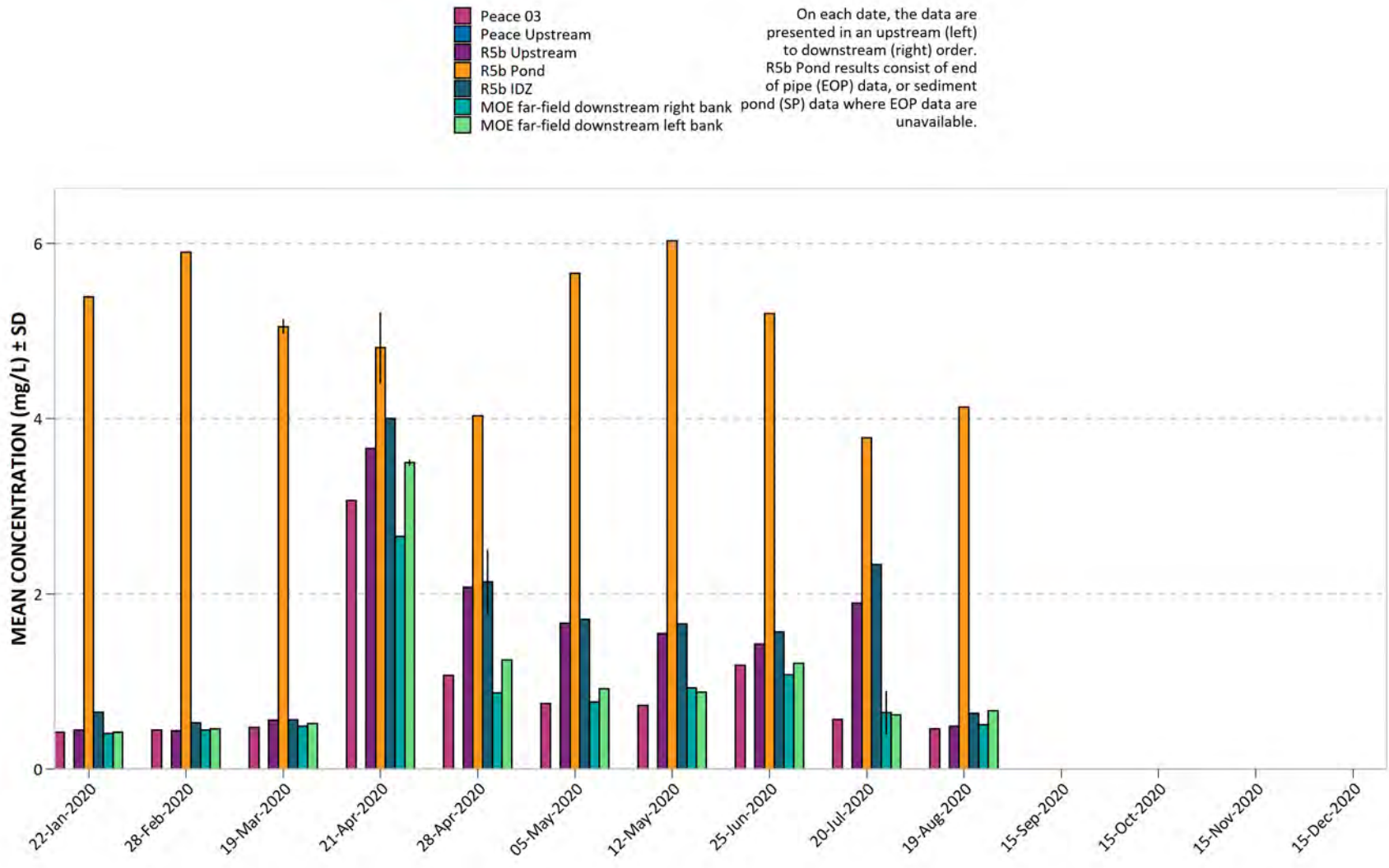


Figure 42. 2020 Peace River and RSEM R5b pond total selenium (Se).

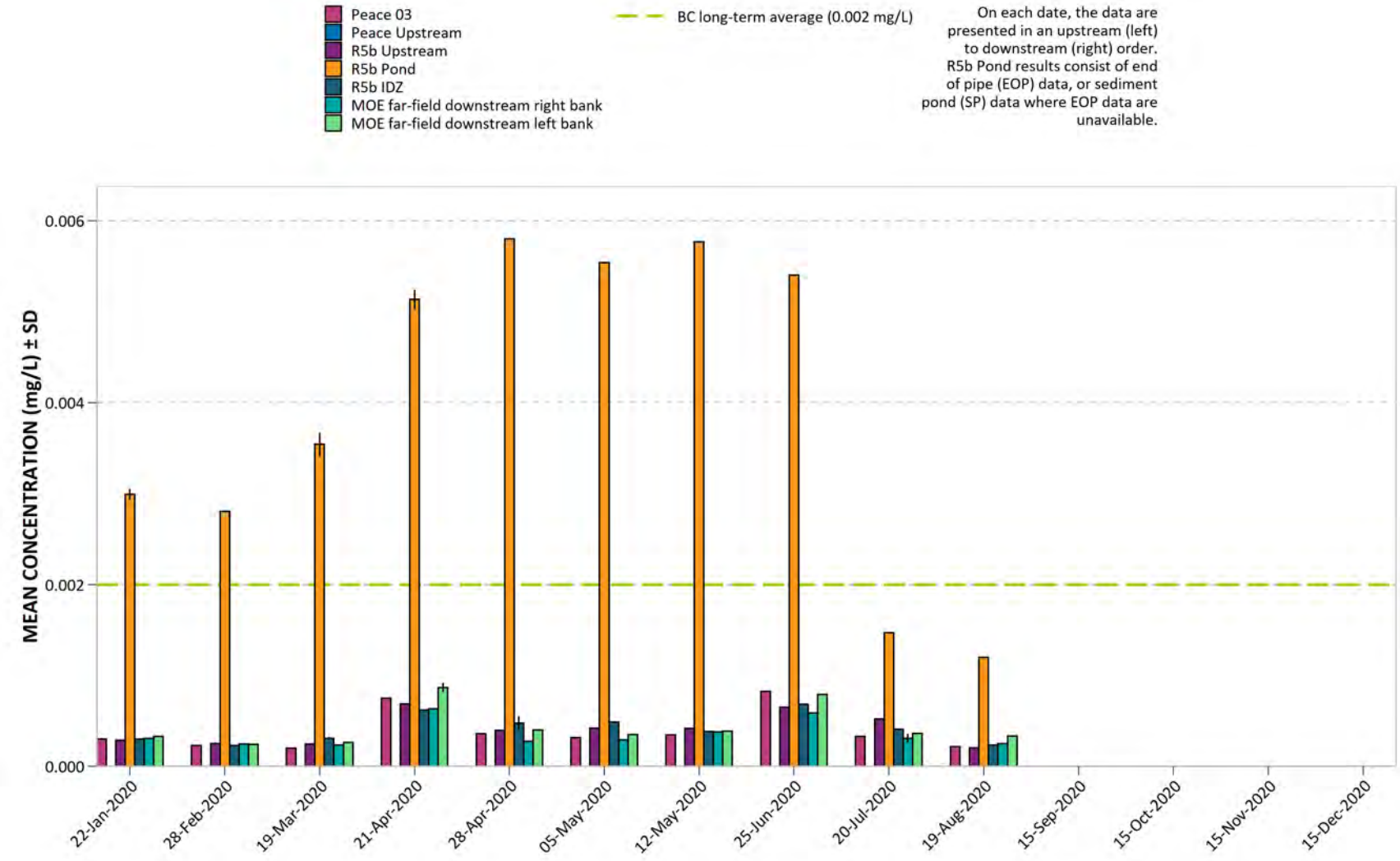


Figure 43. 2020 Peace River and RSEM R5b pond total silicon (Si).

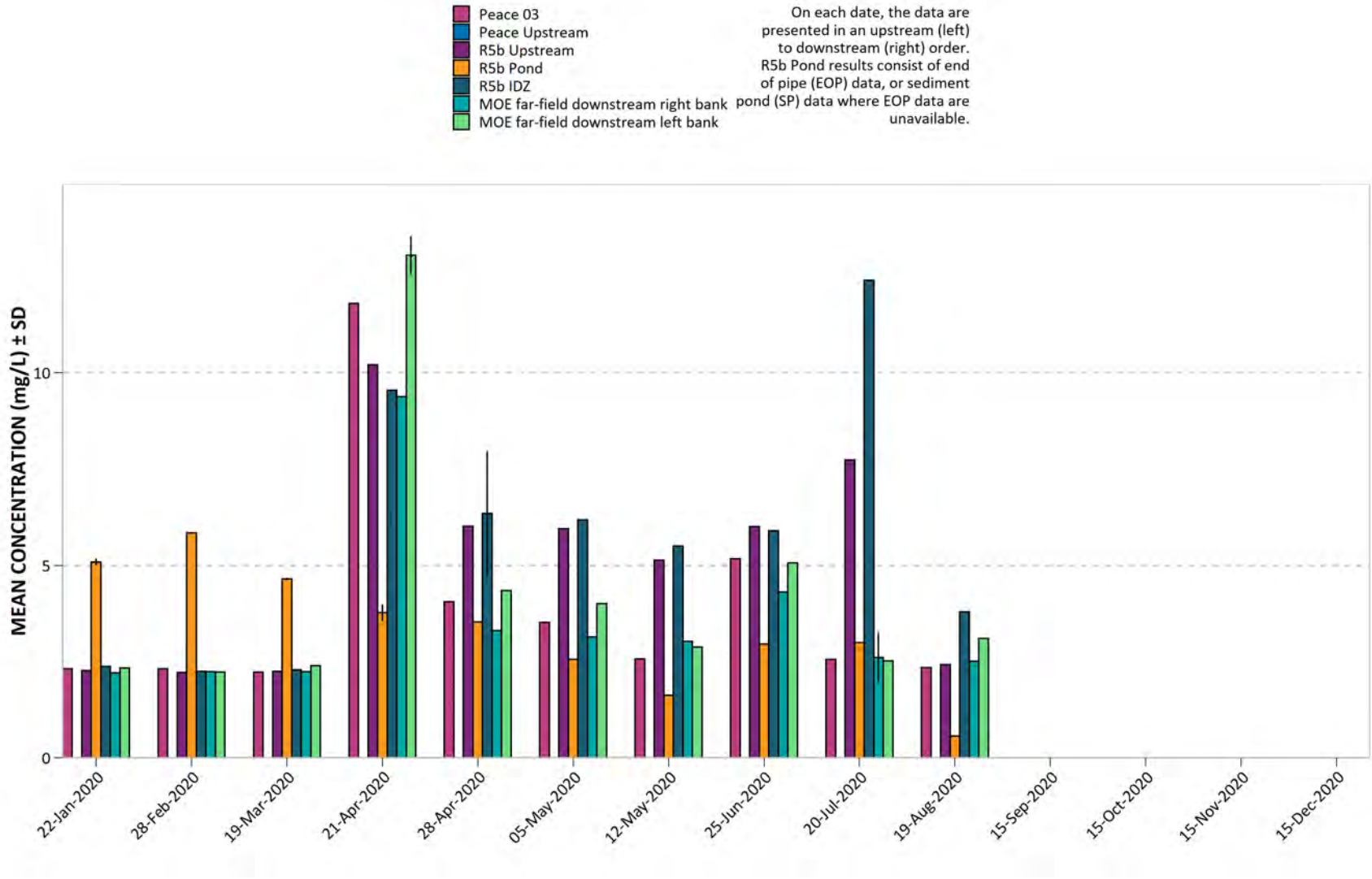


Figure 44. 2020 Peace River and RSEM R5b pond total silver (Ag).

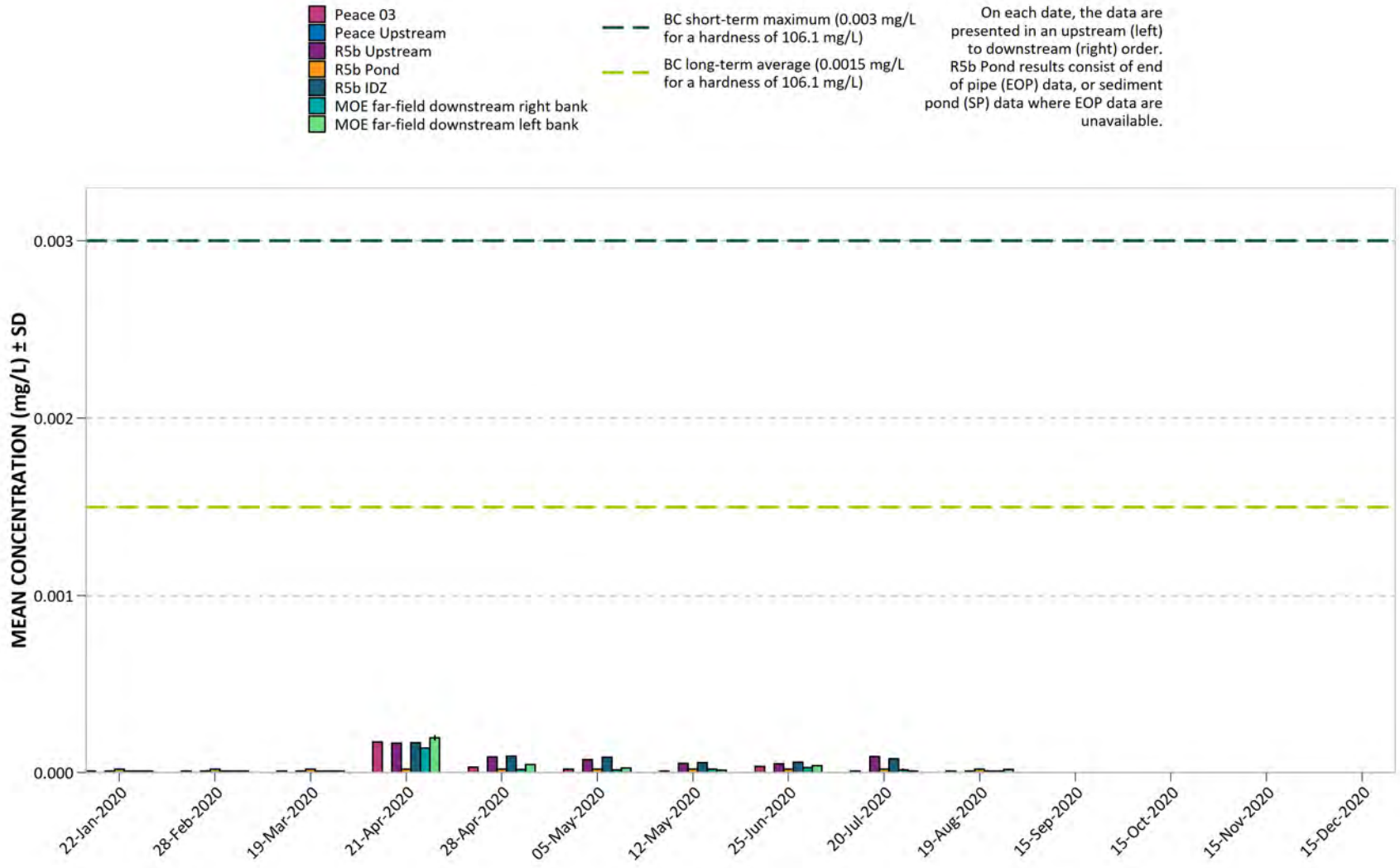


Figure 45. 2020 Peace River and RSEM R5b pond total sodium (Na).

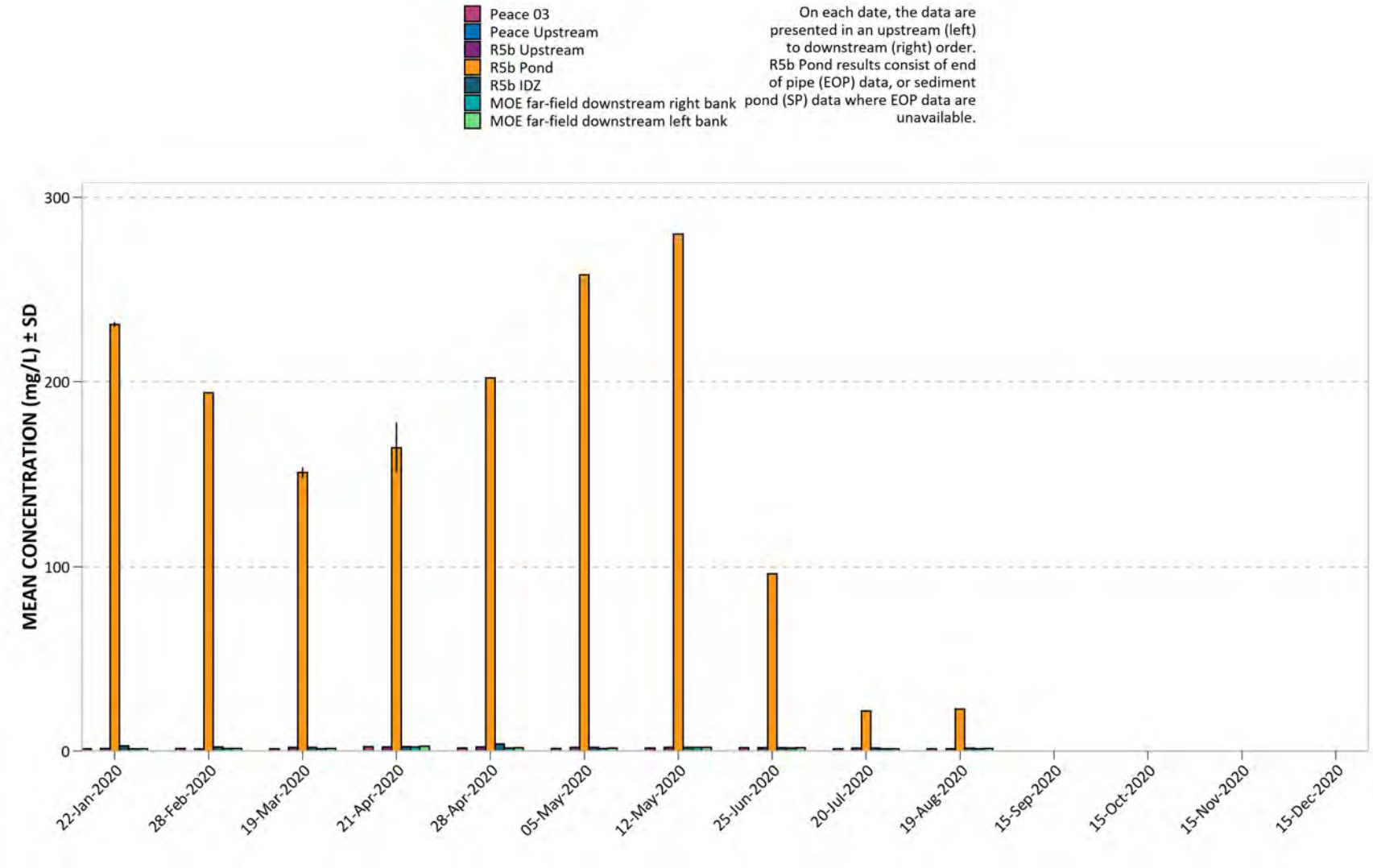


Figure 46. 2020 Peace River and RSEM R5b pond total strontium (Sr).

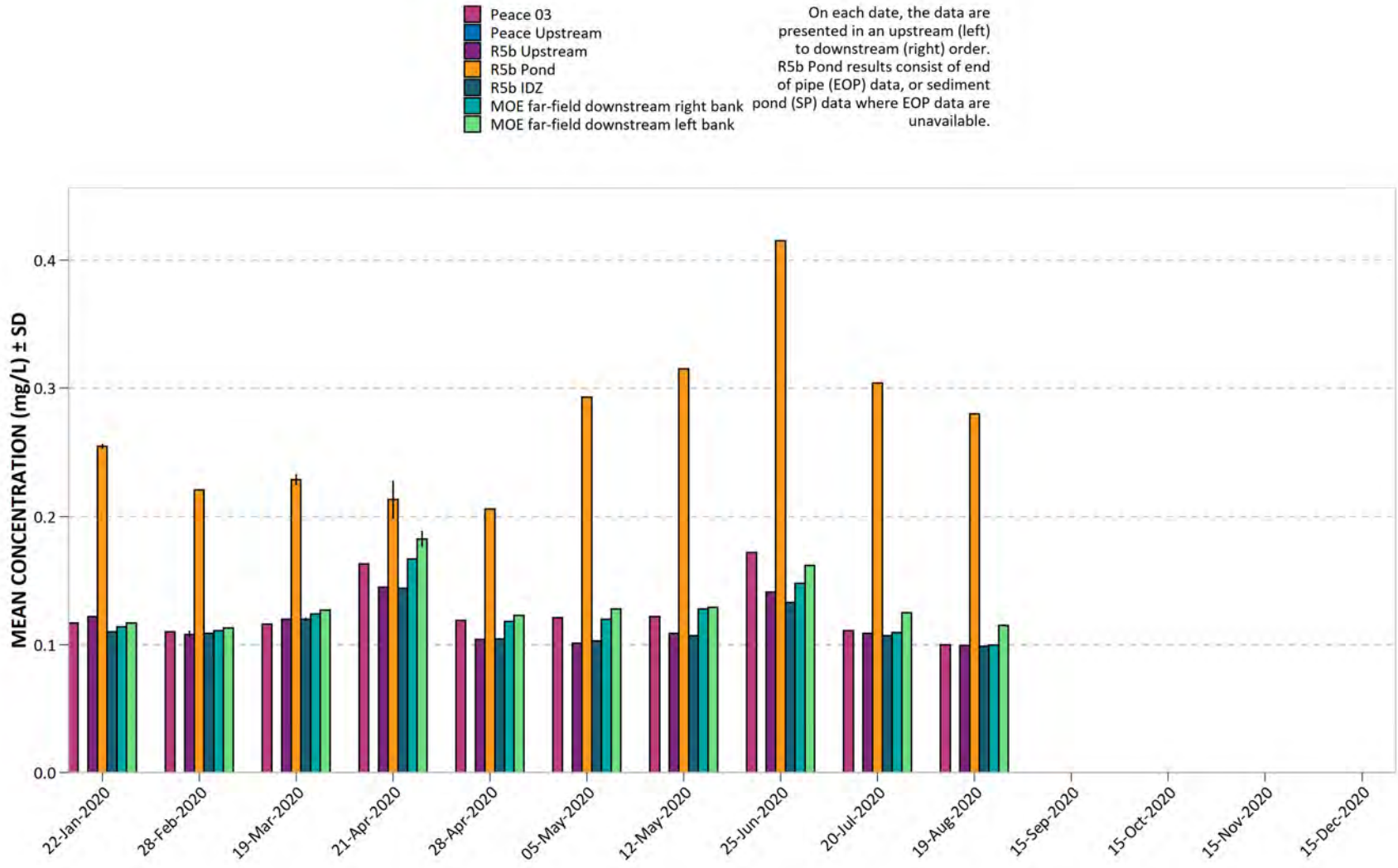


Figure 47. 2020 Peace River and RSEM R5b pond total sulfur (S).

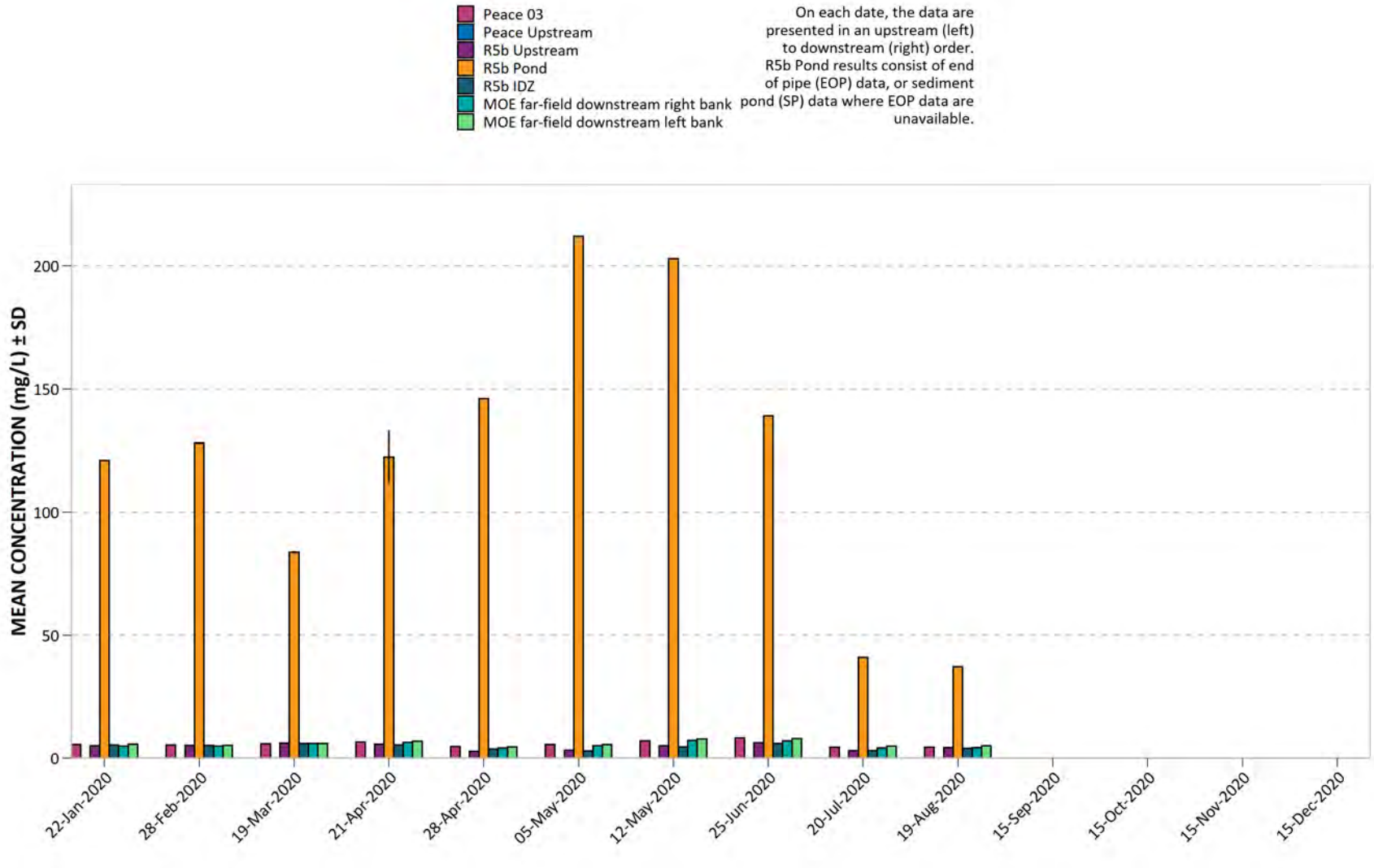


Figure 48. 2020 Peace River and RSEM R5b pond total thallium (Tl).

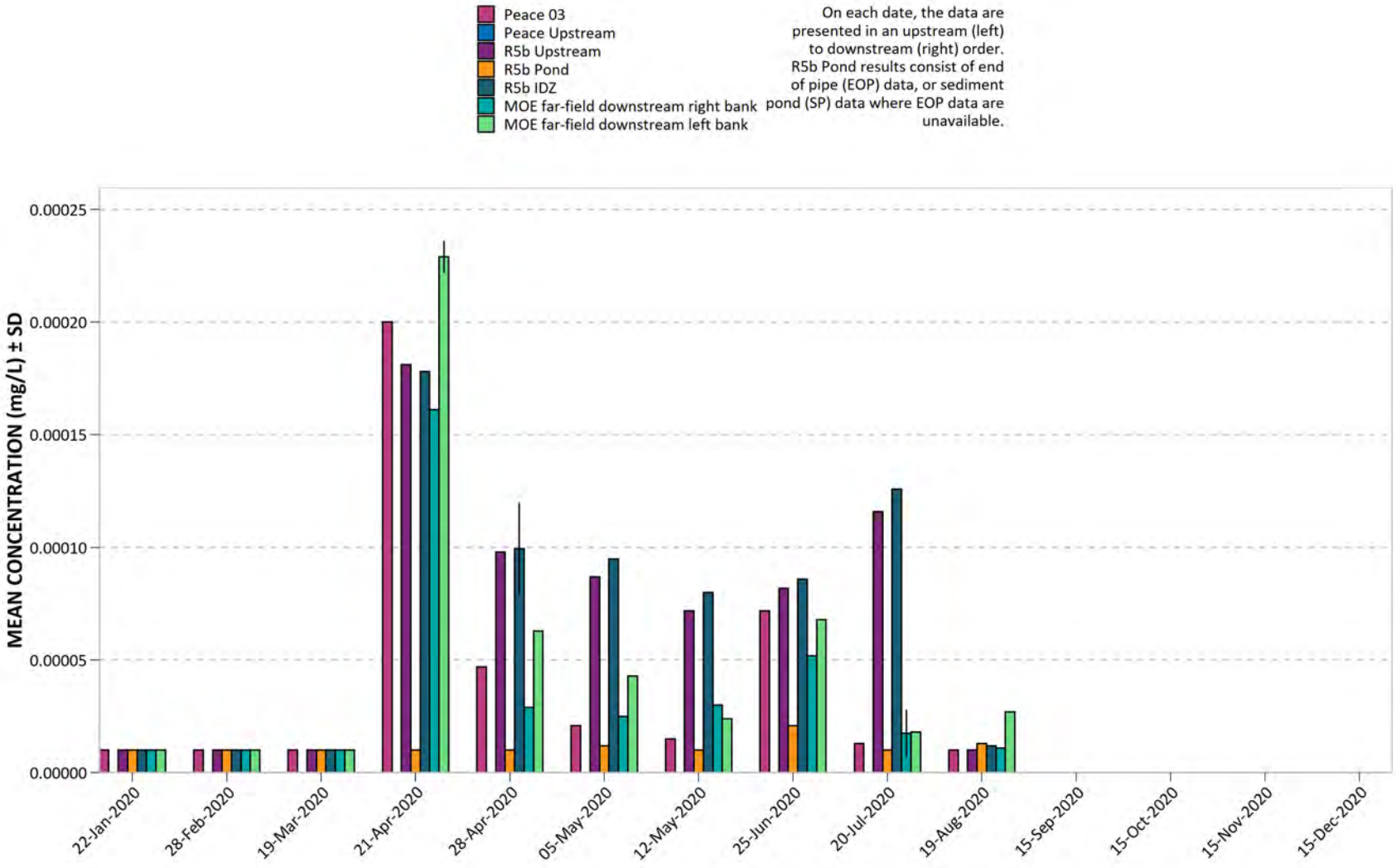


Figure 49. 2020 Peace River and RSEM R5b pond total tin (Sn).

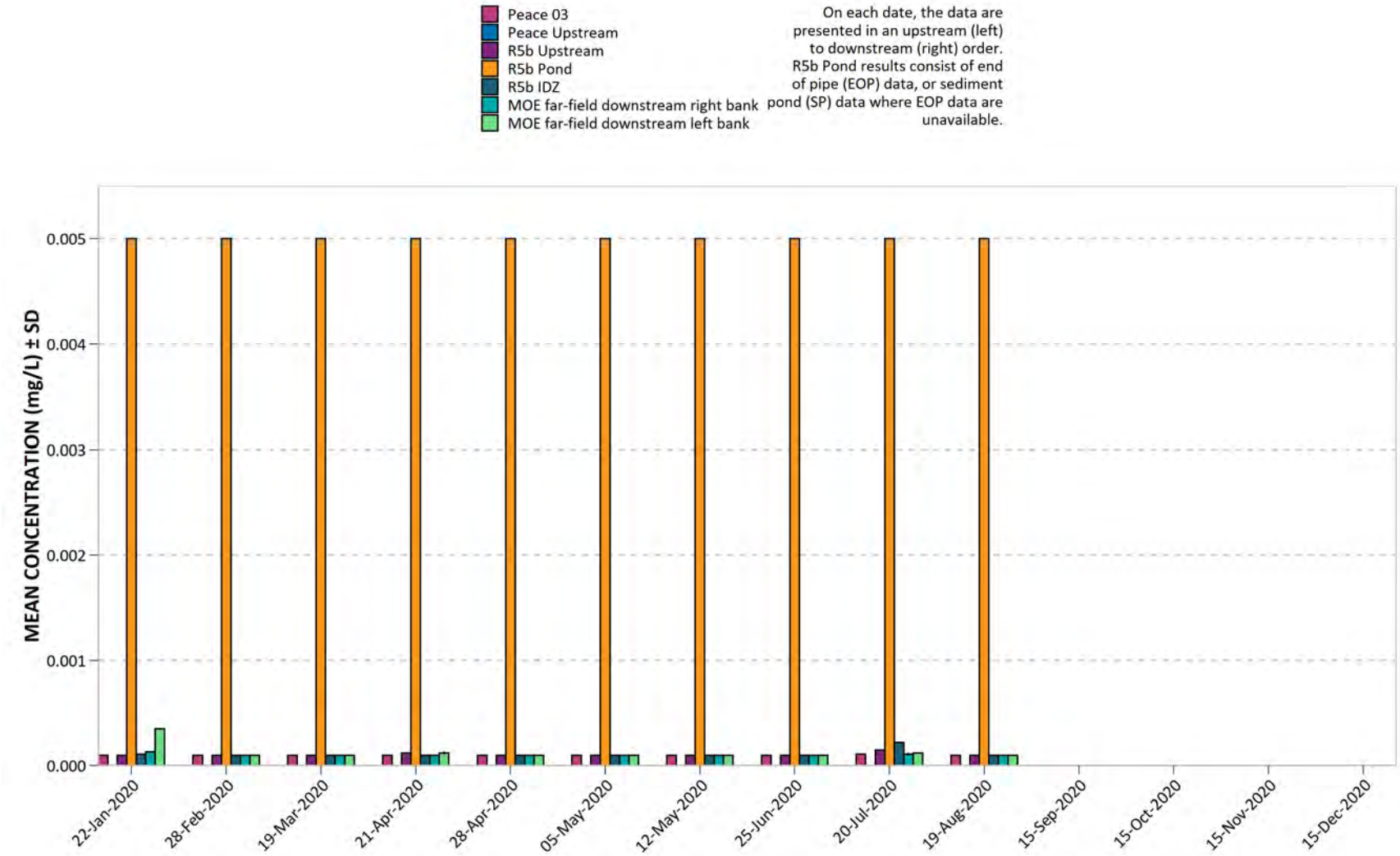


Figure 50. 2020 Peace River and RSEM R5b pond total titanium (Ti).

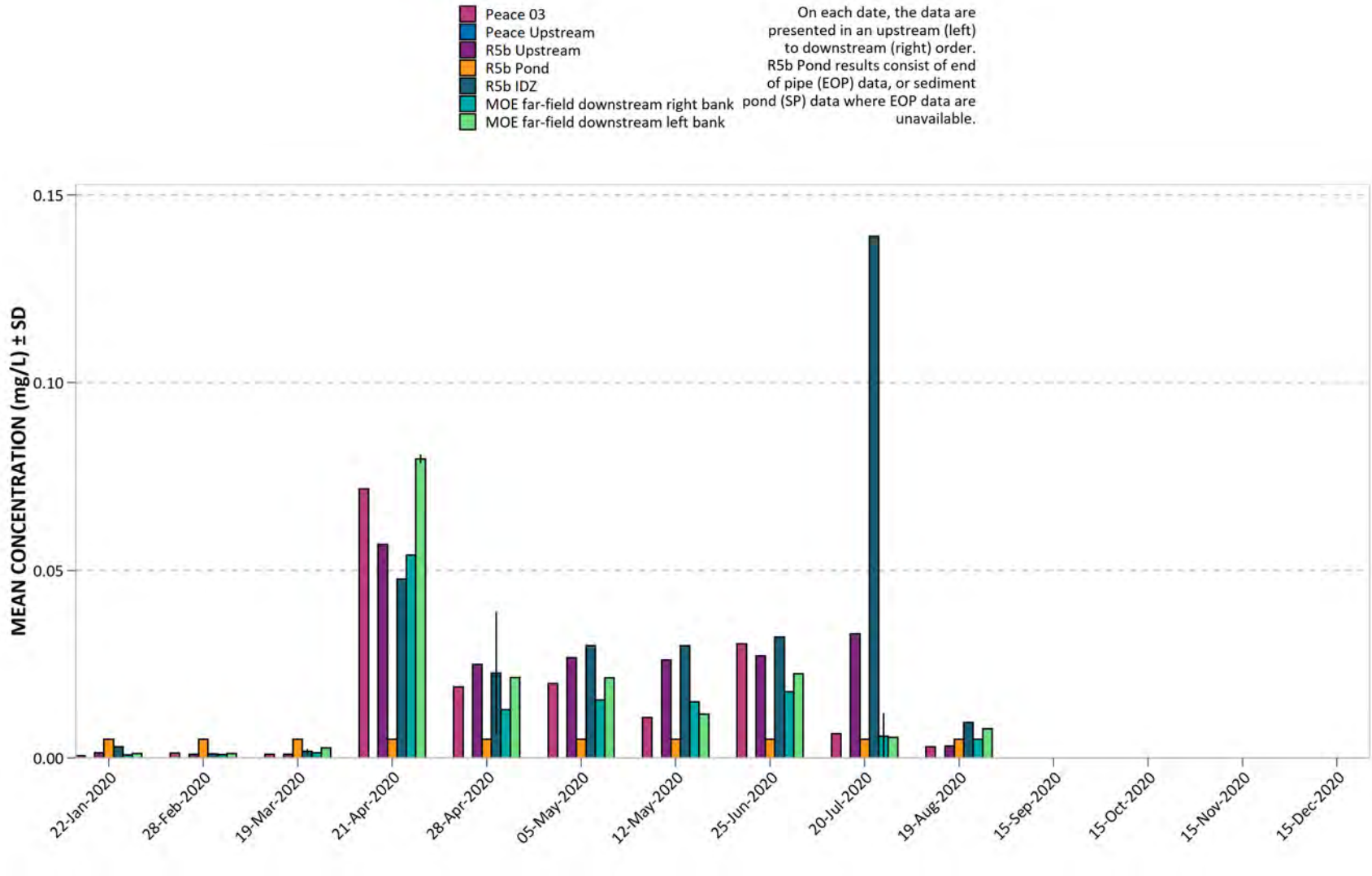


Figure 51. 2020 Peace River and RSEM R5b pond total uranium (U).

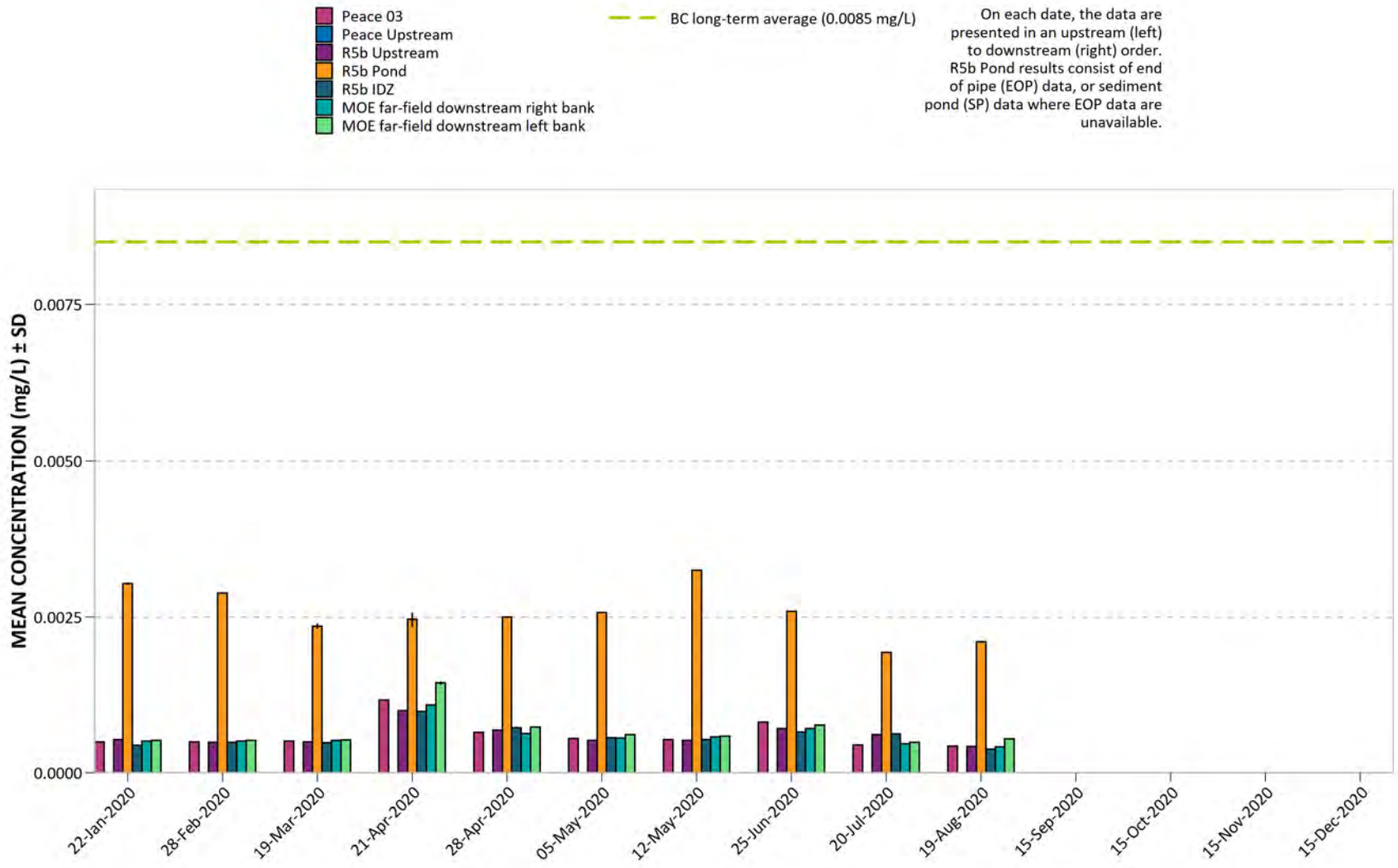


Figure 52. 2020 Peace River and RSEM R5b pond total vanadium (V).

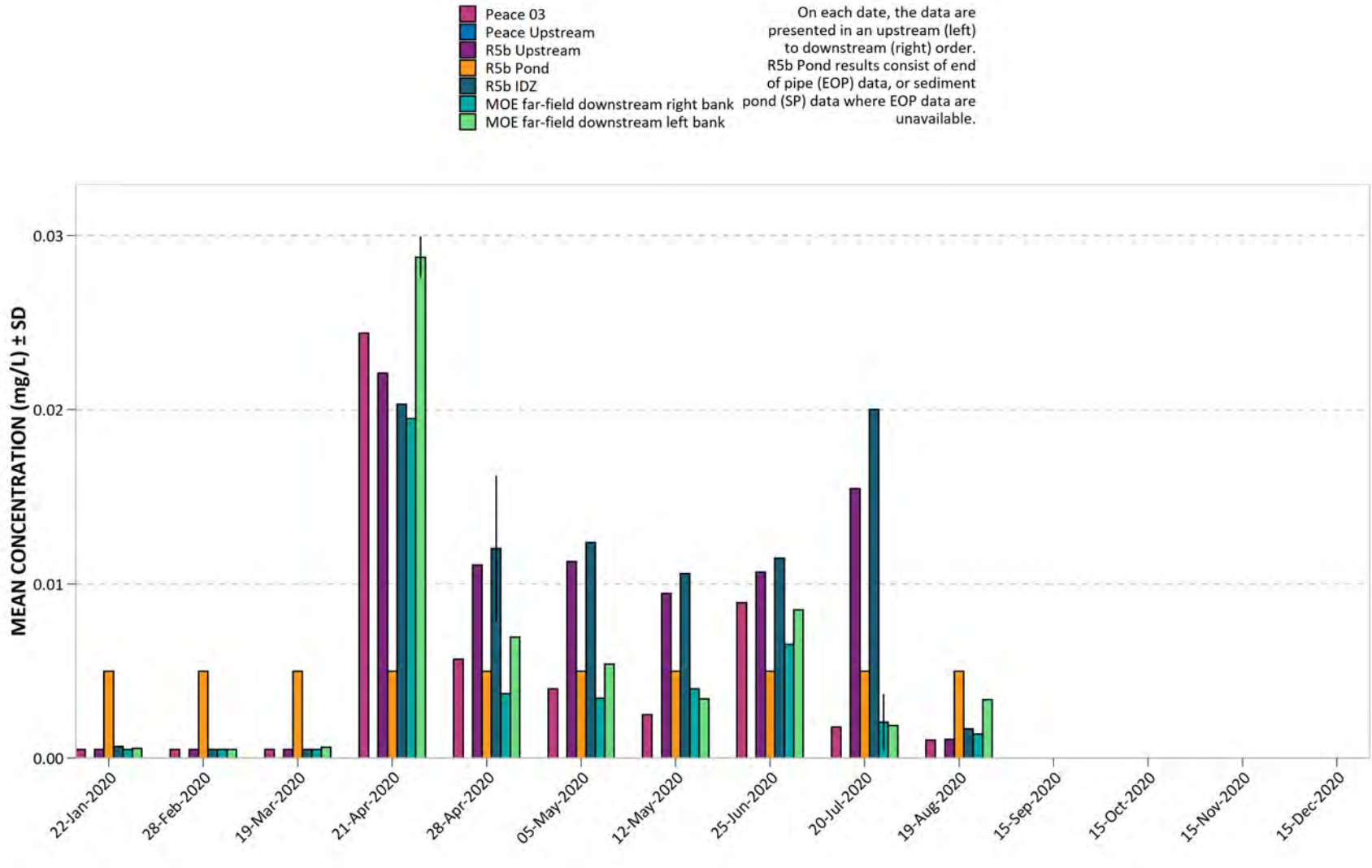


Figure 53. 2020 Peace River and RSEM R5b pond total zinc (Zn).

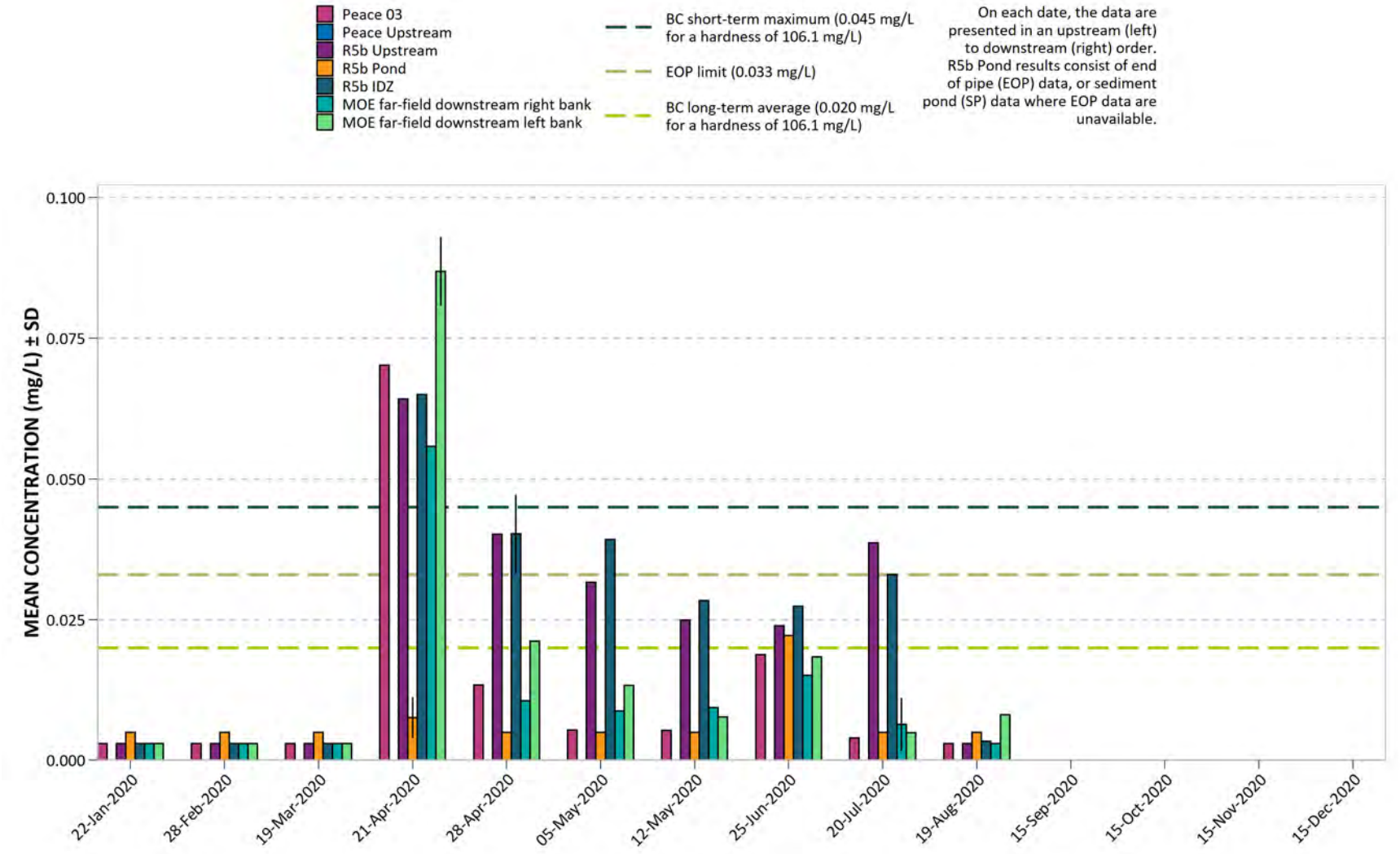


Figure 54. 2020 Peace River and RSEM R5b pond total zirconium (Zr).

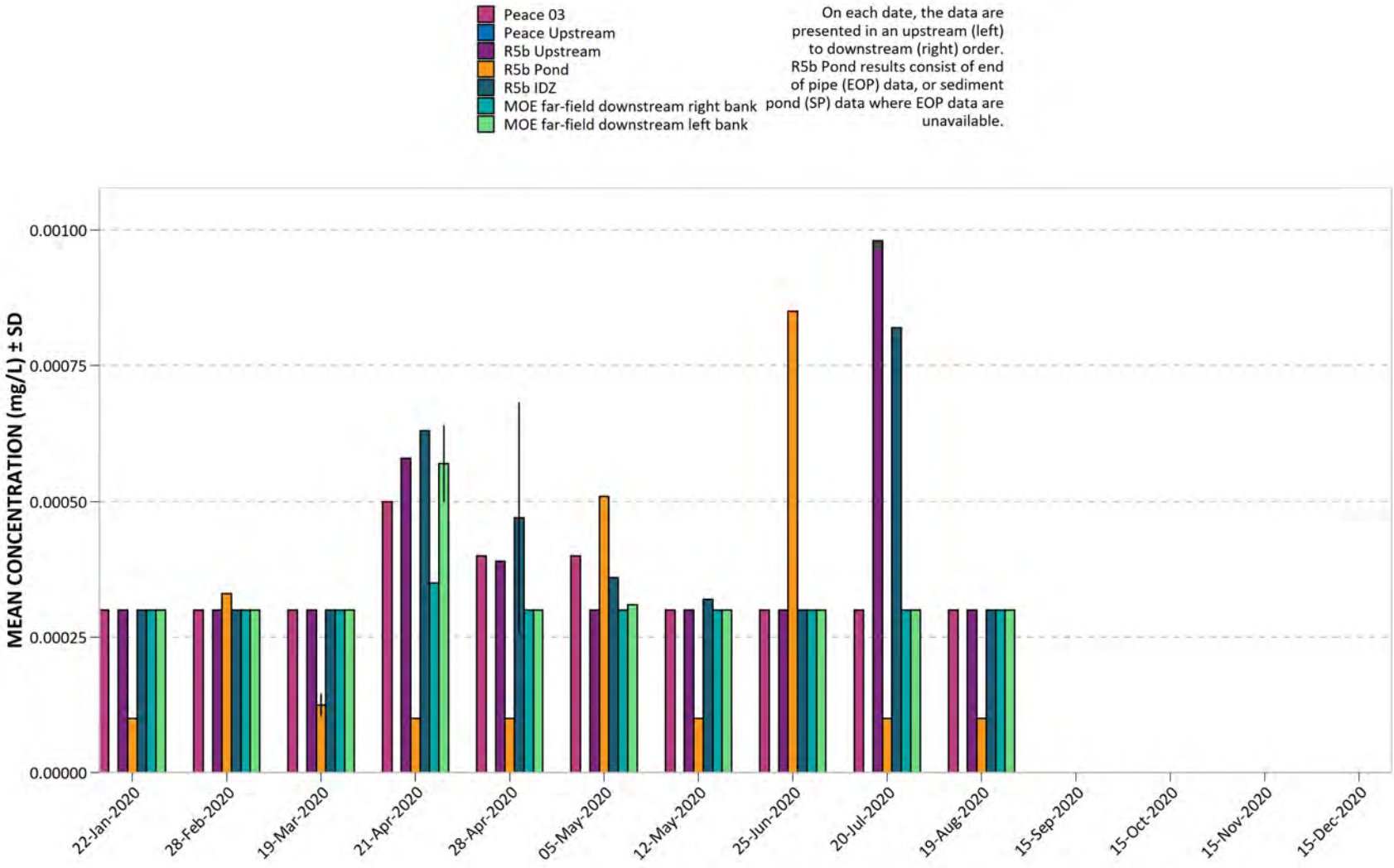


Figure 55. 2020 Peace River and RSEM R5b pond dissolved aluminum (Al).

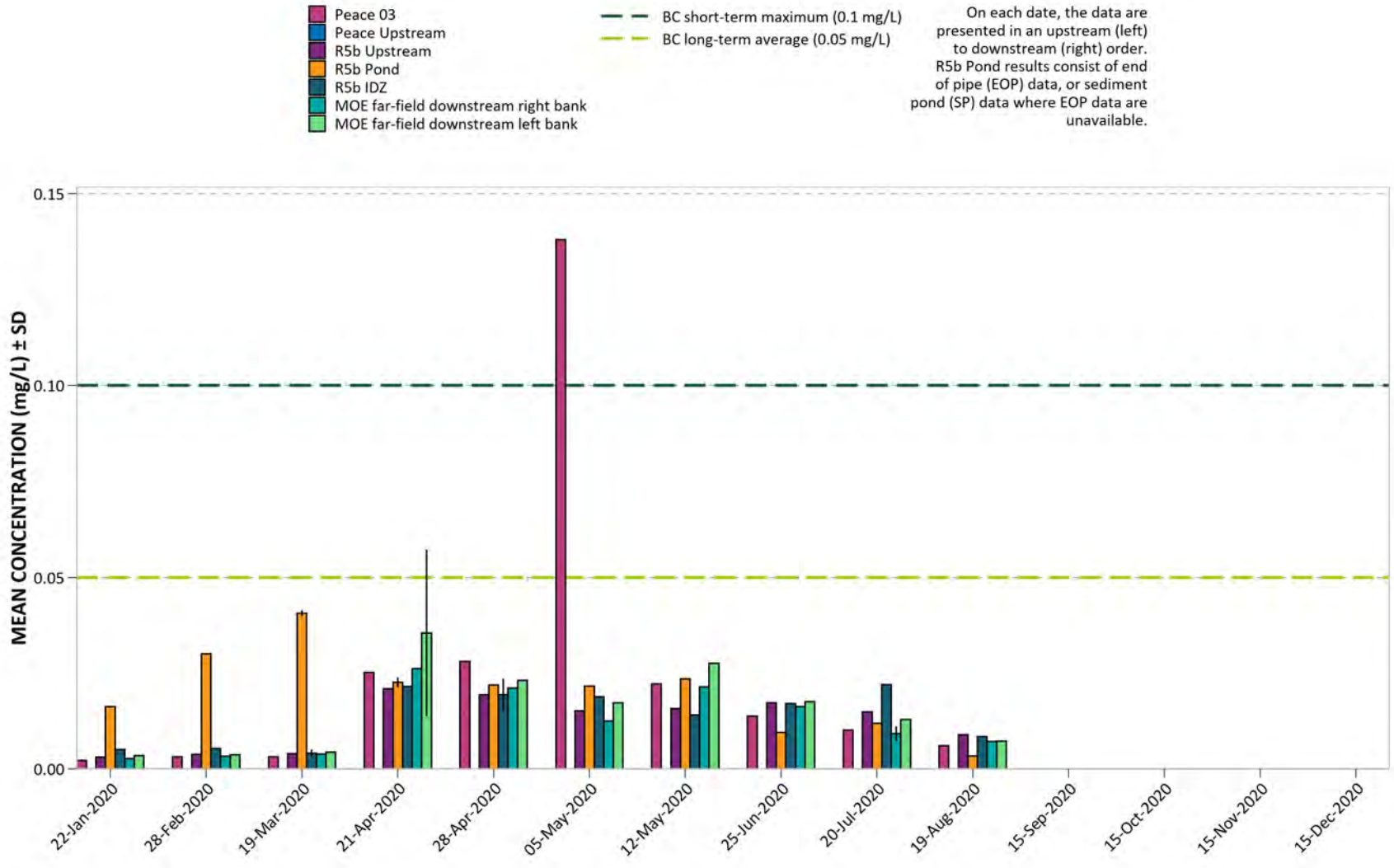


Figure 56. 2020 Peace River and RSEM R5b pond dissolved antimony (Sb).

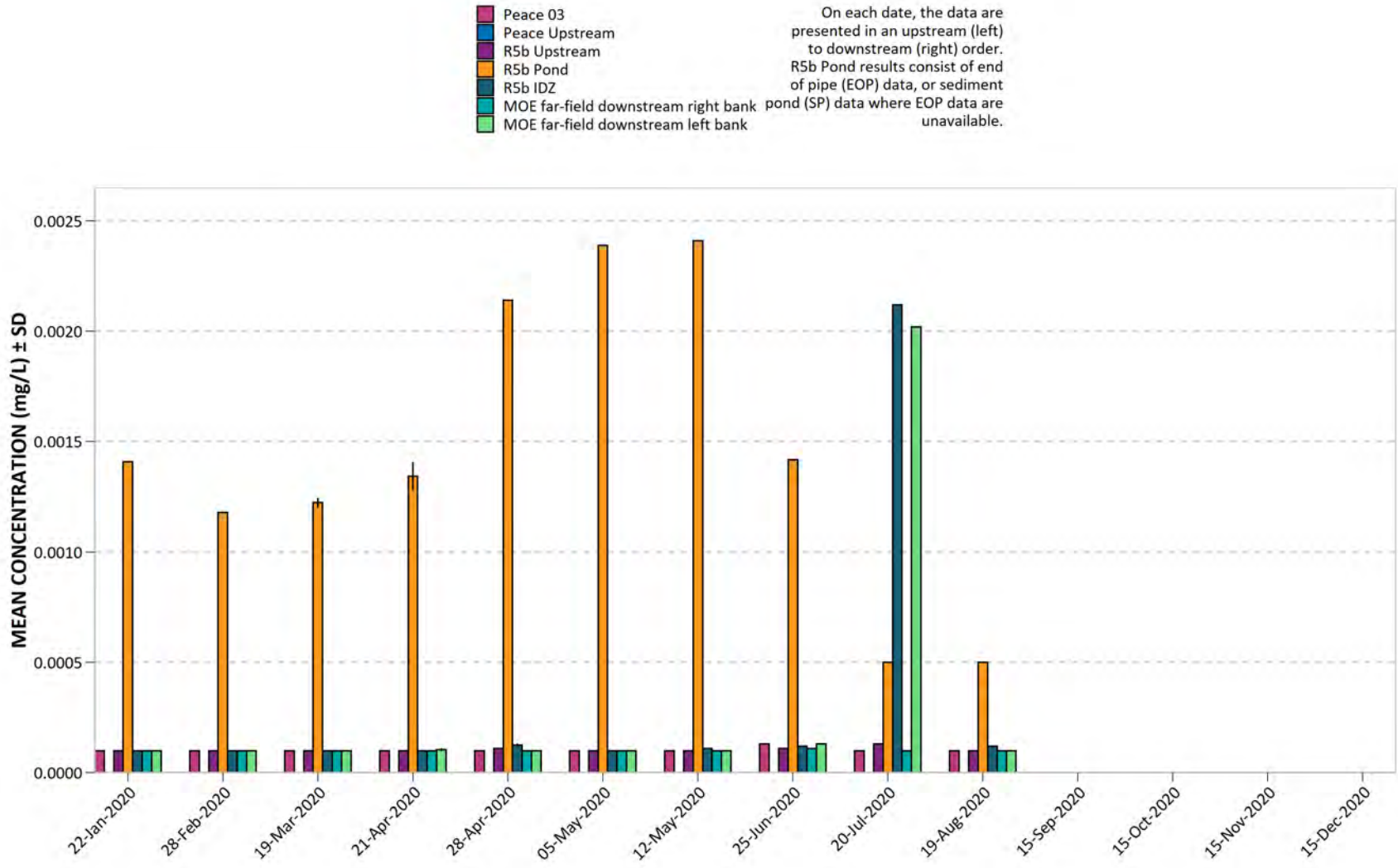


Figure 57. 2020 Peace River and RSEM R5b pond dissolved arsenic (As).

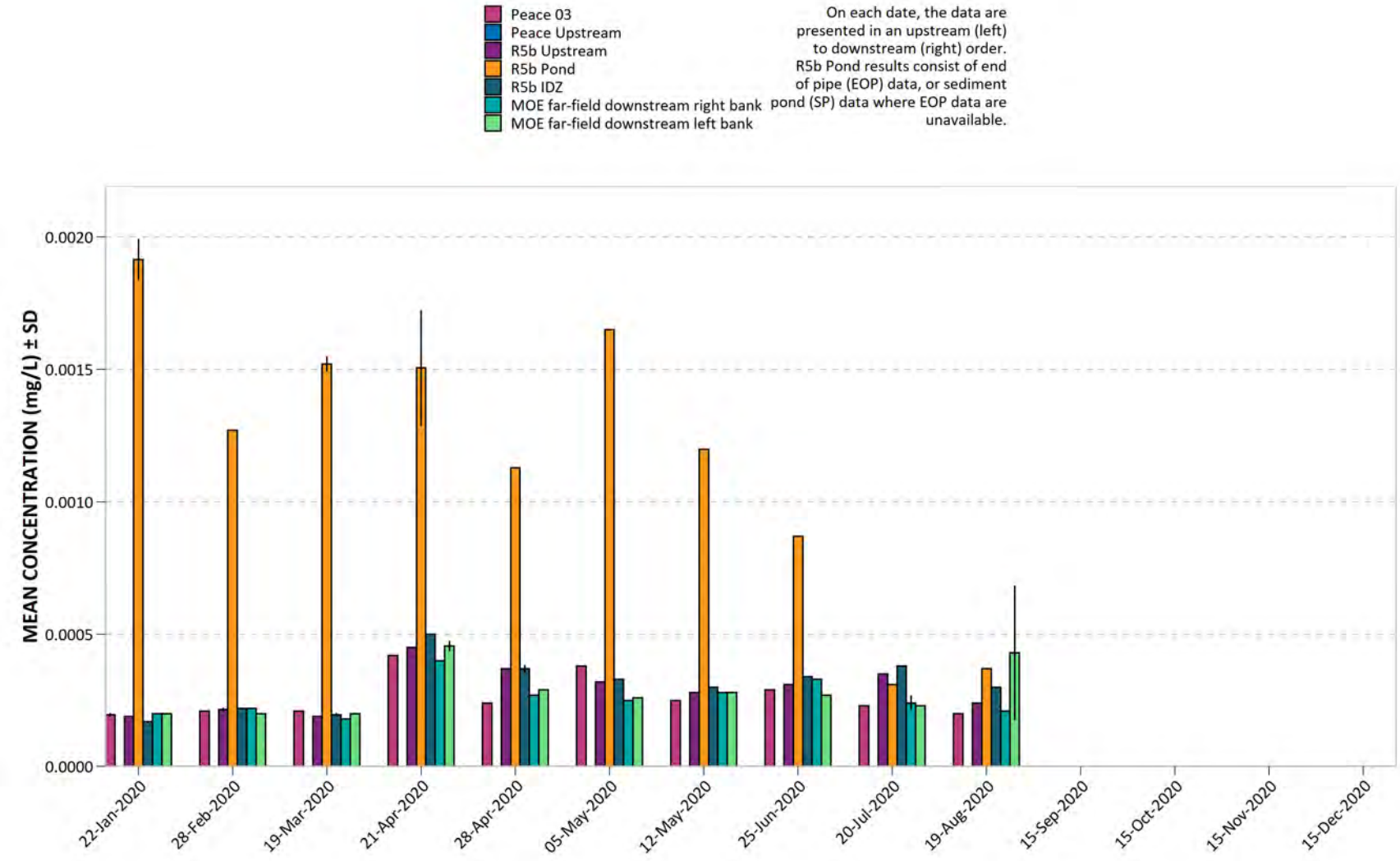


Figure 58. 2020 Peace River and RSEM R5b pond dissolved barium (Ba).

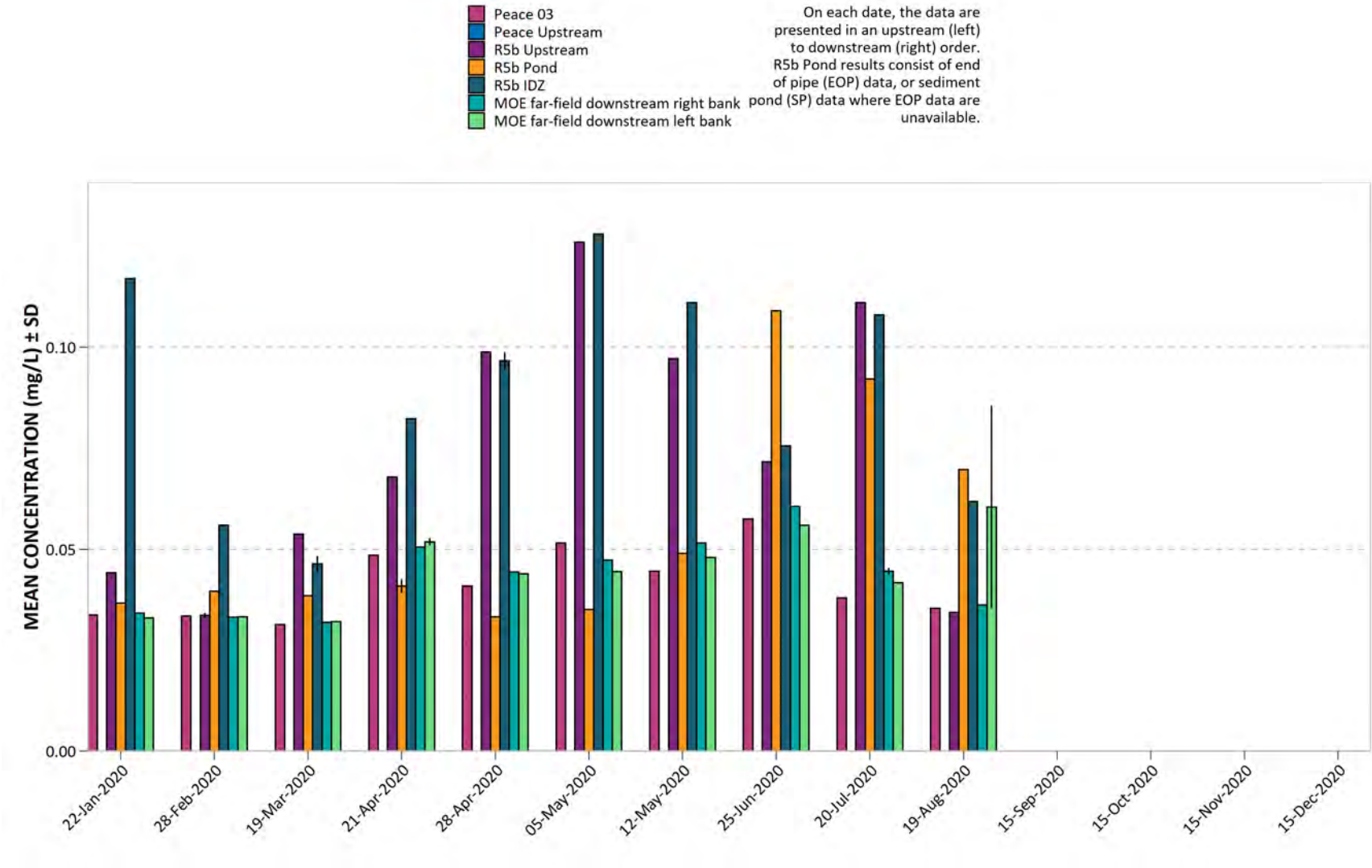


Figure 59. 2020 Peace River and RSEM R5b pond dissolved beryllium (Be).

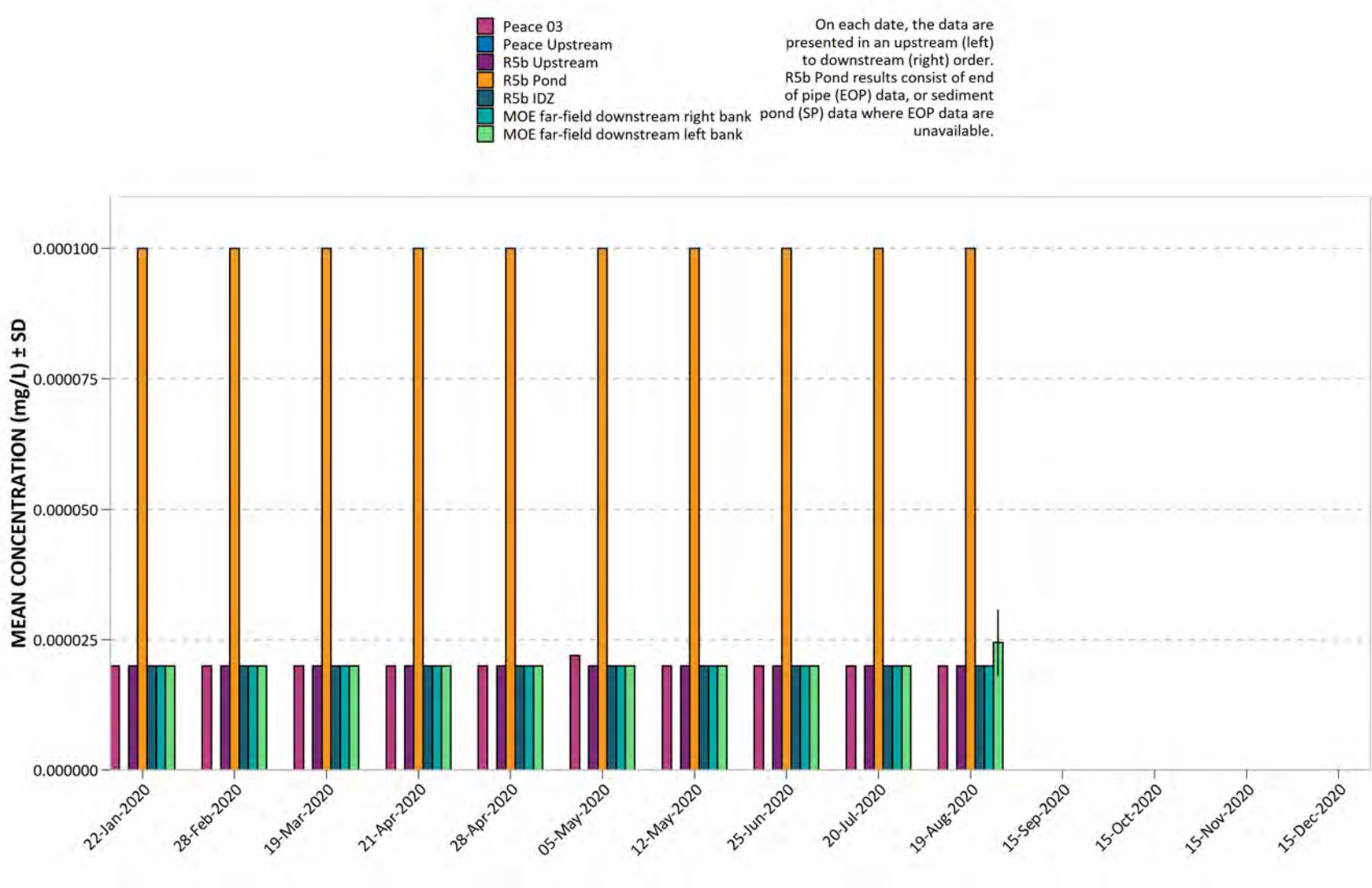


Figure 60. 2020 Peace River and RSEM R5b pond dissolved bismuth (Bi).

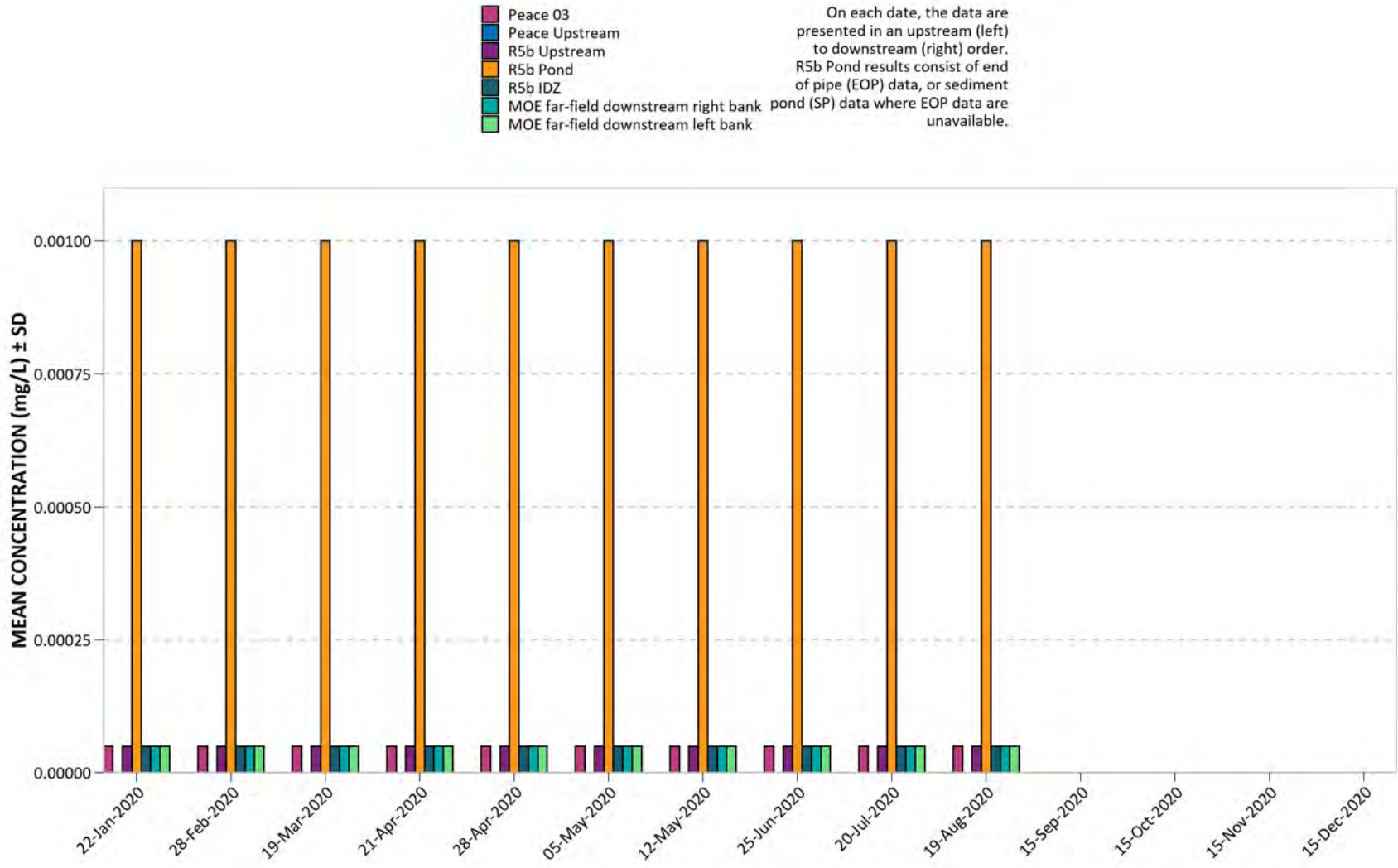


Figure 61. 2020 Peace River and RSEM R5b pond dissolved boron (B).

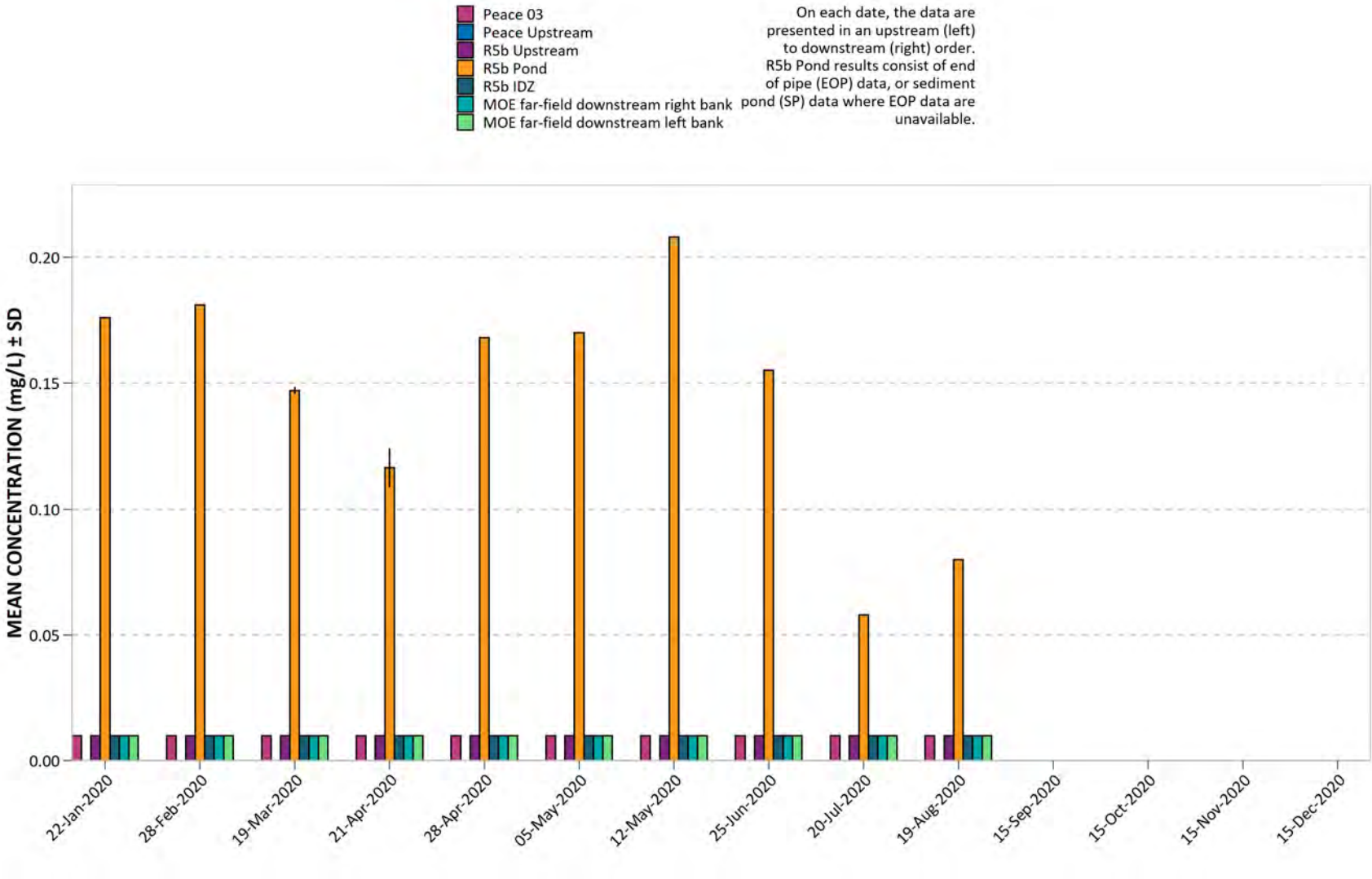


Figure 62. 2020 Peace River and RSEM R5b pond dissolved cadmium (Cd).

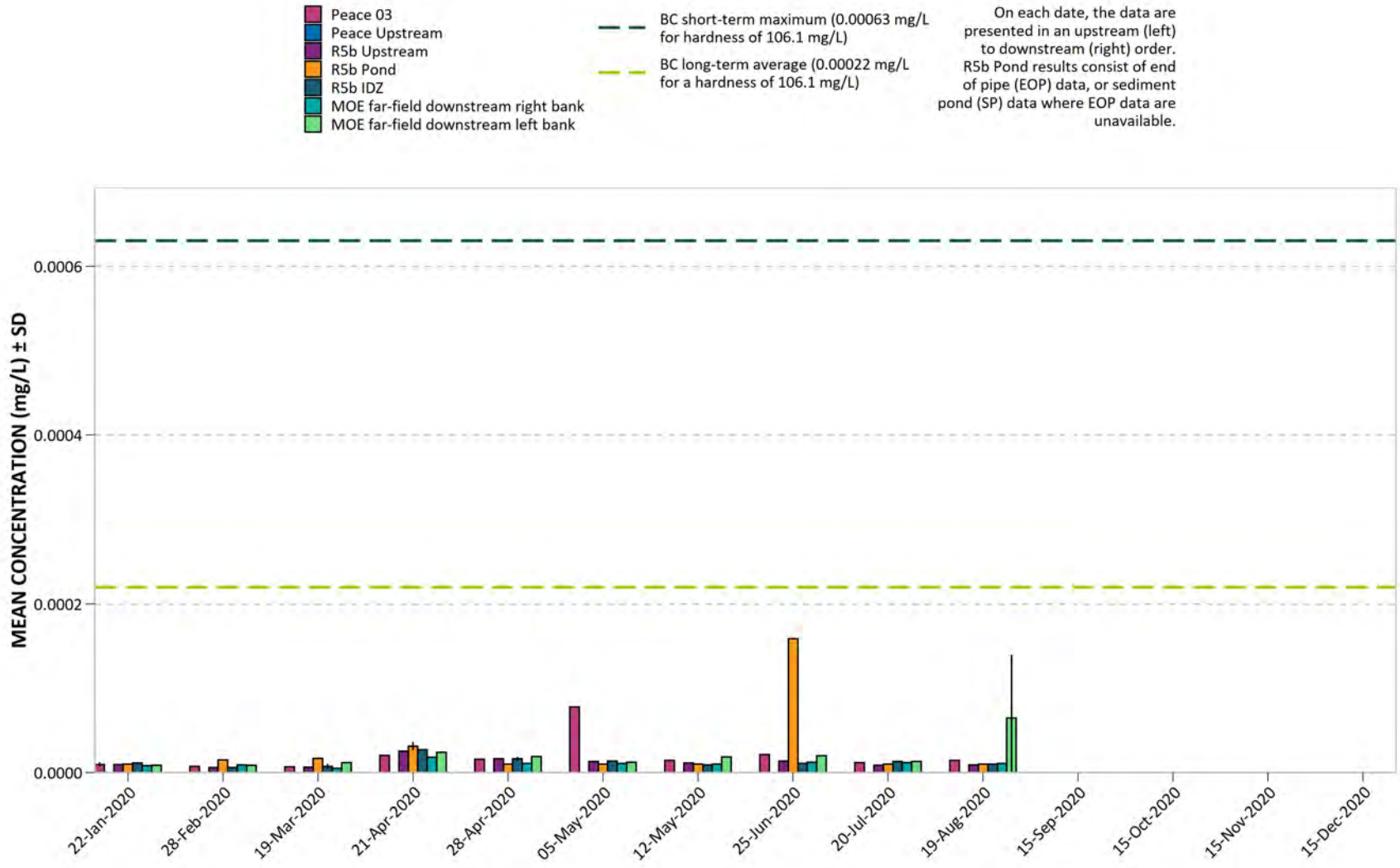


Figure 63. 2020 Peace River and RSEM R5b pond dissolved calcium (Ca).

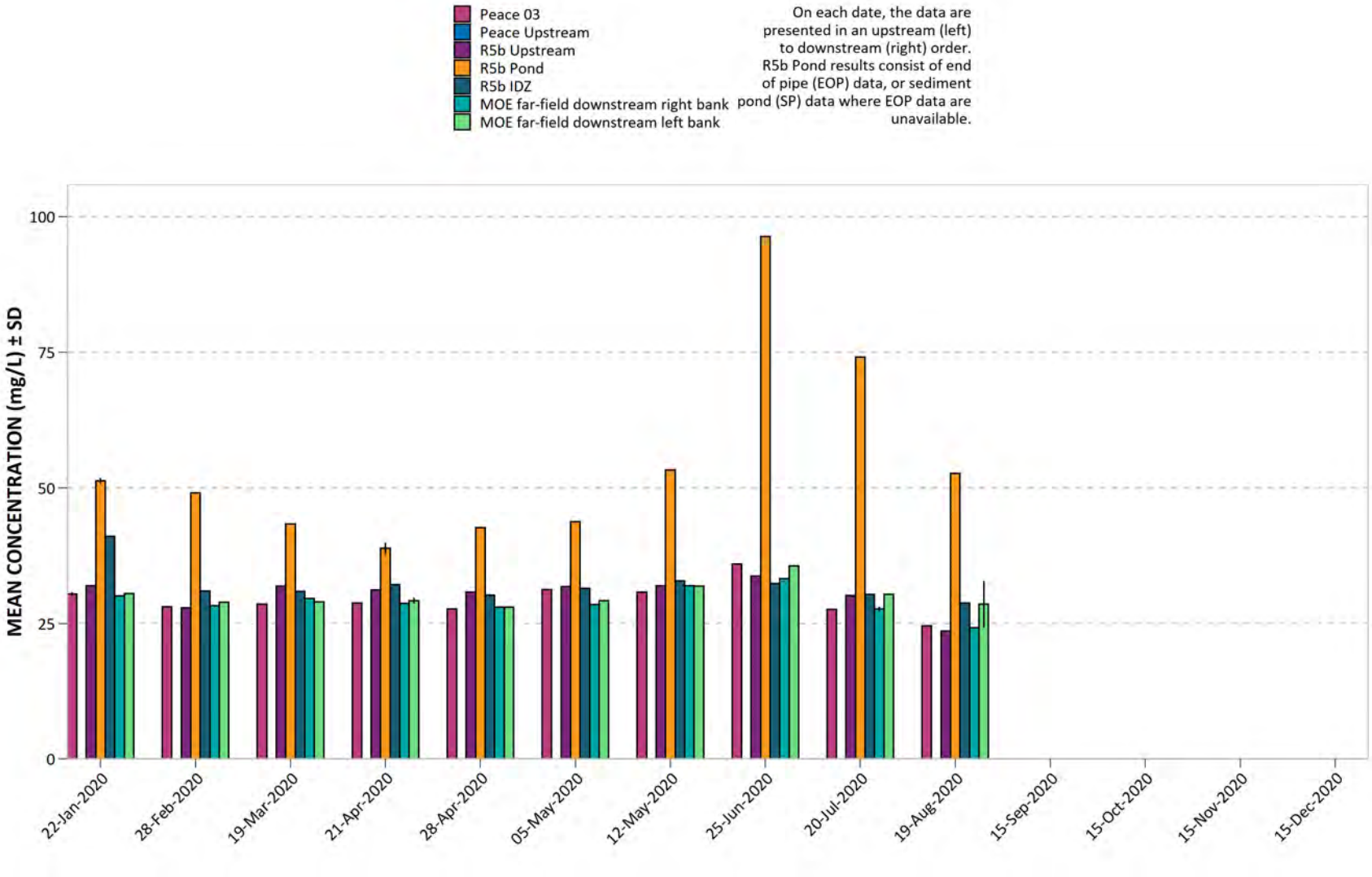


Figure 64. 2020 Peace River and RSEM R5b pond dissolved chromium (Cr).

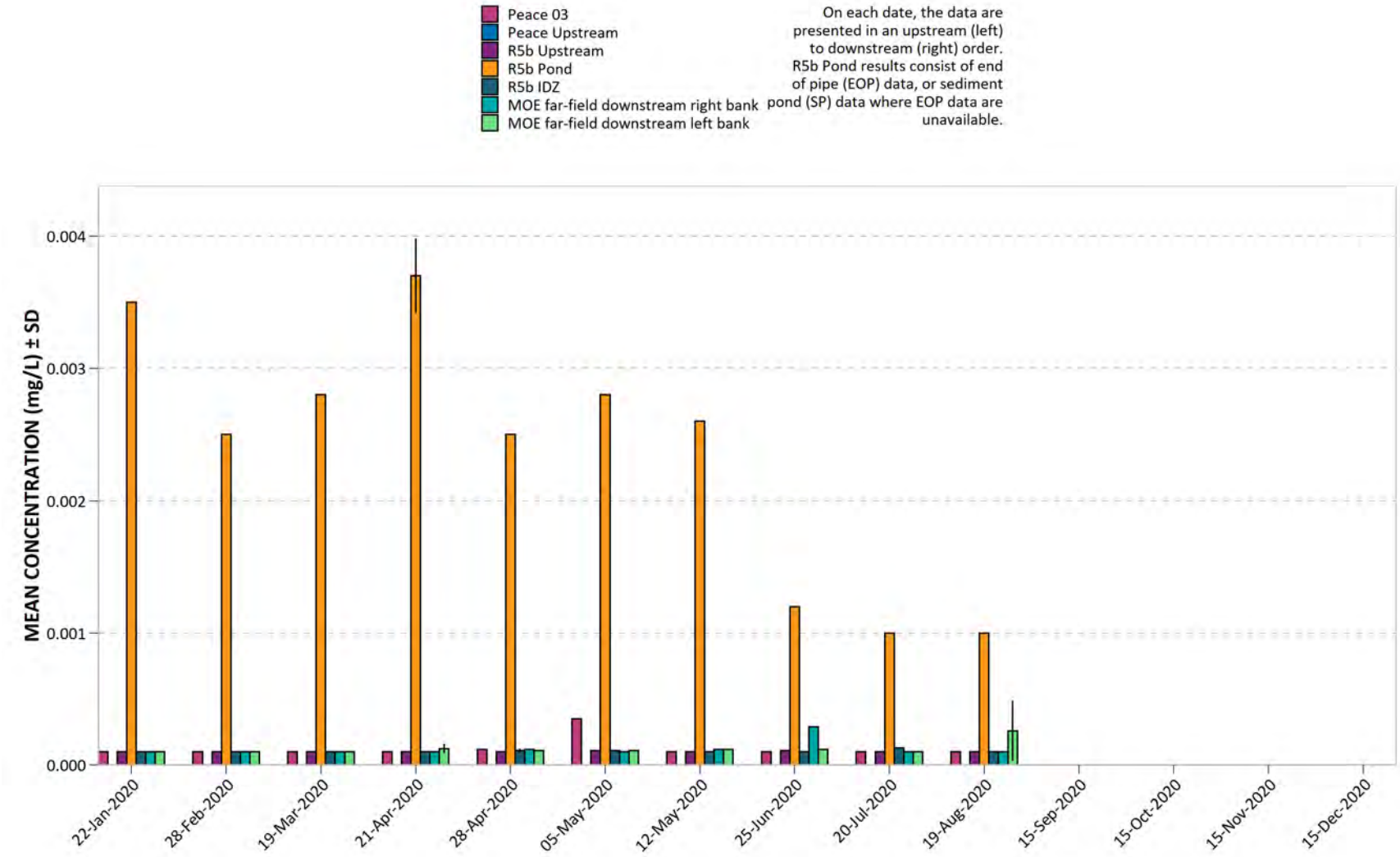


Figure 65. 2020 Peace River and RSEM R5b pond dissolved cobalt (Co).

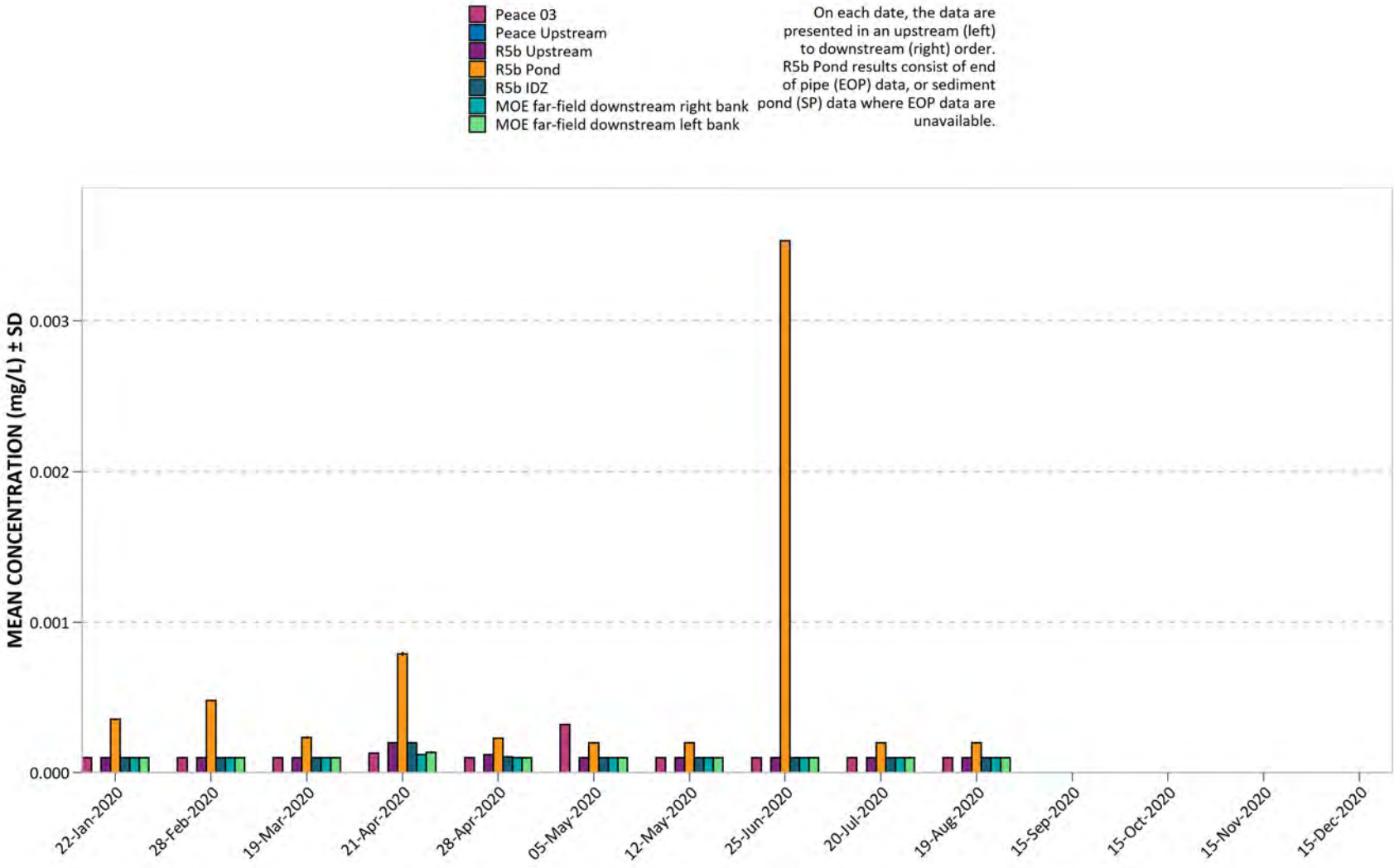


Figure 66. 2020 Peace River and RSEM R5b pond dissolved copper (Cu).

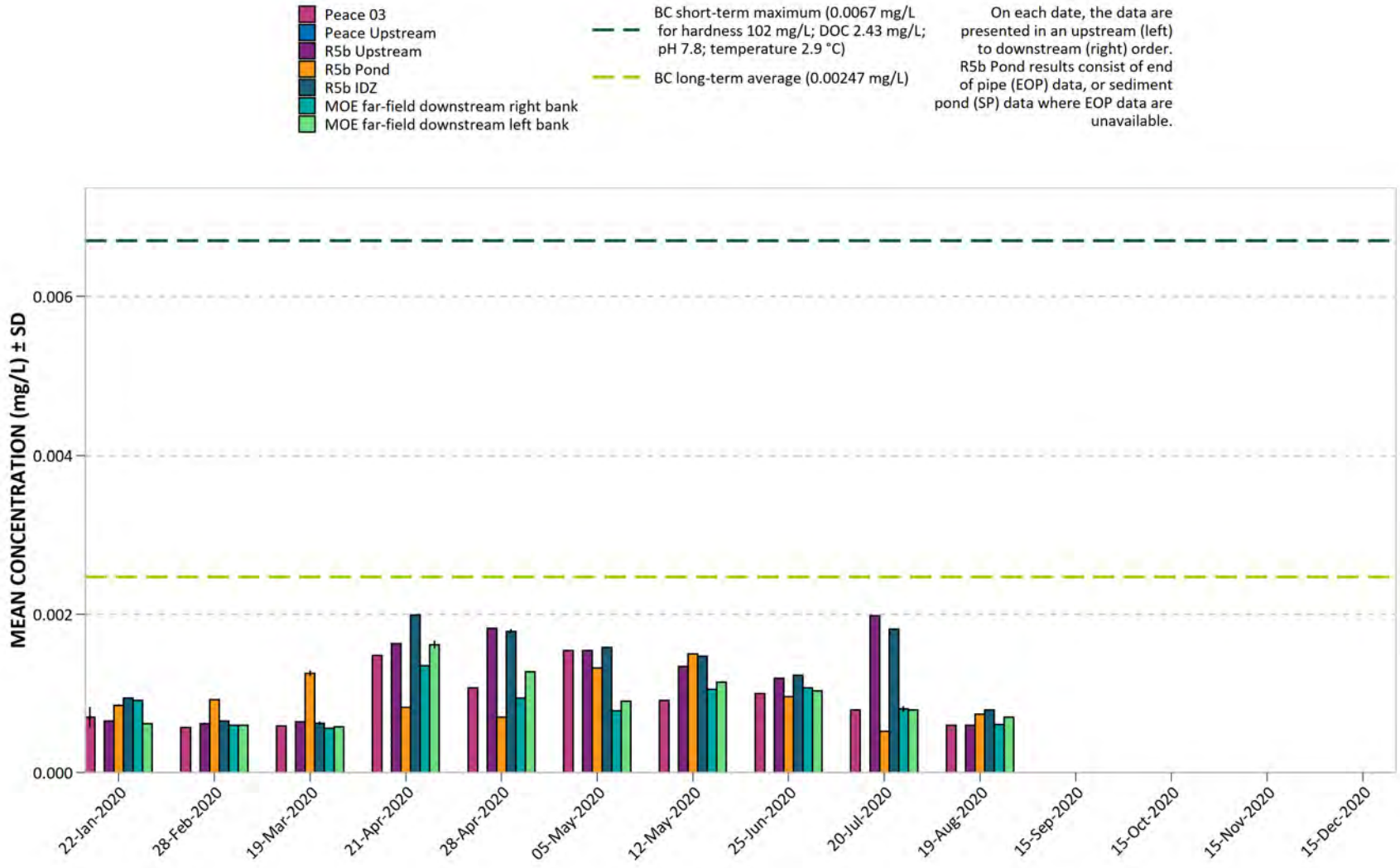


Figure 67. 2020 Peace River and RSEM R5b pond dissolved iron (Fe).

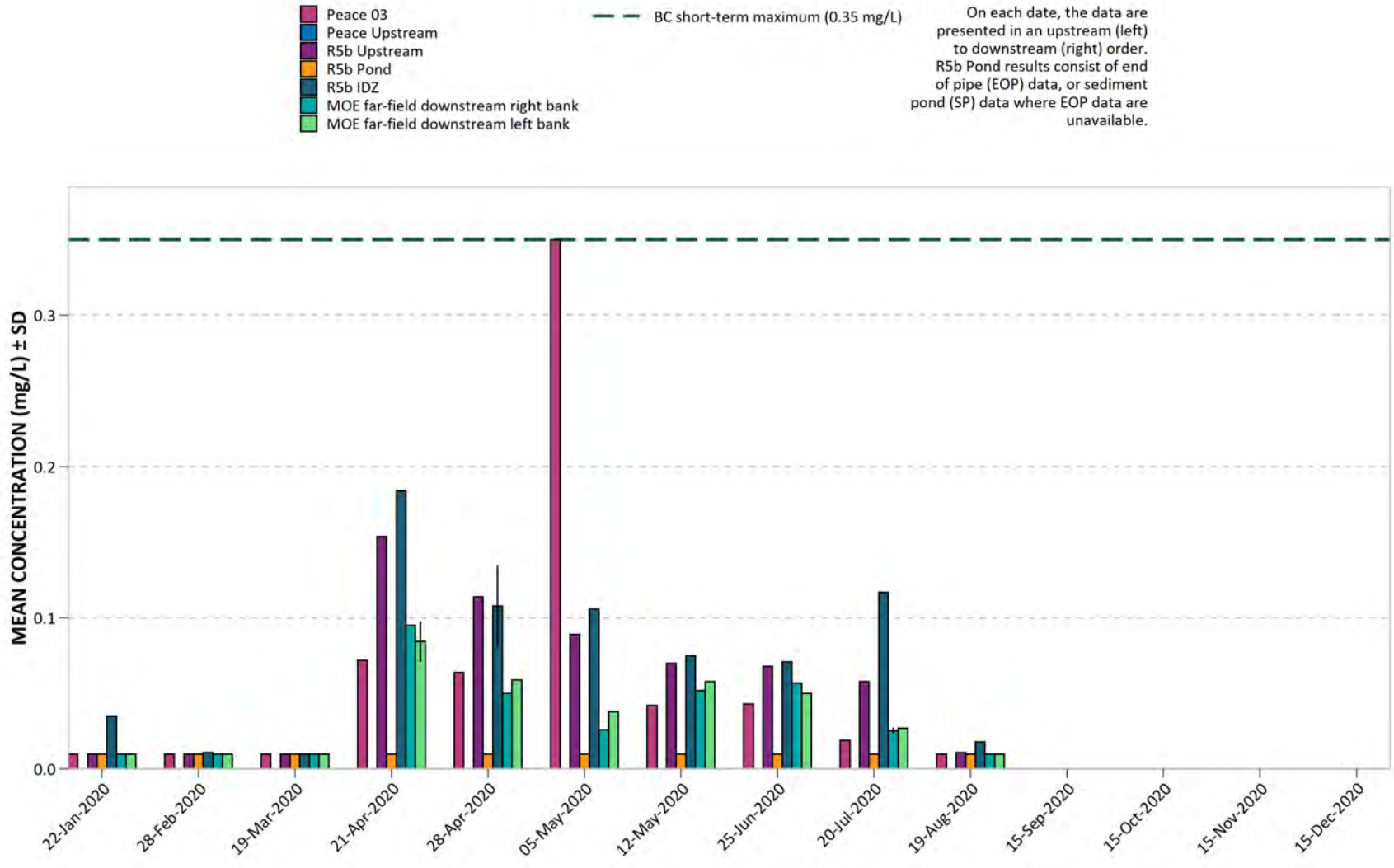


Figure 68. 2020 Peace River and RSEM R5b pond dissolved lead (Pb).

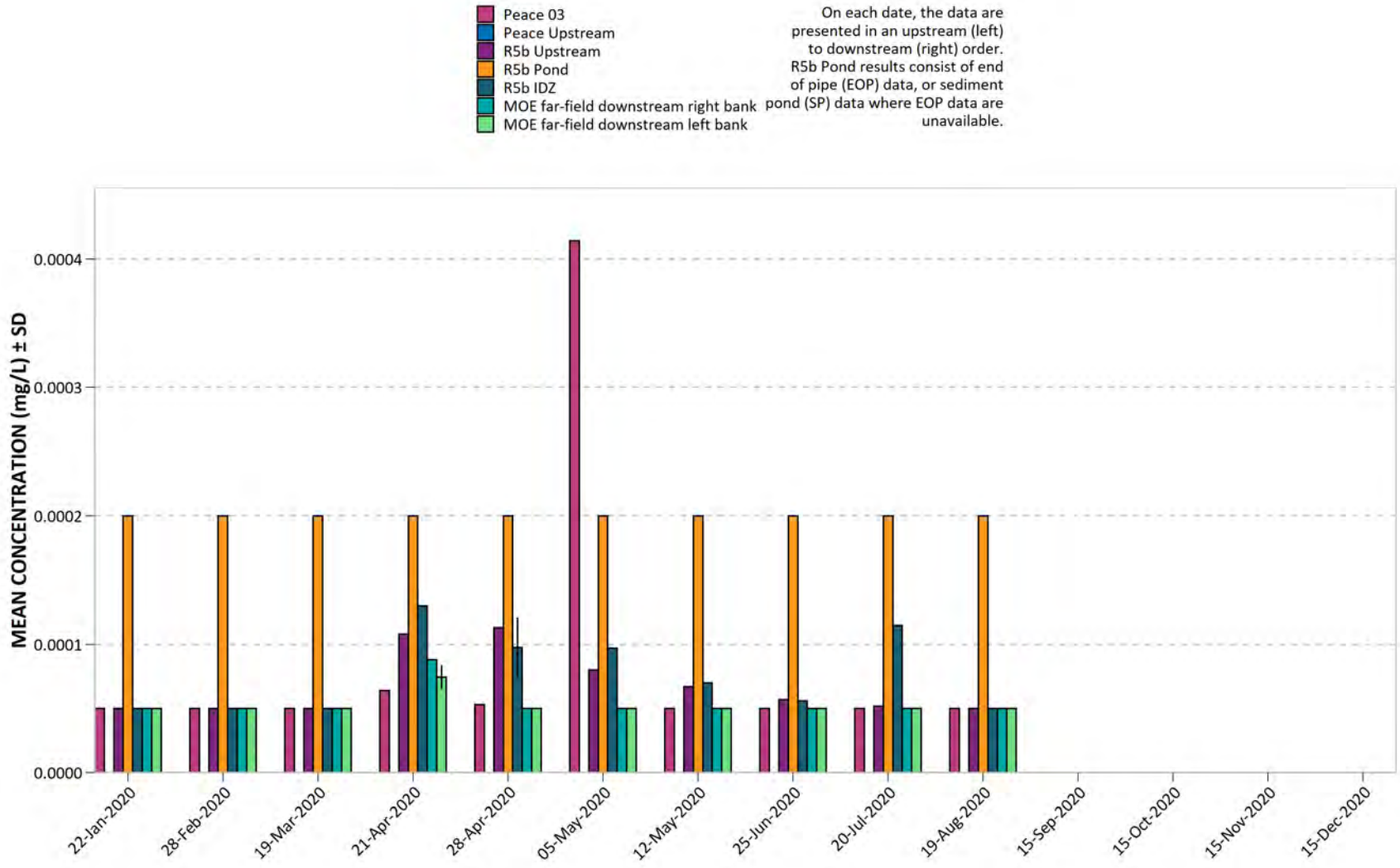


Figure 69. 2020 Peace River and RSEM R5b pond dissolved lithium (Li).

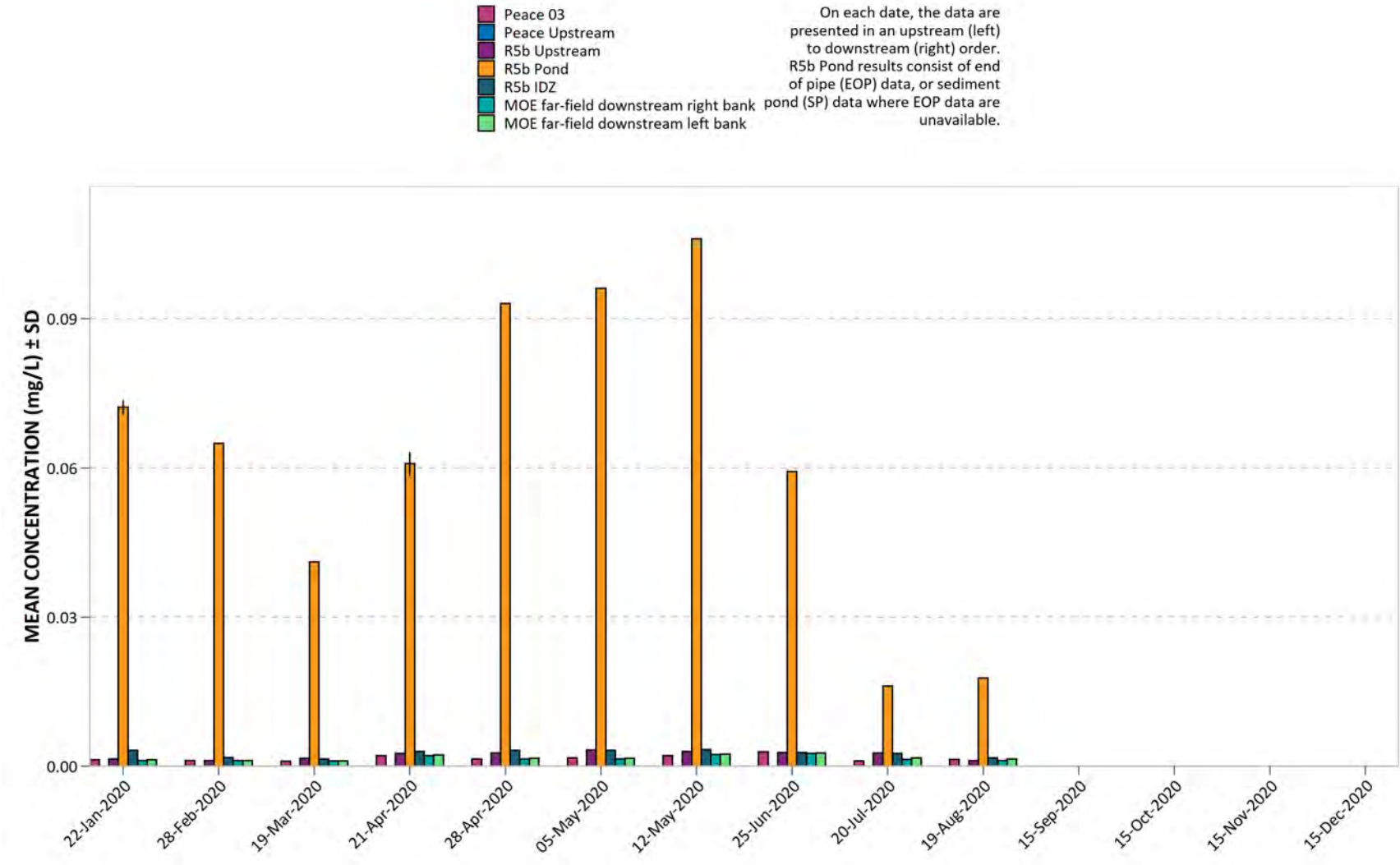


Figure 70. 2020 Peace River and RSEM R5b pond dissolved magnesium (Mg).

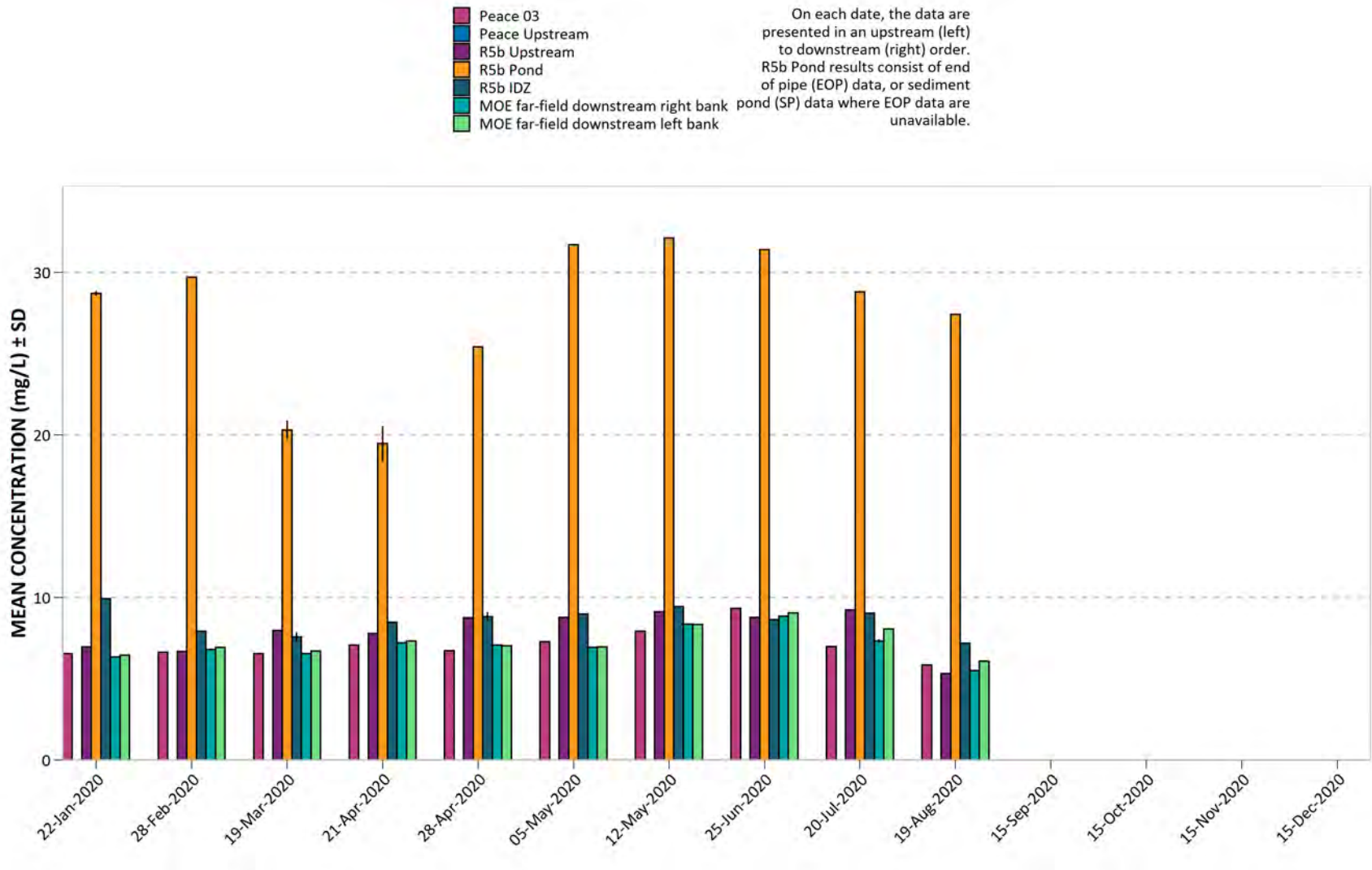


Figure 71. 2020 Peace River and RSEM R5b pond dissolved manganese (Mn).

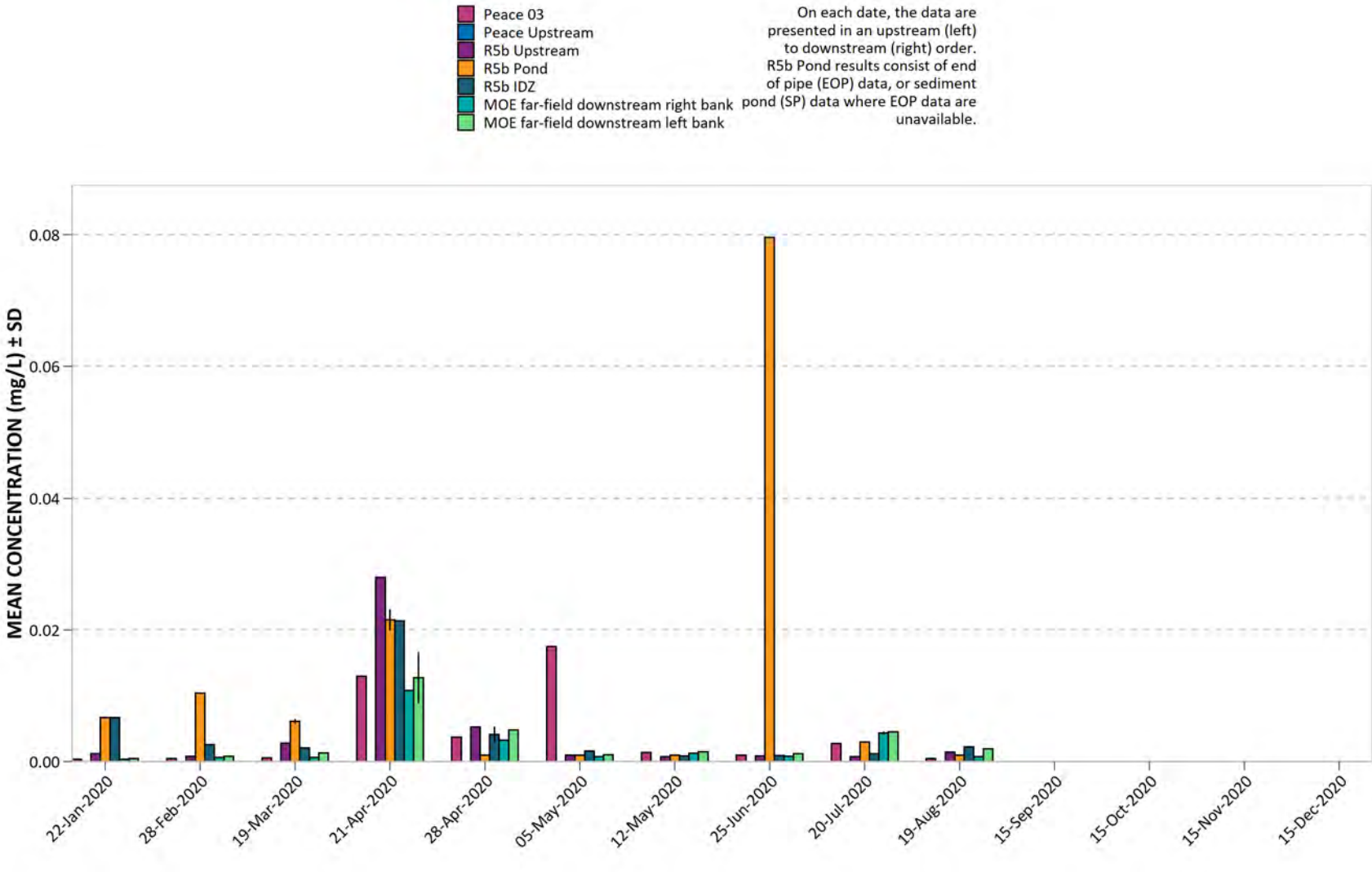


Figure 72. 2020 Peace River and RSEM R5b pond dissolved mercury (Hg).

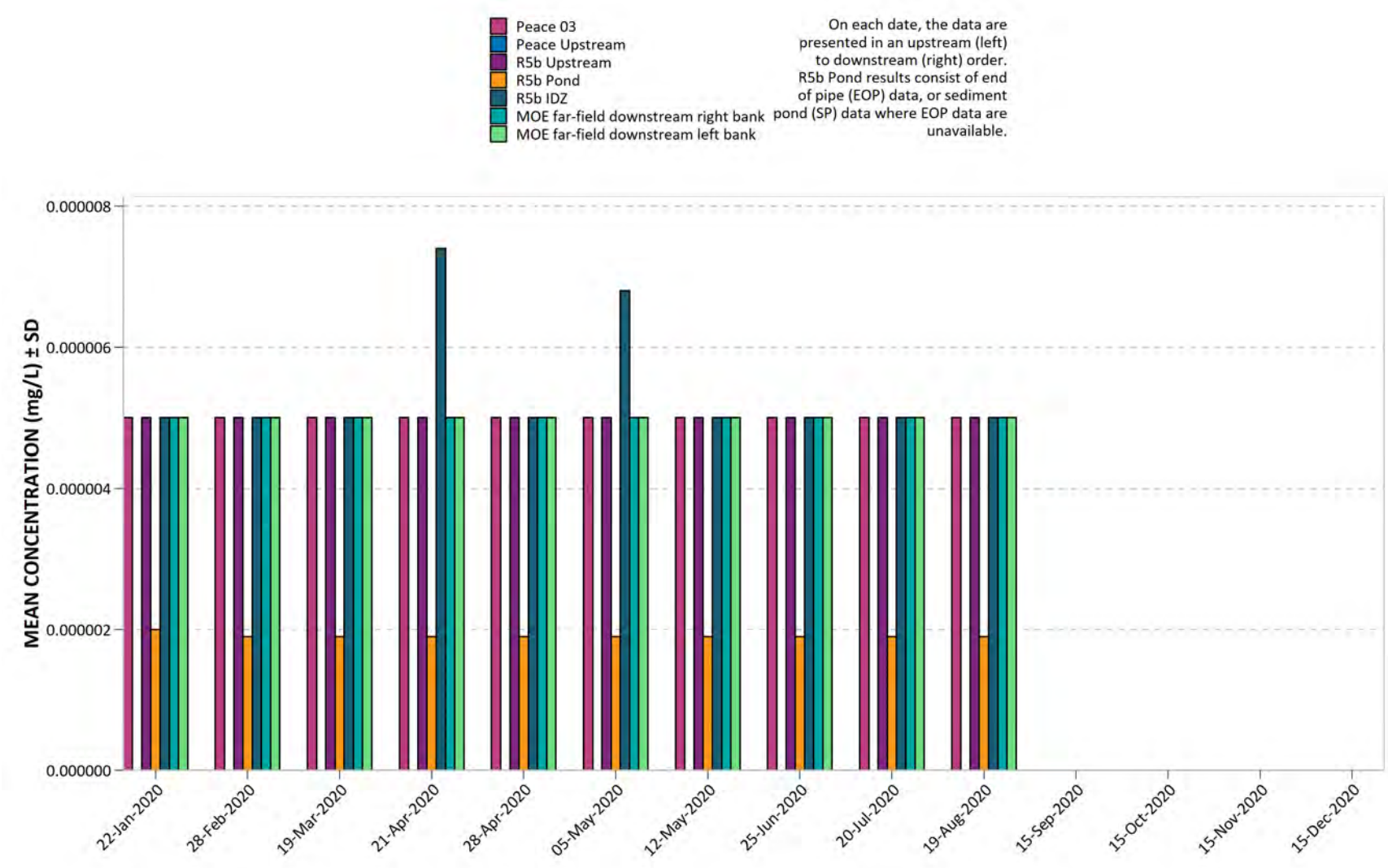


Figure 73. 2020 Peace River and RSEM R5b pond dissolved molybdenum (Mo).

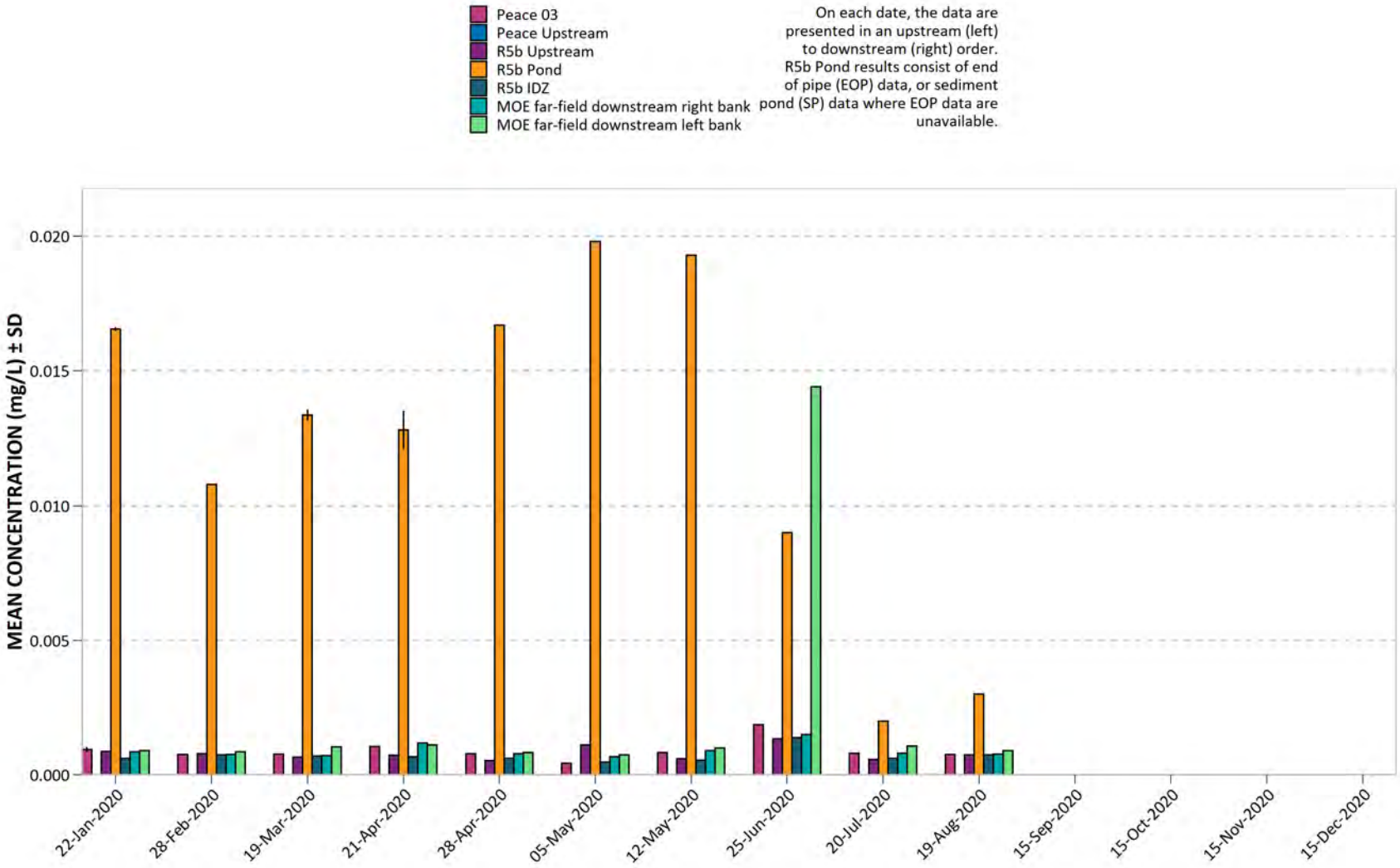


Figure 74. 2020 Peace River and RSEM R5b pond dissolved nickel (Ni).

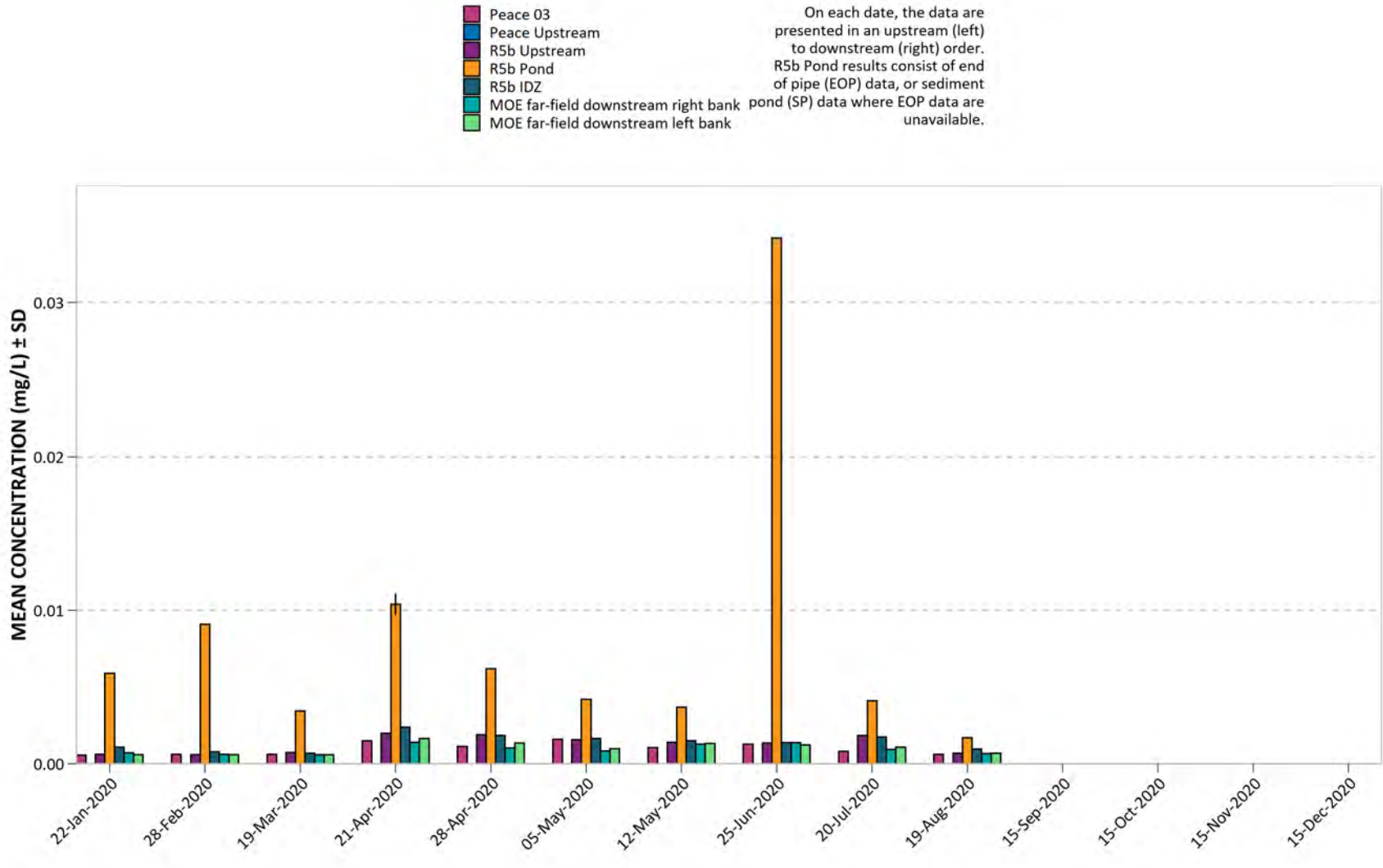


Figure 75. 2020 Peace River and RSEM R5b pond dissolved potassium (K).

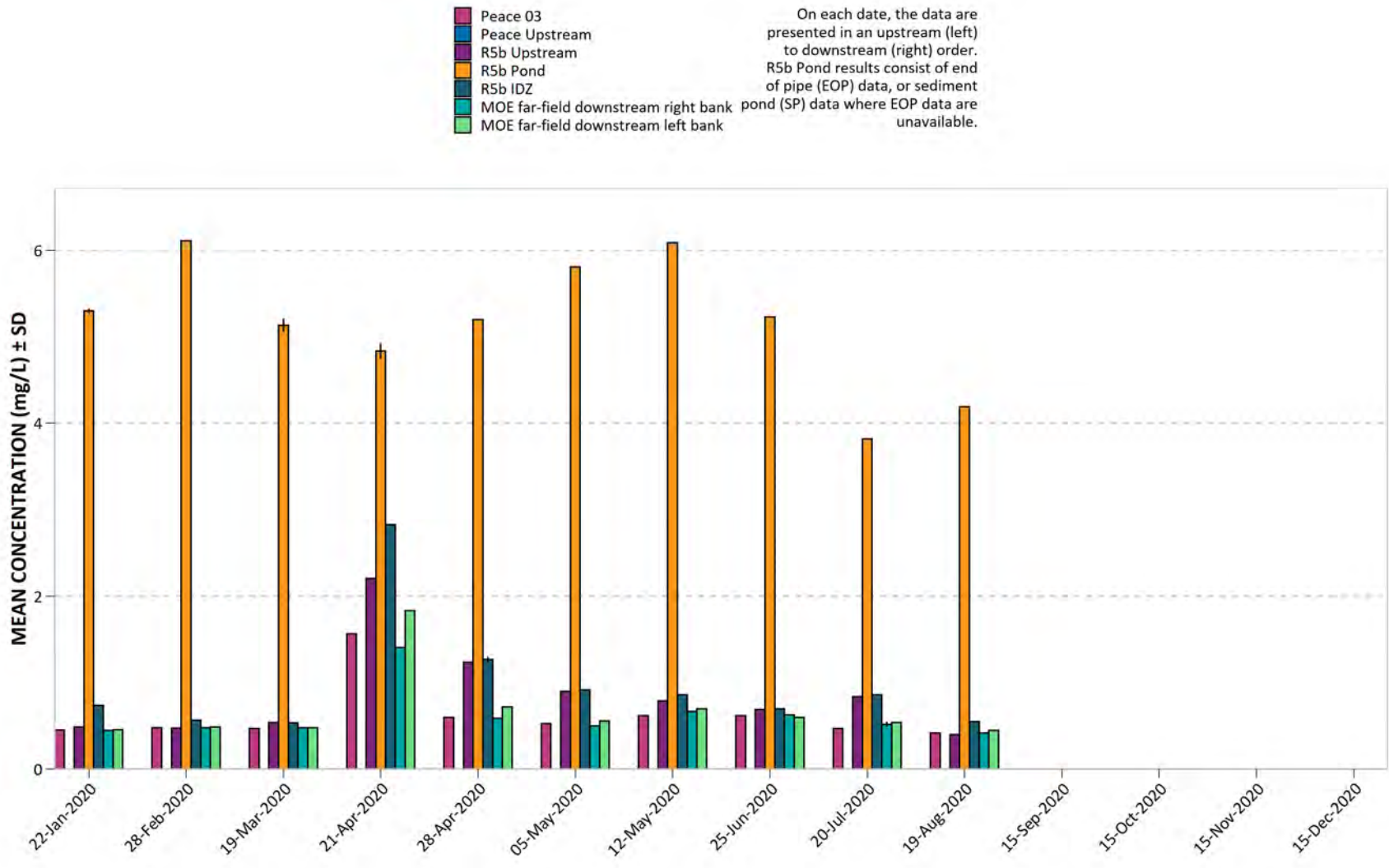


Figure 76. 2020 Peace River and RSEM R5b pond dissolved selenium (Se).

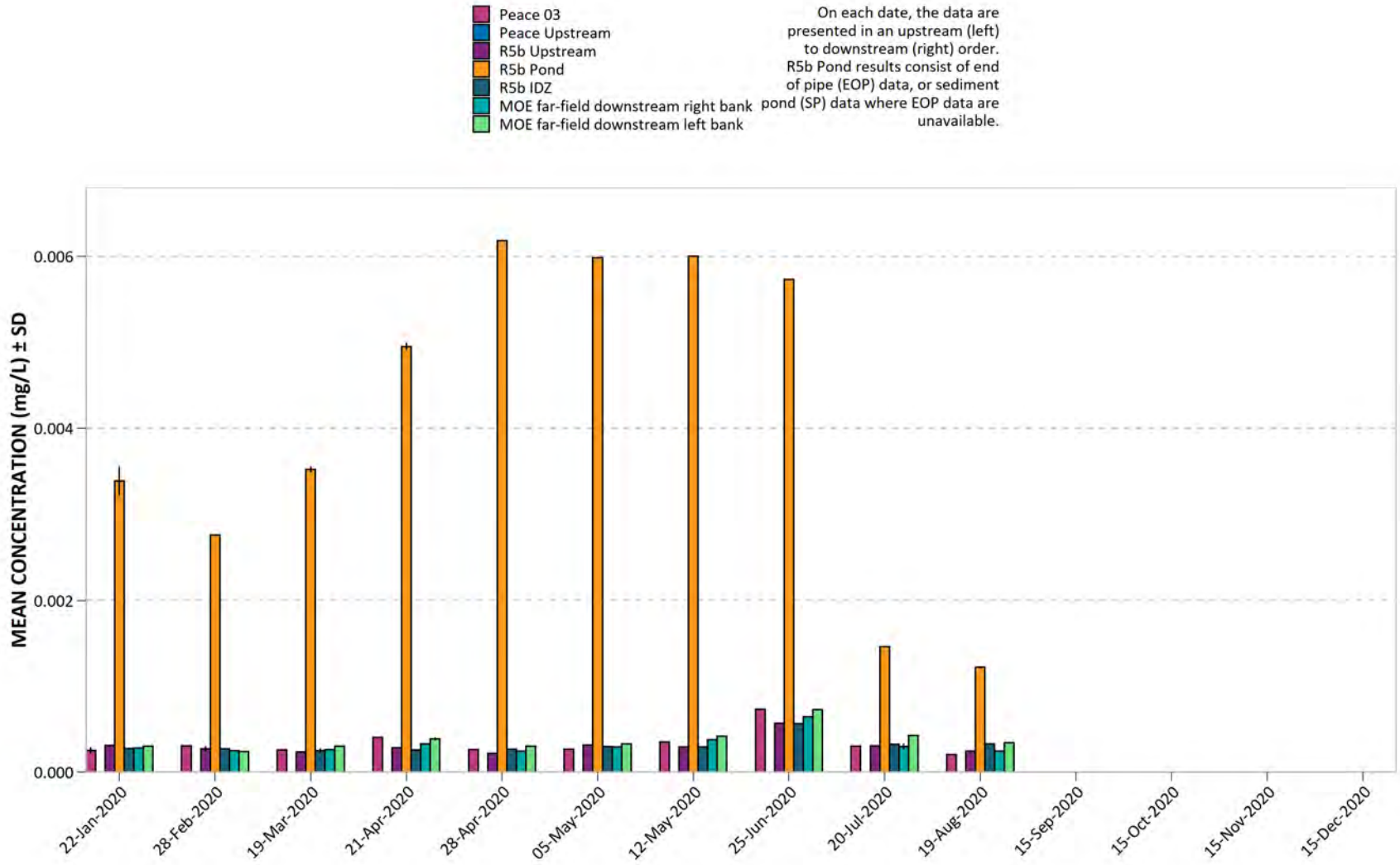


Figure 77. 2020 Peace River and RSEM R5b pond dissolved silicon (Si).

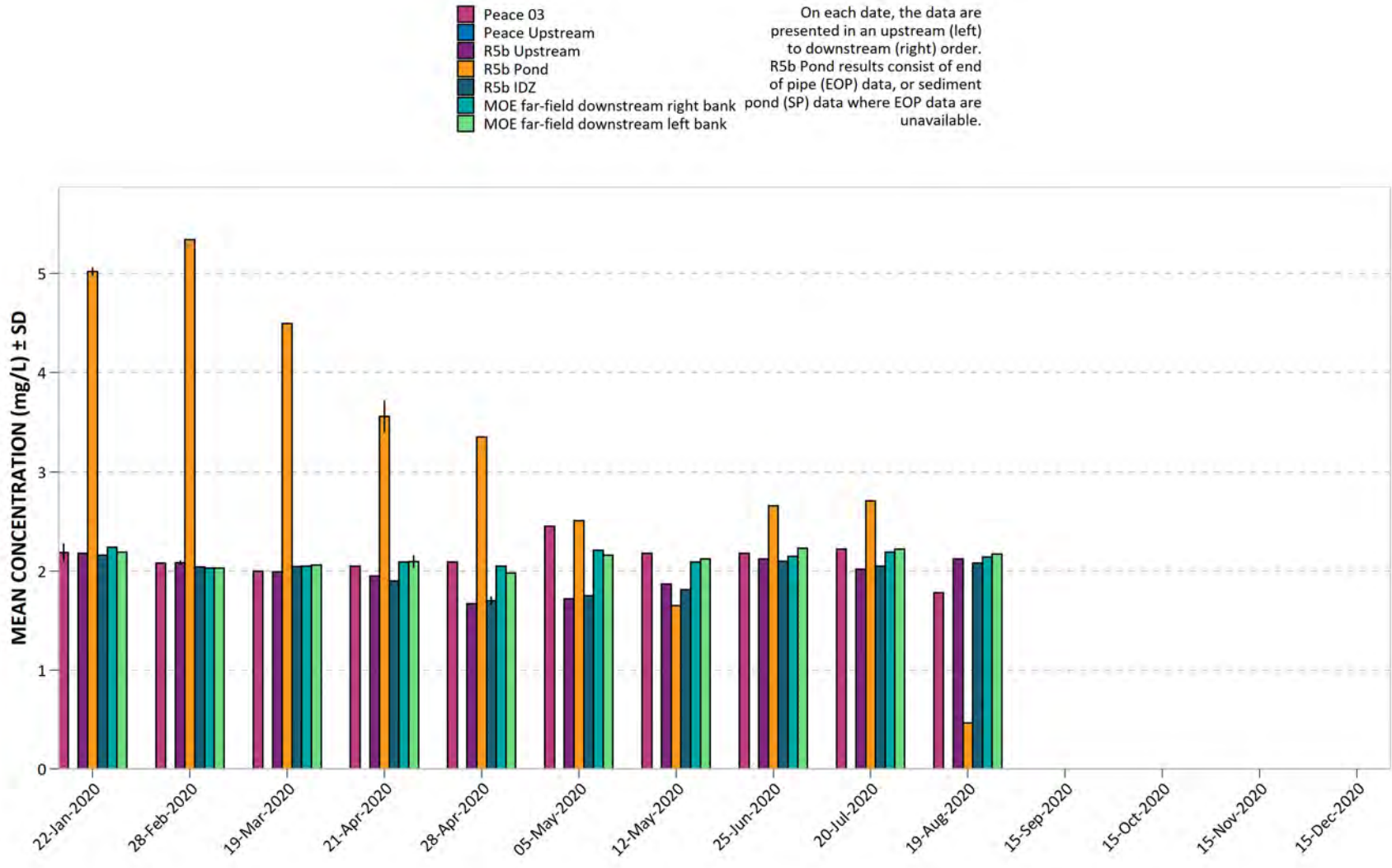


Figure 78. 2020 Peace River and RSEM R5b pond dissolved silver (Ag).

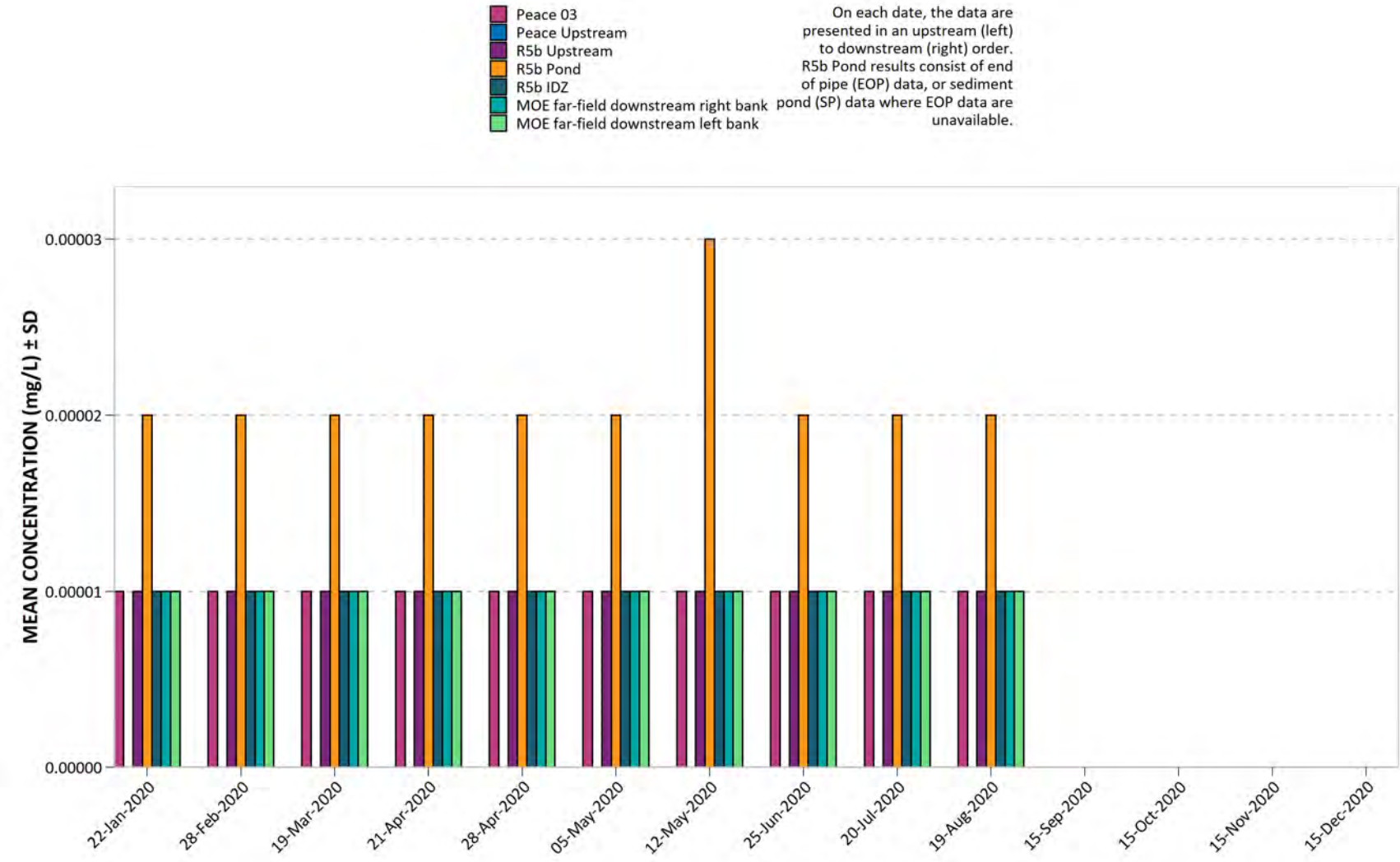


Figure 79. 2020 Peace River and RSEM R5b pond dissolved sodium (Na).

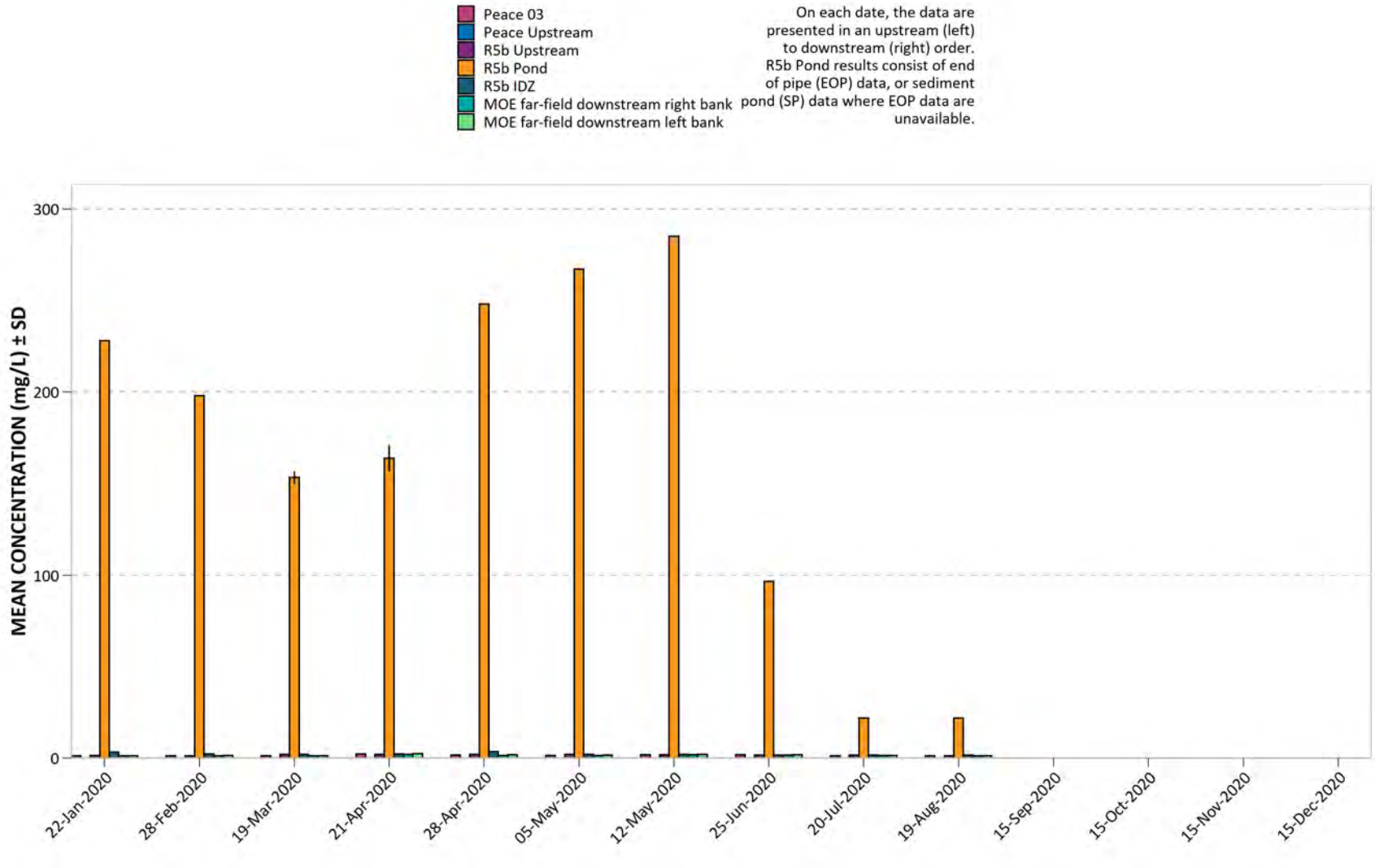


Figure 80. 2020 Peace River and RSEM R5b pond dissolved strontium (Sr).

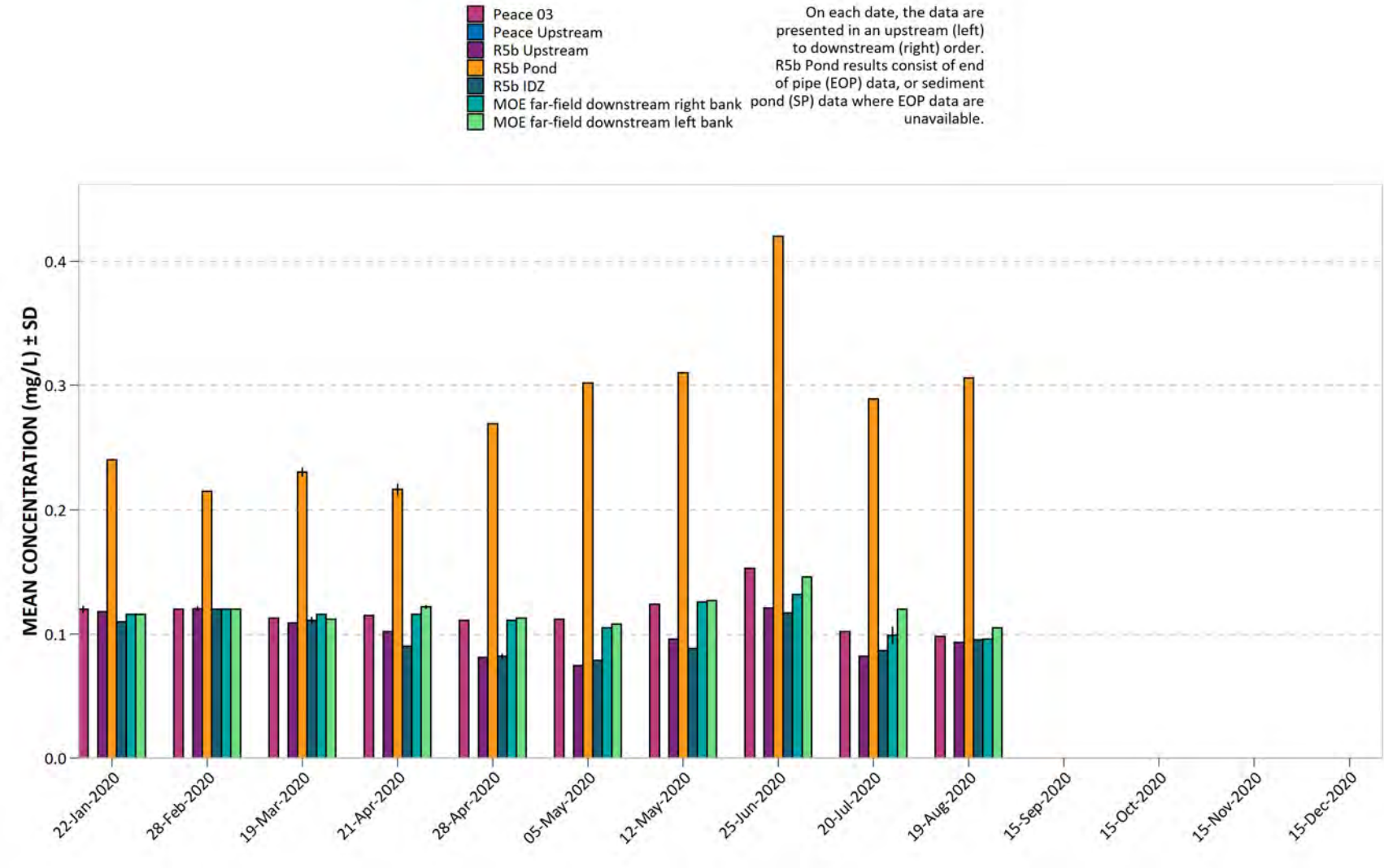


Figure 81. 2020 Peace River and RSEM R5b pond dissolved sulfur (S).

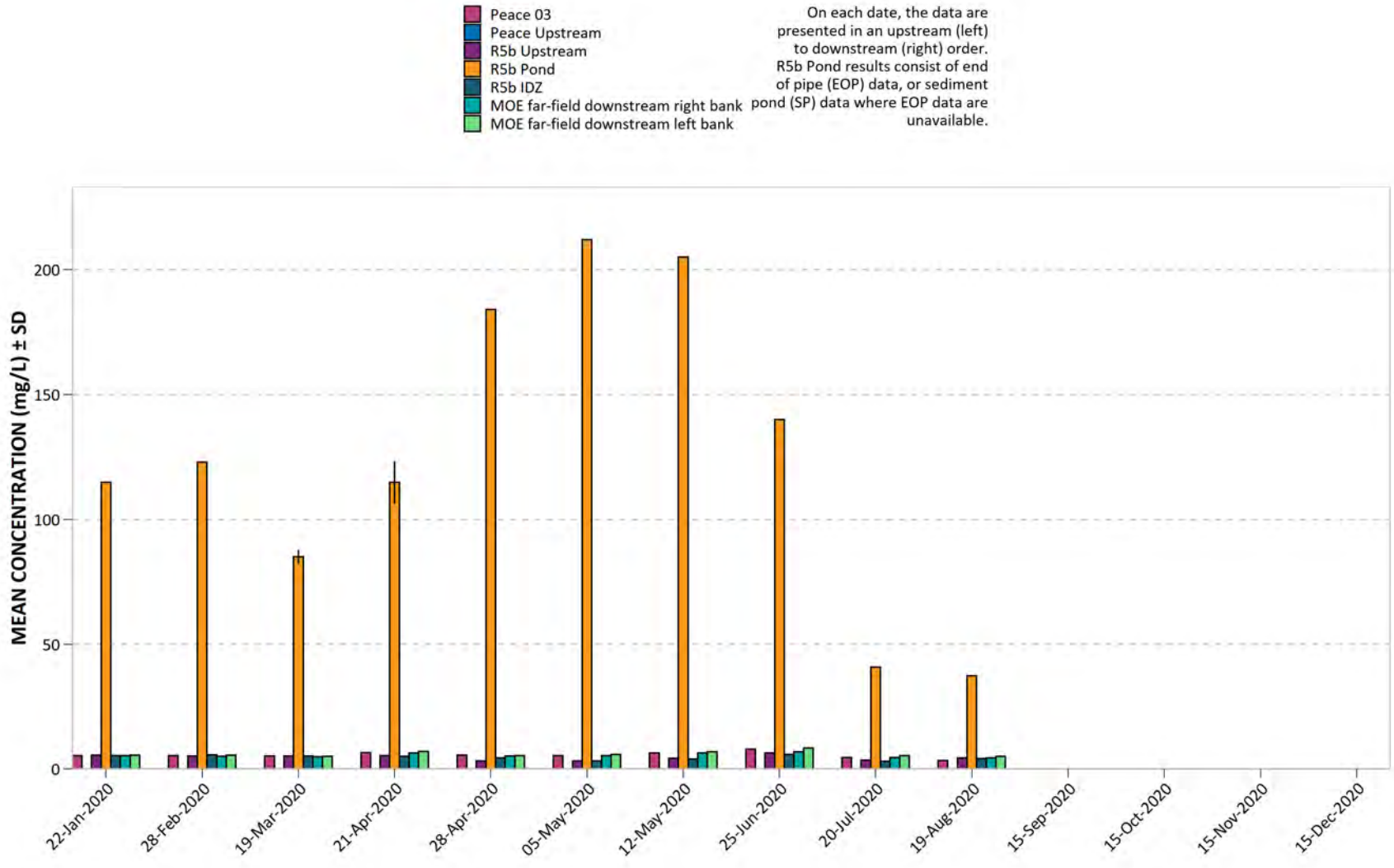


Figure 82. 2020 Peace River and RSEM R5b pond dissolved thallium (Tl).

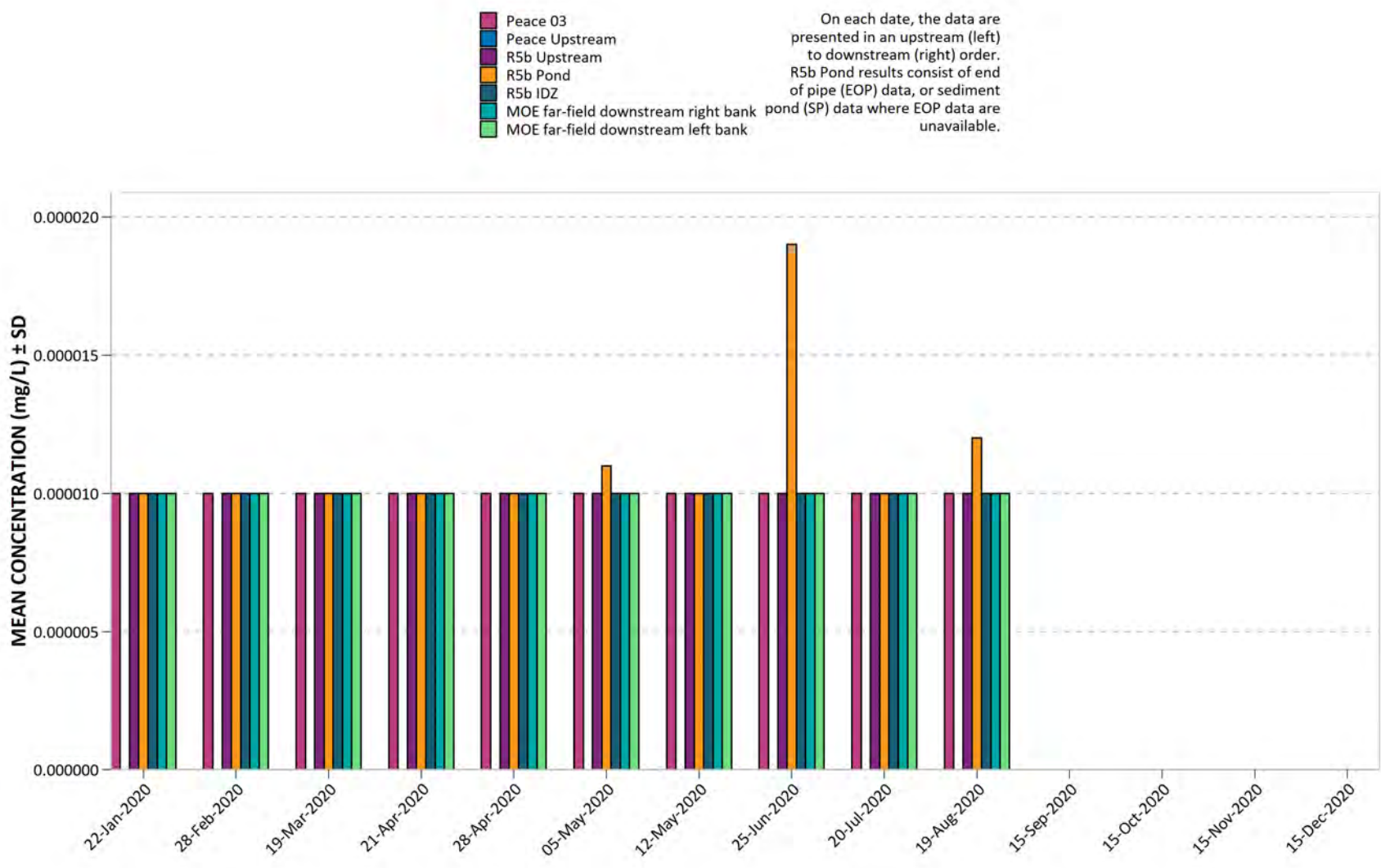


Figure 83. 2020 Peace River and RSEM R5b pond dissolved tin (Sn).

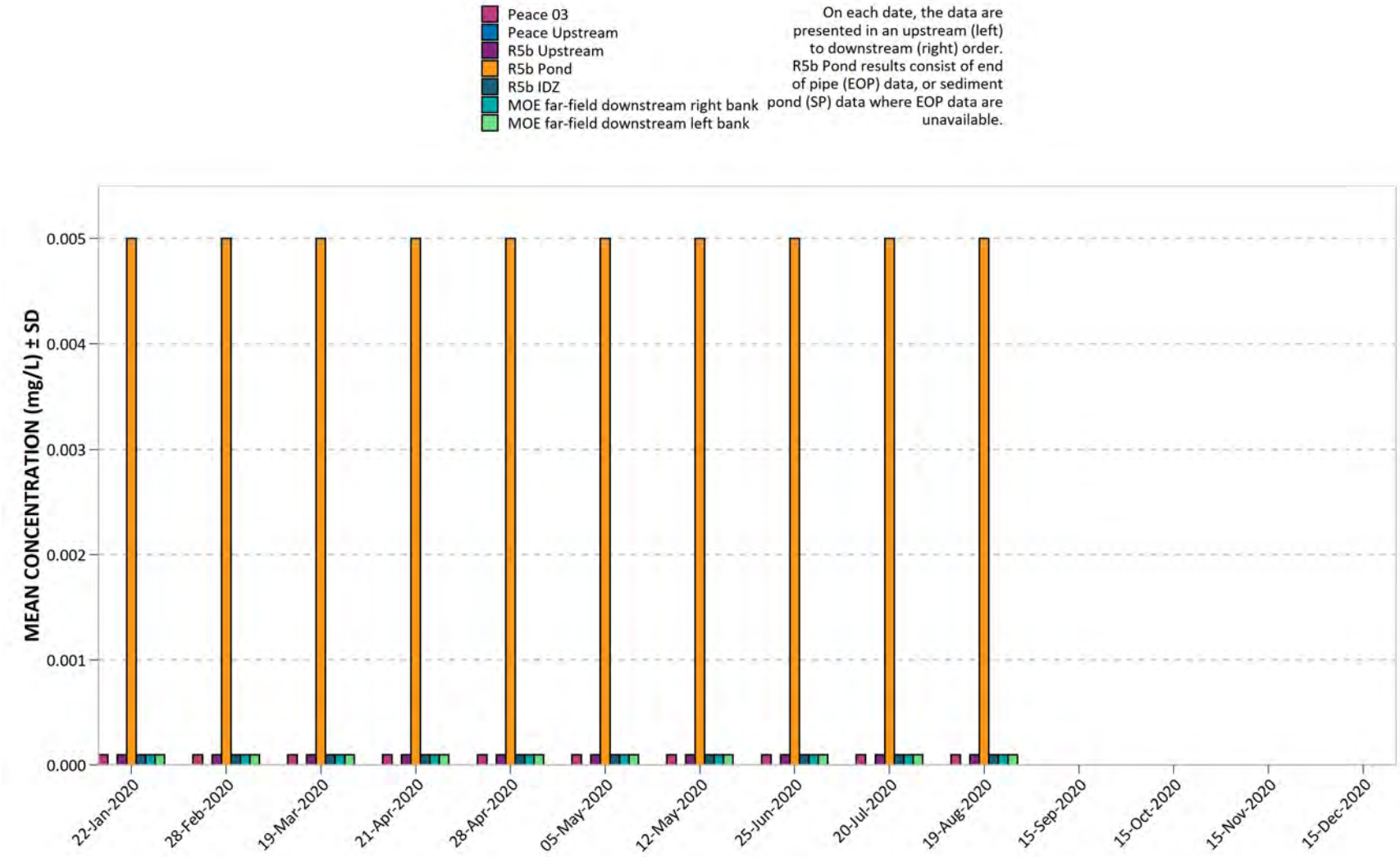


Figure 84. 2020 Peace River and RSEM R5b pond dissolved titanium (Ti).

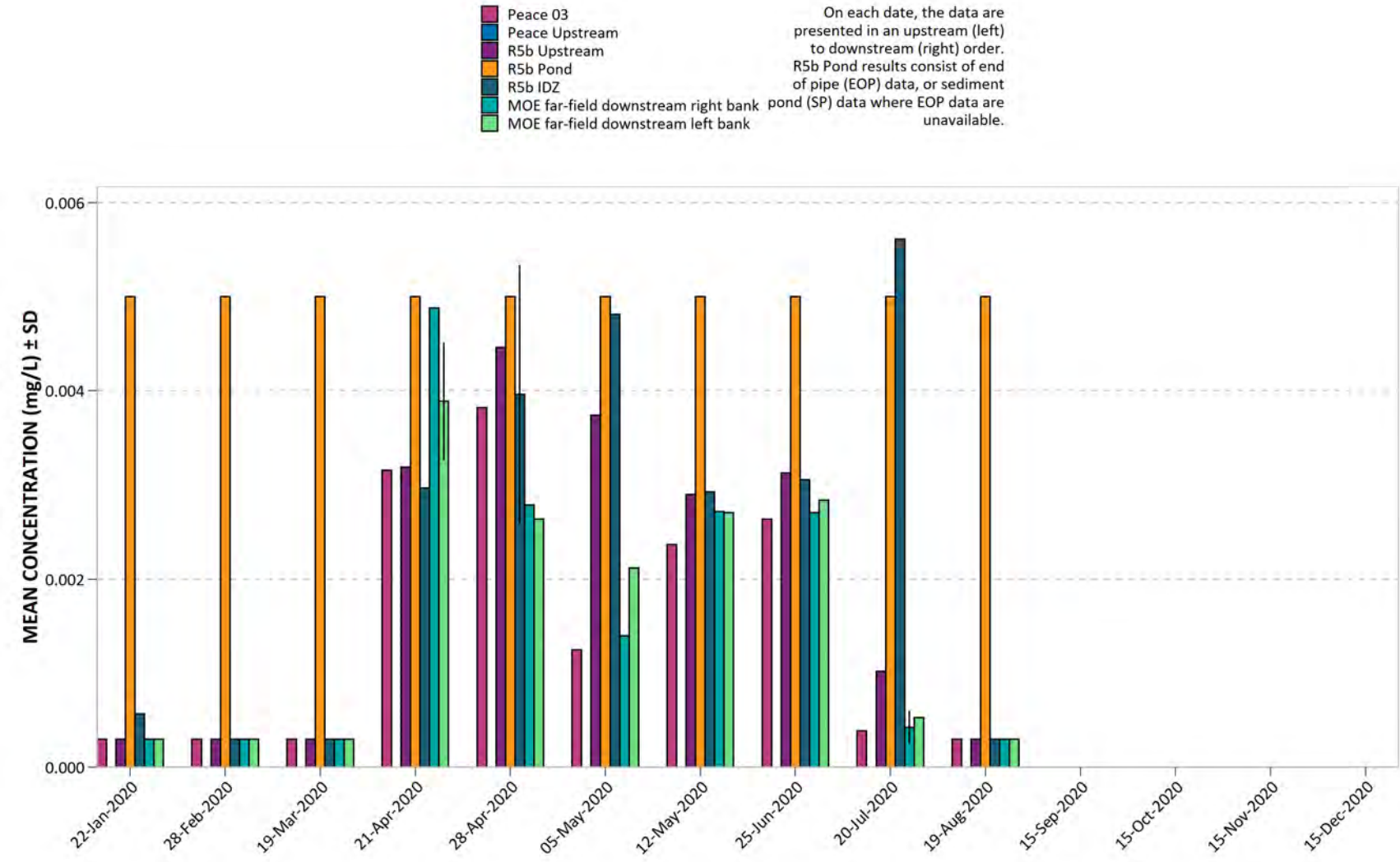


Figure 85. 2020 Peace River and RSEM R5b pond dissolved uranium (U).

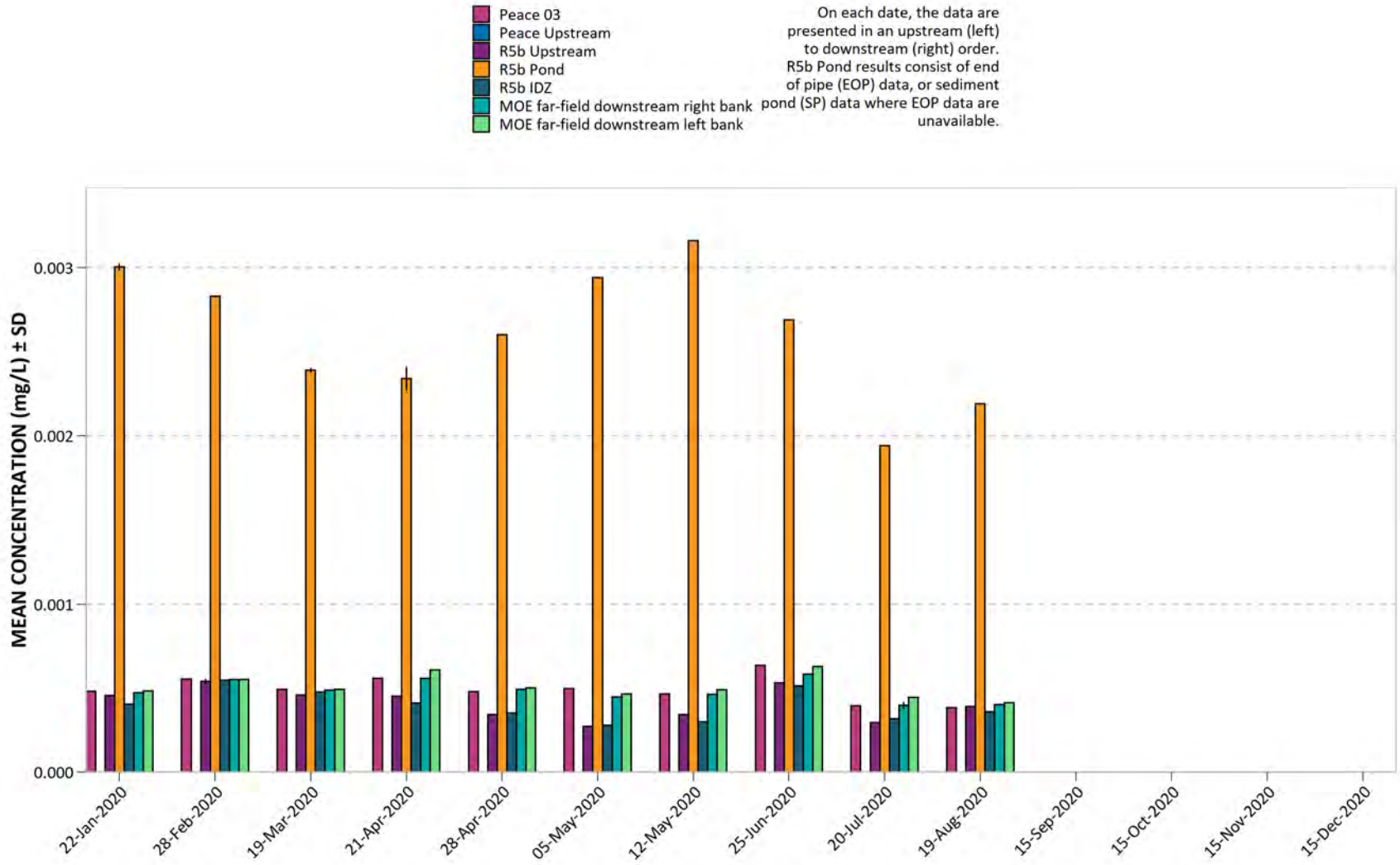


Figure 86. 2020 Peace River and RSEM R5b pond dissolved vanadium (V).

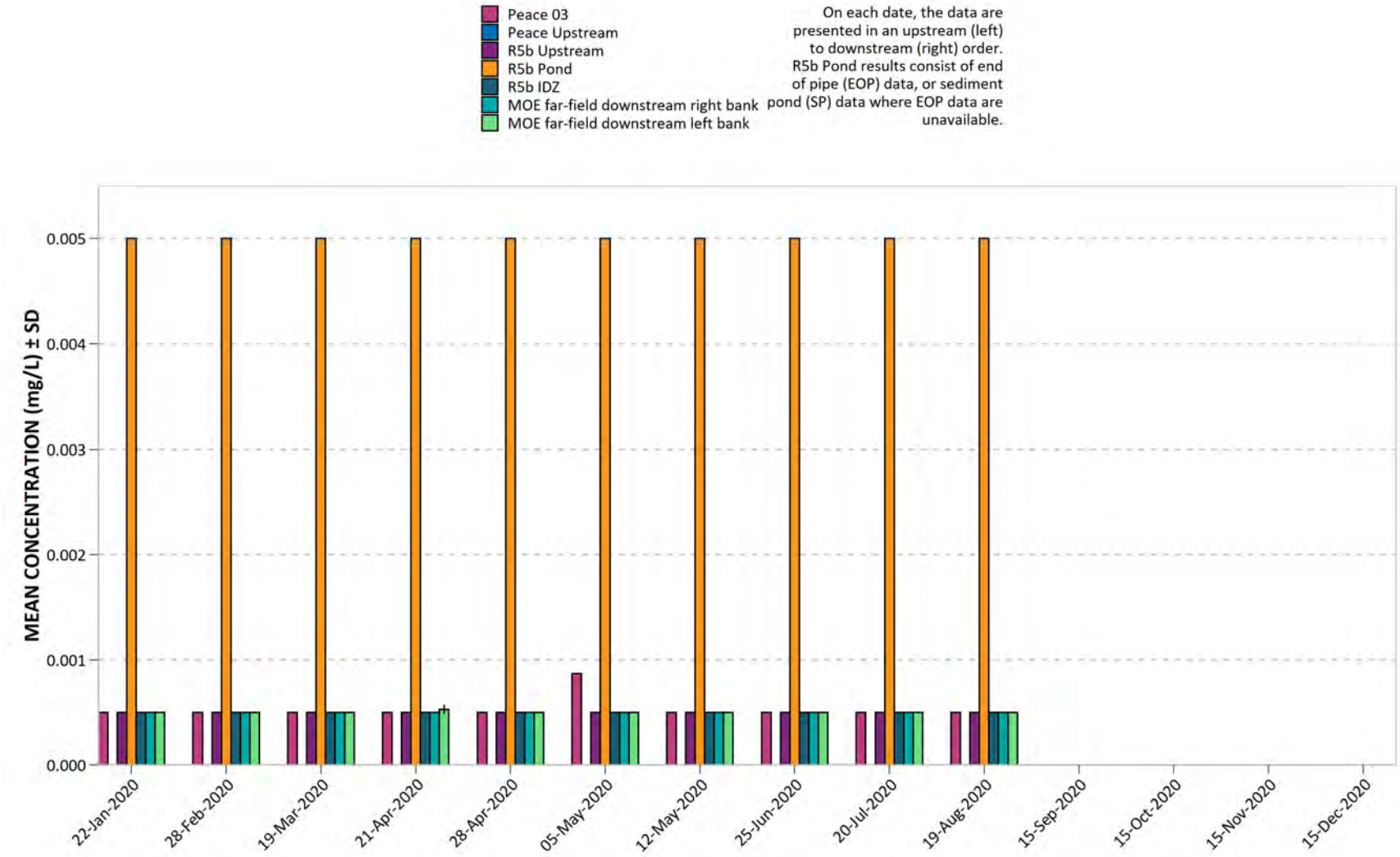


Figure 87. 2020 Peace River and RSEM R5b pond dissolved zinc (Zn).

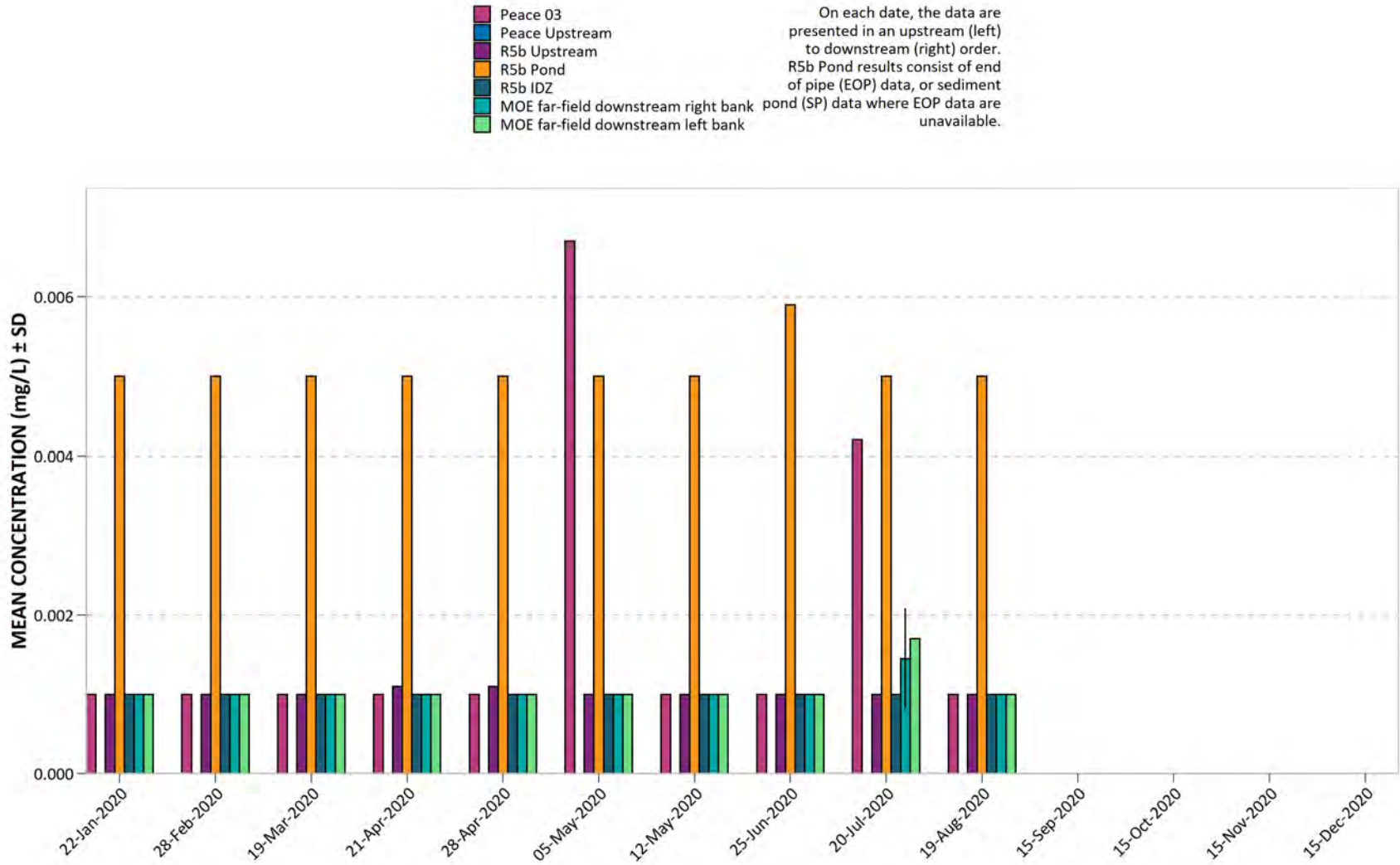
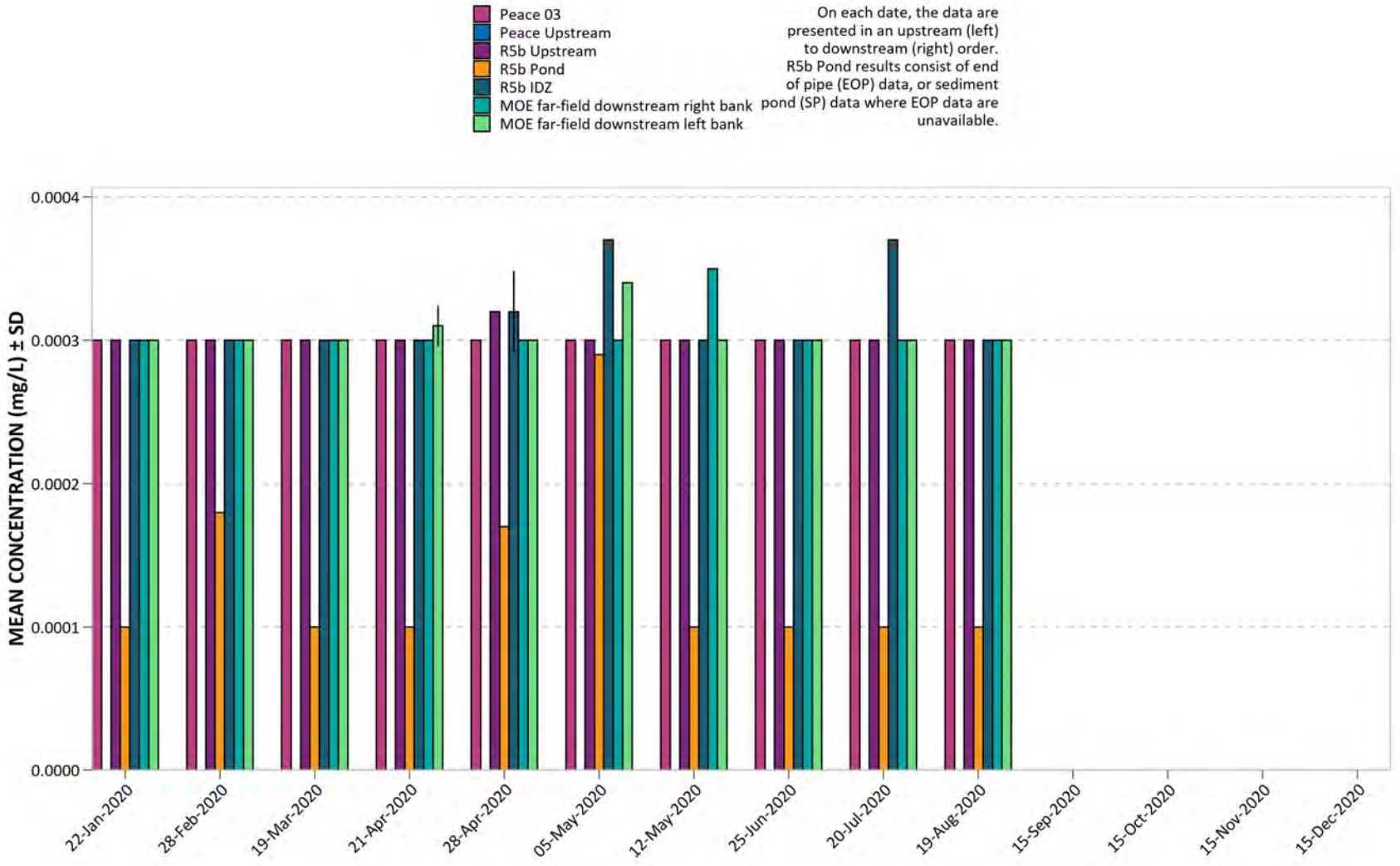


Figure 88. 2020 Peace River and RSEM R5b pond dissolved zirconium (Zr).



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

Figure 89. 2020 Peace River (*in-situ*) and RSEM R6 pond (lab) specific conductivity.

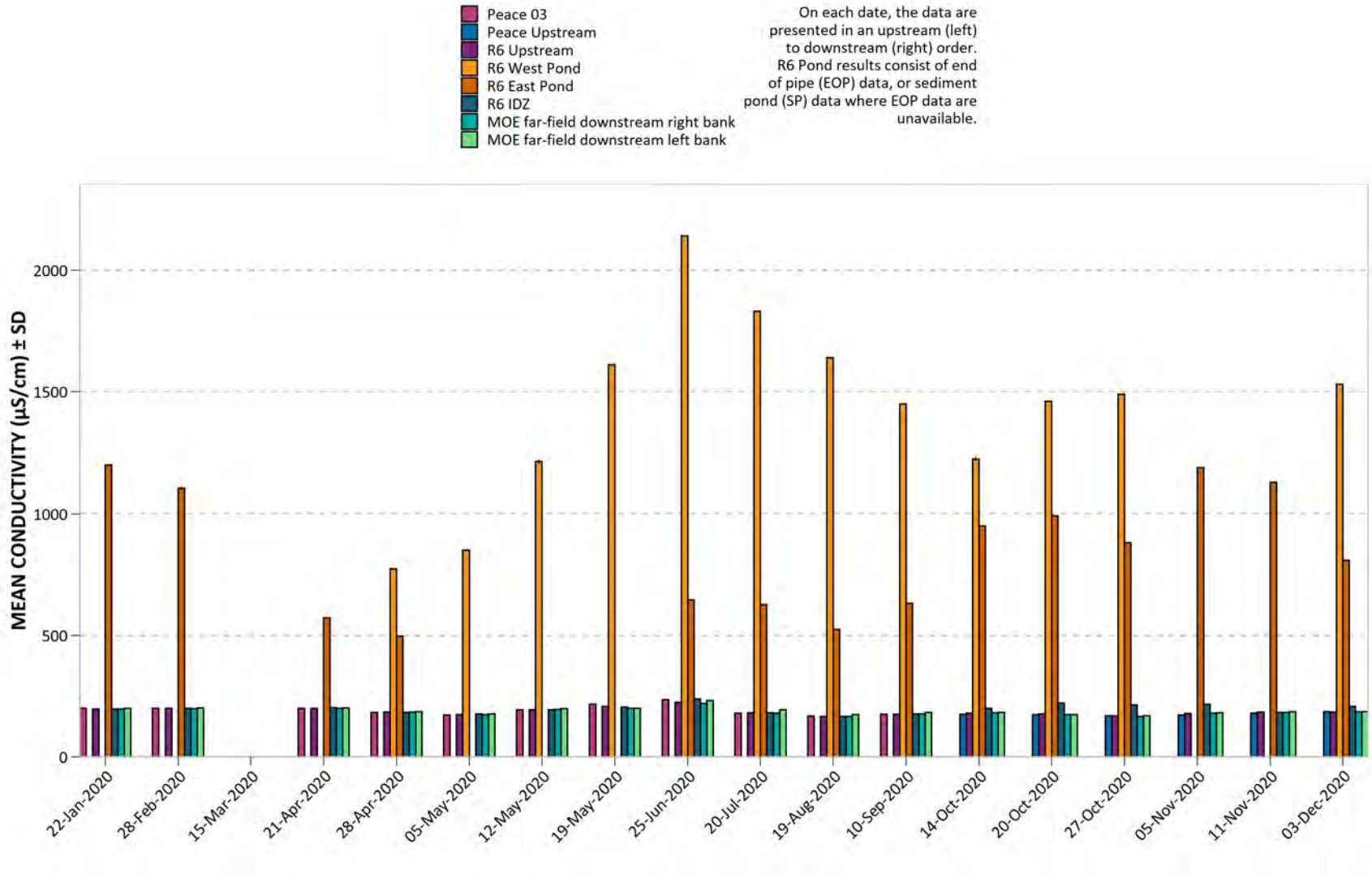


Figure 90. 2020 Peace River and RSEM R6 pond lab specific conductivity.

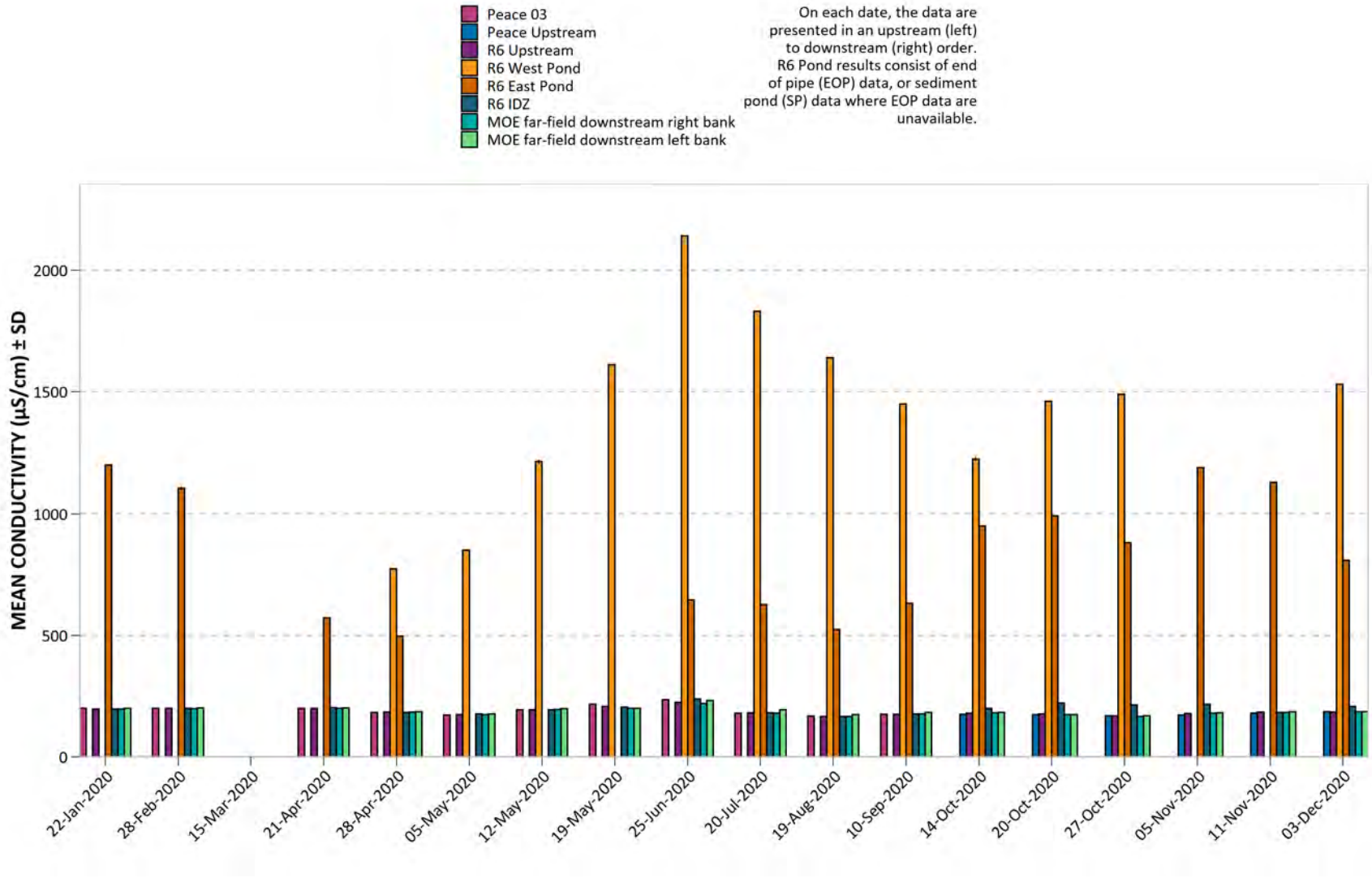


Figure 91. 2020 Peace River and RSEM R6 pond hardness (as $CaCO_3$).

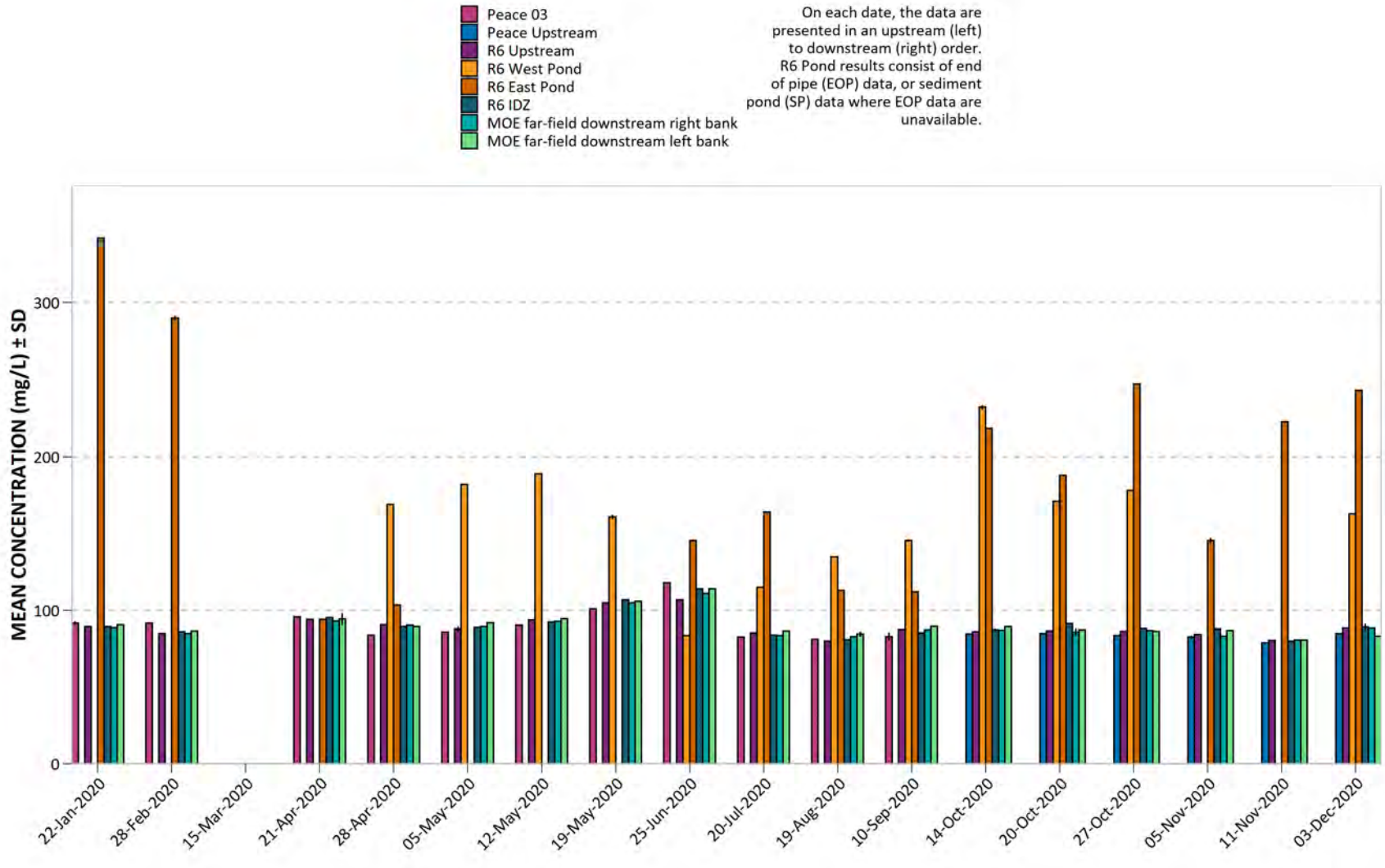


Figure 92. 2020 Peace River and RSEM R6 pond total dissolved solids (TDS).

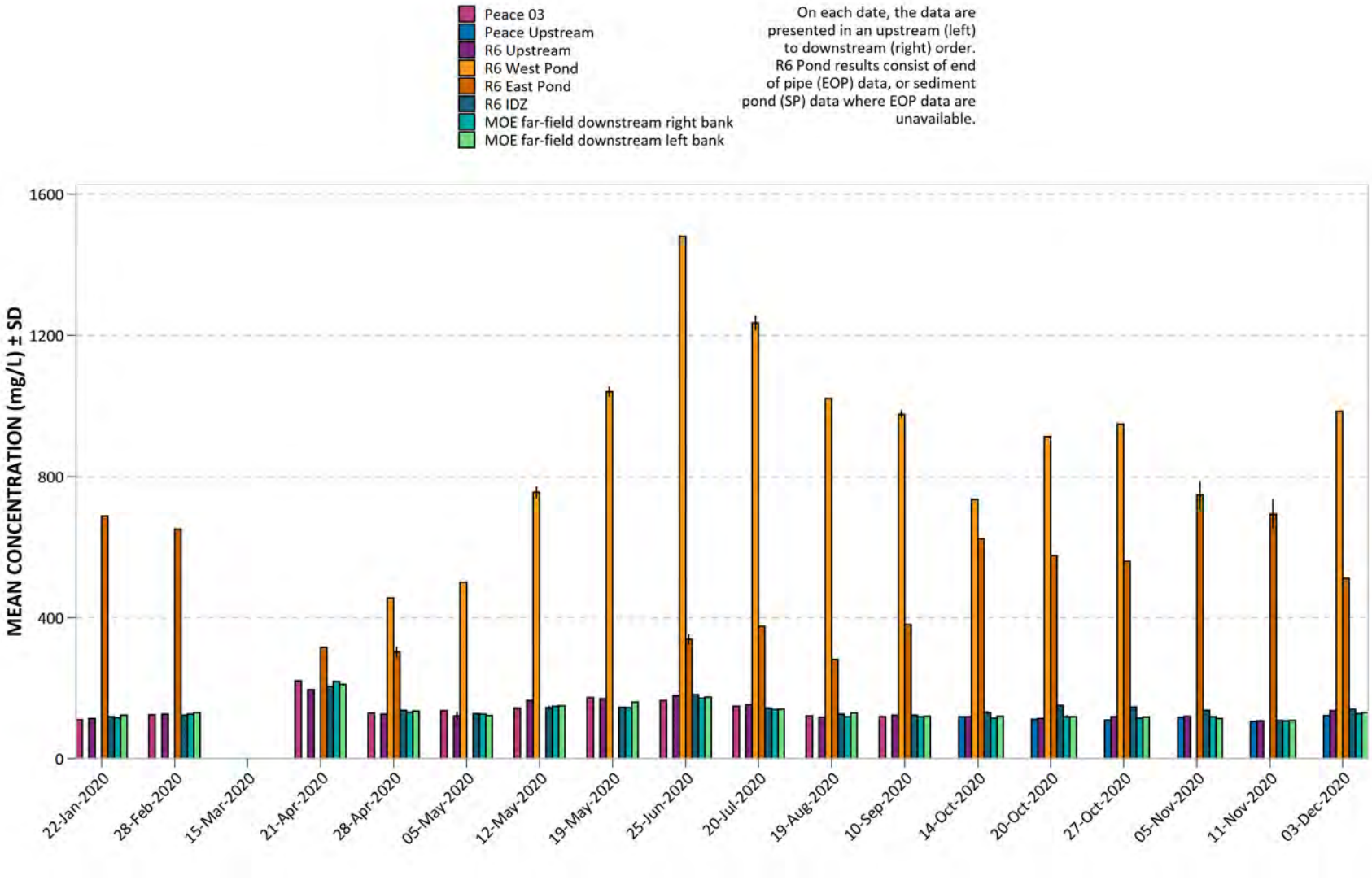


Figure 93. 2020 Peace River and RSEM R6 pond total suspended solids (TSS).

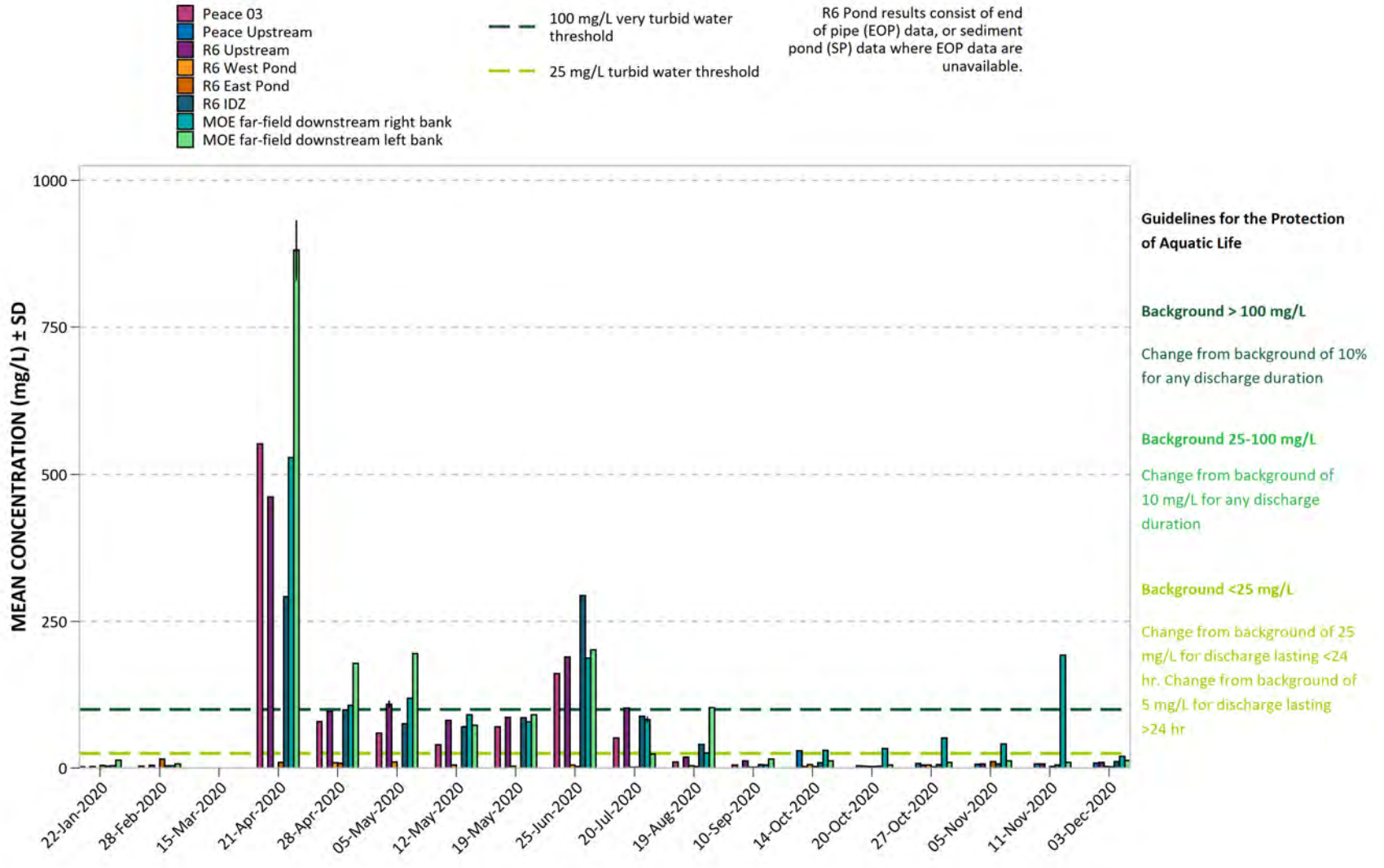


Figure 94. 2020 Peace River (*in-situ*) and RSEM R6 pond (lab) turbidity.

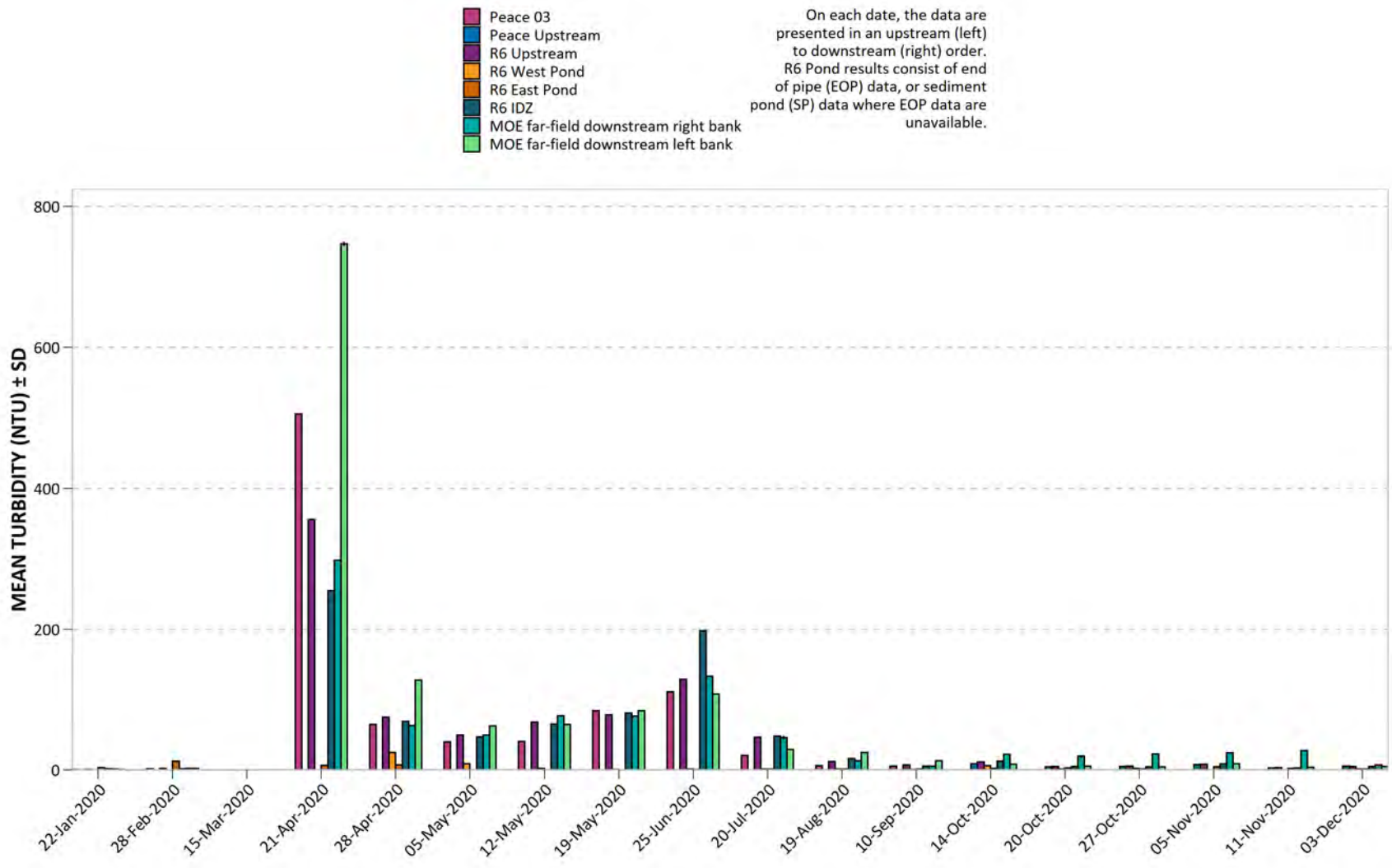


Figure 95. 2020 Peace River (*in-situ*) and RSEM R6 pond (lab) pH.

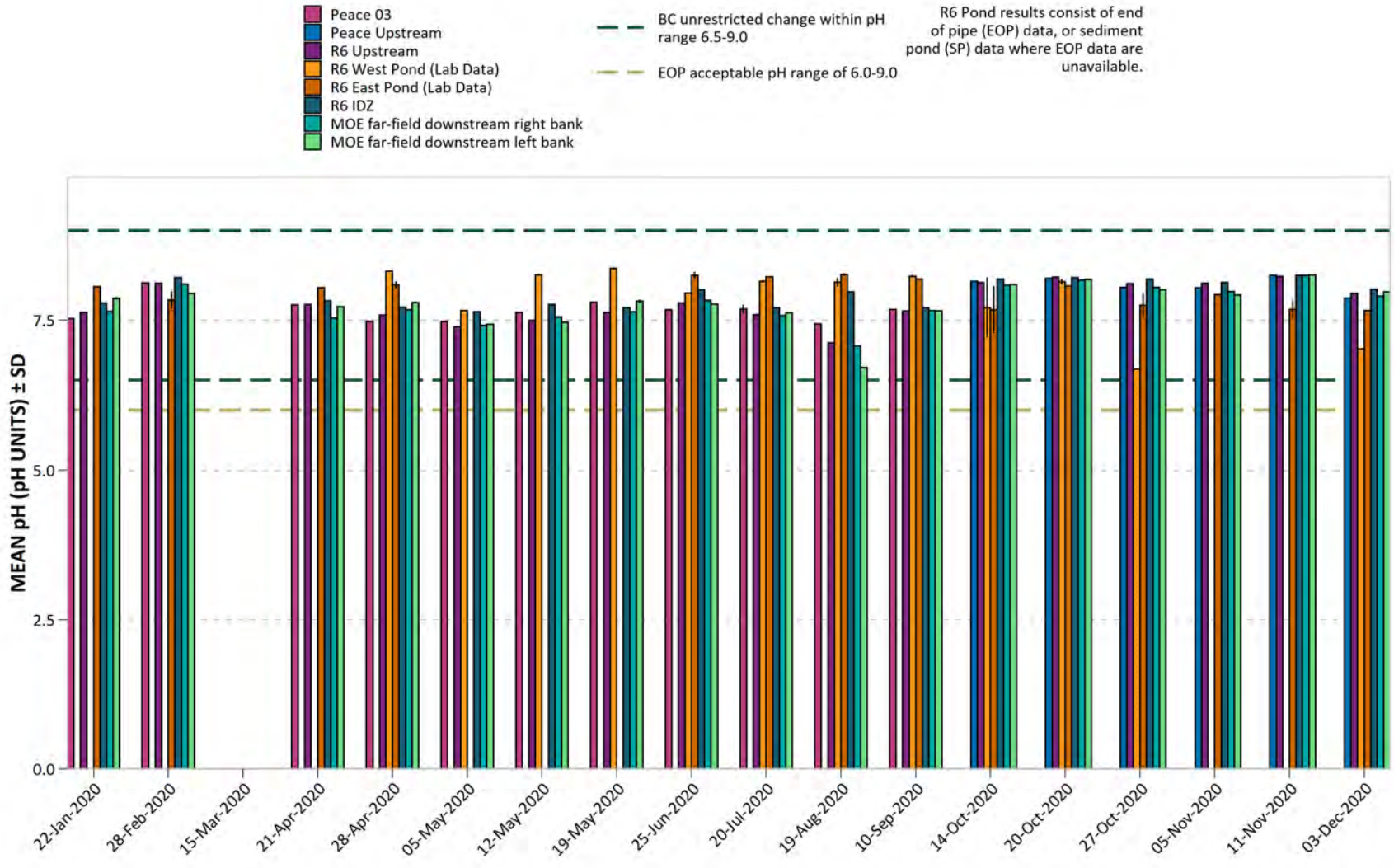


Figure 96. 2020 Peace River and RSEM R6 pond lab pH.

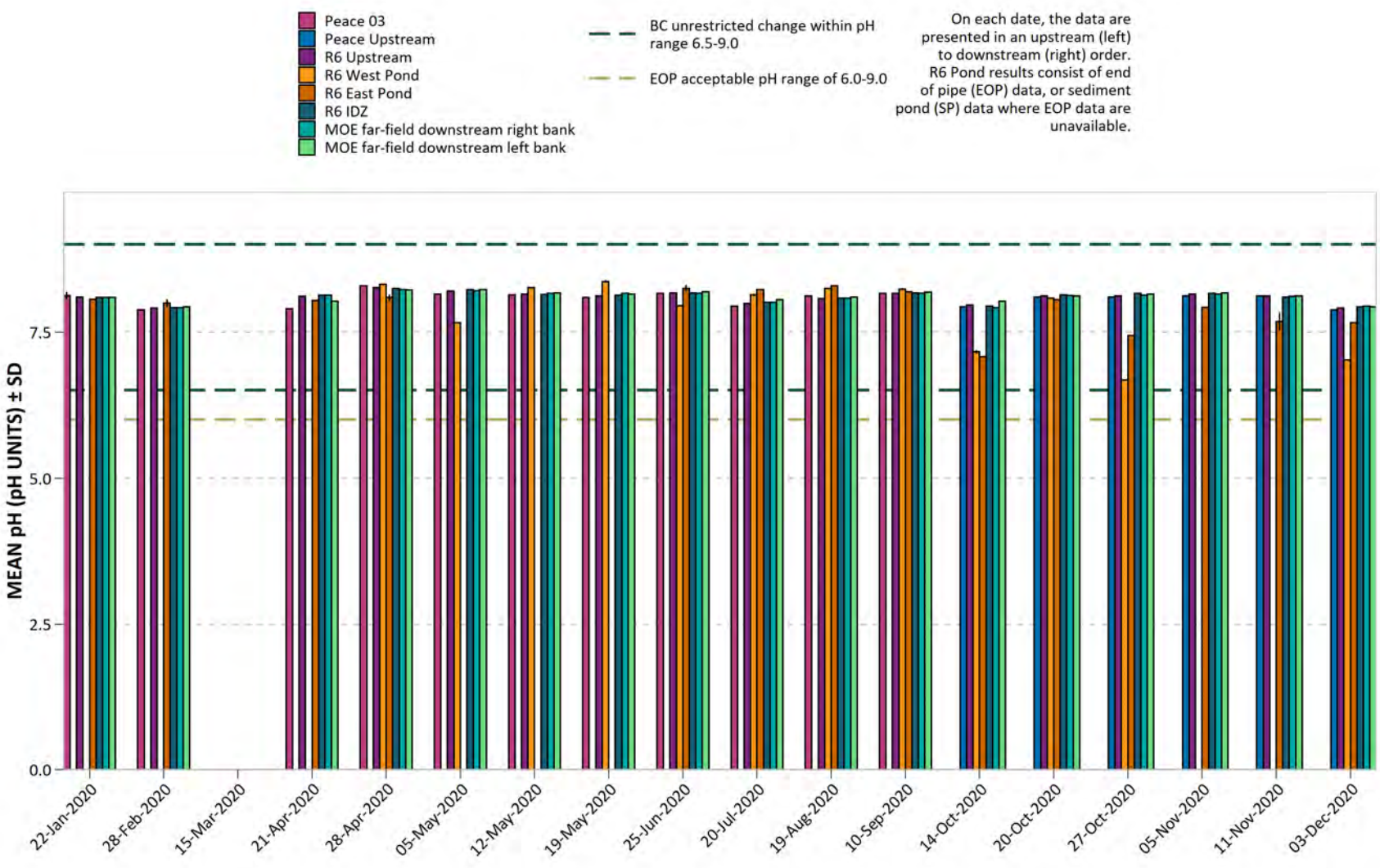


Figure 97. 2020 Peace River and RSEM R6 pond total alkalinity (as $CaCO_3$).

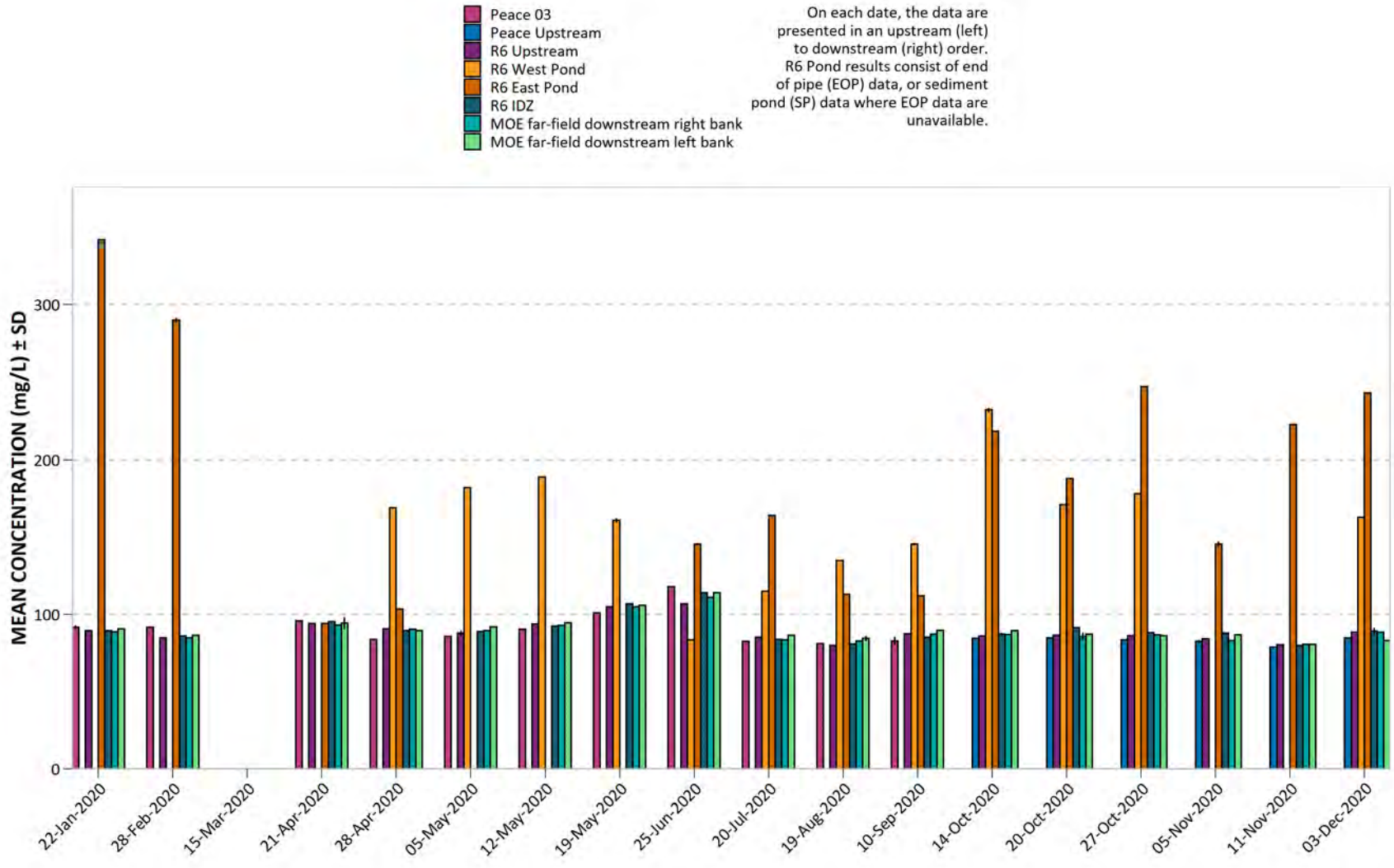


Figure 98. 2020 Peace River and RSEM R6 pond total ammonia (as N).

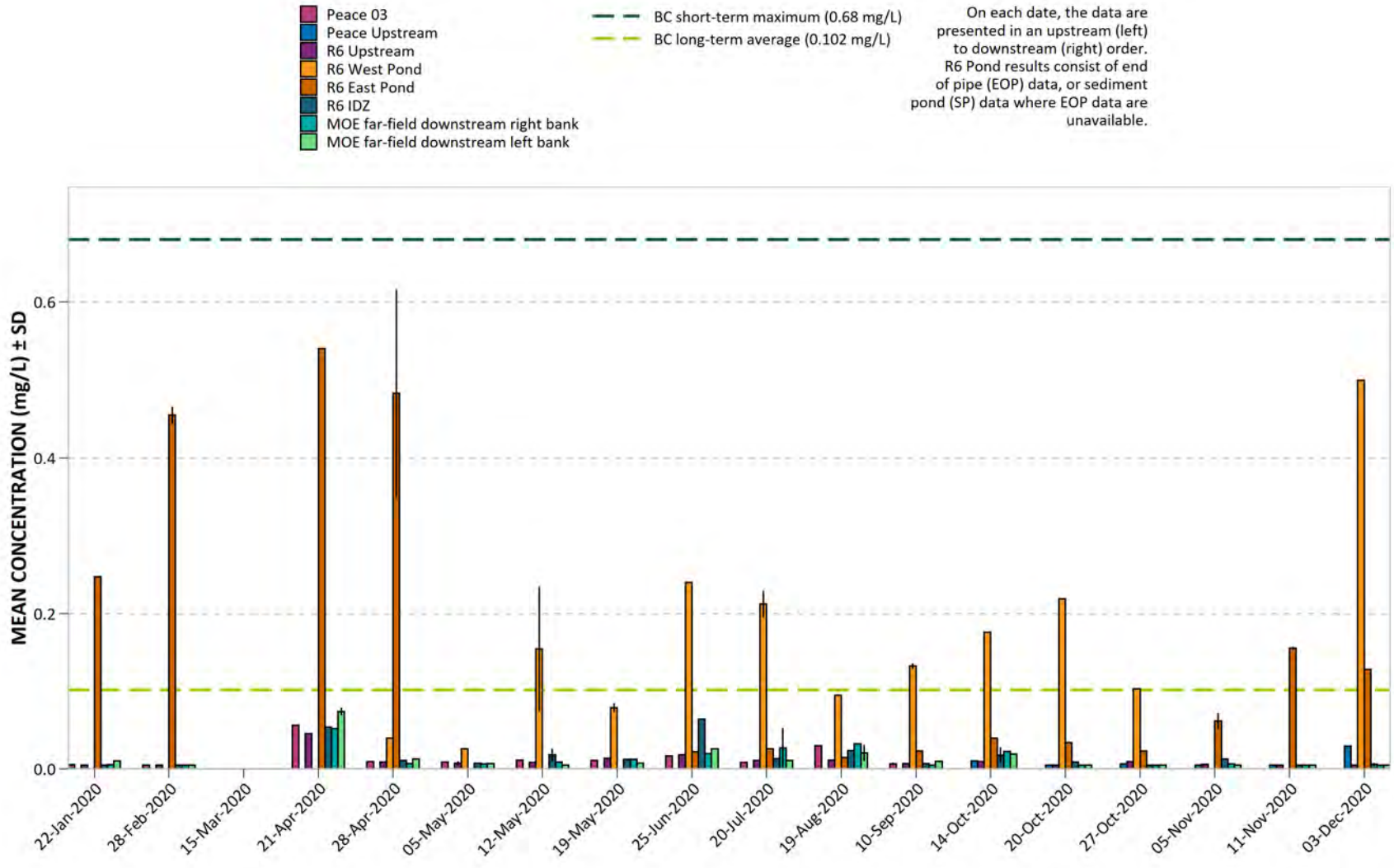


Figure 99. 2020 Peace River and RSEM R6 pond bromide (Br).

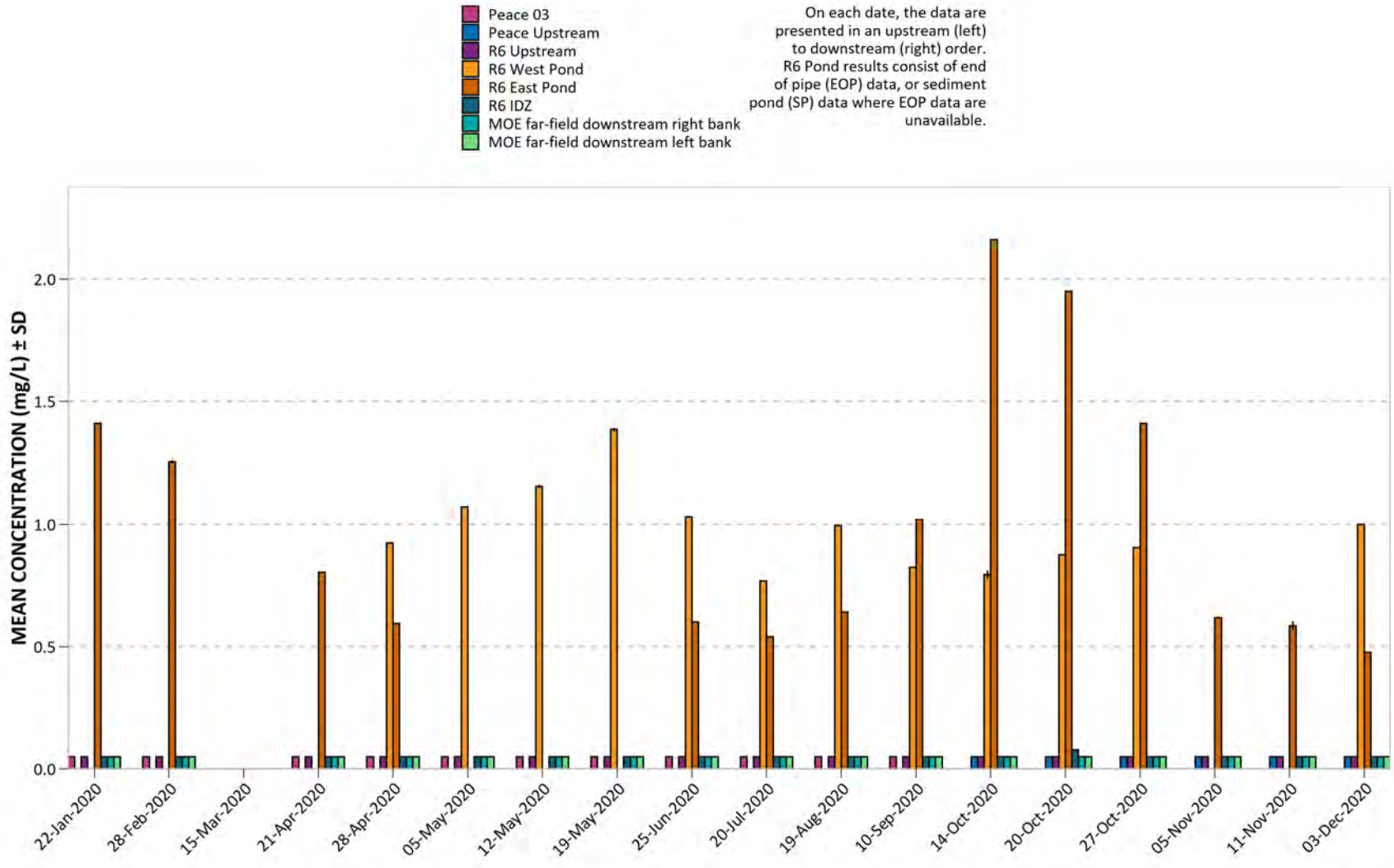


Figure 100. 2020 Peace River and RSEM R6 pond chloride (Cl).

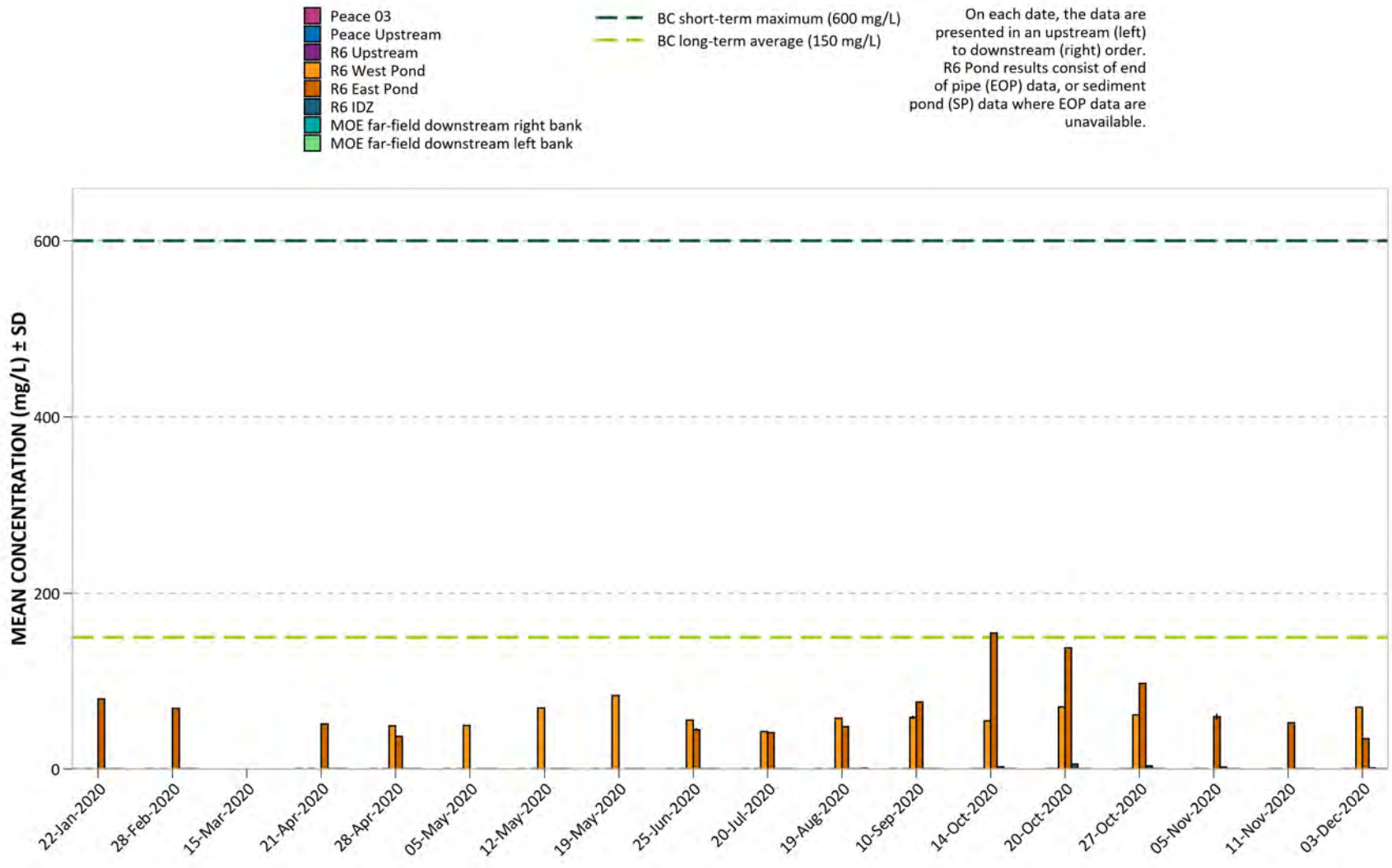


Figure 101. 2020 Peace River and RSEM R6 pond dissolved orthophosphate.

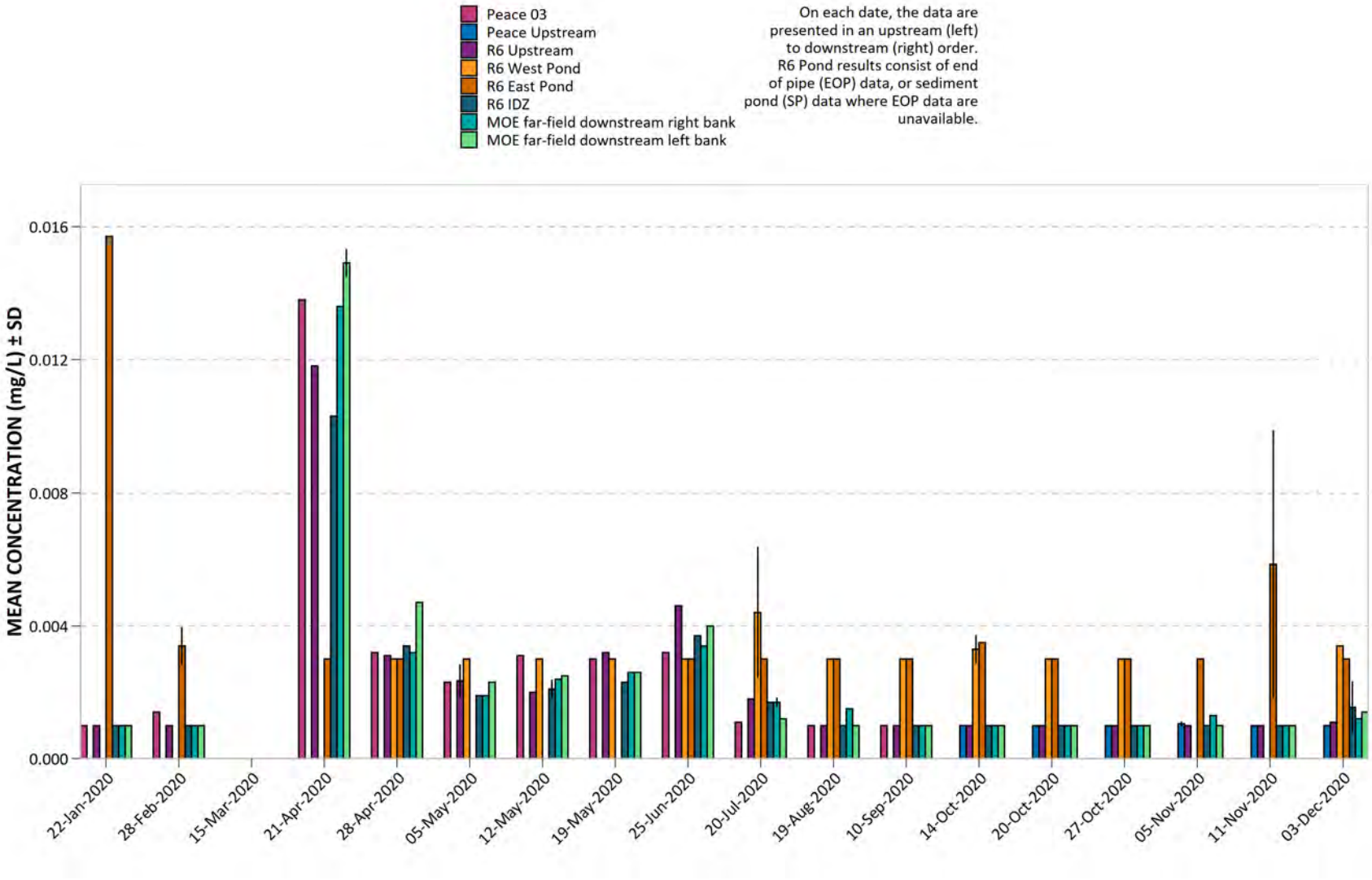


Figure 102. 2020 Peace River and RSEM R6 pond fluoride (F).

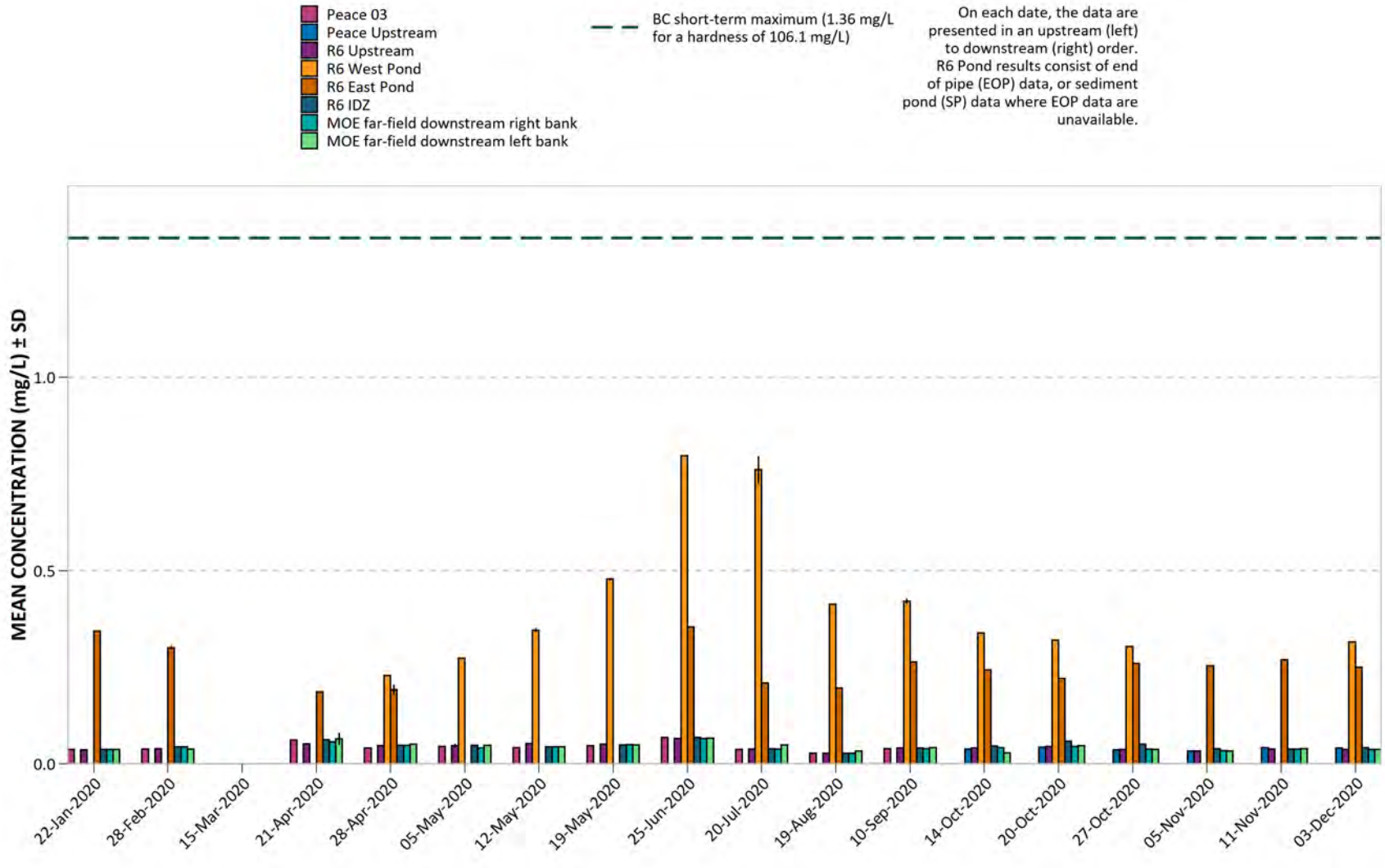


Figure 103. 2020 Peace River and RSEM R6 pond nitrate (as N).

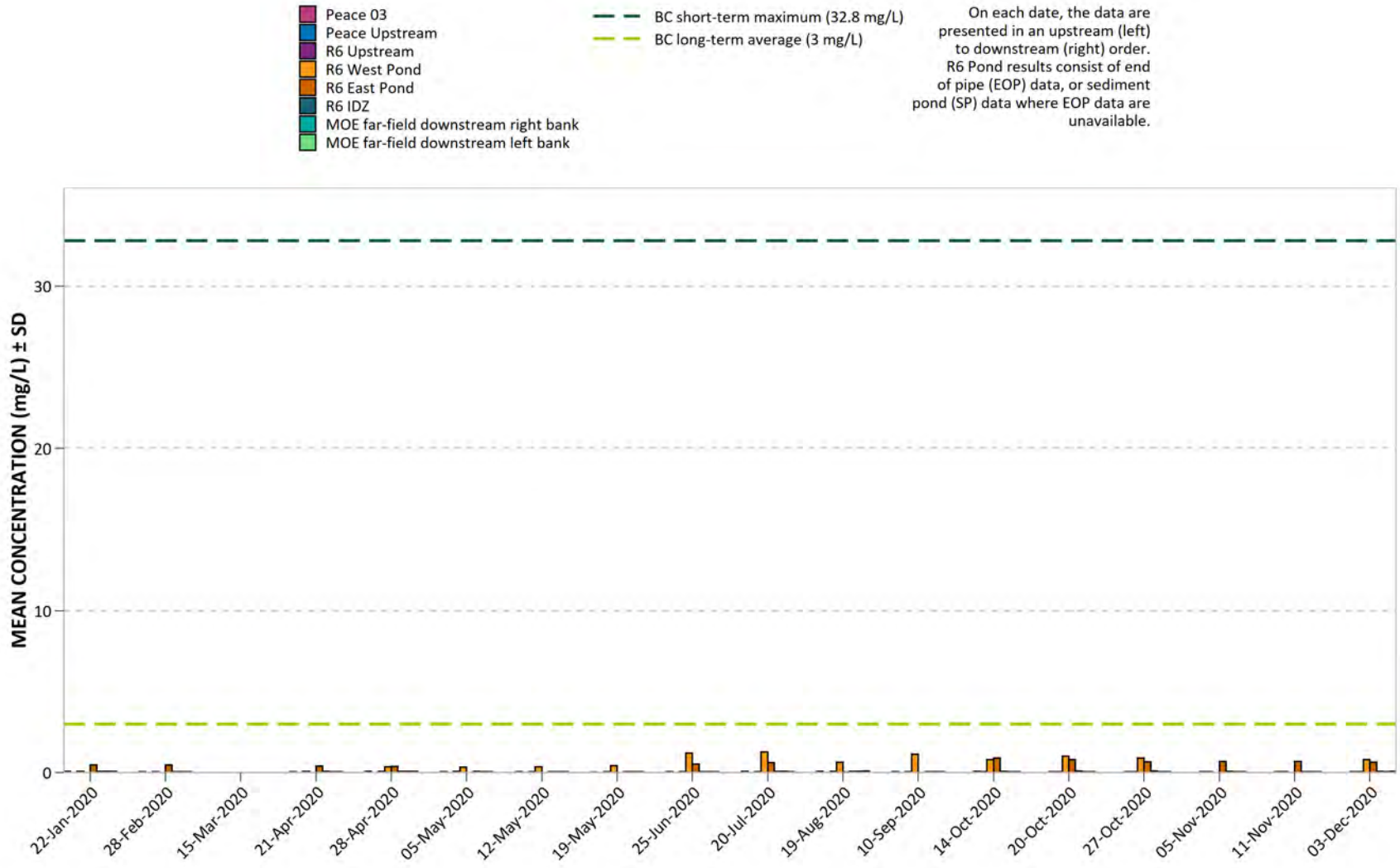
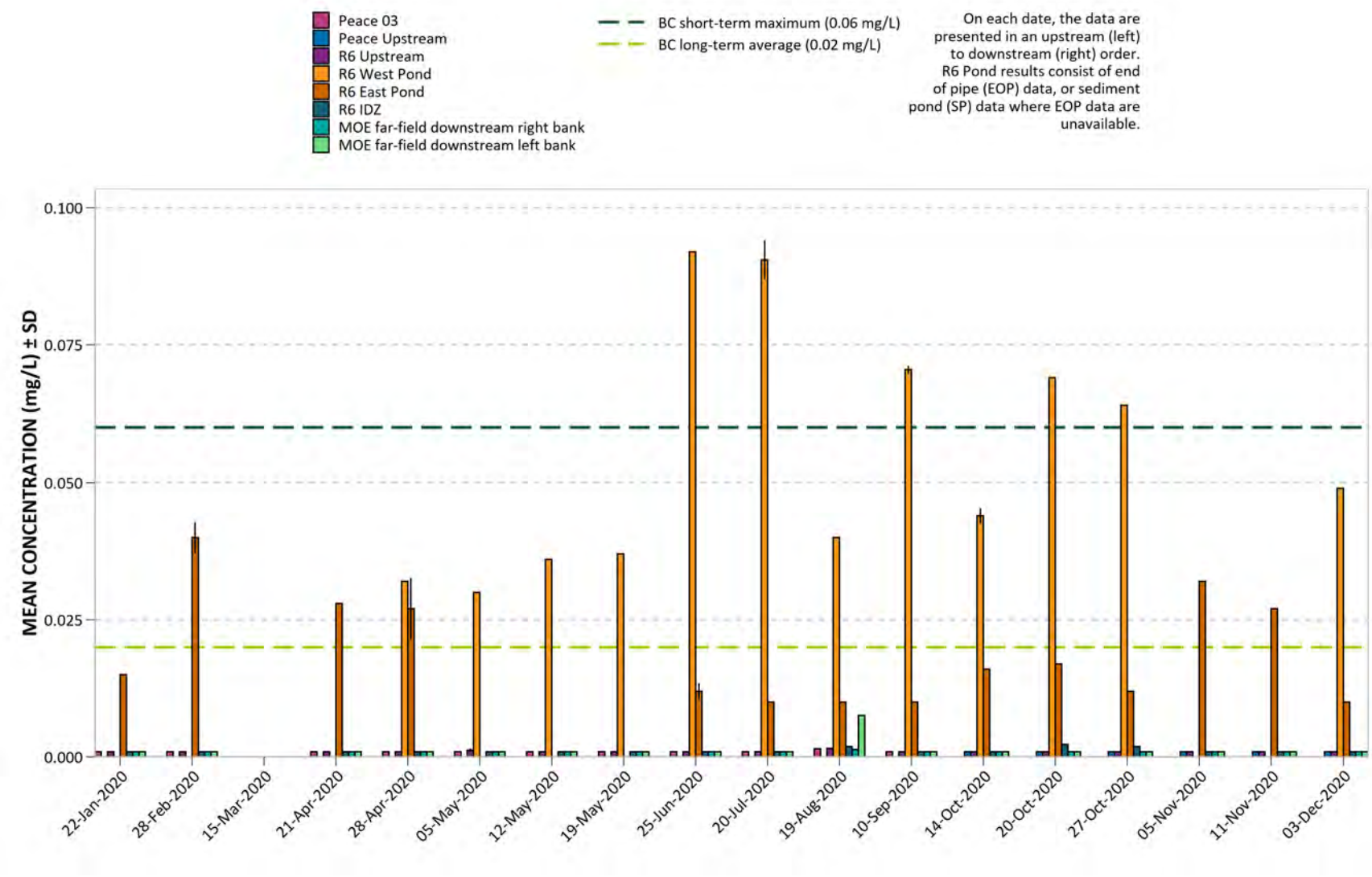


Figure 104. 2020 Peace River and RSEM R6 pond nitrite (as N).



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 105. 2020 Peace River and RSEM R6 pond sulfate (SO_4).

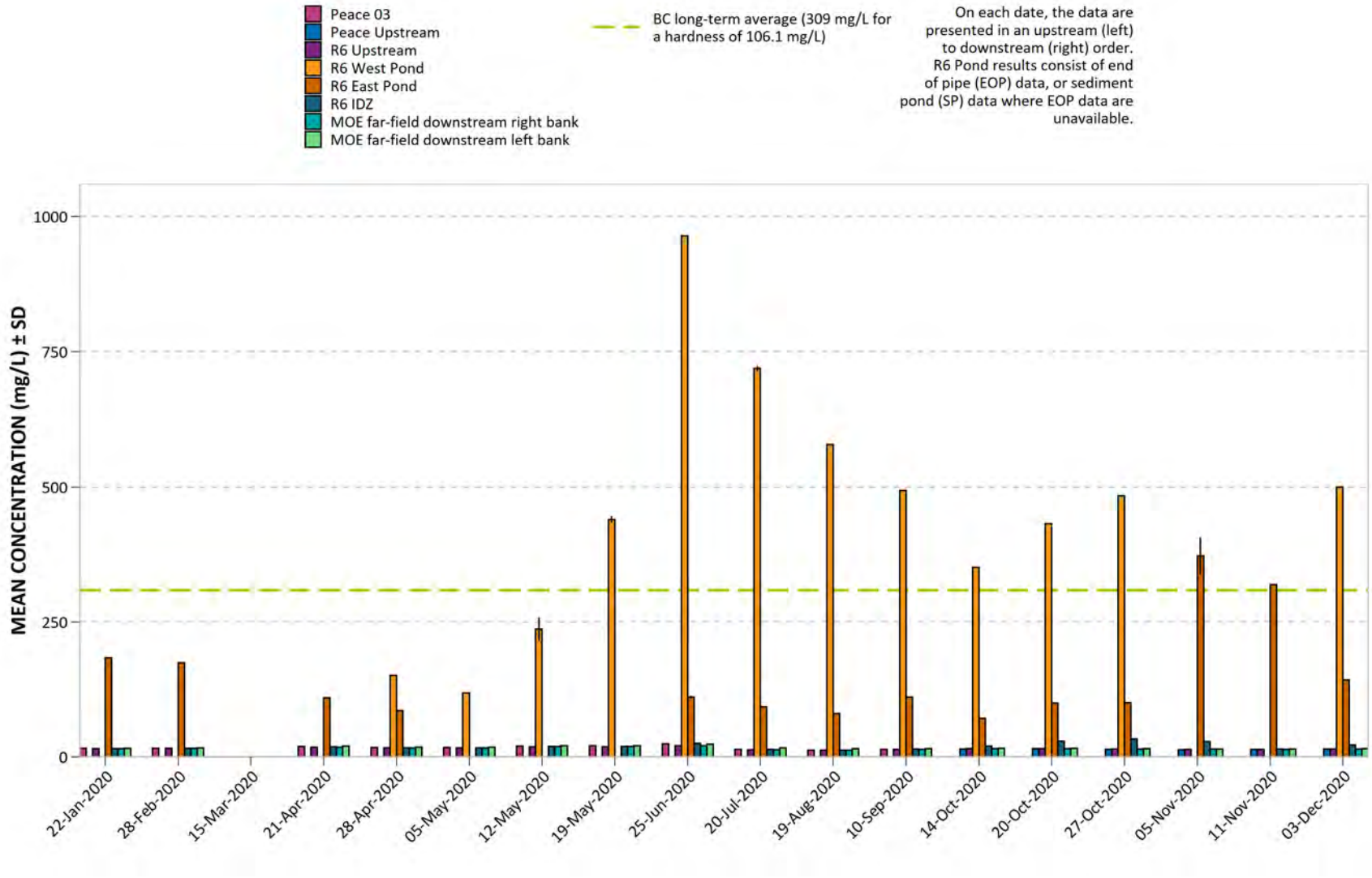


Figure 106. 2020 Peace River and RSEM R6 pond dissolved organic carbon (DOC).

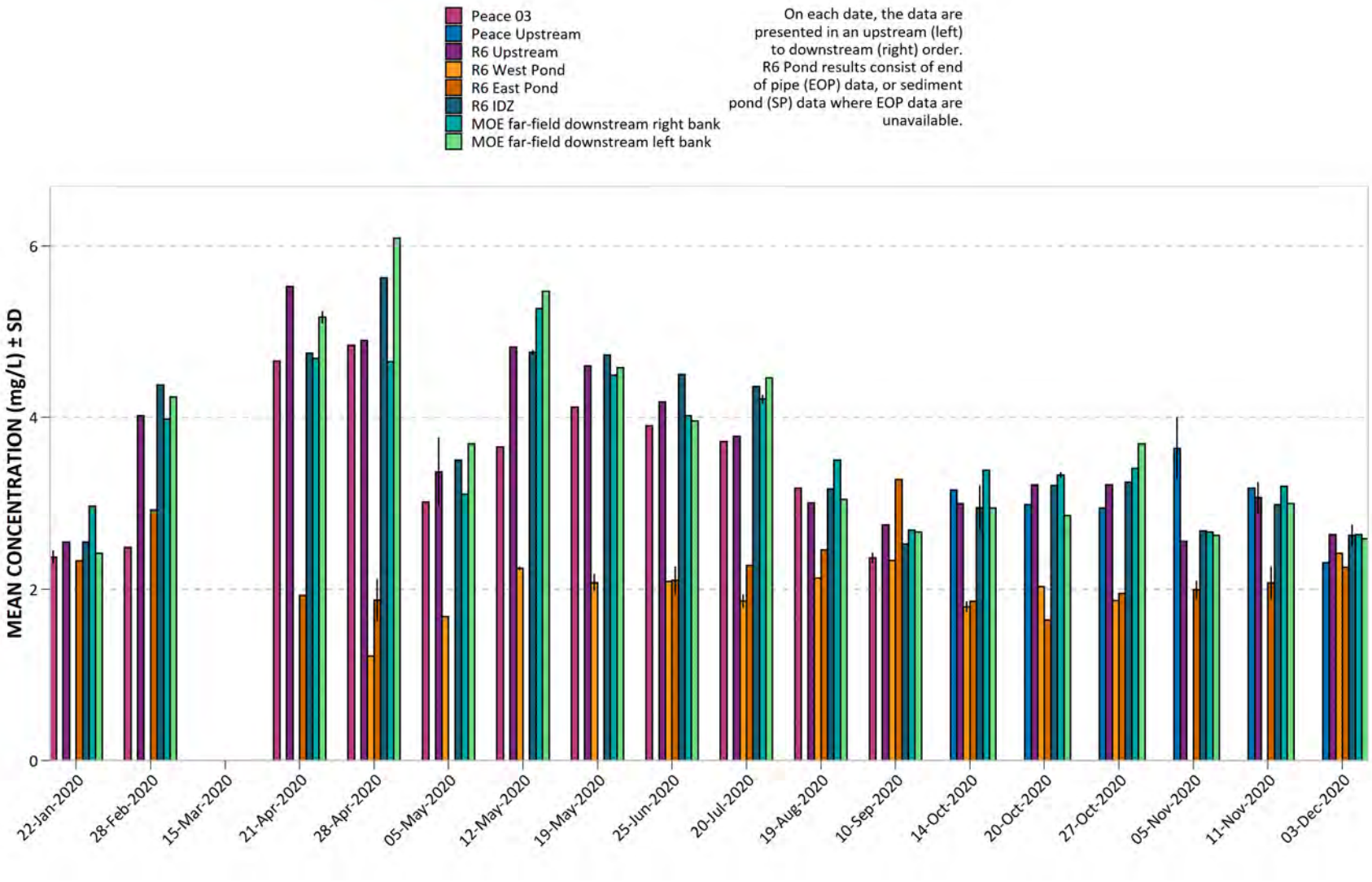


Figure 107. 2020 Peace River and RSEM R6 pond total organic carbon (TOC).

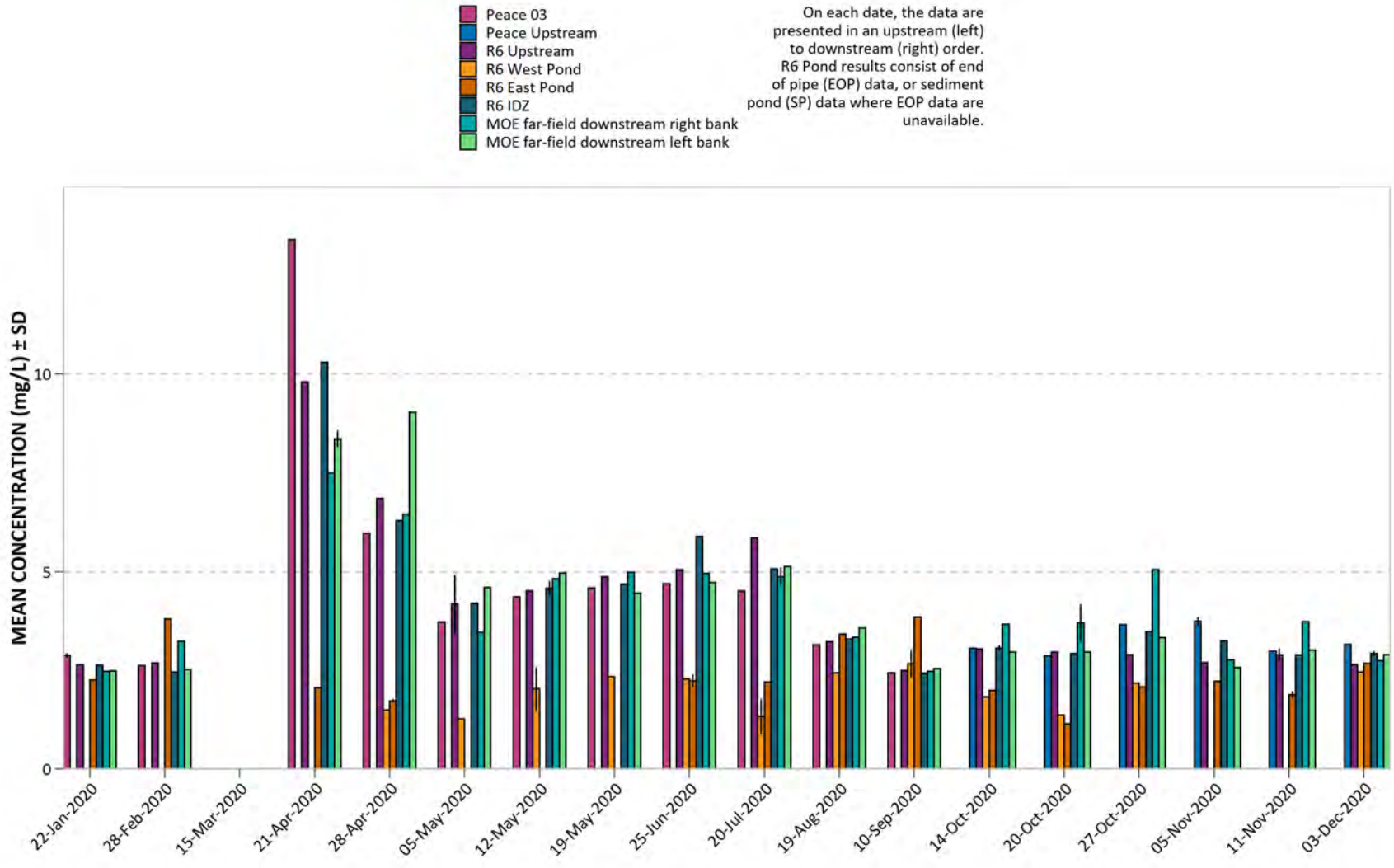


Figure 108. 2020 Peace River and RSEM R6 pond total aluminum (Al).

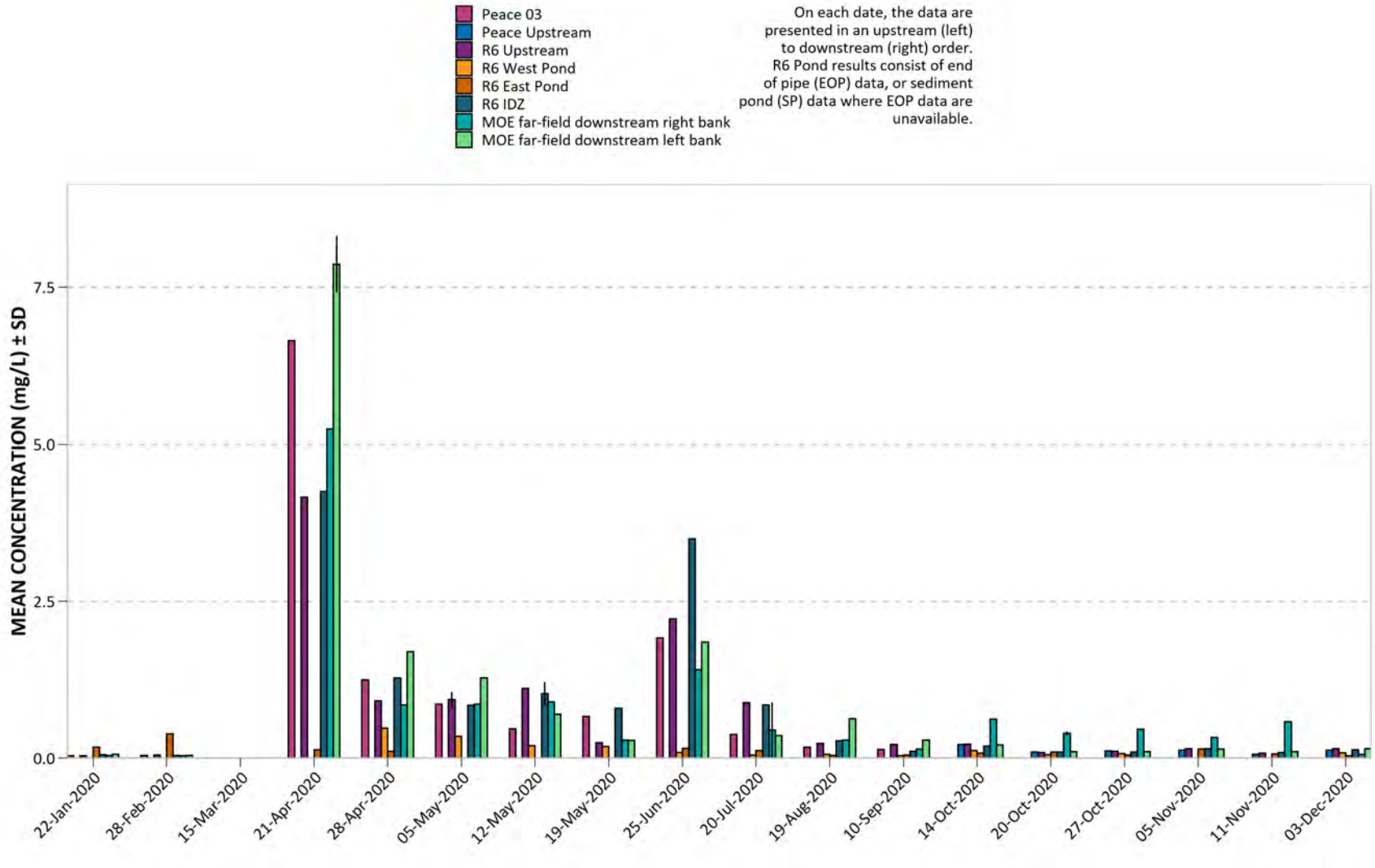


Figure 109. 2020 Peace River and RSEM R6 pond total antimony (Sb).

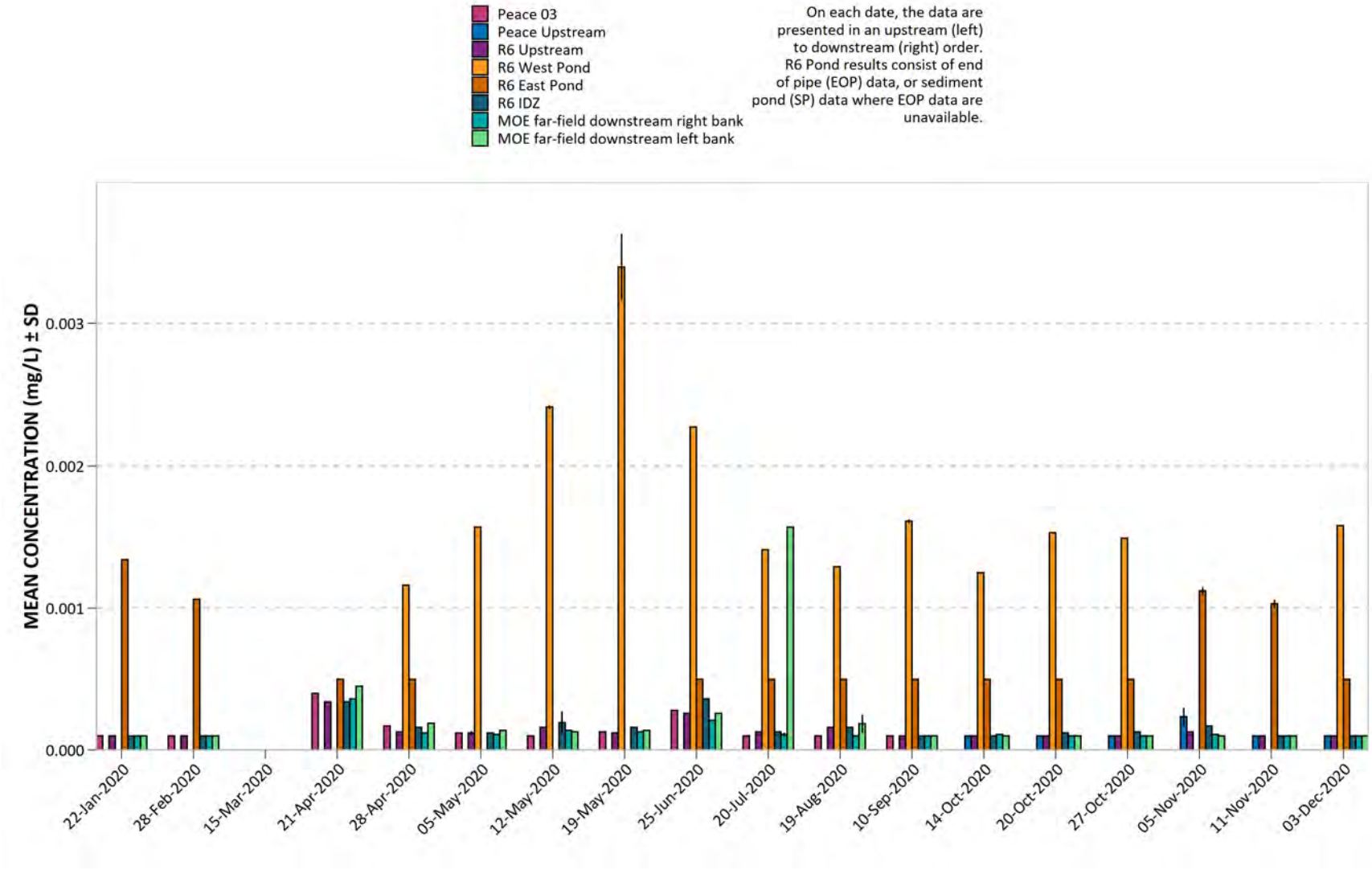


Figure 110. 2020 Peace River and RSEM R6 pond total arsenic (As).

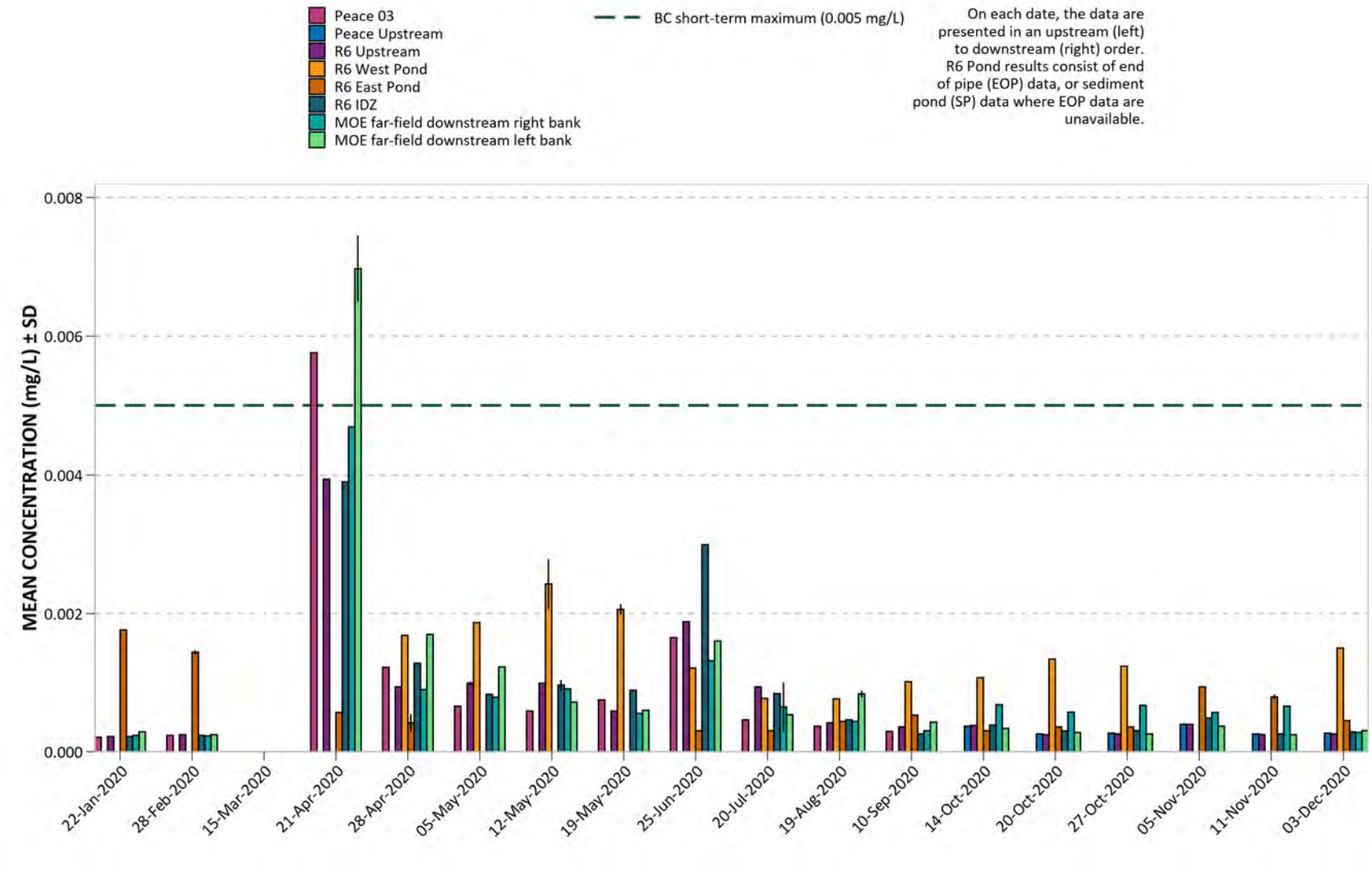


Figure 111. 2020 Peace River and RSEM R6 pond total barium (Ba).

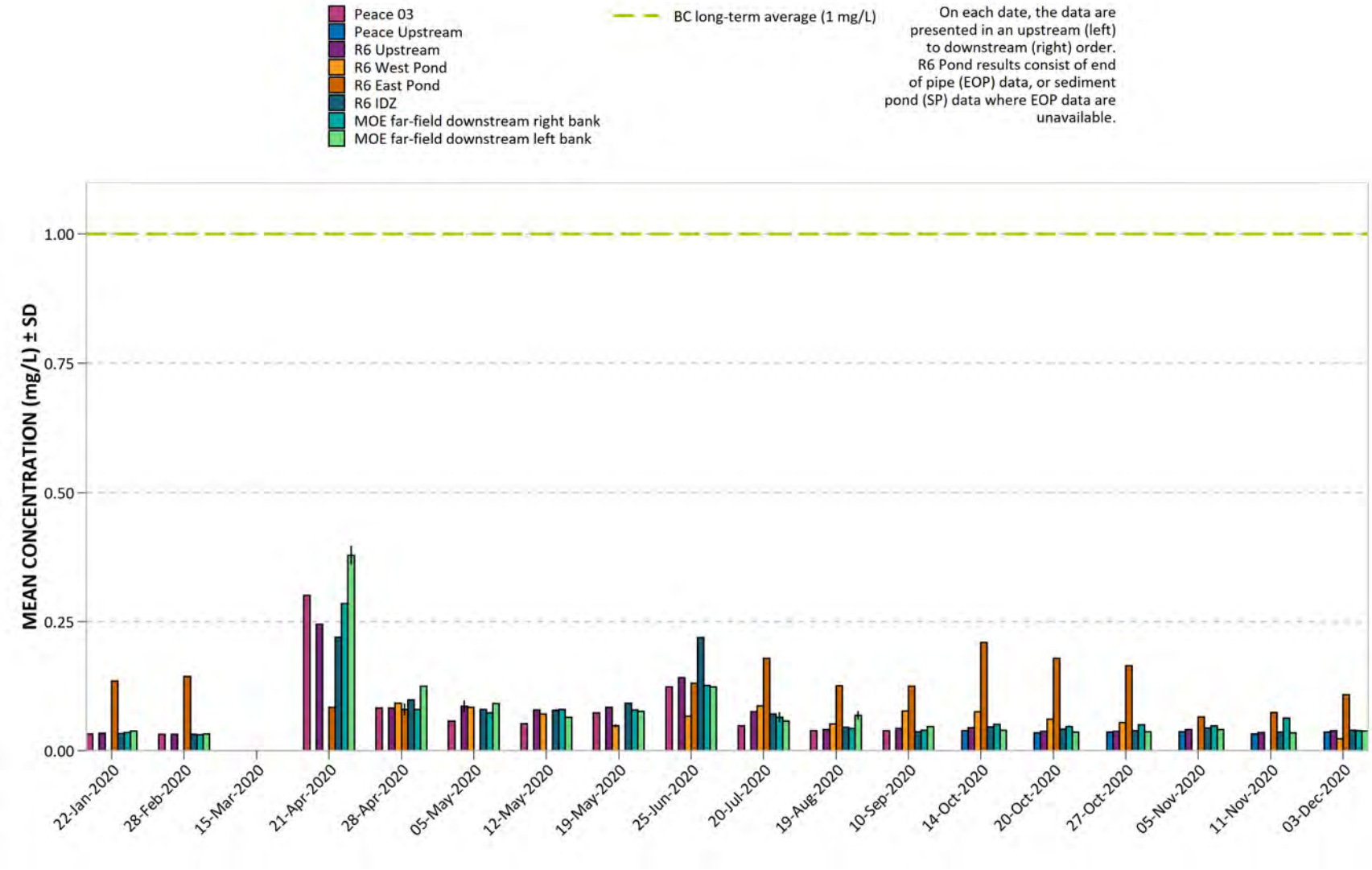


Figure 112. 2020 Peace River and RSEM R6 pond total beryllium (Be).

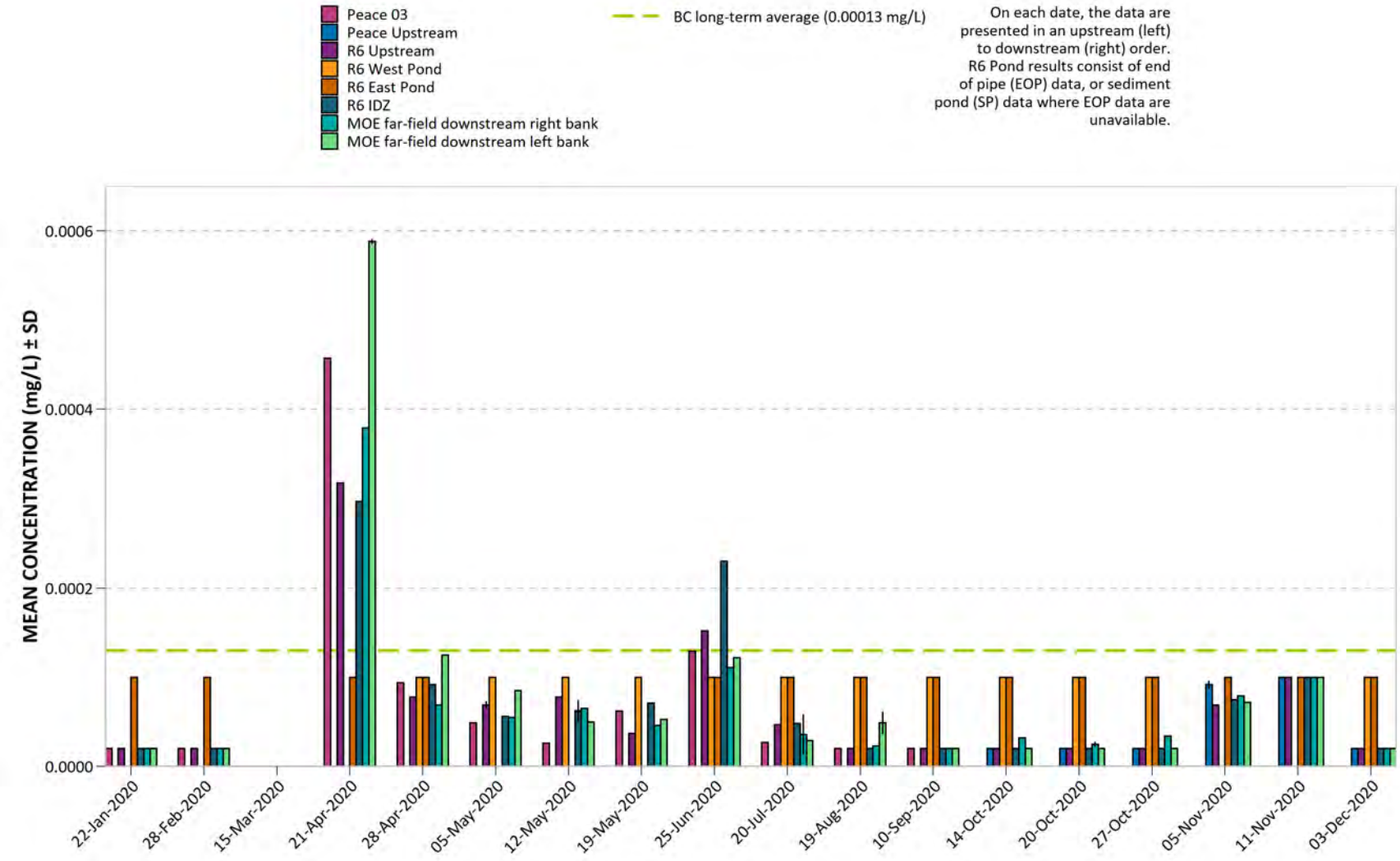


Figure 113. 2020 Peace River and RSEM R6 pond total bismuth (Bi).

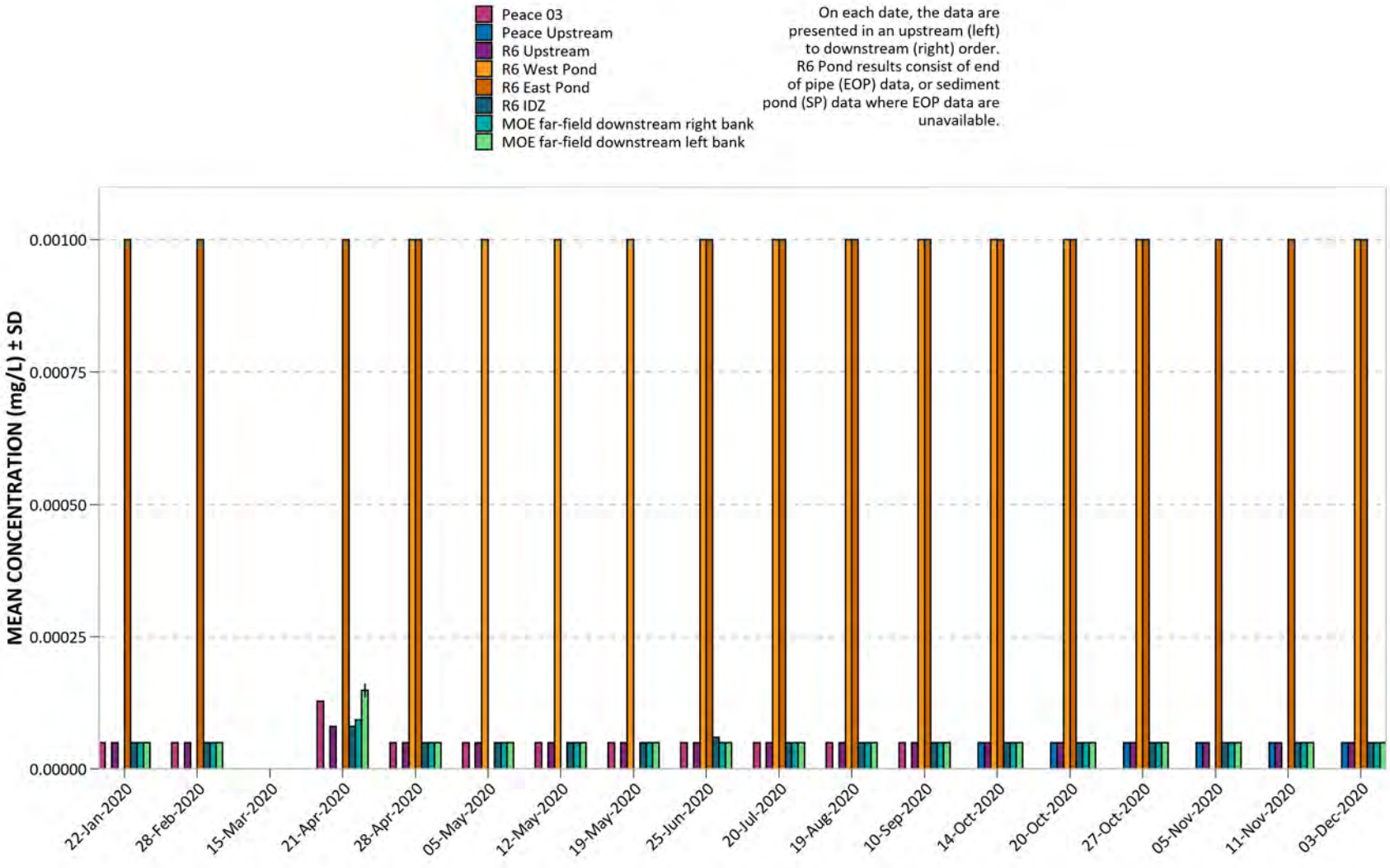


Figure 114. 2020 Peace River and RSEM R6 pond total boron (B).

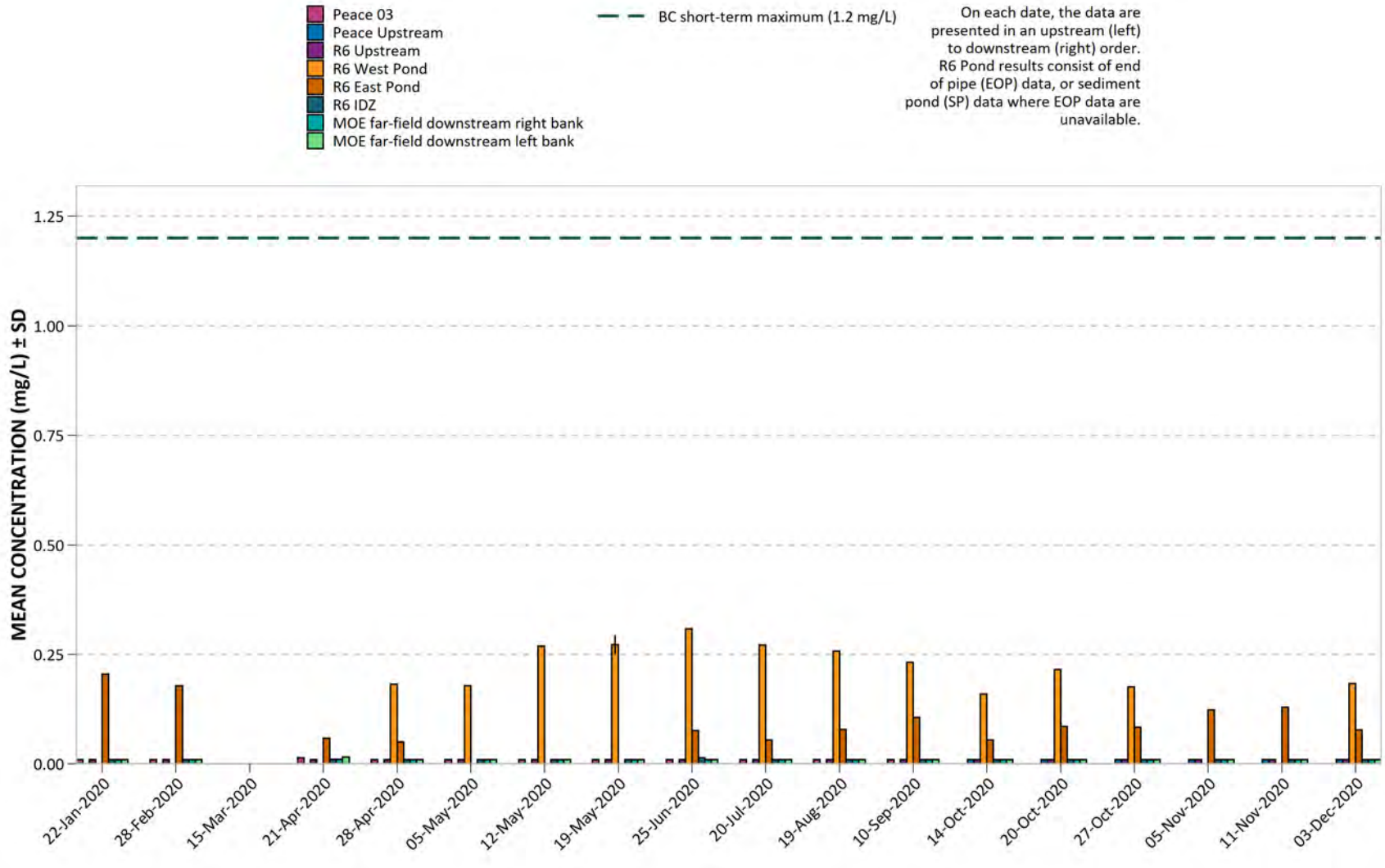


Figure 115. 2020 Peace River and RSEM R6 pond total cadmium (Cd).

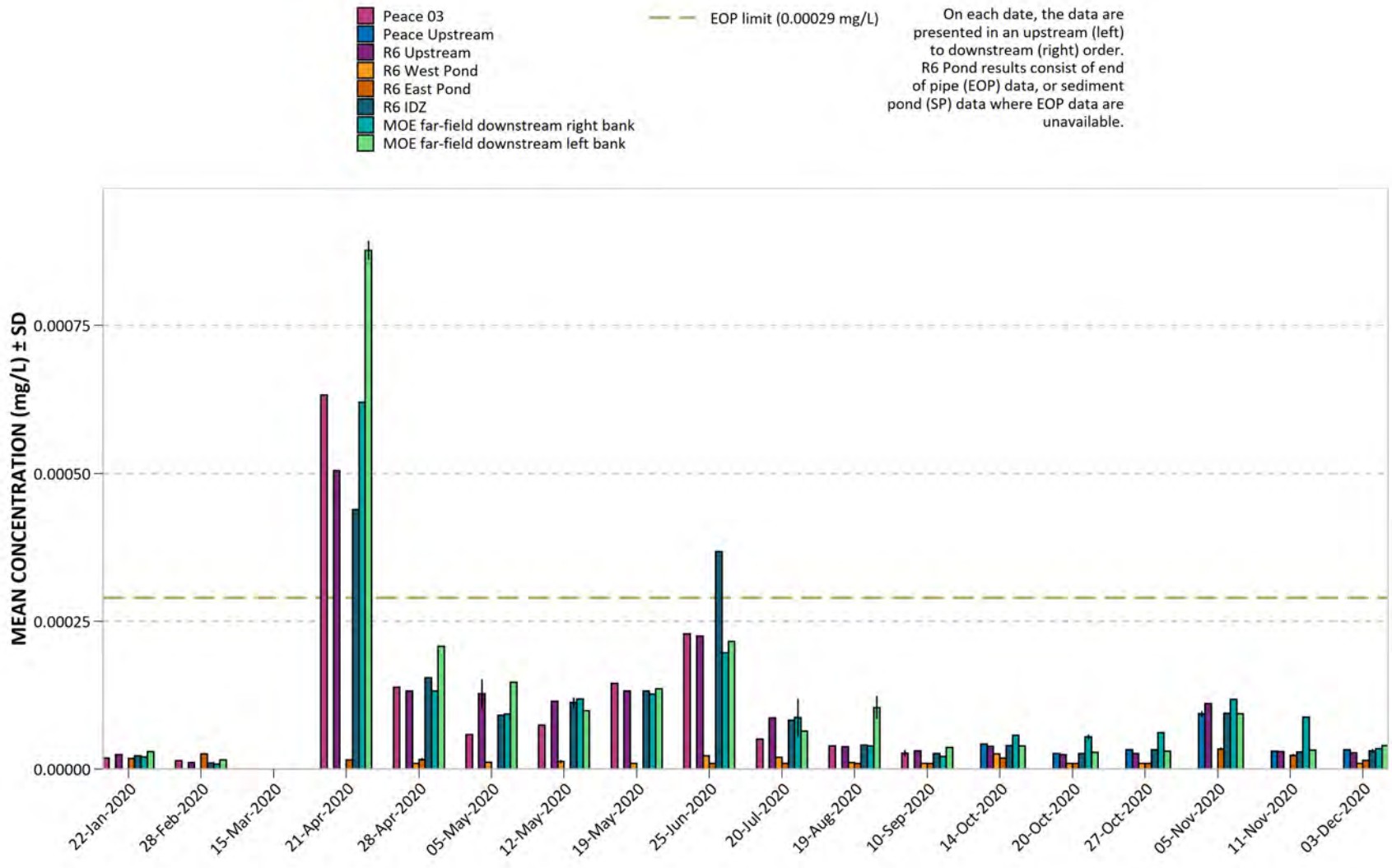


Figure 116. 2020 Peace River and RSEM R6 pond total calcium (Ca).

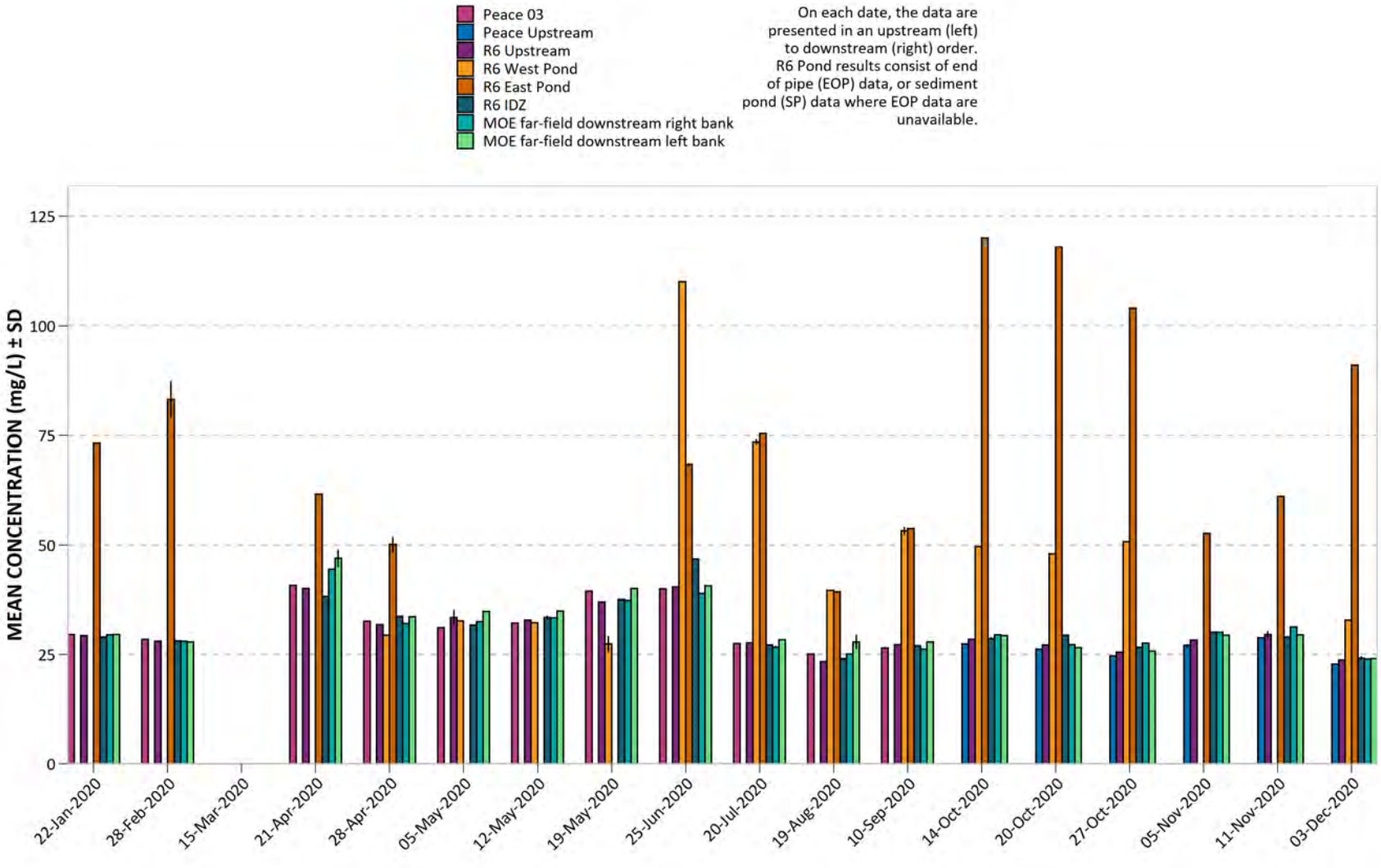


Figure 117. 2020 Peace River and RSEM R6 pond total chromium (Cr).

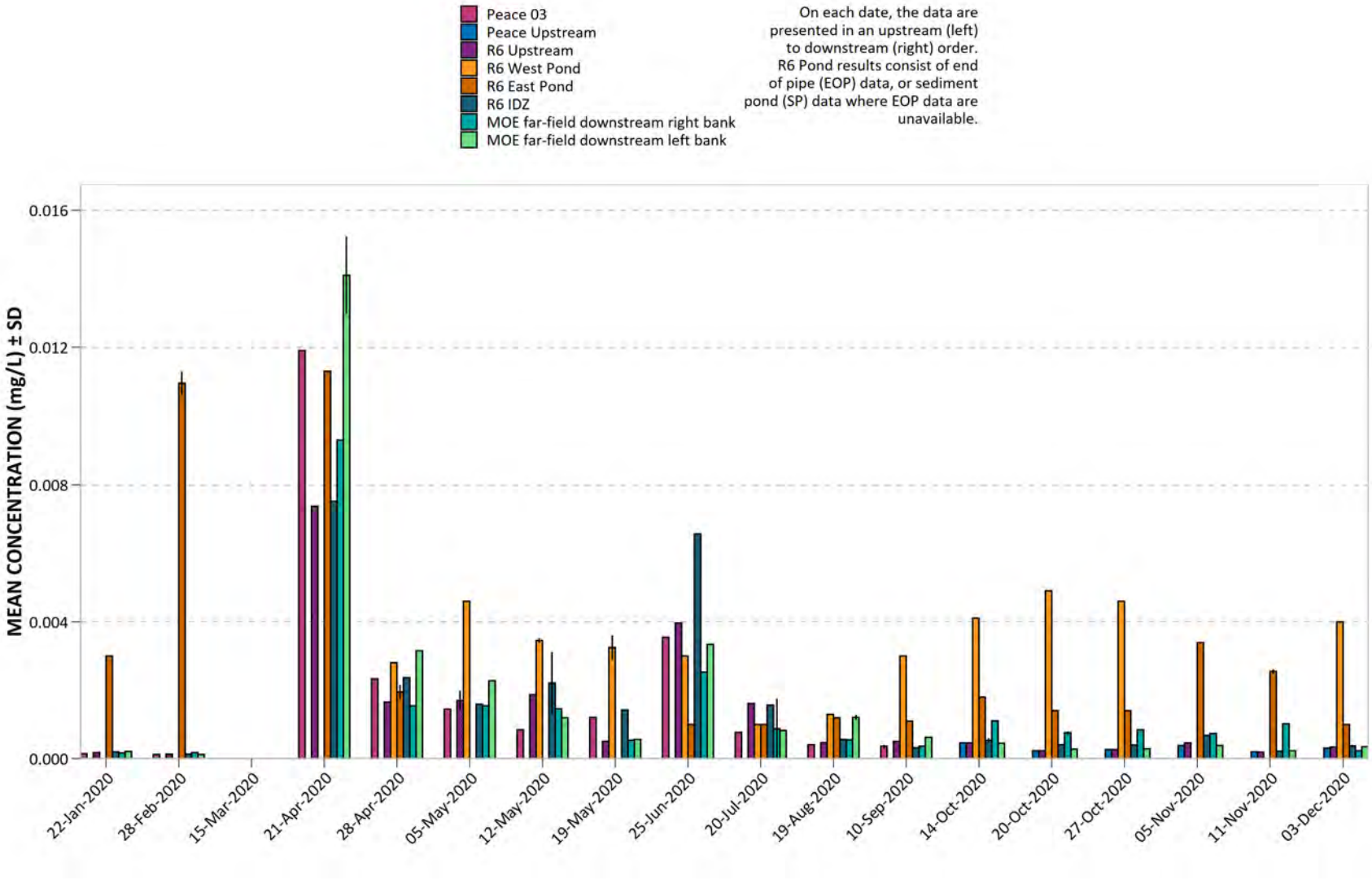


Figure 118. 2020 Peace River and RSEM R6 pond total cobalt (Co).

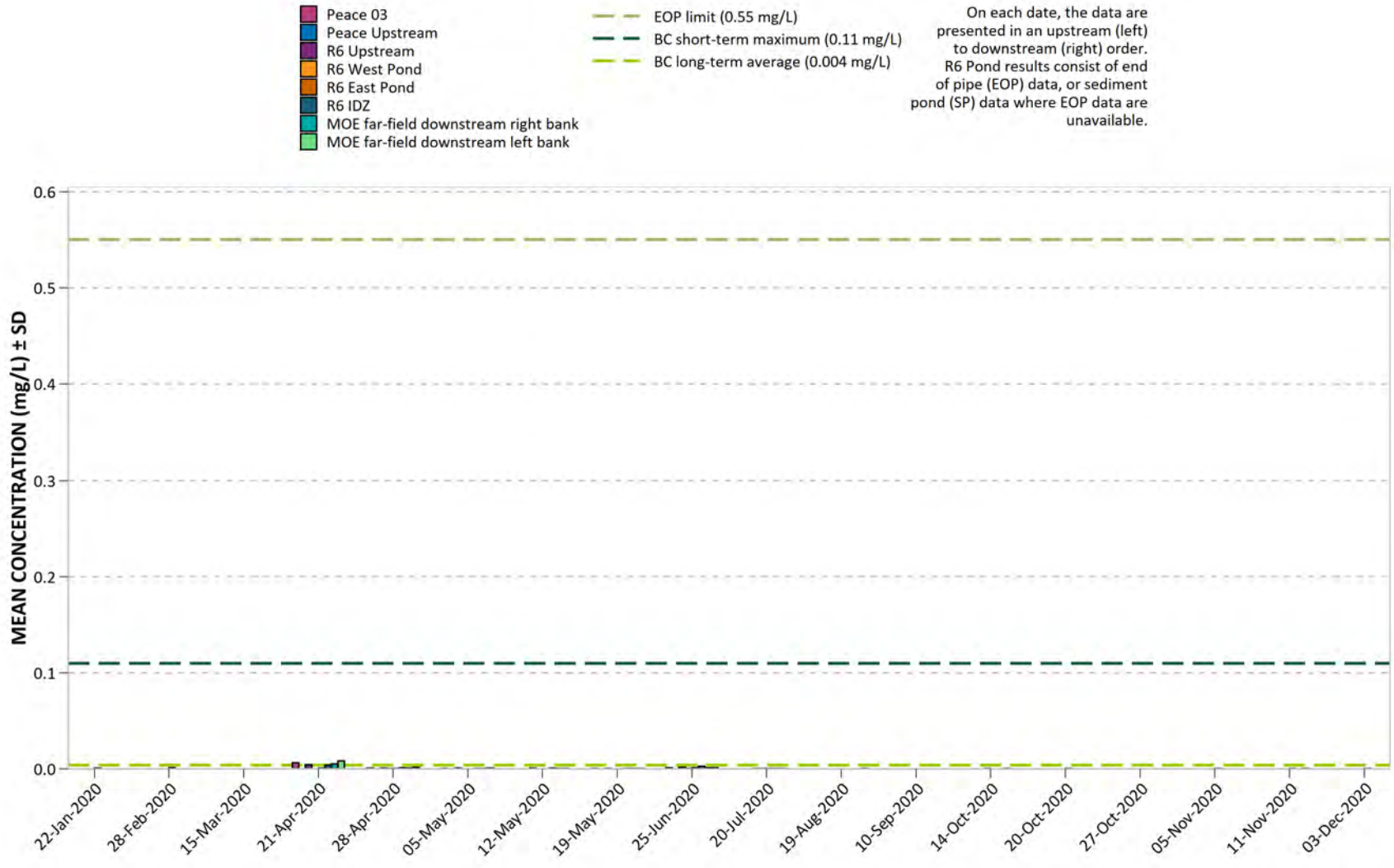


Figure 119. 2020 Peace River and RSEM R6 pond total copper (Cu).

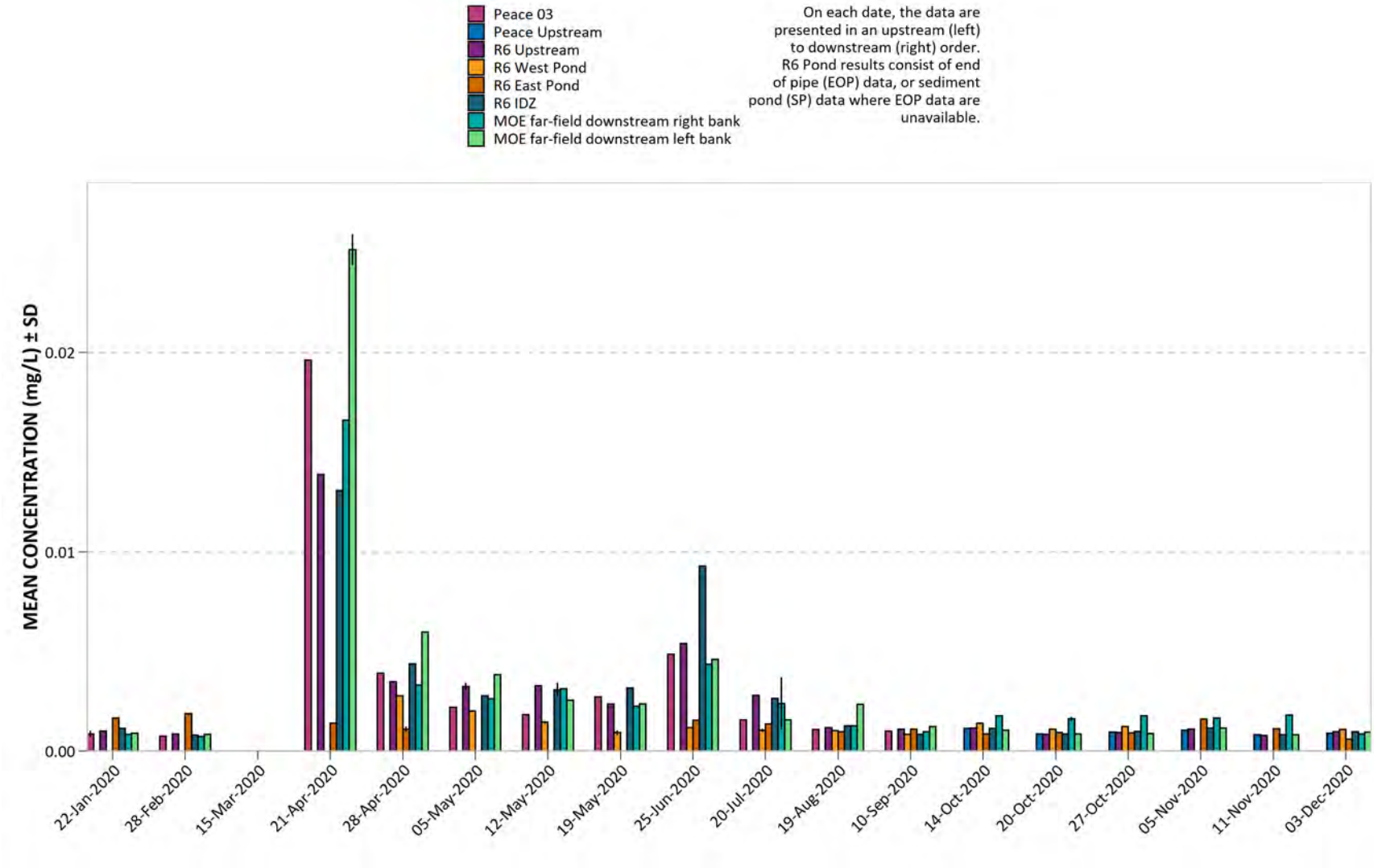


Figure 120. 2020 Peace River and RSEM R6 pond total iron (Fe).

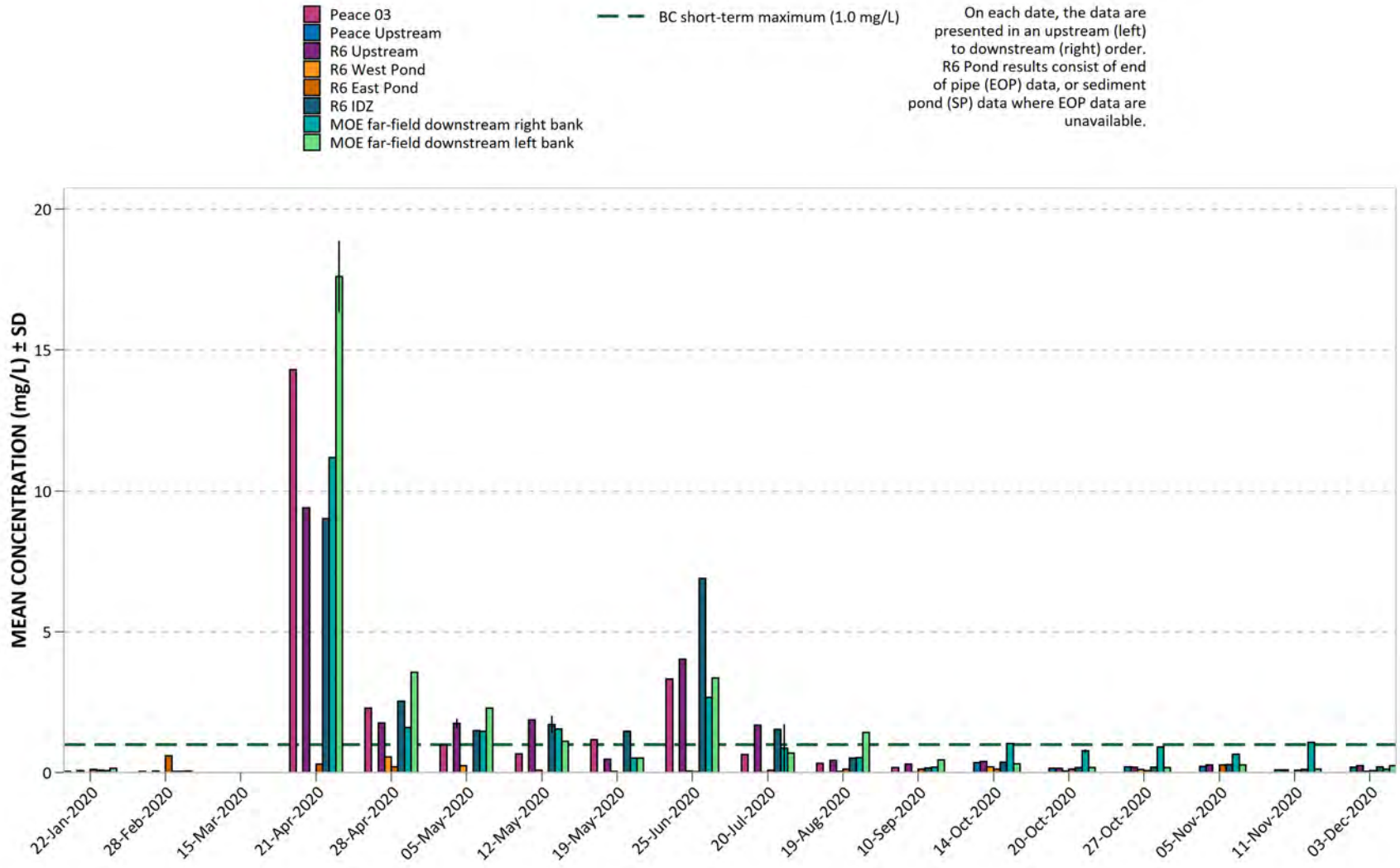


Figure 121. 2020 Peace River and RSEM R6 pond total lead (Pb).

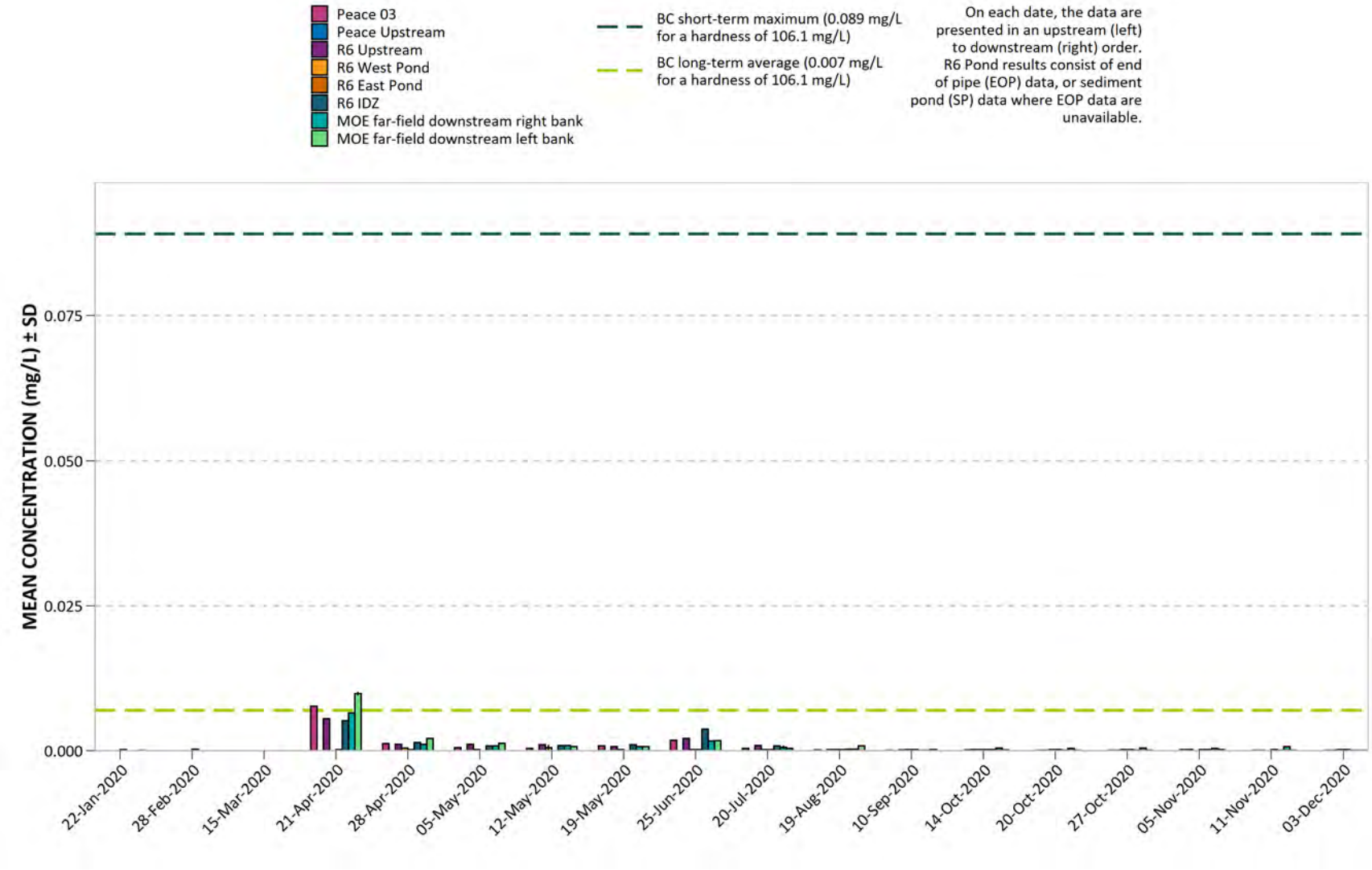


Figure 122. 2020 Peace River and RSEM R6 pond total lithium (Li).

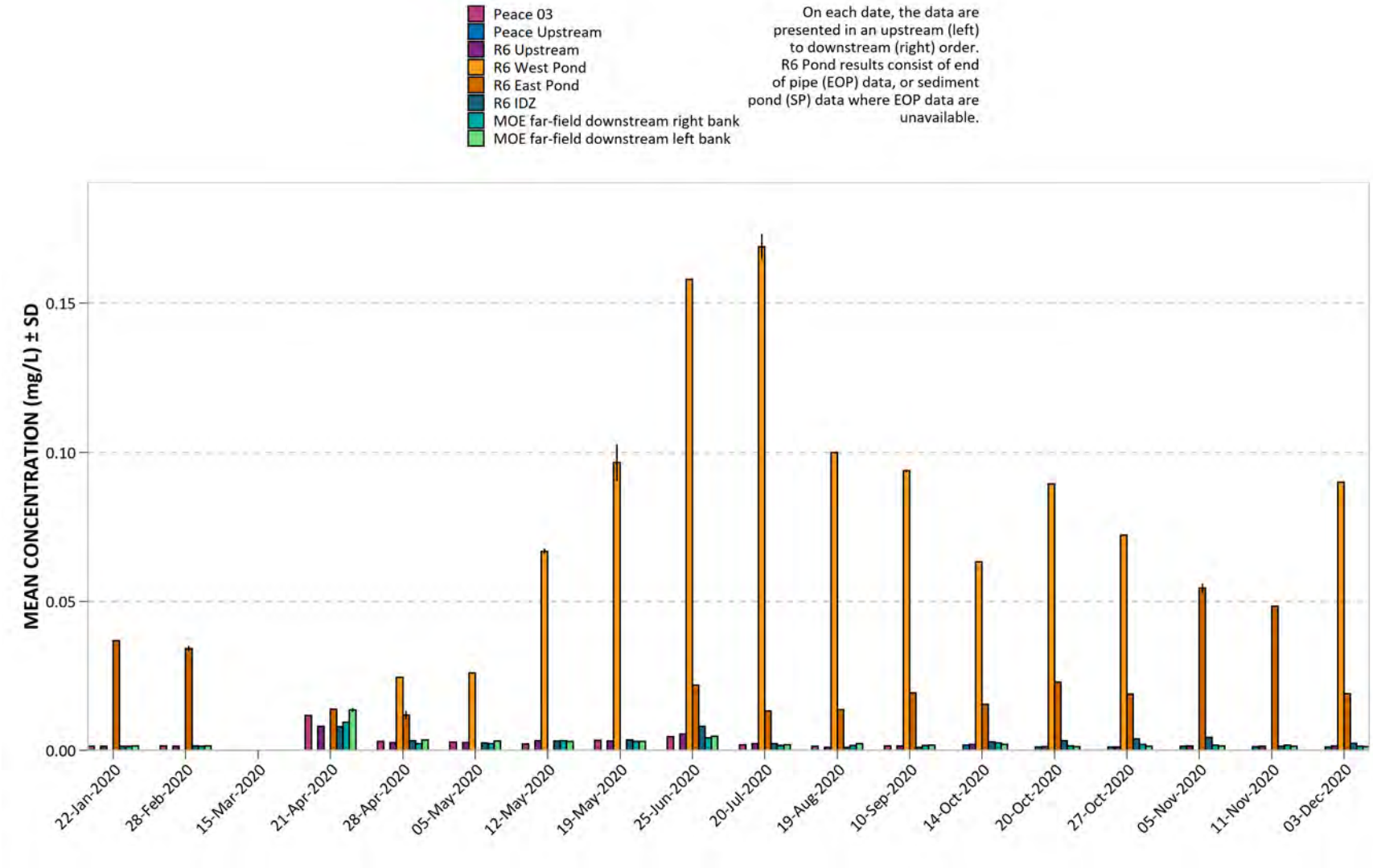


Figure 123. 2020 Peace River and RSEM R6 pond total magnesium (Mg).

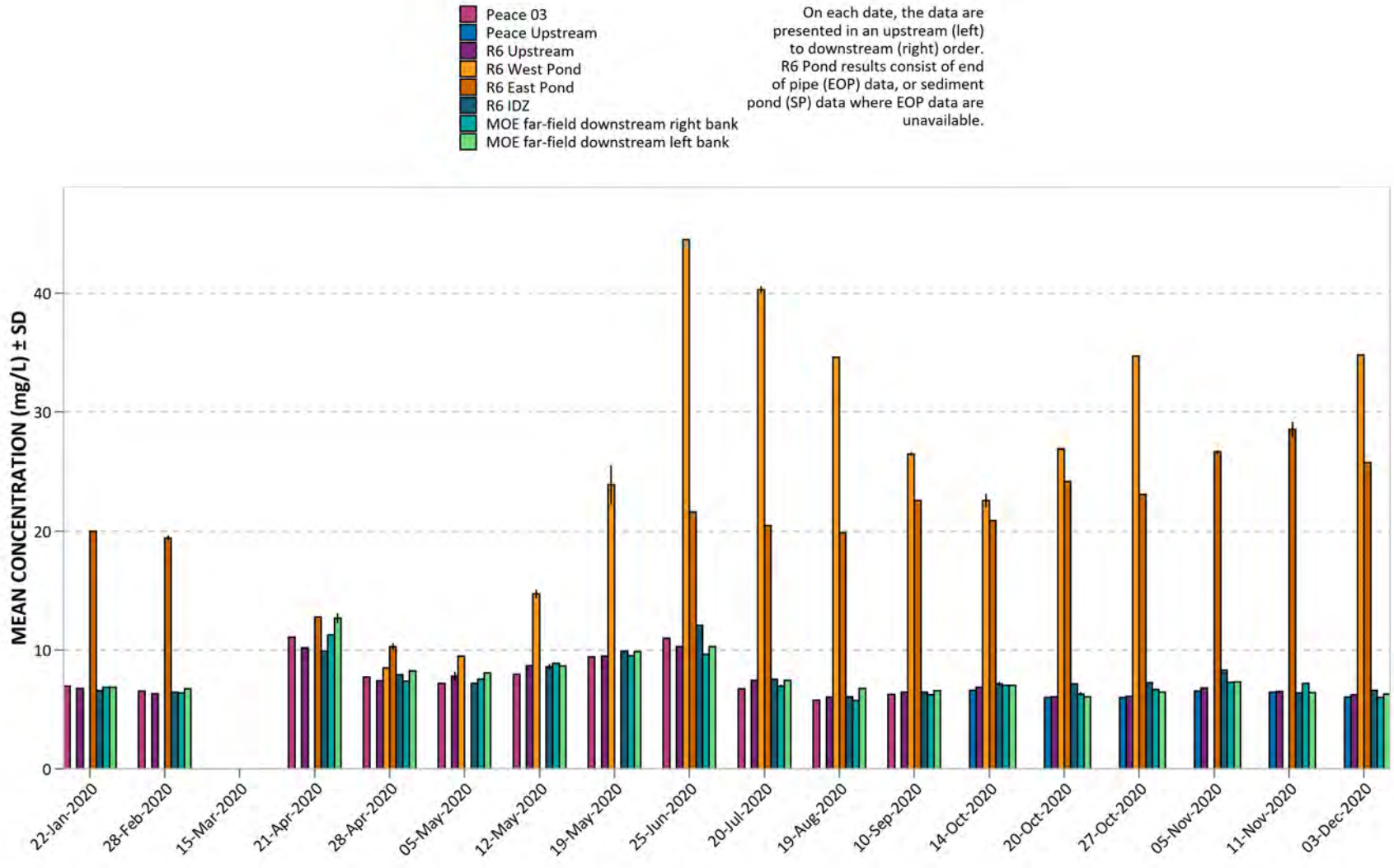


Figure 124. 2020 Peace River and RSEM R6 pond total manganese (Mn).

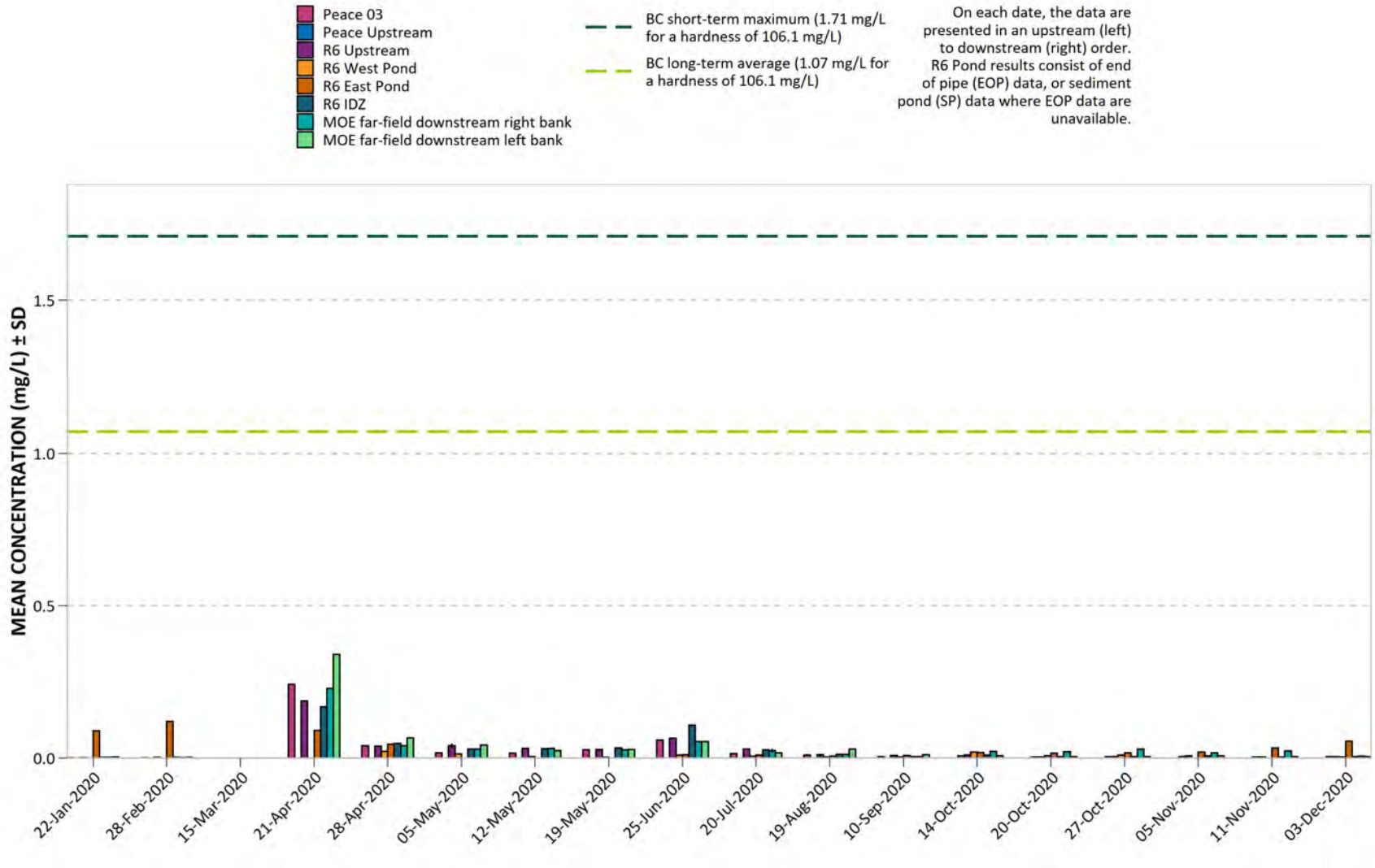


Figure 125. 2020 Peace River and RSEM R6 pond total mercury (Hg).

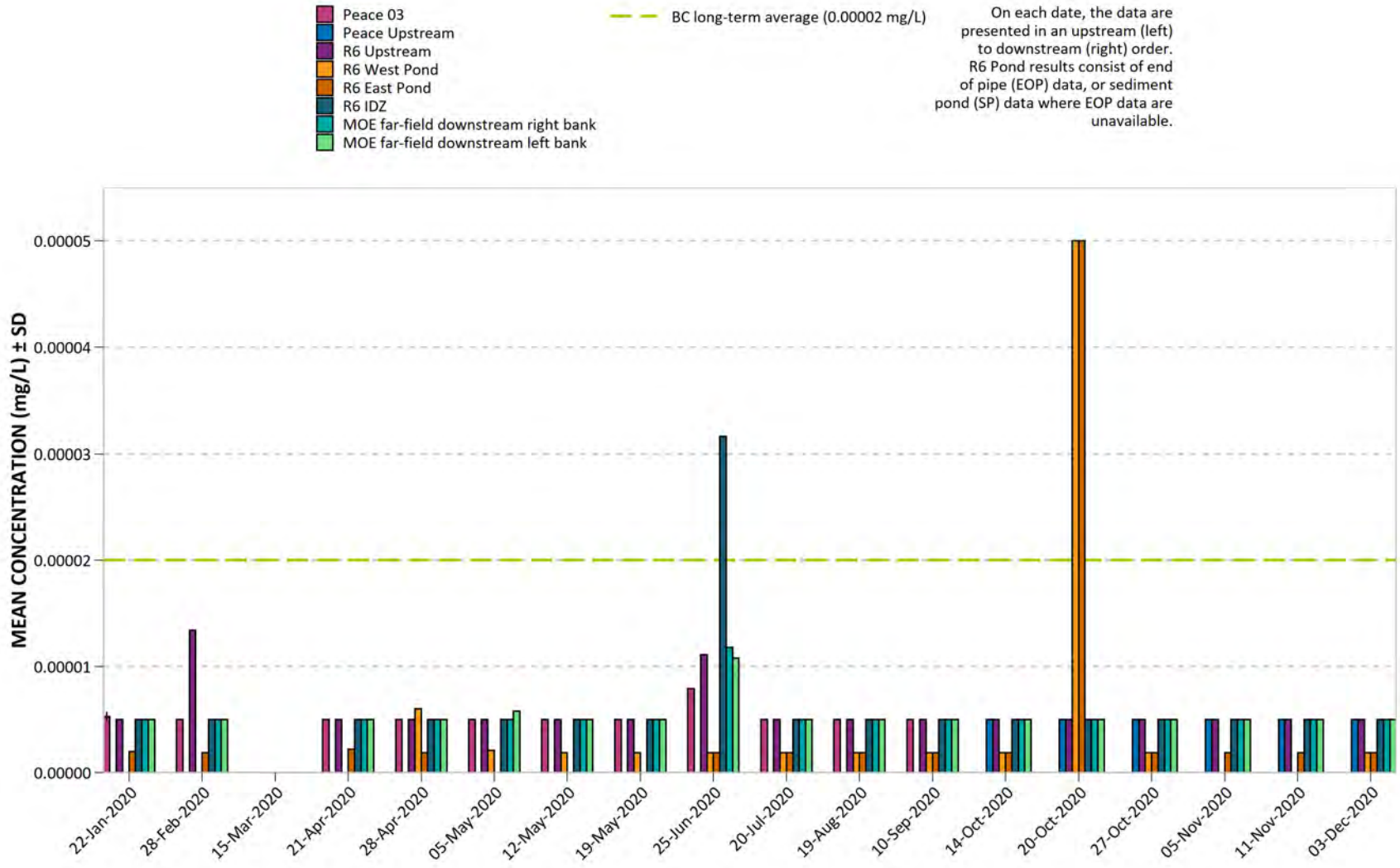


Figure 126. 2020 Peace River and RSEM R6 pond total molybdenum (Mo).

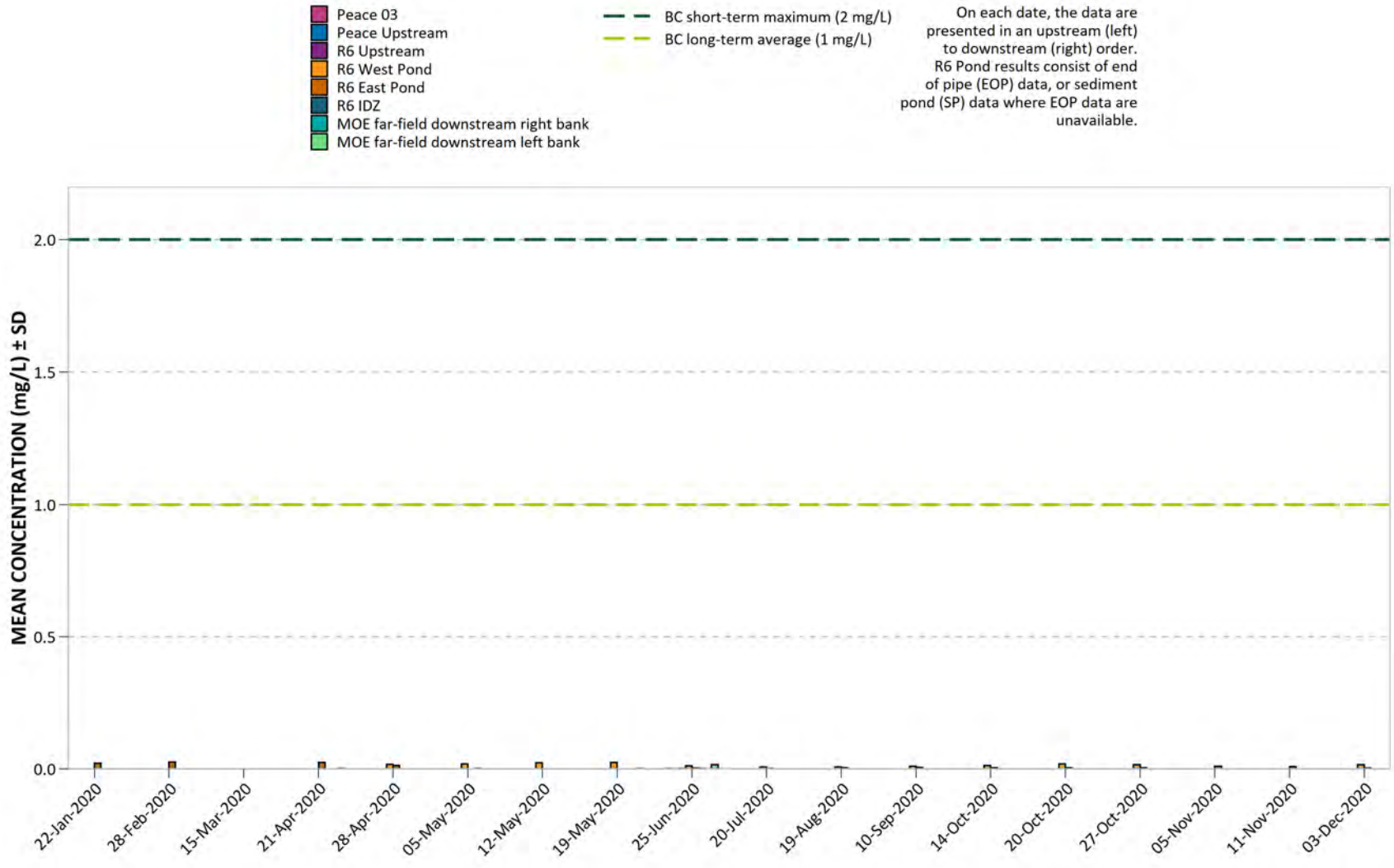


Figure 127. 2020 Peace River and RSEM R6 pond total nickel (Ni).

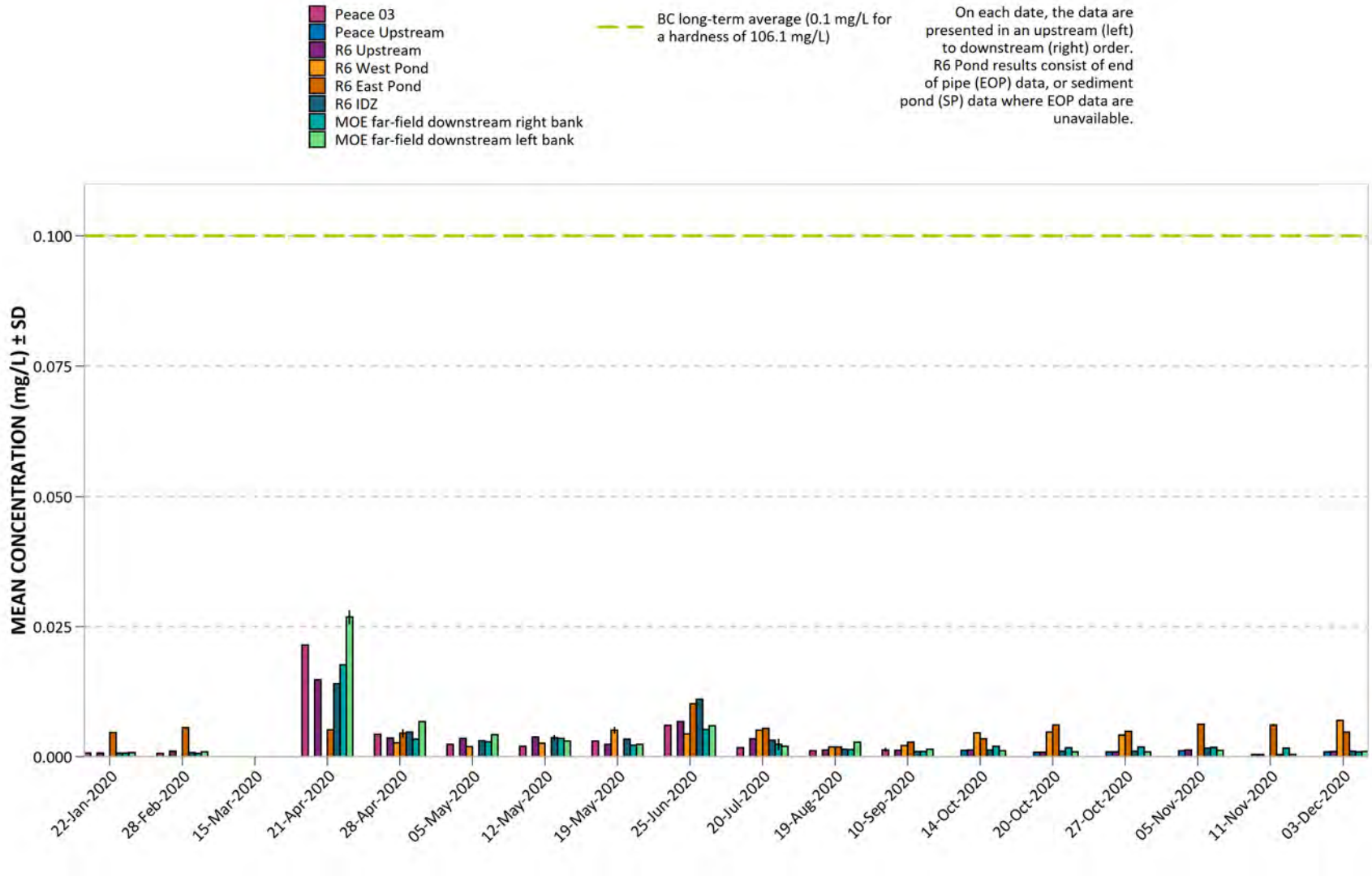


Figure 128. 2020 Peace River and RSEM R6 pond total potassium (K).

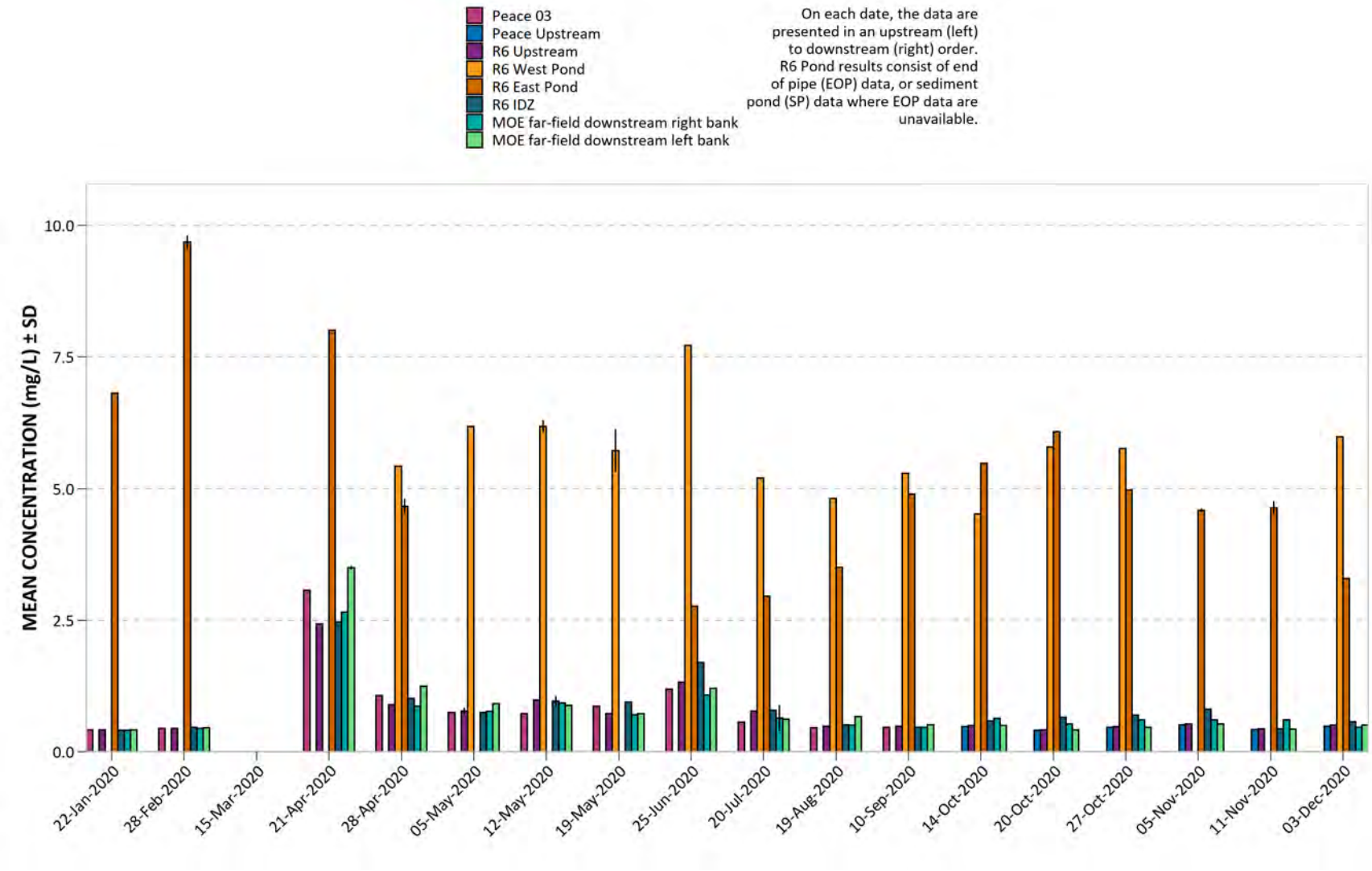


Figure 129. 2020 Peace River and RSEM R6 pond total selenium (Se).

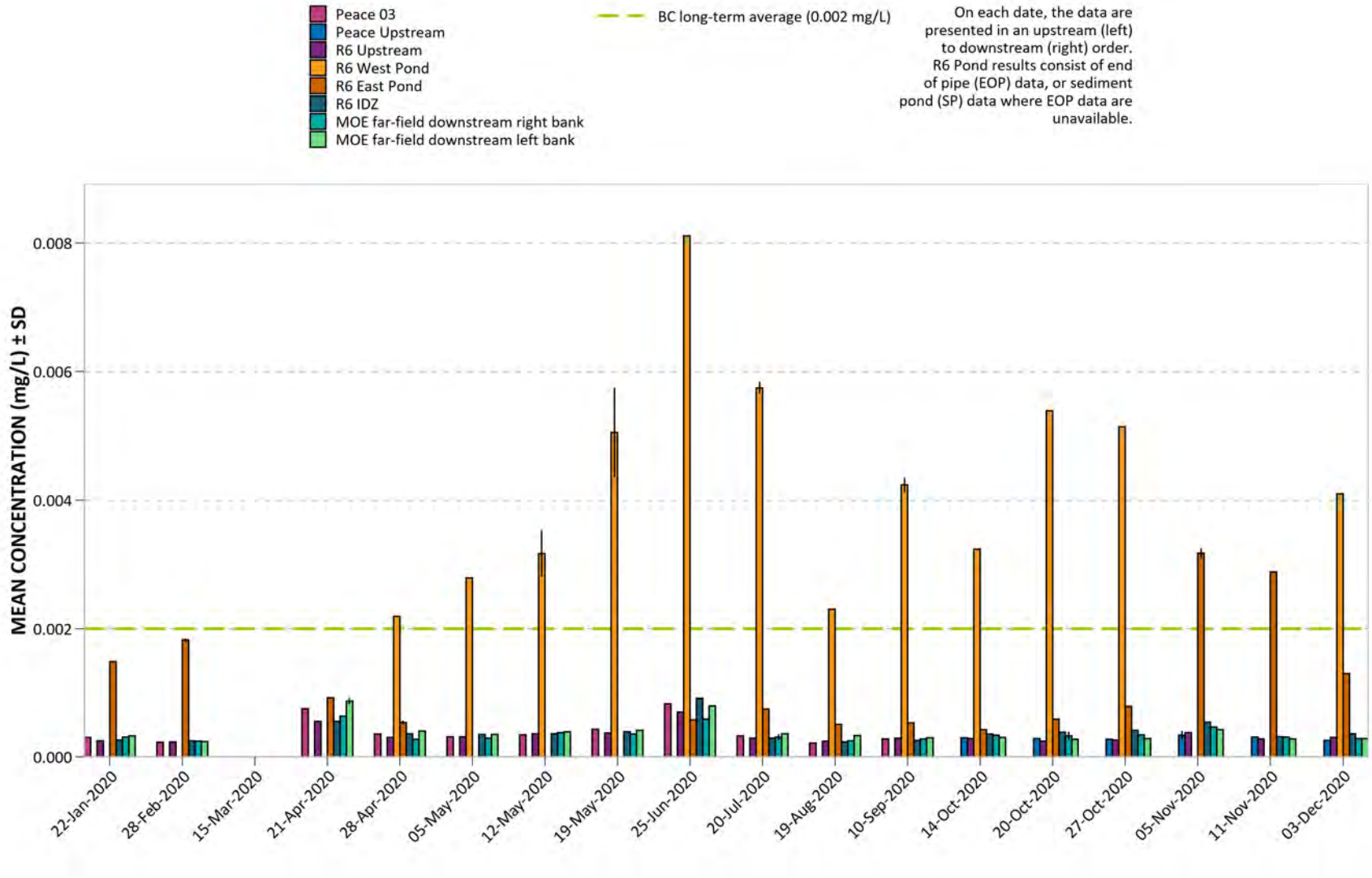


Figure 130. 2020 Peace River and RSEM R6 pond total silicon (Si).

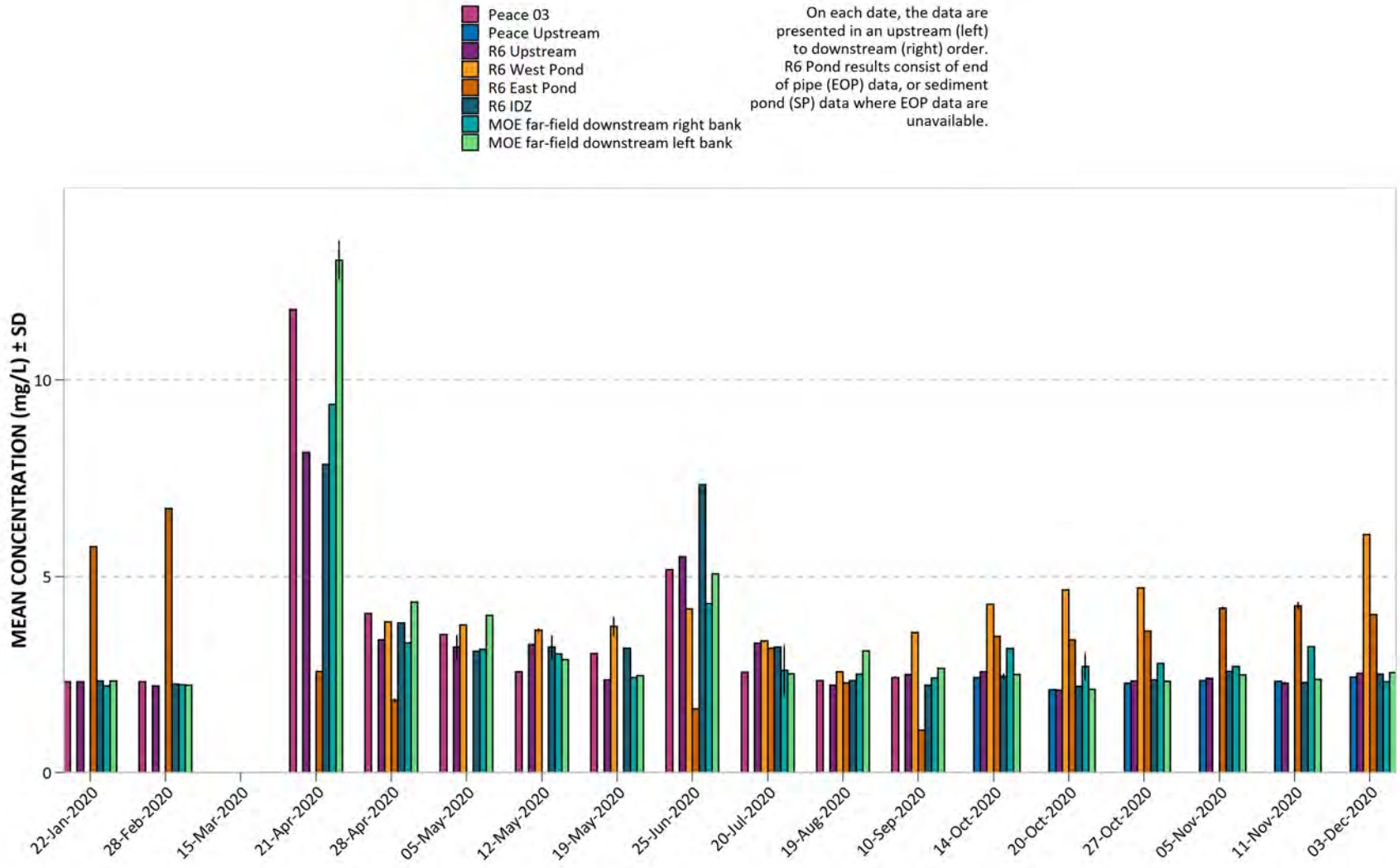


Figure 131. 2020 Peace River and RSEM R6 pond total silver (Ag).

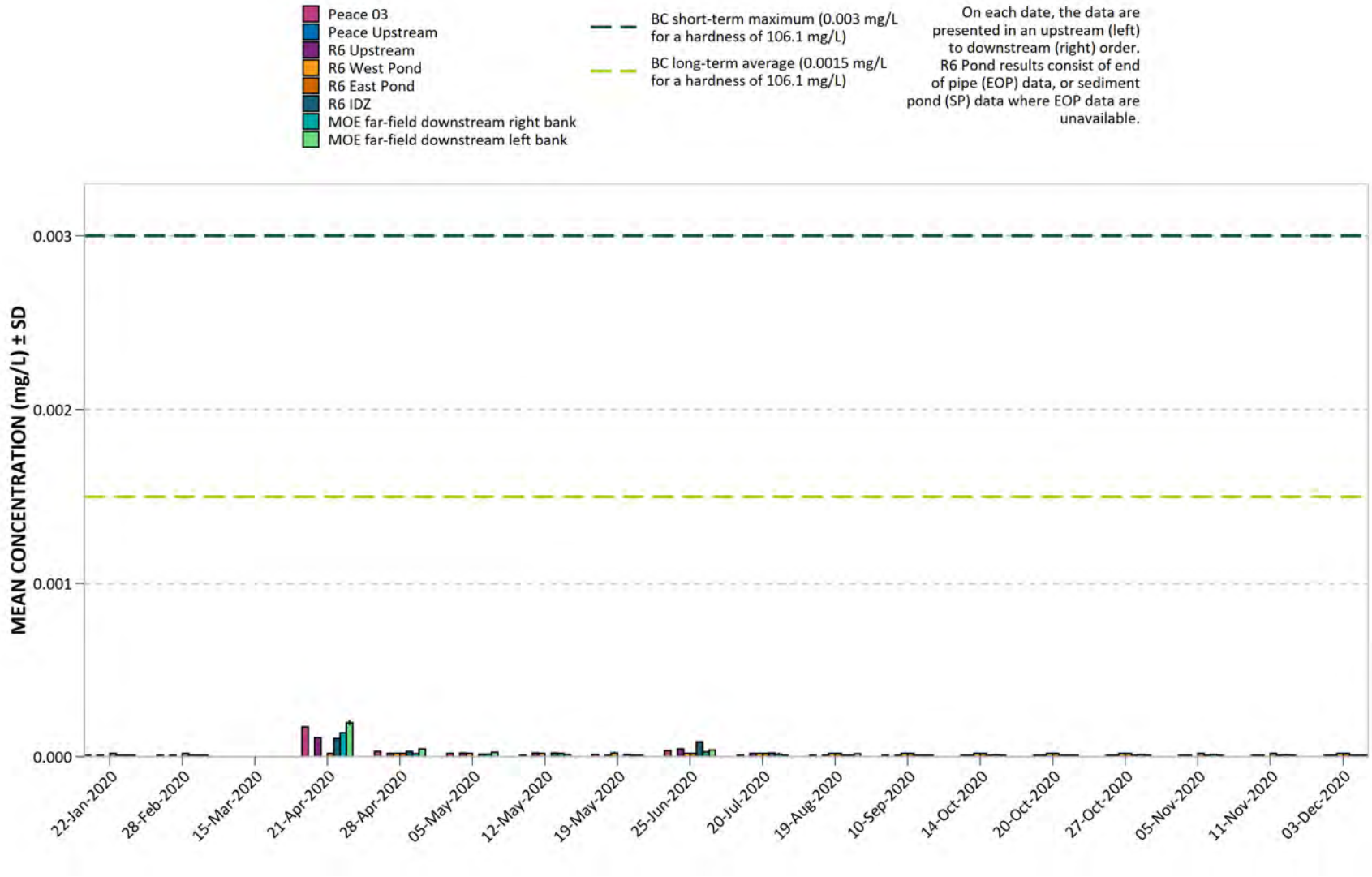


Figure 132. 2020 Peace River and RSEM R6 pond total sodium (Na).

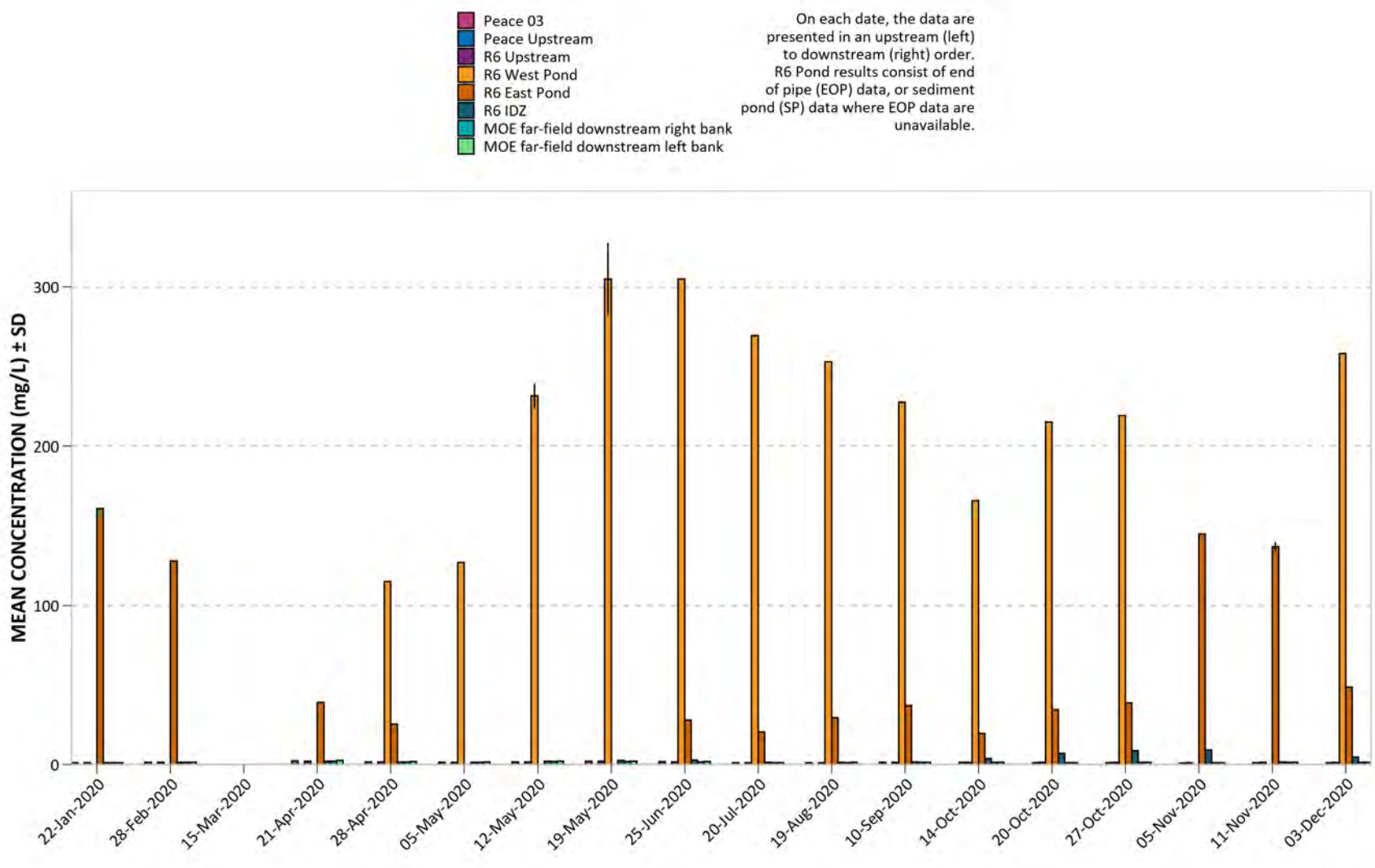


Figure 133. 2020 Peace River and RSEM R6 pond total strontium (Sr).

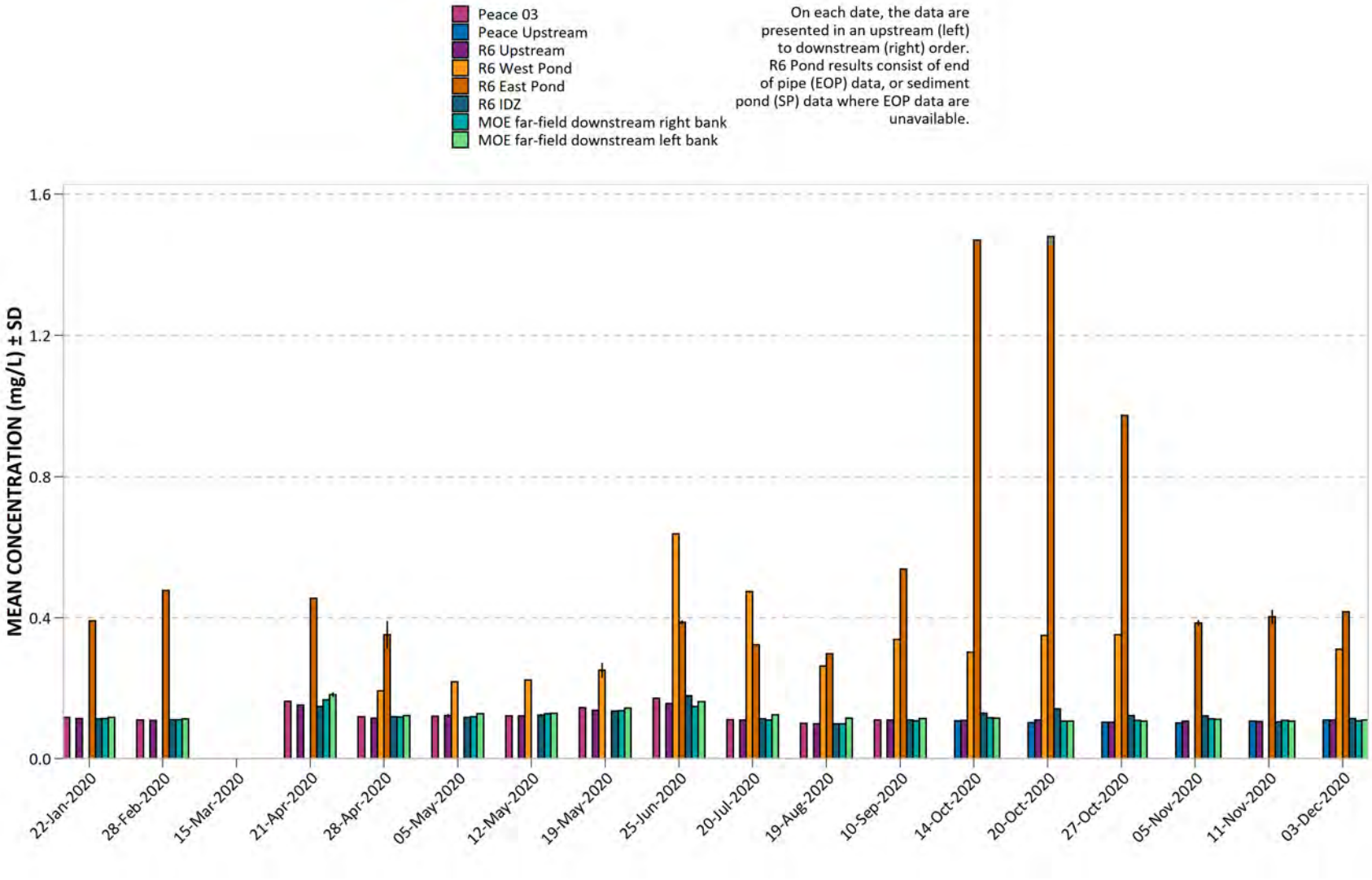


Figure 134. 2020 Peace River and RSEM R6 pond total sulfur (S).

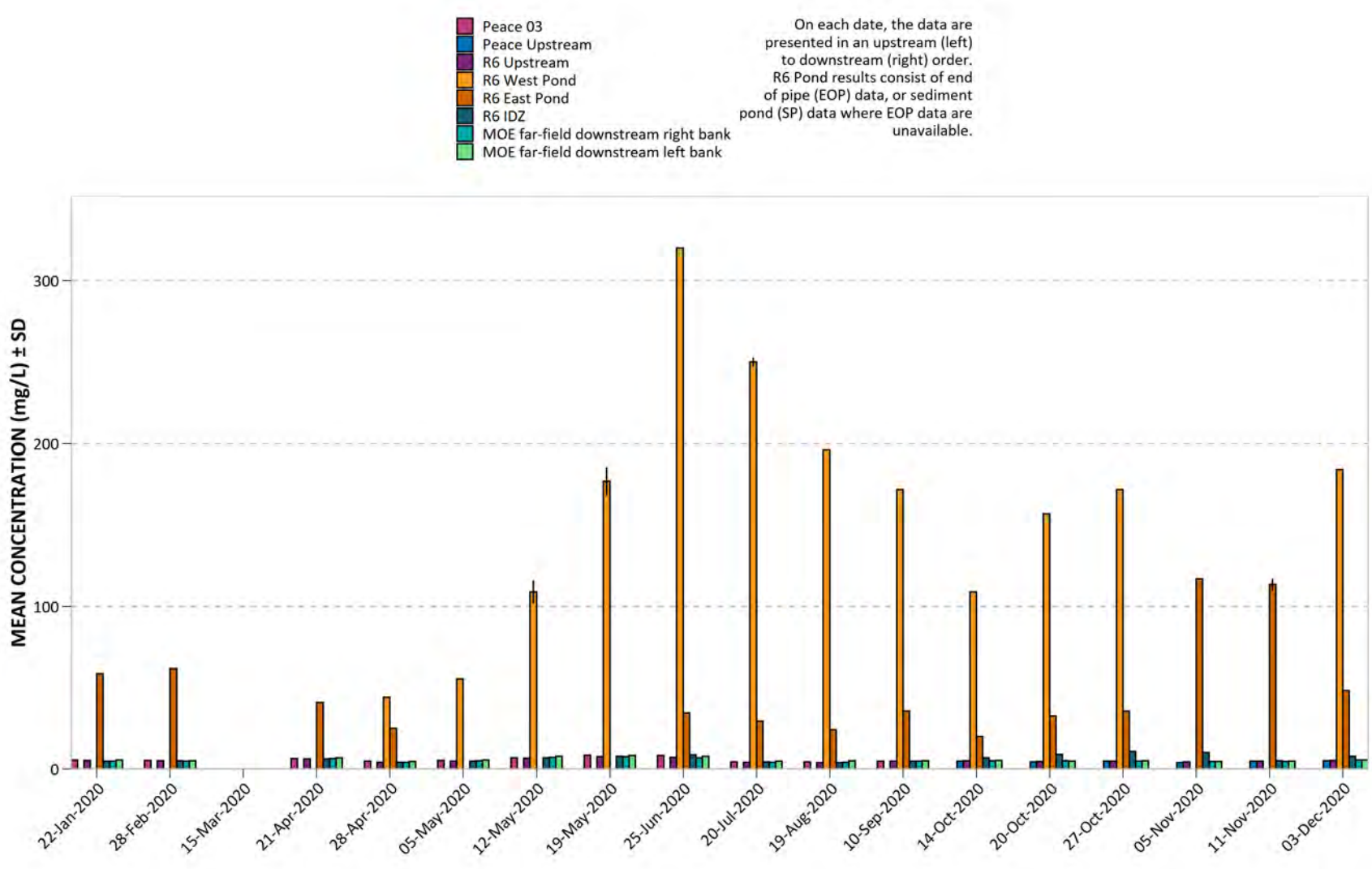


Figure 135. 2020 Peace River and RSEM R6 pond total thallium (Tl).

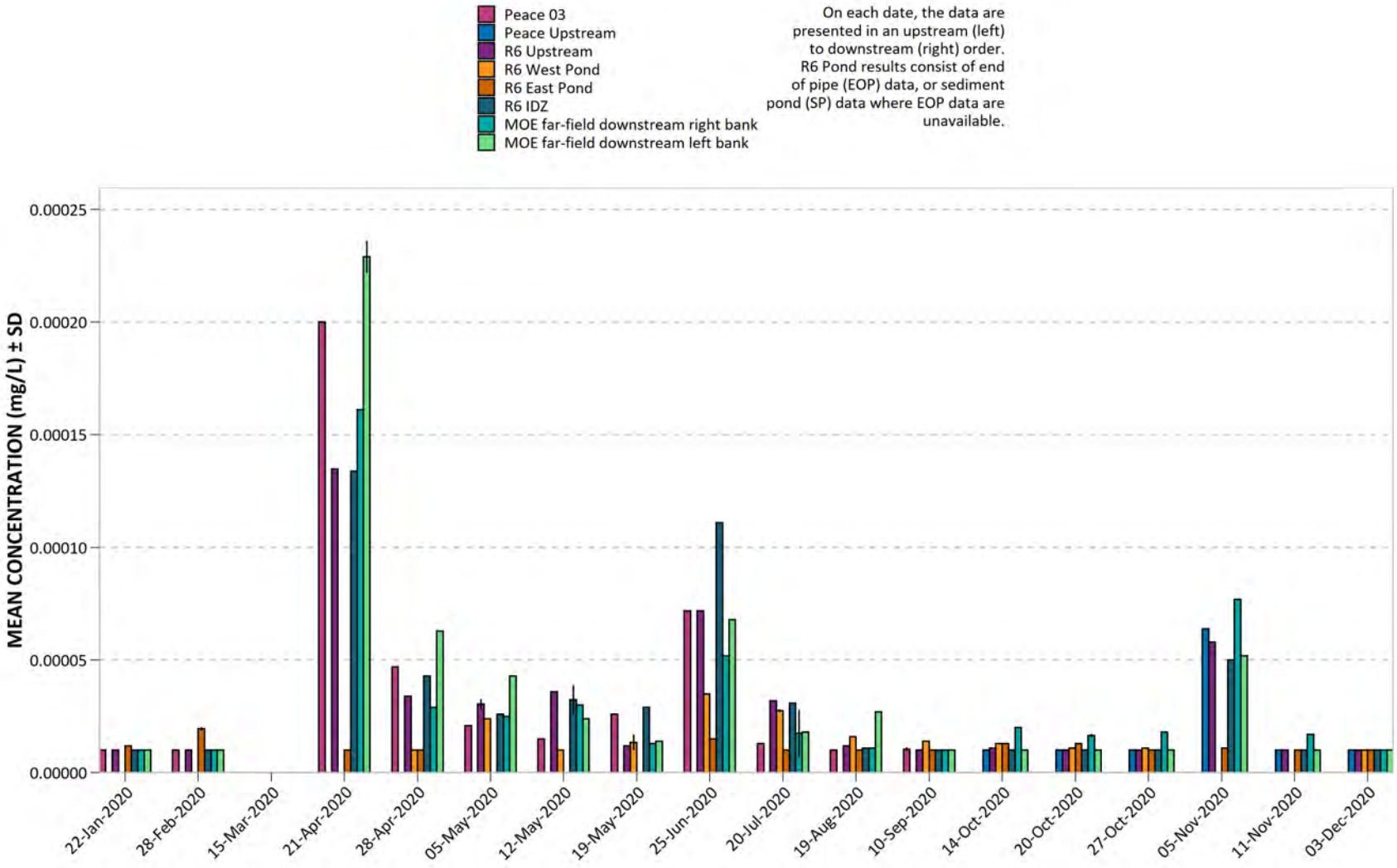


Figure 136. 2020 Peace River and RSEM R6 pond total tin (Sn).

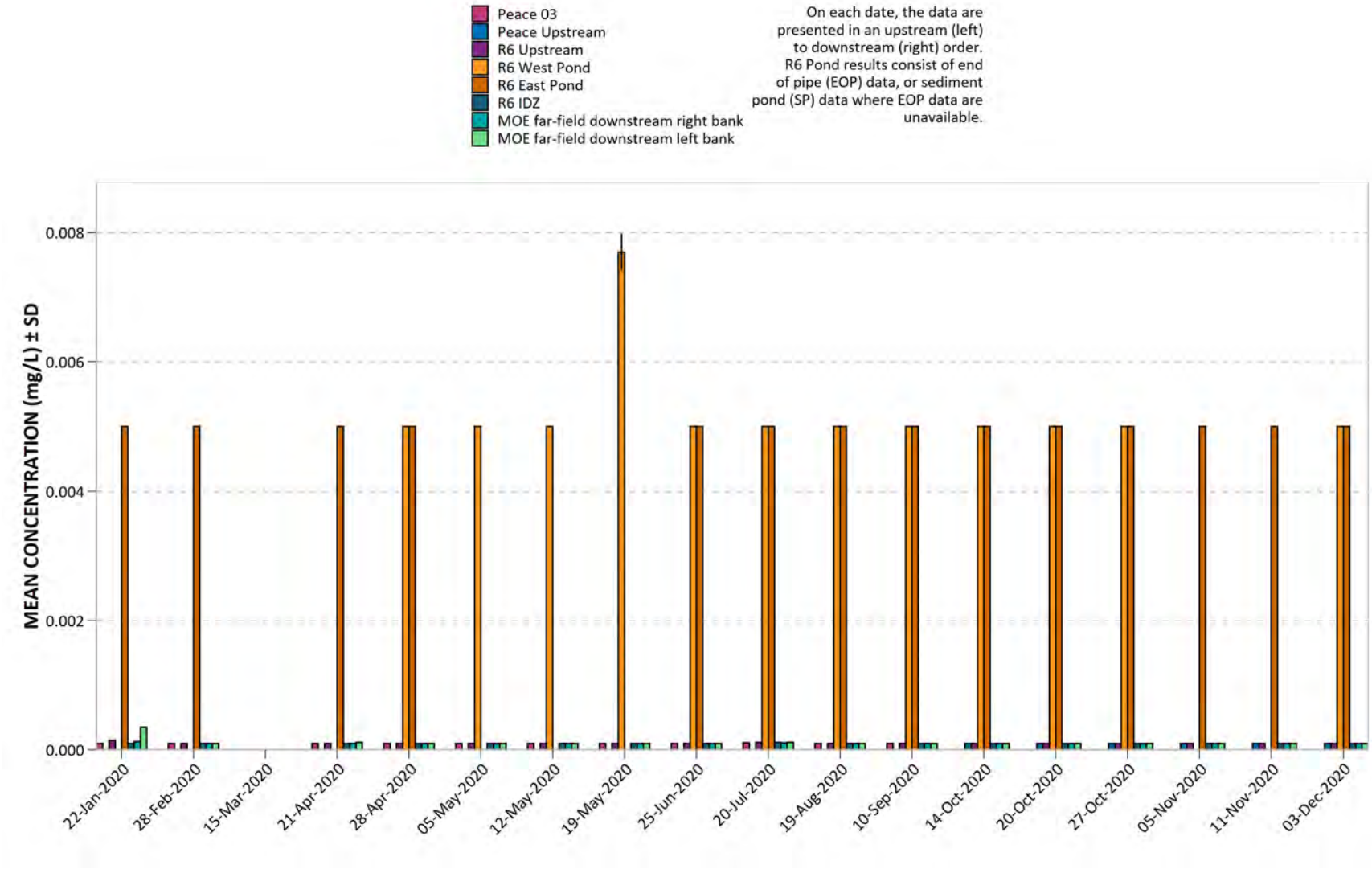


Figure 137. 2020 Peace River and RSEM R6 pond total titanium (Ti).

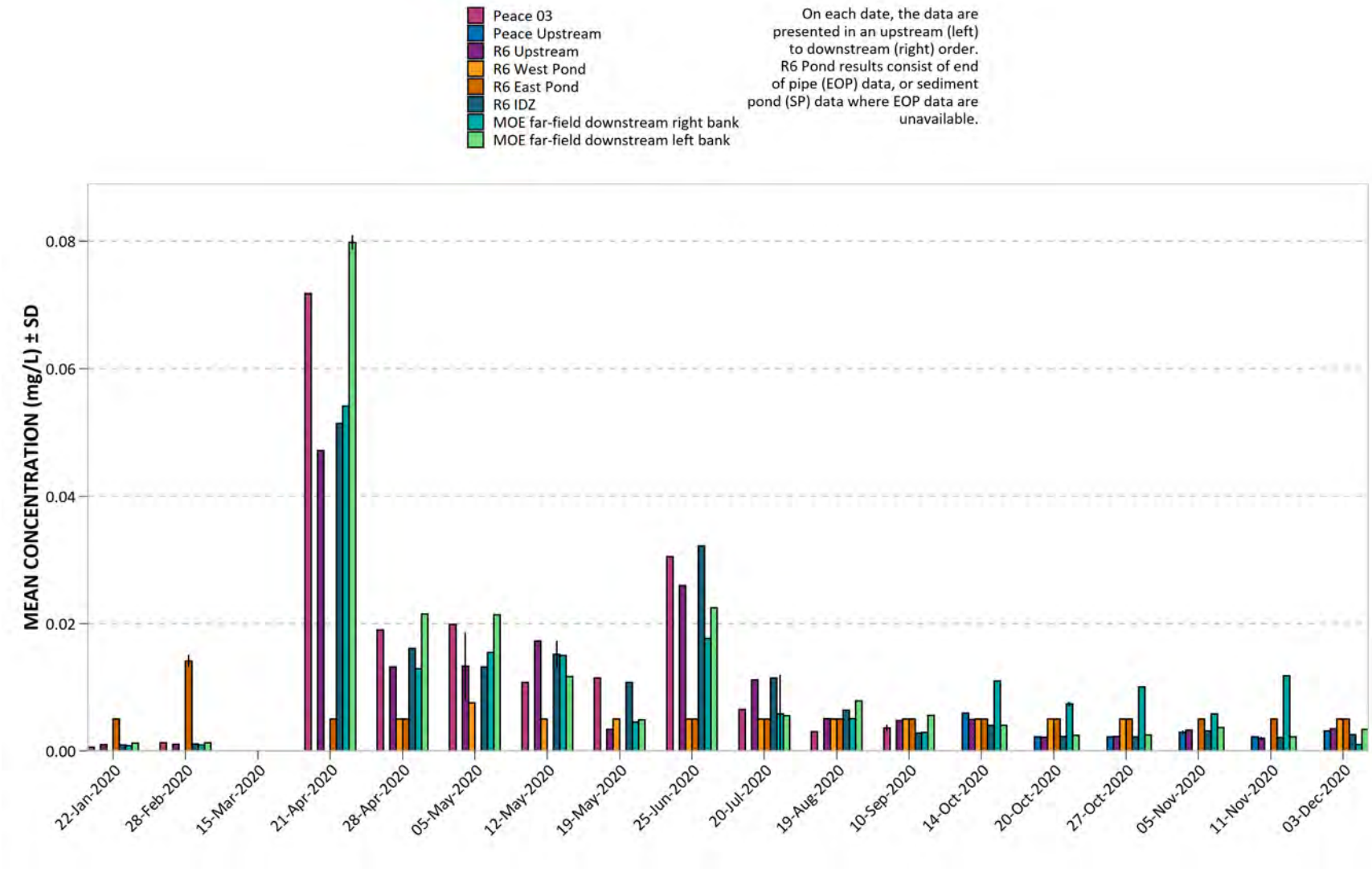


Figure 138. 2020 Peace River and RSEM R6 pond total uranium (U).

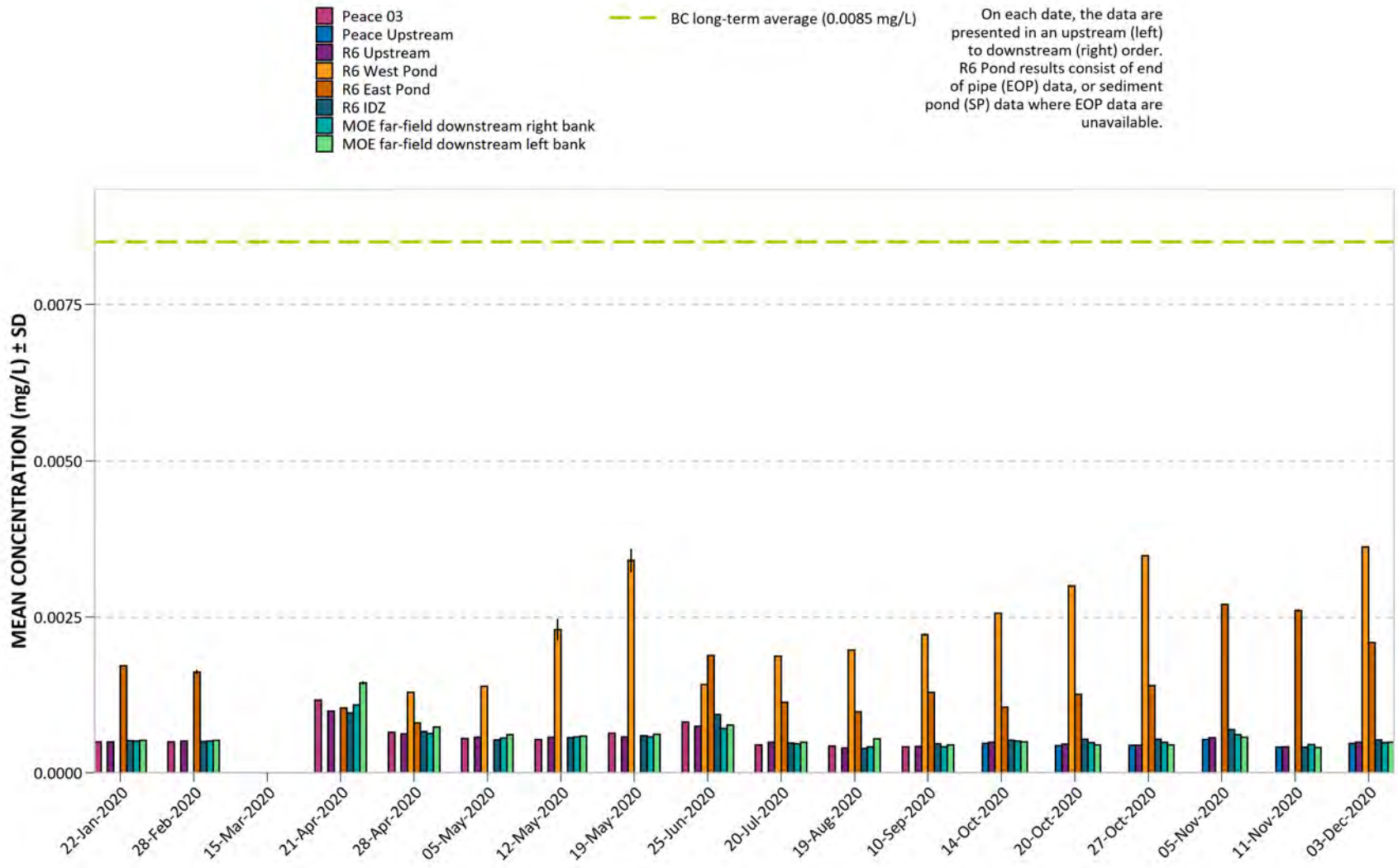


Figure 139. 2020 Peace River and RSEM R6 pond total vanadium (V).

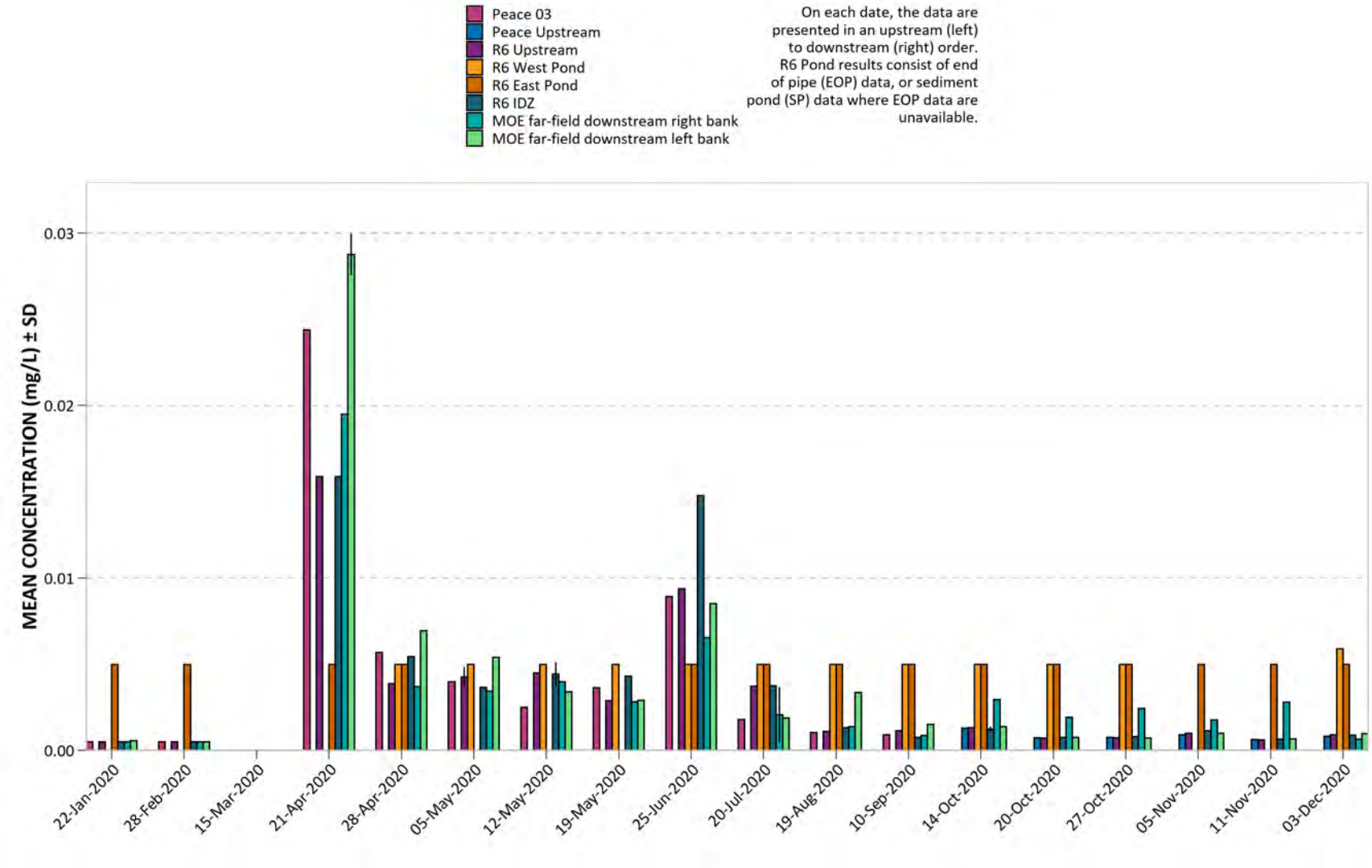


Figure 140. 2020 Peace River and RSEM R6 pond total zinc (Zn).

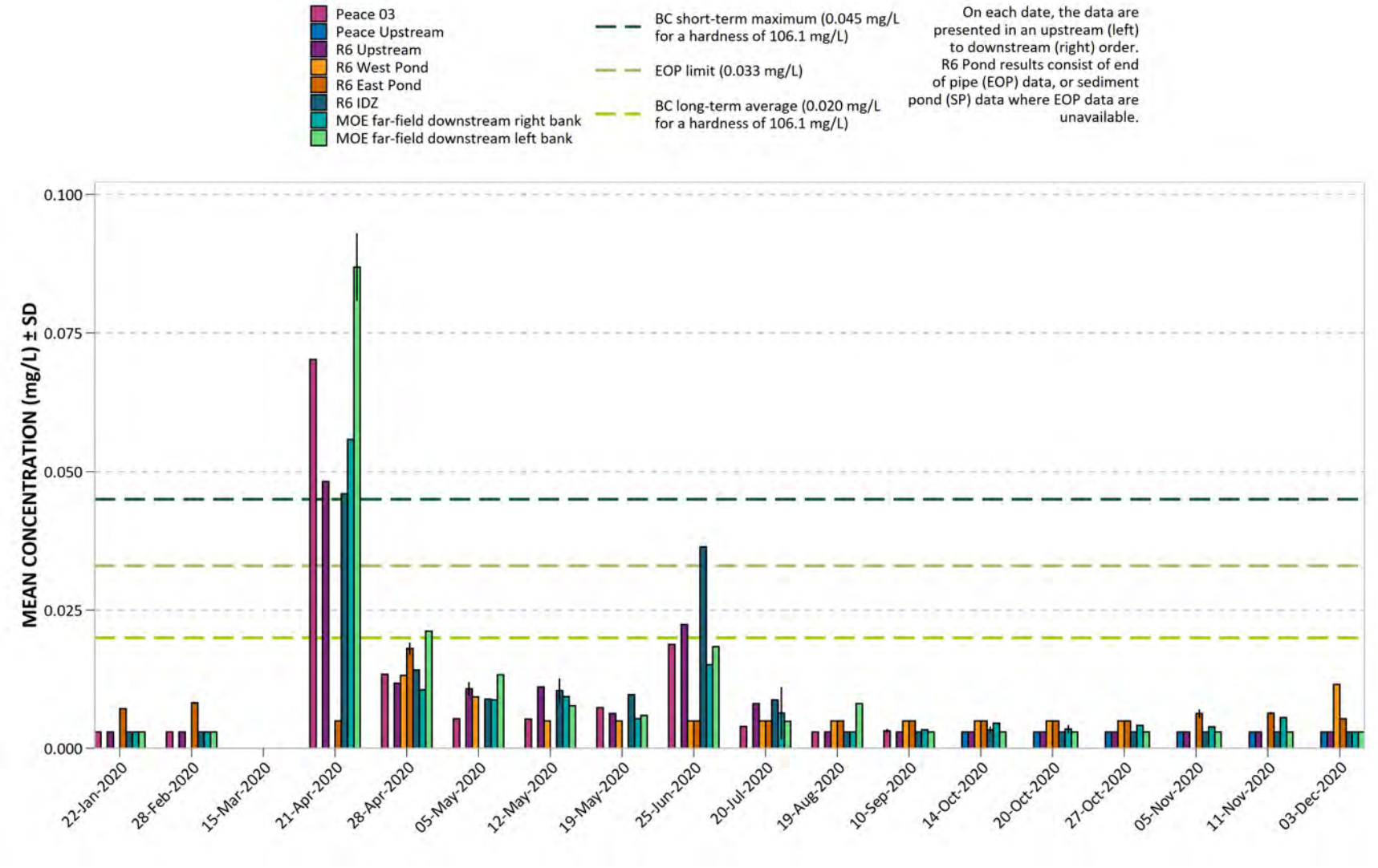


Figure 141. 2020 Peace River and RSEM R6 pond total zirconium (Zr).

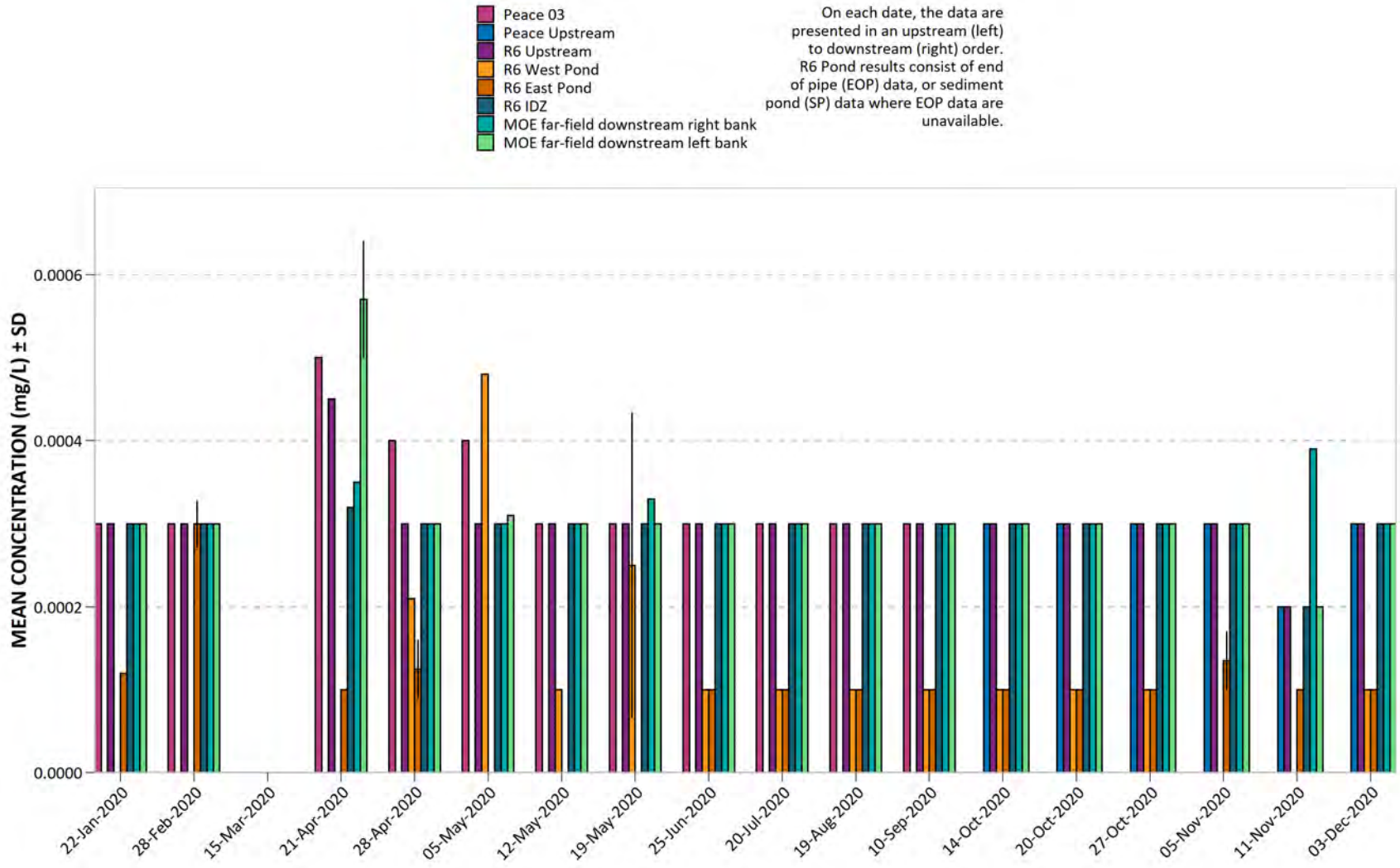


Figure 142. 2020 Peace River and RSEM R6 pond dissolved aluminum (Al).

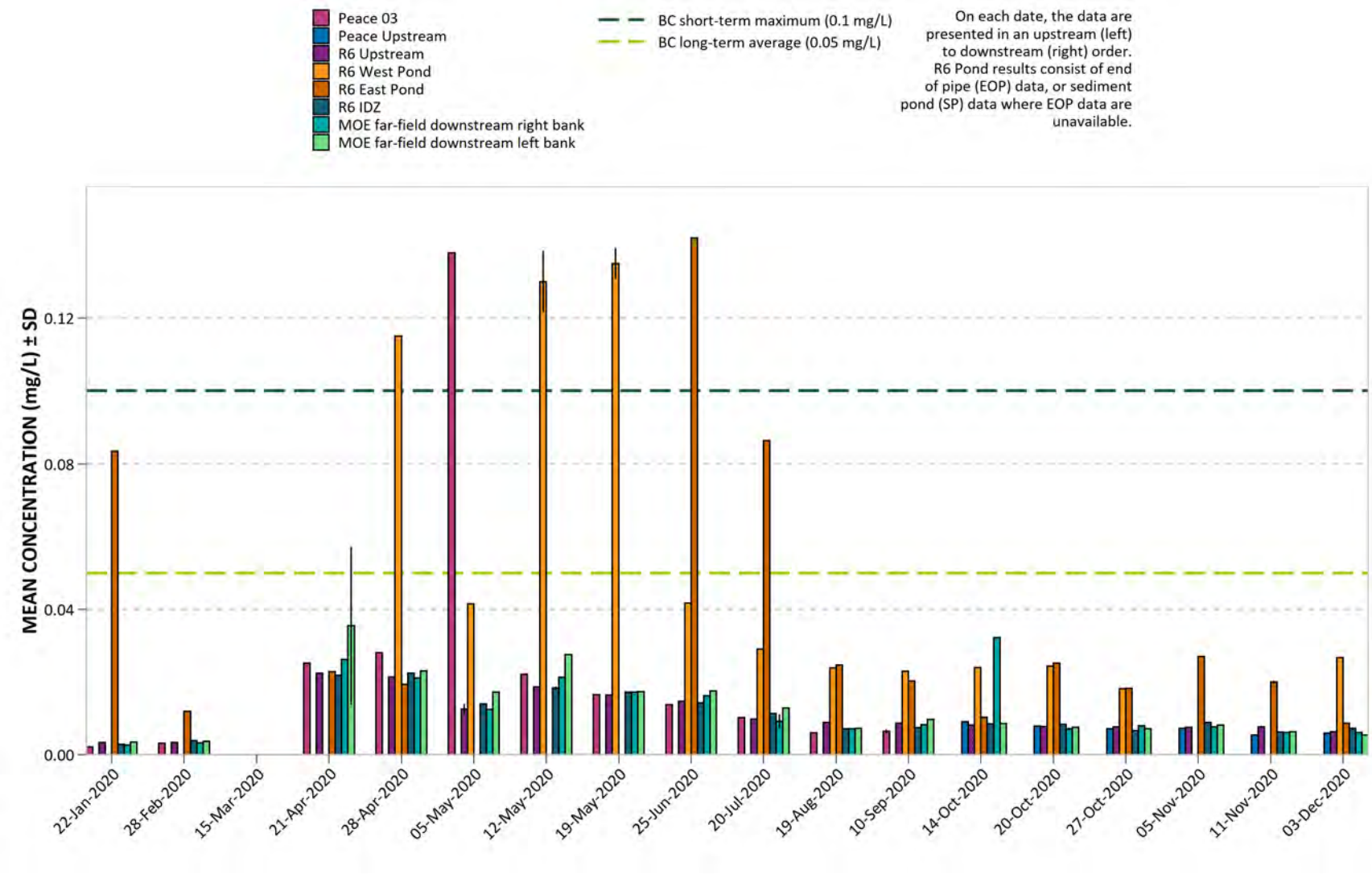


Figure 143. 2020 Peace River and RSEM R6 pond dissolved antimony (Sb).

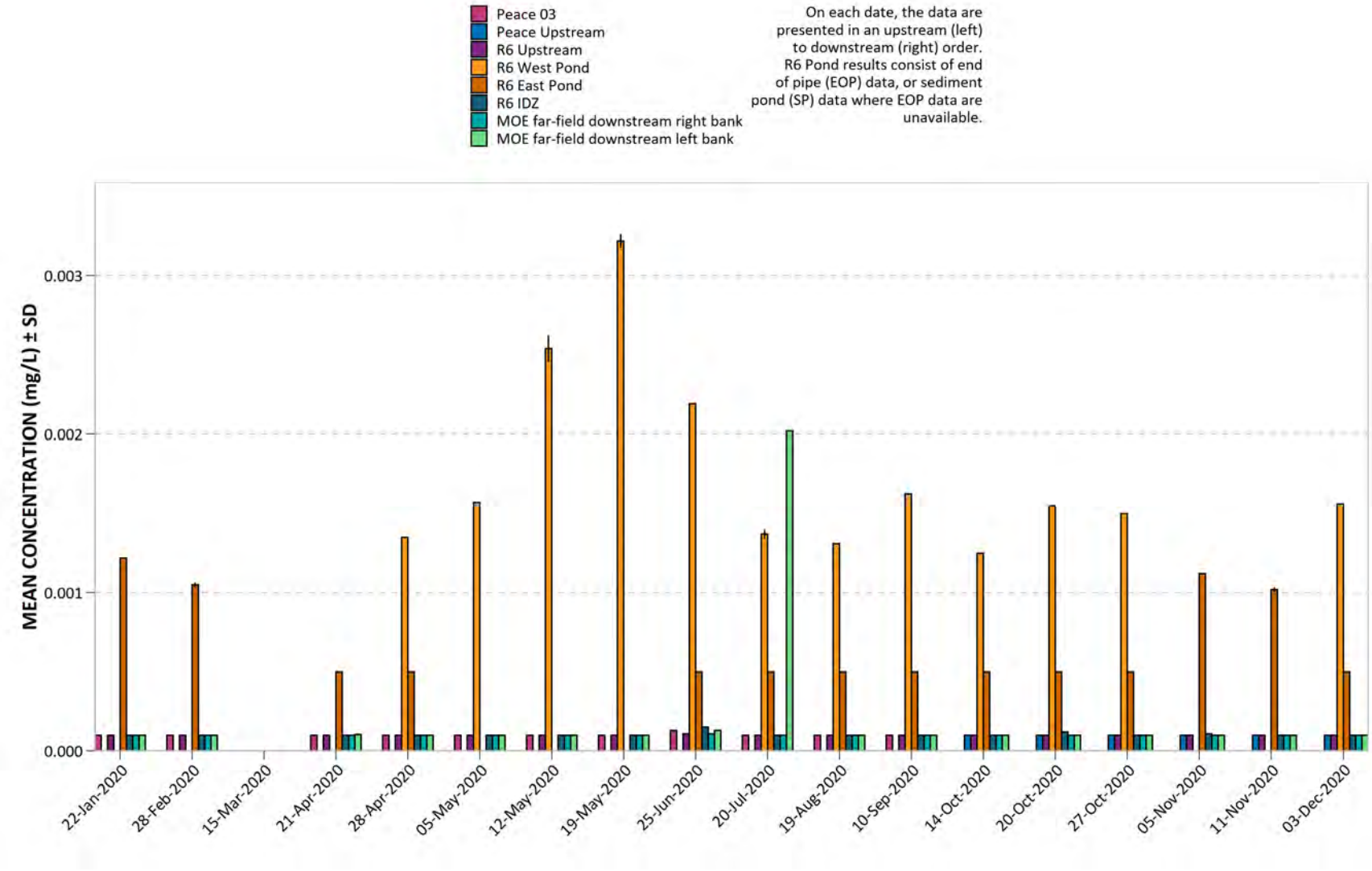


Figure 144. 2020 Peace River and RSEM R6 pond dissolved arsenic (As).

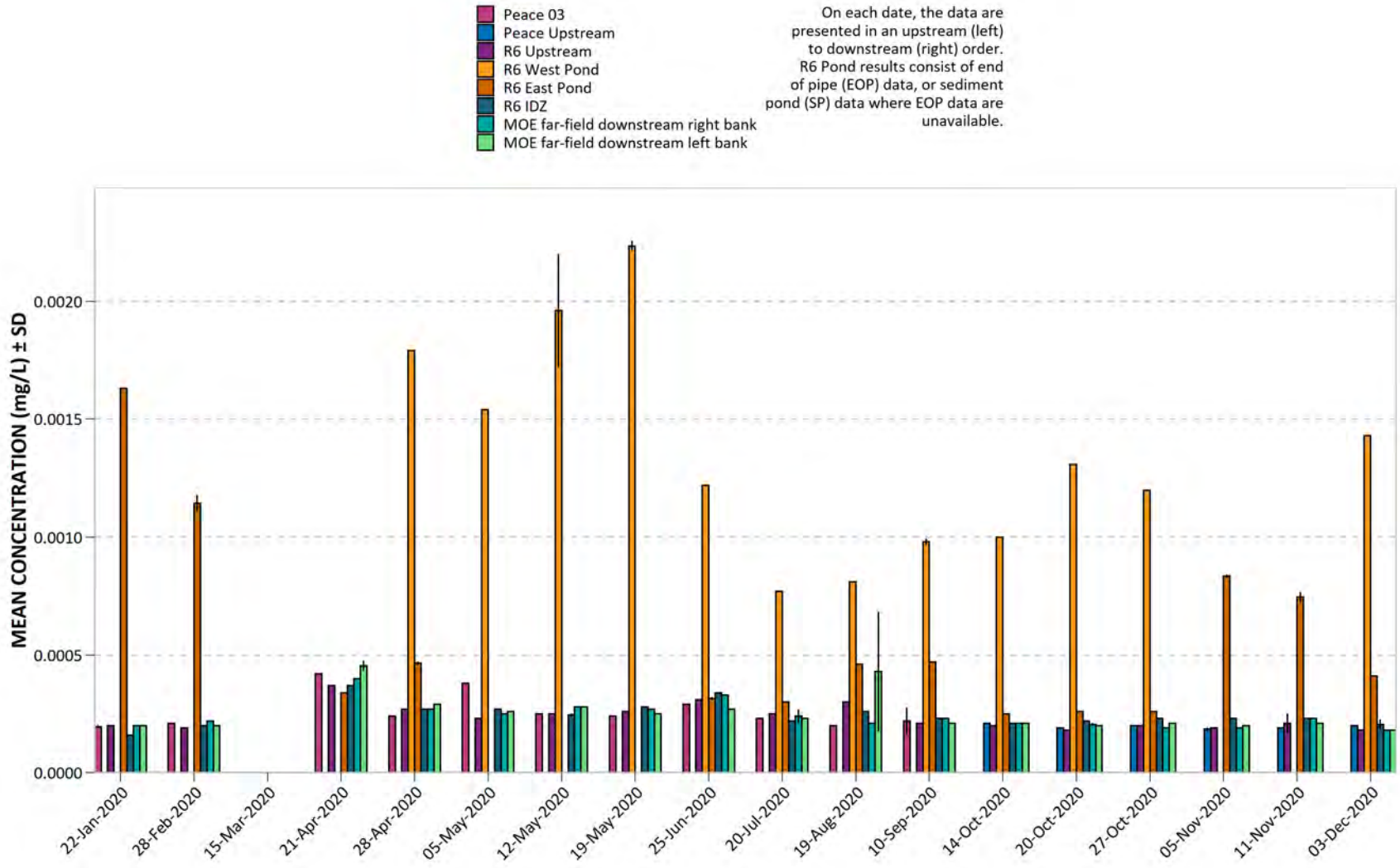


Figure 145. 2020 Peace River and RSEM R6 pond dissolved barium (Ba).

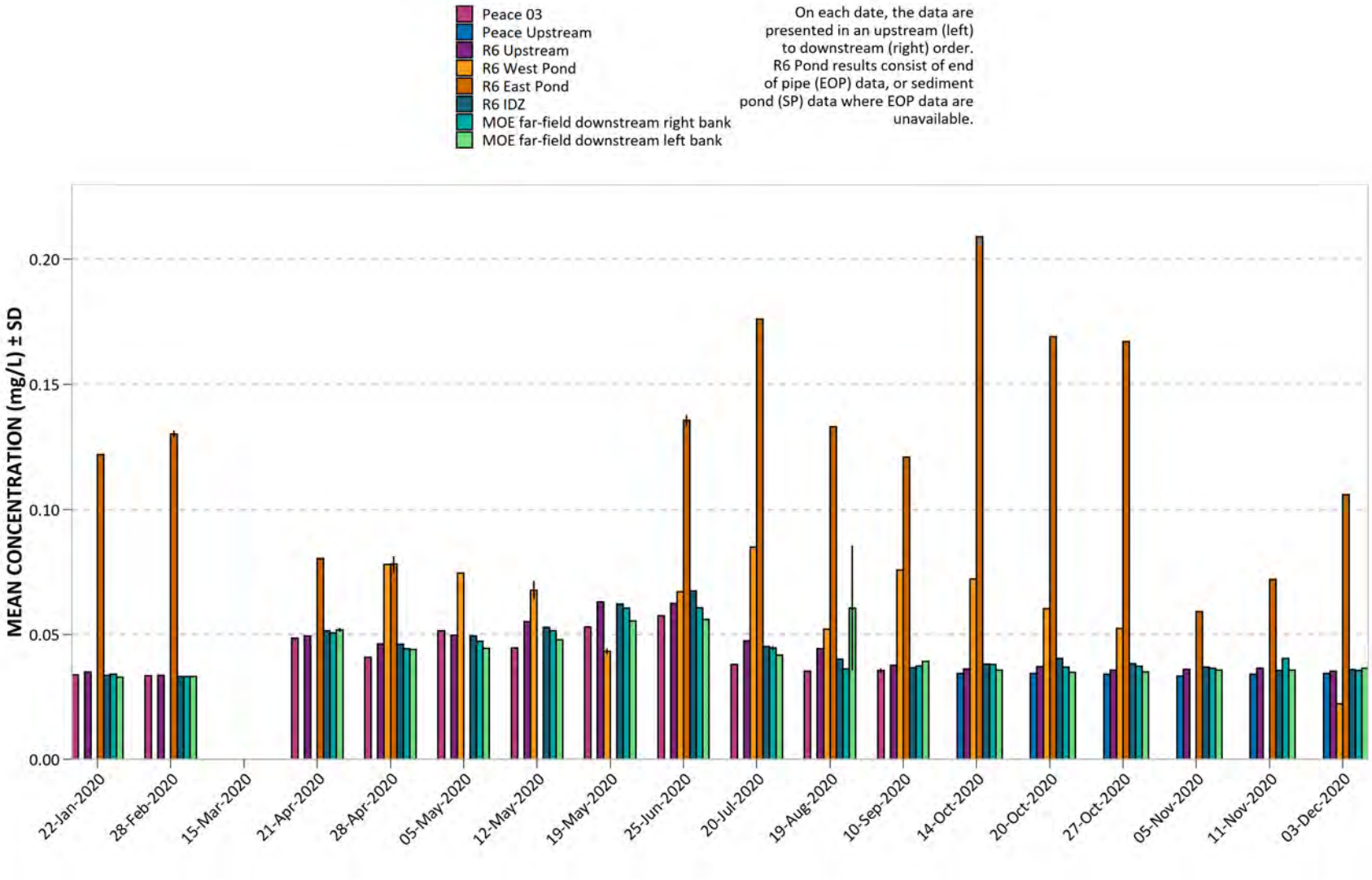


Figure 146. 2020 Peace River and RSEM R6 pond dissolved beryllium (Be).

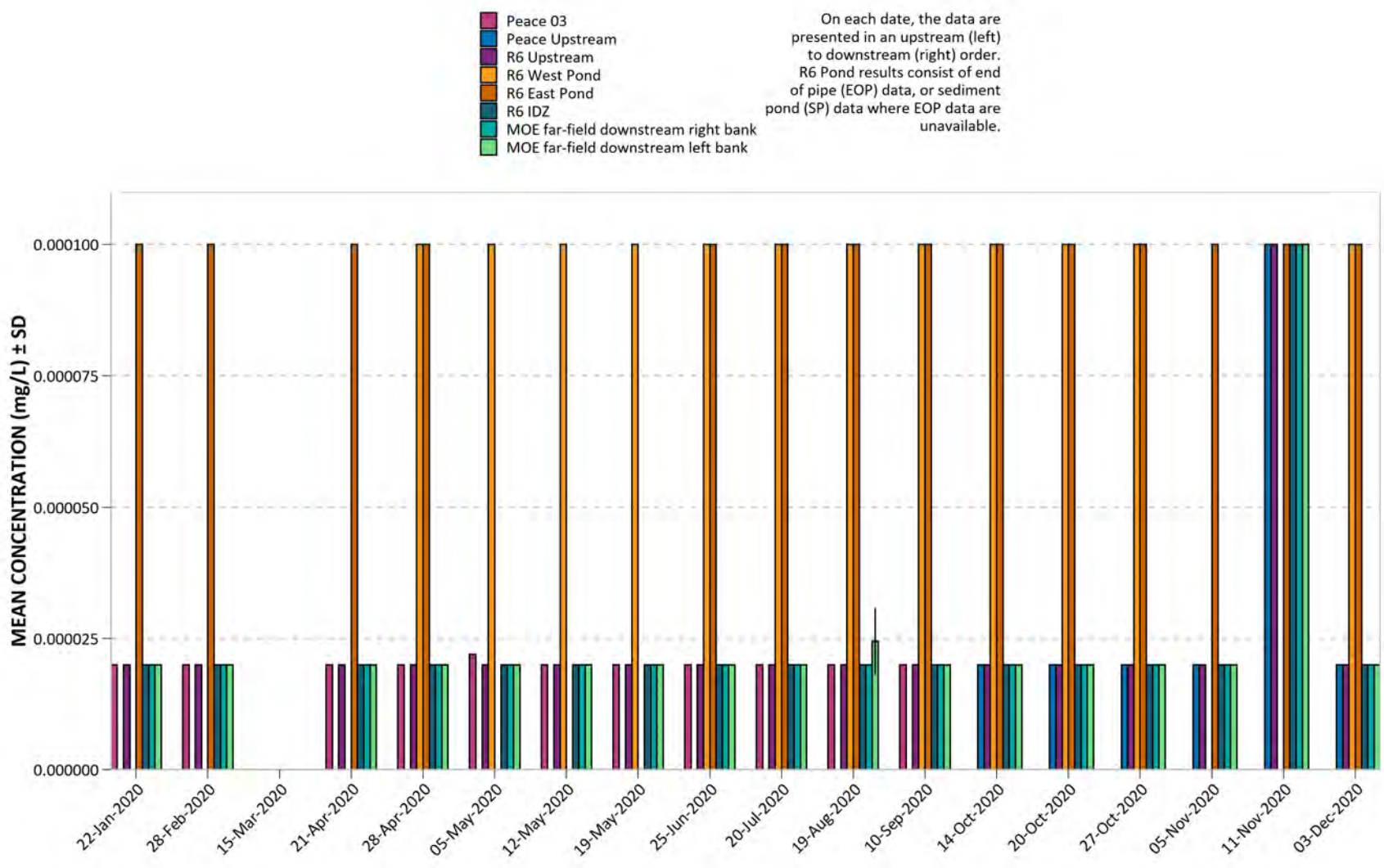


Figure 147. 2020 Peace River and RSEM R6 pond dissolved bismuth (Bi).

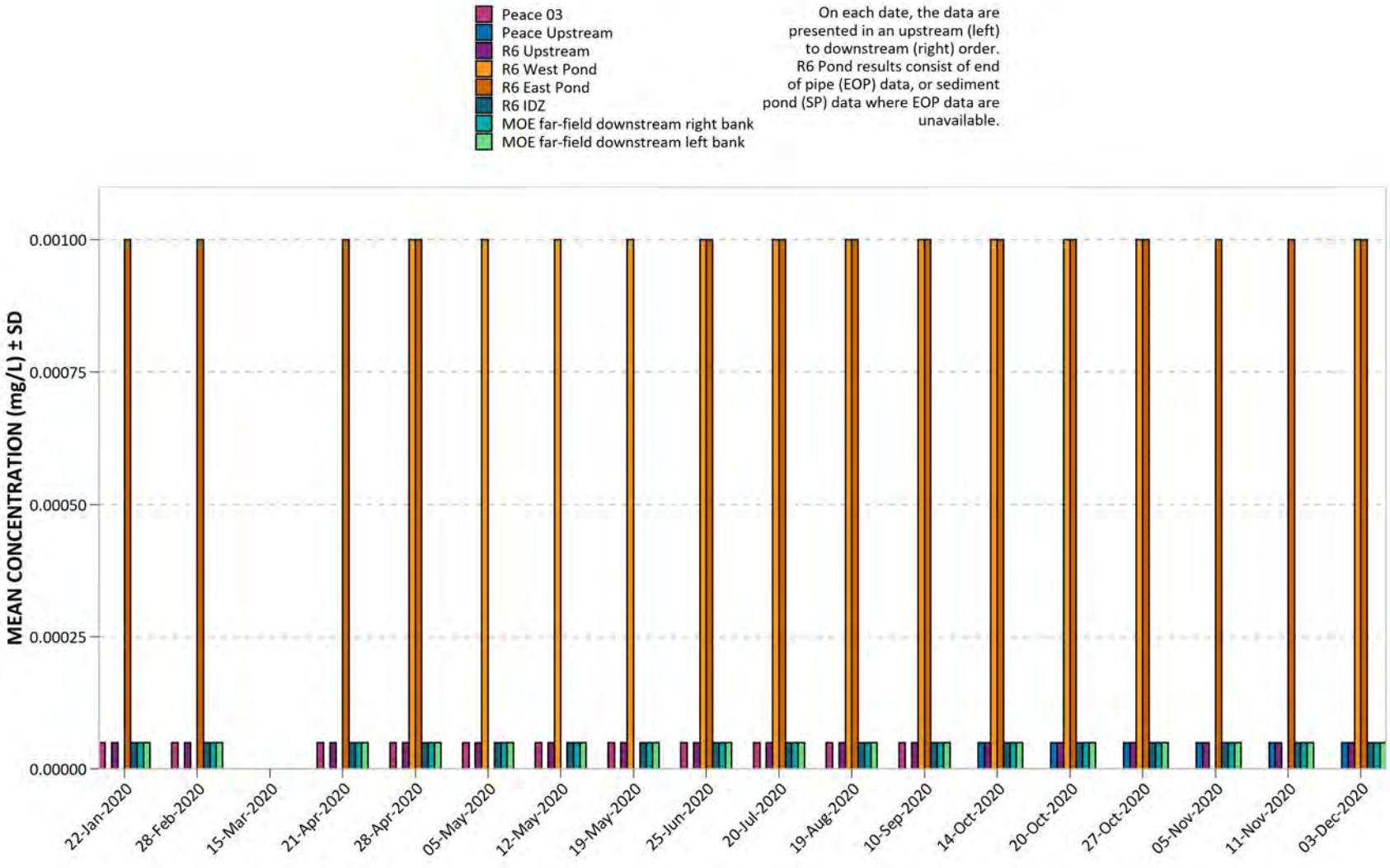


Figure 148. 2020 Peace River and RSEM R6 pond dissolved boron (B).

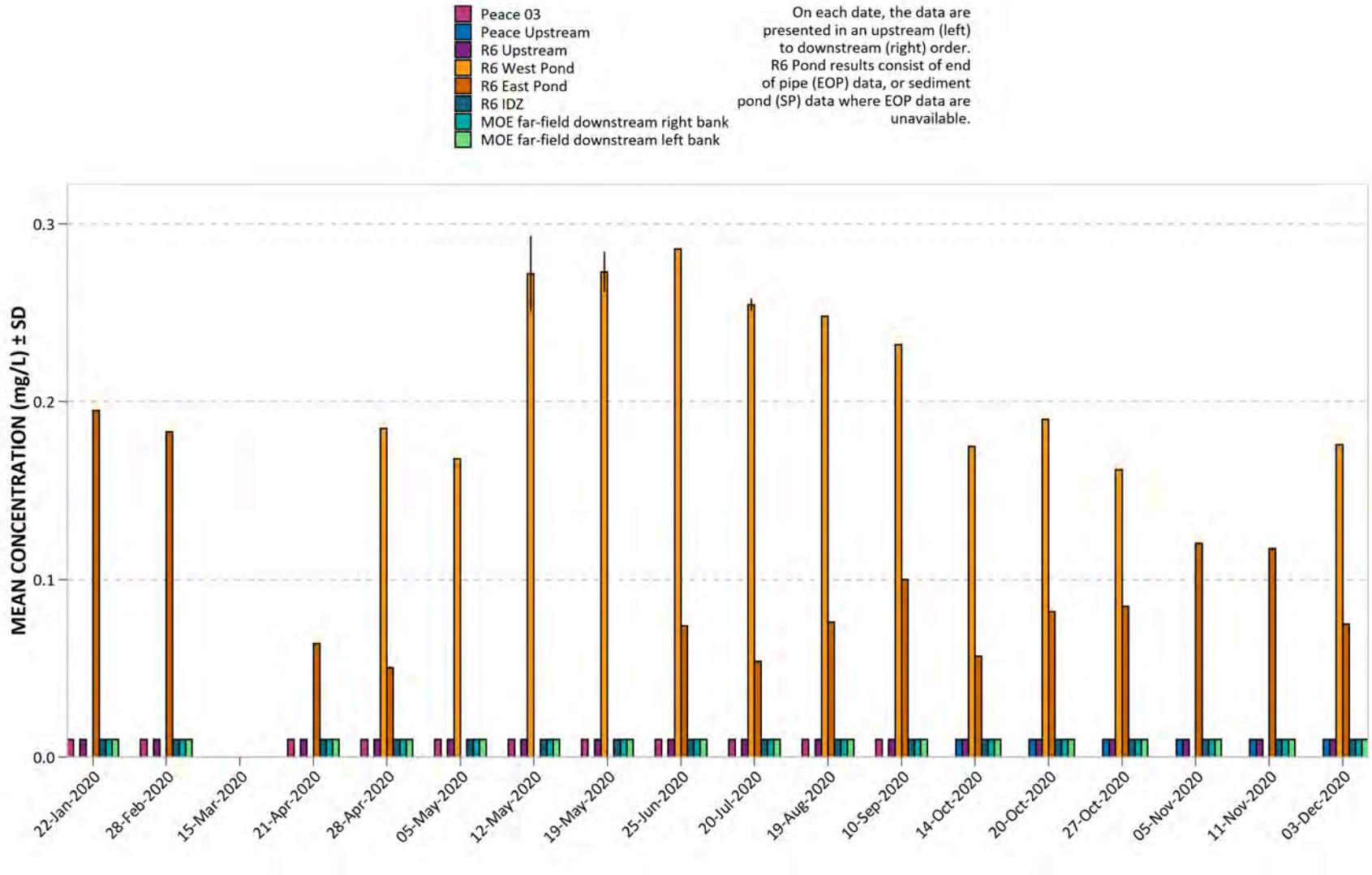


Figure 149. 2020 Peace River and RSEM R6 pond dissolved cadmium (Cd).

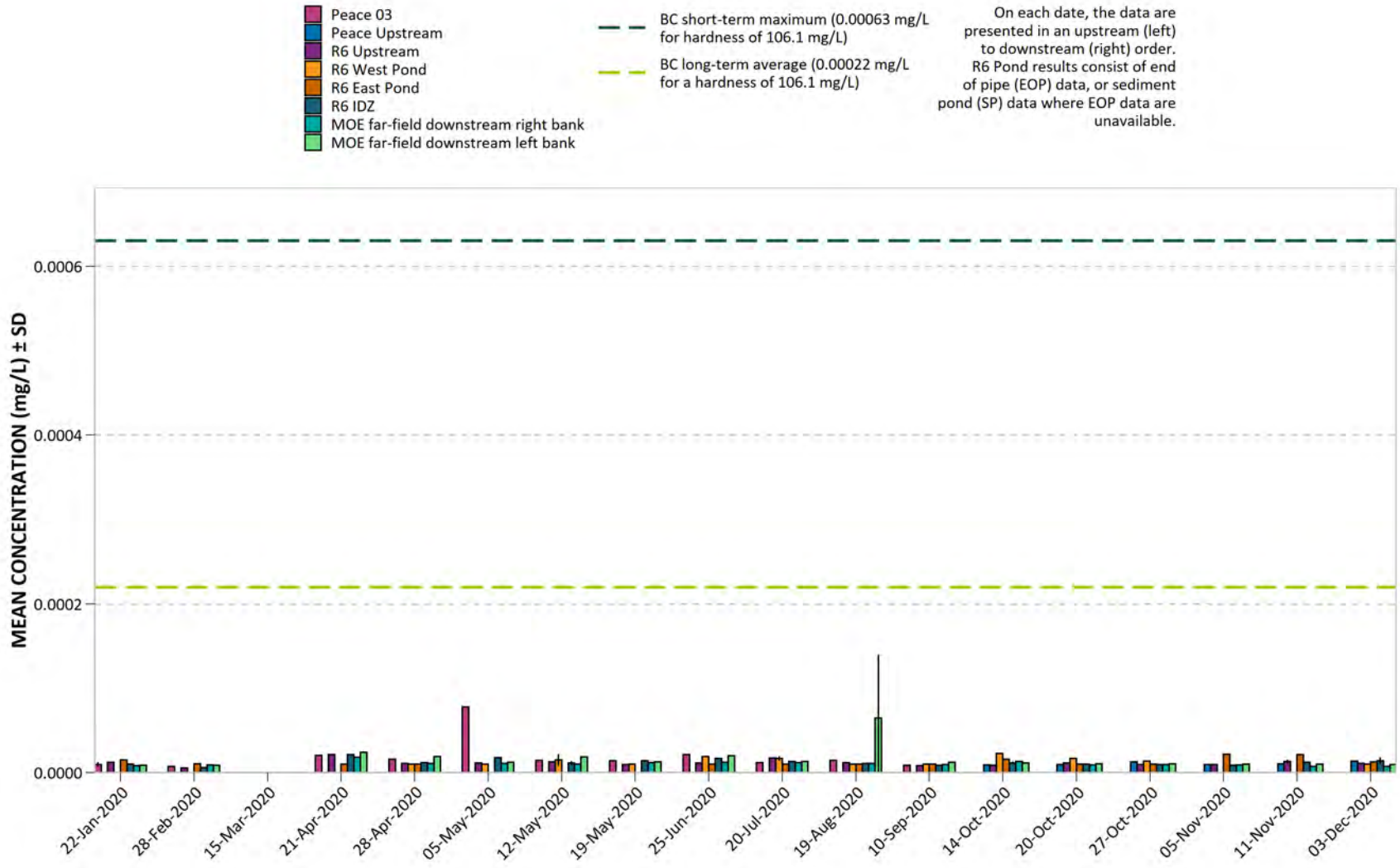


Figure 150. 2020 Peace River and RSEM R6 pond dissolved calcium (Ca).

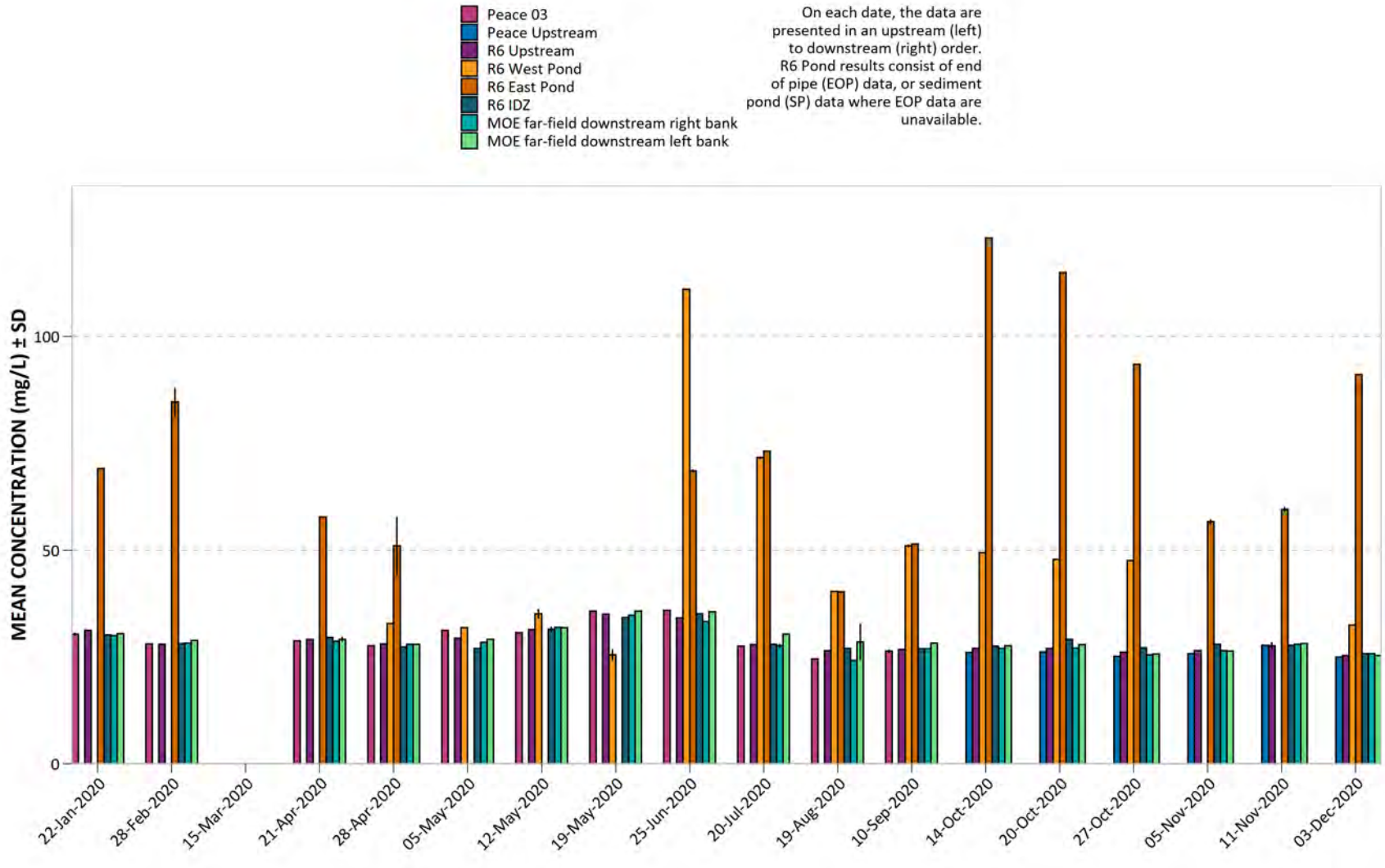


Figure 151. 2020 Peace River and RSEM R6 pond dissolved chromium (Cr).

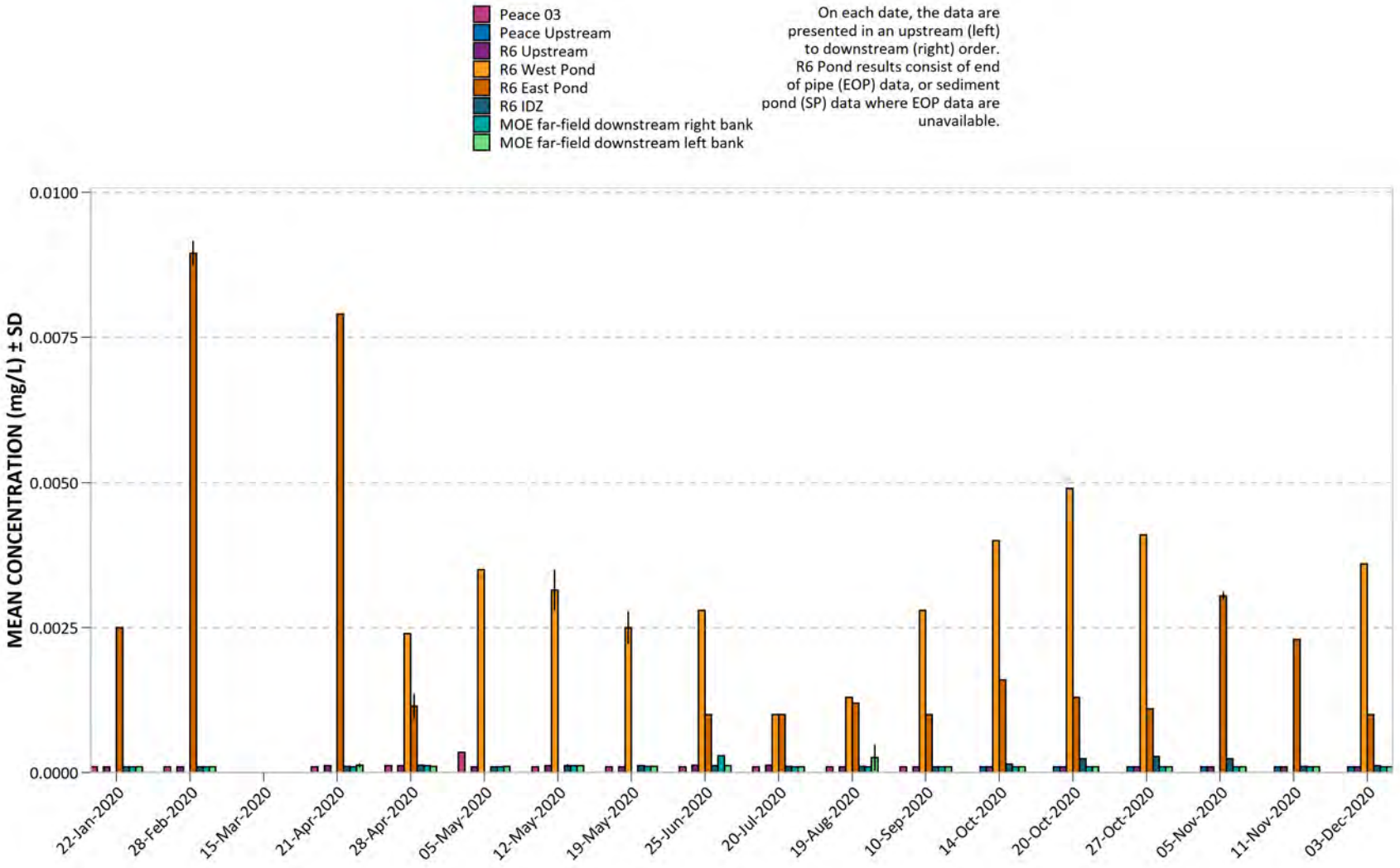


Figure 152. 2020 Peace River and RSEM R6 pond dissolved cobalt (Co).

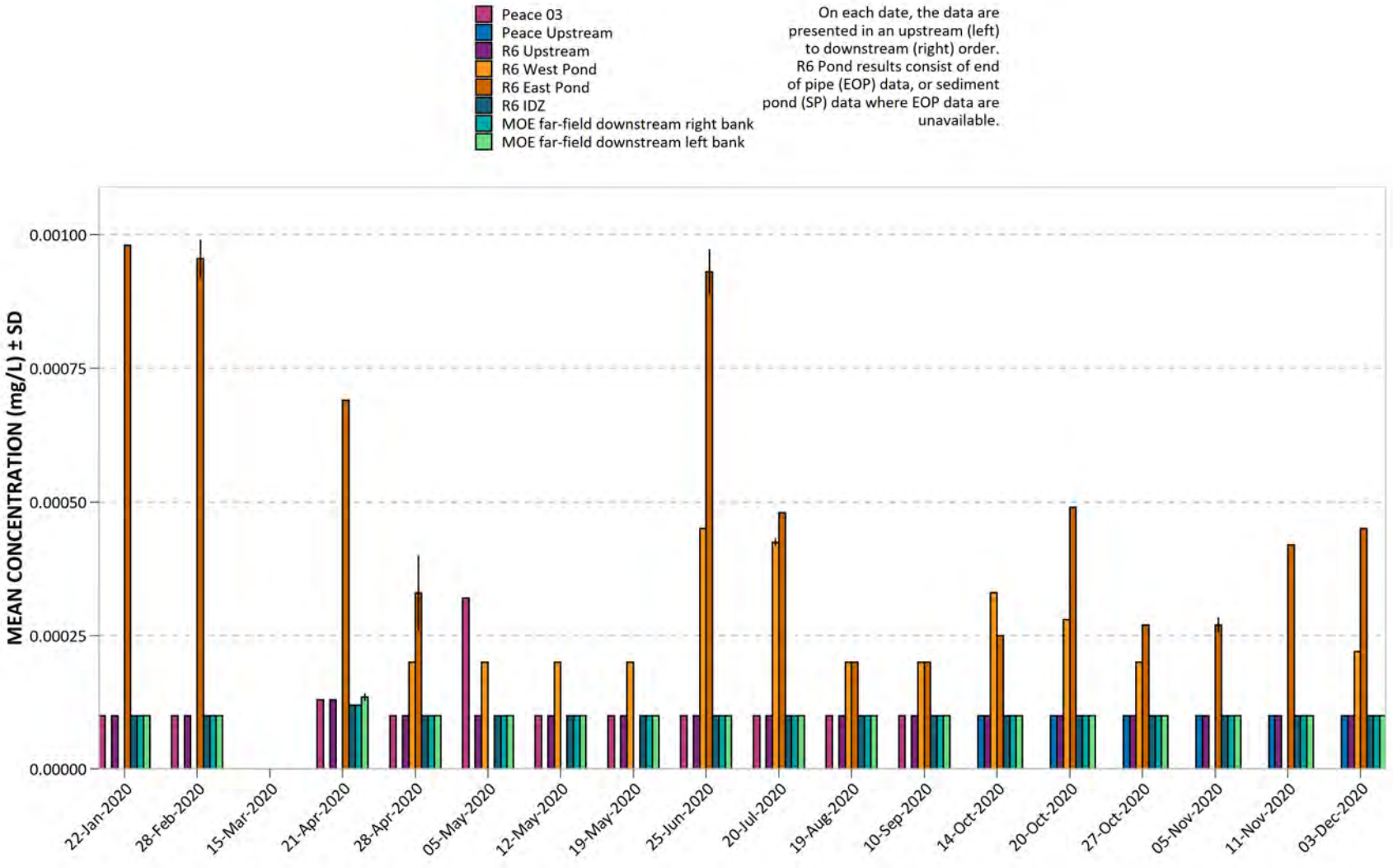


Figure 153. 2020 Peace River and RSEM R6 pond dissolved copper (Cu).

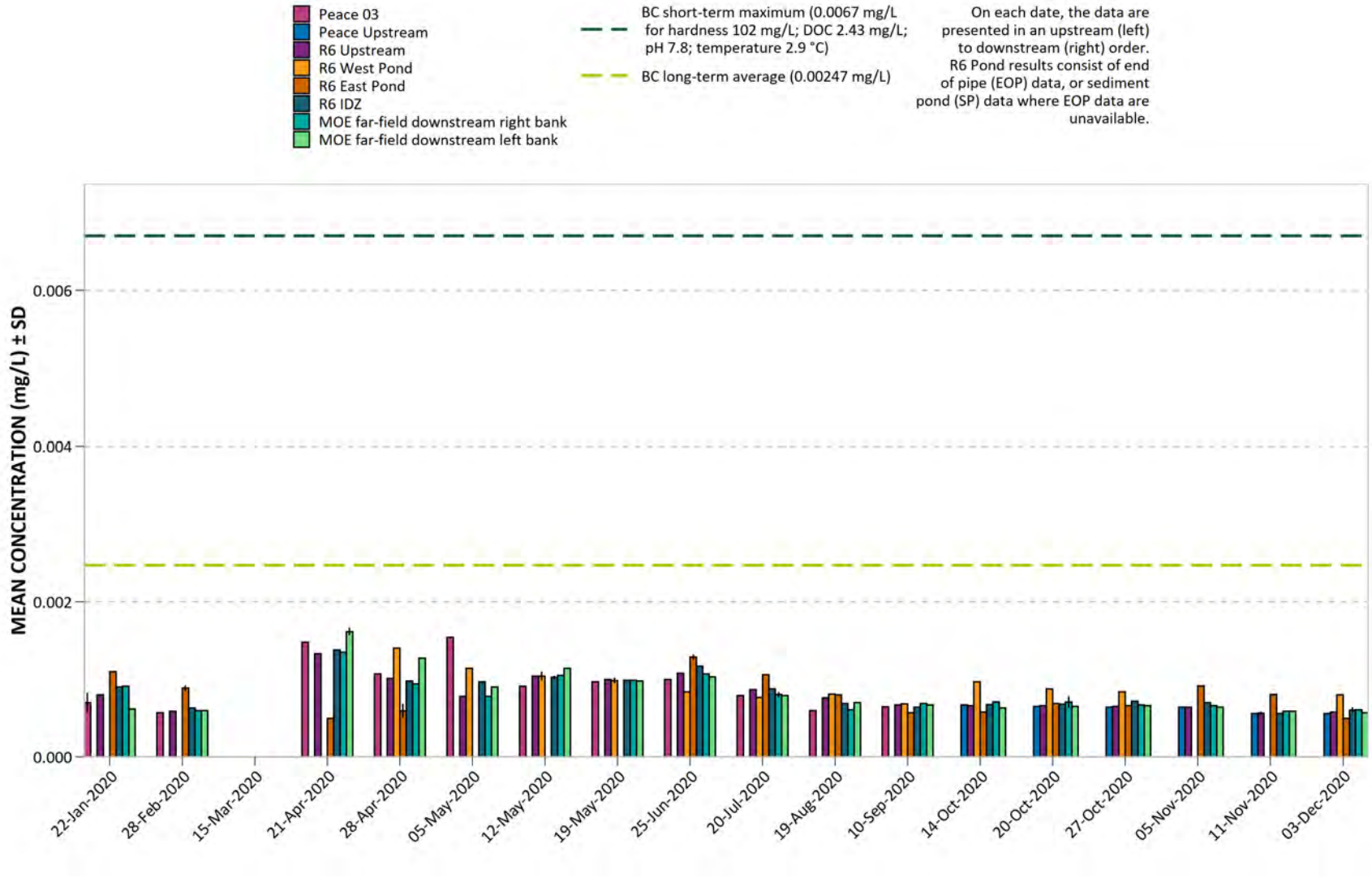


Figure 154. 2020 Peace River and RSEM R6 pond dissolved iron (Fe).

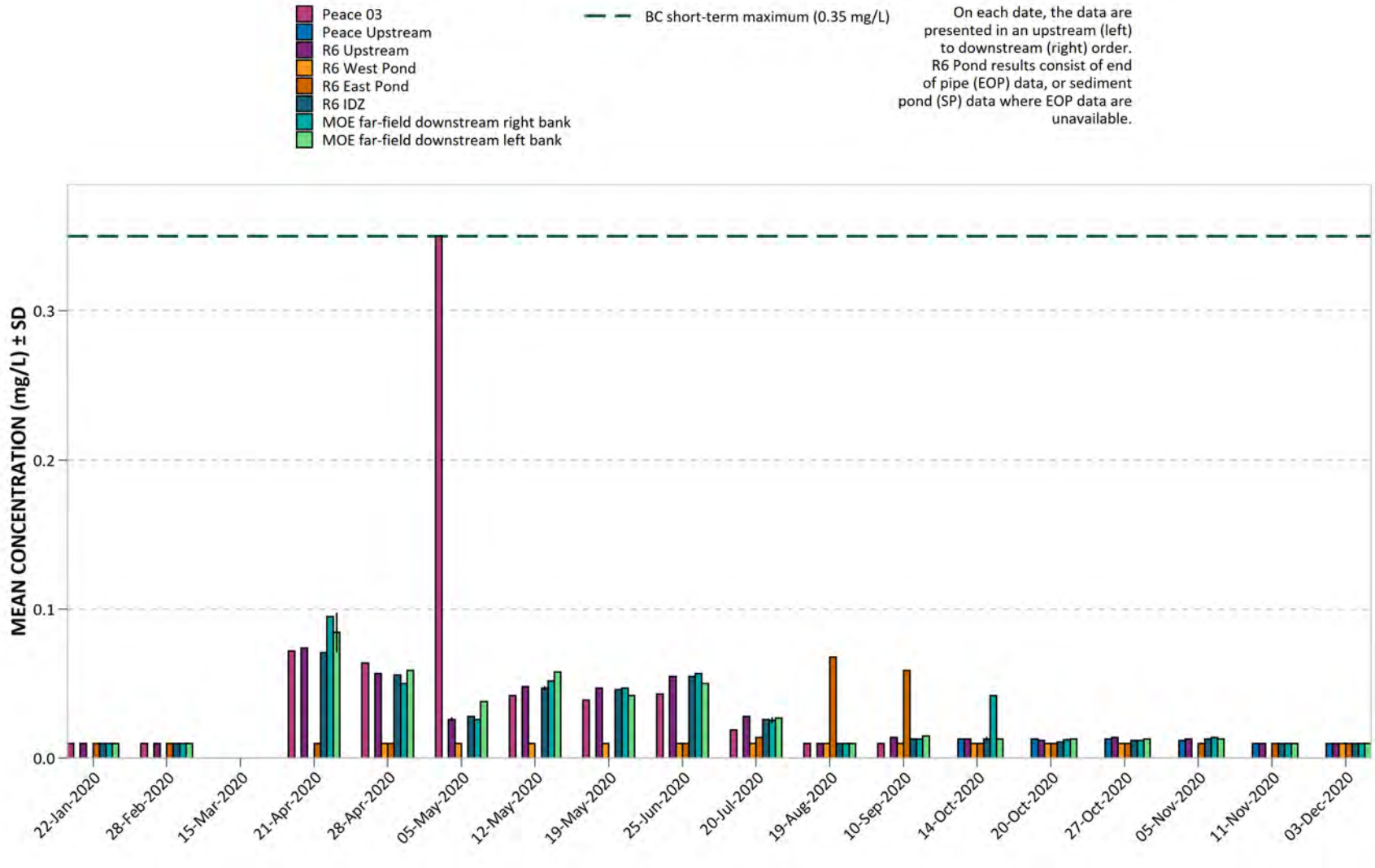


Figure 155. 2020 Peace River and RSEM R6 pond dissolved lead (Pb).

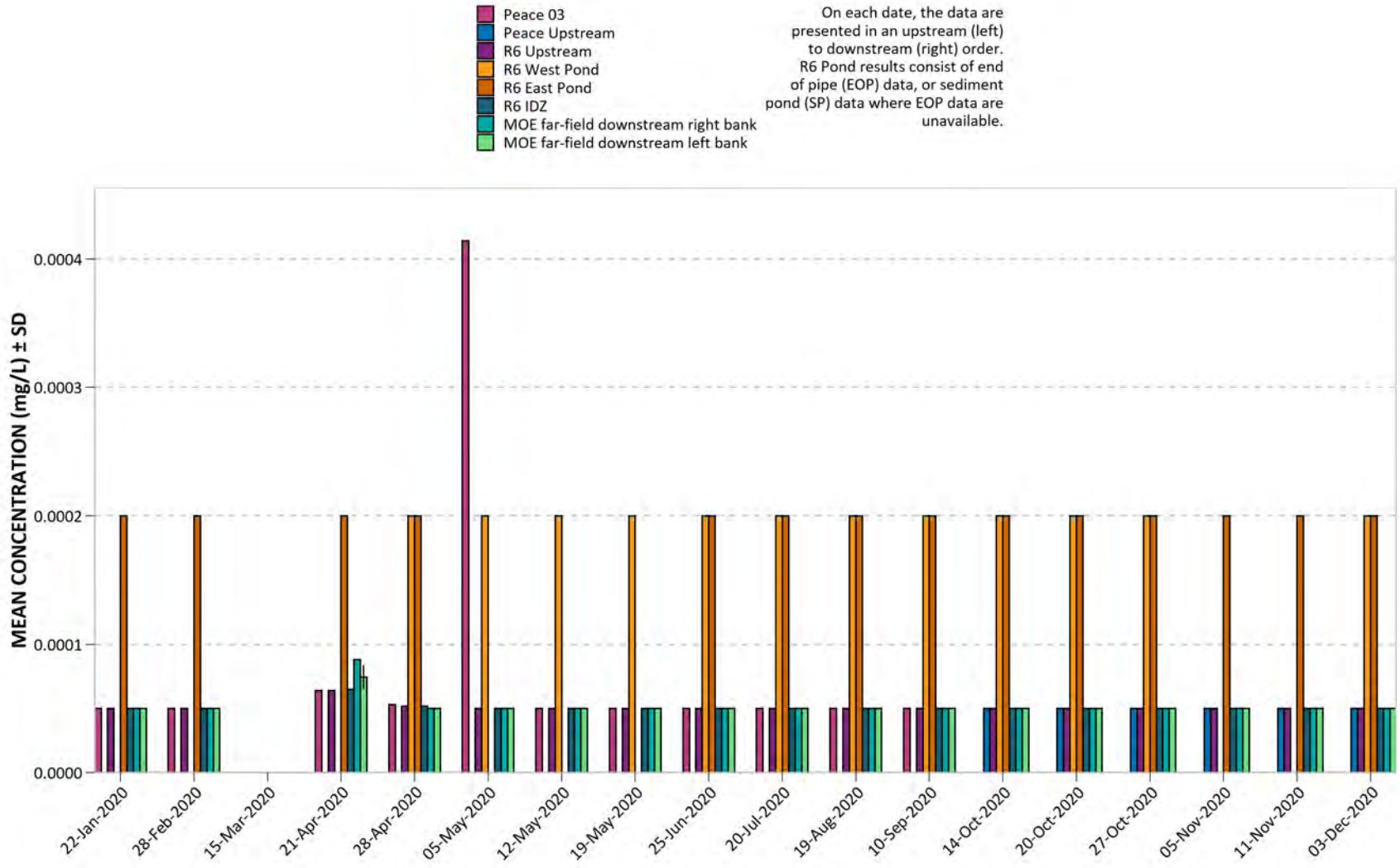


Figure 156. 2020 Peace River and RSEM R6 pond dissolved lithium (Li).

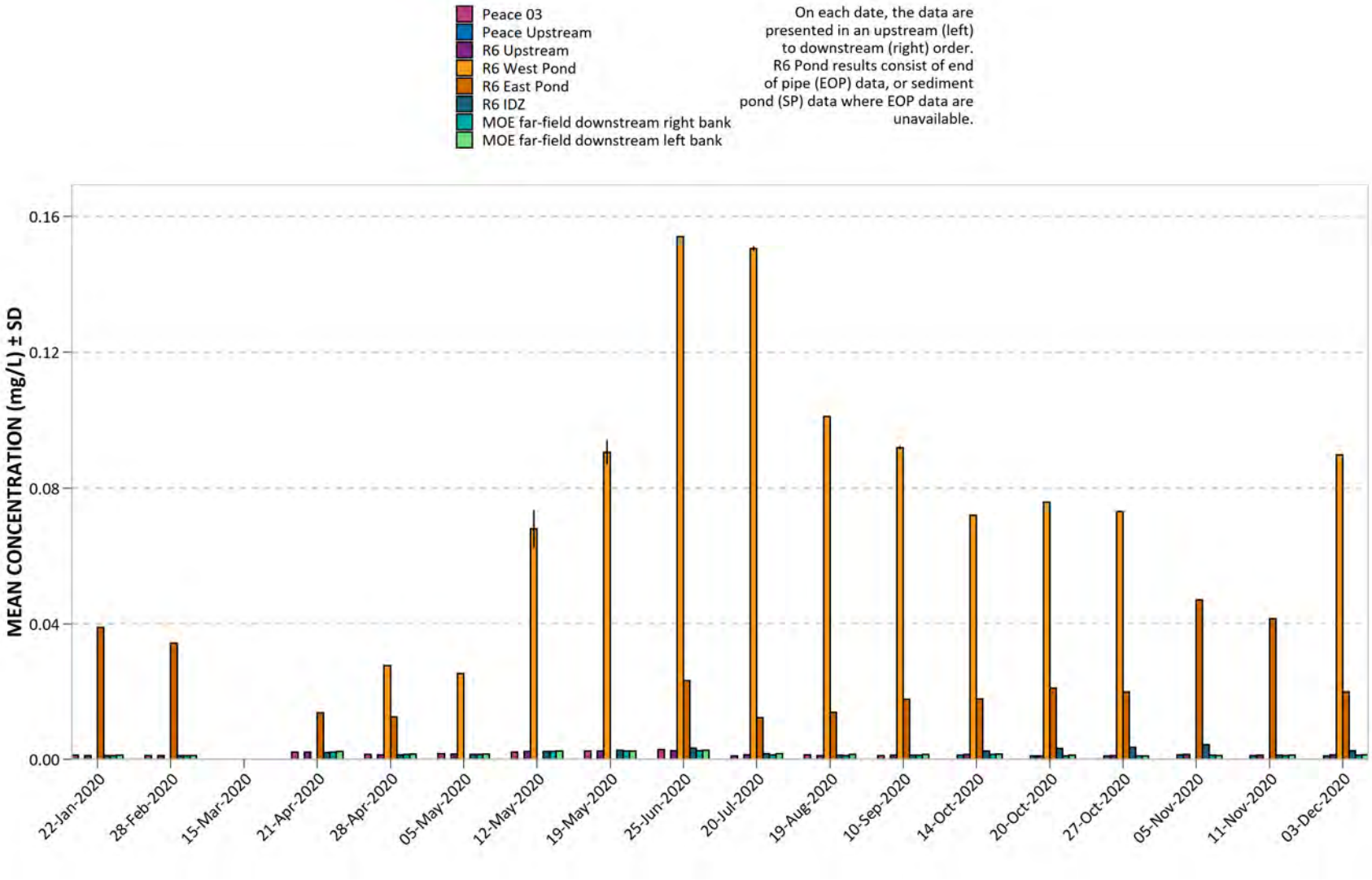


Figure 157. 2020 Peace River and RSEM R6 pond dissolved magnesium (Mg).

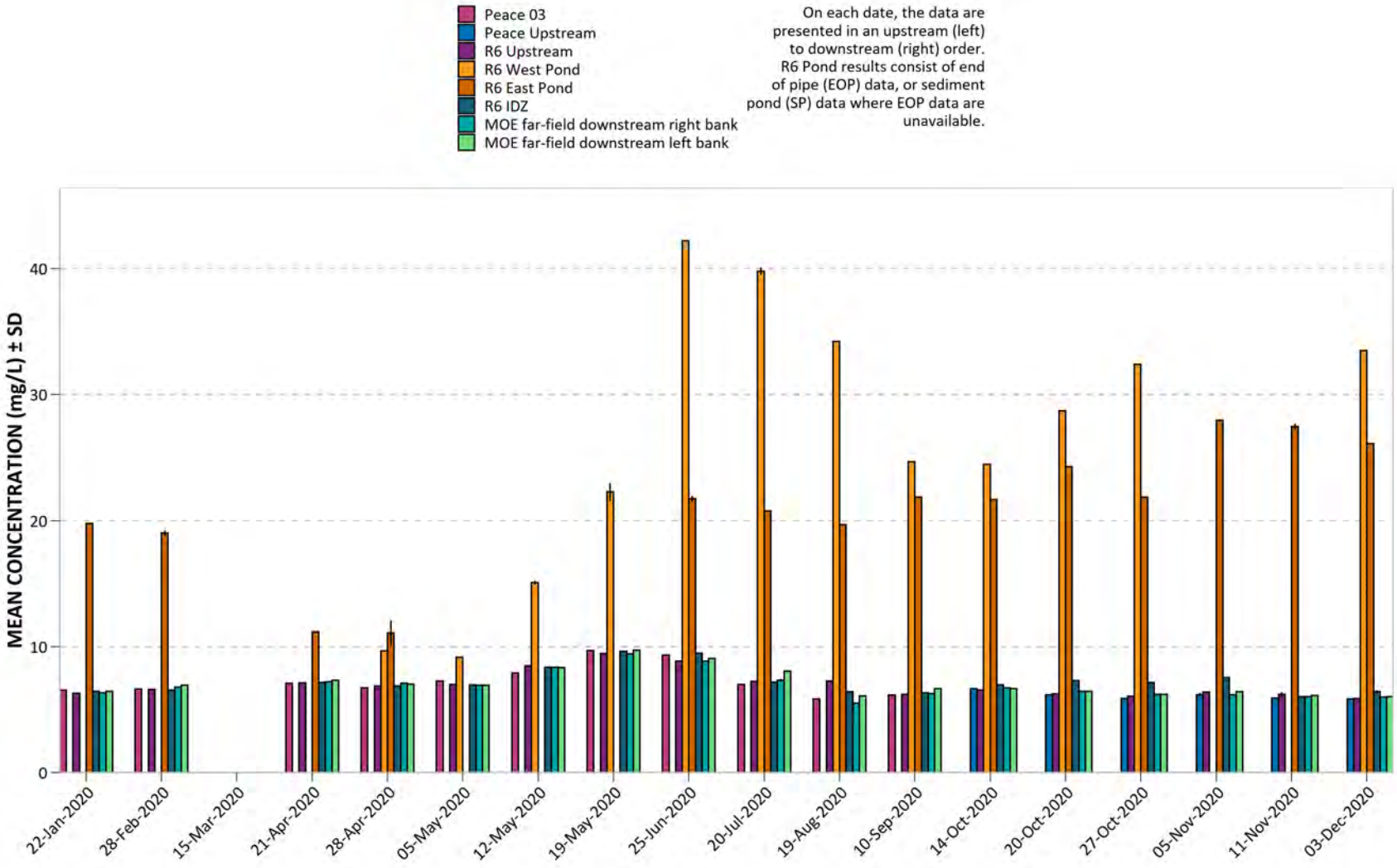


Figure 158. 2020 Peace River and RSEM R6 pond dissolved manganese (Mn).

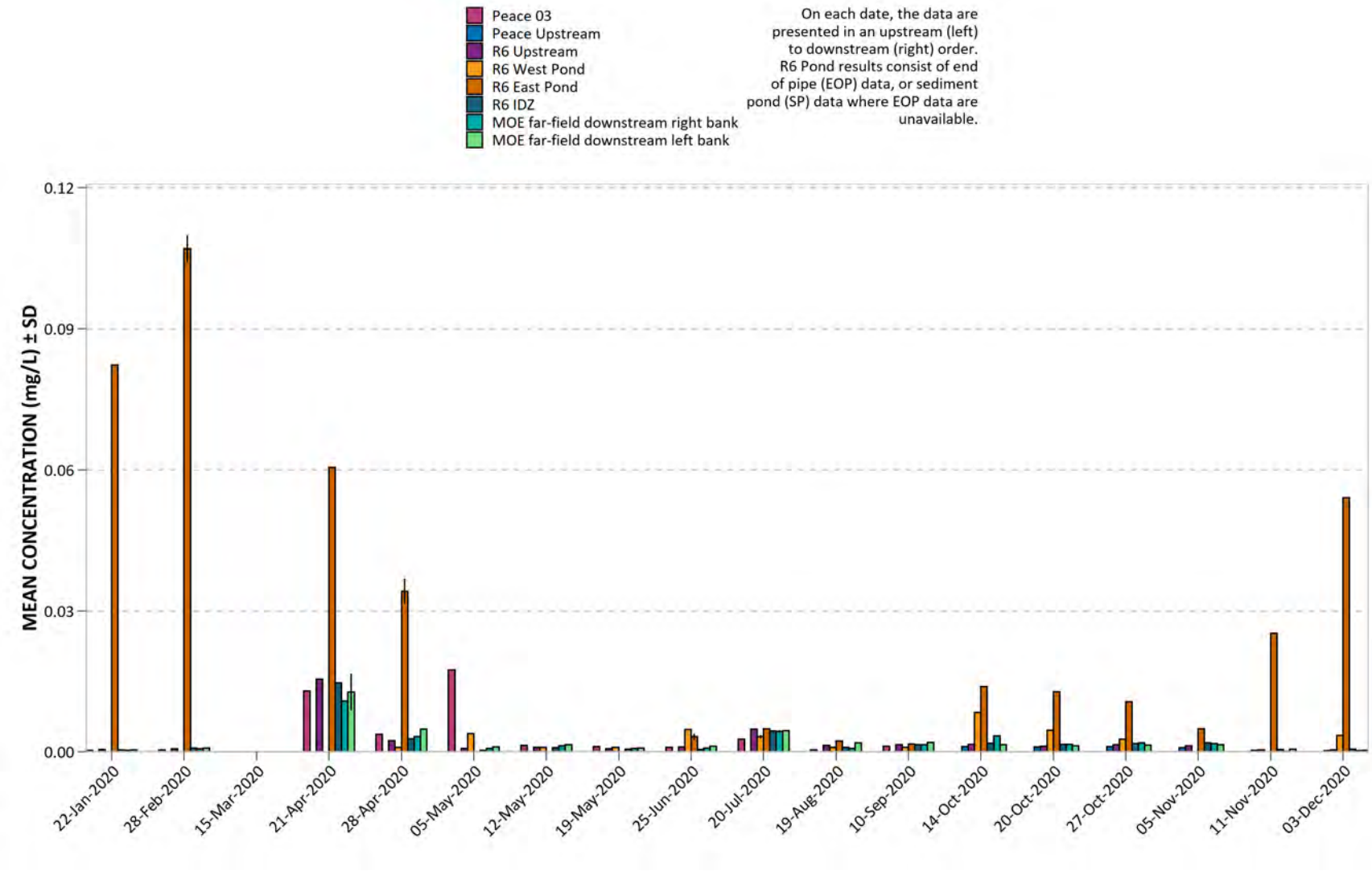


Figure 159. 2020 Peace River and RSEM R6 pond dissolved mercury (Hg).

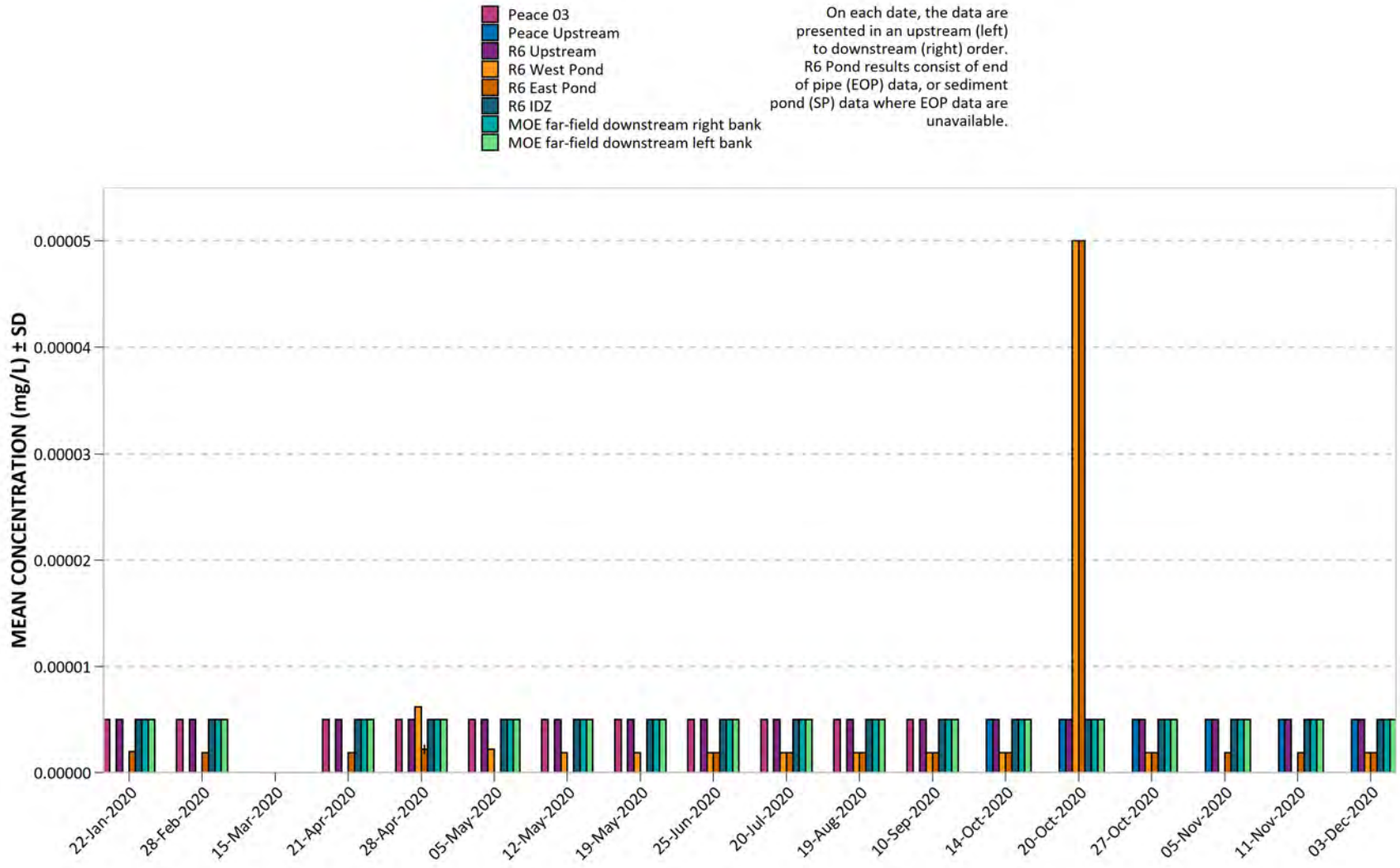


Figure 160. 2020 Peace River and RSEM R6 pond dissolved molybdenum (Mo).

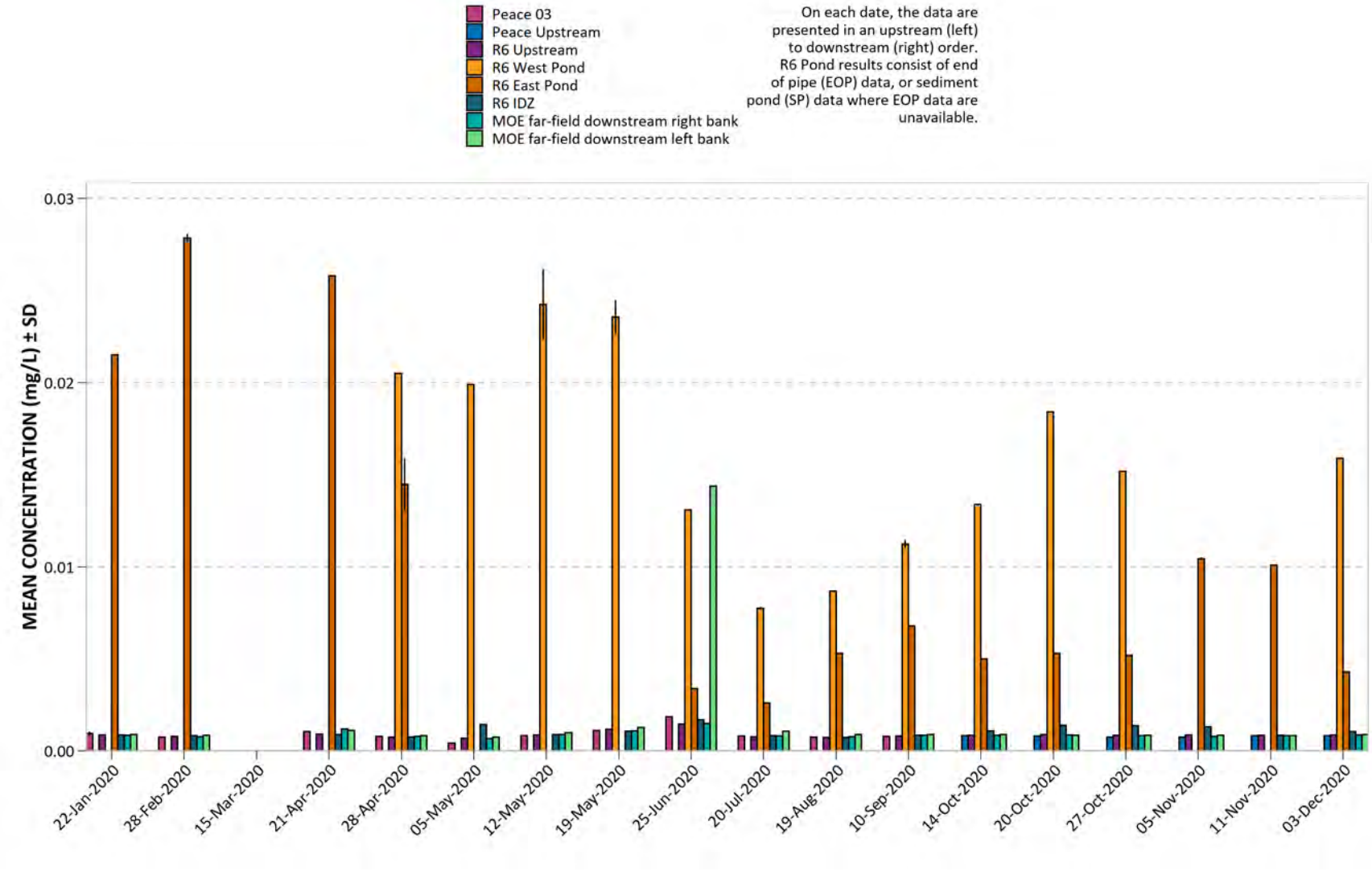


Figure 161. 2020 Peace River and RSEM R6 pond dissolved nickel (Ni).

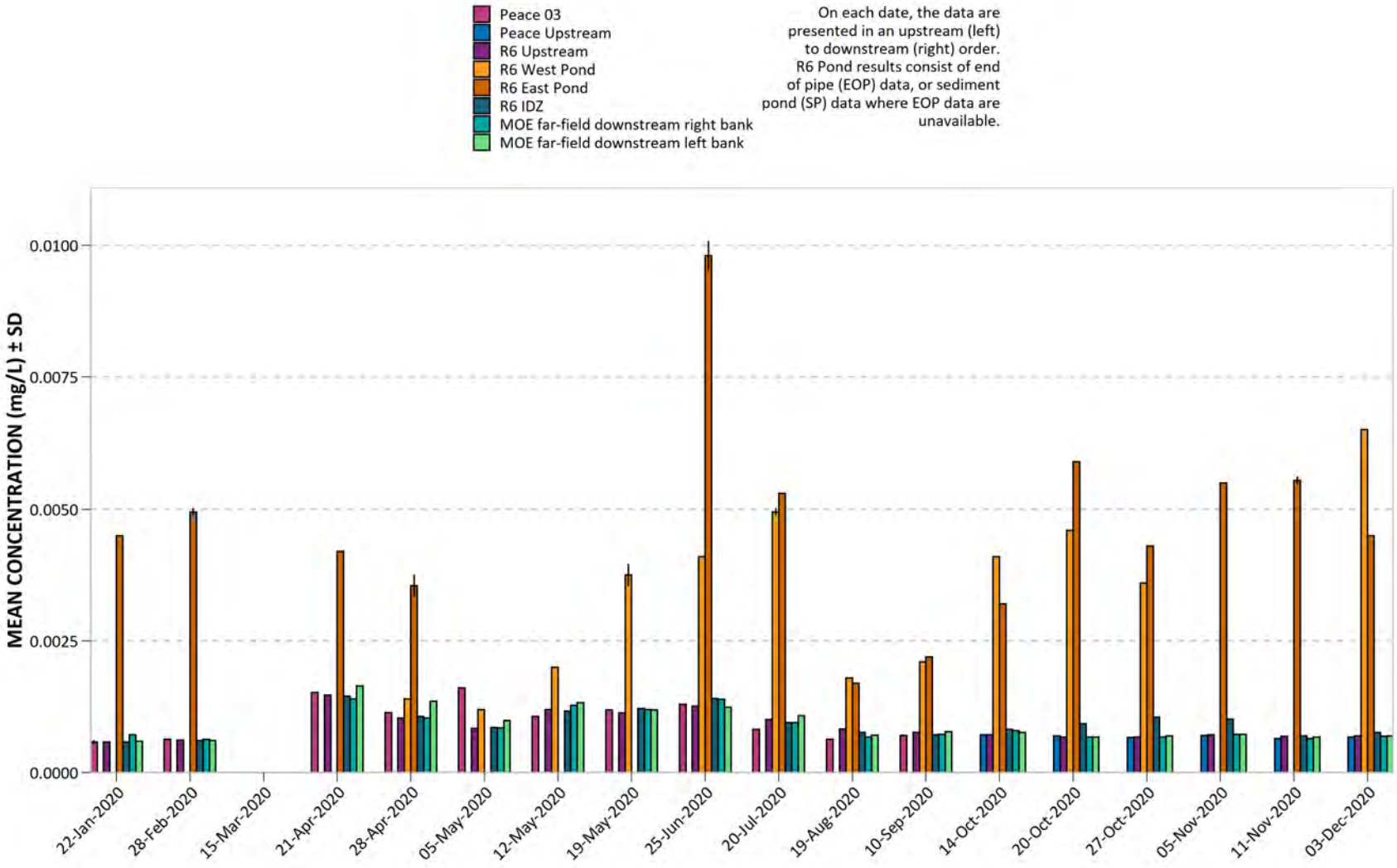


Figure 162. 2020 Peace River and RSEM R6 pond dissolved potassium (K).

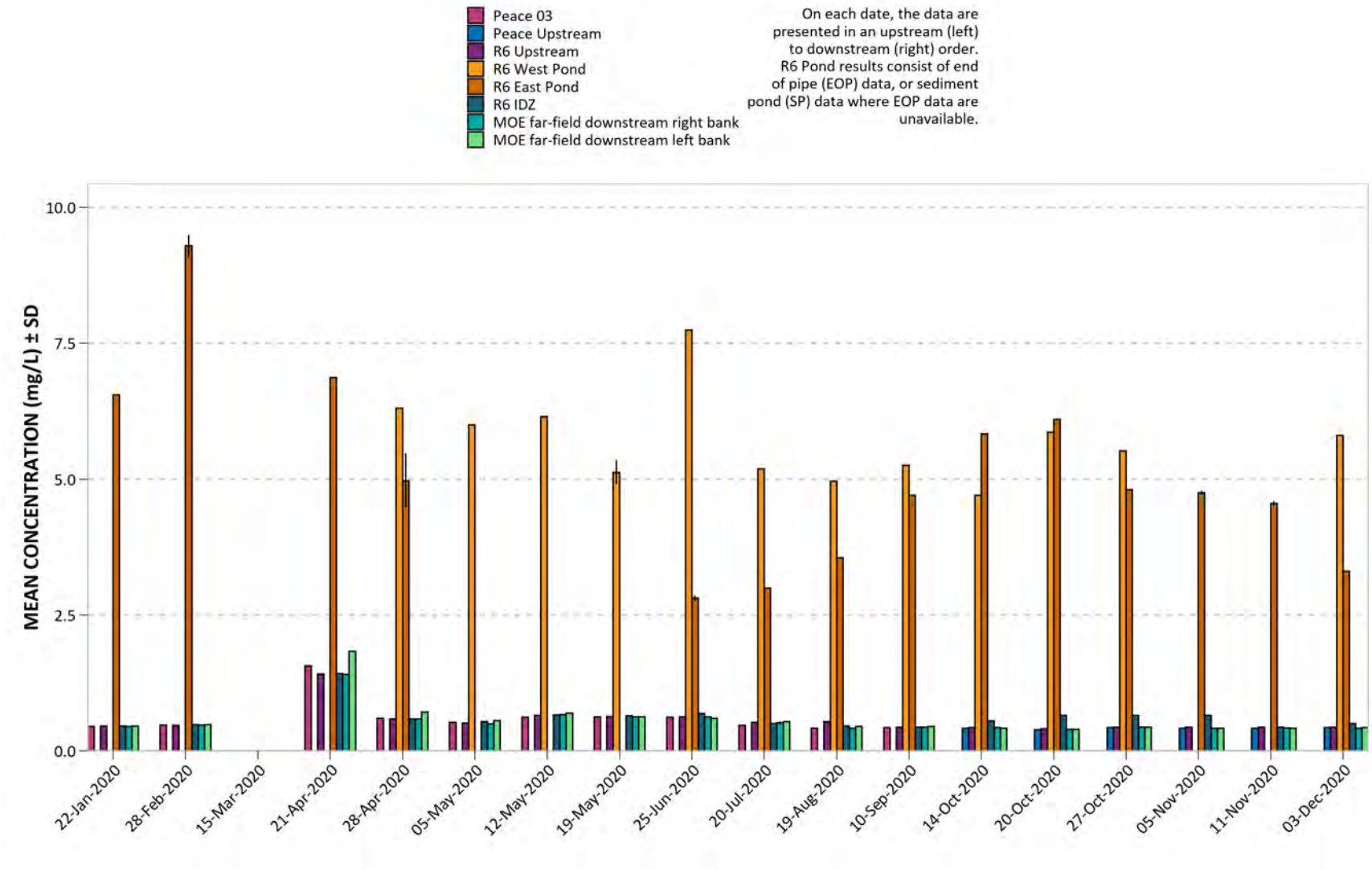


Figure 163. 2020 Peace River and RSEM R6 pond dissolved selenium (Se).

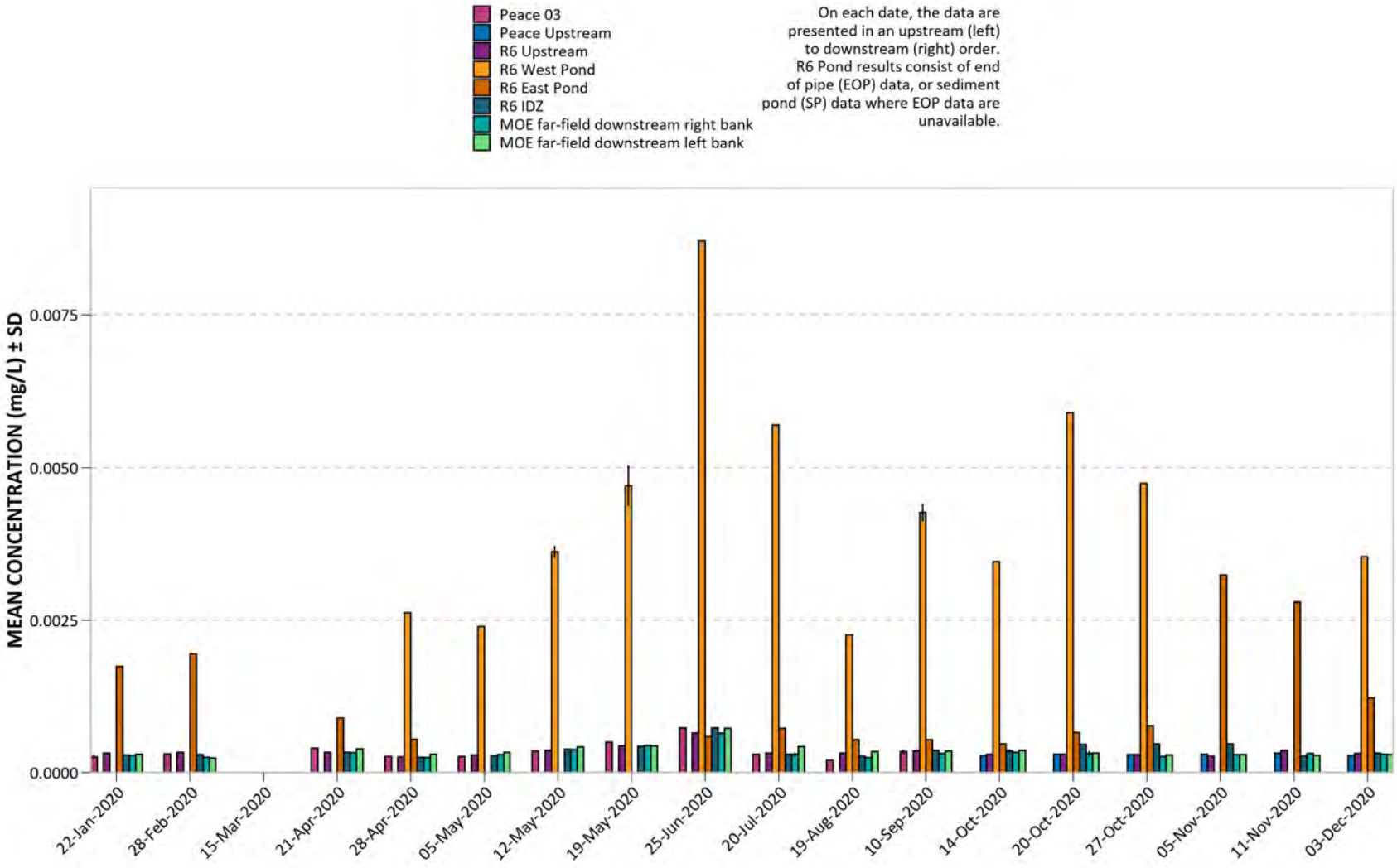


Figure 164. 2020 Peace River and RSEM R6 pond dissolved silicon (Si).

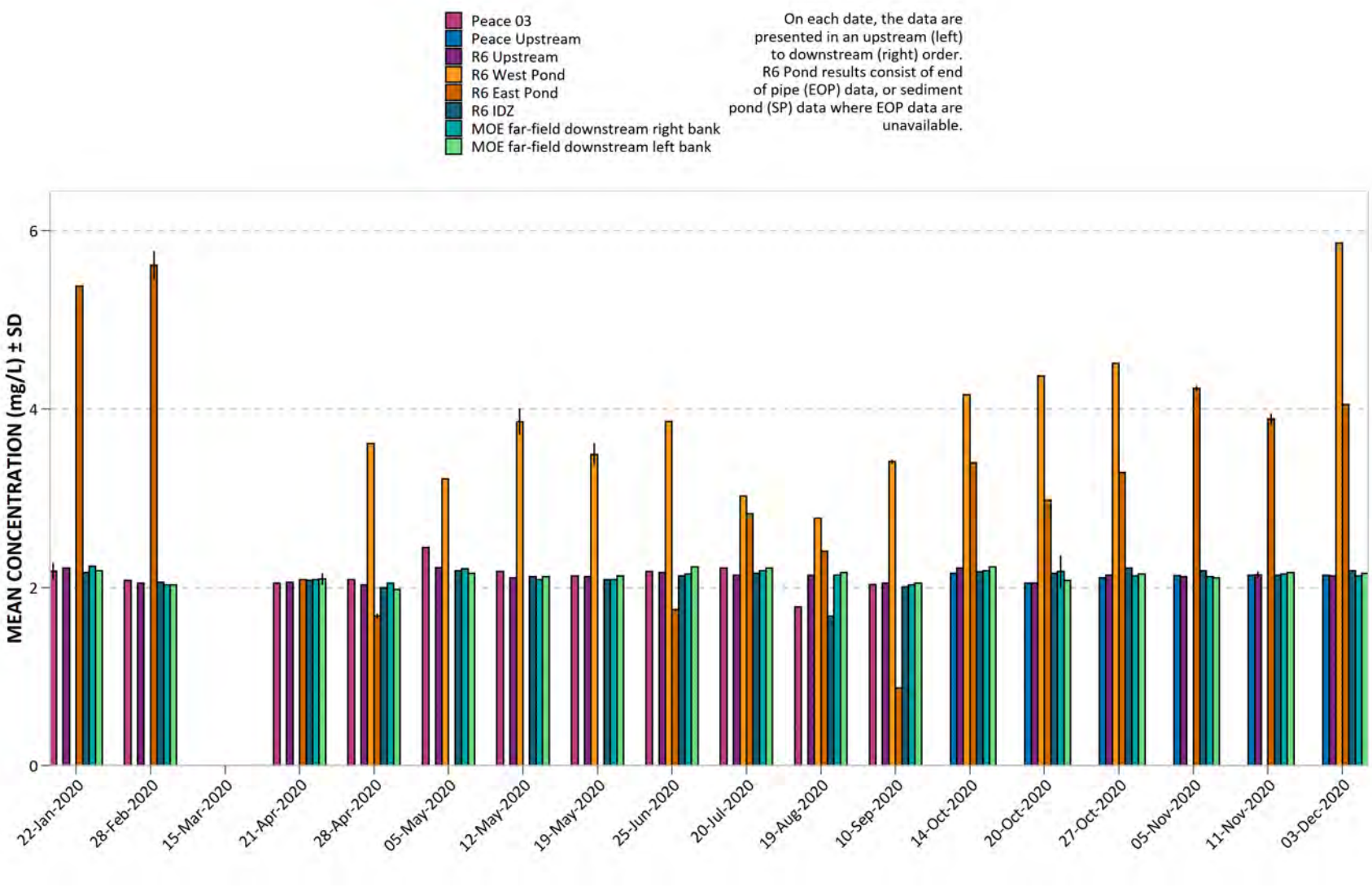


Figure 165. 2020 Peace River and RSEM R6 pond dissolved silver (Ag).

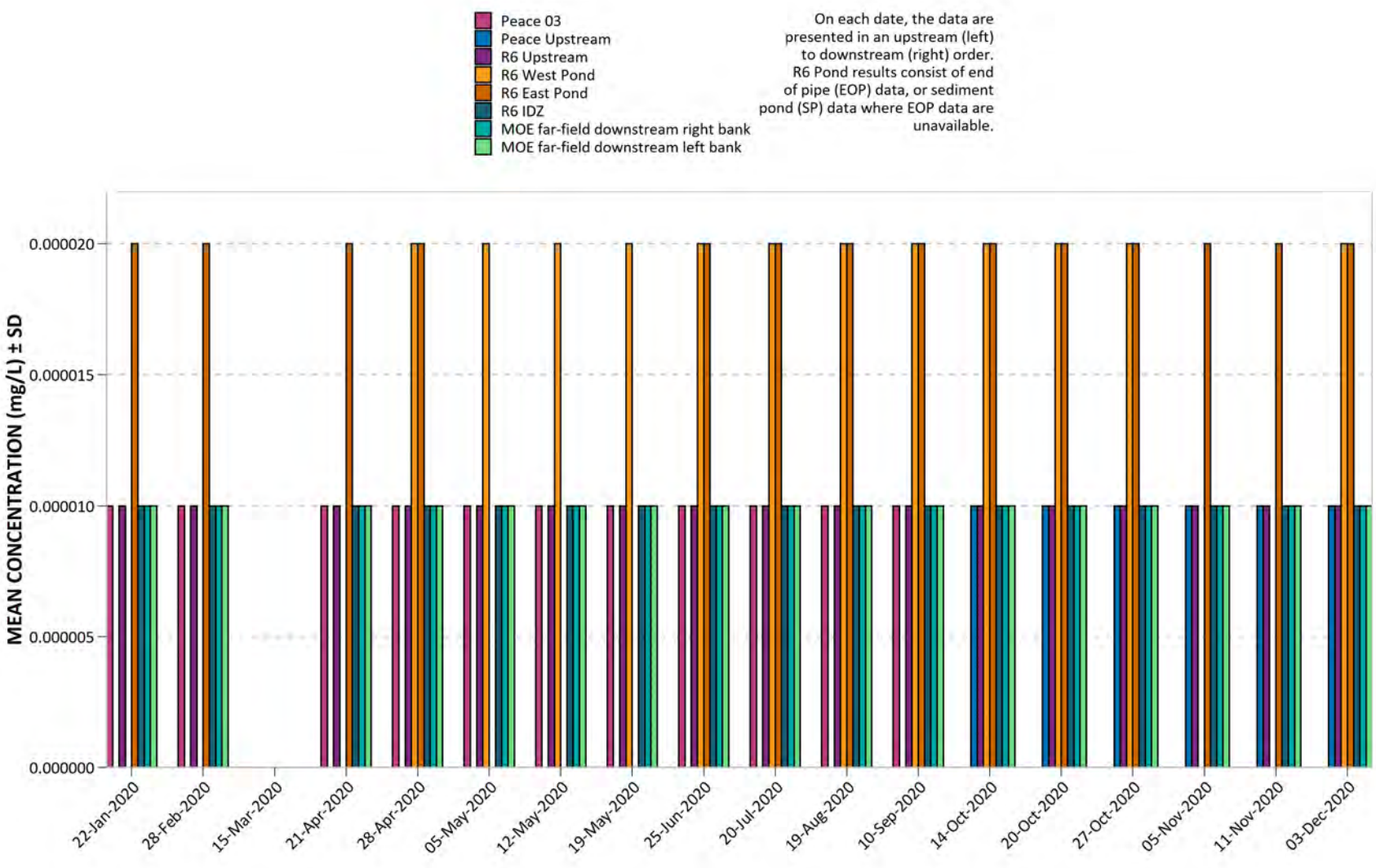


Figure 166. 2020 Peace River and RSEM R6 pond dissolved sodium (Na).

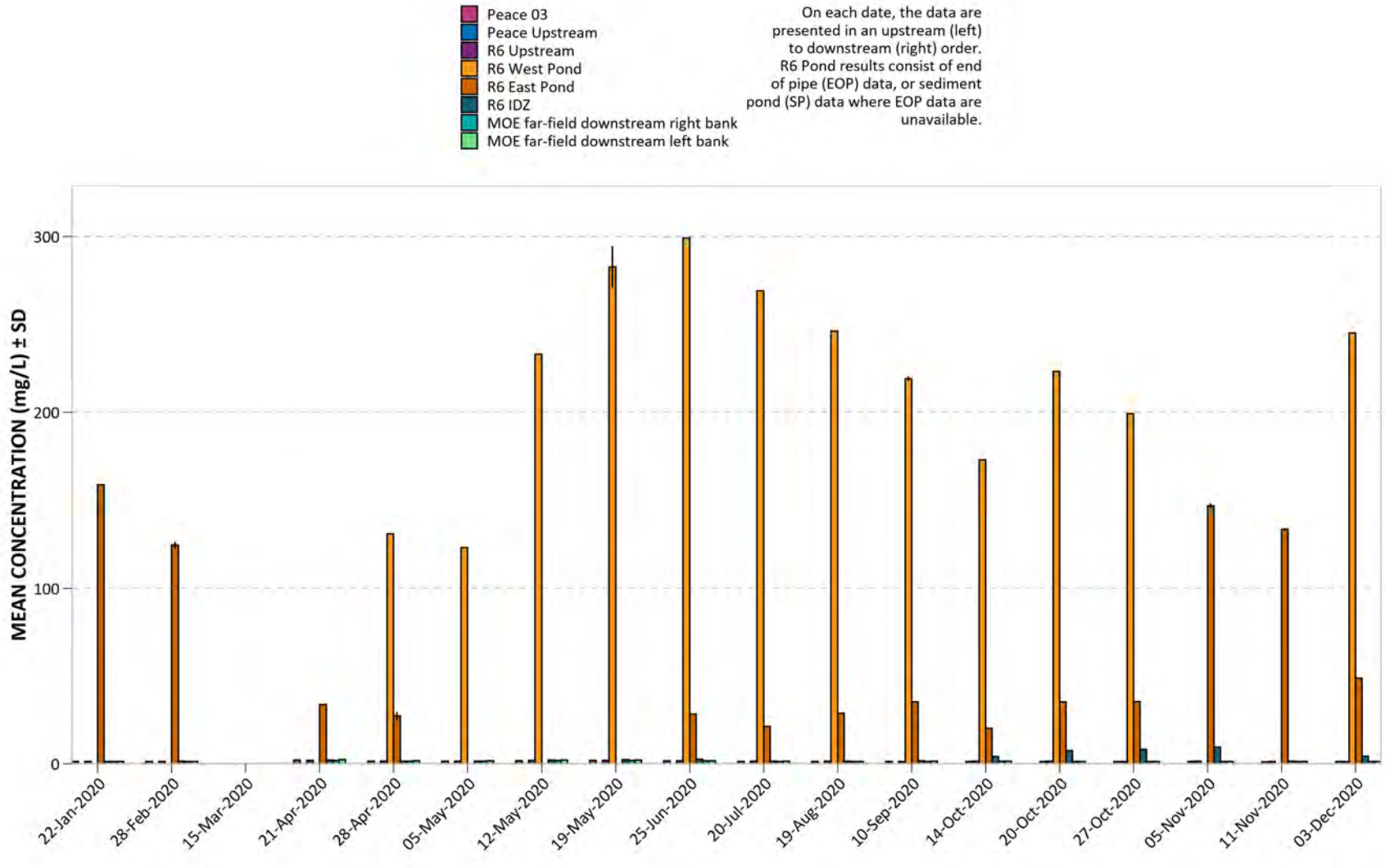


Figure 167. 2020 Peace River and RSEM R6 pond dissolved strontium (Sr).

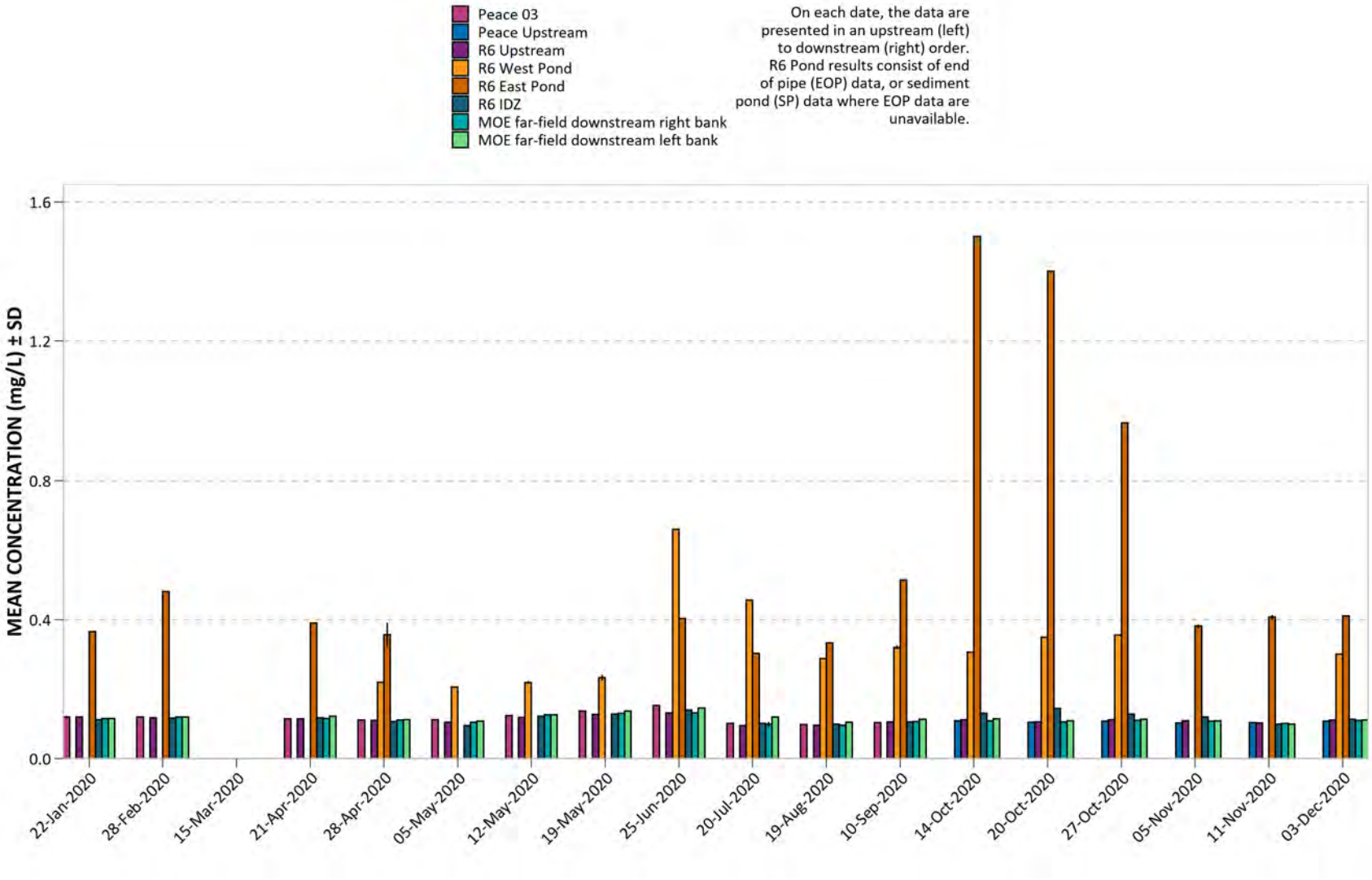


Figure 168. 2020 Peace River and RSEM R6 pond dissolved sulfur (S).

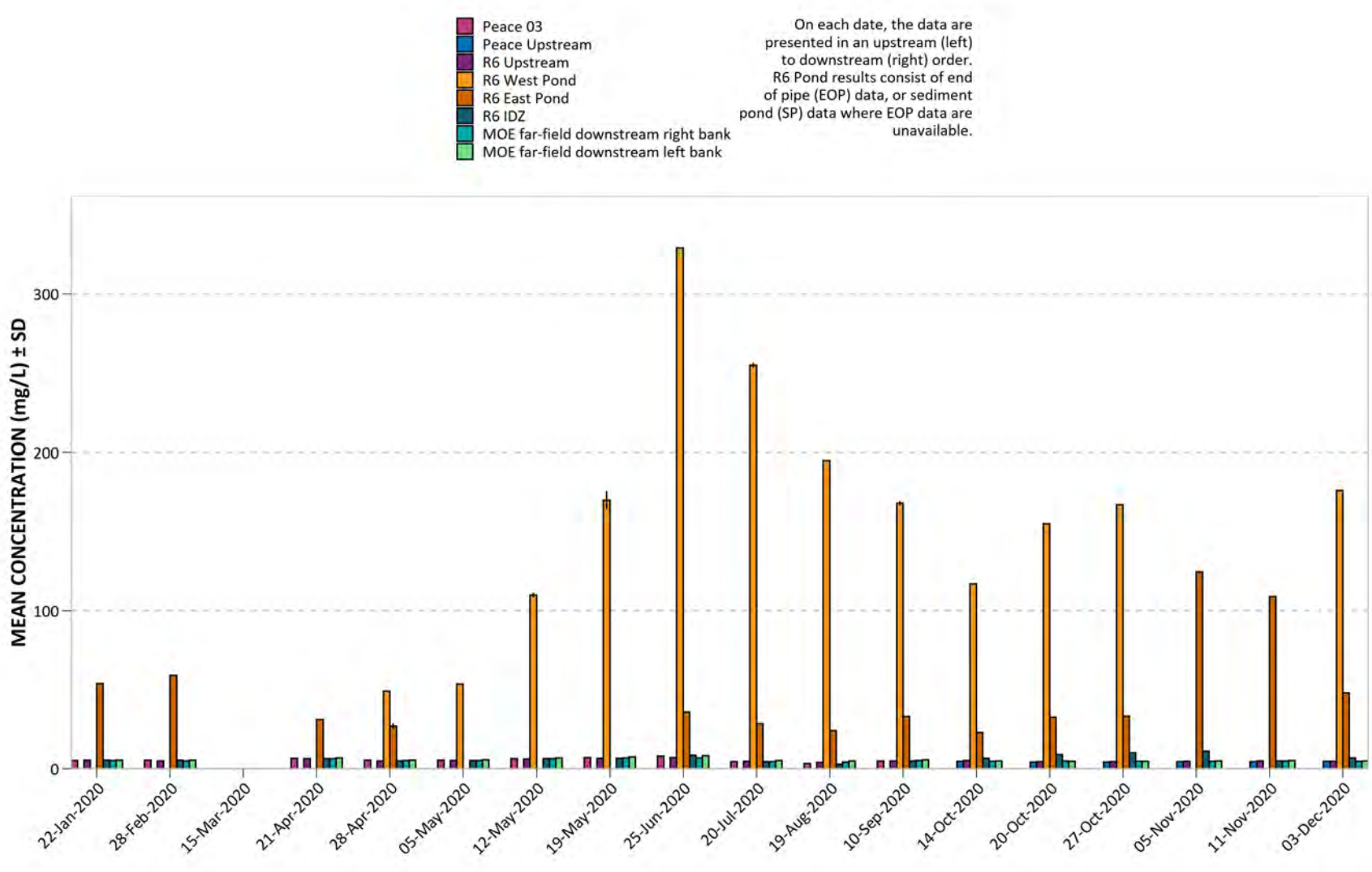


Figure 169. 2020 Peace River and RSEM R6 pond dissolved thallium (Tl).

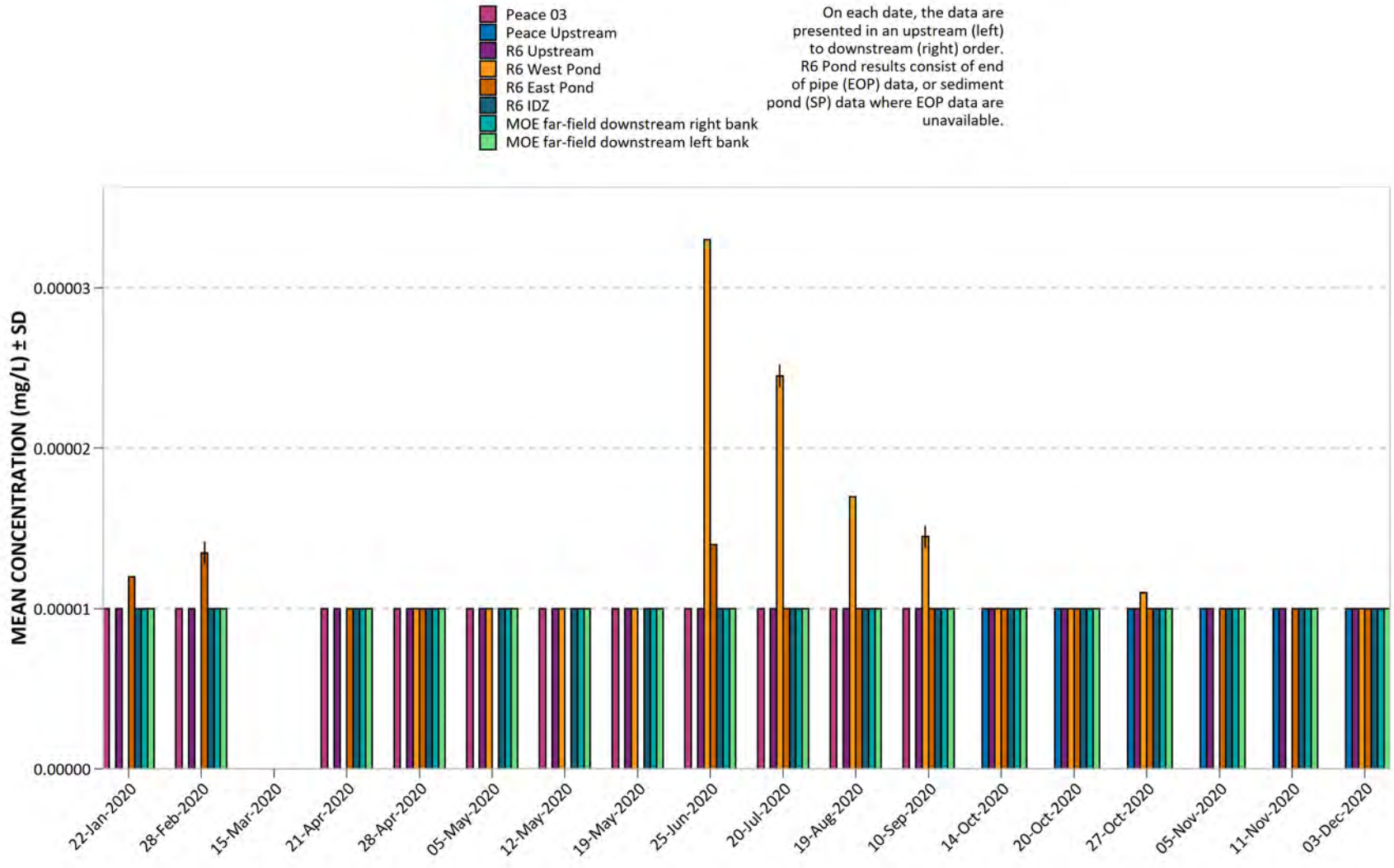


Figure 170. 2020 Peace River and RSEM R6 pond dissolved tin (Sn).

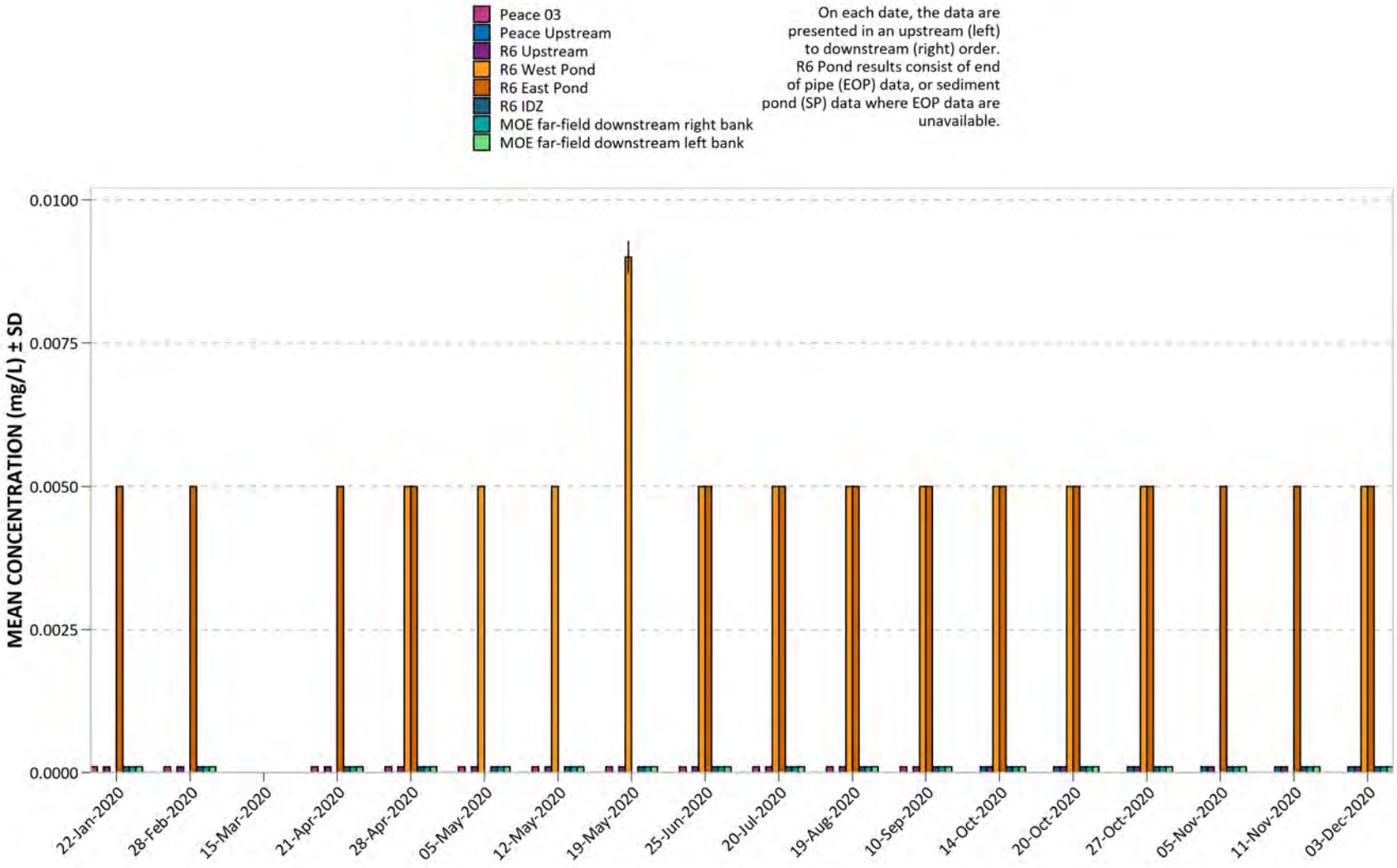


Figure 171. 2019 Peace River and RSEM R6 pond dissolved titanium (Ti).

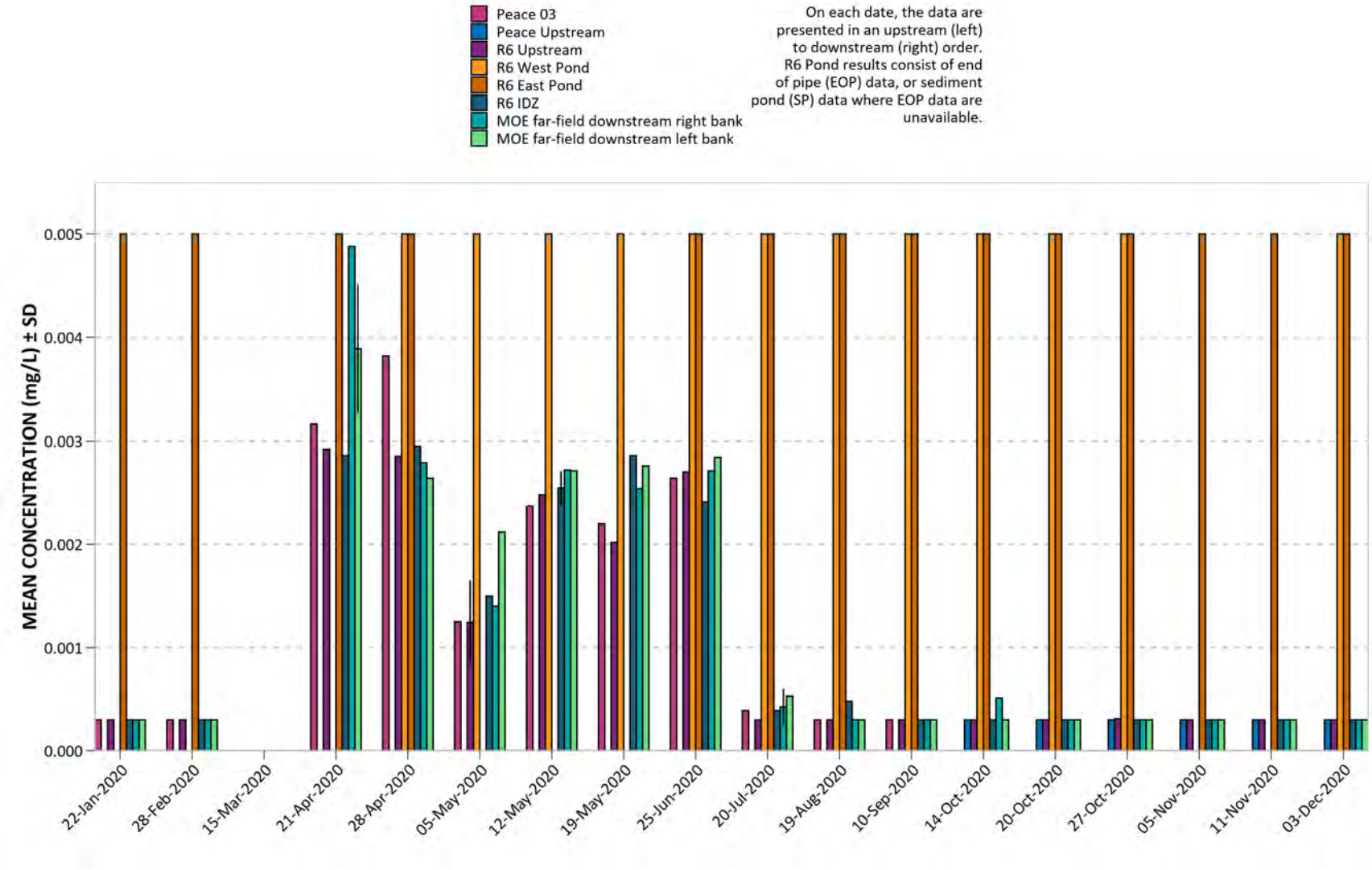


Figure 172. 2020 Peace River and RSEM R6 pond dissolved uranium (U).

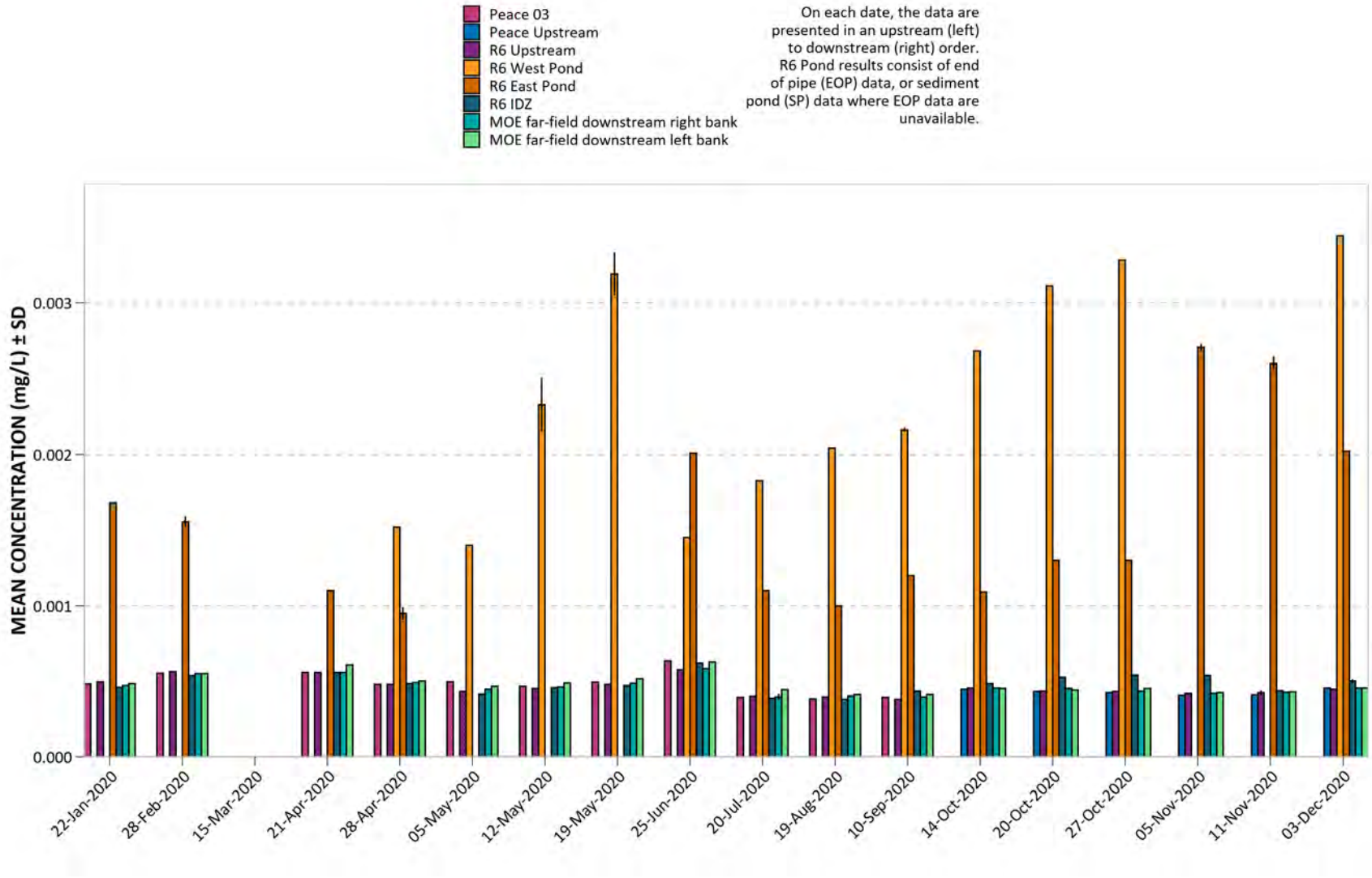


Figure 173. 2020 Peace River and RSEM R6 pond dissolved vanadium (V).

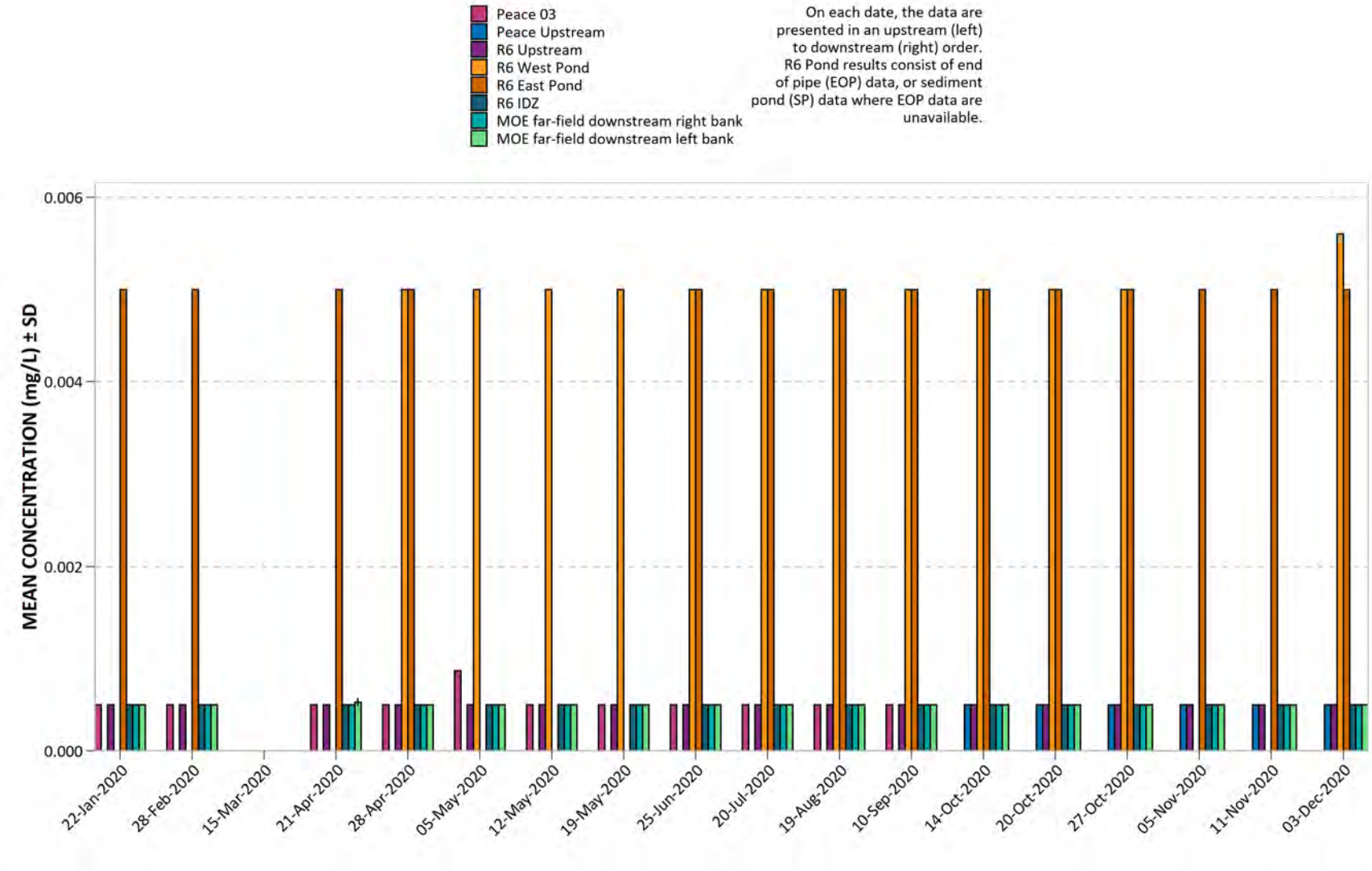


Figure 174. 2019 Peace River and RSEM R6 pond dissolved zinc (Zn).

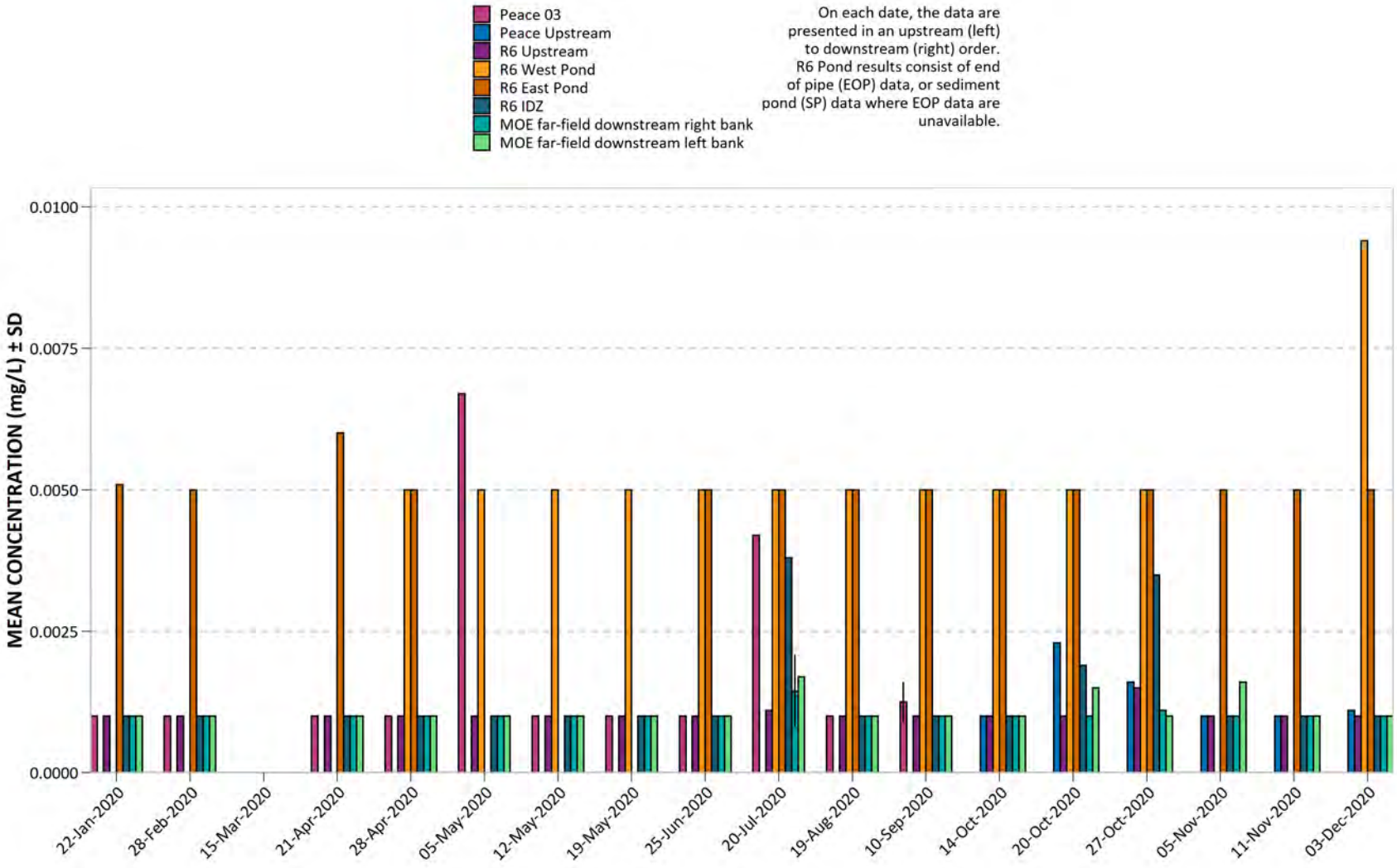
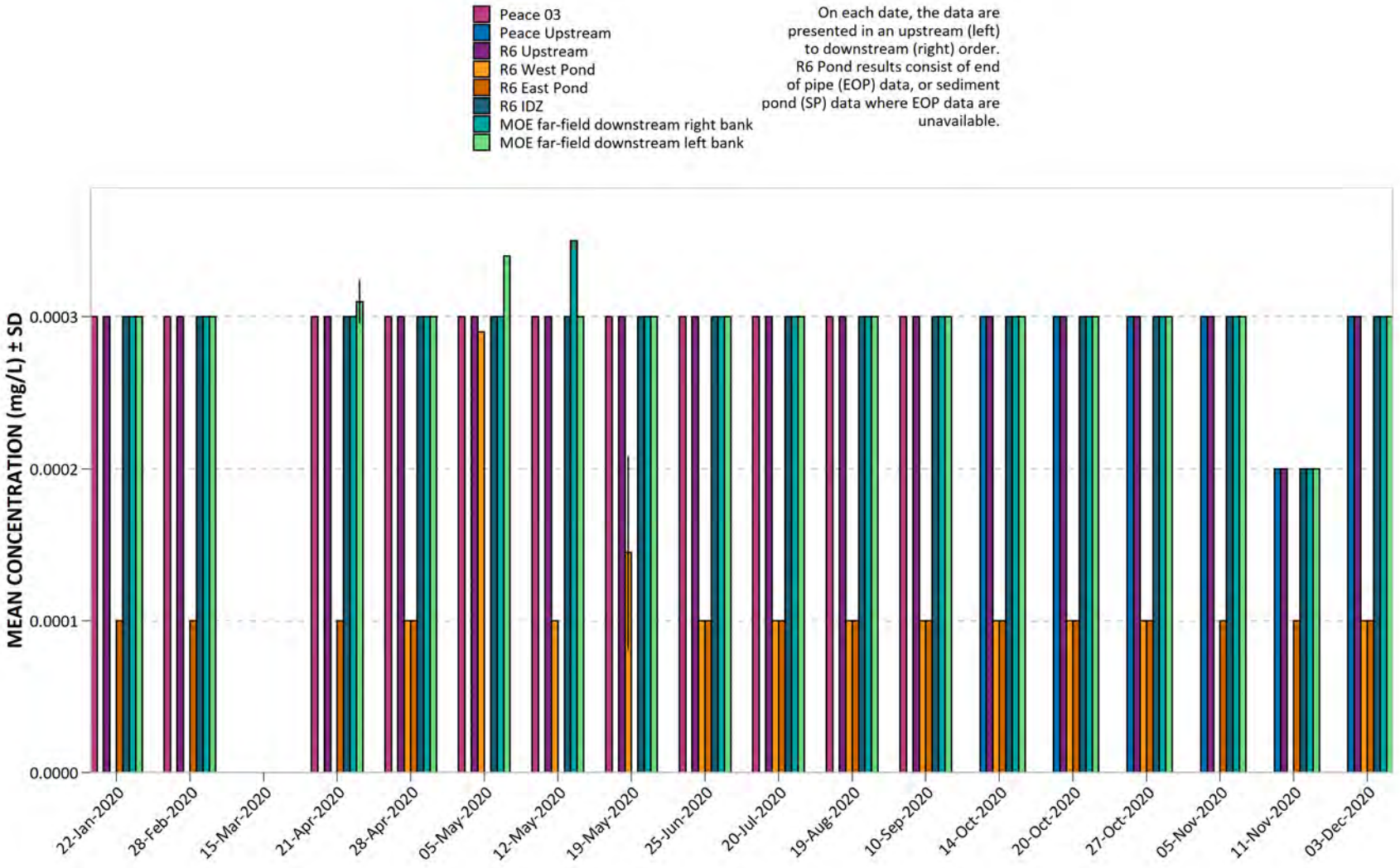


Figure 175. 2020 Peace River and RSEM R6 pond dissolved zirconium (Zr).



Appendix D. Site C PAG Contact RSEM Surface Water Quality Monitoring Time Series Plots – L5 Monthly and 5 in 30-day Data.

Figure 176. 2020 Peace River (*in situ*) and Phase 1 RSEM L5 pond (lab) specific conductivity.

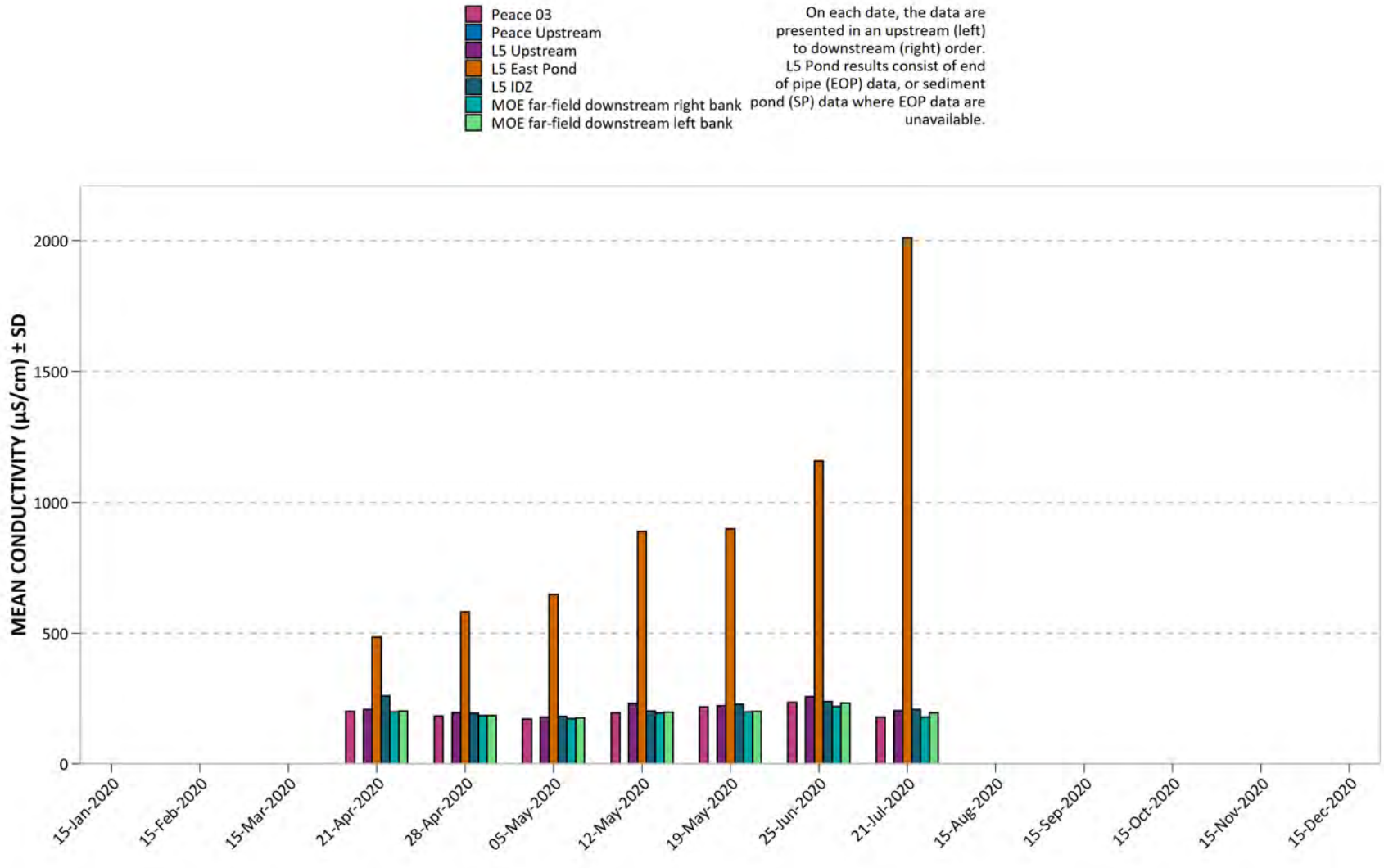


Figure 177. 2020 Peace River and Phase 1 RSEM L5 pond lab specific conductivity.

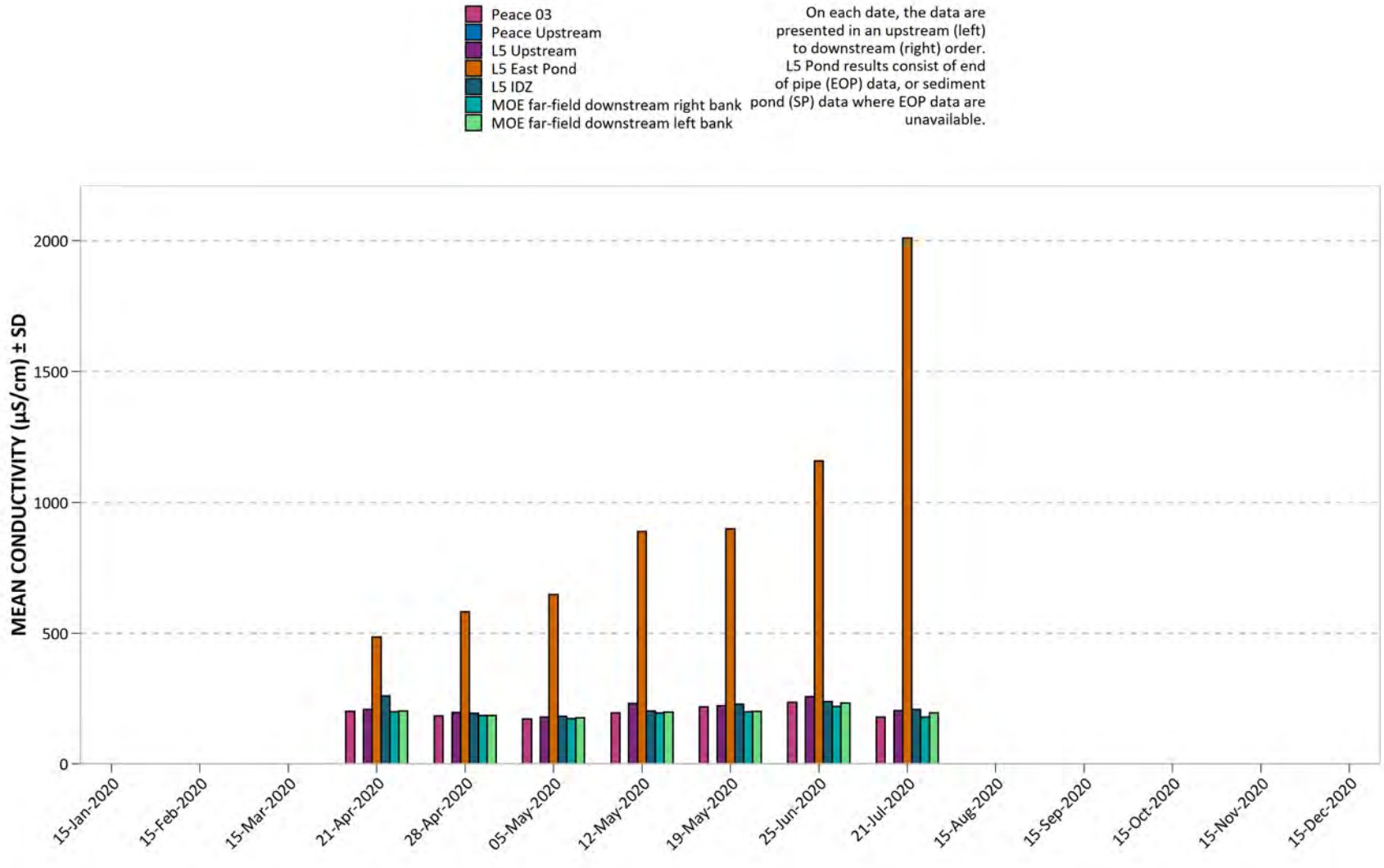


Figure 178. 2020 Peace River and Phase 1 RSEM L5 pond hardness (as $CaCO_3$).

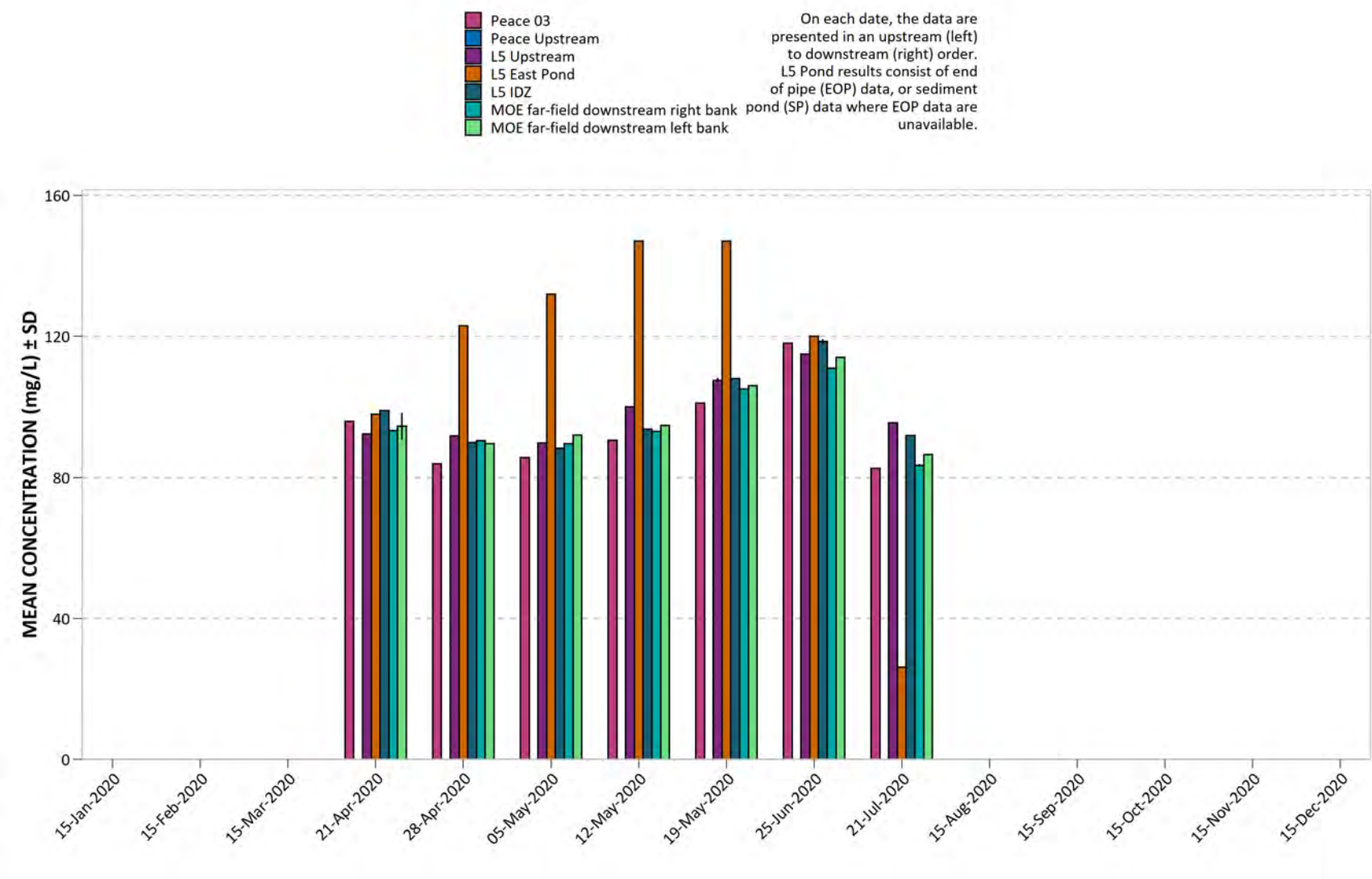


Figure 179. 2020 Peace River and Phase 1 RSEM L5 pond total dissolved solids (TDS).

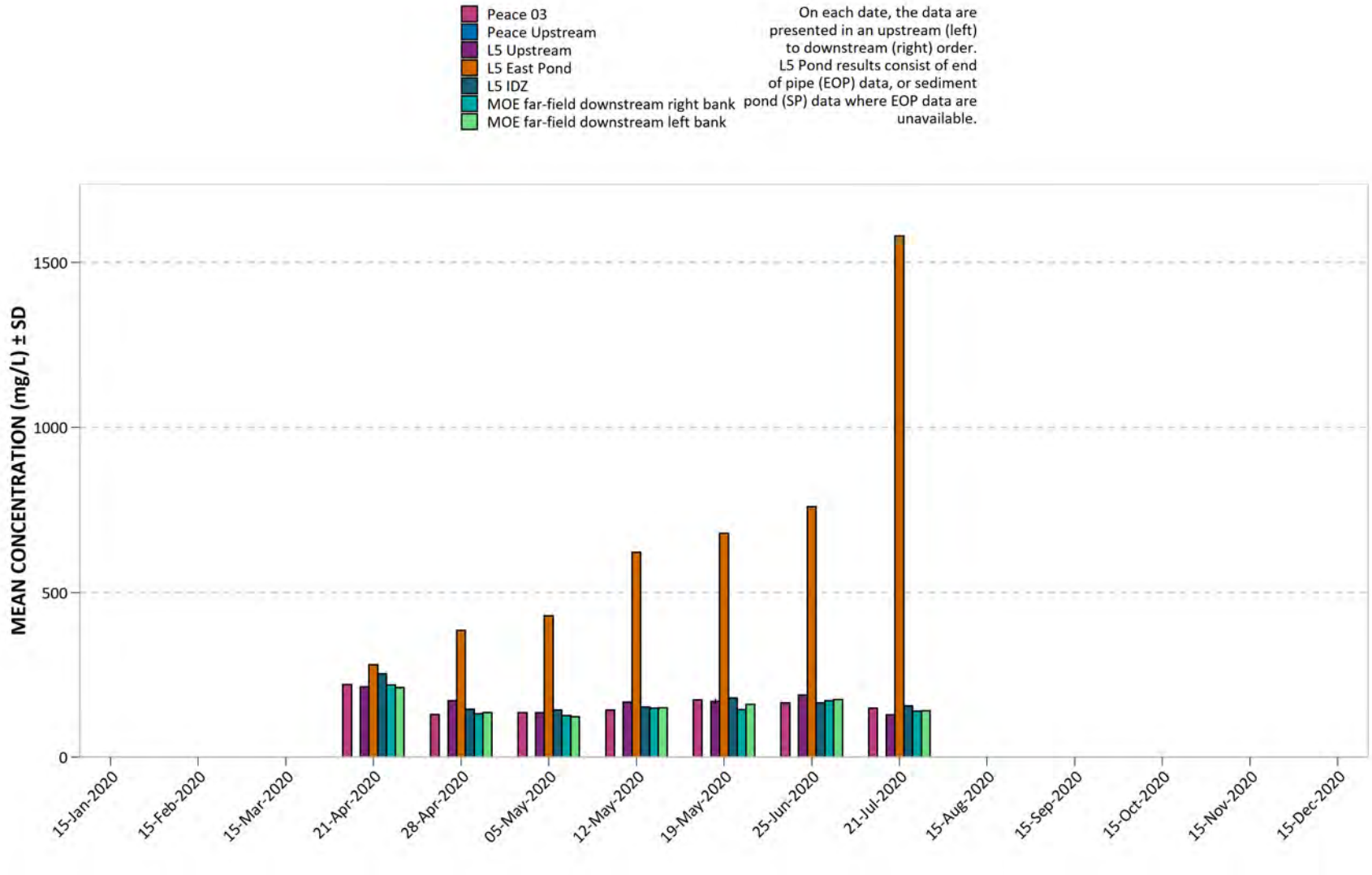


Figure 180. 2020 Peace River and Phase 1 RSEM L5 pond total suspended solids (TSS).

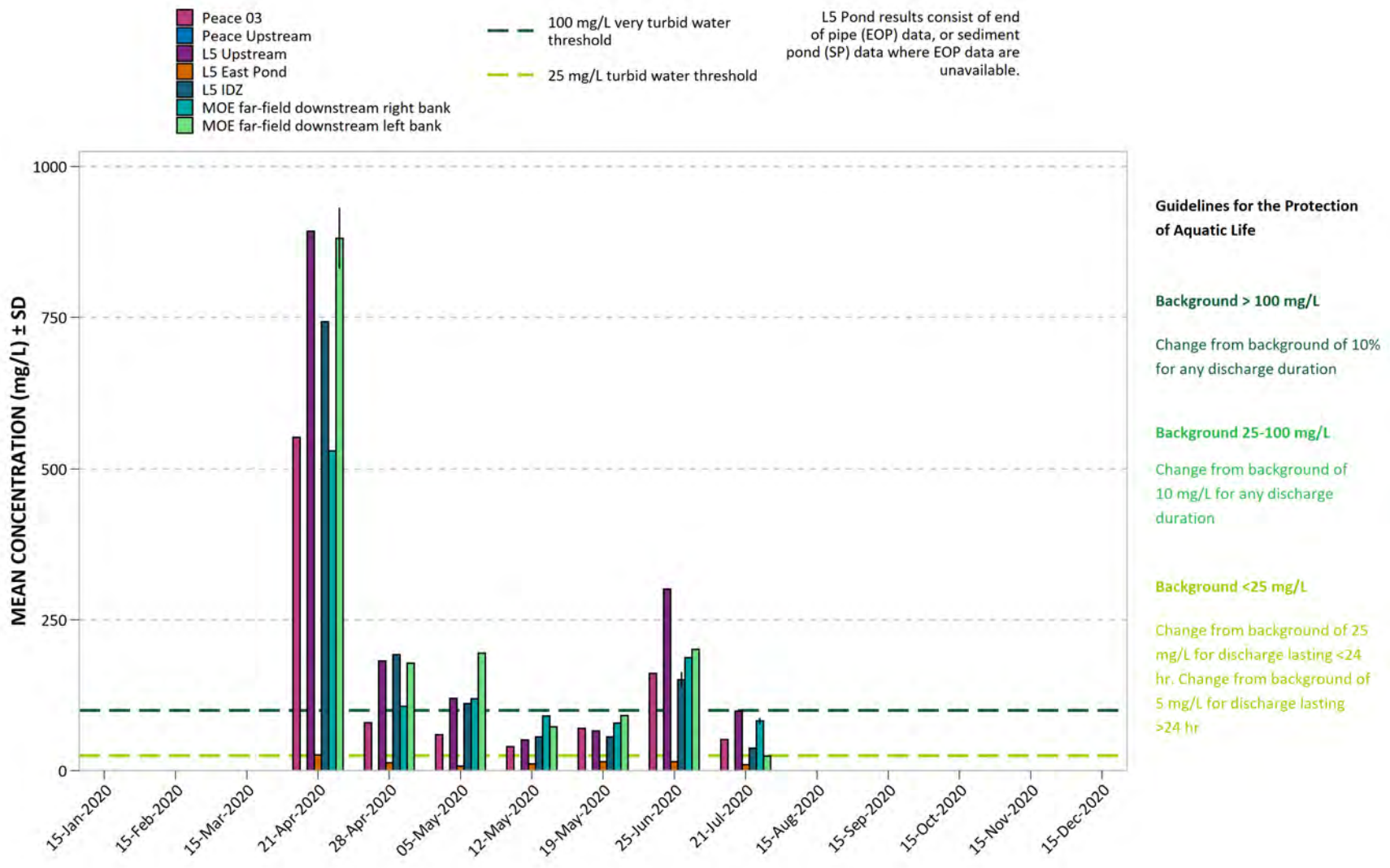


Figure 181. 2020 Peace River (*in-situ*) Phase 1 RSEM L5 pond (lab) turbidity.

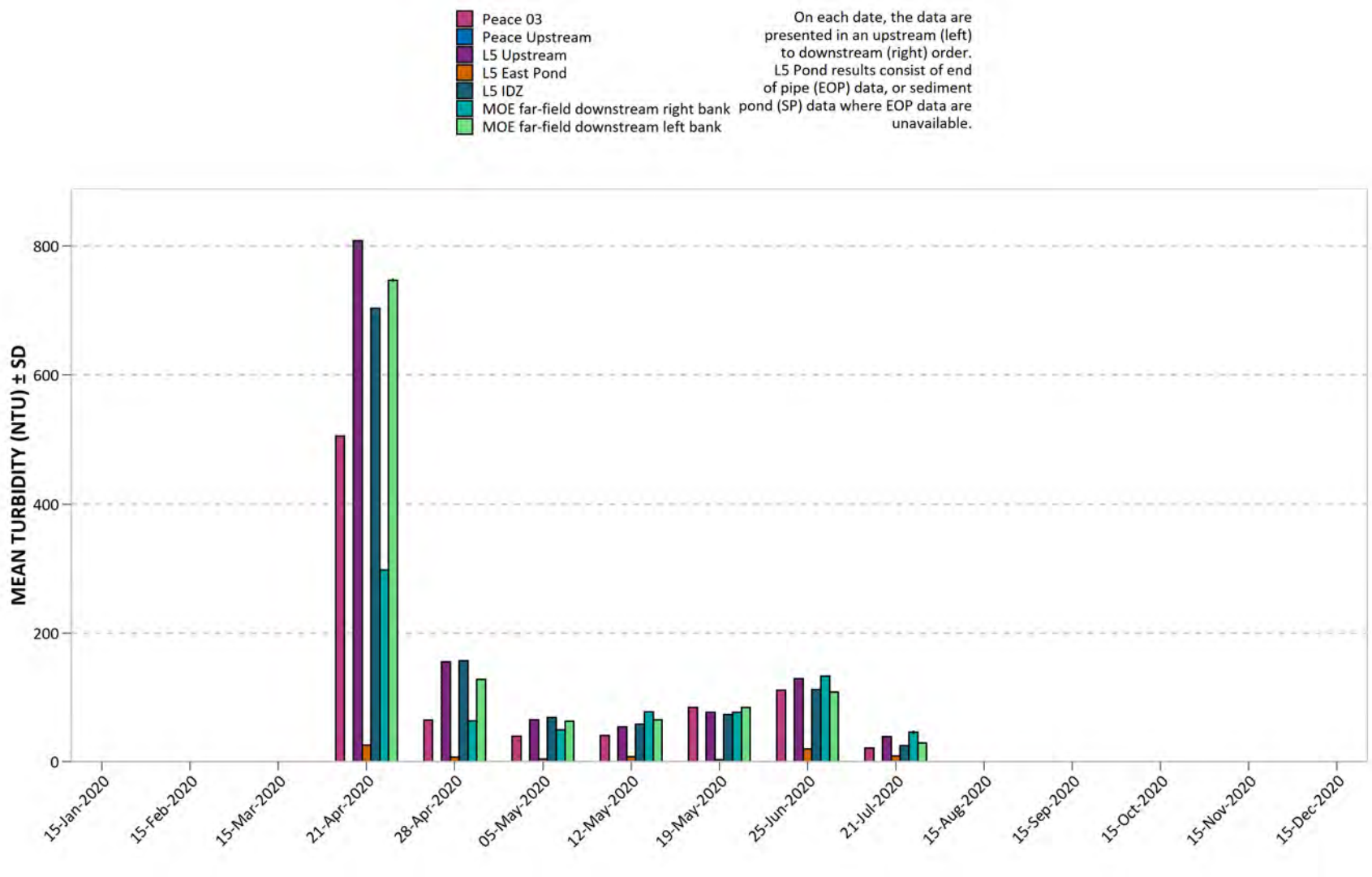


Figure 182. 2019 Peace River (*in*-situ) and Phase 1 RSEM L5 pond (lab) pH.

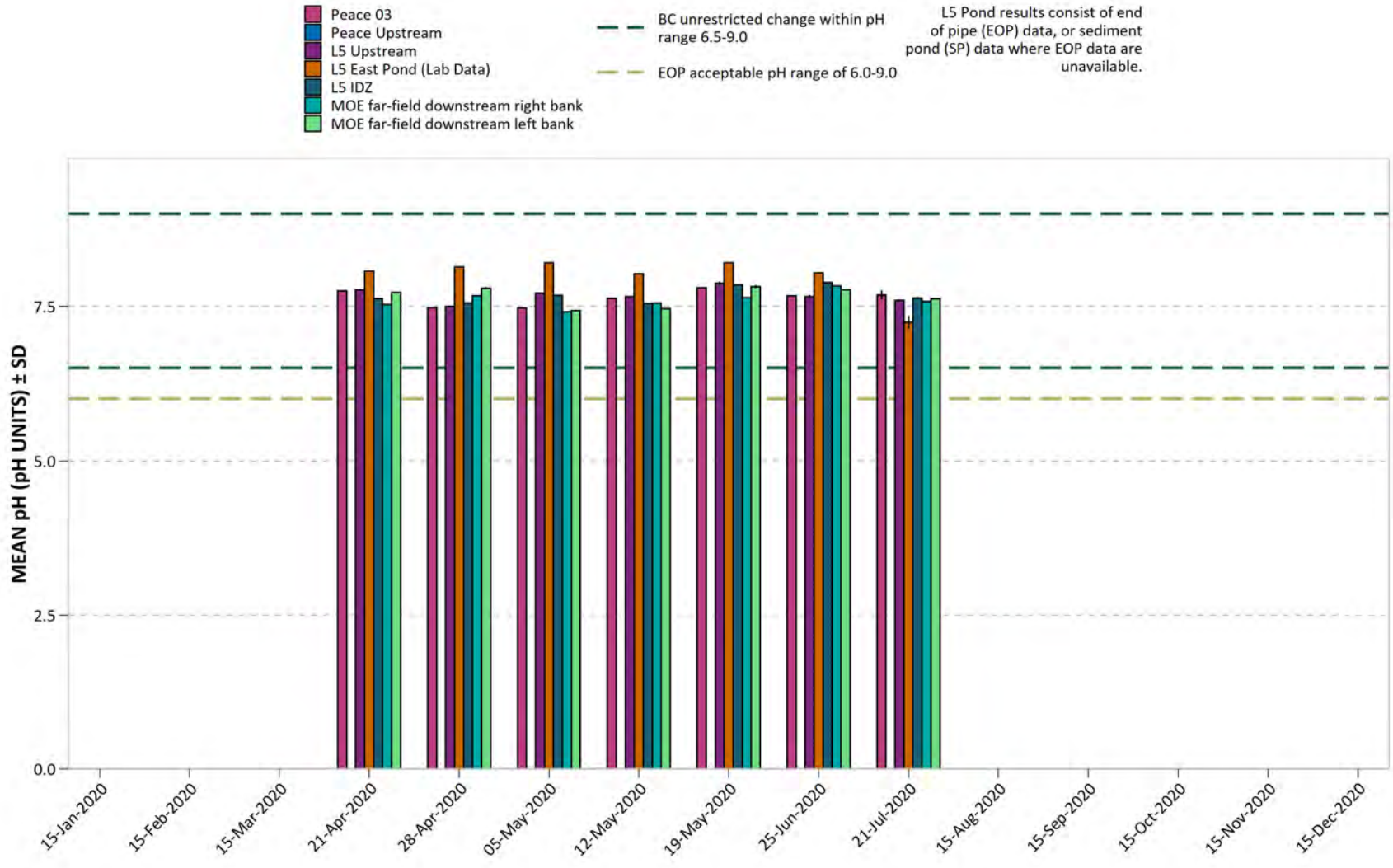


Figure 183. 2020 Peace River and Phase 1 RSEM L5 pond lab pH.

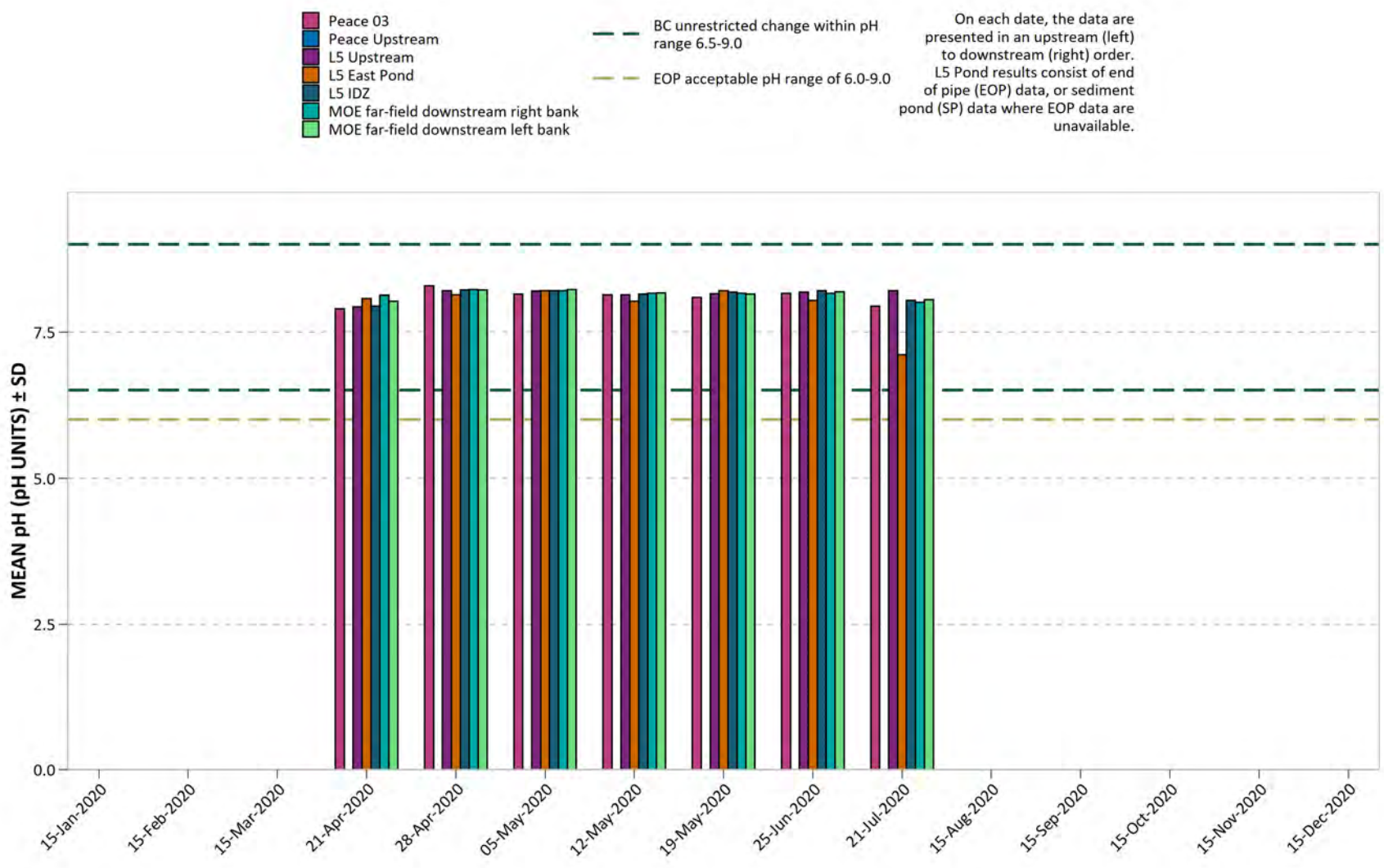


Figure 184. 2020 Peace River and Phase 1 RSEM L5 pond total alkalinity (as $CaCO_3$).

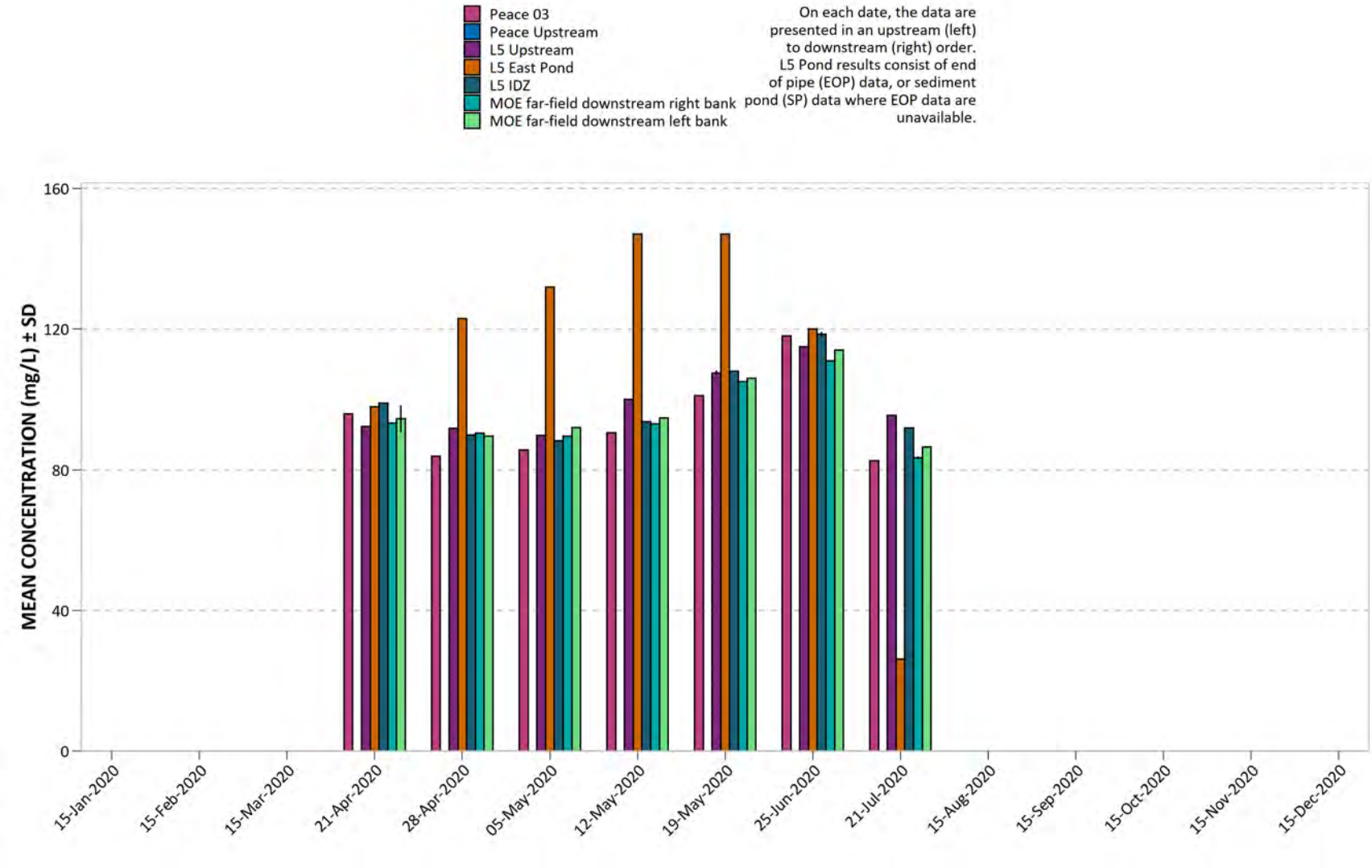


Figure 185. 2020 Peace River and Phase 1 RSEM L5 pond total ammonia (as N).

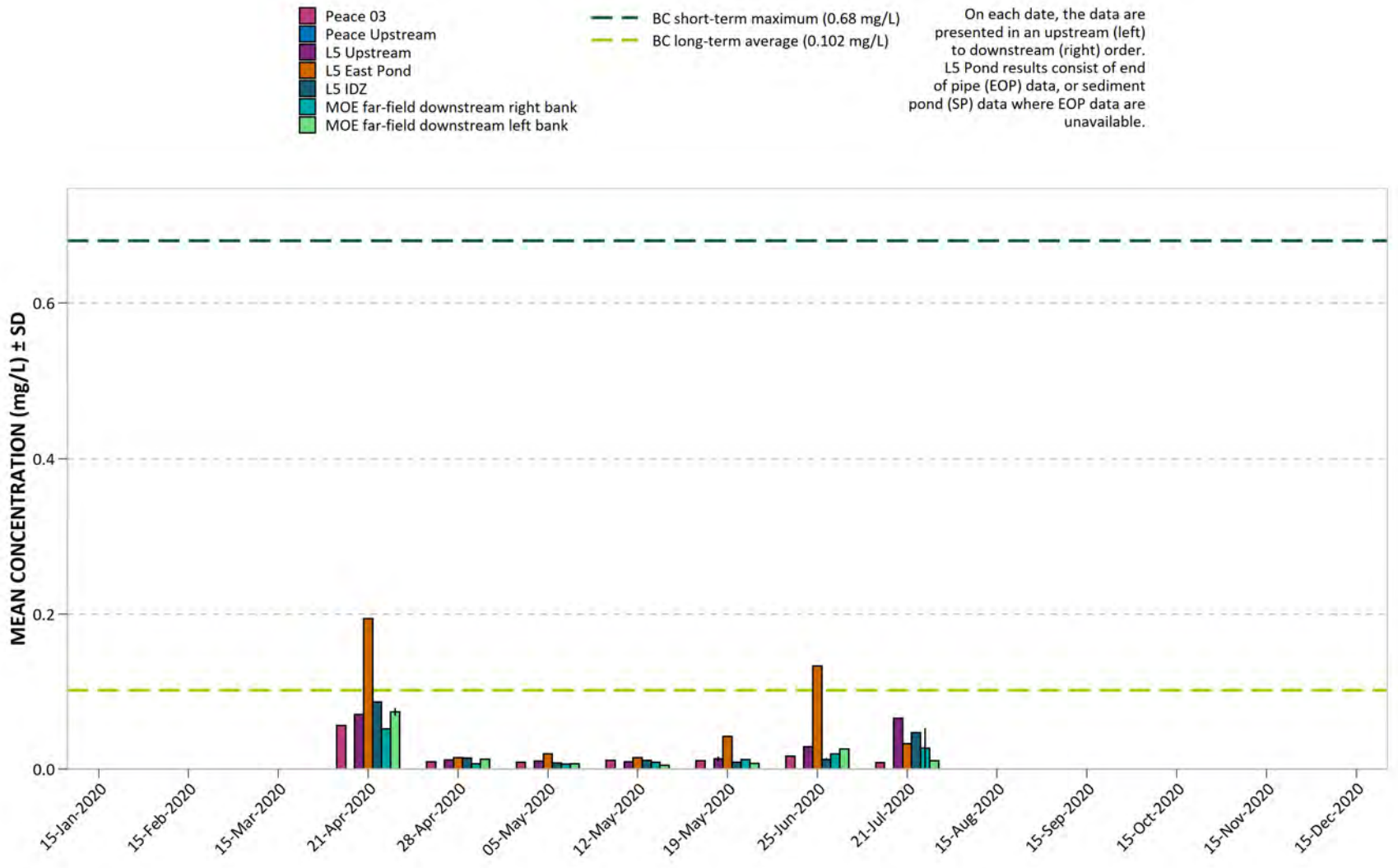


Figure 186. 2020 Peace River and Phase 1 RSEM L5 pond bromide (Br).

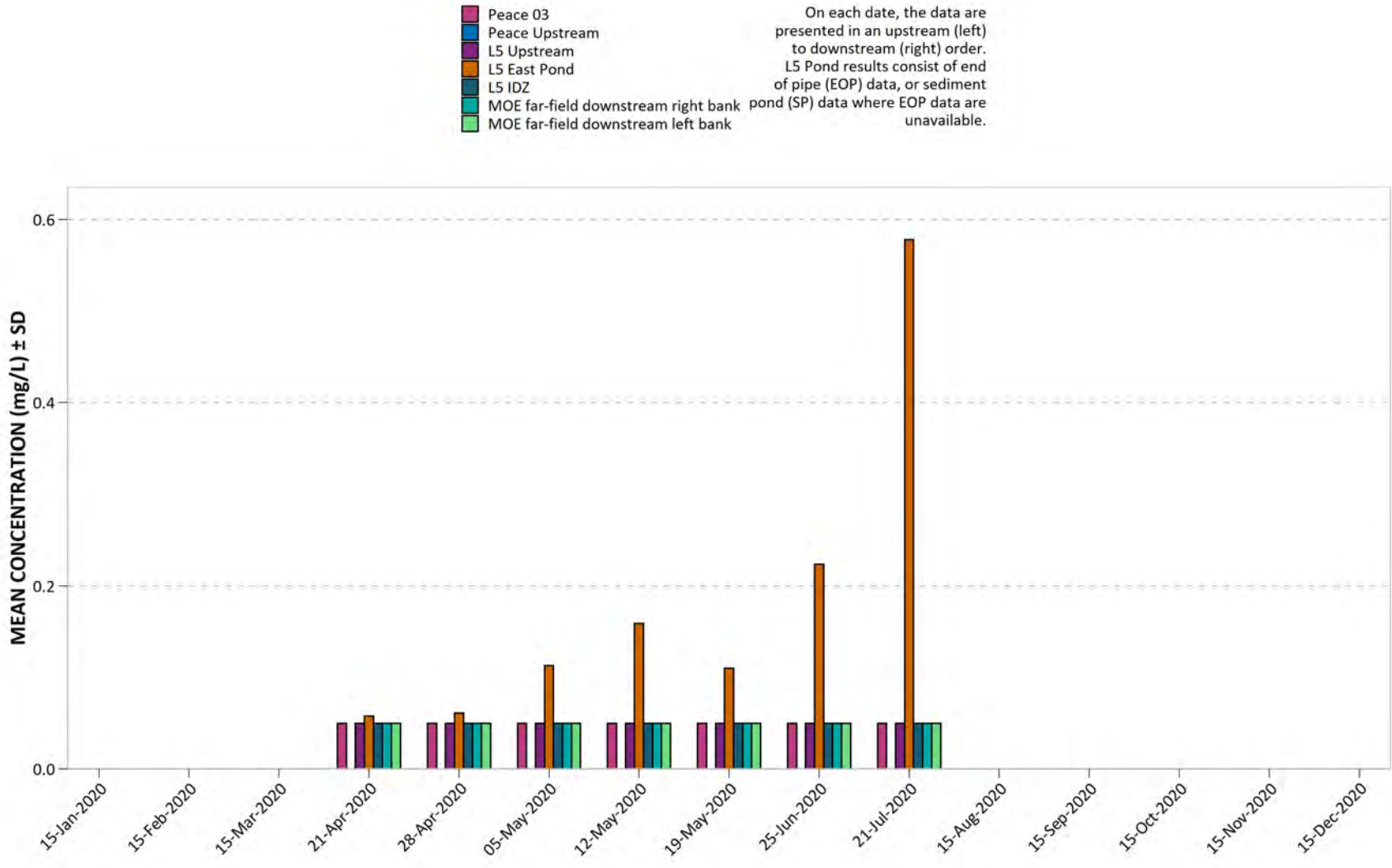


Figure 187. 2020 Peace River and Phase 1 RSEM L5 pond chloride (Cl).

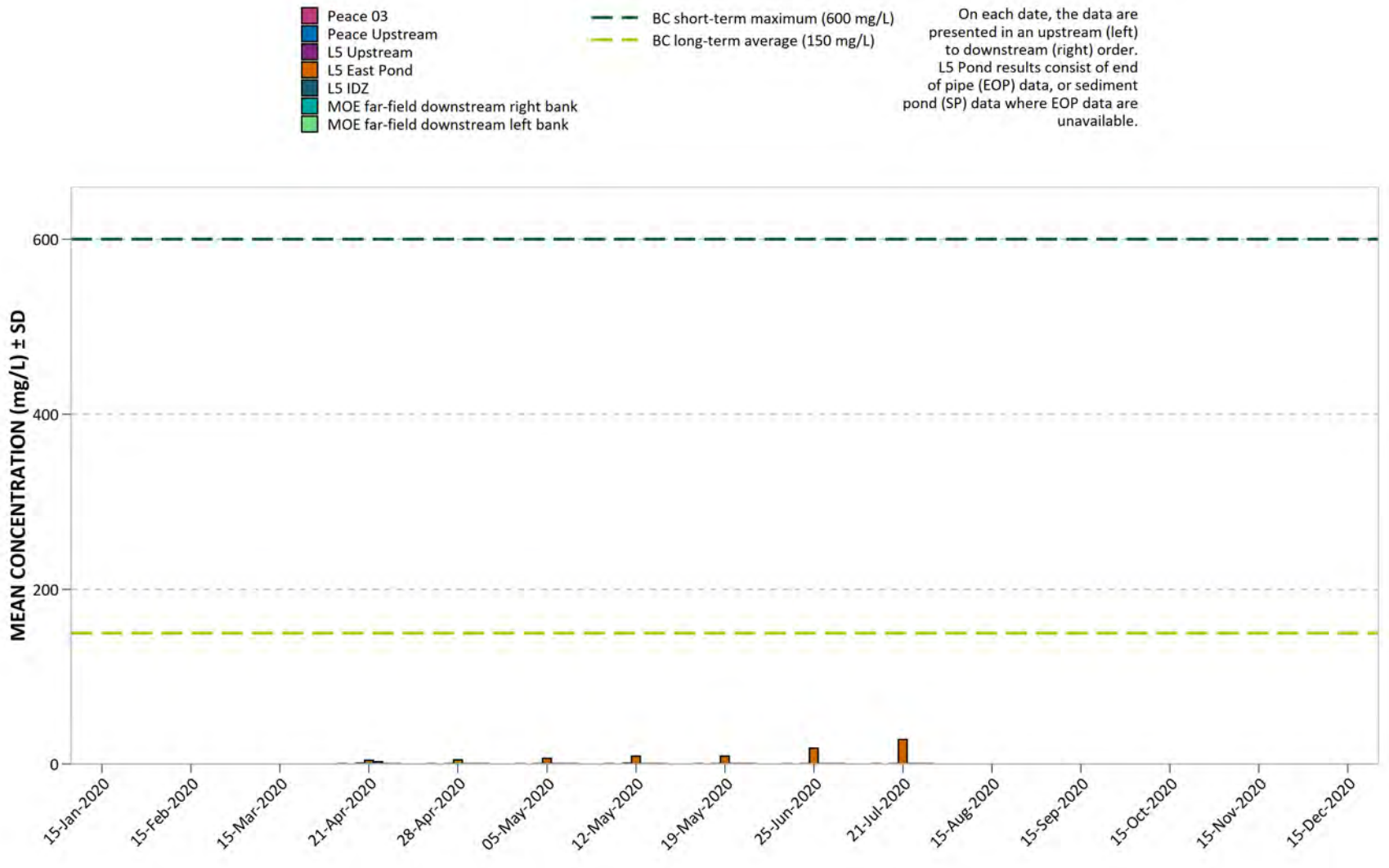


Figure 188. 2020 Peace River and Phase 1 RSEM L5 pond dissolved orthophosphate.

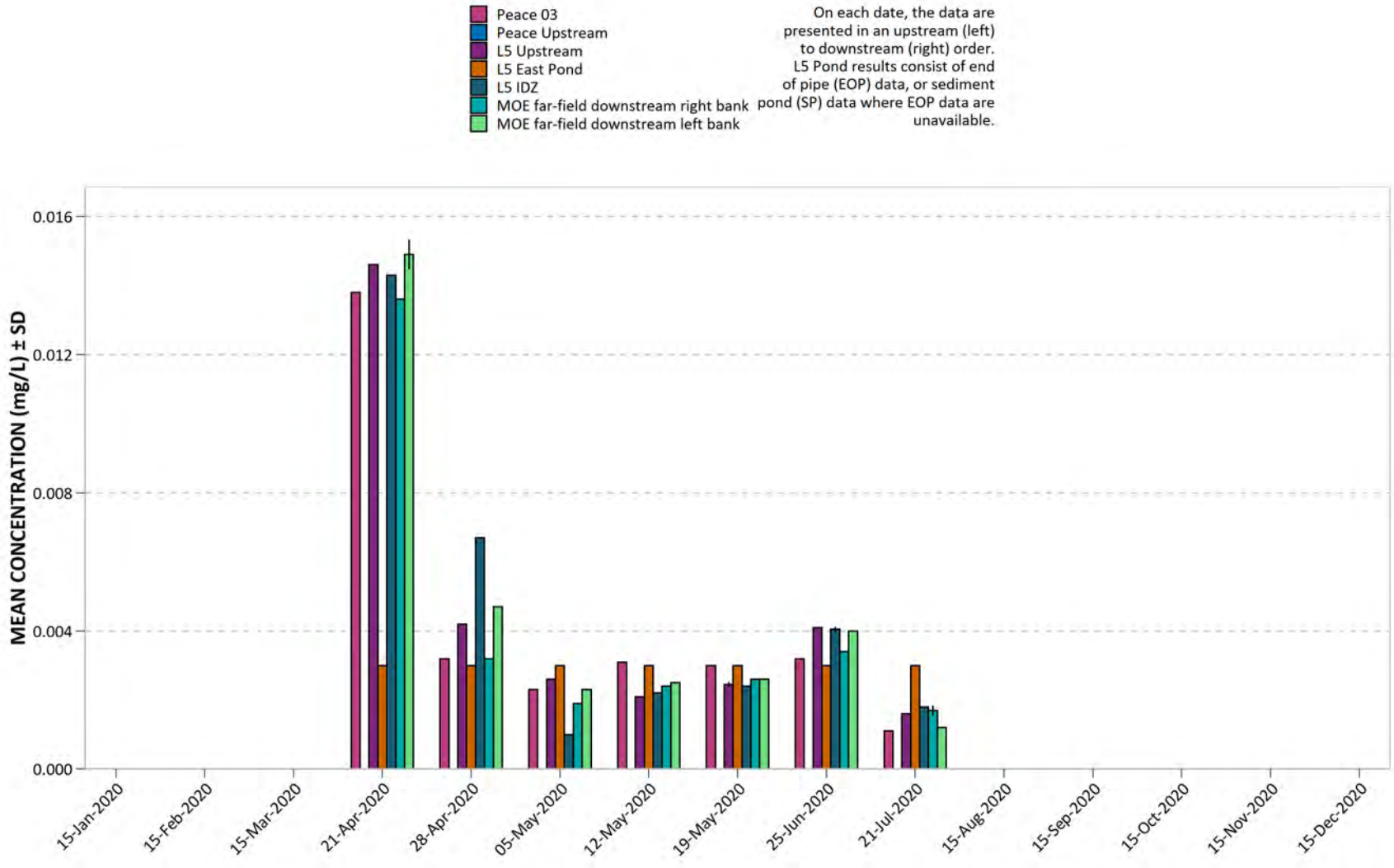


Figure 189. 2020 Peace River and Phase 1 RSEM L5 pond fluoride (F).

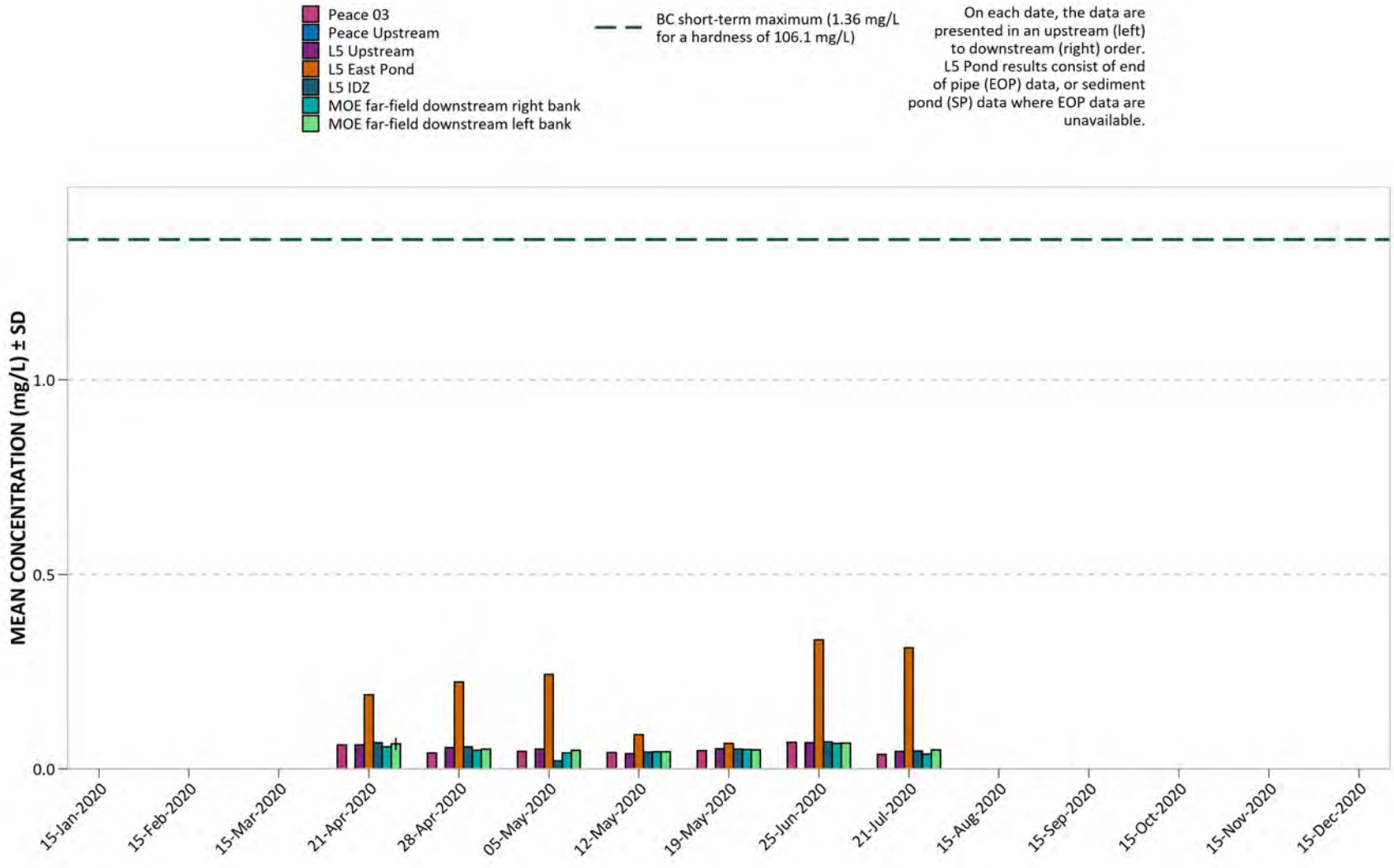


Figure 190. 2020 Peace River and Phase 1 RSEM L5 pond nitrate (as N).

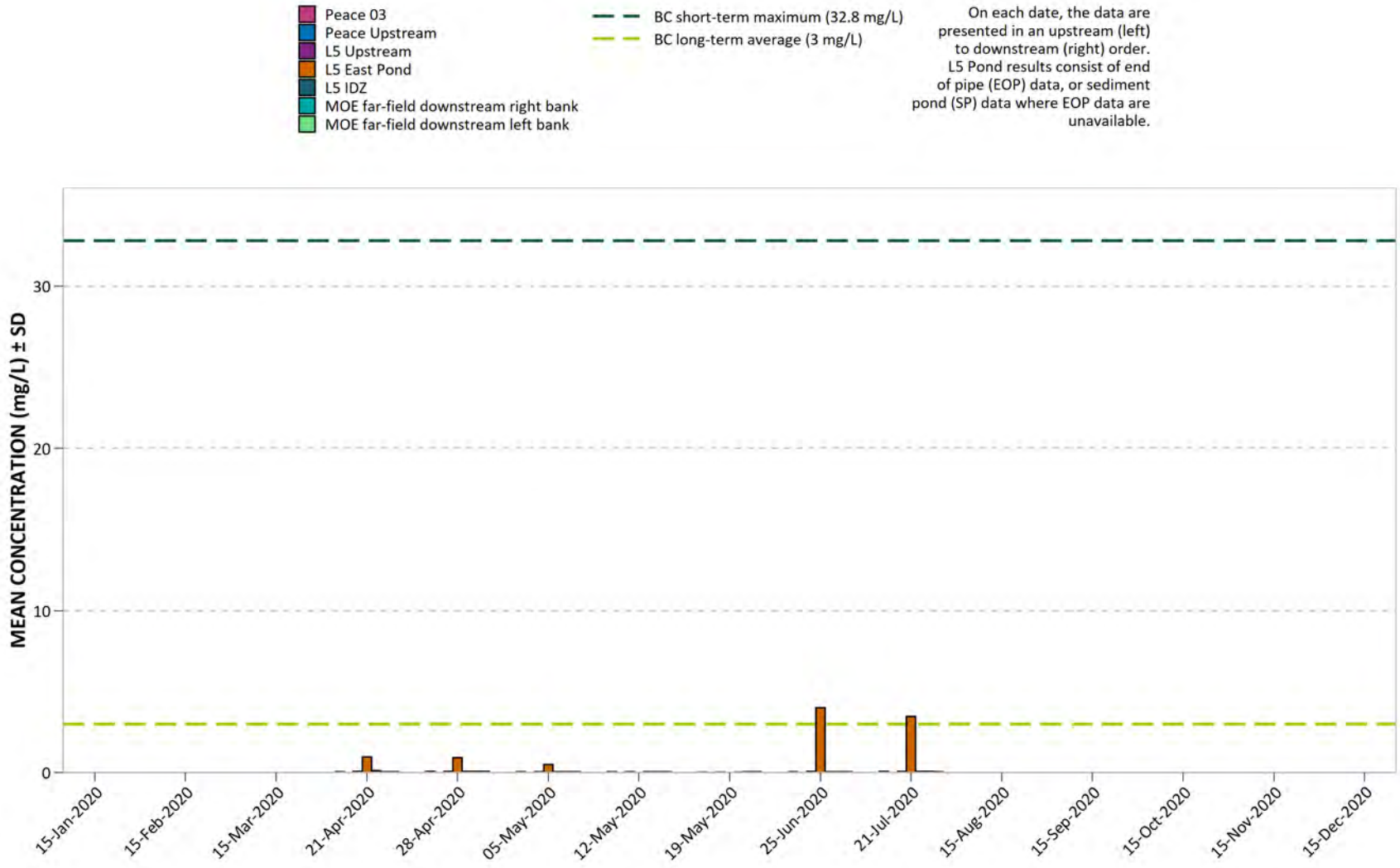
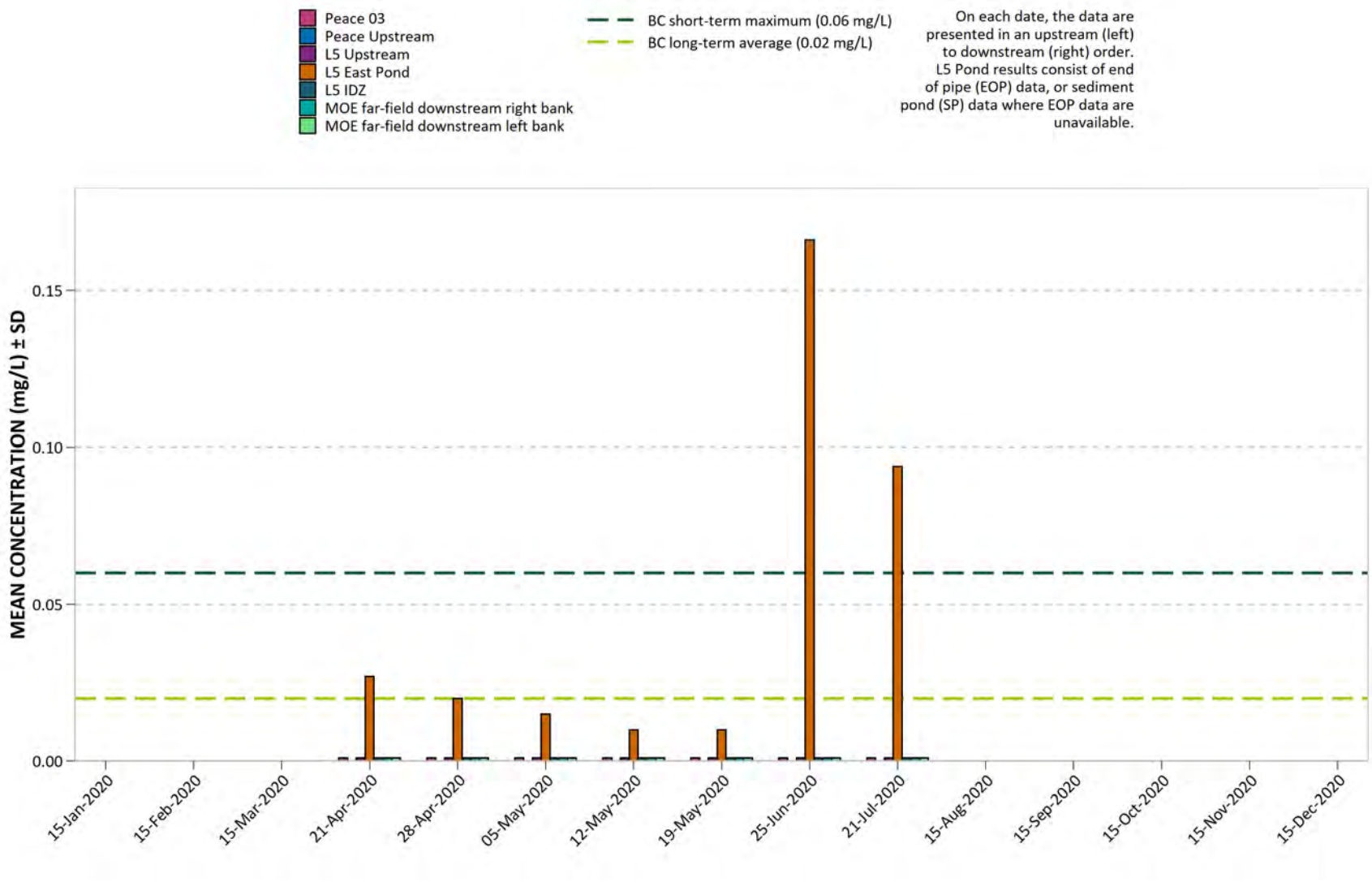


Figure 191. 2020 Peace River and Phase 1 RSEM L5 pond nitrite (as N).



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 192. 2020 Peace River and Phase 1 RSEM L5 pond sulfate (SO_4).

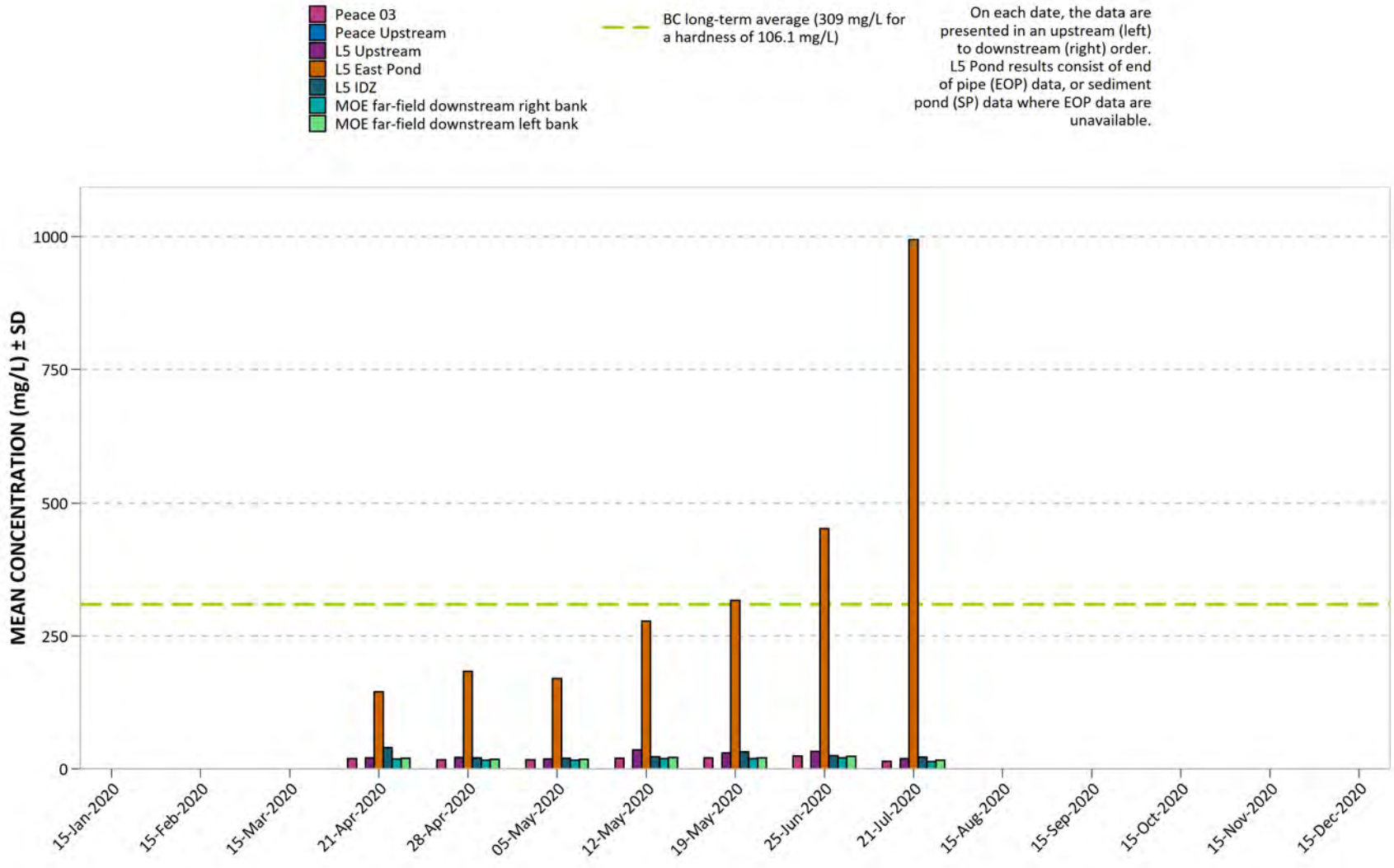


Figure 193. 2020 Peace River and Phase 1 RSEM L5 pond dissolved organic carbon (DOC).

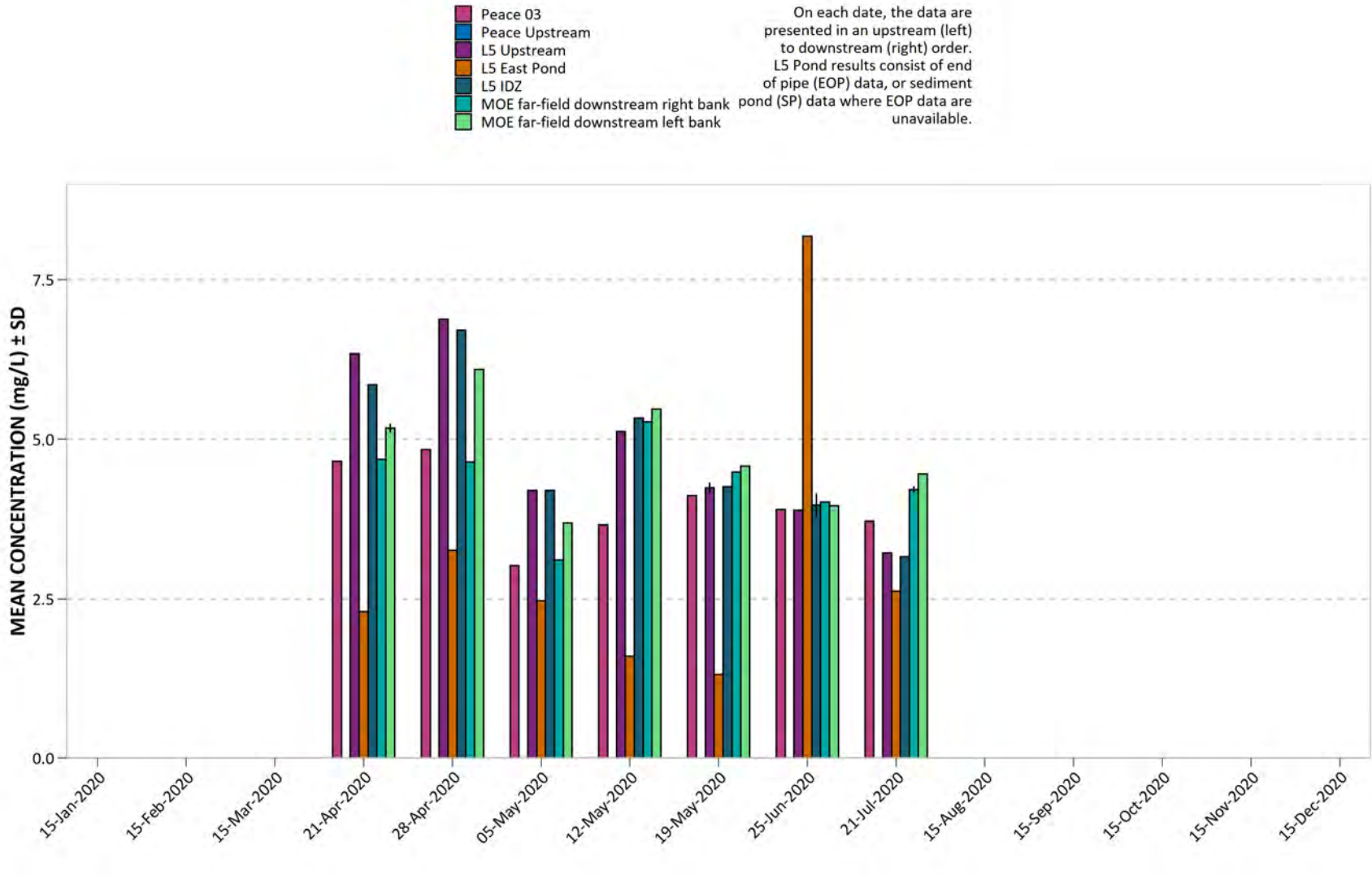


Figure 194. 2020 Peace River and Phase 1 RSEM L5 pond total organic carbon (TOC).

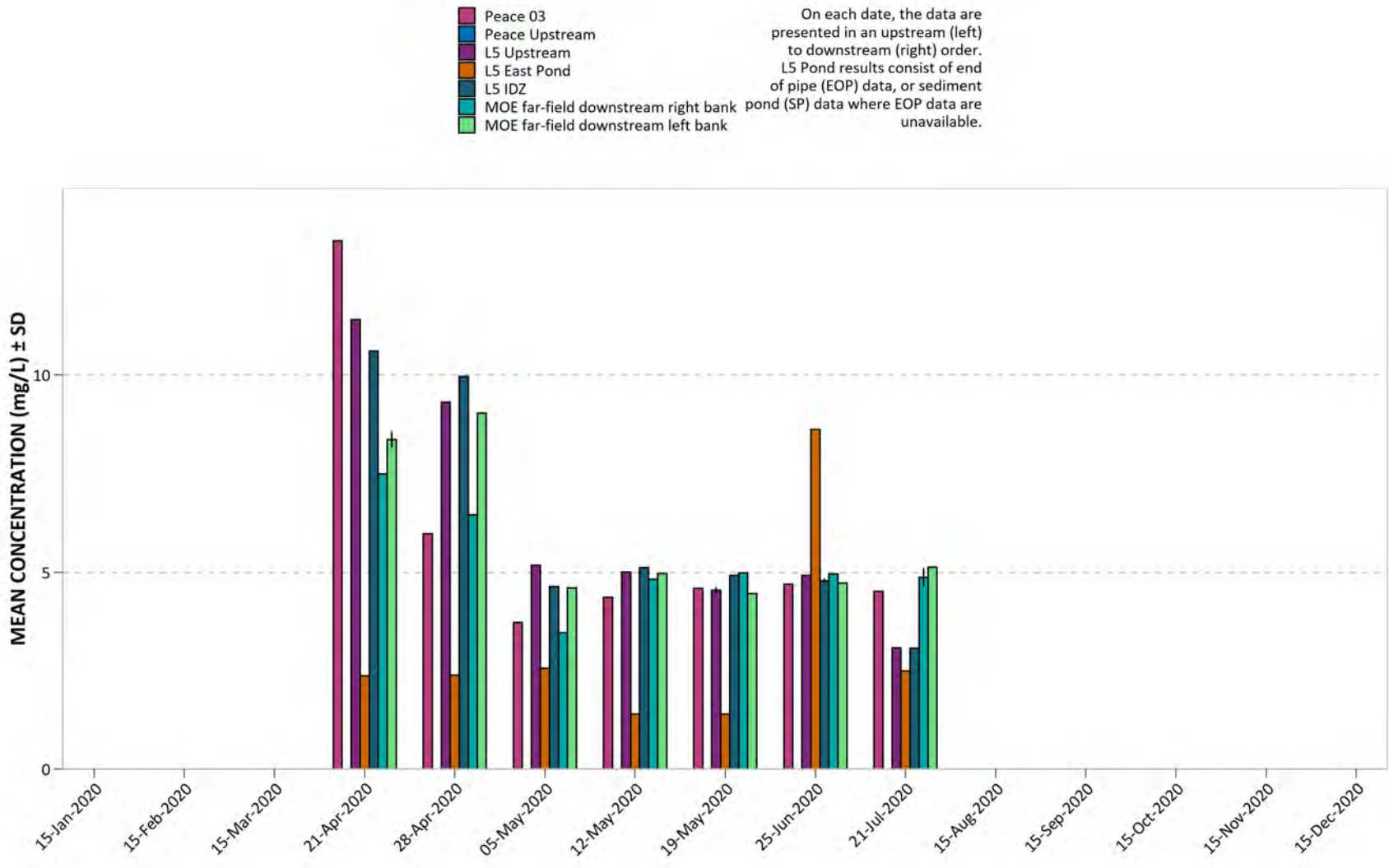


Figure 195. 2020 Peace River and Phase 1 RSEM L5 pond total aluminum (Al).

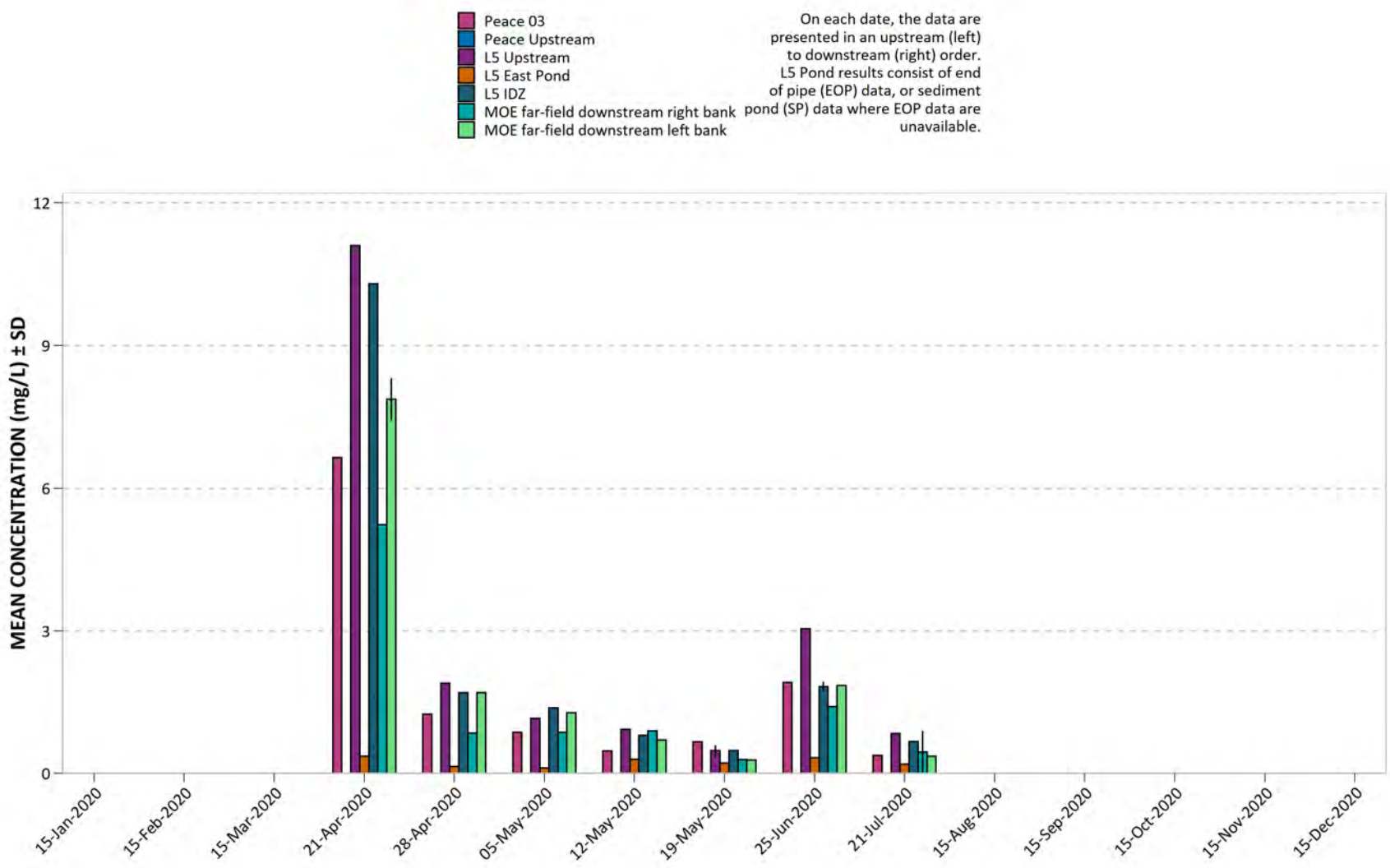


Figure 196. 2020 Peace River and Phase 1 RSEM L5 pond total antimony (Sb).

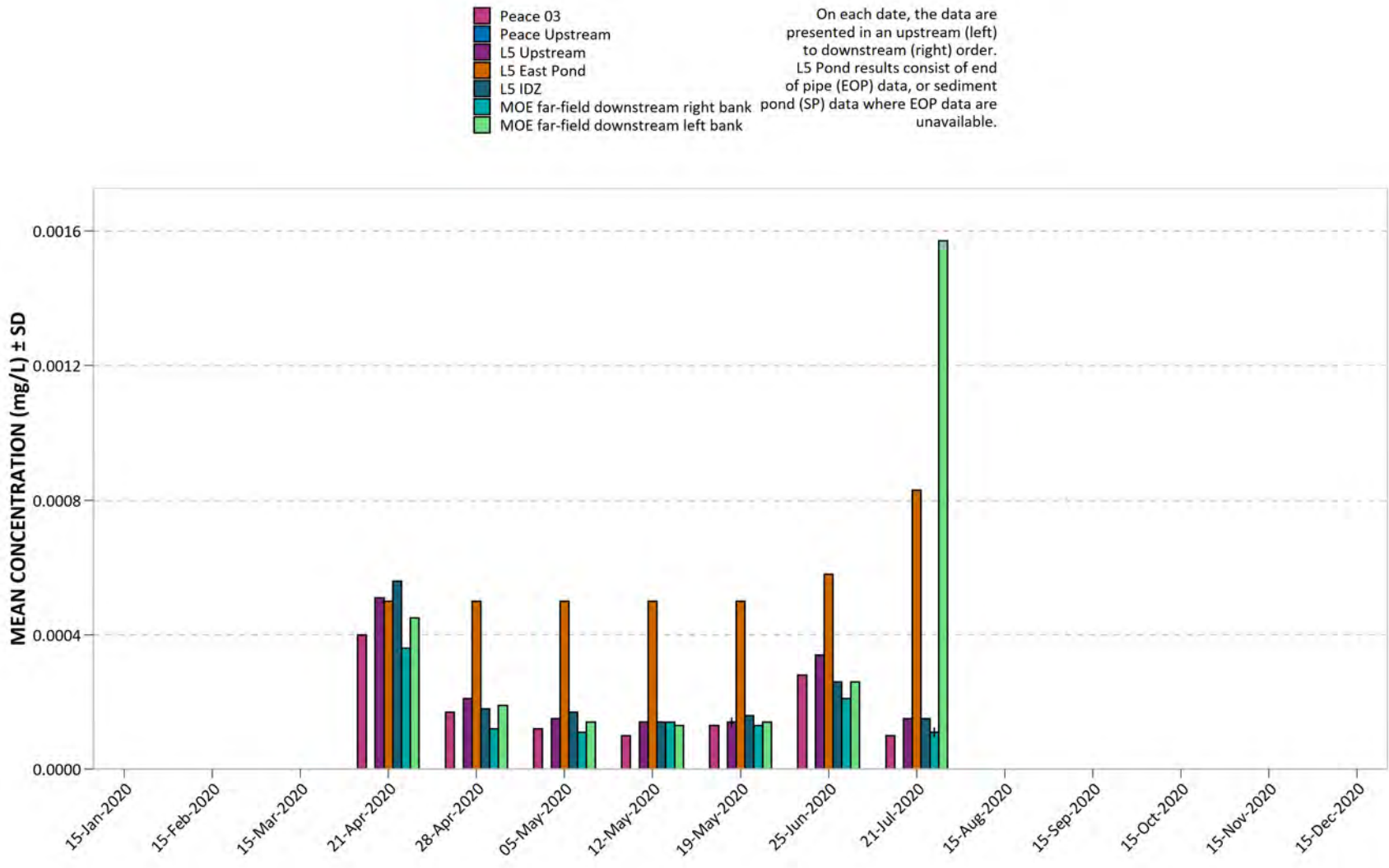


Figure 197. 2020 Peace River and Phase 1 RSEM L5 pond total arsenic (As).

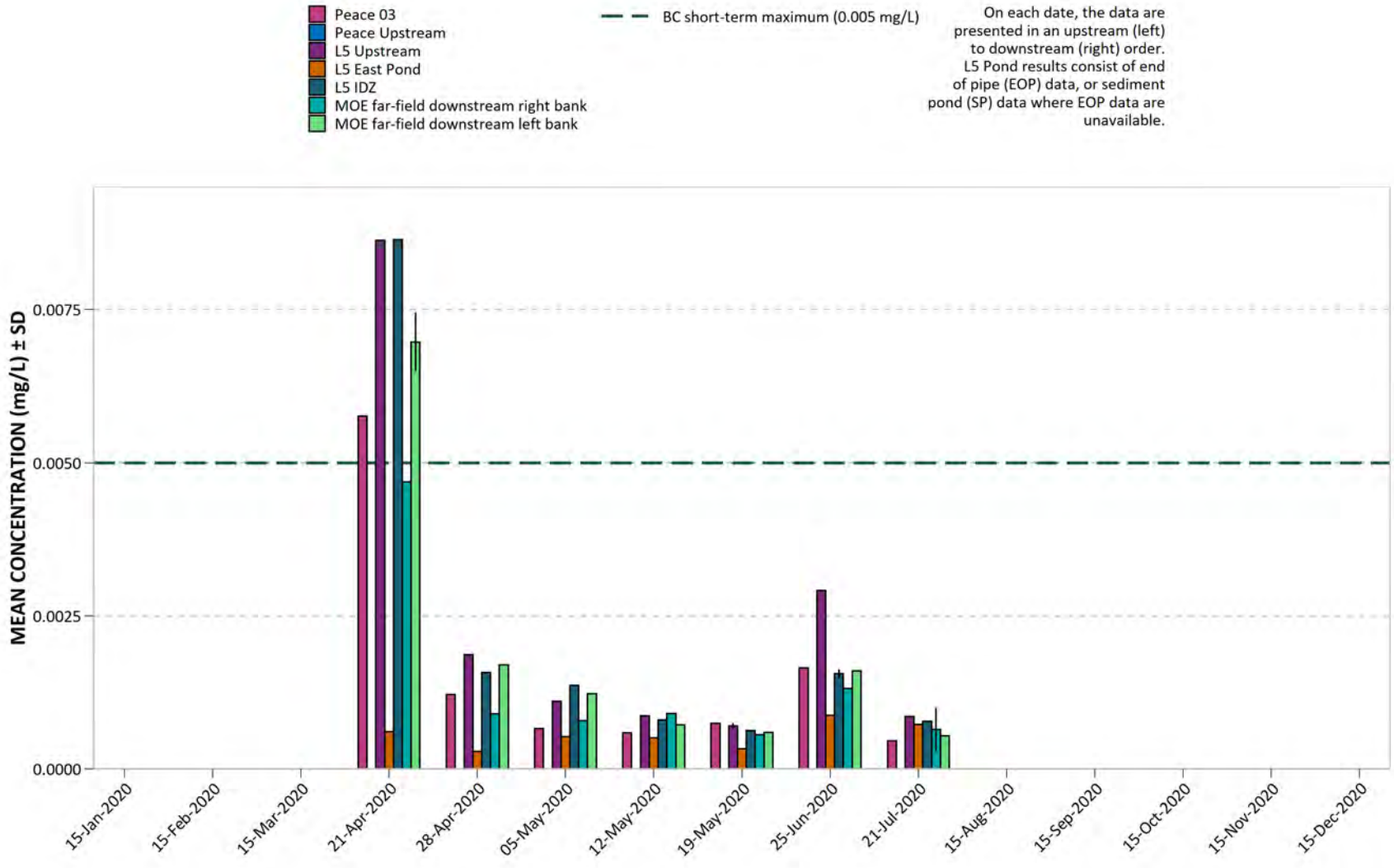


Figure 198. 2020 Peace River and Phase 1 RSEM L5 pond total barium (Ba).

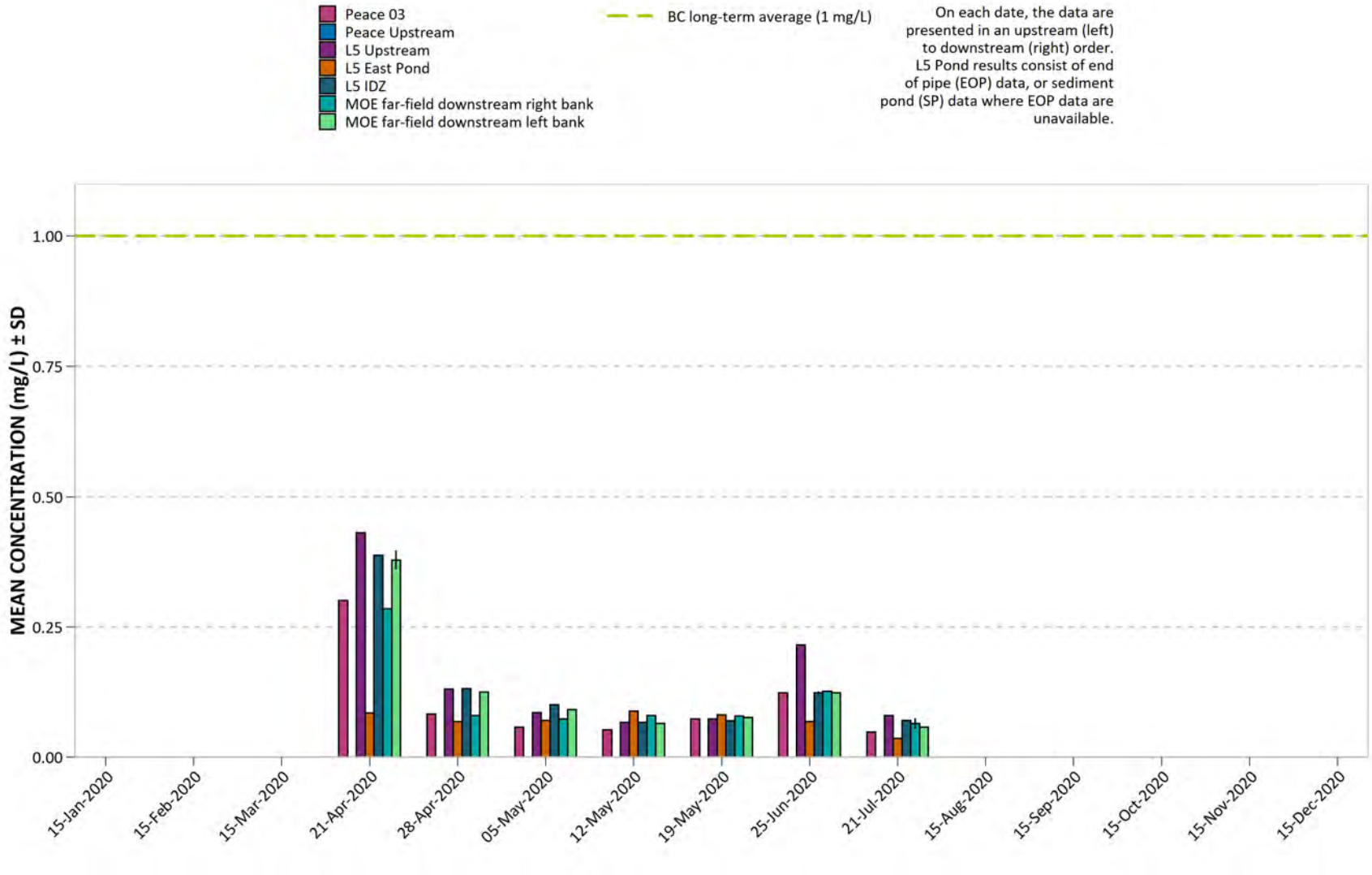


Figure 199. 2020 Peace River and Phase 1 RSEM L5 pond total beryllium (Be).

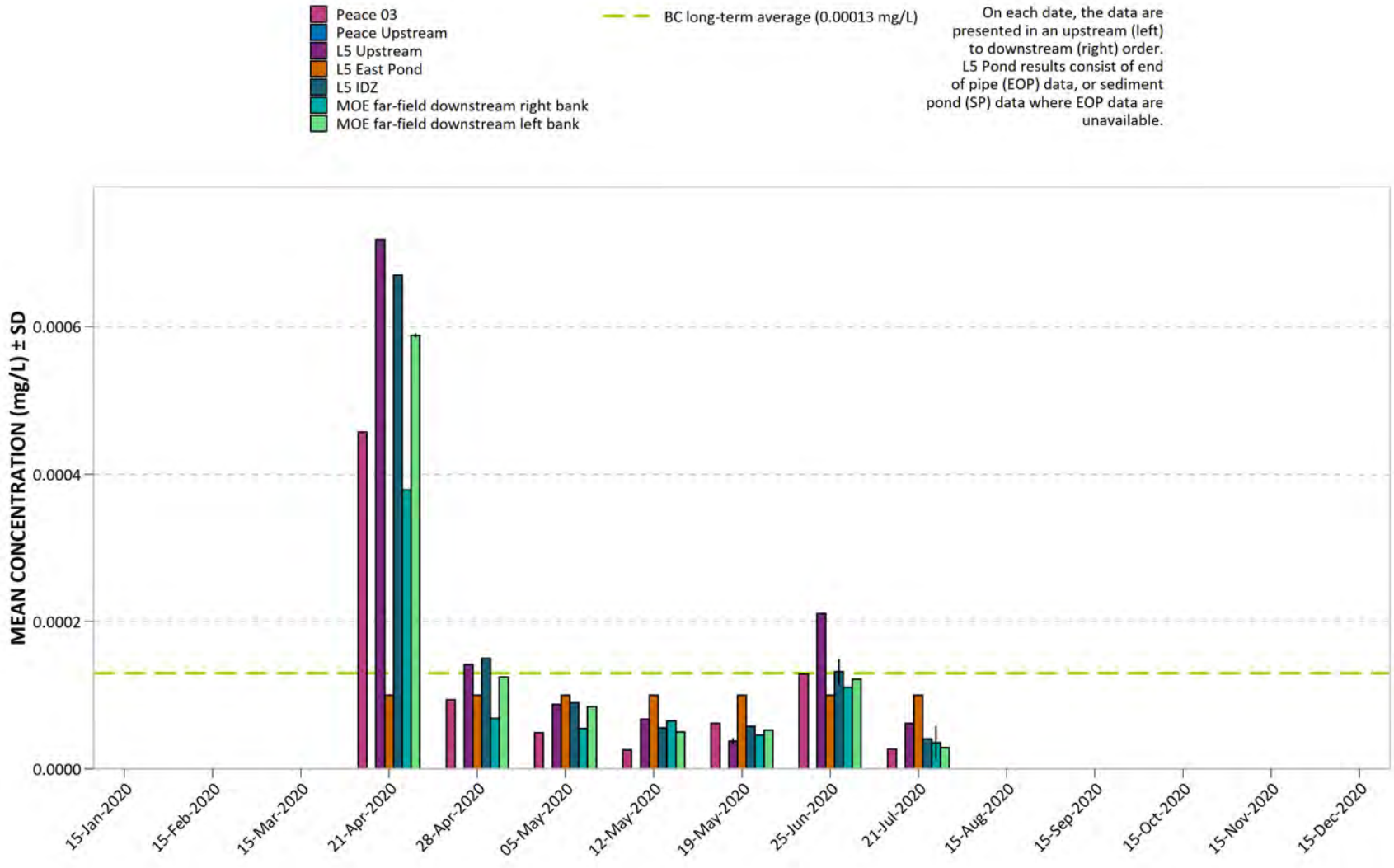


Figure 200. 2020 Peace River and Phase 1 RSEM L5 pond total bismuth (Bi).

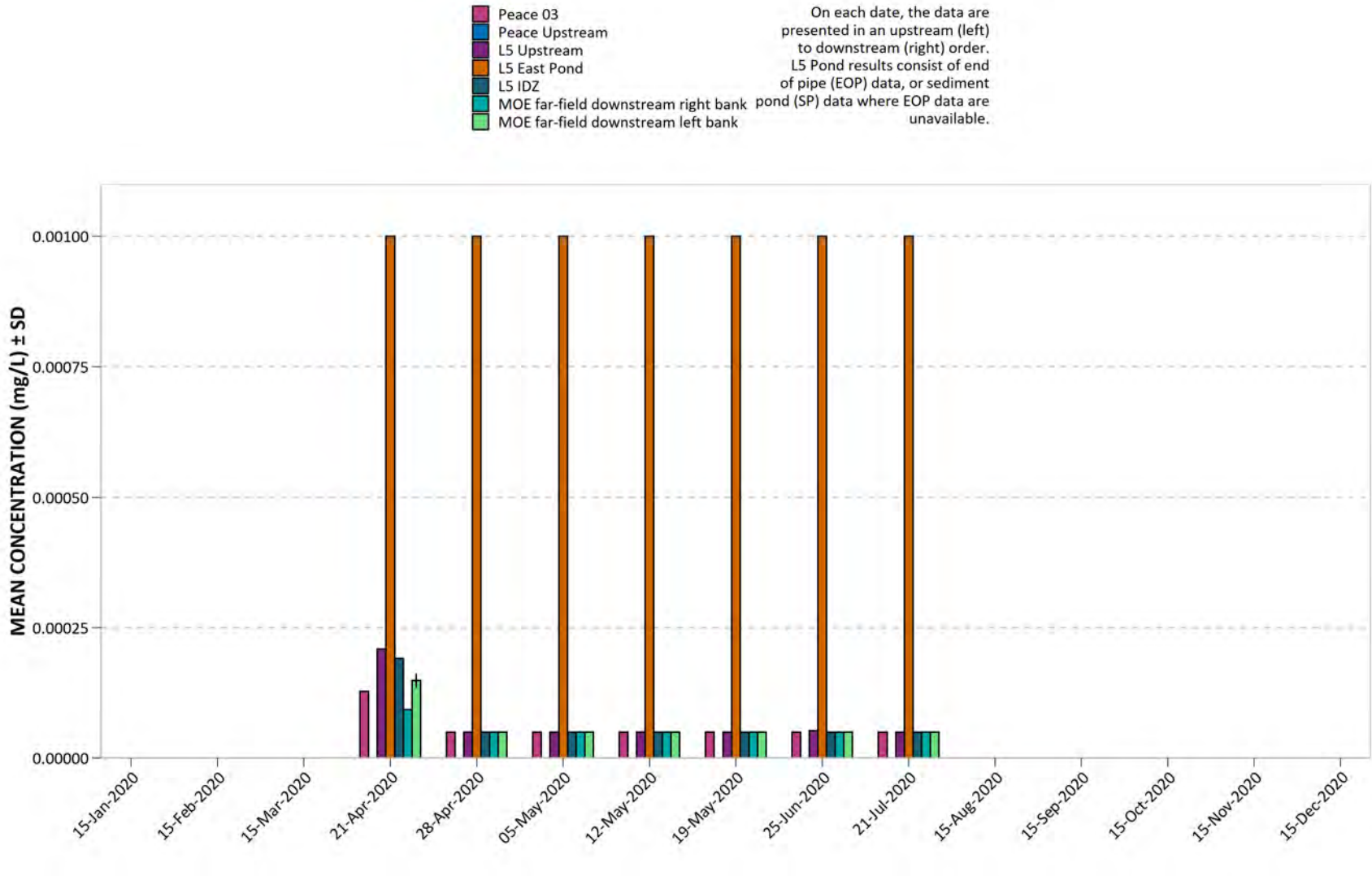


Figure 201. 2020 Peace River and Phase 1 RSEM L5 pond total boron (B).

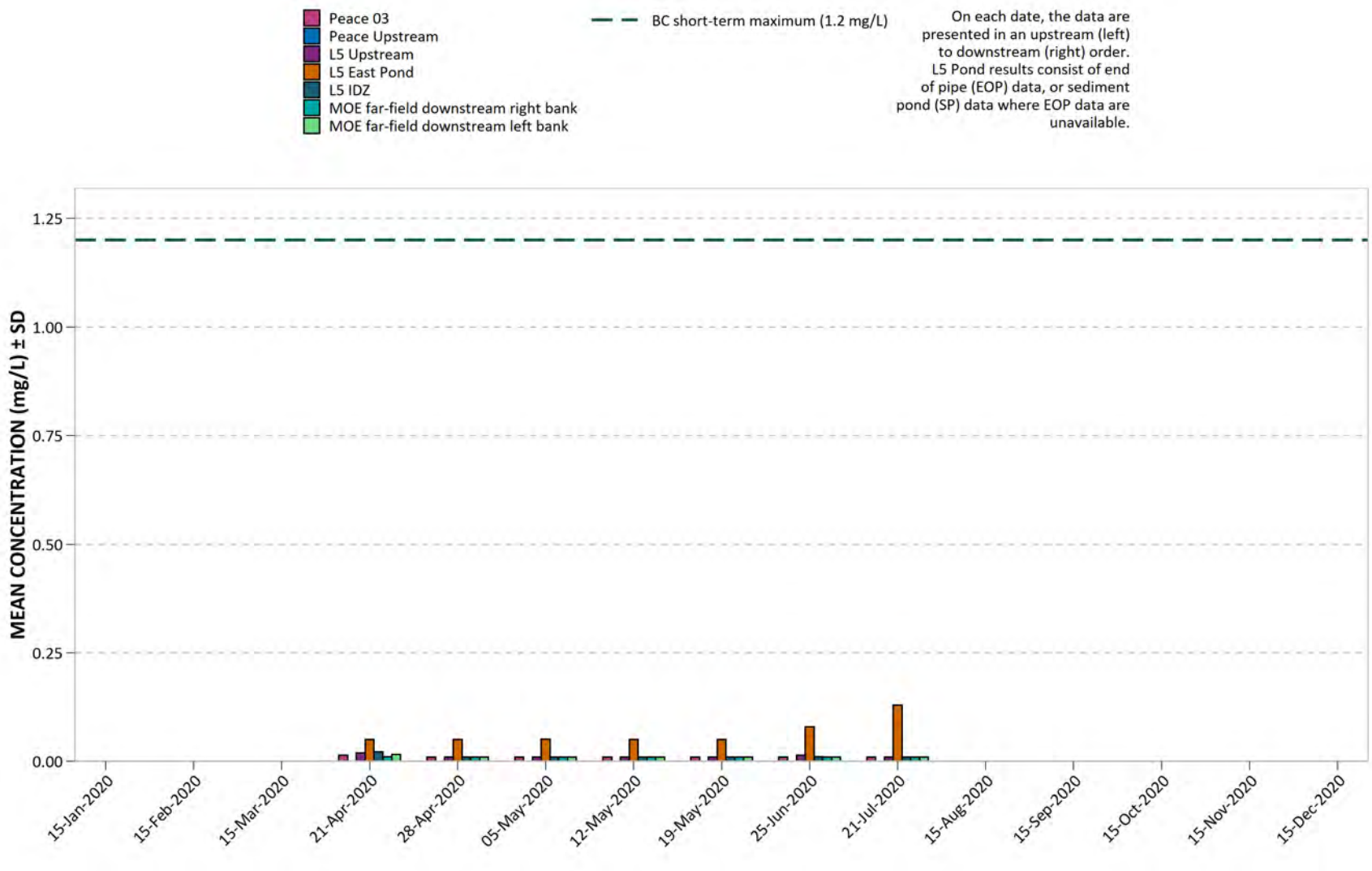


Figure 202. 2020 Peace River and Phase 1 RSEM L5 pond total cadmium (Cd).

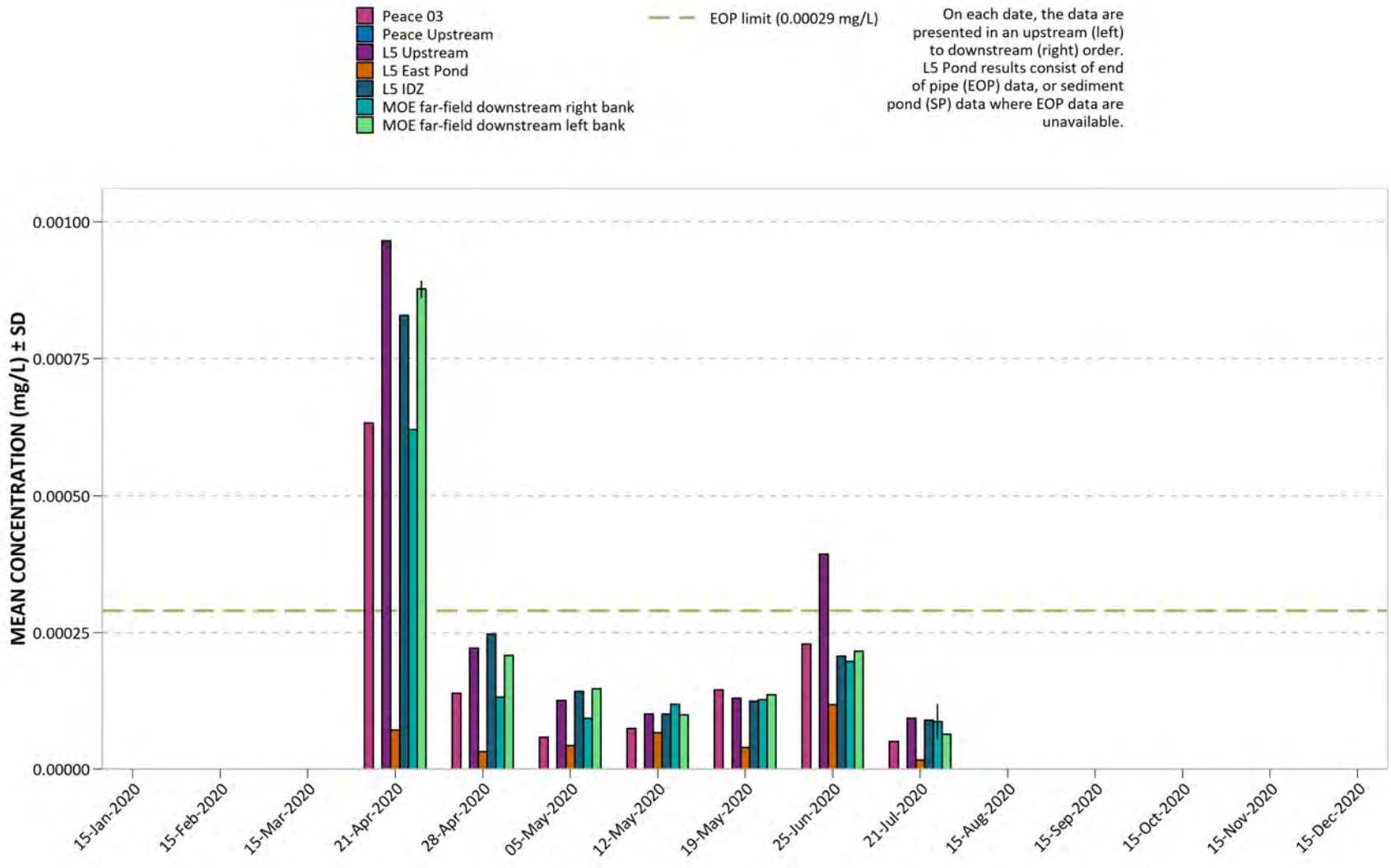


Figure 203. 2020 Peace River and Phase 1 RSEM L5 pond total calcium (Ca).

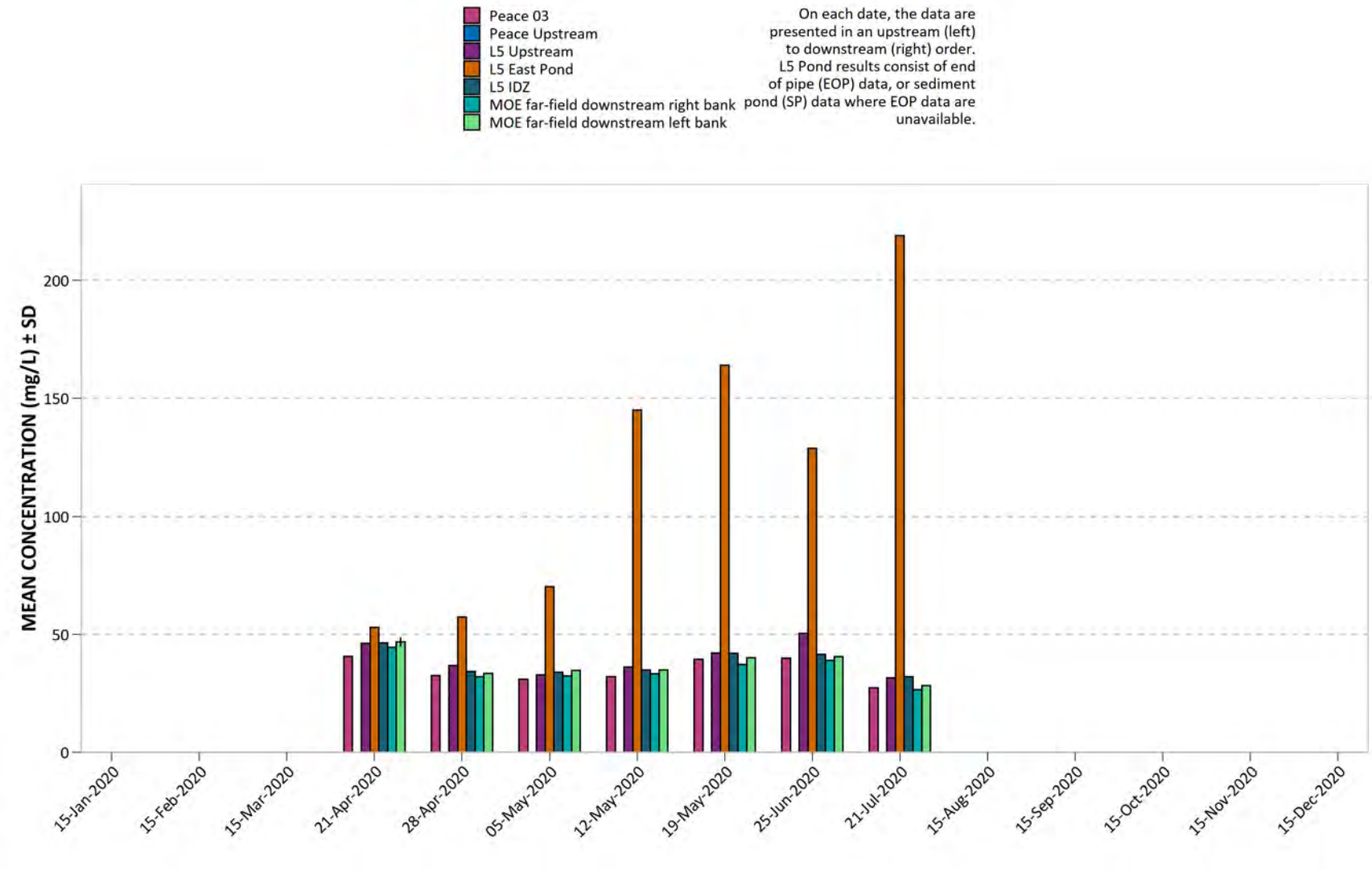


Figure 204. 2020 Peace River and Phase 1 RSEM L5 pond total chromium (Cr).

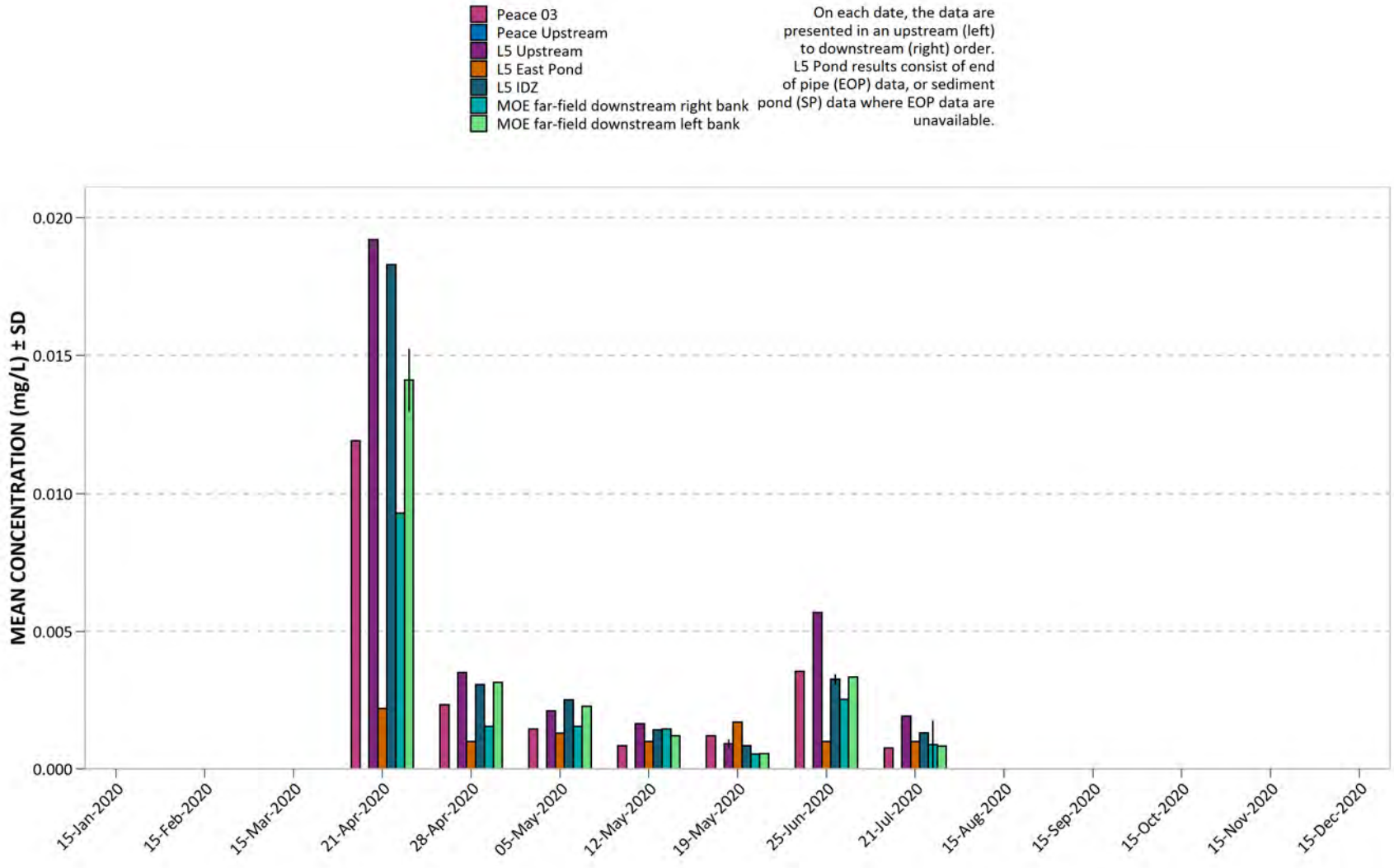


Figure 205. 2020 Peace River and Phase 1 RSEM L5 pond total cobalt (Co).

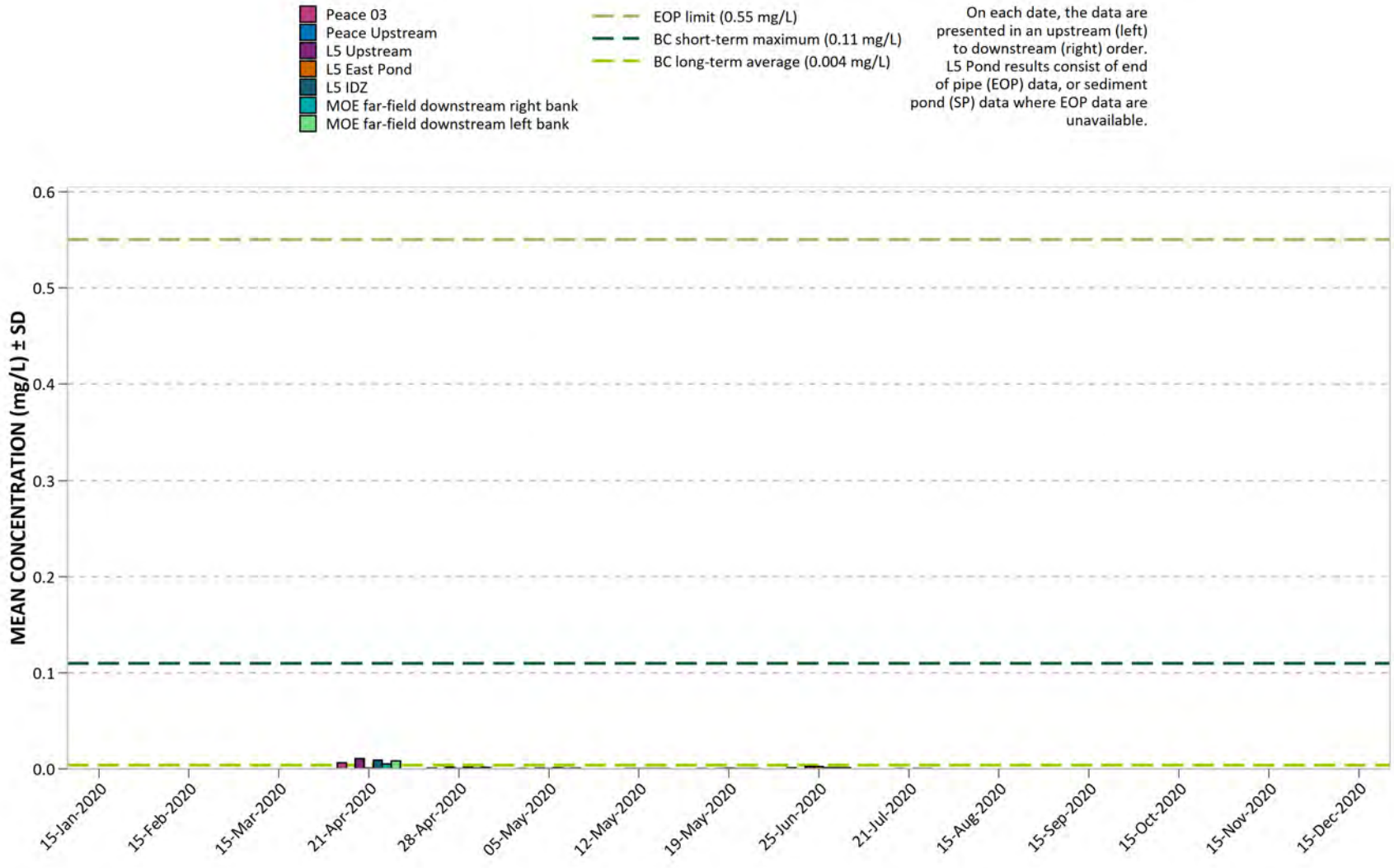


Figure 206. 2020 Peace River and Phase 1 RSEM L5 pond total copper (Cu).

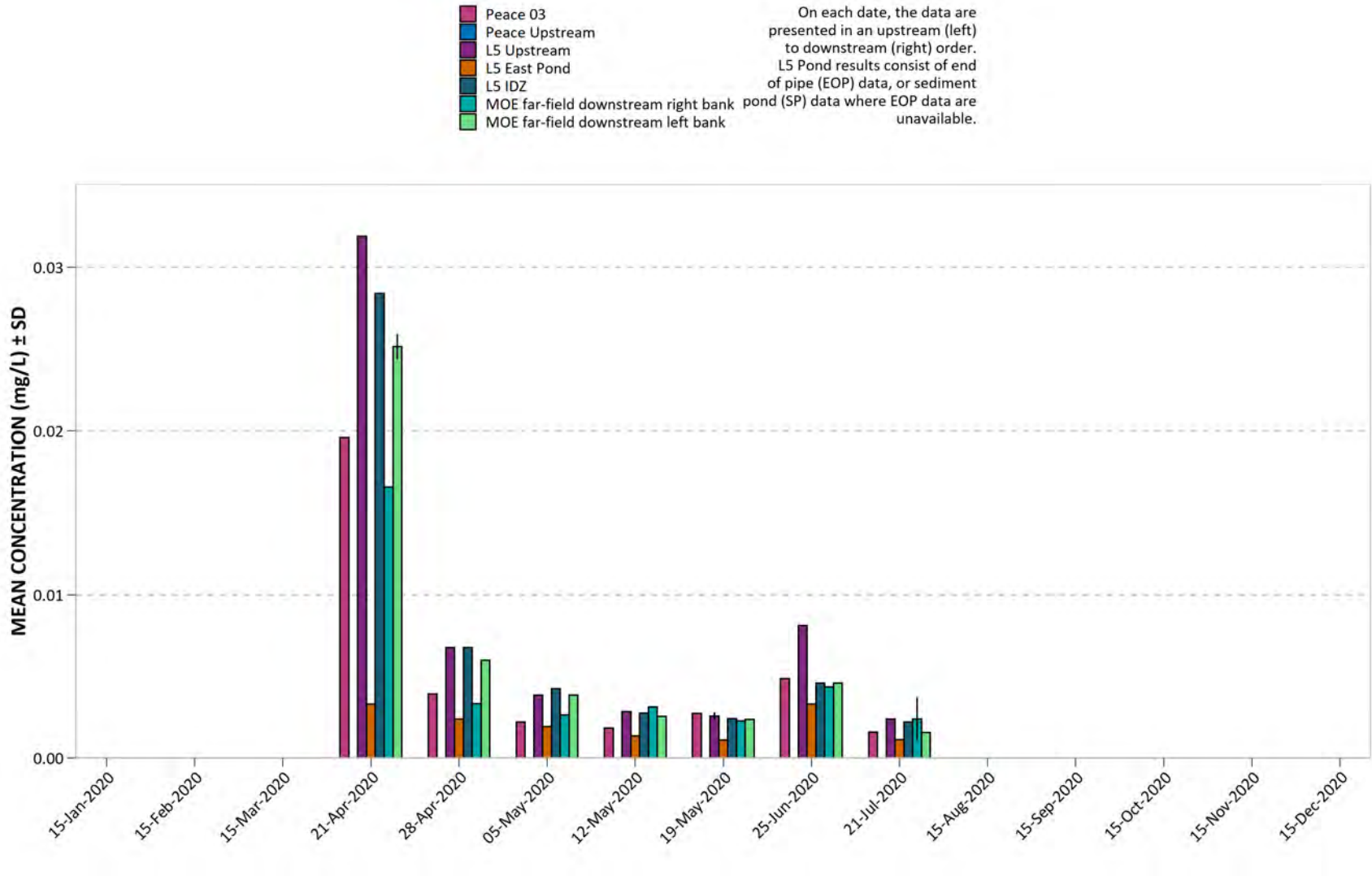


Figure 207. 2020 Peace River and Phase 1 RSEM L5 pond total iron (Fe).

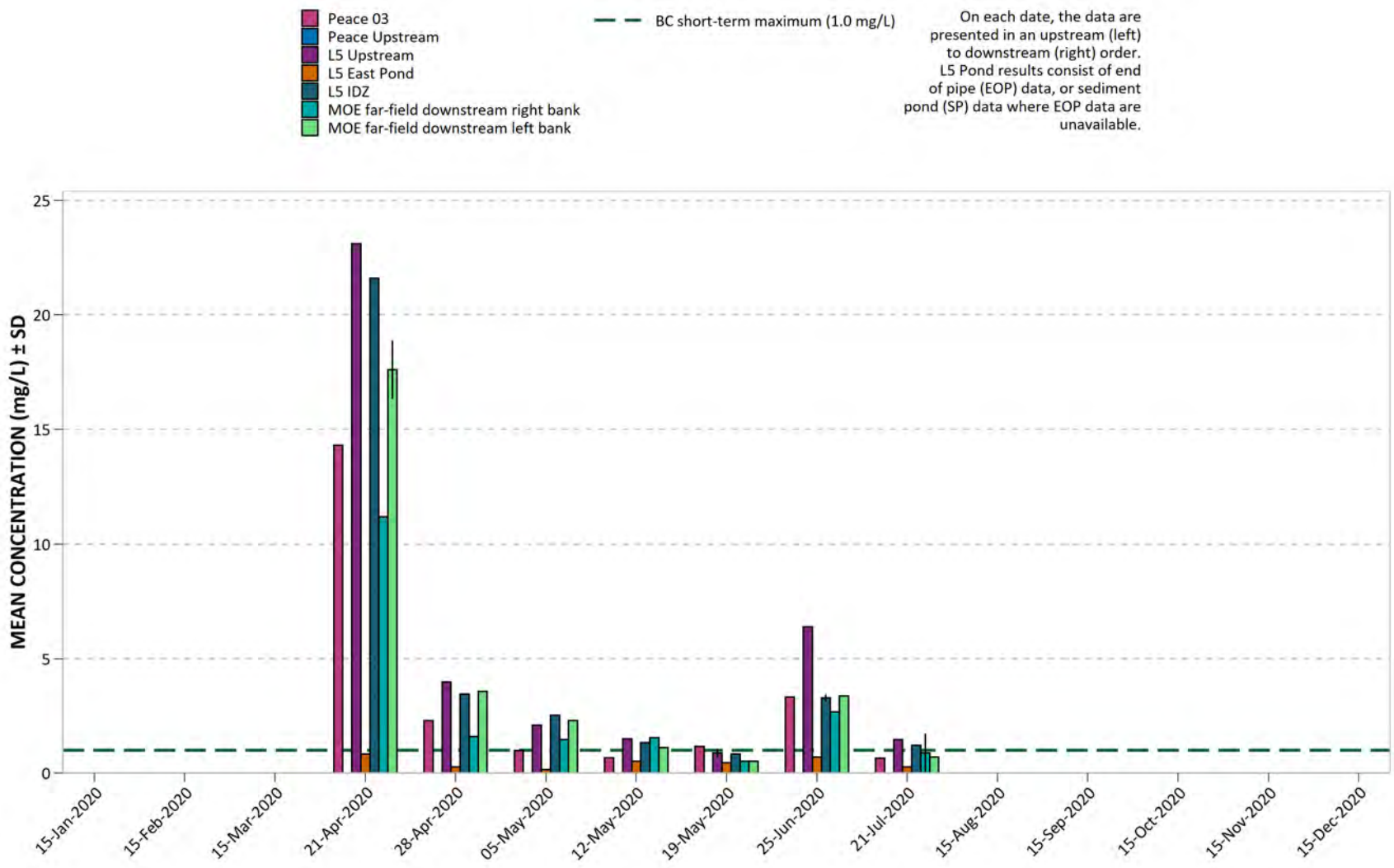


Figure 208. 2020 Peace River and Phase 1 RSEM L5 pond total lead (Pb).

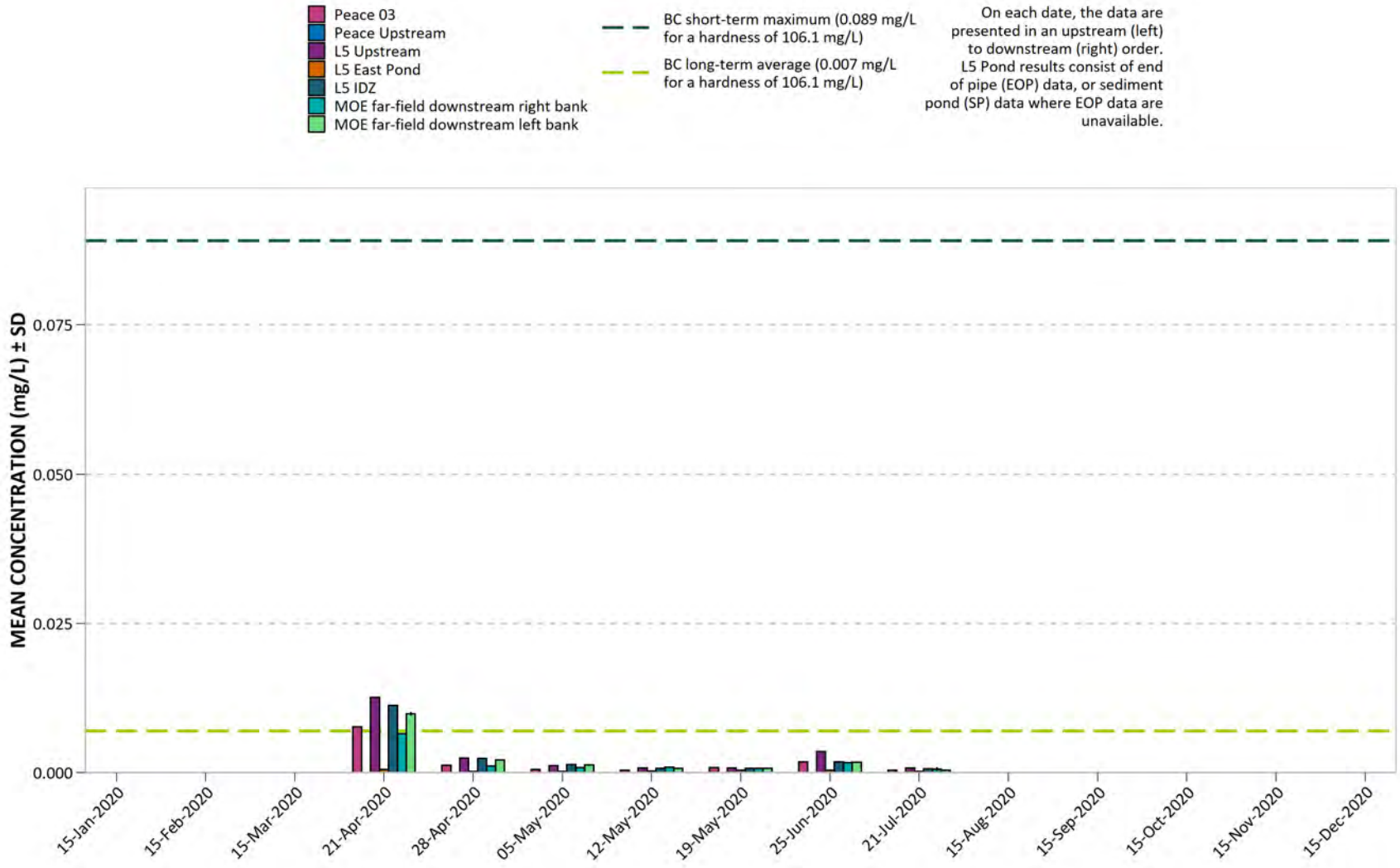


Figure 209. 2020 Peace River and Phase 1 RSEM L5 pond total lithium (Li).

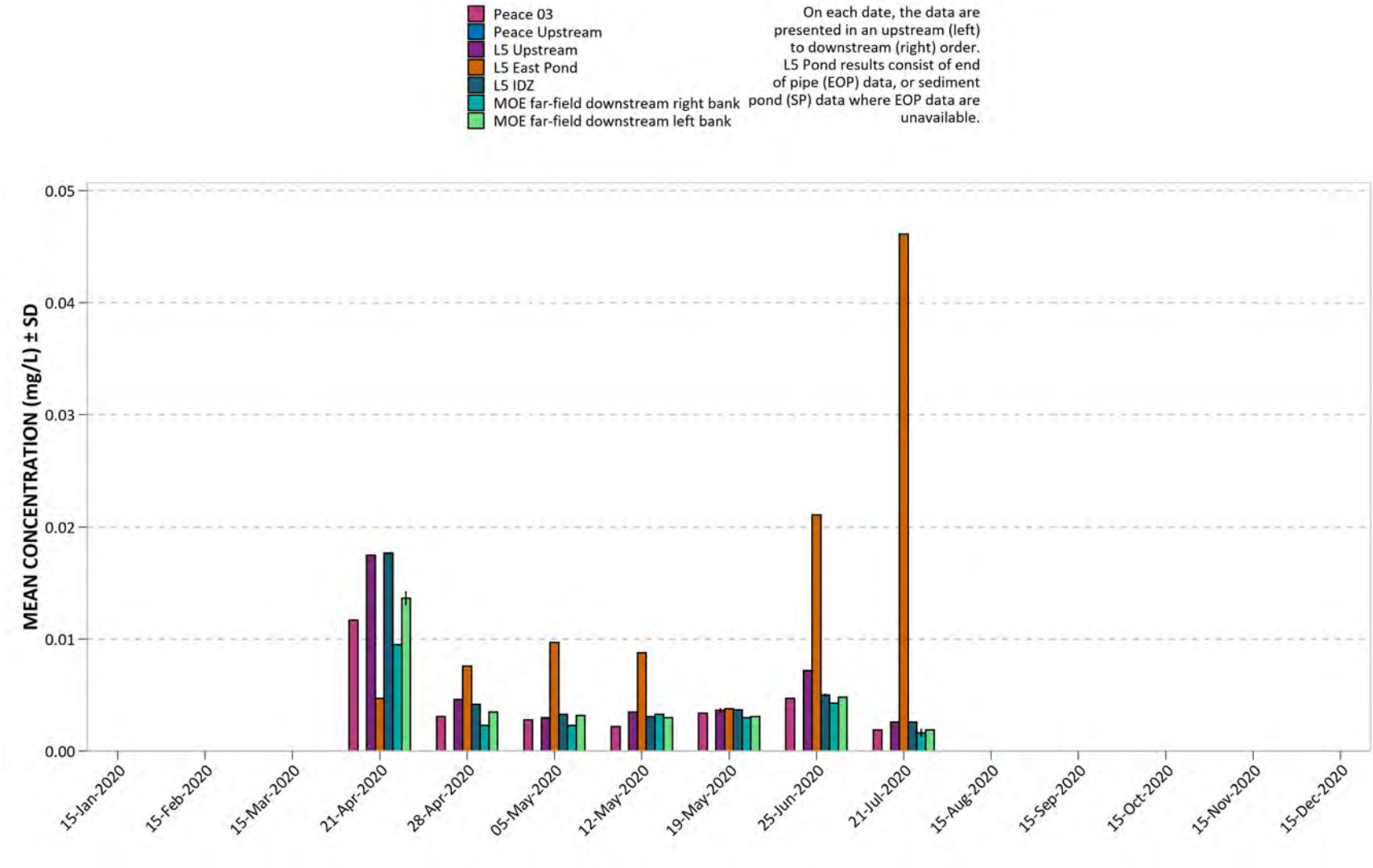


Figure 210. 2020 Peace River and Phase 1 RSEM L5 pond total magnesium (Mg).

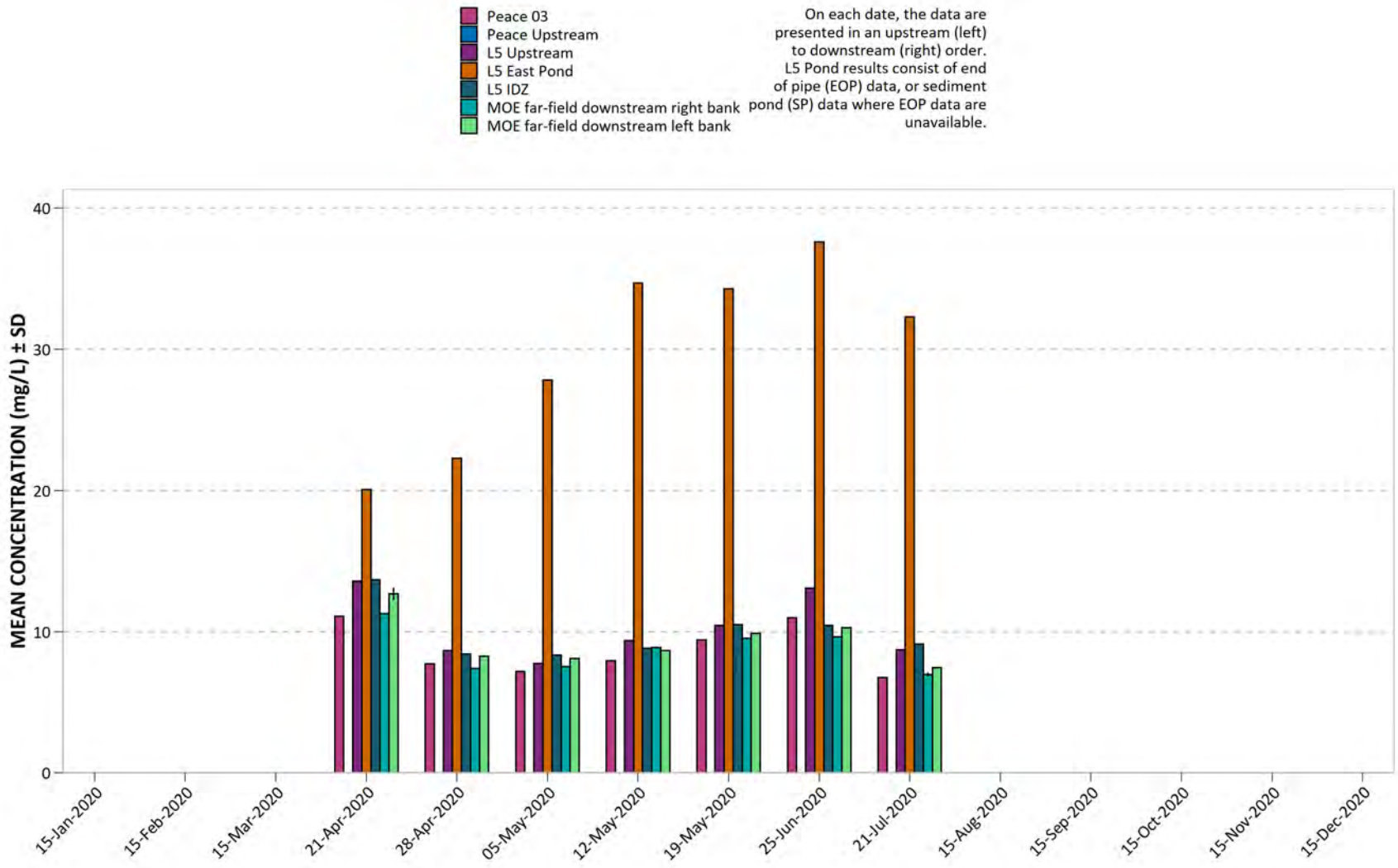


Figure 211. 2020 Peace River and Phase 1 RSEM L5 pond total manganese (Mn).

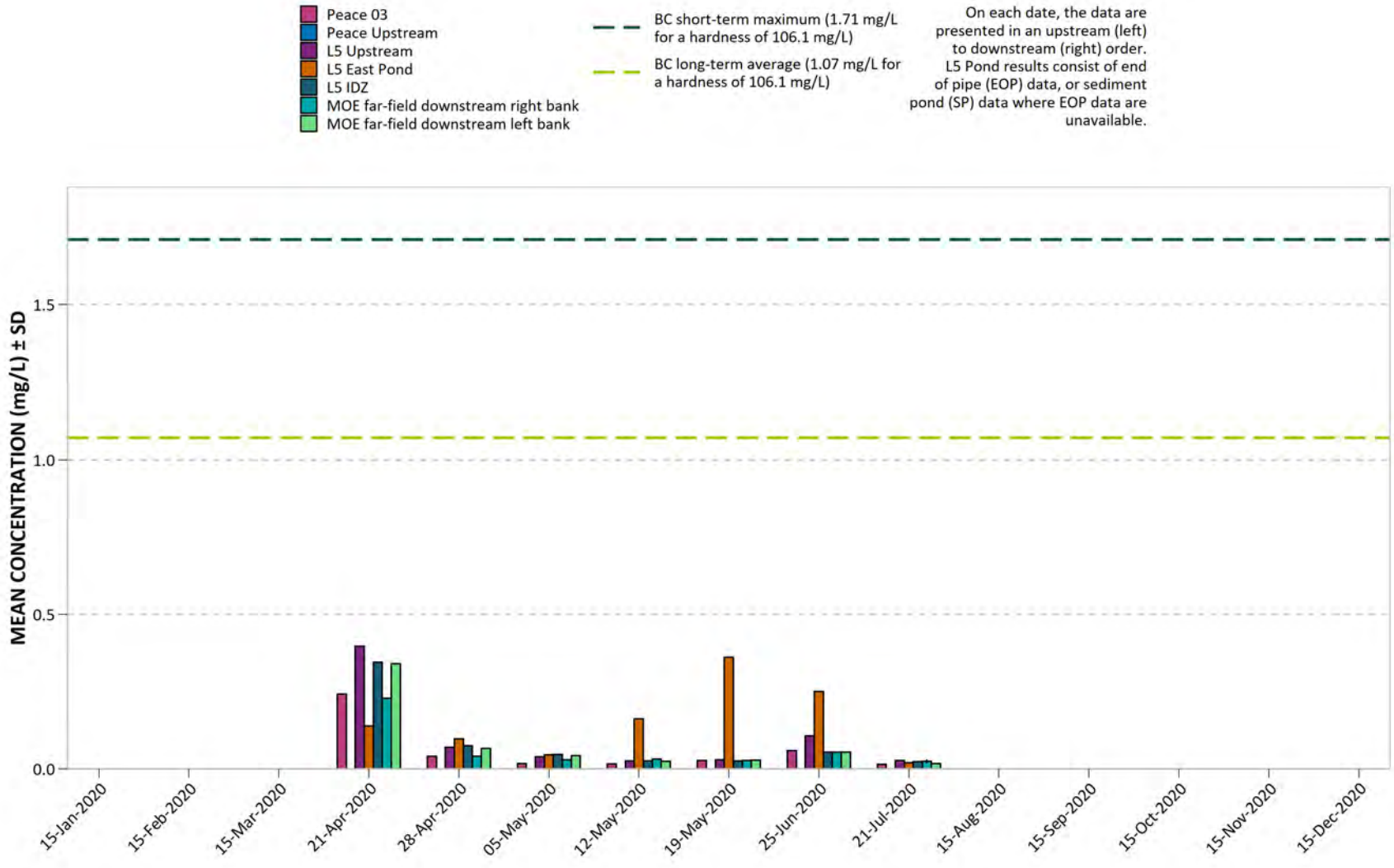


Figure 212. 2020 Peace River and Phase 1 RSEM L5 pond total mercury (Hg).

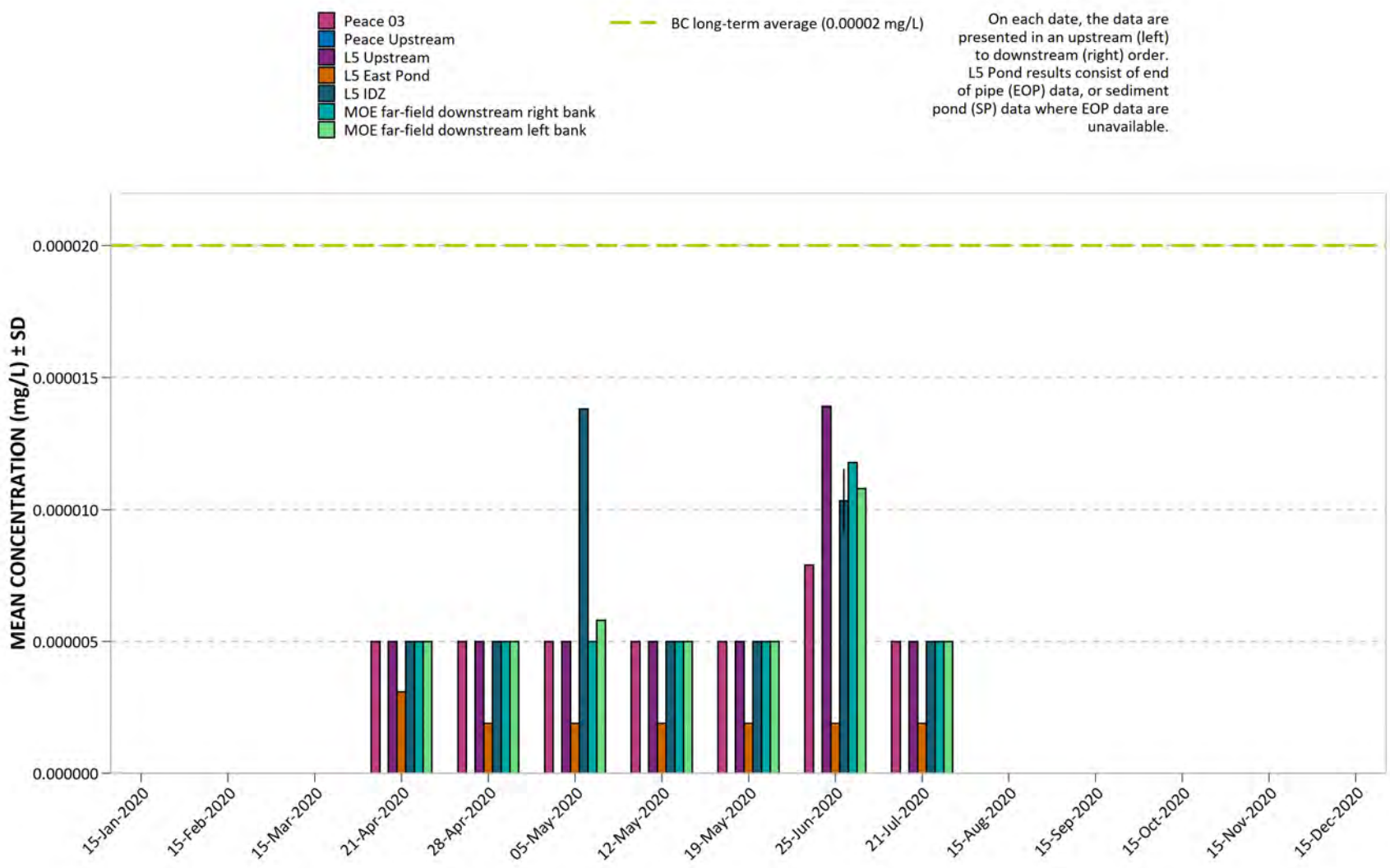


Figure 213. 2020 Peace River and Phase 1 RSEM L5 pond total molybdenum (Mo).

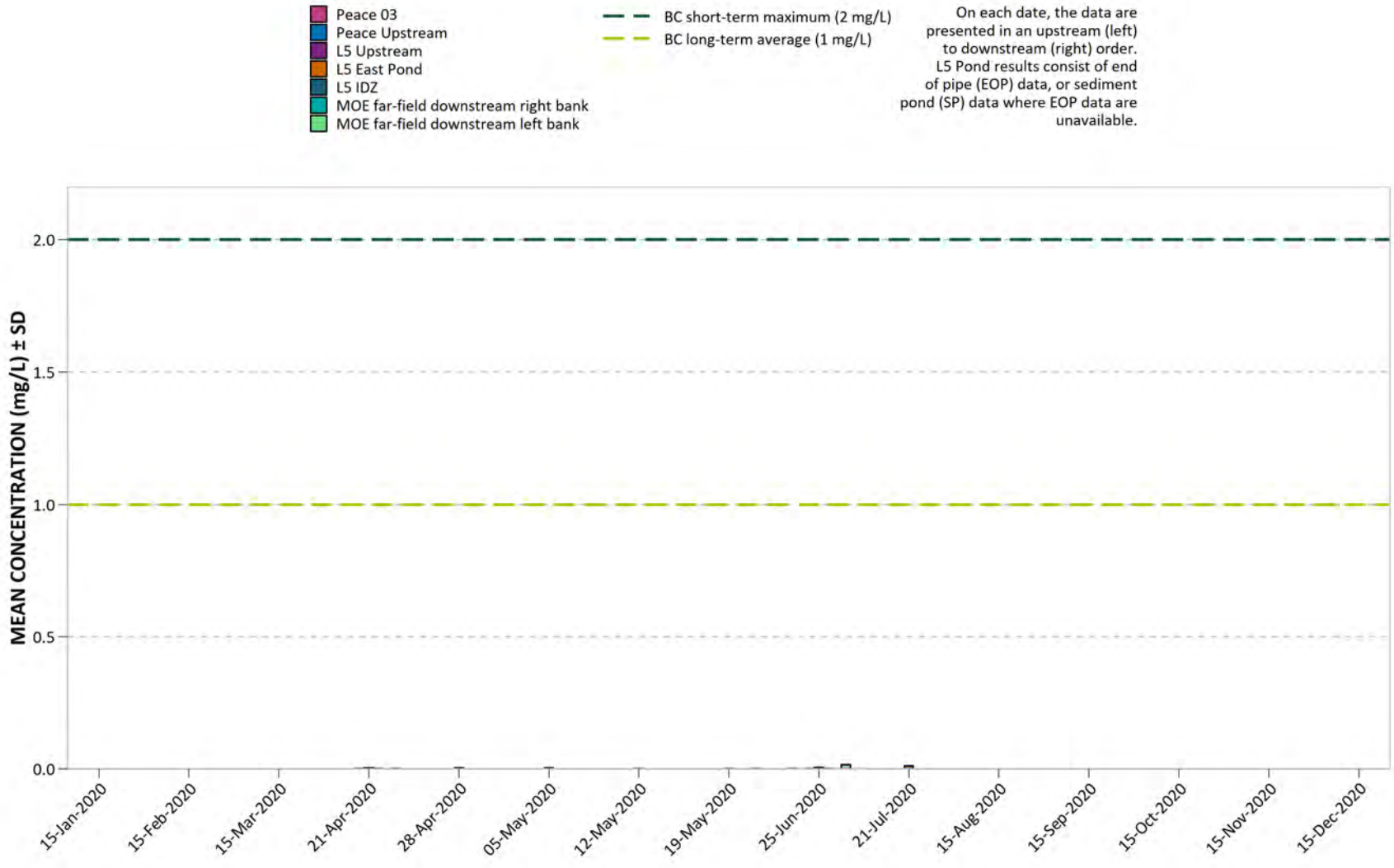


Figure 214. 2020 Peace River and Phase 1 RSEM L5 pond total nickel (Ni).

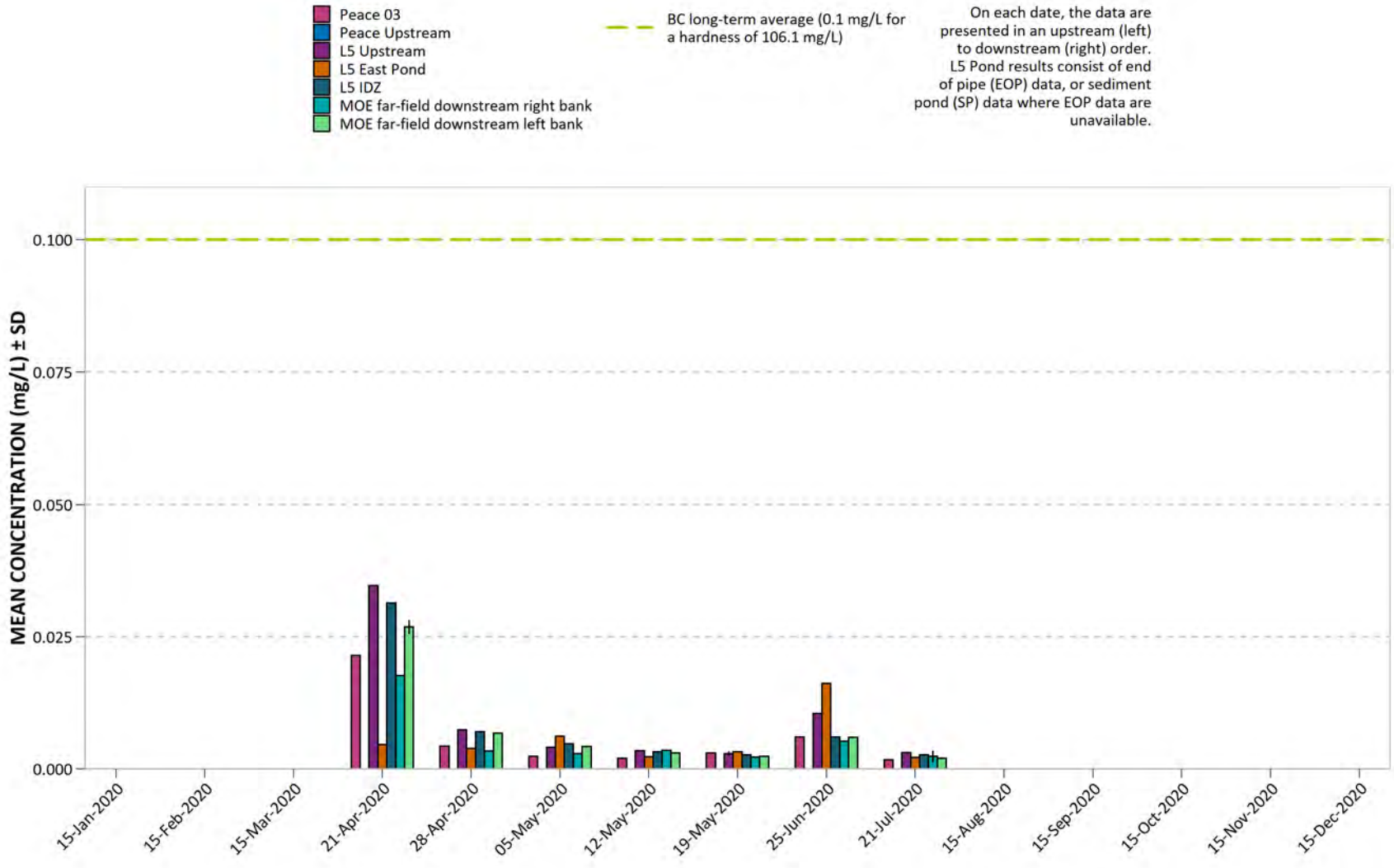


Figure 215. 2020 Peace River and Phase 1 RSEM L5 pond total potassium (K).

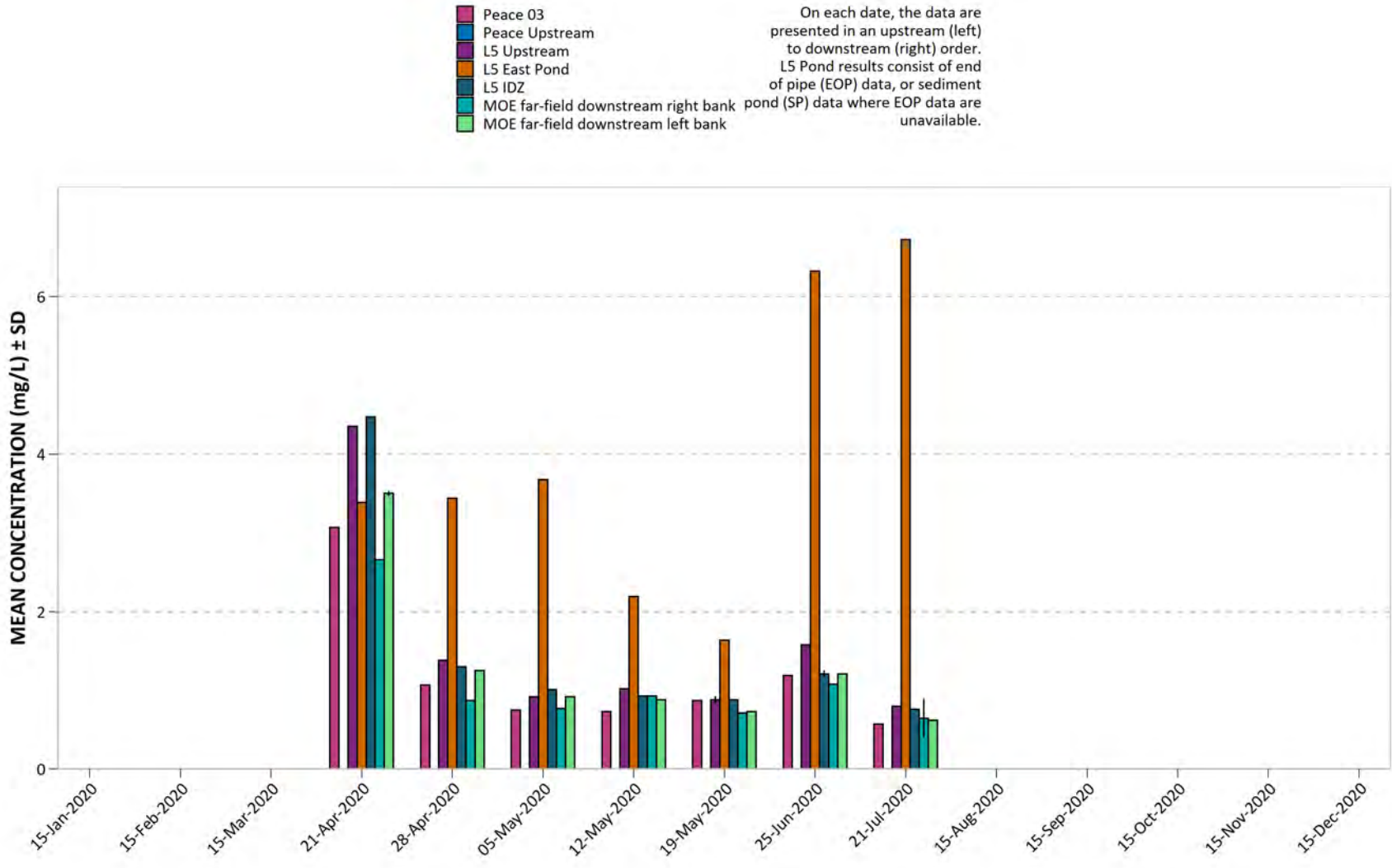


Figure 216. 2020 Peace River and Phase 1 RSEM L5 pond total selenium (Se).

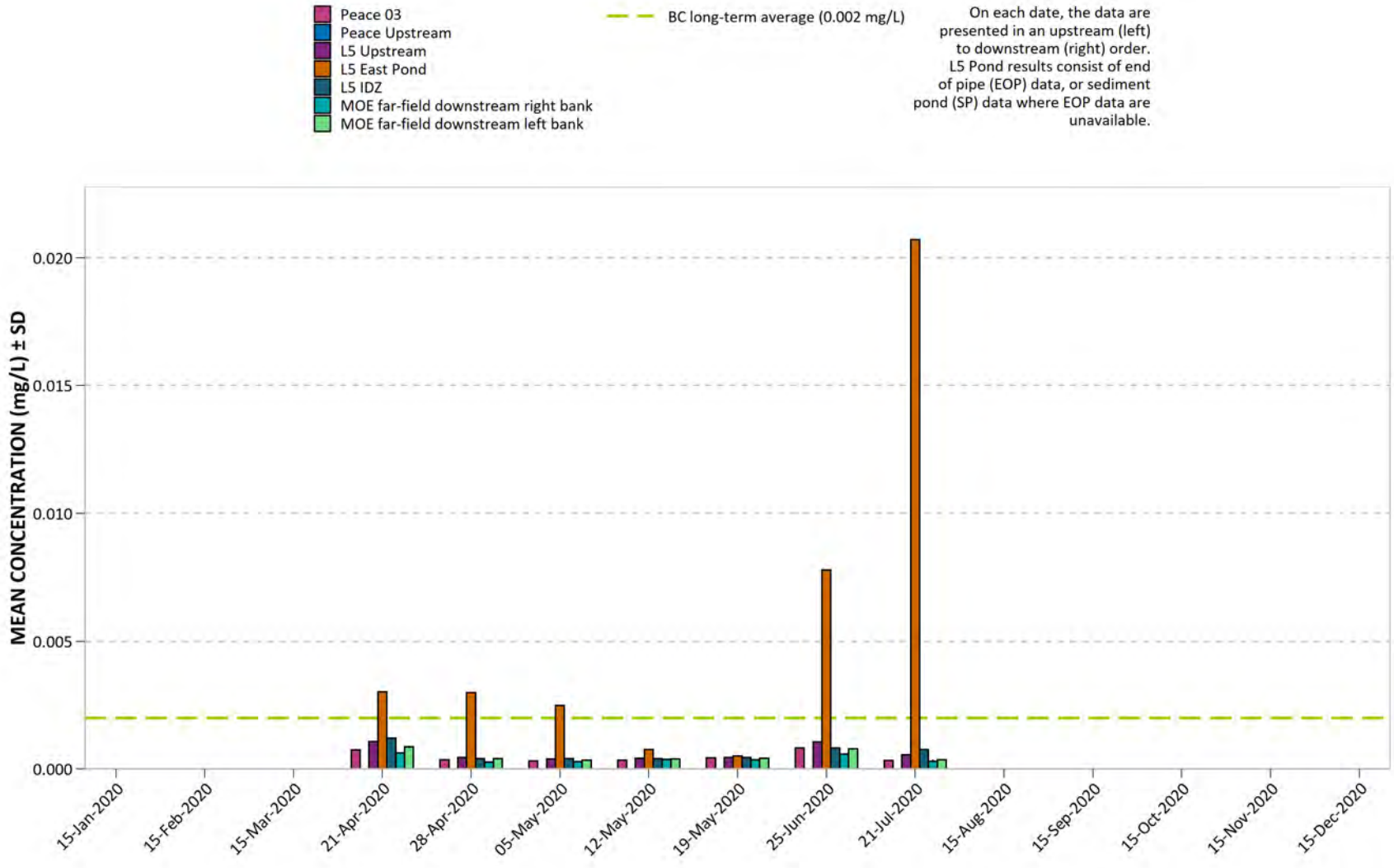


Figure 217. 2020 Peace River and Phase 1 RSEM L5 pond total silicon (Si).

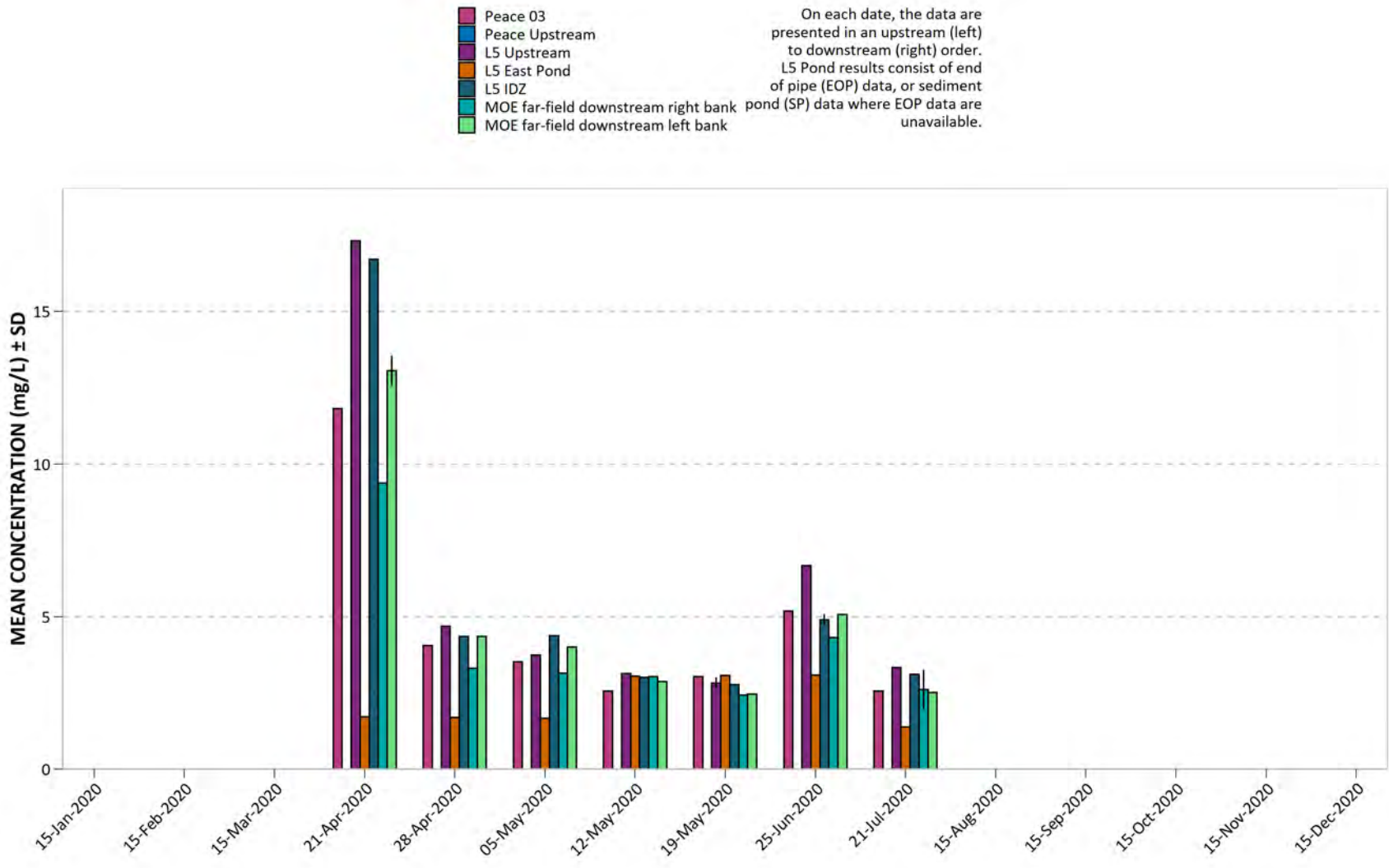


Figure 218. 2020 Peace River and Phase 1 RSEM L5 pond total silver (Ag).

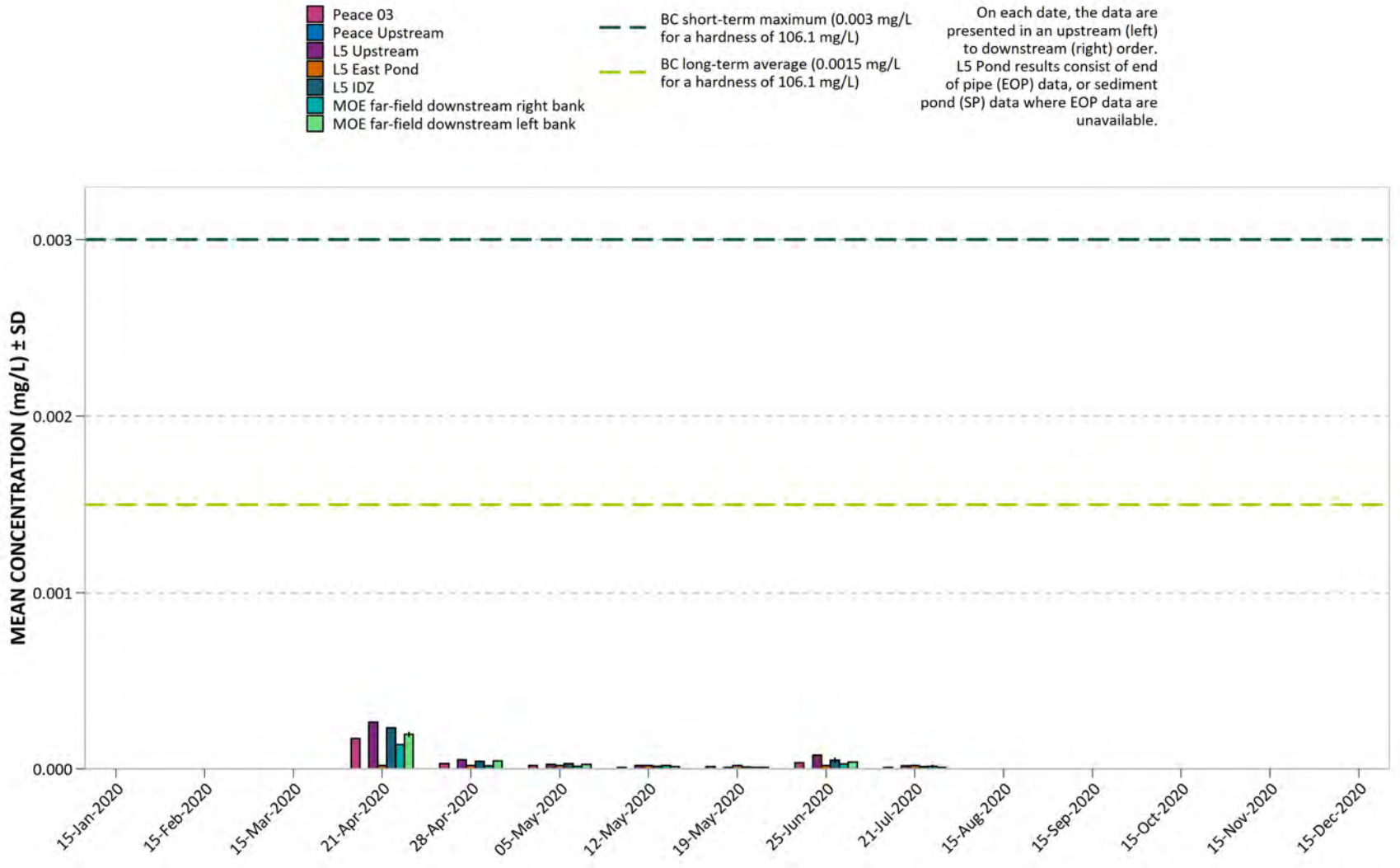


Figure 219. 2020 Peace River and Phase 1 RSEM L5 pond total sodium (Na).

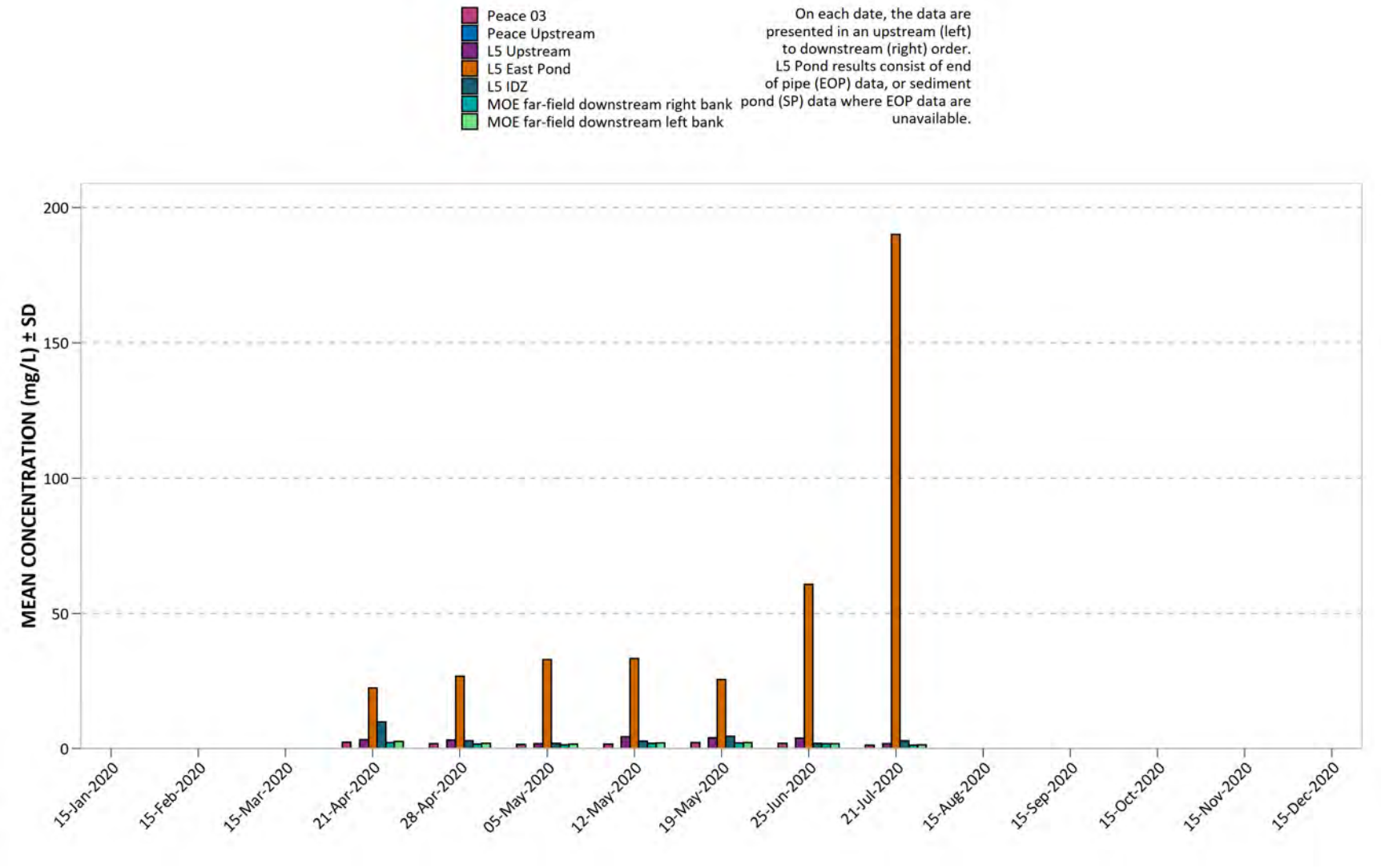


Figure 220. 2020 Peace River and Phase 1 RSEM L5 pond total strontium (Sr).

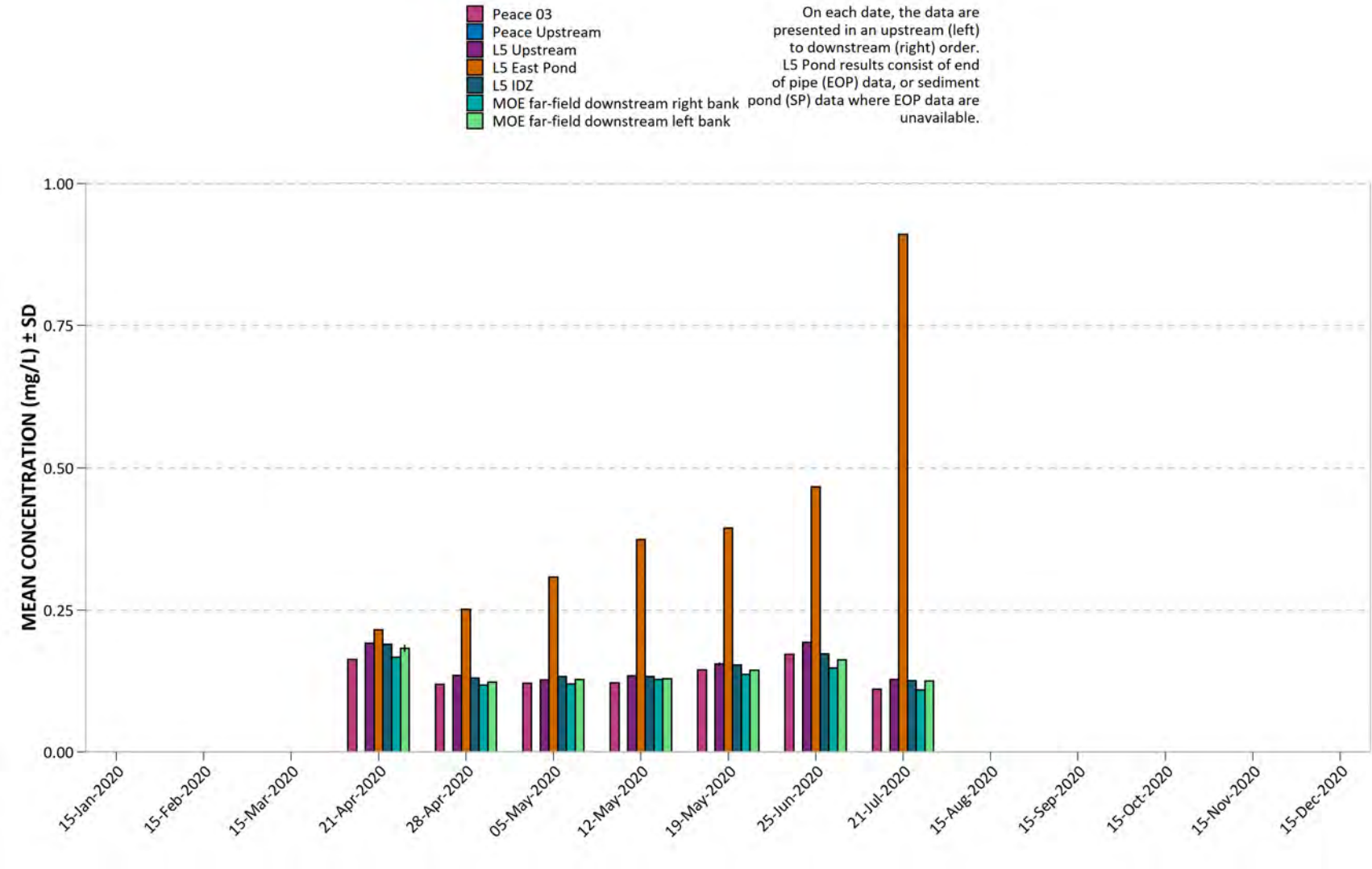


Figure 221. 2020 Peace River and Phase 1 RSEM L5 pond total sulfur (S).

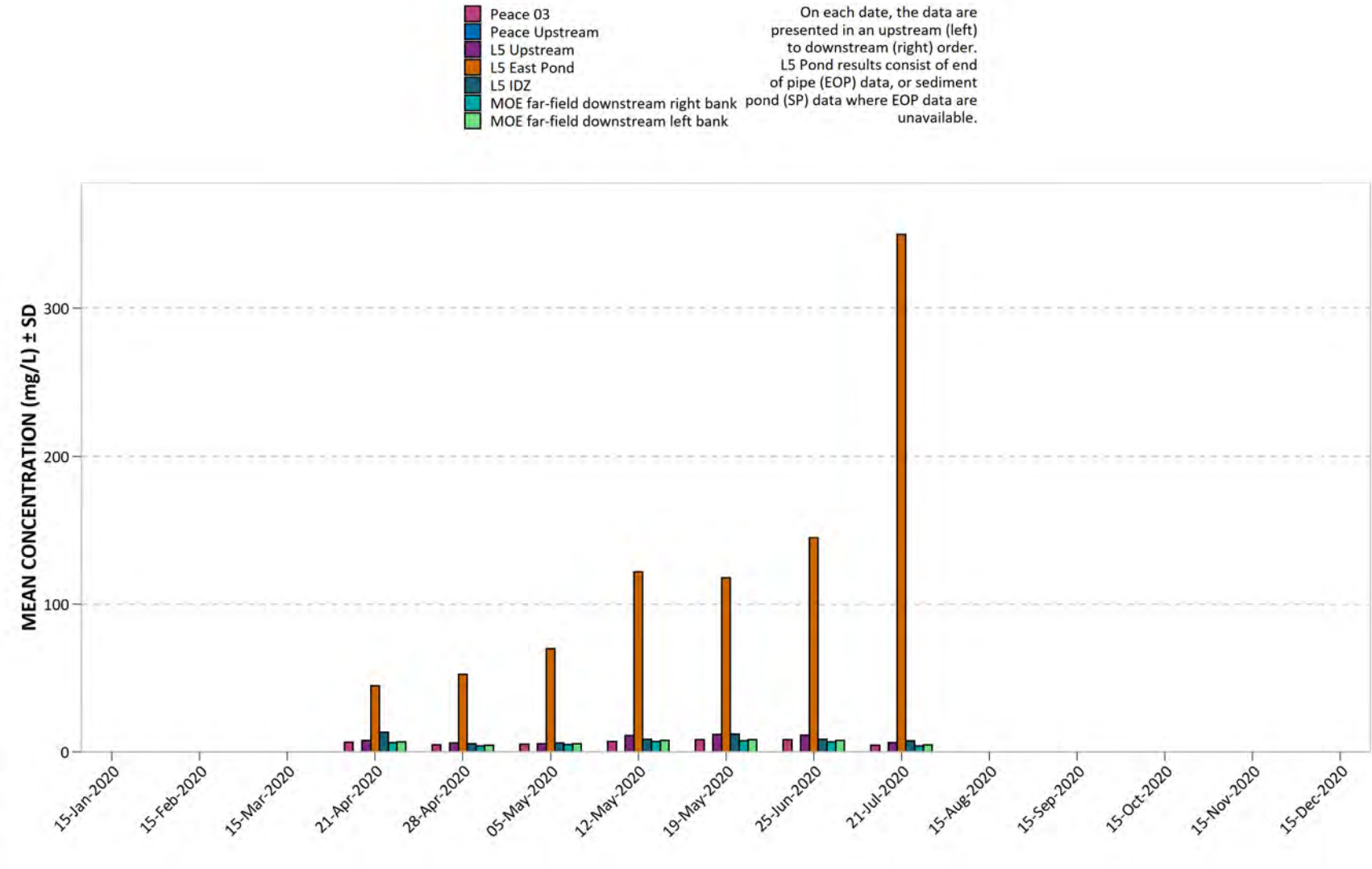


Figure 222. 2020 Peace River and Phase 1 RSEM L5 pond total thallium (Tl).

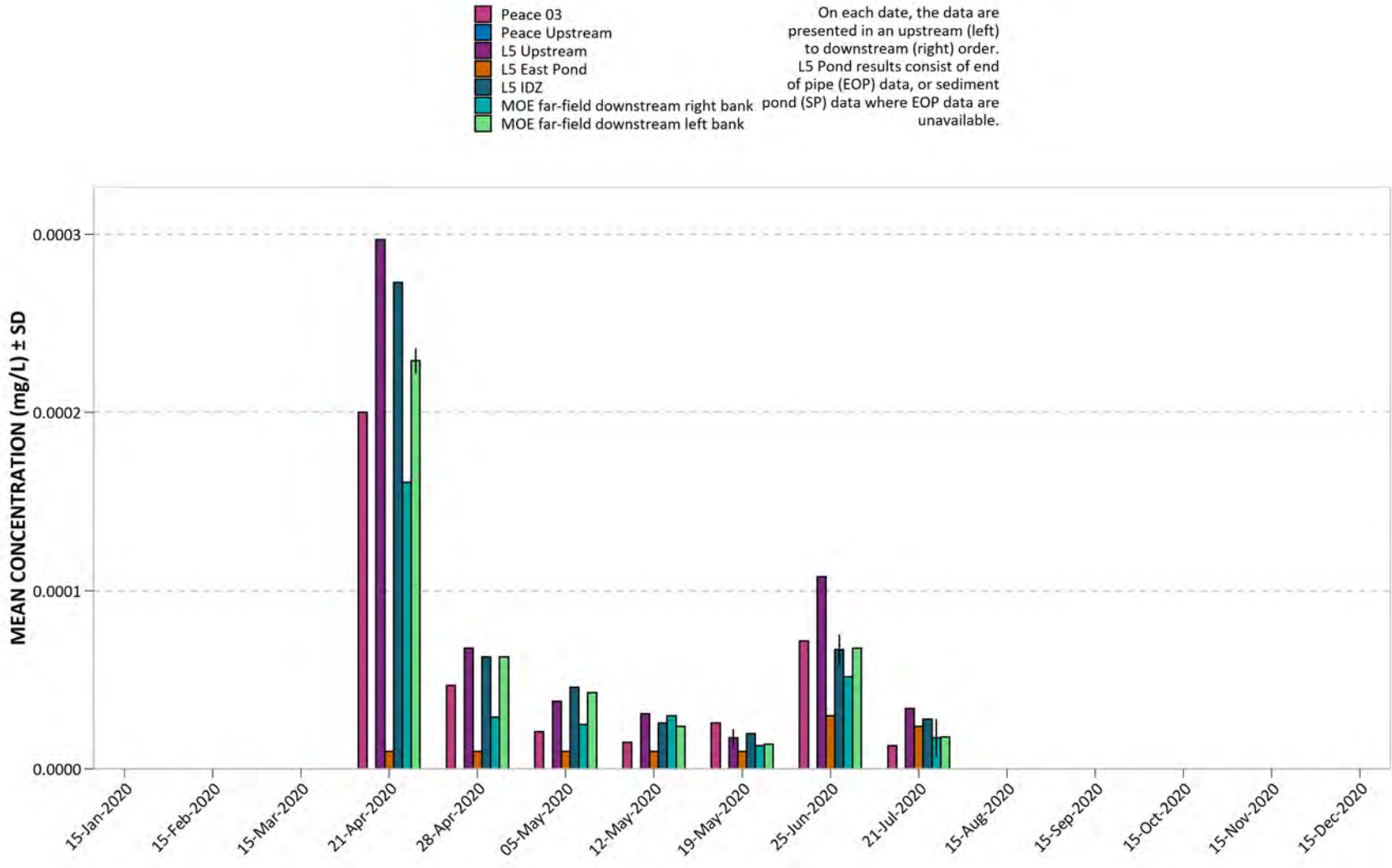


Figure 223. 2020 Peace River and Phase 1 RSEM L5 pond total tin (Sn).

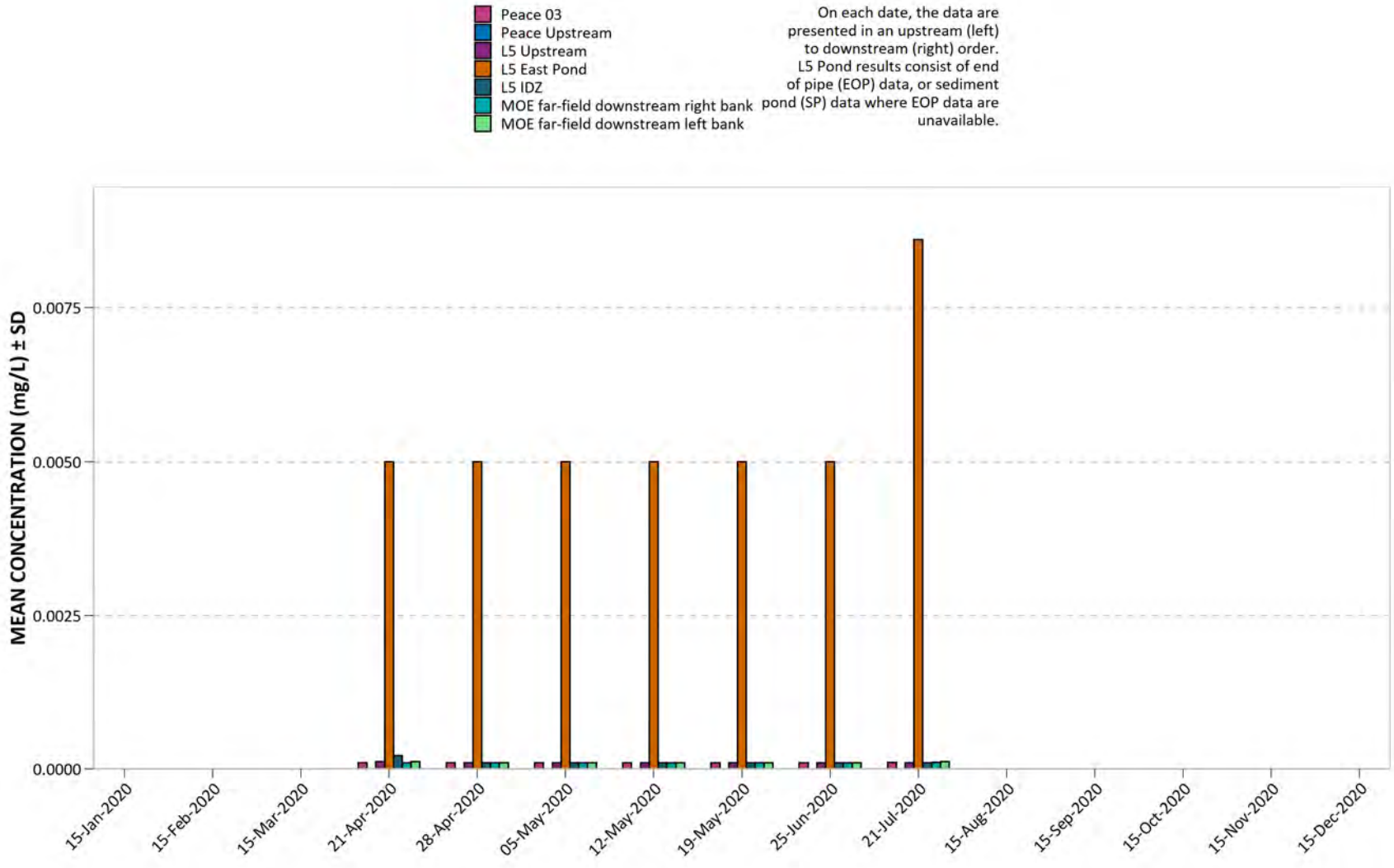


Figure 224. 2020 Peace River and Phase 1 RSEM L5 pond total titanium (Ti).

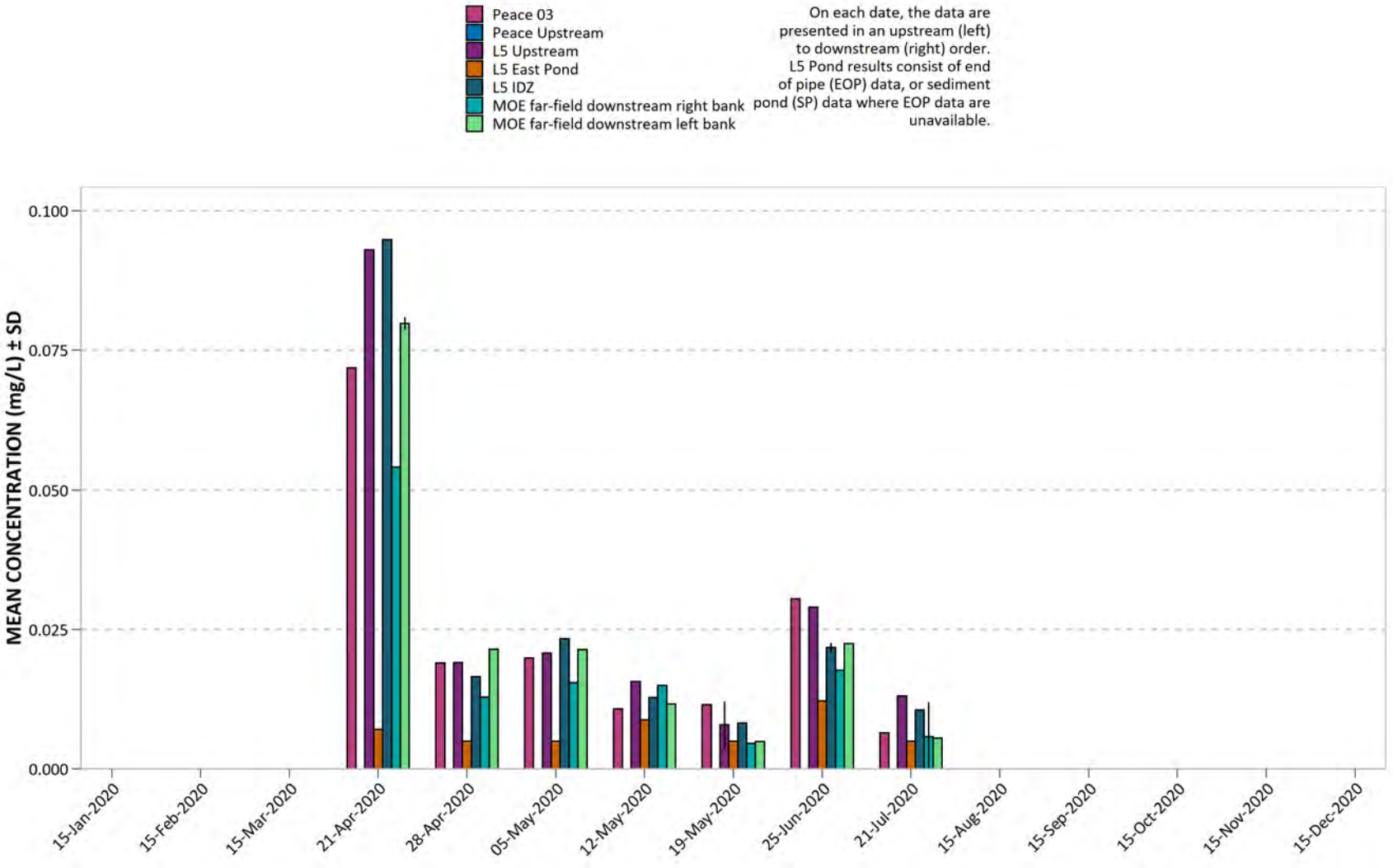


Figure 225. 2020 Peace River and Phase 1 RSEM L5 pond total uranium (U).

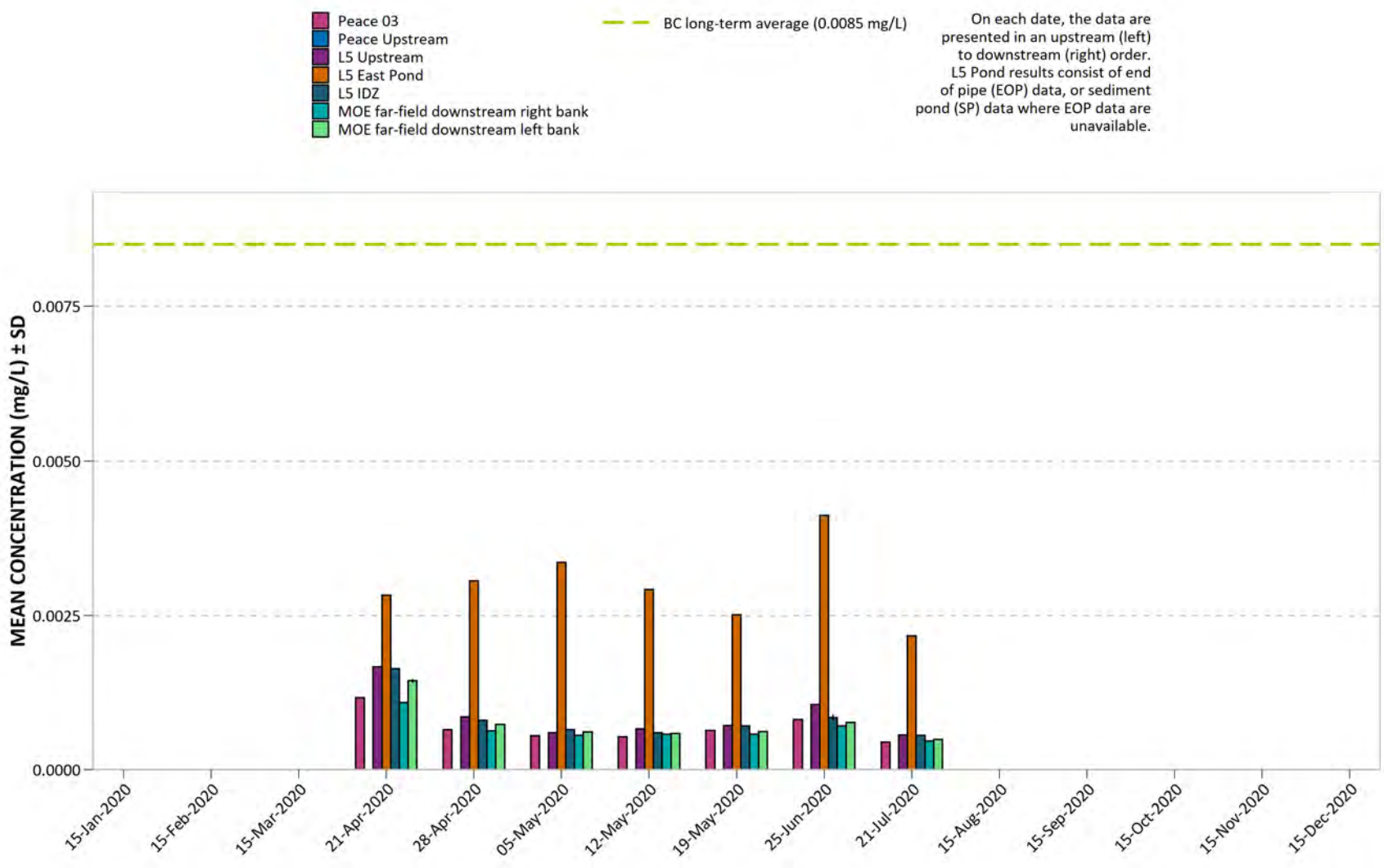


Figure 226. 2020 Peace River and Phase 1 RSEM L5 pond total vanadium (V).

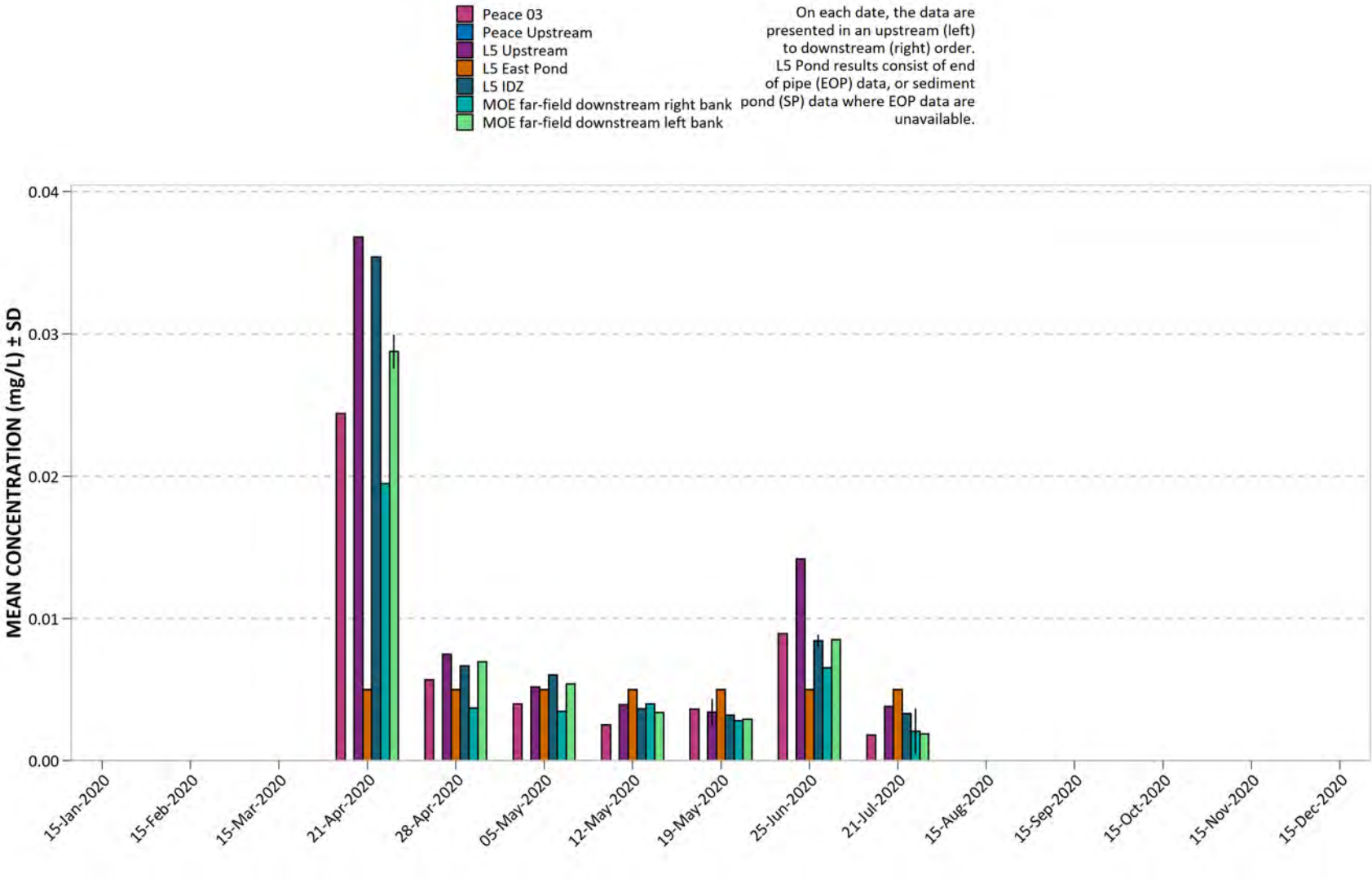


Figure 227. 2020 Peace River and Phase 1 RSEM L5 pond total zinc (Zn).

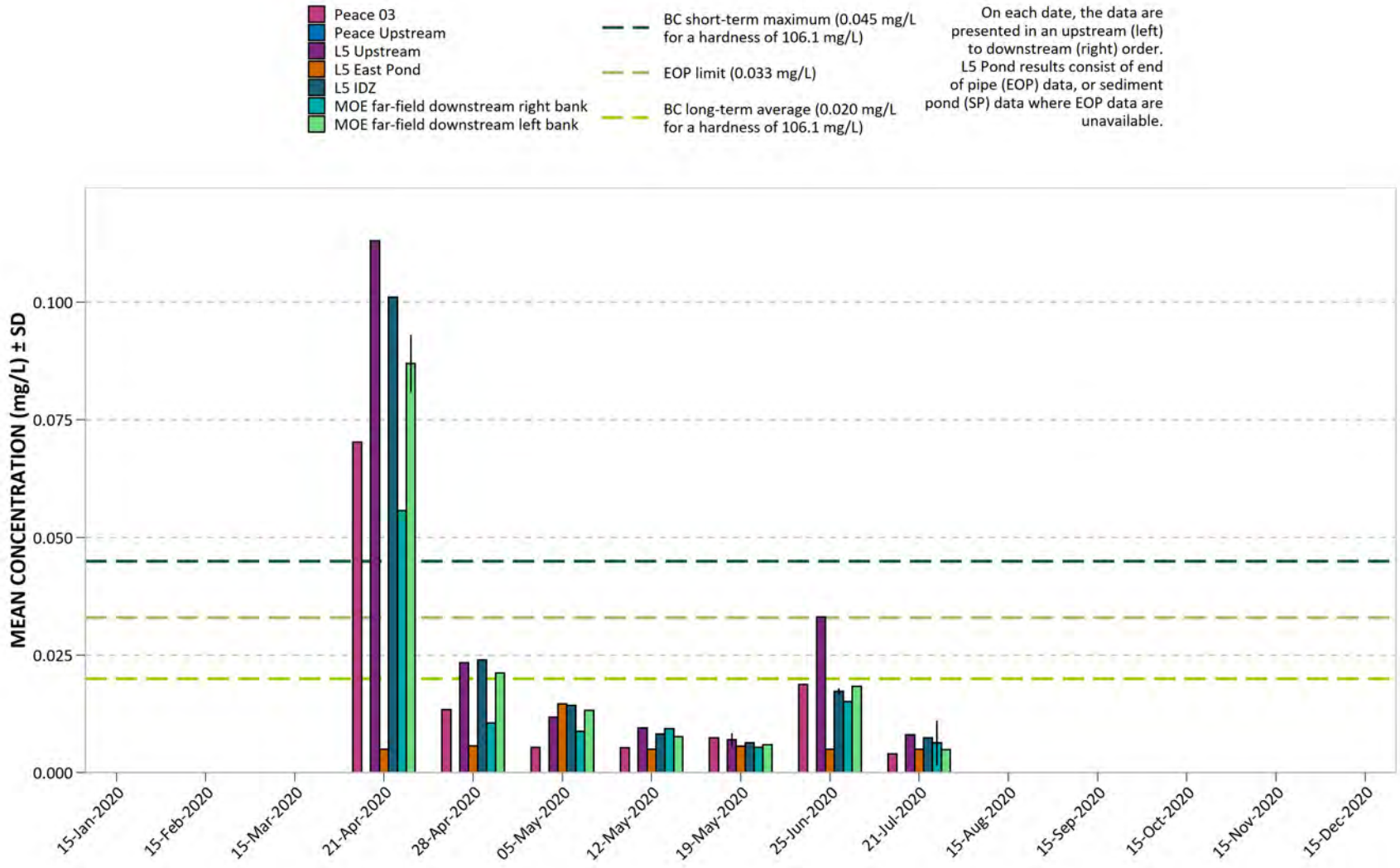


Figure 228. 2020 Peace River and Phase 1 RSEM L5 pond total zirconium (Zr).

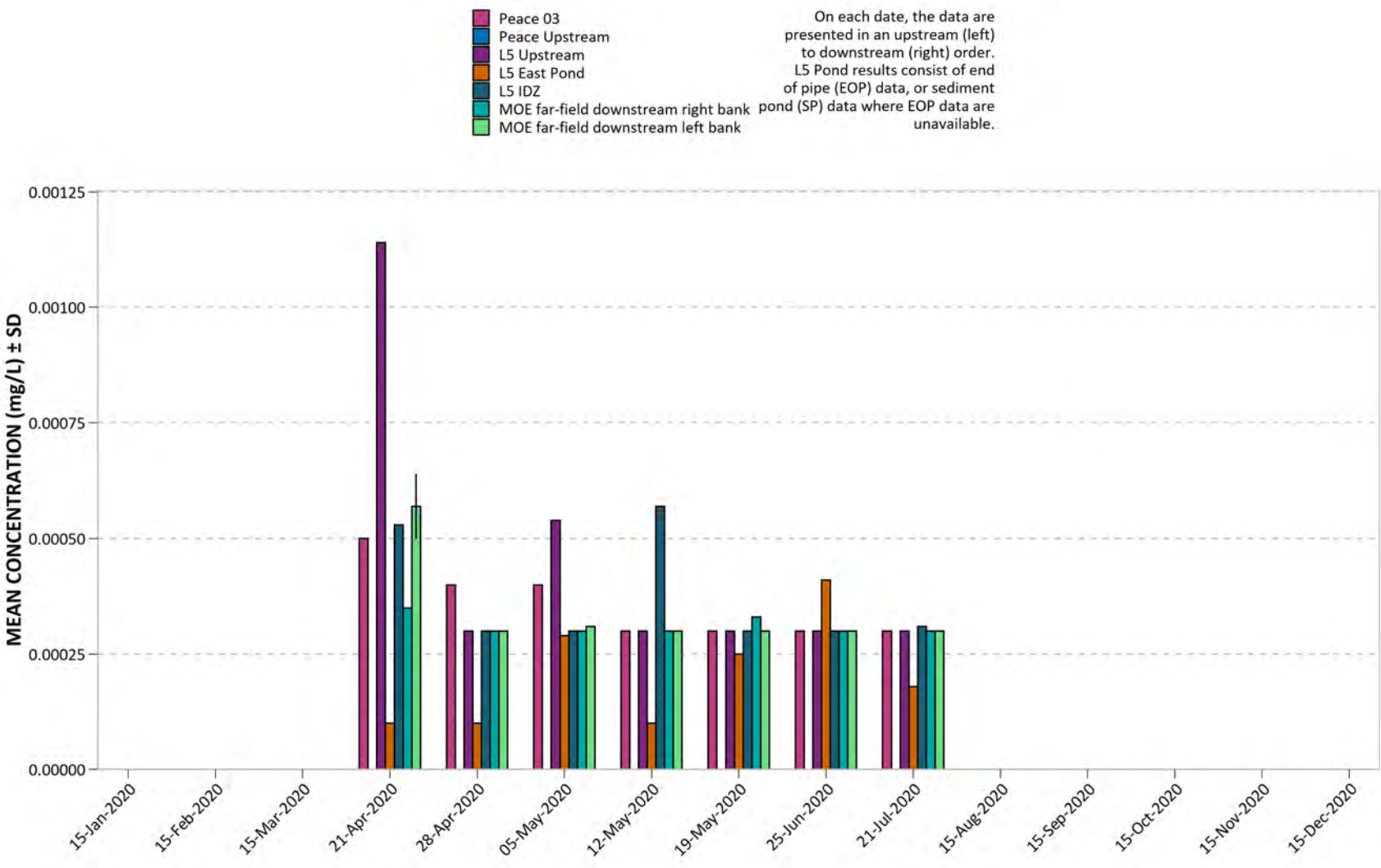


Figure 229. 2020 Peace River and Phase 1 RSEM L5 pond dissolved aluminum (Al).

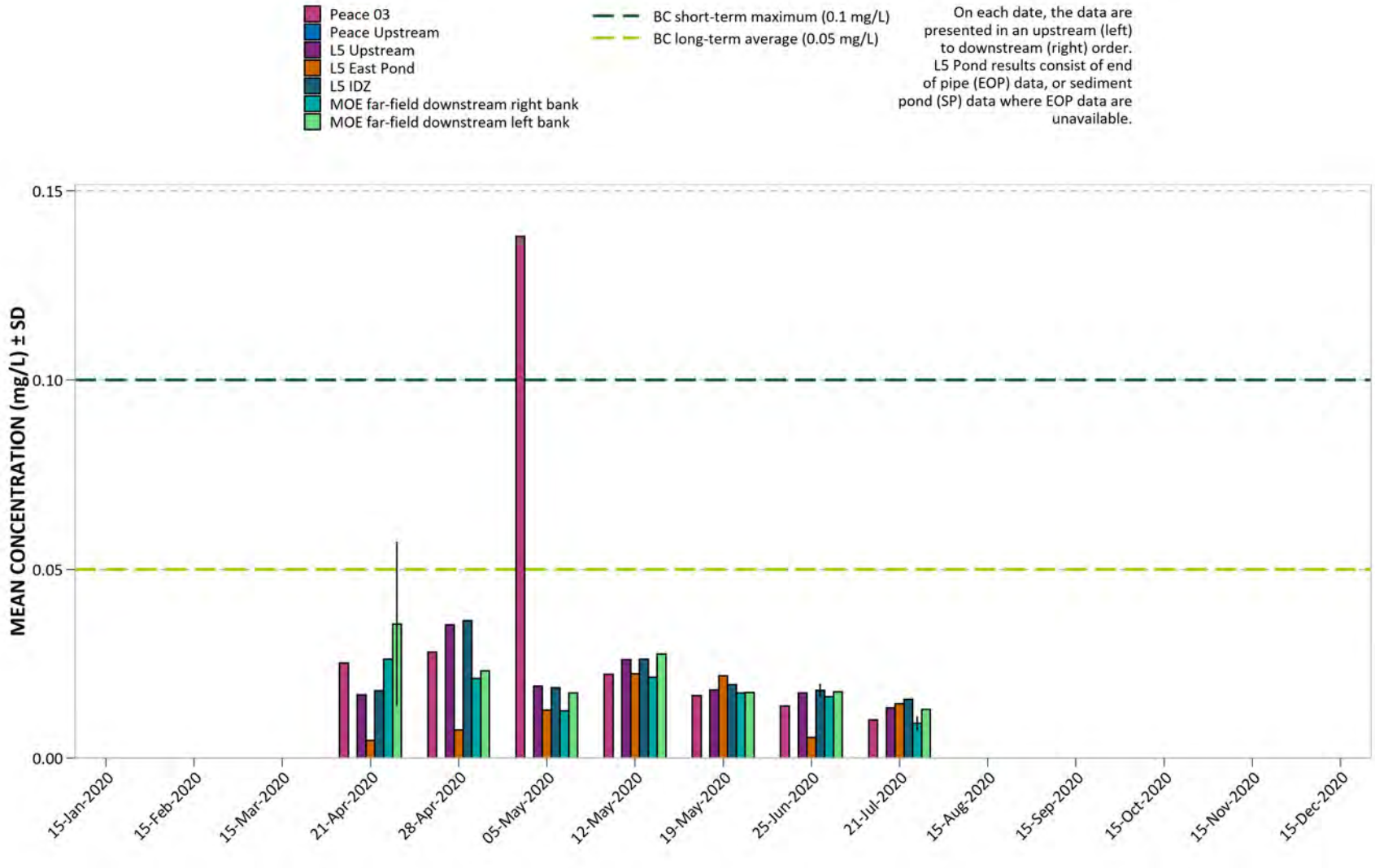


Figure 230. 2020 Peace River and Phase 1 RSEM L5 pond dissolved antimony (Sb).

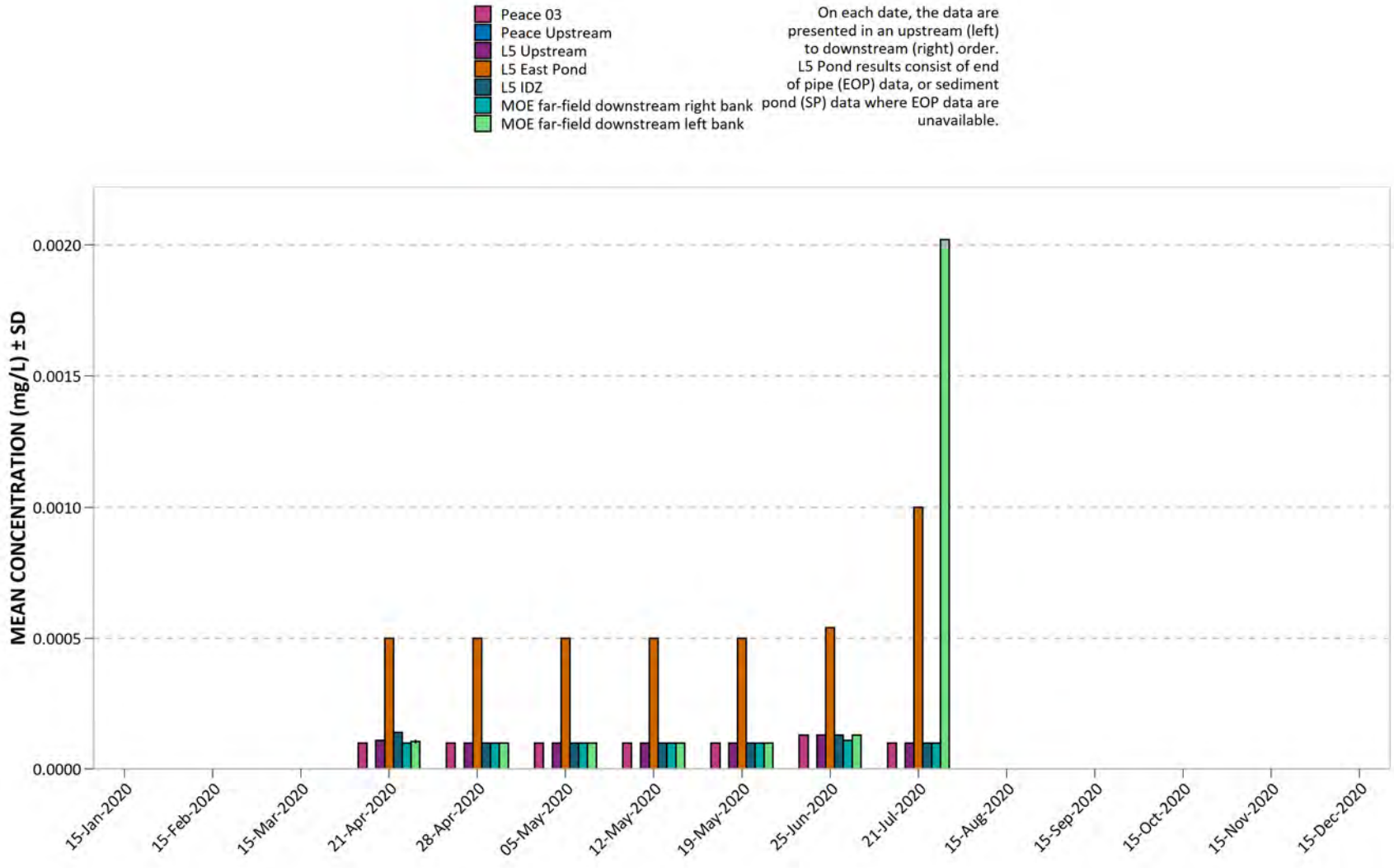


Figure 231. 2020 Peace River and Phase 1 RSEM L5 pond dissolved arsenic (As).

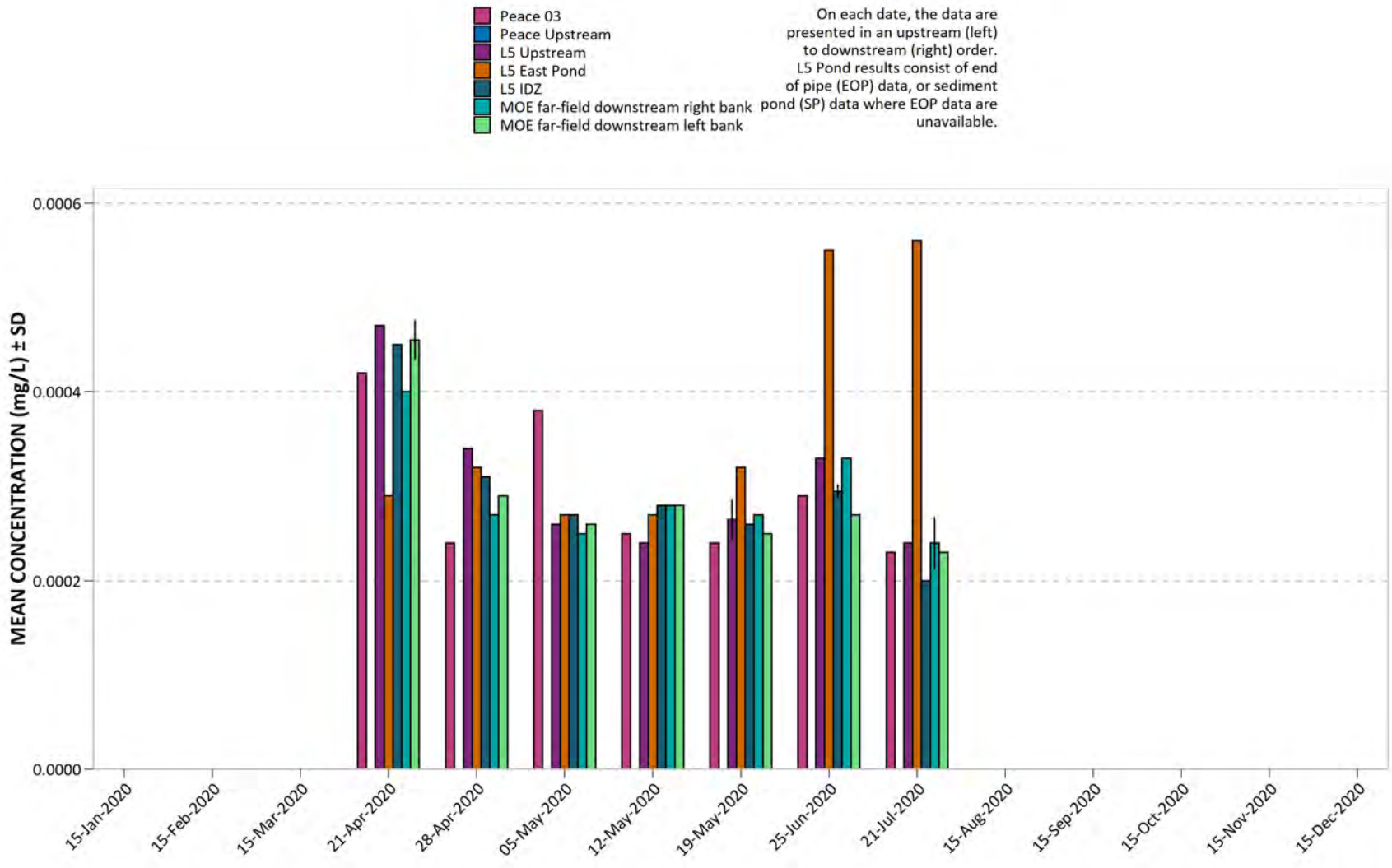


Figure 232. 2020 Peace River and Phase 1 RSEM L5 pond dissolved barium (Ba).

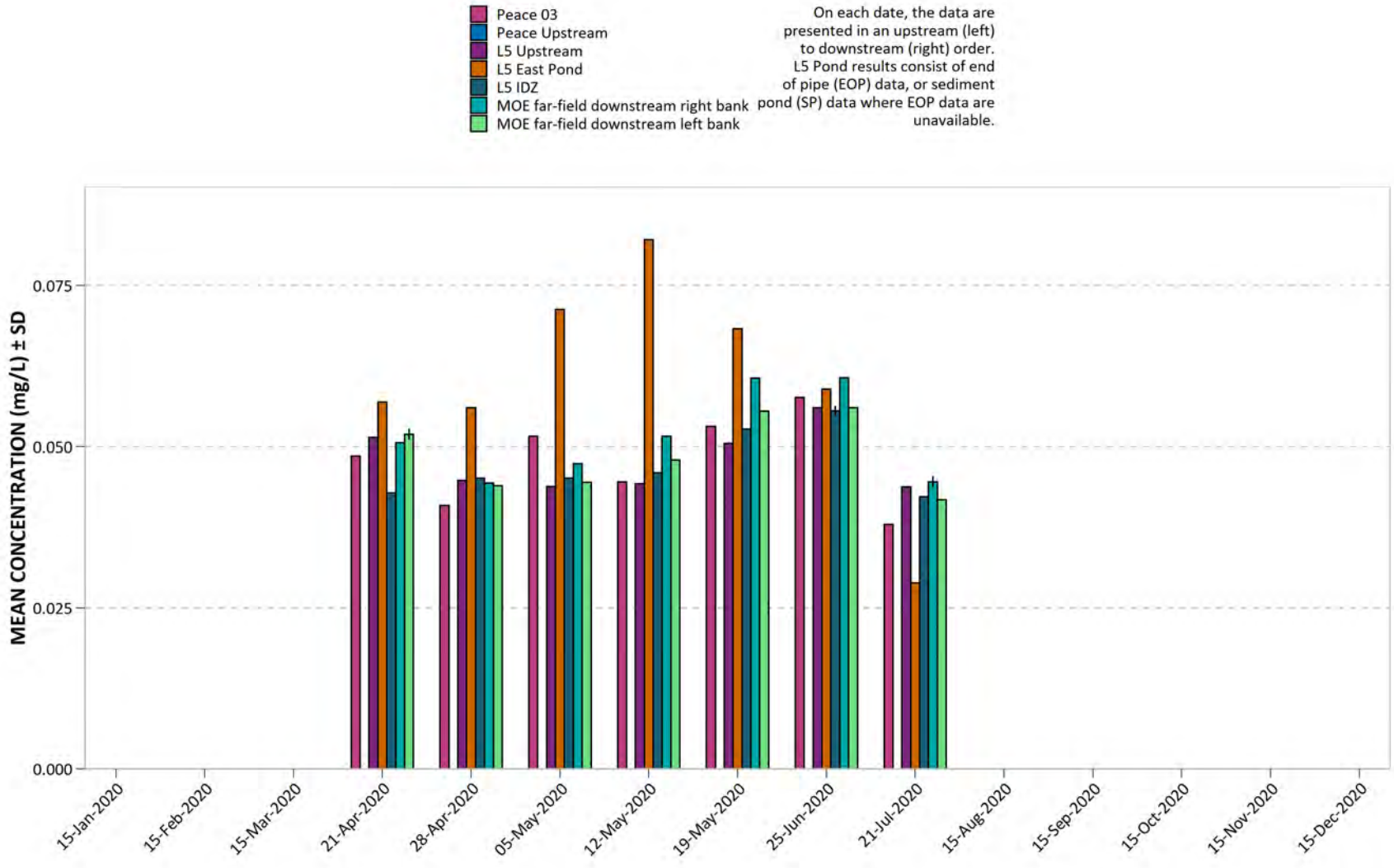


Figure 233. 2020 Peace River and Phase 1 RSEM L5 pond dissolved beryllium (Be).

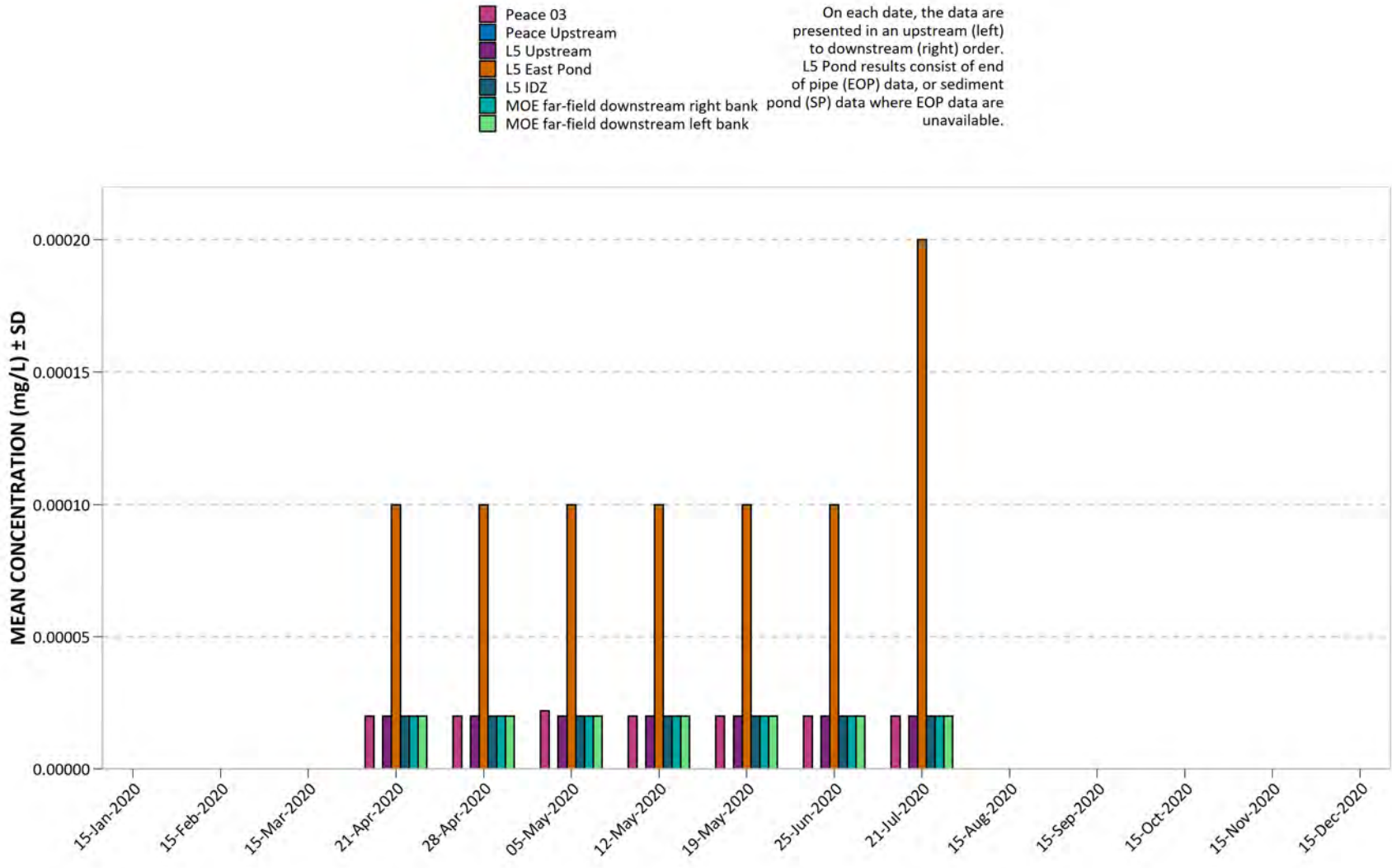


Figure 234. 2020 Peace River and Phase 1 RSEM L5 pond dissolved bismuth (Bi).

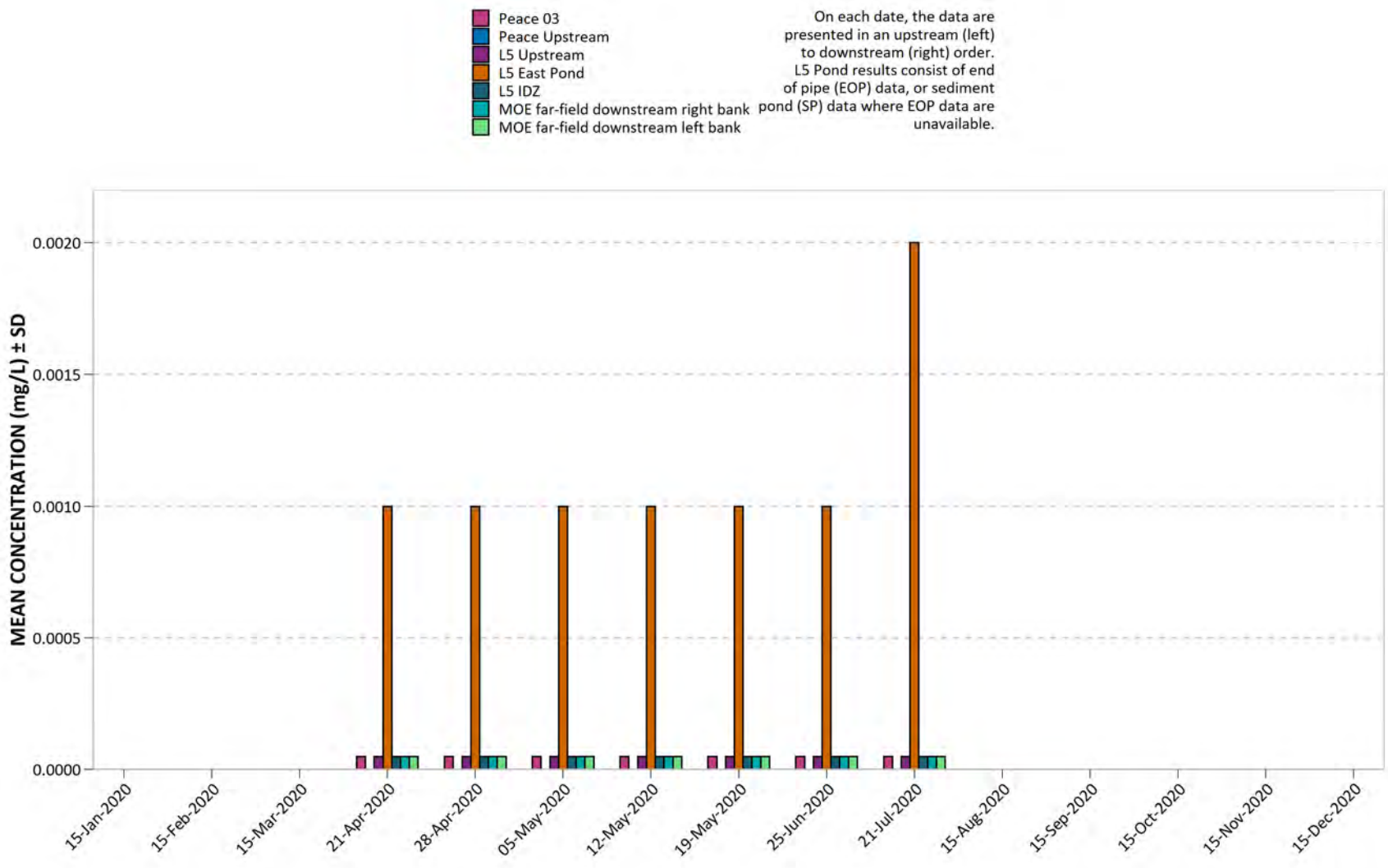


Figure 235. 2020 Peace River and Phase 1 RSEM L5 pond dissolved boron (B).

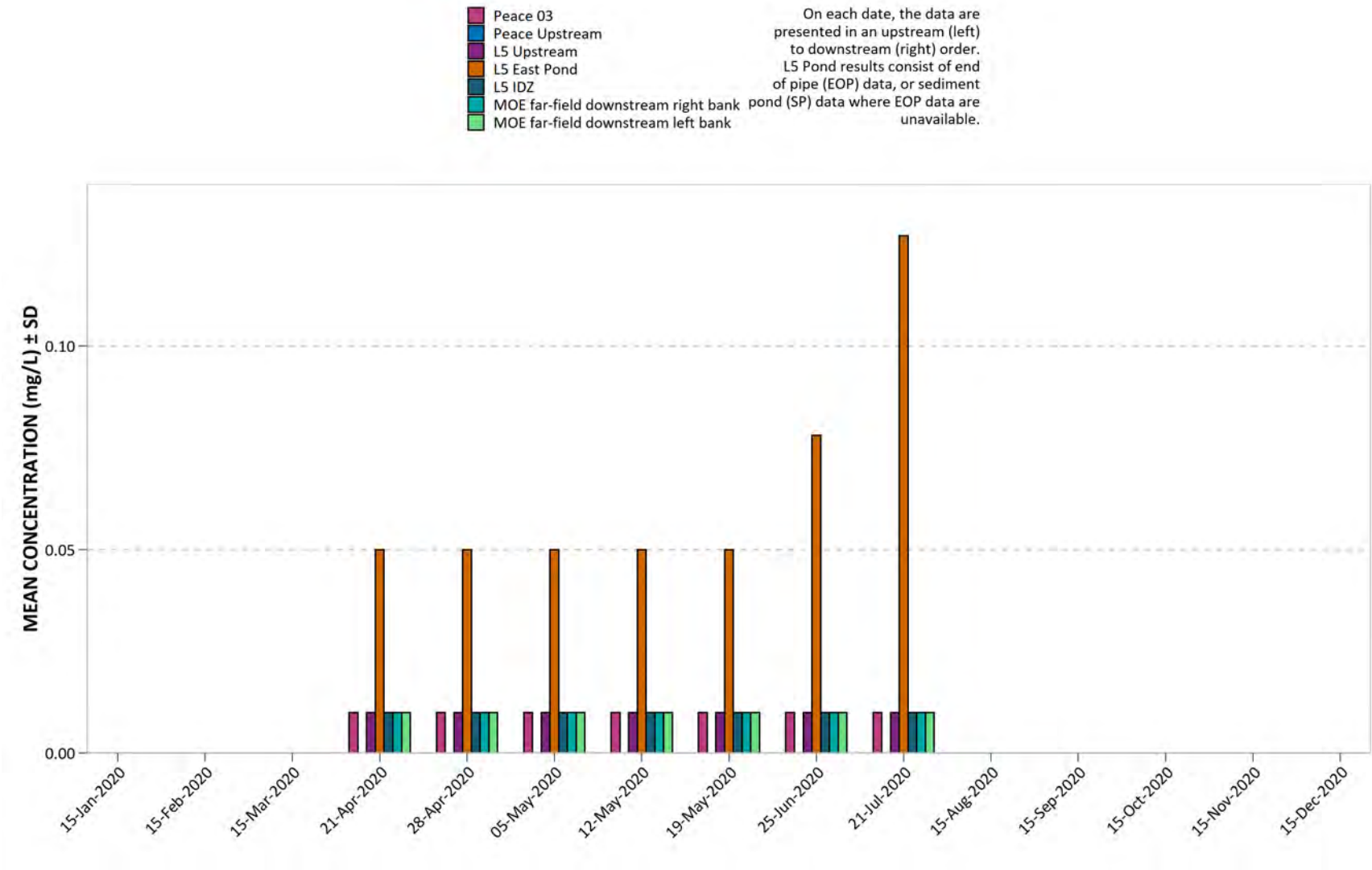


Figure 236. 2020 Peace River and Phase 1 RSEM L5 pond dissolved cadmium (Cd).

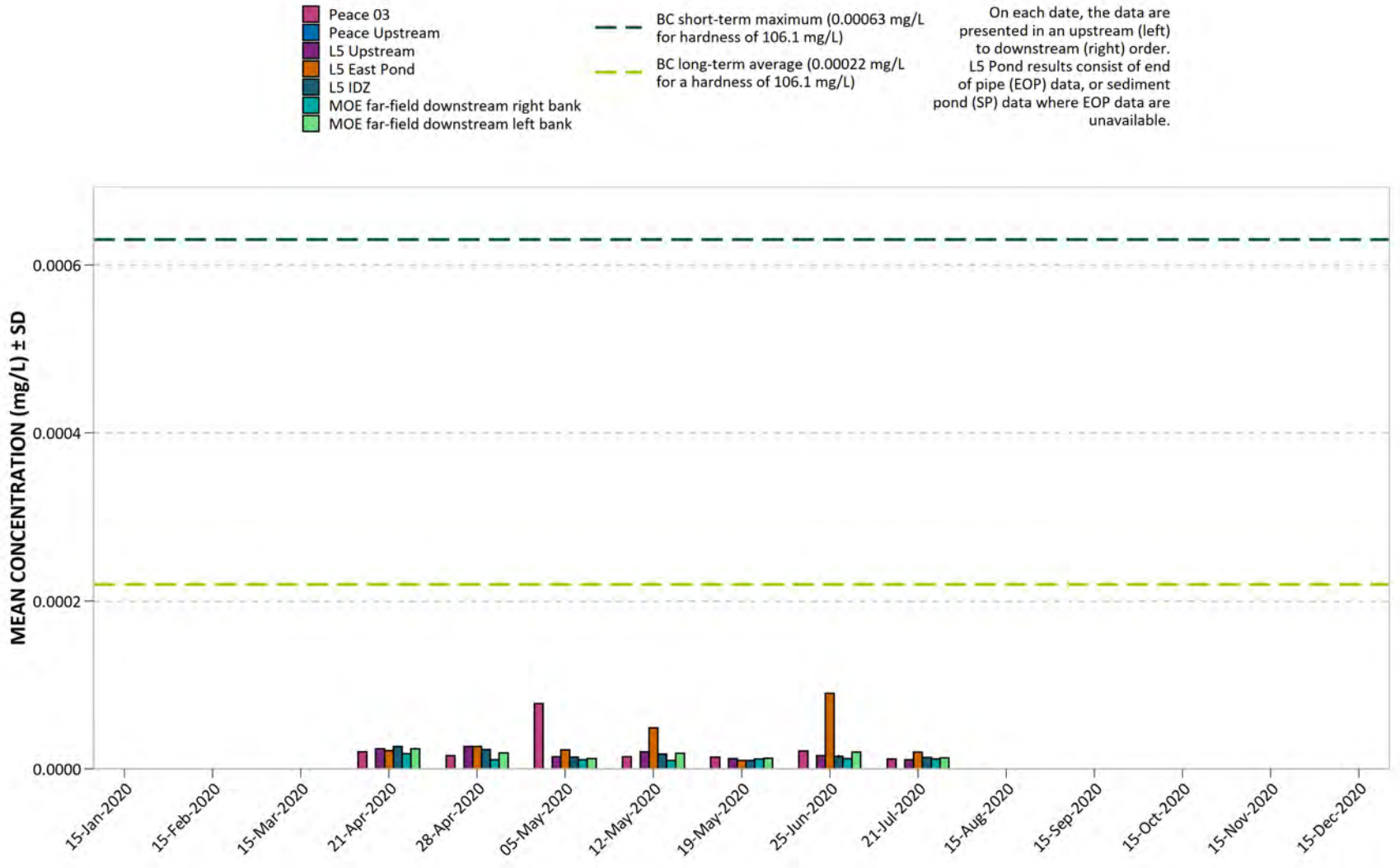


Figure 237. 2020 Peace River and Phase 1 RSEM L5 pond dissolved calcium (Ca).

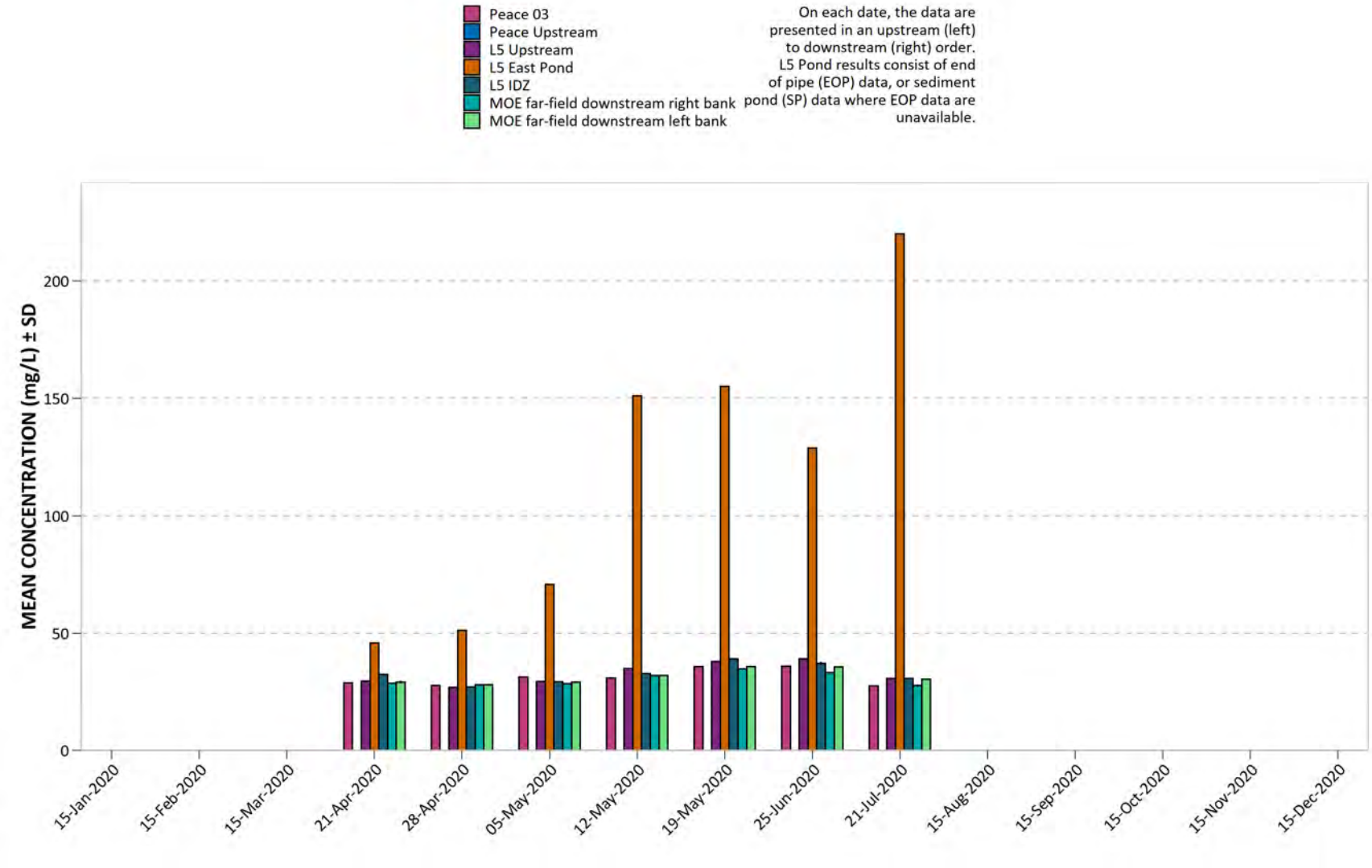


Figure 238. 2020 Peace River and Phase 1 RSEM L5 pond dissolved chromium (Cr).

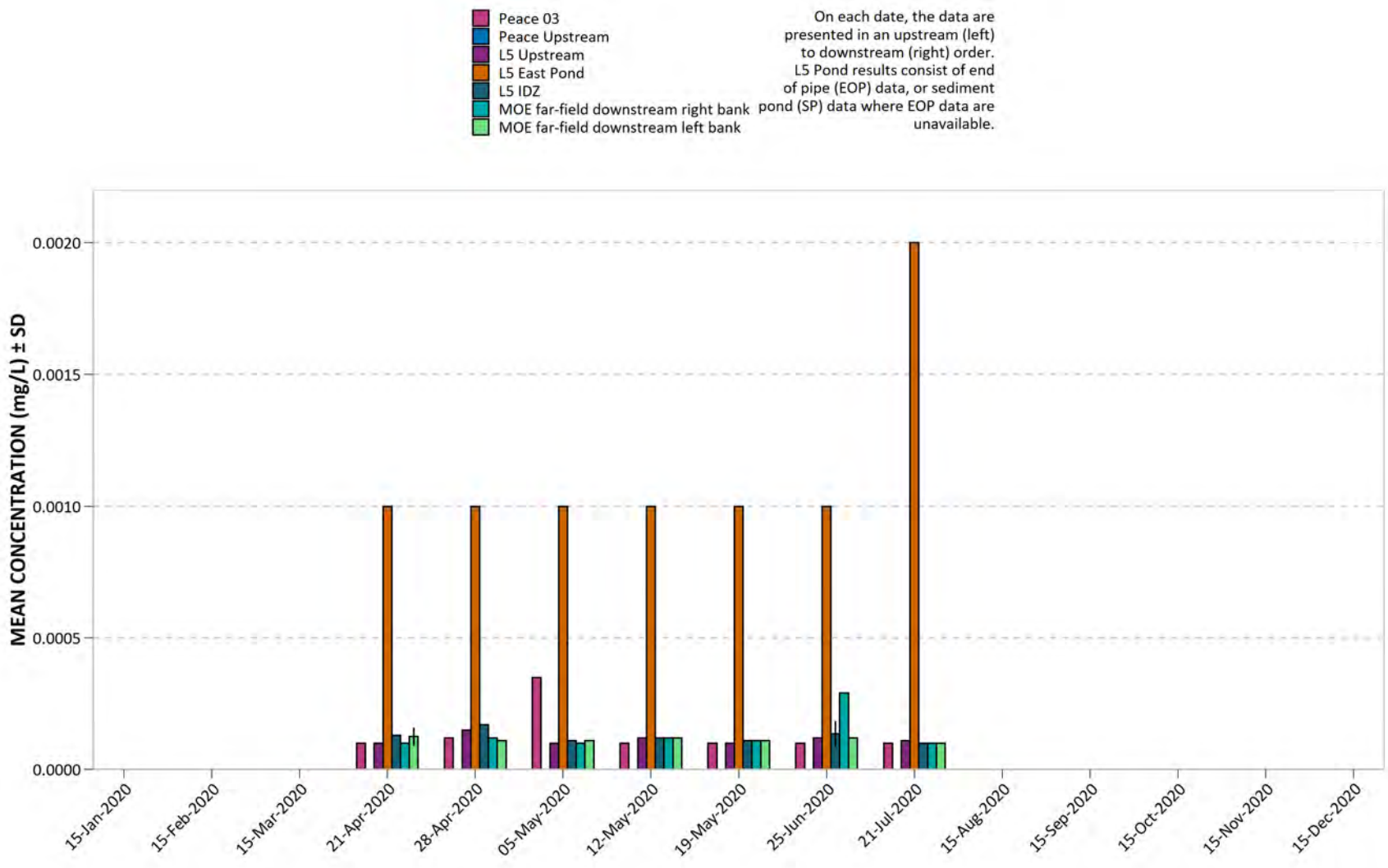


Figure 239. 2020 Peace River and Phase 1 RSEM L5 pond dissolved cobalt (Co).

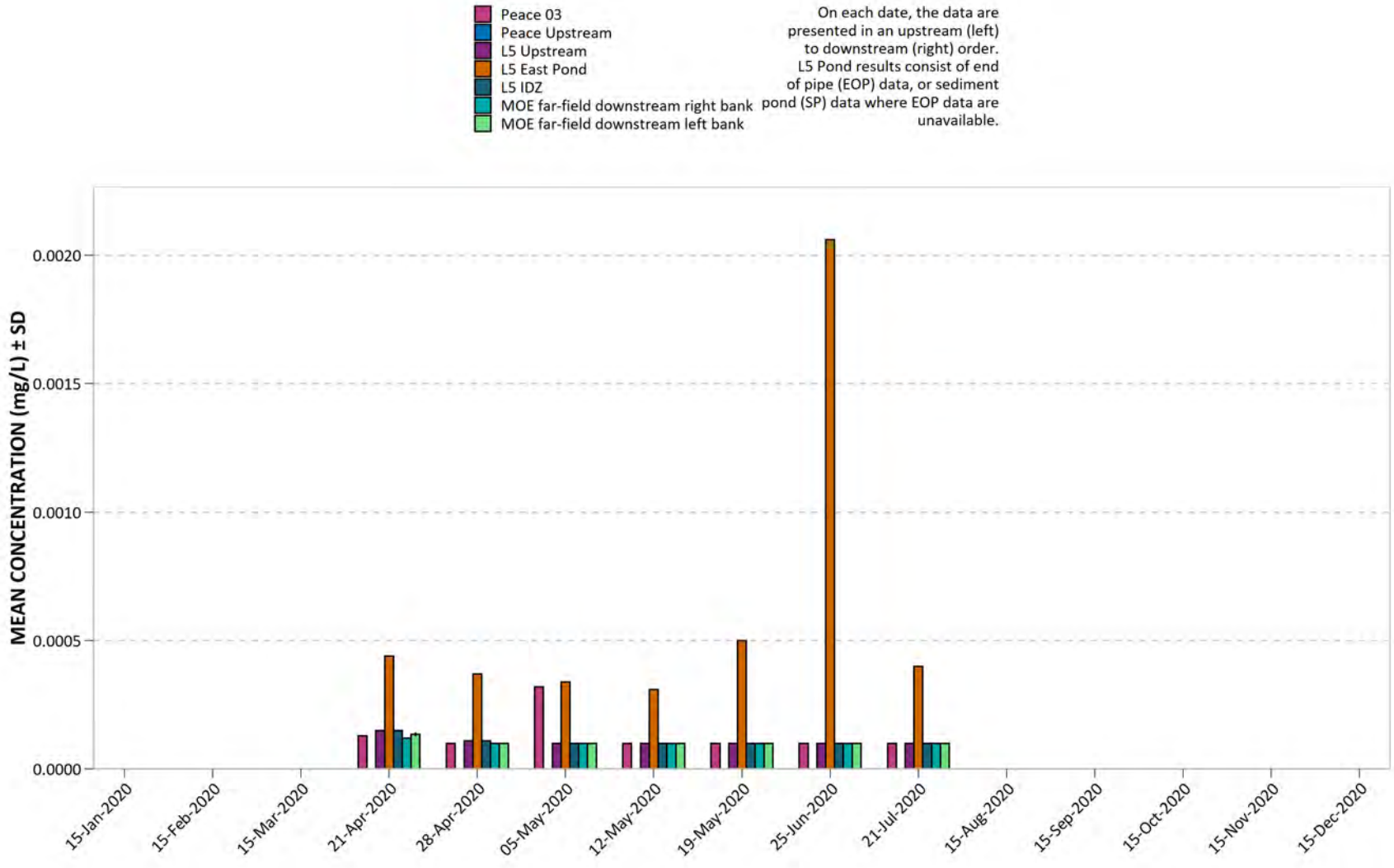


Figure 240. 2020 Peace River and Phase 1 RSEM L5 pond dissolved copper (Cu).

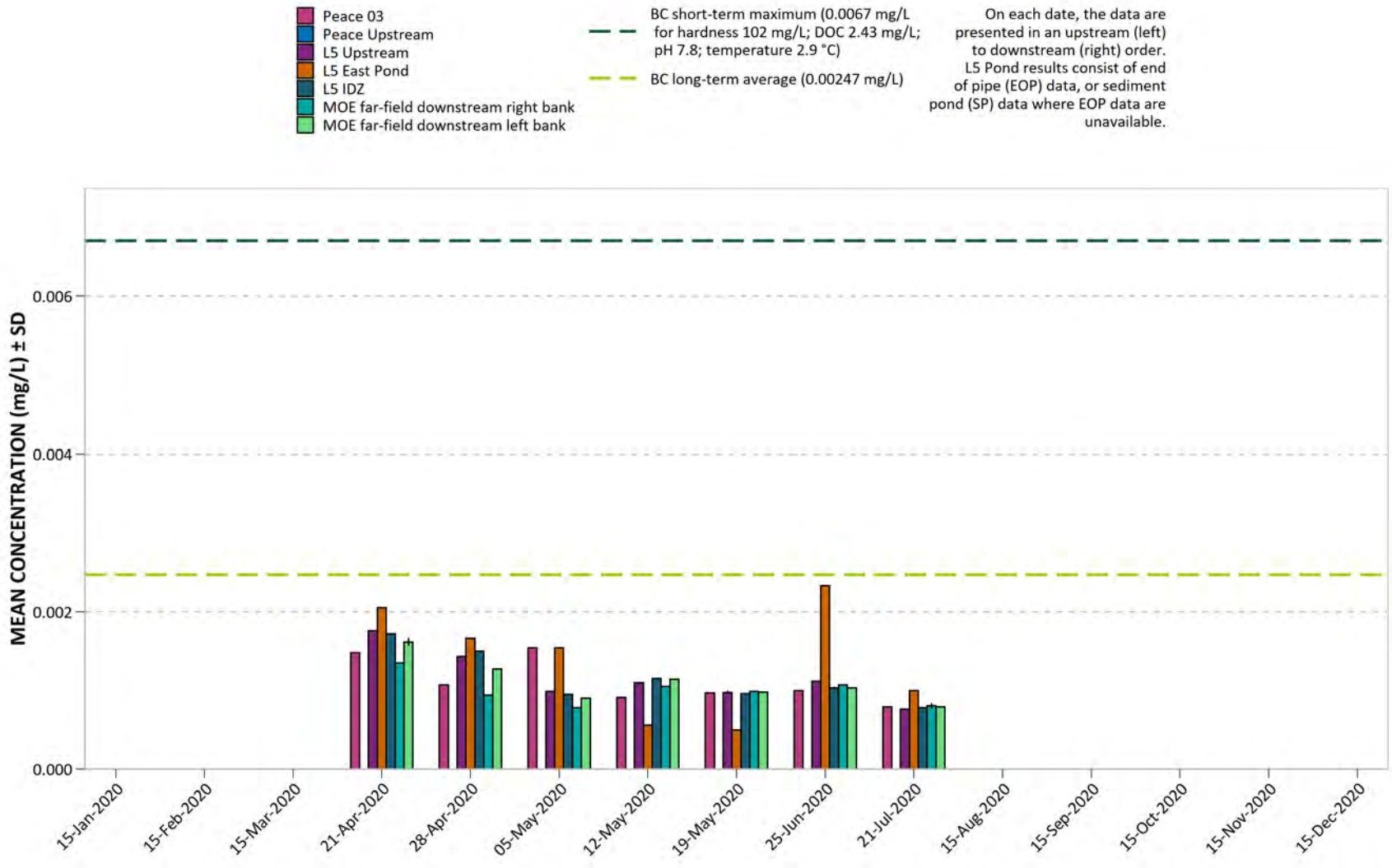


Figure 241. 2020 Peace River and Phase 1 RSEM L5 pond dissolved iron (Fe).

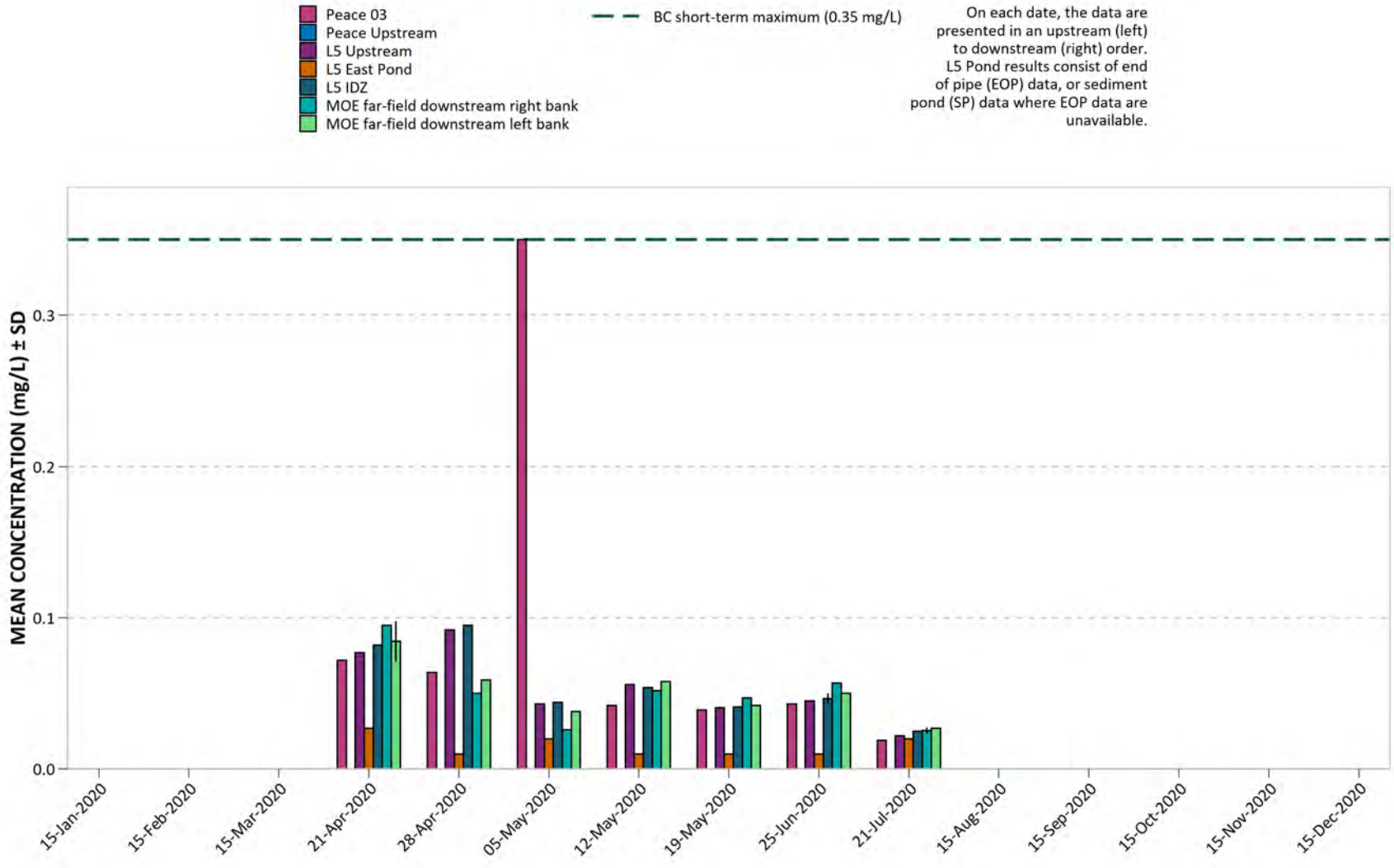


Figure 242. 2020 Peace River and Phase 1 RSEM L5 pond dissolved lead (Pb).

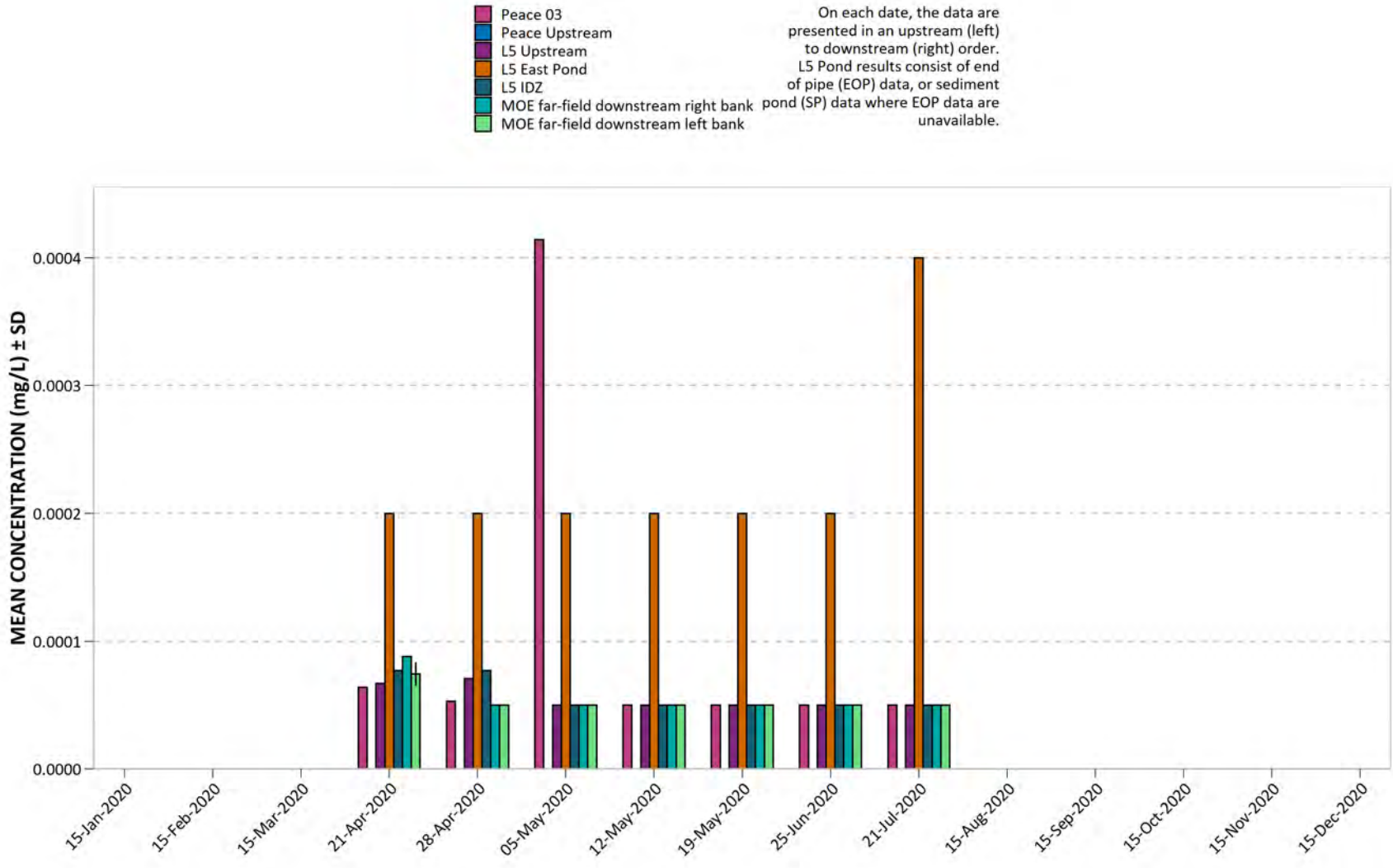


Figure 243. 2020 Peace River and Phase 1 RSEM L5 pond dissolved lithium (Li).

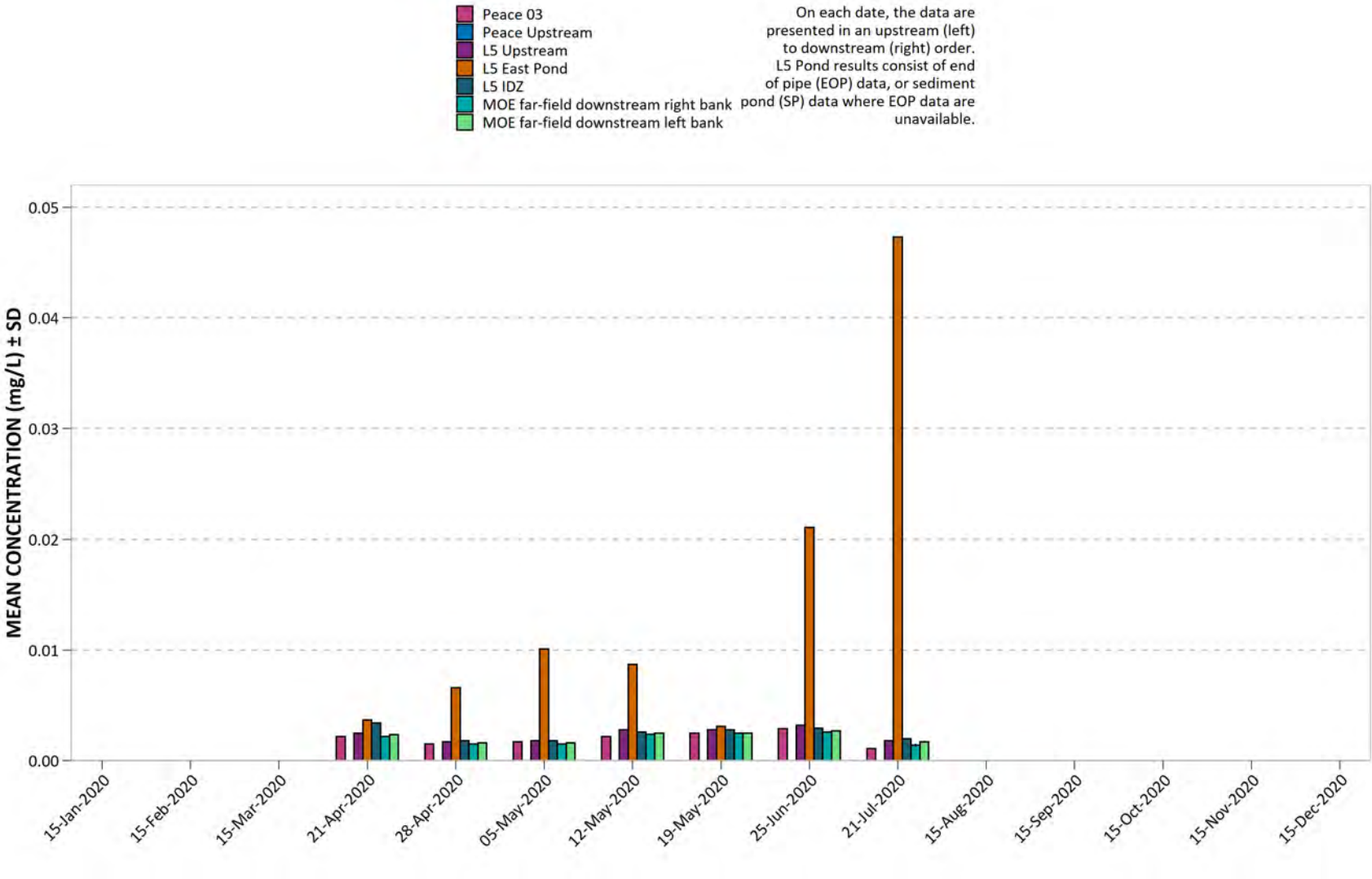


Figure 244. 2020 Peace River and Phase 1 RSEM L5 pond dissolved magnesium (Mg).

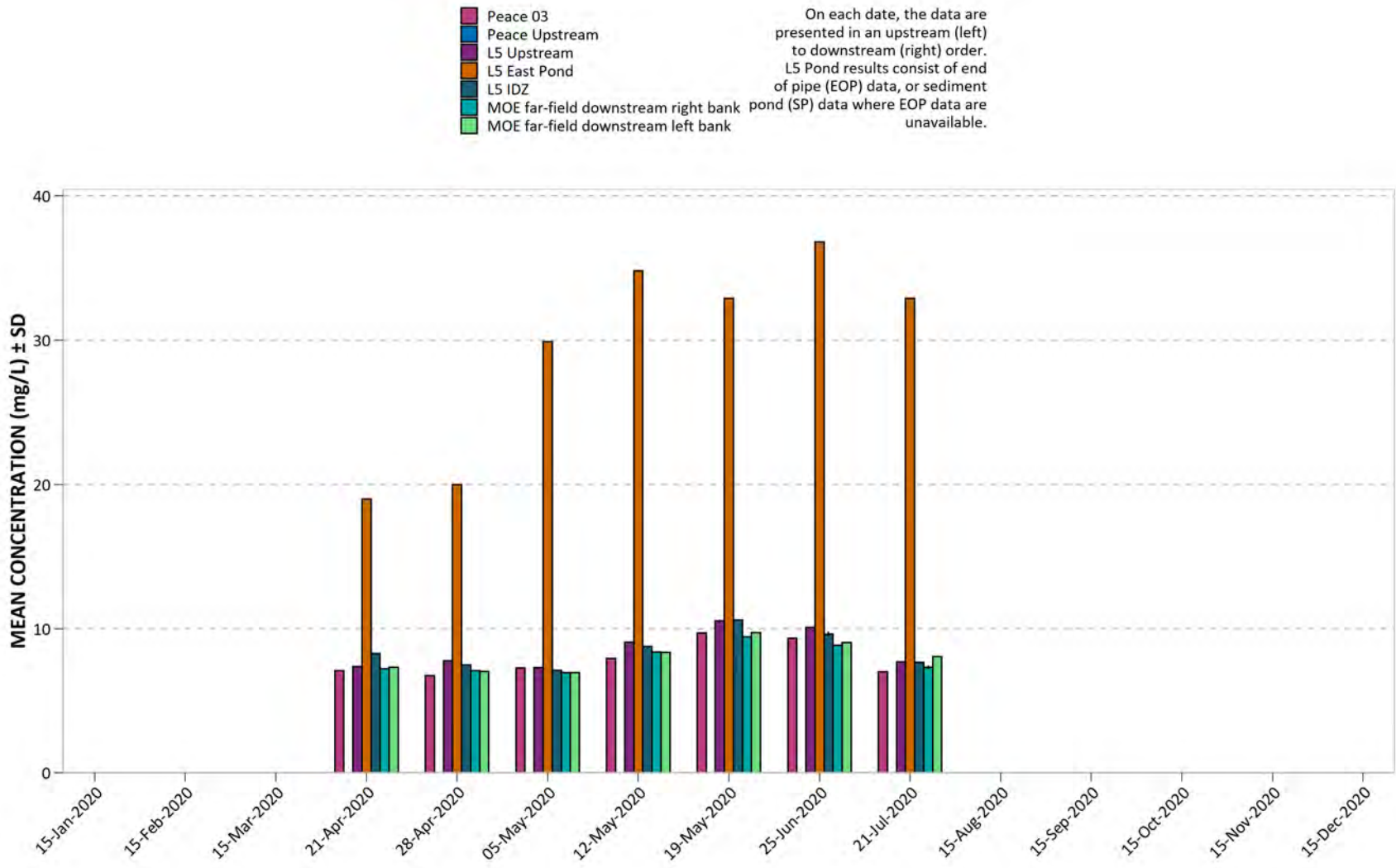


Figure 245. 2020 Peace River and Phase 1 RSEM L5 pond dissolved manganese (Mn).

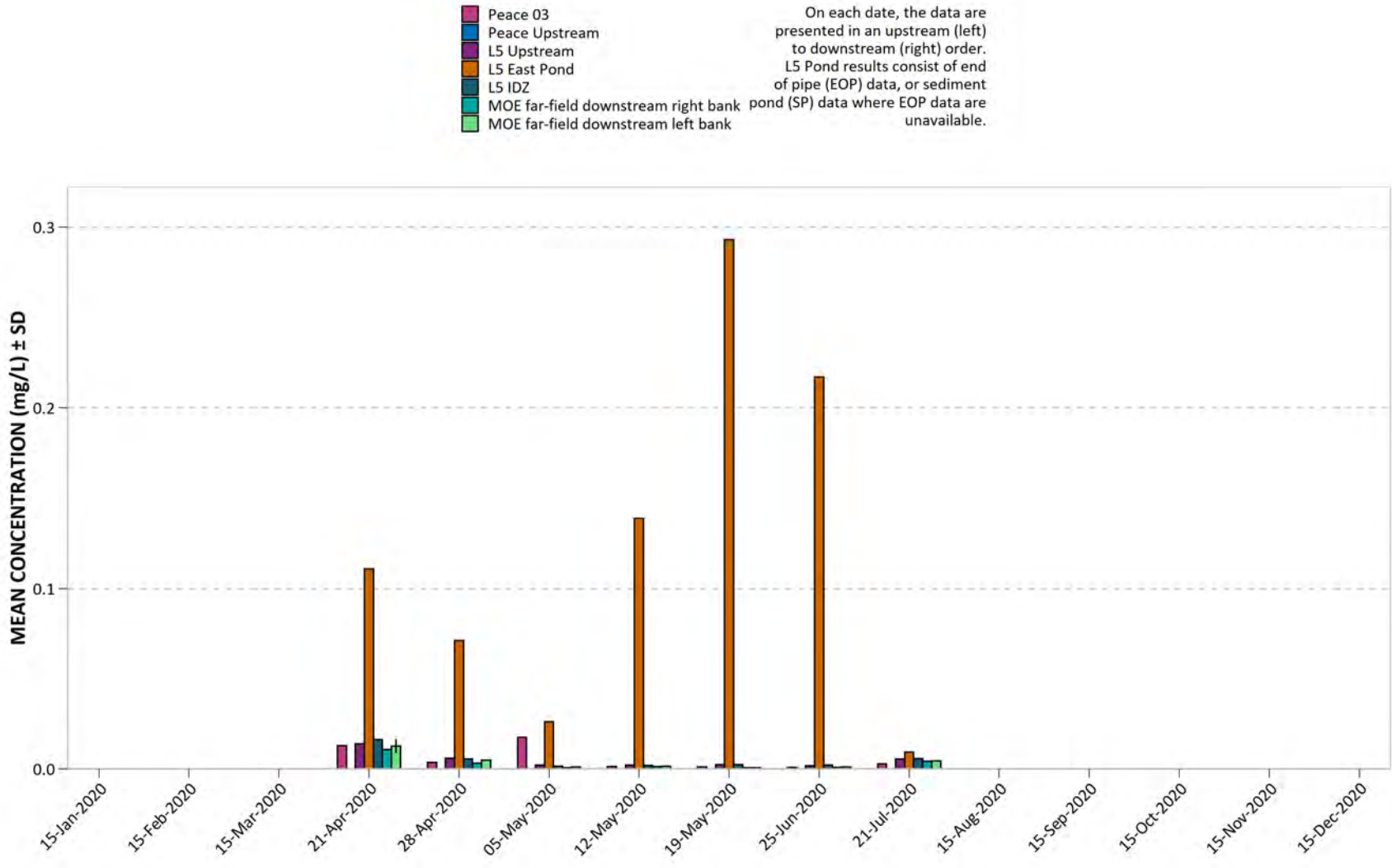


Figure 246. 2020 Peace River and Phase 1 RSEM L5 pond dissolved mercury (Hg).

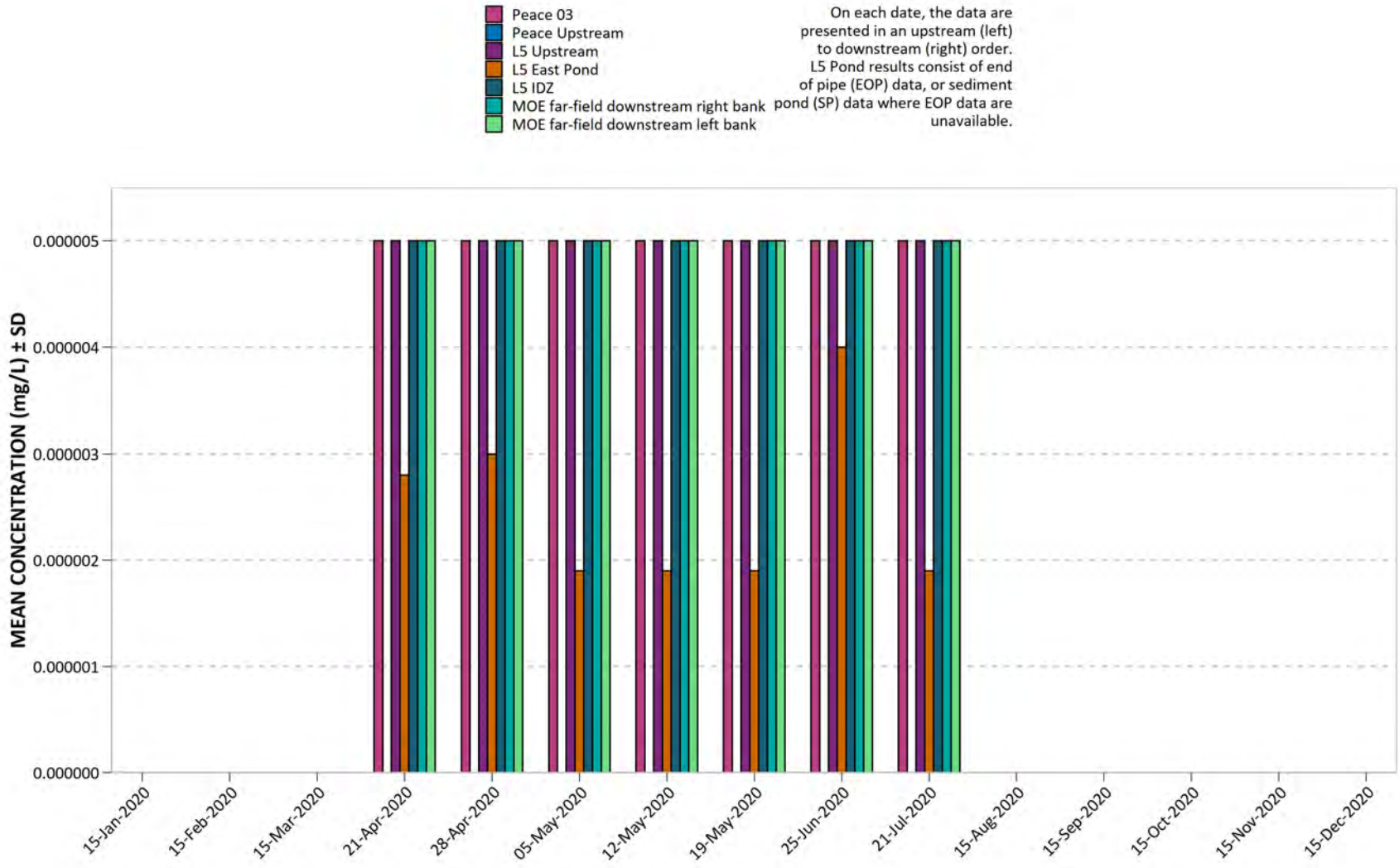


Figure 247. 2020 Peace River and Phase 1 RSEM L5 pond dissolved molybdenum (Mo).

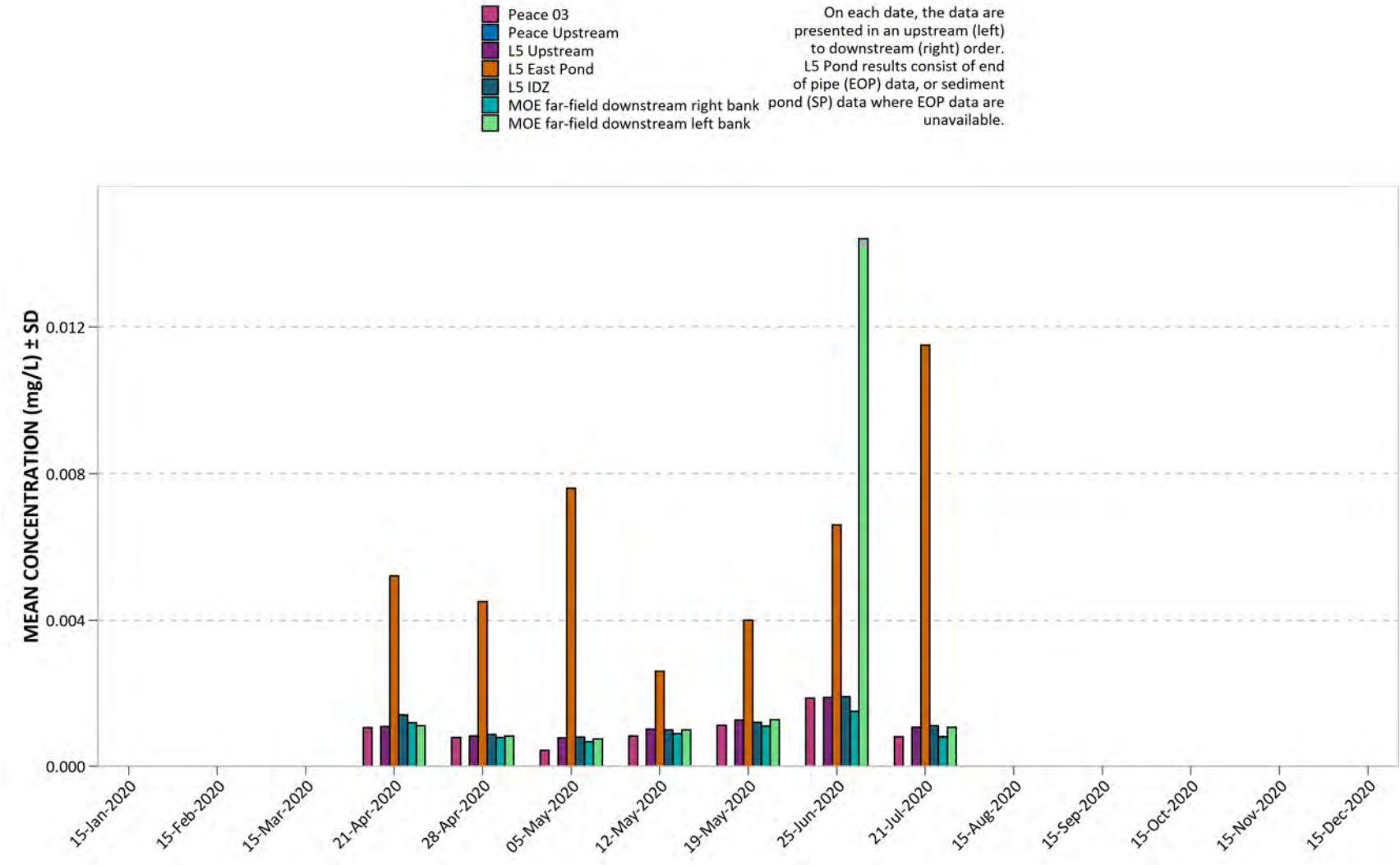


Figure 248. 2020 Peace River and Phase 1 RSEM L5 pond dissolved nickel (Ni).

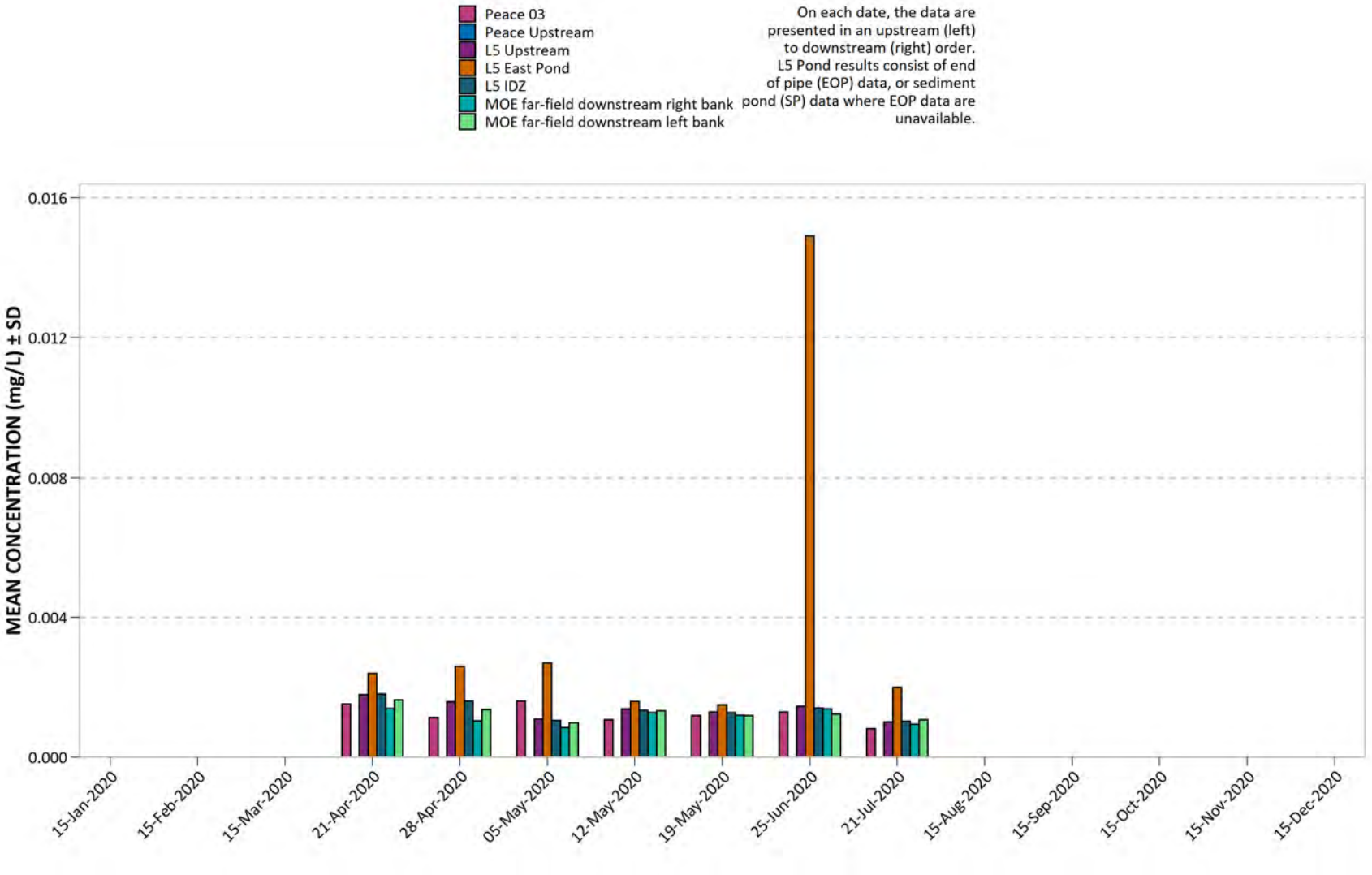


Figure 249. 2020 Peace River and Phase 1 RSEM L5 pond dissolved potassium (K).

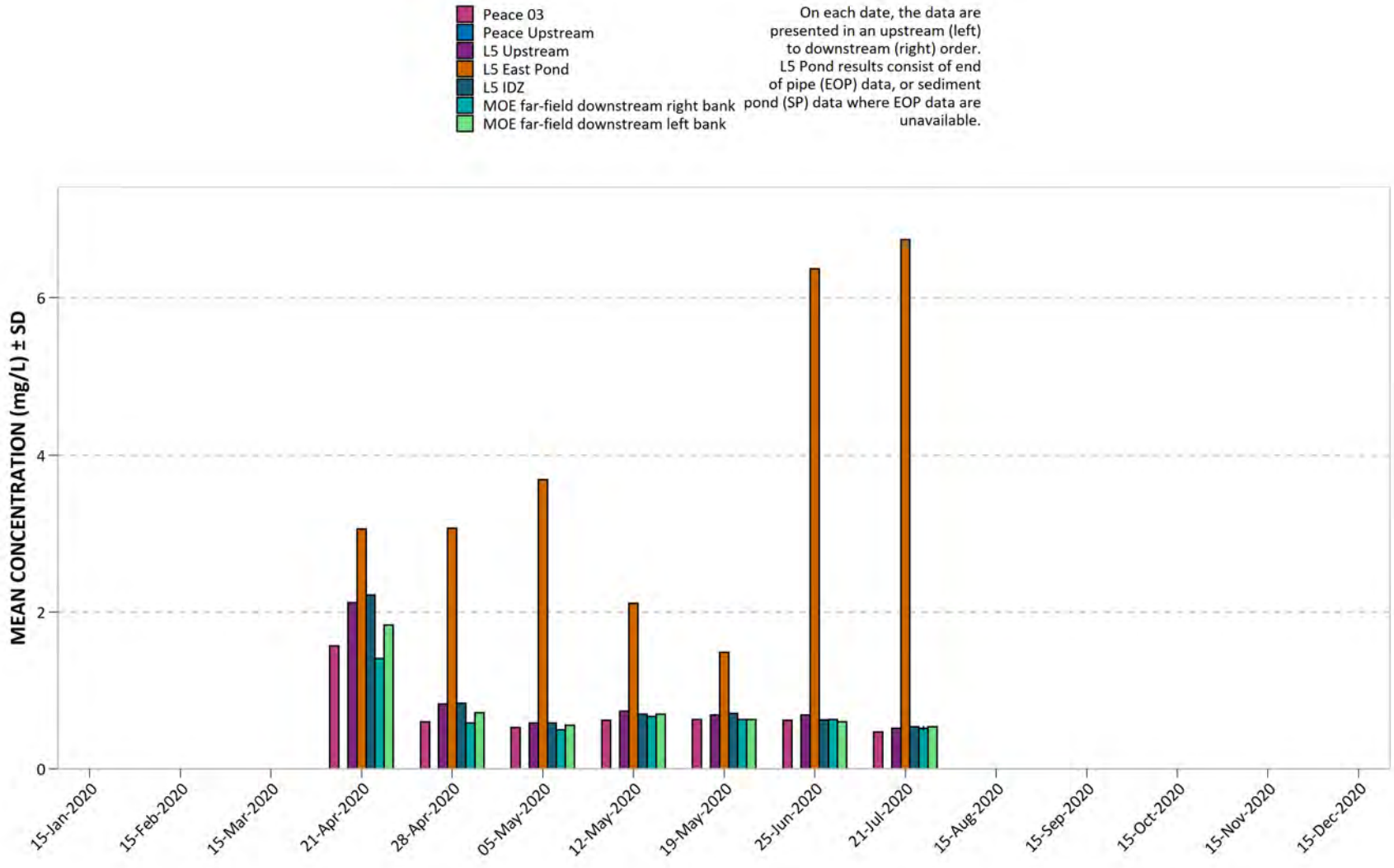


Figure 250. 2020 Peace River and Phase 1 RSEM L5 pond dissolved selenium (Se).

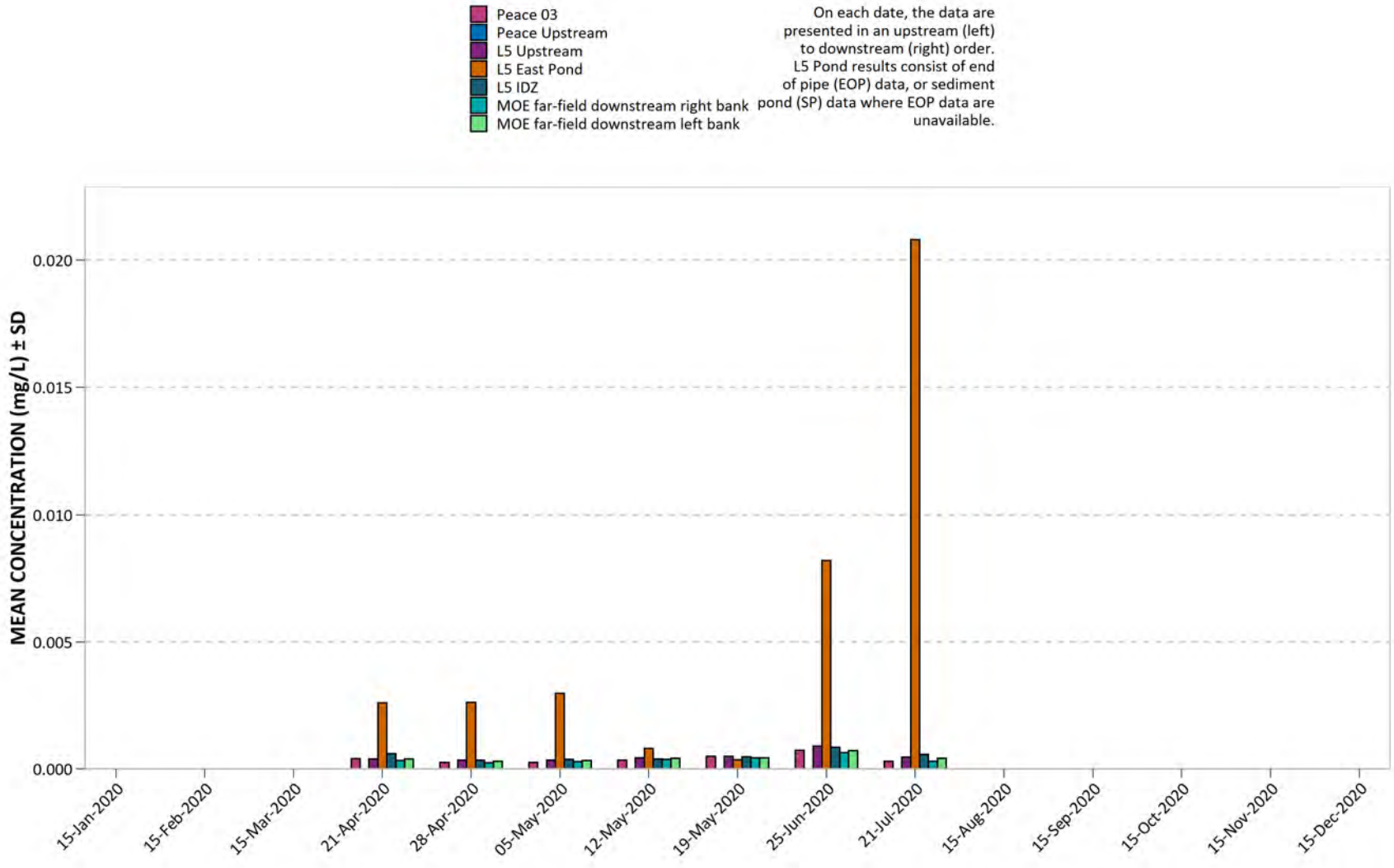


Figure 251. 2020 Peace River and Phase 1 RSEM L5 pond dissolved silicon (Si).

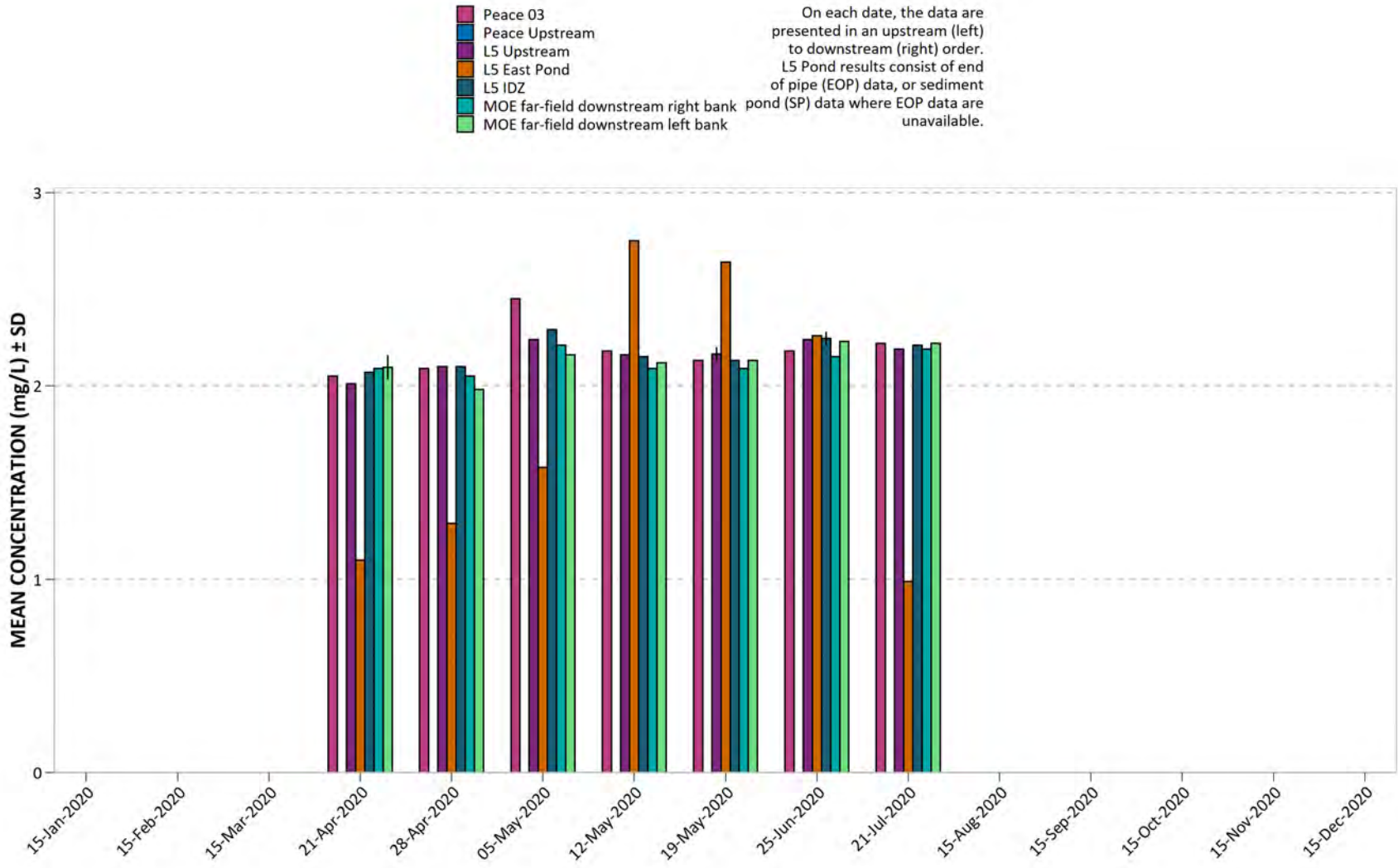


Figure 252. 2020 Peace River and Phase 1 RSEM L5 pond dissolved silver (Ag).

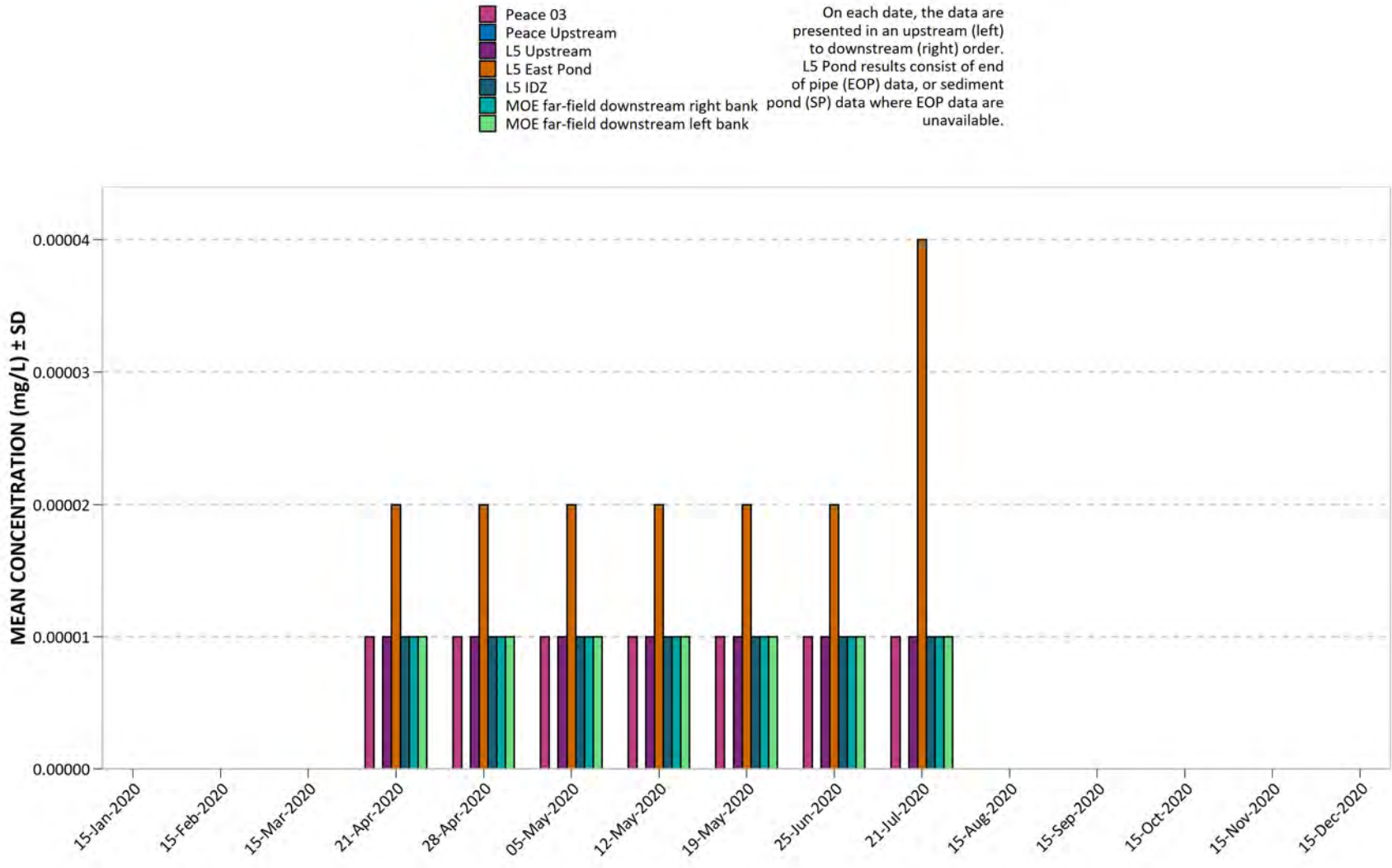


Figure 253. 2020 Peace River and Phase 1 RSEM L5 pond dissolved sodium (Na).

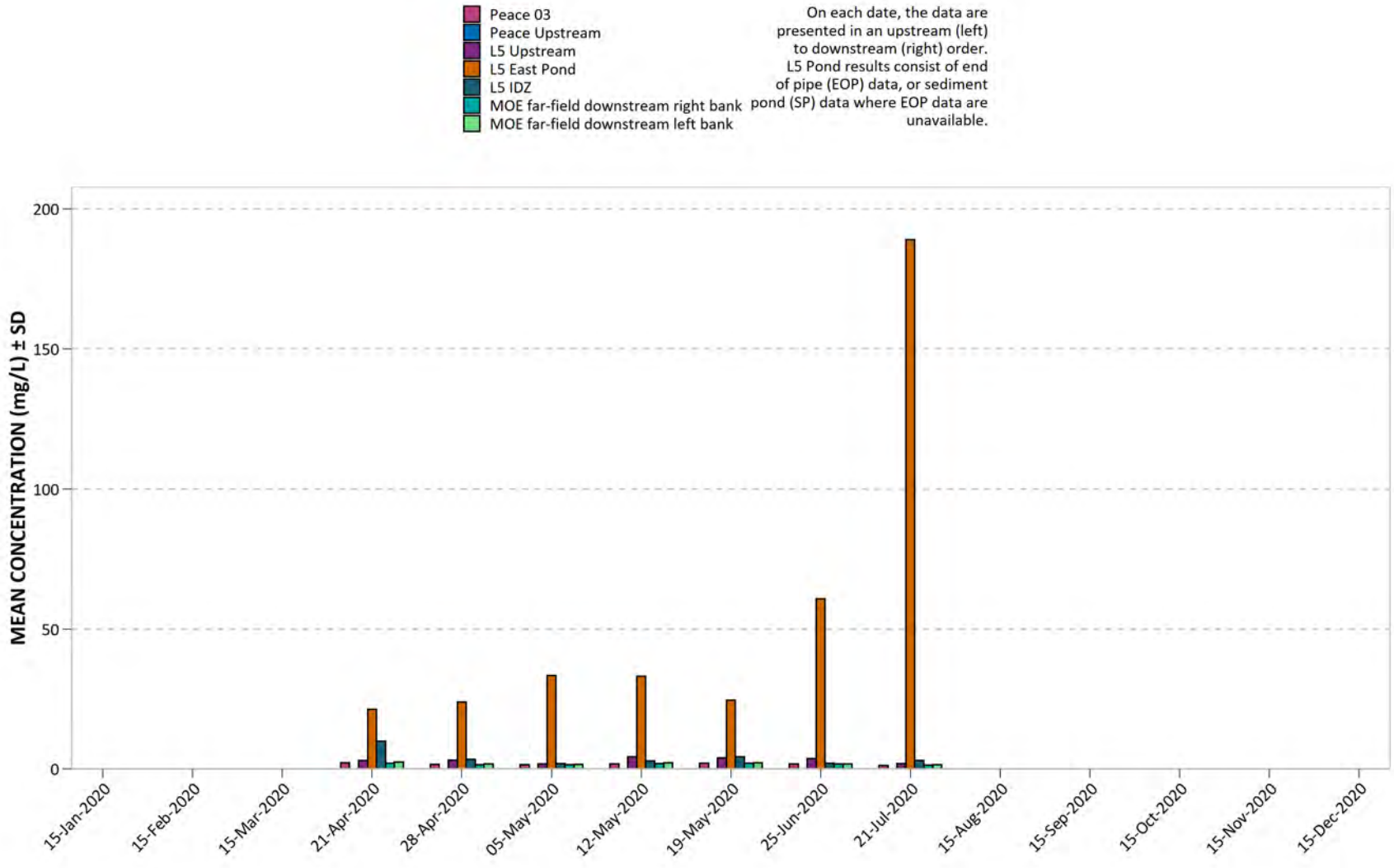


Figure 254. 2020 Peace River and Phase 1 RSEM L5 pond dissolved strontium (Sr).

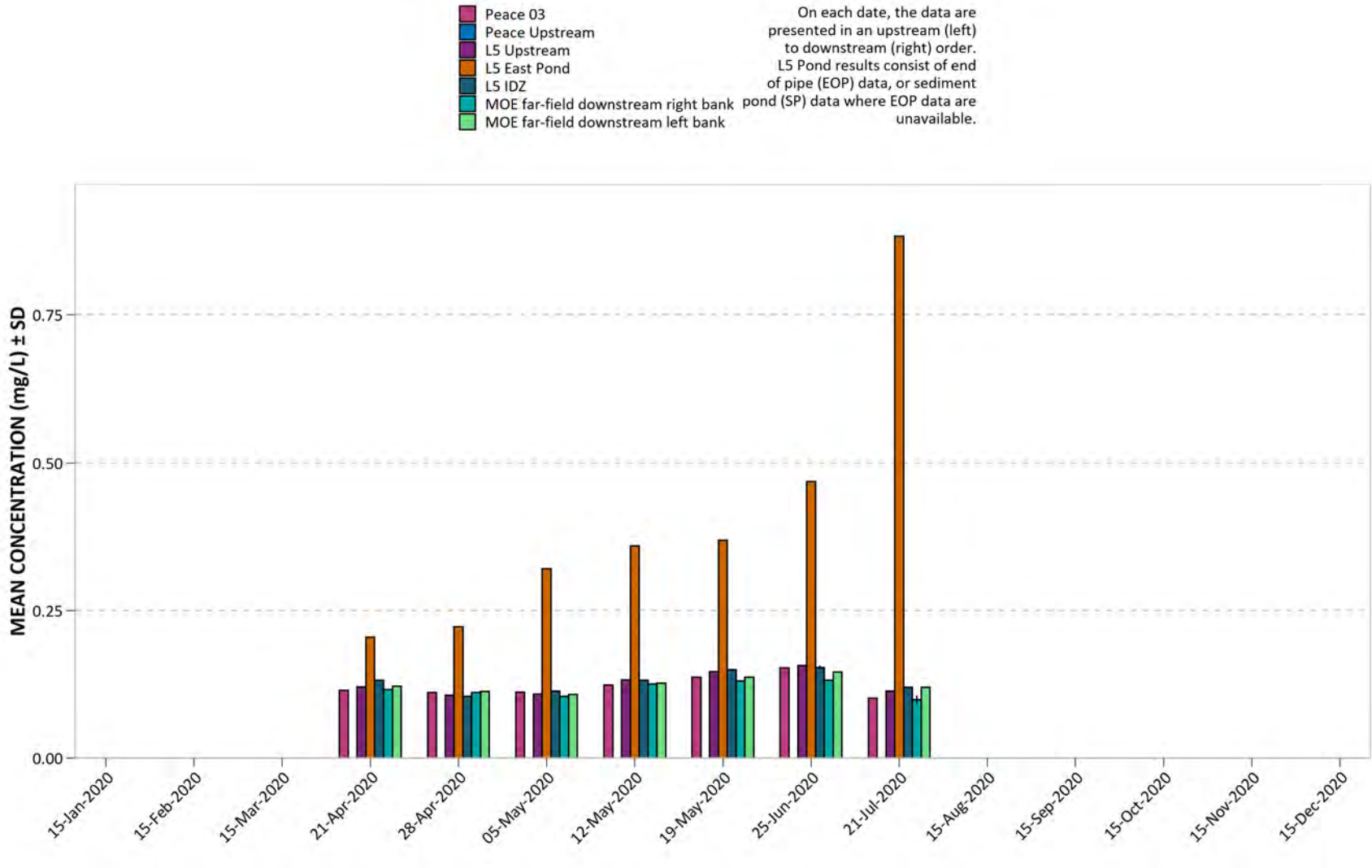


Figure 255. 2020 Peace River and Phase 1 RSEM L5 pond dissolved sulfur (S).

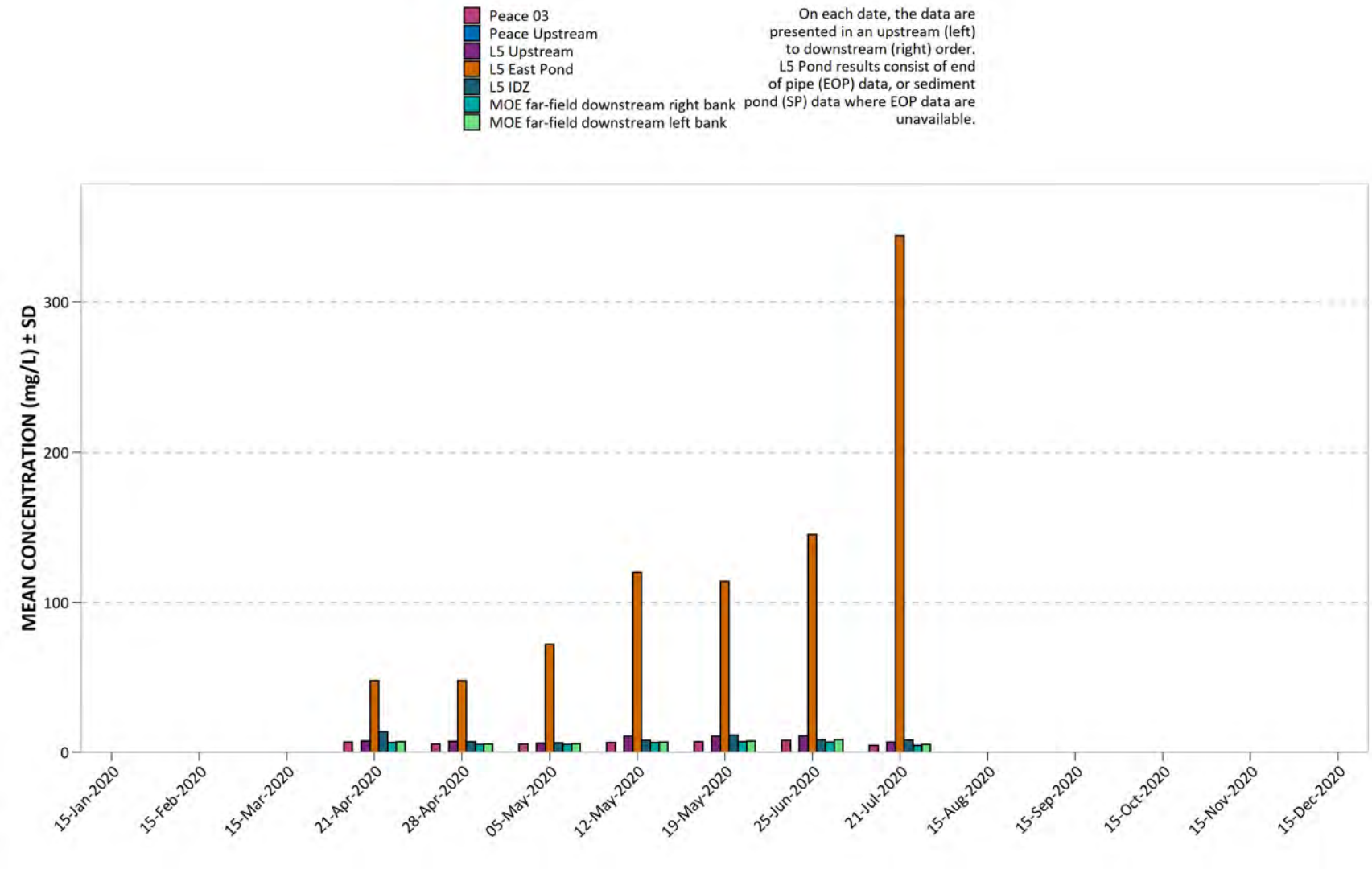


Figure 256. 2020 Peace River and Phase 1 RSEM L5 pond dissolved thallium (Tl).

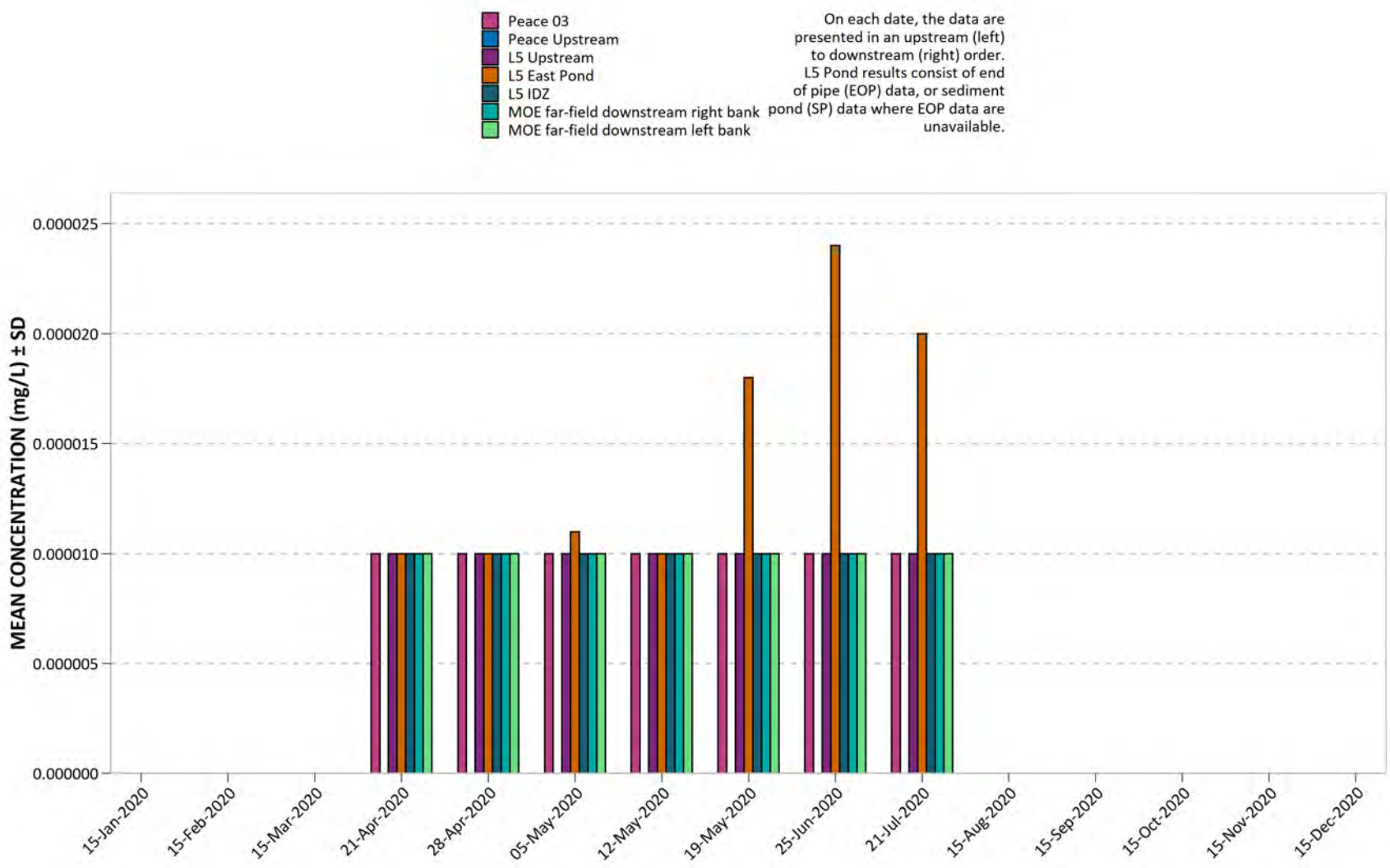


Figure 257. 2020 Peace River and Phase 1 RSEM L5 pond dissolved tin (Sn).

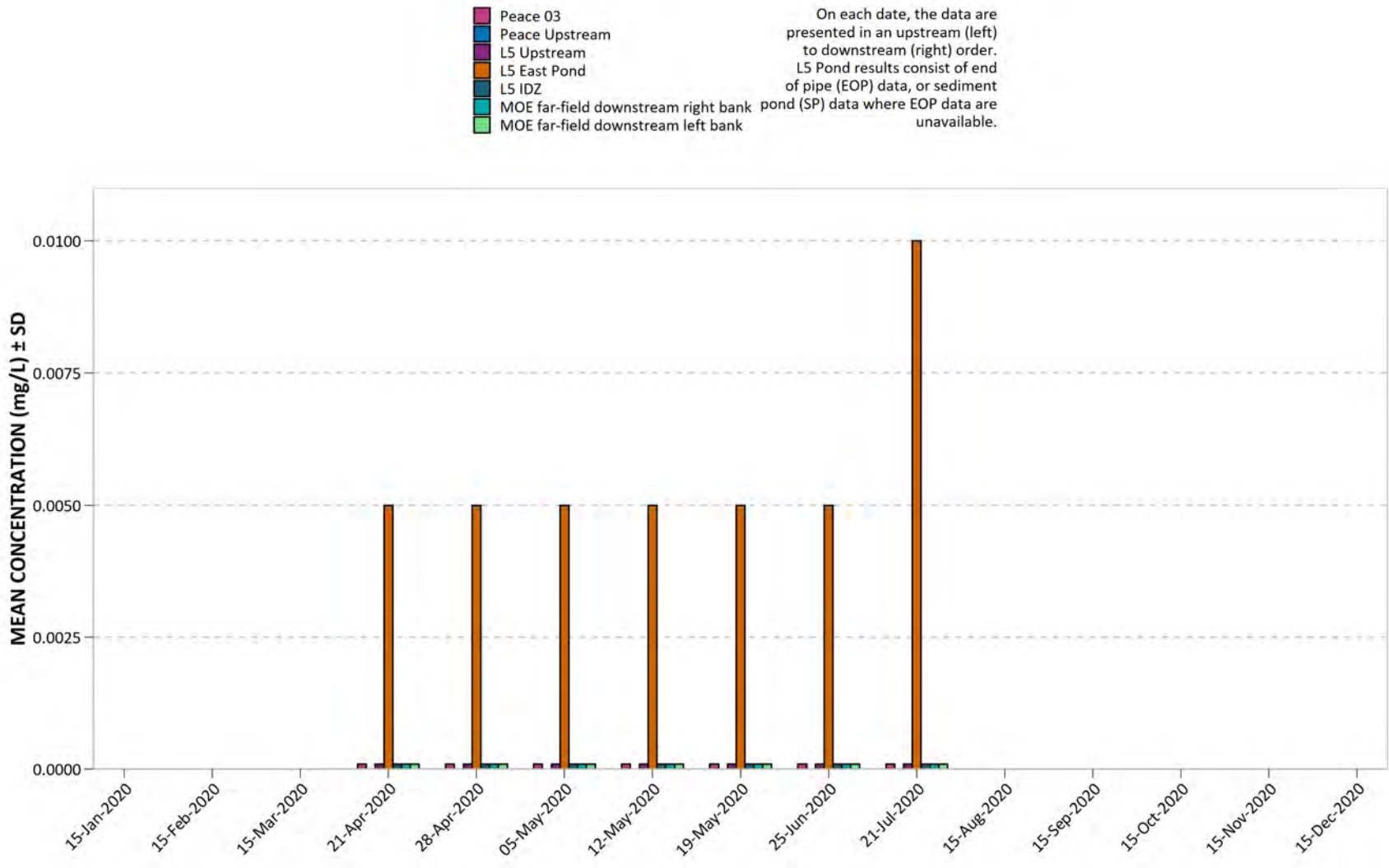


Figure 258. 2020 Peace River and Phase 1 RSEM L5 pond dissolved titanium (Ti).

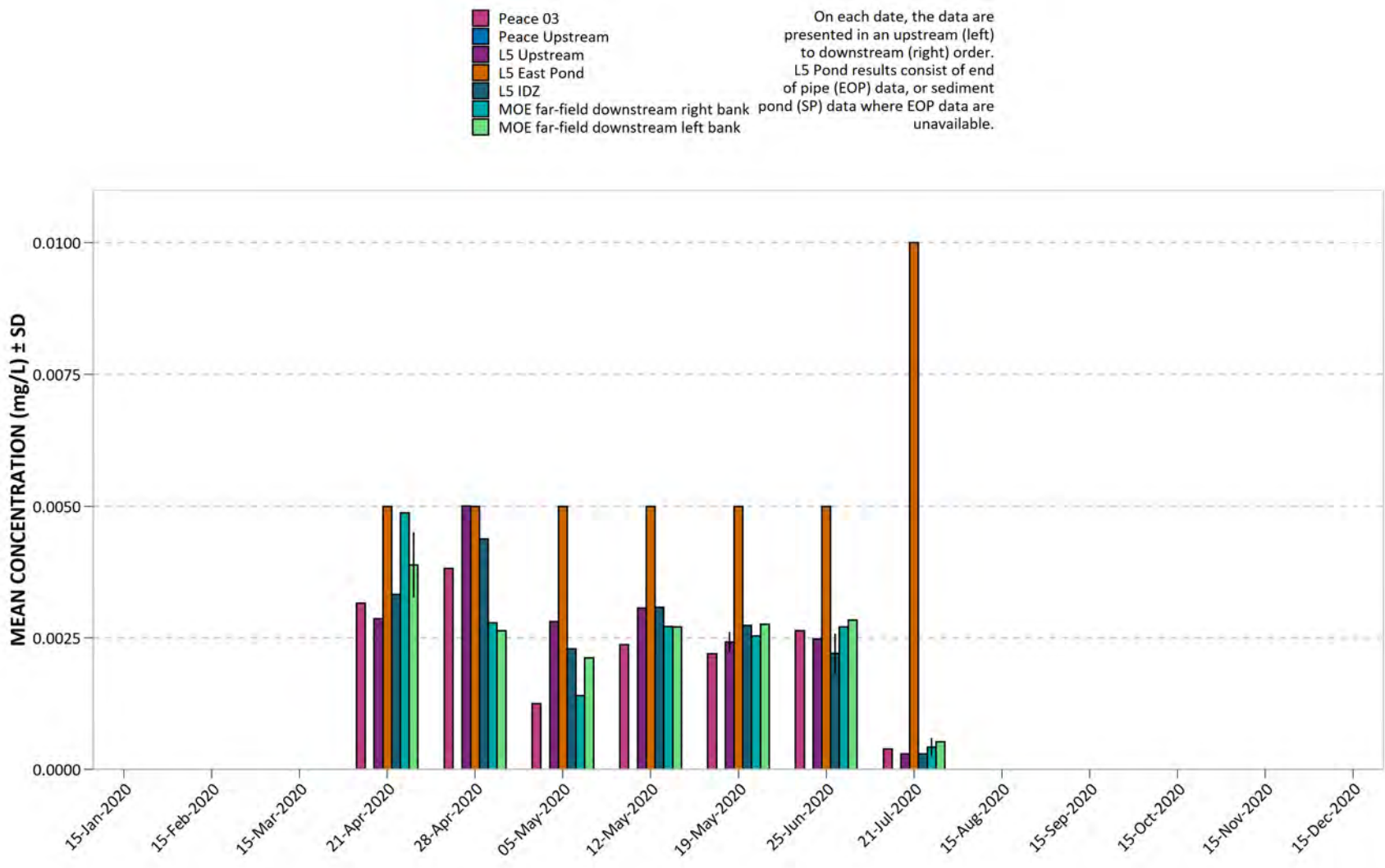


Figure 259. 2020 Peace River and Phase 1 RSEM L5 pond dissolved uranium (U).

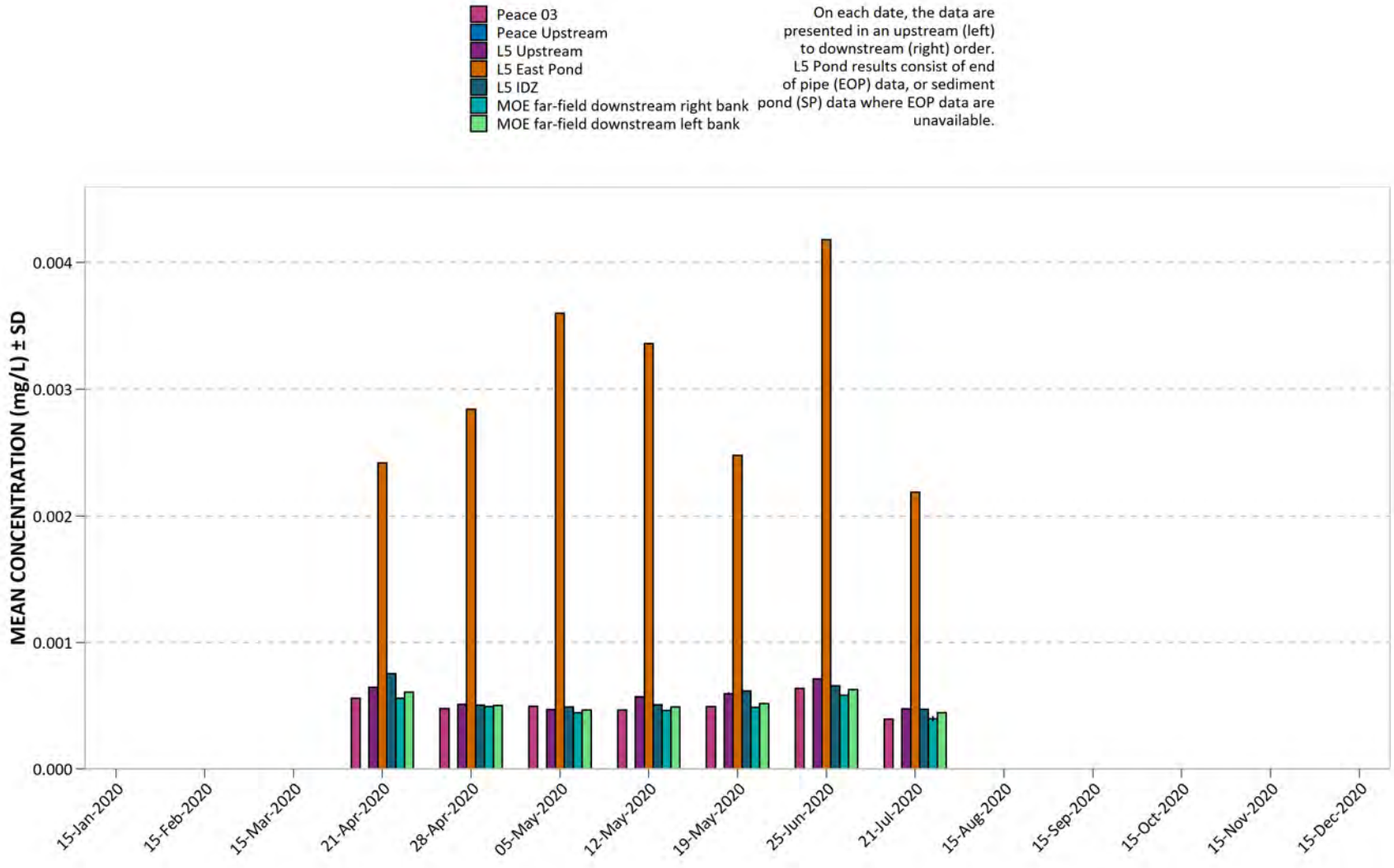


Figure 260. 2020 Peace River and Phase 1 RSEM L5 pond dissolved vanadium (V).

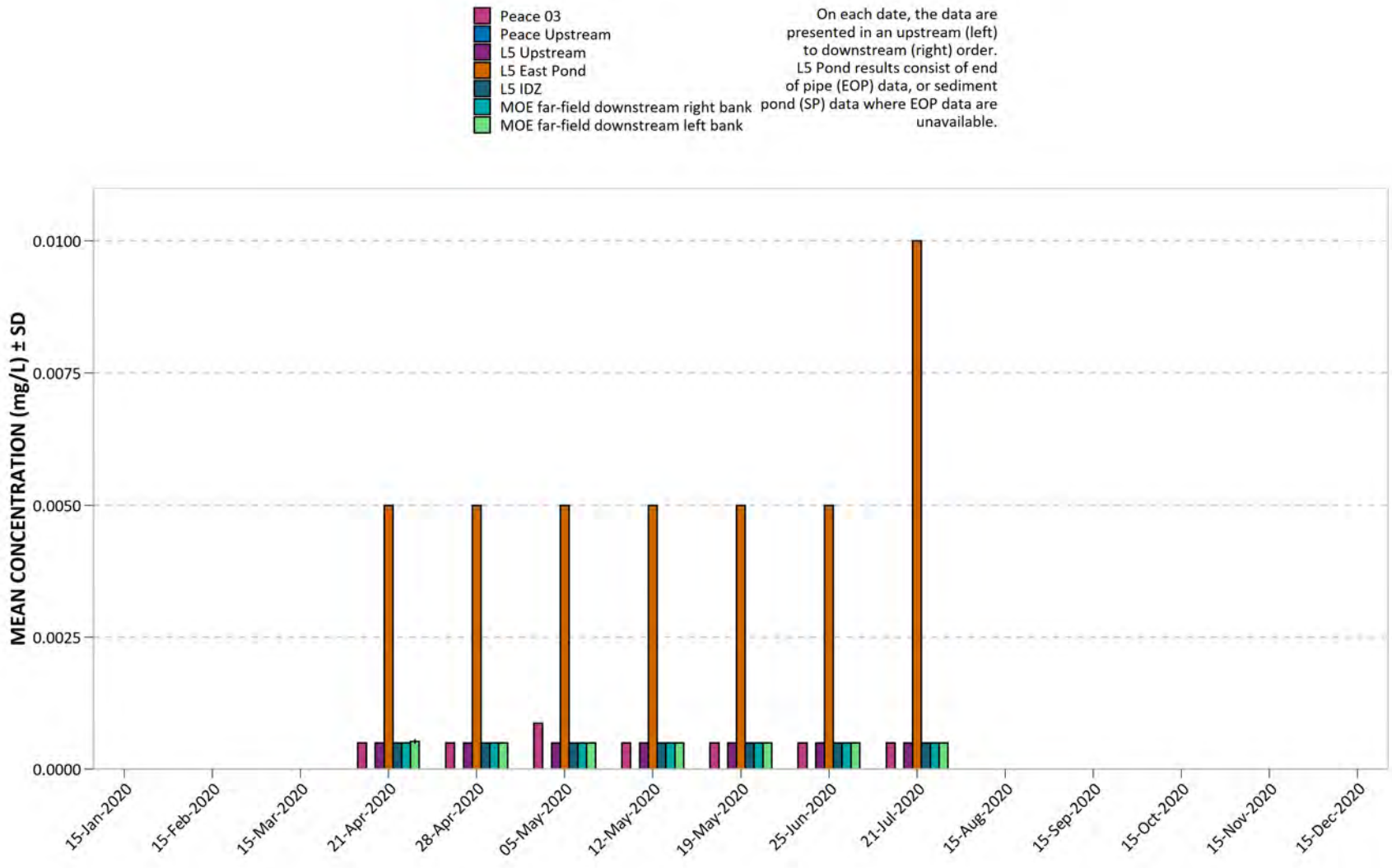


Figure 261. 2020 Peace River and Phase 1 RSEM L5 pond dissolved zinc (Zn).

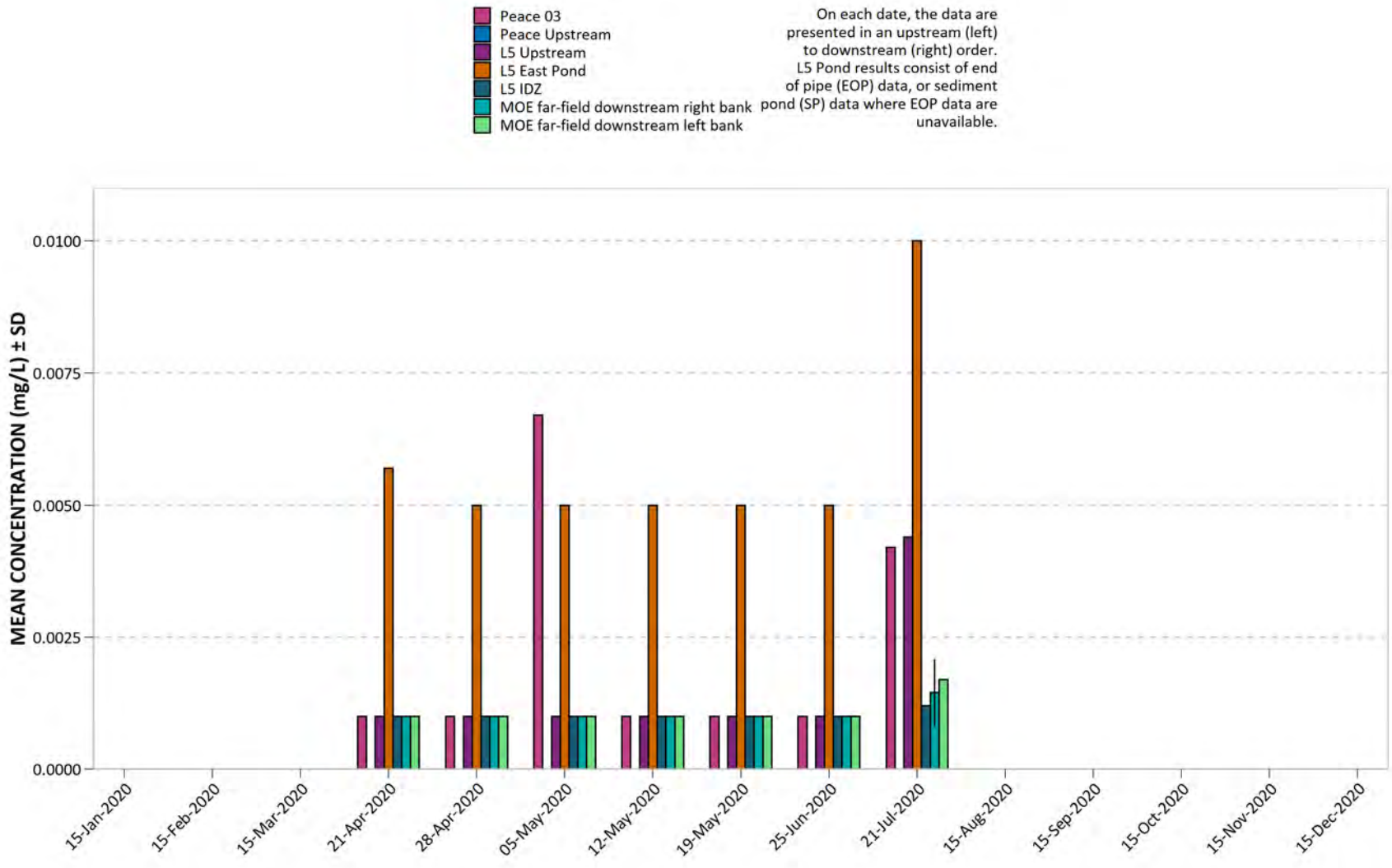
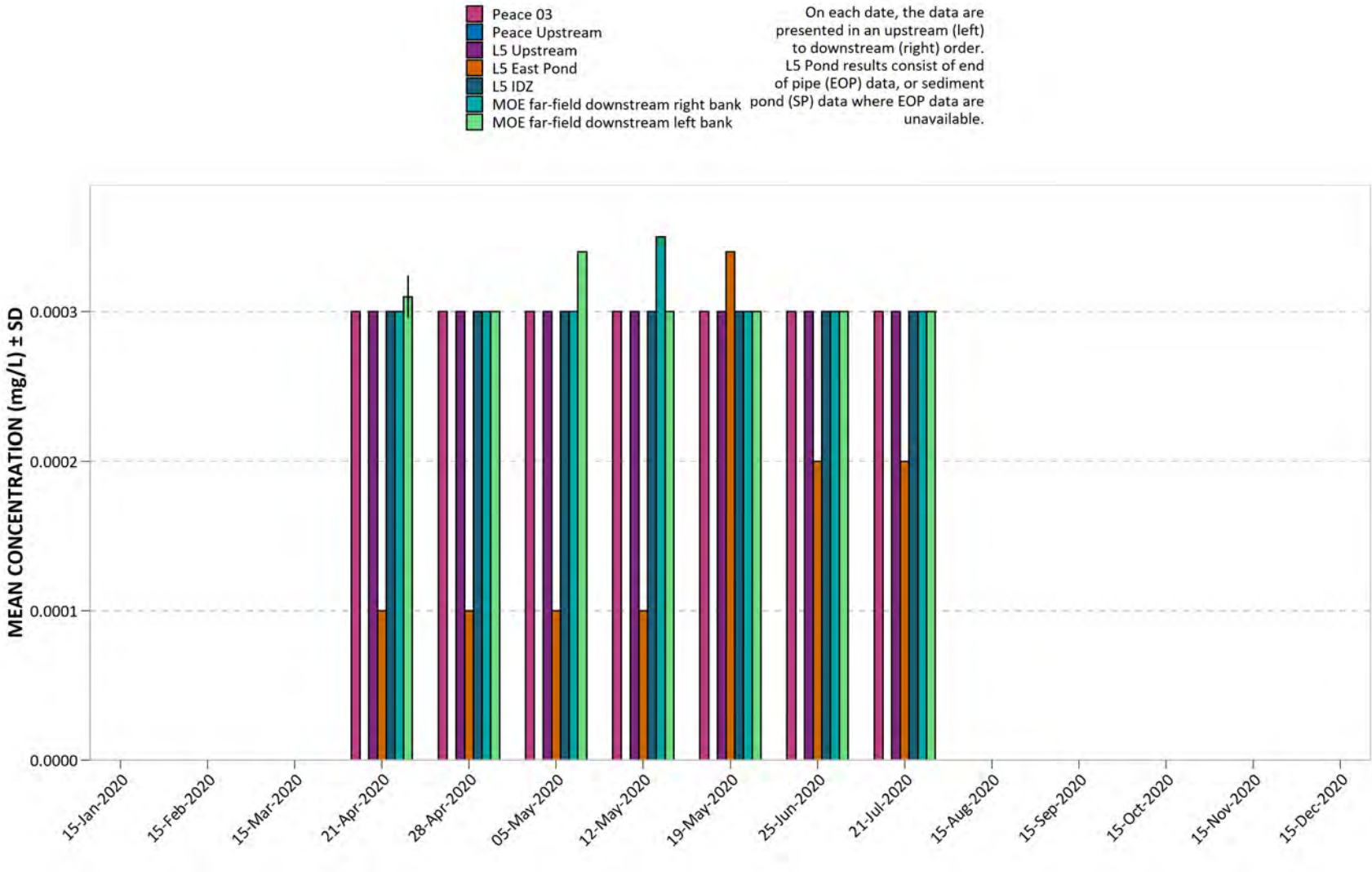


Figure 262. 2020 Peace River and Phase 1 RSEM L5 pond dissolved zirconium (Zr).



Appendix E. 2020 Quality Assurance and Quality Control Summary.

Table 42. ALS Environmental hold time exceedance summary for 2020.

Parameter	Date (2020)	Hold Time (days)		Number of Samples/ Sites Exceeded[1]	Qualifier
		Recommended	Actual		
Diss. Orthophosphate in Water by Colour	19-Mar	3	4	6	EHT
Filtr./Pres. for carbons and nutrients	19-Mar	3	4	7	EHT
Nitrate in Water by IC (Low Level)	14-Oct	3	8	1	EHT
	19-Mar	3	4	8	EHT
Nitrite in Water by IC	19-Mar	3	4	9	EHT
	14-Oct	3	8	1	EHT
Turbidity by Meter	22-Jan	3	4	3	EHT

[1]Specific sample sites where hold time exceedances occurred are provided in ALS laboratory reports.
EHT: Exceeded ALS recommended hold time prior to analysis.
EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

Table 43. Field blank and travel blank detections in 2020.

Sample Type	No. of Sampling Dates (2020)	Field Blank QA/QC Objective (≤5.0% Detectable)			
		No. of Parameter Results (n) [1]	No. of Detectable Results (>MDL)	% Detectable Results	QA/QC Objective Met
Field Blanks	20	1432	29	2.0%	Yes
Travel Blanks	17	1032	11	1.1%	Yes

[1] n refers to the total number of parameters analyzed in the field and travel blanks (non-detectable and detectable).
pH is not included in the calculation of detectable results.
The field blank QA/QC objective of ≤5% detectable is applied to the entire data set for the monitoring period.
Travel blanks and field blanks collected on May 5, 2020 and May 12, 2020 were removed from the data set due to contamination of deionized water at ALS Environmental.

Table 44. Summary of cases with relative percent difference >20% for duplicate samples in 2020.

Date (2020)	Clear/Turbid Flow[1]	Site	Parameter	Relative Percent Difference (%)[2]
22-Jan	Clear	PR-3.88	Aluminum (Al)-Total	46.3
28-Feb	Clear	RBPR-5.69	Turbidity (lab, NTU)	22.6
19-Mar	Clear	RBPR-5.81	Aluminum (Al)-Total	28.3
			Iron (Fe)-Total	23.6
			Titanium (Ti)-Total	50.3
21-Apr	Very Turbid	LBPR-9.34	Aluminum (Al)-Dissolved	86.4
			Iron (Fe)-Dissolved	22.5
			Manganese (Mn)-Dissolved	43.1
			Titanium (Ti)-Dissolved	22.6
28-Apr	Very Turbid	RBPR-5.81	Aluminum (Al)-Dissolved	31.5
			Aluminum (Al)-Total	36.7
			Arsenic (As)-Total	48.8
			Beryllium (Be)-Total	22.1
			Chromium (Cr)-Total	36.8
			Iron (Fe)-Dissolved	35.2
			Iron (Fe)-Total	34.5
			Manganese (Mn)-Dissolved	41.3
			Potassium (K)-Total	24.3
			Selenium (Se)-Total	23
			Silicon (Si)-Total	36.2
			Thallium (Tl)-Total	29.1
			Titanium (Ti)-Dissolved	49
			Titanium (Ti)-Total	102
			Turbidity (lab, NTU)	51.9
			Vanadium (V)-Total	49.1
			Zinc (Zn)-Total	24.6
5-May	Very Turbid	RBPR-7.05	Cadmium (Cd)-Total	27.5
			Chromium (Cr)-Total	23.5
			Manganese (Mn)-Total	24.3
			Molybdenum (Mo)-Total	29.4
			Titanium (Ti)-Dissolved	45.8
			Titanium (Ti)-Total	57
			Total Organic Carbon	25.1
			Total Phosphorus (P)	44.4
12-May	Clear	RBPR-7.15	Aluminum (Al)-Total	25.4
			Chromium (Cr)-Total	57.9
			Iron (Fe)-Total	25.6
			Vanadium (V)-Total	22.1
19-May	Turbid	LBPR-4.50	Aluminum (Al)-Total	35.1
			Chromium (Cr)-Total	25.1
			Iron (Fe)-Total	29.2
			Titanium (Ti)-Total	75.8
			Vanadium (V)-Total	37.3
25-Jun	Very Turbid	LBPR-4.60	Silver (Ag)-Total	43.1
			Titanium (Ti)-Dissolved	24

[1] Clear flow: Peace River sampling site TSS ≤ 25 mg/L; Turbid flow: Peace River TSS > 25 mg/L and ≤ 100 mg/L; Very Turbid: Peace River TSS > 100 mg/L.

[2] RPD was calculated if at least one replicate was > 5 times the MDL.

Table 44. Continued.

Date (2020)	Clear/Turbid Flow[1]	Site	Parameter	Relative Percent Difference (%)[2]
20-Jul	Turbid	RBPR-9.34	Aluminum (Al)-Dissolved	29.2
			Aluminum (Al)-Total	141
			Ammonia, Total (as N)	133
			Arsenic (As)-Total	76.9
			Barium (Ba)-Total	21.2
			Cadmium (Cd)-Total	52.4
			Chromium (Cr)-Total	139
			Cobalt (Co)-Total	78.8
			Copper (Cu)-Total	77.5
			Iron (Fe)-Total	137
			Lead (Pb)-Total	61.9
			Manganese (Mn)-Total	37.5
			Molybdenum (Mo)-Total	34.5
			Nickel (Ni)-Total	66.9
			Phosphorus (P)-Total	135
			Potassium (K)-Total	54.3
			Selenium (Se)-Total	21.5
			Silicon (Si)-Total	34.8
			Titanium (Ti)-Total	150
			Vanadium (V)-Total	110
19-Aug	Very Turbid	LBPR-9.34	Aluminum (Al)-Dissolved	182
			Ammonia, Total (as N)	71.5
			Arsenic (As)-Dissolved	83.7
			Barium (Ba)-Dissolved	58.5
			Cadmium (Cd)-Dissolved	163
			Cadmium (Cd)-Total	26.3
			Calcium (Ca)-Dissolved	21.4
			Cobalt (Co)-Dissolved	139
			Copper (Cu)-Dissolved	96.7
			Hardness (as CaCO3)	21.3
			Iron (Fe)-Dissolved	194
			Lead (Pb)-Dissolved	173
			Lead (Pb)-Total	20.8
			Magnesium (Mg)-Dissolved	21
			Manganese (Mn)-Dissolved	176
			Molybdenum (Mo)-Dissolved	40.5
			Nitrate (as N)	30.6
			Nitrite (as N)	138
			Titanium (Ti)-Total	21.5
			Total Suspended Solids	48.5
			Zinc (Zn)-Dissolved	145
10-Sep	Clear	PR-3.88	Cadmium (Cd)-Total	27.8
14-Oct	Clear	RBPR-7.15	Ammonia, Total (as N)	83.1
			Total Phosphorus (P)	142
20-Oct	Turbid	RBPR-9.34	Selenium (Se)-Total	26.8
			Total Phosphorus (P)	30.2
5-Nov	Clear	PR-2.81	Selenium (Se)-Total	26.6
			Total Suspended Solids	34.4
			Turbidity (lab, NTU)	24.4
11-Nov	Clear	RBPR-7.05	Manganese (Mn)-Dissolved	42.7

[1] Clear flow: Peace River sampling site TSS ≤ 25 mg/L; Turbid flow: Peace River TSS > 25 mg/L and ≤ 100 mg/L; Very Turbid: Peace River TSS > 100 mg/L.

[2] RPD was calculated if at least one replicate was > 5 times the MDL.

Table 45. Summary of cases with a relative standard deviation >18% for triplicate samples in 2020.

Date	Sample	Parameter	Average	SD	Relative Standard Deviation (%)[1]
22-Jan-2020	PR-3.88	Turbidity (In Situ, NTU)	6	1.33	22.2
5-May-2020	RBPR-5.70	Turbidity (In Situ, NTU)	229	54.2	23.7

[1] (standard deviation/average)*100

Table 46. Summary of cases where the dissolved metals to total metals ratio was >1.2 in 2020.

Parameter	Date (2020)	Site	Concentration (mg/L)		D-Metal/ T-Metal Ratio
			Total Metal	Dissolved Metal	
Antimony (Sb)	1-Jul	LBPR-9.34	0.0016	0.0020	1.3
Barium (Ba)	19-Aug	LBPR-9.34	0.0629	0.0782	1.2
Cadmium (Cd)	5-May	PR-3.88	0.0001	0.0001	1.3
	19-Aug	LBPR-9.34	0.0001	0.0001	1.3
Magnesium (Mg)	19-Aug	RBPR-7.05	6.0600	7.2800	1.2
Molybdemun (Mo)	28-Apr	LBPR-4.60	0.0007	0.0009	1.3
Selenium (Se)	22-Jan	RBPR-7.05	0.0003	0.0003	1.3
	28-Feb	PR-3.88	0.0002	0.0003	1.3
		RBPR-7.05	0.0002	0.0003	1.4
	19-Mar	PR-3.88	0.0002	0.0003	1.3
	19-May	RBPR-9.34	0.0004	0.0004	1.2
	19-Aug	RBPR-5.81	0.0002	0.0003	1.4
		RBPR-7.05	0.0003	0.0003	1.3
	10-Sep	PR-3.88	0.0003	0.0004	1.3
		RBPR-7.05	0.0003	0.0004	1.2
		RBPR-7.15	0.0003	0.0004	1.4
	14-Oct	LBPR-9.34	0.0003	0.0004	1.2
	20-Oct	RBPR-7.05	0.0002	0.0003	1.2
	11-Nov	RBPR-7.05	0.0003	0.0004	1.3
			0.0003	0.0004	1.3
Sodium (Na)	22-Jan	RBPR-5.81	2.8300	3.4100	1.2
	28-Apr	LBPR-4.60	2.8900	3.4700	1.2
	20-Jul	RBPR-9.34	1.2500	1.5200	1.2
	19-Aug	RBPR-7.05	1.3500	1.6300	1.2
Sulfur (S)	28-Apr	LBPR-4.50	6.0300	7.3500	1.2
		LBPR-4.60	5.6000	7.0500	1.3
		RBPR-5.81	3.4800	4.4600	1.3
		RBPR-9.34	4.2300	5.2300	1.2
	5-Nov	PR-2.81	3.8100	4.6500	1.2
Zinc (Zn)	5-May	PR-3.88	0.0054	0.0067	1.2