REPORT

Beaverdell Tailings Storage Facilities – 2023 Annual Facility Performance Report

Teck Resources Limited, Beaverdell Mine

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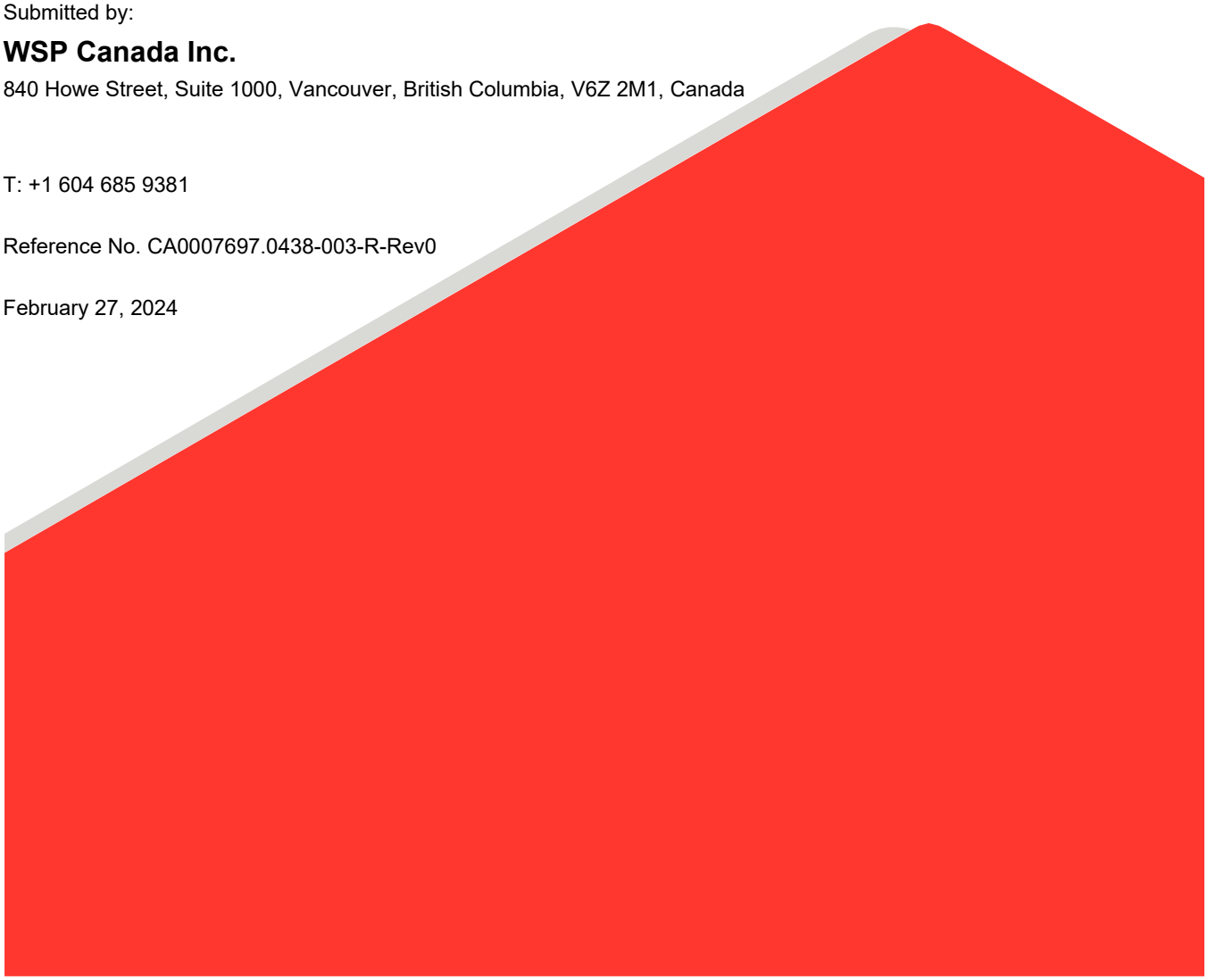
February 27, 2024



Distribution List

Electronic Copy: Teck Resources Limited

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Executive Summary

This Annual Facility Performance Report (AFPR) summarizes the performance of the tailings storage facilities (TSFs) at Teck Legacy Properties' Beaverdell Mine. WSP Canada Inc. (WSP) prepared this AFPR report in accordance with the requirements of the Health, Safety and Reclamation Code for Mines in British Columbia (HSRC), Ministry of Energy, Mines and Low Carbon Innovation (EMLI 2022). It is also an essential document per the Global Industry Standard on Tailings Management (GISTM) which was released in August 2020.

Based on Teck Resources Limited's (Teck) operational and monitoring information and the on-site facility review, WSP considers that the performance of the tailings impoundments and their appurtenant water conveyance features continues to be satisfactory. The following list provides the information to be included in the executive summary for facilities as required by the Health Safety and Reclamation Code Guidance Document (EMLI 2016).

Summary of Facility Description

The Beaverdell Mine is an underground operation adjacent to the community of Beaverdell, BC, which is located 87 kilometres from Kelowna via BC Highway 33. The mine adits are located on the mountainside on Wallace Mountain to the east of Beaverdell, and the former mine mill facility and tailings storage facilities (TSFs) are located approximately 0.5 km west of the town of Beaverdell on the West Kettle River (WKR). The TSFs are located in the valley of the WKR with Cranberry Ridge to the west and the river to the east.

The TSF infrastructure is divided into the South TSF area consisting of five cells (Cells 1 through 5), and the North TSF area consisting of two cells (Cells 6 and 7). The TSF cells were constructed through use of embankments and natural topographic features (e.g., bedrock outcropping) to contain tailings. No information is available on the operation of the TSFs prior to 1970, however the South TSF was in operation from when on-site milling was established in the 1950's until 1980. The North TSF was in operation from 1988 through to decommissioning of the mill in 1991.

Summary of Key Hazards

A formal assessment of credible modes of failure was carried out in April 2022. The assessment of the identified credible hazards was completed based on observations during the site reconnaissance and data provided by Teck. AFPRs will summarize the credible failure modes based on the results of the formal assessment. TSFs can experience failure by one of three failure mechanisms – instability, internal erosion, and overtopping (ICMM 2021).

Failure by internal erosion has been determined to be extremely rare for the North TSF and South TSF. This is primarily because the embankments are unsaturated based on the piezometric and cone penetration data.

Failure by overtopping is considered to be extremely rare for both TSFs. The spillway for Cell 3 was upgraded to pass the 24-hour IDF which is 1/3 between the 1:1,000-year return period flood and the probable maximum flood. Cells 6 and 7 have the storage capacity to store the IDF. In the event of a precipitation event greater than the IDF, the Cell 7 spillway will become active.

At both TSFs, failure by instability in static drained conditions is considered to be extremely rare. Failure by instability for seismic loading, flood and external erosion conditions is considered to be rare for the South TSF and extremely rare for the North TSF.

While not a failure mode for the entire facility, the proximity of the WKR to the South TSF poses a potentially credible erosion mechanism. This is primarily based on observed flooding that occurred in 2018. While no erosion from the facilities occurred in 2018, the potential was present. Following the 2018 flooding, riprap was installed to protect the South TSF up to and including a 1:200-year design event, which meets minimum regulatory requirements. At the time of the annual site reconnaissance, the riprap was in good condition. The peak flow during the reporting period was approximately equivalent to a 1:10-year event, significantly less than 1:200-year event. The North TSF is separated from the WKR by approximately 50 m horizontally and 10 m vertically (from the embankment toe to the river level), and thus the risk posed to the North TSF is negligible.

Consequence Classification

Teck is committed to the safe and environmentally responsible management of tailings facilities throughout the mining life cycle to minimize harm to the environment and protect the health and safety of their people and surrounding Communities of Interest. This commitment includes the implementation of the Global Industry Standard on Tailings Management (GISTM) and industry-leading guidelines established by the International Council on Mining and Metals (ICMM), the Mining Association of Canada (MAC) and Canadian Dam Association (CDA).

For the purpose of assigning dam classifications, the consequences of potential failure modes are assessed as per the Canadian Dam Association (CDA) guidelines and the requirements of British Columbia. The Global Industry Standard on Tailings Management (GISTM) bases consequence classification on credible failure modes only, which may result in a lower stated classification.

As part of Teck's commitment to the safety of tailings facilities, Teck has adopted evaluating their facilities against extreme loading criteria with a credible catastrophic flow failure mode, regardless of consequence classification. Risk assessments are performed for all tailings facilities, with the objective of reducing risks to As Low As Reasonably Practicable (ALARP). In some cases, this results in further risk reduction beyond applicable regulatory requirements and is consistent with the GISTM and industry-leading best practice.

Both the South TSF and the North TSF are classified as Significant consequence facilities. The consequence classifications were reviewed and confirmed as part of the most recent dam safety review (SRK 2023).

- The South TSF was classified as Significant because of the proximity of the WKR to Cells 4 and 5 and the potential for environmental impacts.
- The North TSF was classified as Significant because of the population at risk on a privately-owned property between the South TSF and the North TSF. That property was acquired by Teck in a prior reporting period, so there is no longer a population at risk, and therefore the classification of the North TSF will be re-evaluated in 2024.

Summary of Significant Changes

There have not been significant changes at or around the Beaverdell TSFs during the present reporting period (September 1, 2022, to August 31, 2023).

Significant Changes in Instrumentation and/or Visual Monitoring Records

The vibrating wire piezometers (VWPs) installed at the Beaverdell TSFs suggest that the water levels beneath the TSFs fluctuate seasonally, as expected, but there have been no other changes noted in the water levels.

Significant Changes to Embankment Stability and/or Surface Water Control

There have been no changes to embankment stability or surface water control during the reporting period.

Summary of Review of Operation, Maintenance and Surveillance Manual

The operations, maintenance, and surveillance (OMS) manual for the TSFs was updated by Teck in September 2023 (Teck 2023), with support and input from WSP. WSP subsequently provided a training session based on the OMS Manual to Teck personnel in October 2023.

Summary of Review of Mine Emergency Preparedness and Response Plan

The mine emergency preparedness and response plan (MERP) was last updated in March 2023. Dam safety and MERP training was provided to the EOR as well as the deputy EOR via a PowerPoint presentation provided by Teck. A tabletop exercise of the MERP was held in May 2022.

Dam Safety Review

A Dam Safety Review (DSR) of the TSFs and associated water infrastructure was performed by SRK in 2021 (SRK 2023). The HSRC (MEM 2016, EMLI 2022) required that all tailings storage facilities undergo a DSR every 5 years at minimum. The next DSR is scheduled for 2026.

Summary of AFPR Conclusions and Recommendations

The Beaverdell Mine TSFs are in good condition and well maintained. Stewardship is appropriate to the level of risk. New recommendations are listed in Table E-1, and recommendations from previous annual performance reports and their status are provided in Table E-2. The levels of priority assigned to each item in the table are based on priority ratings developed by Teck (and consistent with HSRC) as follows:

- Priority 1: A high probability or actual TSF safety issue considered immediately dangerous to life, health or the environment, or a significant risk of regulatory enforcement.
- Priority 2: If not corrected could likely result in TSF safety issues leading to injury, environmental impact or significant regulatory enforcement; or a repetitive deficiency that demonstrates a systematic breakdown of procedures.
- Priority 3: Single occurrences of deficiencies or non-conformances that alone would not be expected to result in TSF safety issues.
- Priority 4: Best Management Practice as a suggestion for continuous improvement towards industry best practices that could further reduce potential risks.

Table E-1: New Recommendations for 2023

ID Number	Deficiency or Non-conformance	Applicable Regulation or OMS Manual Reference	Recommended Action	Priority
2023-01	In Cell 3, tailings are present at the level of the spillway invert. If the spillway becomes active, tailings could be transported downstream.		Evaluate measures to minimize transport of tailings downstream of the Cell 3 spillway and develop a design for the preferred option by Q4 2024. A follow-up recommendation will then be added to this registry to implement the selected measures.	2

Table E-2: Previous Actionable Recommendations

ID Number	Deficiency or Non-conformance	Applicable Regulation or OMS Manual Reference	Recommended Action	Priority	Status (March 2024)
2018-03a,b	*Existing riprap along the toe of Cells 4 and 5 may not be sufficient to prevent erosion of embankment fill during a large river freshet flood event, based on observed changes in river alignment and adjacent riverbank conditions.*	*HSRC §10.1.8*	*Document long-term plan for riprap along West Kettle River considering larger flood events to mitigate risk of erosion along the toe of Cells 4 and 5.*	*3*	*Completed*
2021-03	Broken perimeter fence posts and wires. Possibly insufficient signage along West Kettle River.		Repair perimeter fence and assess need for additional signage.	4	Ongoing
2022-01	Surficial erosion on downstream embankment crest from surface water runoff concentrated in areas disturbed by animal activity.		Mark areas of erosion in the field by flagging or similar means and monitor for changes.	3	Areas are marked with flagging and observed for changes during inspection. To be included in OMS manual and closed in 2024.

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TABLES

FIGURES

APPENDICES

1.0 INTRODUCTION

WSP Canada Inc. (WSP) has prepared this 2023 Annual Facility Performance Review (AFPR) report for the tailings storage facilities at the closed Beaverdell Mine, owned by Teck Resources Limited (Teck).

1.1 Scope

Teck requires all of its tailings facilities, whether active or legacy, to have a minimum level of governance that includes an Engineer of Record (EOR). One of the key responsibilities of the EOR is to prepare an annual report summarizing the performance of the facility over the reporting period, along with recommendations for the subsequent period based upon observations made. Teck's requirements are mirrored in some jurisdictions, such as British Columbia, by regulatory reporting requirements for AFPRs. In British Columbia, the regulations require that the AFPR addresses the reporting period and be submitted no later than March 31 of the following year. The scope of this report addresses the period spanning September 2022 through August 2023, which is referred to as the "reporting period". Information presented is based on observations made during site visits, analysis of instrumentation and monitoring data, and correspondence. The report generally does not address changes or conditions after the end of the reporting period unless a specific significant event occurred.

1.2 Annual Reporting Requirements

This report was prepared in accordance with the requirements of the British Columbia Ministry of Energy, Mines and Low-carbon Innovation (EMLI) presented in the November 2022 "Health Safety and Reclamation Code for Mines in BC" (HSRC) and the July 2016 "Guidance Document – Health, Safety and Reclamation Code (HSRC) for Mines in British Columbia" (HSRC Guidance Document). It is also an essential document per the Global Industry Standard on Tailings Management (GISTM) which was released in August 2020.

The numbered items required for the AFPR (formerly known as Dam Safety Inspections, or DSIs) by Section 4.2 of the HSRC Guidance Document are found in the following sections of this report.

- Executive Summary – precedes the Table of Contents
- Facility Description – Section 2 and Appendix A
- Identification of Engineer of Record (EOR) and TSF Qualified Person – Section 1.3
- Plan and Cross-sections (Golder 2021) – Appendix B
- Site Reconnaissance and Site Photographs – Section 4 and Appendices C and D
- Review of Climate Data – Section 3
- Water Balance Review and Reconciliation – Section 3
- Freeboard and Storage Availability (in excess of the design flood) – Section 3
- Water Discharge System, Volumes, and Quality – Section 3
- Surface Water Control and Surface Erosion – Section 3
- Instrumentation Review – Section 5 and Appendix E
- Recommendations – Section 9

1.3 Roles and Responsibilities

The Beaverdell Mine TSFs are regulated by the HSRC. The TSF embankments meet the definition of mining dams as defined in the HSRC. The HSRC describes and defines responsibilities for several key roles for a TSF (MEM 2016). For the Beaverdell TSFs, the following personnel fill these roles:

1.3.1 Responsible Tailings Facility Engineer (equivalent to TSF Qualified Person)

The Responsible Tailings Facility Engineer (RTFE) (equivalent to the TSF Qualified Person role defined in the HSRC) for the Beaverdell TSFs is Chris Jeffrey, P.Eng. of Teck Resources Limited.

1.3.2 Engineer of Record

The EOR for the Beaverdell TSFs is Dixie Ann Simon, P.Eng., on behalf of WSP, with Sean Birch, P.Eng., in the role of Deputy EOR.

Prior to March 31, 2024, a transition in the EOR position will take place. Sean Birch will become the new EOR for the Beaverdell TSFs, with Nicole Brisson, P.Eng., taking on the role of Deputy EOR.

1.3.3 Mine Manager

The Mine Manager pursuant to the HSRC and the Mines Act permit M-71 for the Beaverdell Mine is Jennifer McConnachie, P.Ag. of Teck Resources Limited.

1.3.4 Third-Party Review

Per the requirements of the February 2017 update to the HSRC, Teck convened an Independent Technical Review Board (ITRB) to provide on-going independent review of the Beaverdell TSFs. The Beaverdell ITRB has met yearly since it was first convened in January 2018. The ITRB board members for the remainder of the reporting period are Randy Knapp, Howard Plewes, and Rick Rodman.

The last ITRB meeting was completed in October 2023. The ITRB also completed a site reconnaissance in October 2023.

1.4 Authorizations

The Beaverdell TSFs are operated under the following permits:

- British Columbia Ministry of Energy, Mines and Petroleum Resources (currently Energy, Mines and Low Carbon Innovation) Permit No. M-71, last amended June 11, 2021.
- British Columbia Ministry of Environment (currently Environment and Climate Change Strategy) Effluent Permit No. PE-444, last amended April 22, 2021.

2.0 BACKGROUND

2.1 Elevation Datum and Coordinate System

The current global coordinate system used for surface works at the mine is the North American Datum of 1983 (NAD83) with coordinates projected to Universal Transverse Mercator (UTM) Zone 11 and the geodetic datum is Canadian Geodetic Vertical Datum (CGVD) 2013.

2.2 Tailings Storage Facility Description and Development

The Beaverdell Mine is an underground operation developed adjacent to the community of Beaverdell, BC, which is located 87 kilometres from Kelowna via BC Highway 33. The location of the Beaverdell Mine is shown in Figure 1. Silver was the main ore extracted from the mine, with appreciable quantities of lead, zinc, gold, and cadmium. The Beaverdell Mine was acquired by Teck Corporation Limited in 1969 or 1970 and continued production until 1991, when the mine and ancillary operations were permanently closed. The Beaverdell Mine is now a closed facility in active closure, with no current or future planned mining activities.

The mine adits are located in the mountainside on Wallace Mountain to the east of Beaverdell; the mine mill facilities and tailings storage facilities (TSFs) are located approximately 0.5 km west of the town of Beaverdell, which is located on the east side of the West Kettle River (WKR). The TSFs are located in the valley of the WKR with Cranberry Ridge to the west and the river to the east. The locations of the North and South TSFs relative to surrounding physical features are shown in Figure 2.

The TSF infrastructure is divided into the South TSF area consisting of five cells (Cells 1 through 5), and the North TSF area consisting of two cells (Cells 6 and 7). The TSF cells were constructed through use of embankments and natural topographic features (e.g., bedrock outcropping), to contain tailings generated at the mill facility. No information is available on the operation of the TSFs prior to 1970. The South TSF was in operation until 1980. The North TSF was in operation from 1988 through to decommissioning of the mill in 1991.

Detailed descriptions of the North and South TSFs are provided in Sections 2.2.1 and 2.2.2. Facility data sheets are provided in Appendix A. As-built information is not available, however cross sections have been developed based on current topography and historical design reports (Golder 2021). Copies of the cross sections are included in Appendix B.

2.2.1 Detailed Description of the South Tailings Storage Facility

The South TSF consists of five cells (Cells 1 through 5). The South TSF is bounded by natural topography on the north and west sides. Embankments on east and south sides contain the tailings; specifically, the eastern embankments of Cells 3, 4, and 5, southern embankments of Cells 1 and 5 and western embankment of Cell 1.

Information on the design and construction of Cells 1 through 4 is not available. A design report is available for Cell 5 (R. F. Binnie Associates Ltd. 1973); however, construction records are not available. The Cell 5 embankment, if constructed as designed, likely was formed using local materials excavated from the interior of the cell and the downstream method of construction. Though no records are available for Cell 4, it is likely that it also was constructed in a manner similar to Cell 5 based on observations.

Reference:

DataBC Data Distribution Service
Open Government License
(http://www.data.gov.bc.ca/)
Geogratis/Geobase
Open Government License - Canada
(http://data.gc.ca/eng/about-datagcca)

CLIENT:
TECK Resources Limited

PROJECT:
Beaverdell Tailings Storage Facilities
2023 Annual Facility Performance Report

TITLE:
Site Location Plan

DATE:	Figure 1
November 2023	

GIS FILE: 03-01-003_Site_Location_Plan_2023.mxd

COORDINATE SYSTEM:	JOB No:	ANALYST:	QA/QC:
NAD 1983 UTM Zone 11N	CA0007697.0438	BB	SB

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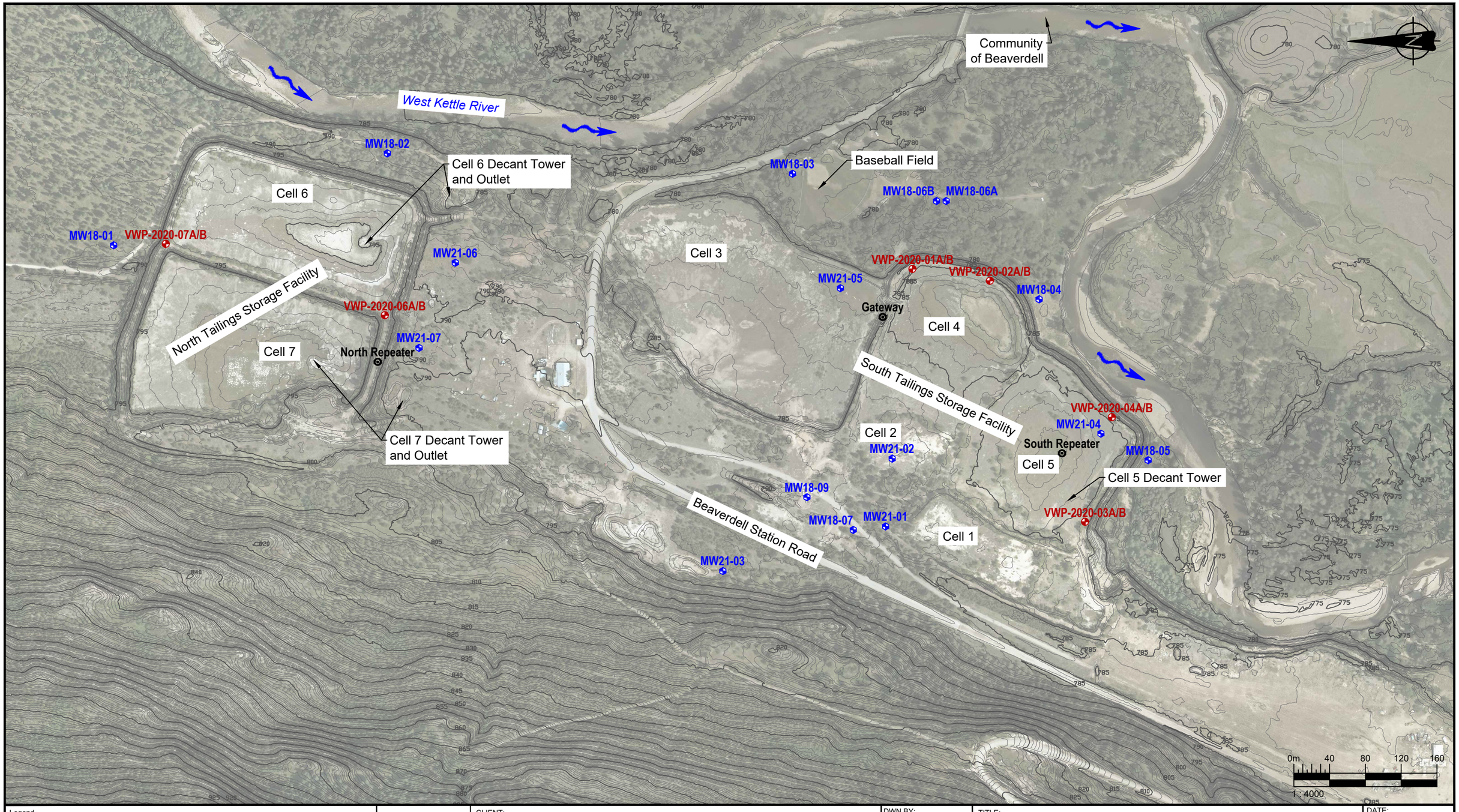

Legend

- Borehole Location
- Monitoring Well Location

Notes:

1. Contours shown at 0.5 m Minor and 5 m Major interval.

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840 Howe Street, #1000
Vancouver, BC, CANADA V6Z 2M1
Tel +1 604-685-9381

DWN BY:	BB
CHK'D BY:	SB
DATUM:	NAD 83
PROJECTION:	UTM Zone 11
SCALE:	1:4 000

TITLE: SITE PLAN

DATE: NOVEMBER 2023

PROJECT NO.: CA0007697.0438

REV. NO.: A

PROJECT: BEAVERDELL TAILINGS STORAGE FACILITIES 2023 ANNUAL FACILITY PERFORMANCE REPORT

FIGURE 2

C:\0 BBY ENV\VE52978 – Teck Beaverdell 2023 EoR & AFPR Services\14 CAD\GEO\VE52978–Fig2–SitePlan.dwg – 1 – Nov. 24, 2023 2:01pm – wds_benjamin.brown2

This drawing was originally produced in colour.

There is a decommissioned decant tower in Cell 5. The decant tower was decommissioned by filling it with expandable foam. The location of the decant tower is shown in Figure 2. The decant tower reportedly discharged to a supernatant pond that historically existed downstream of the southwest corner of Cell 5, however the decant discharge pipe is not visible on the downstream Cell 5 slope.

2.2.1.1 Dimensions of the South TSF Perimeter Embankments

The dimensions of the South TSF perimeter embankments as determined by Golder Associates Ltd. (Golder) are provided in Table 1 (Golder 2021). Golder estimated the dimensions based on the 2018 LiDAR survey and their observations. The maximum height is about 10 m, located on the Cell 1 embankment. The total length of the perimeter embankments is about 1,010 m. The upstream slopes of Cell 1 could not be observed as they are covered with tailings. Cell 2 does not have a containment embankment or a divider dyke between it and Cell 4. Cell 2 appears to be continuous with Cell 4.

Table 1: Dimensions of the South TSF Perimeter Embankments

Cell	Downstream Slope (H:V)	Upstream Slope (H:V)	Exterior Crest Length[(a)] (m)	Crest Width (m)	Embankment Height (m)	Approximate Minimum Crest Elevation[(b)] (m)
1	2.0:1 to 4:1	Not known	110	1 to 3	3 to 10	785.5
2	N/A[(c)]	N/A[(c)]	N/A[(c)]	N/A[(c)]	N/A[(c)]	N/A[(c)]
3	1.5:1 to 2.4:1	1.5:1 to 3:1	360	1 to 5	2 to 3	781.1
4	1.2:1 to 1.4:1	1.5:1[(d)]	240	3 to 3.5	7 to 8	785
5	1.3:1 to 2.5:1	1.5:1[(d)]	300	3 to 6	7 to 9	785

(a) Crest length includes only that portion of the embankment that forms the TSF perimeter.
(b) Elevations are in CGVD2013.
(c) Does not form a portion of the TSF perimeter; does not appear to have a containment embankment or a dyke between it and Cell 4.
(d) Based on original design drawings.

2.2.1.2 South TSF Spillways

Golder determined the dimensions of the South TSF internal spillways based on the 2018 LiDAR survey and their observations during site inspections (Golder 2021). There is a spillway through the divider dyke between Cell 3 and Cell 4 that allows water to flow from Cell 4 to Cell 3. This spillway has a base width of 3 m, a minimum depth of 1 m and side slopes of 2H:1V. The invert elevation is approximately 784.5 m. It is trapezoidal in shape and partially armored with riprap.

There is a small, partially armored spillway through the divider dyke between Cell 4 and Cell 5 that allows water to flow from Cell 5 to Cell 4. The invert elevation is approximately 785.0 m.

The Cell 3 external spillway was upgraded in 2019 (Golder 2019a). The Cell 3 spillway is trapezoidal in shape with a minimum base width of 13.6 m at the invert and a longitudinal slope of 5H:1V. The invert elevation is 780.4 m. It is armored with a 0.66 m thick layer of Class 50 riprap. The spillway is capable of passing the 24-hour IDF. Construction records are available for the Cell 3 spillway upgrade (Golder 2019a).

2.2.1.3 South TSF Tailings Storage and Water Storage Capacity

Golder estimated the current storage capacity of the South TSF cells based on the LiDAR survey completed in July 2018 and the as-built survey for the Cell 3 spillway (Golder 2019a). The storage capacity is the volume of water that could be stored above the tailings and below the lowest spillway elevation. Cells 1, 2 and 3 cannot store water. The volume of the stored tailings was based on the 2018 cone penetration testing program (Golder 2019b). The storage and tailings volumes calculated by Golder are provided in Table 2.

Table 2: South TSF Tailings and Water Storage

Cell	Storage Volume (m^3)	Storage Elevation[(a)] (m)	Overflow Discharges To	Estimated Volume of Stored Tailings (m^3)
1	0	N/A	Cell 5	27,000
2	0	N/A	Cell 4	18,000
3	0	N/A	Downstream via external spillway	192,000
4	7,400	784.5	Cell 3	165,000
5	14,500	785.0	Cell 4	142,000
Total	**21,900**	**N/A**	**N/A**	**544,000**

(a) Elevations are in CGVD2013.

2.2.2 Detailed Description of the North Tailings Storage Facility

The North TSF consists of two cells (Cells 6 and 7). The North TSF is bound by natural topography to the west. Embankments provide containment on the north, east and south sides contain the tailings. Design reports are available for Cells 6 and 7 (R.F. Binnie and Associates Ltd., 1980a, 1980b and 1988). Construction reports are not available. Based on observations, it appears that the Cell 6 and 7 embankments were constructed in accordance with the design reports. Material for construction of Cells 6 and 7 was the natural sand and gravel materials obtained from excavation within the cell area.

There are two decommissioned decant towers present in the North TSF, one in Cell 6 and one in Cell 7. The decant towers have been decommissioned by sealing with expandable foam. The discharge pipes for both decants are present and do not appear to be sealed. The Cell 6 decant tower reportedly discharged to a supernatant pond that historically existed near the southeast corner of Cell 6. A supernatant pond specific to the Cell 7 decant is not shown on the available historical drawings; however, the disturbance of the ground surface present immediately downstream of the Cell 7 decant suggests that a supernatant pond could have existed at that location.

2.2.2.1 Dimensions of the North TSF Perimeter Embankments

The dimensions of the North TSF perimeter embankments as determined by Golder are provided in Table 3 (Golder 2021). Golder estimated the geometry based on the 2018 LiDAR survey and their observations. The maximum height is about 12 m. The total length of the perimeter embankments is about 840 m. This length does not include the divider dyke between the two North TSF cells.

Table 3: Dimensions of the North TSF Perimeter Embankments

Cell	Downstream Slope (H:V)	Upstream Slope (H:V)	Exterior Crest Length[(a)] (m)	Crest Width (m)	Embankment Height (m)	Approximate Minimum Crest Elevation[(b)] (m)
6	1.4:1 to 1.9:1	1.5:1[(c)]	510	3 to 4	10 to 12	797.5
7	1.6:1 to 2.6:1	1.5:1	330	3 to 4	8 to 10	798.0

(a) Crest length includes only that portion of the embankment that forms the TSF perimeter.
(b) Elevations are in CGVD2013.
(c) Based on original design drawings.

2.2.2.2 North TSF Spillways

Golder determined the dimensions of the North TSF based on the 2018 LiDAR survey and their observations during site inspections (Golder 2021). The spillway is located on the west side of Cell 7 in natural ground. It is trapezoidal in cross-section with a base width of approximately 2 m and 4H:1V side slopes. The spillway is approximately 2 m below the surrounding natural ground. The invert elevation is approximately 797.0 m, which is about 0.5 m below the crest of Cell 6 and 1.0 m below the crest of Cell 7.

The crest elevation of the divider dyke between Cells 6 and 7 is about the same elevation as the invert of the spillway.

2.2.2.3 North TSF Tailings Storage and Water Storage Capacity

The current storage capacity of the North TSF cells was estimated based on the LiDAR survey completed in July 2018 (Golder 2019a). The storage capacity is the volume of water that could be stored above the tailings and below the lowest spillway elevation. The volume of the stored tailings was based on the 2018 cone penetration testing program (Golder 2019b). The storage and tailings volumes calculated by Golder are provided in Table 4.

Table 4: North TSF Tailings and Water Storage

Cell	Storage Volume (m^3)	Storage Elevation[(a)] (m)	Overflow Discharges To	Estimated Volume of Stored Tailings (m^3)
6	22,500	797.0	Cell 7	271,000
7	162,100	797.0	Downstream via spillway	113,000
Total	**184,600**	**N/A**	**N/A**	**384,000**

(a) Elevations are in CGVD2013.

2.3 Loading Criteria

The Beaverdell Mine TSFs are in Closure – Active Care which is often referred to as 'Care and Maintenance'. The HSRC loading criteria for active care are provided in Table 5. For comparison purposes, the loading criteria recommended in the Global Industry Standard for Tailings Management (GISTM 2020) are also provided.

Teck is committed to the safe and environmentally responsible management of tailings facilities throughout the mining life cycle to minimize harm to the environment and protect the health and safety of its people and Communities of Interest. This commitment includes the implementation of the Global Industry Standard on Tailings Management (GISTM) and industry-leading guidelines established by the International Council on Mining and Metals (ICMM), the Mining Association of Canada (MAC) and Canadian Dam Association (CDA).

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Both the South TSF and the North TSF are classified as Significant consequence facilities. The consequence classifications were reviewed and confirmed as part of the most recent dam safety review (SRK 2023).

- The South TSF was classified as Significant because of the proximity of the WKR to Cells 4 and 5 and the potential for environmental impacts.
- The North TSF was classified as Significant because of the population at risk on a privately-owned property between the South TSF and the North TSF. That property was acquired by Teck in a prior reporting period, so there is no longer a population at risk, and therefore the classification of the North TSF should be revisited.

Table 5: Beaverdell Mine TSF Loading Criteria

Aspect	HSRC Guidance Document and CDA (active care)	GISTM Operations and Closure (active care)	GISTM Passive-closure (passive care) and Teck[(a)] for Active / Passive Care or Operations
Inflow Design Flood (IDF)	1/3 between 1/975 and PMF	1/1,000	1/10,000
Environmental Design Flood (EDF)	1/50 to 1/200	Not specified	N/A[(b)]
Earthquake	1/2,475	1/1,000	1/10,000
Embankment Integrity Measure	Limit-Equilibrium Factors of Safety irrespective of material type: 1.5 – Static; 1.2 – Post Seismic; 1.0 – Pseudo Static	Performance Based	Performance Based
Downstream Slope	2H:1V or flatter	Performance Based	Performance Based

(a) Teck's use of Performance Based criteria for embankment integrity is aligned with current best practice (ICMM 2021).

(b) Storage of an EDF is not a requirement for the Beaverdell TSFs.

3.0 WATER MANAGEMENT

3.1 Climate

A weather station is no longer present at the mine site nor in the nearby community of Beaverdell. The nearest weather stations are located in Kelowna and Penticton, about 60 km and 37 km distant from the site and 430 m and 344 m in elevation, respectively. For comparison, the Beaverdell TSFs are approximately at 790 m elevation.

Historical average monthly precipitation (rainfall and snowfall) was developed using historical data from the Beaverdell stations and the historical climate normals from the surrounding weather stations (Golder 2021). Composite correlation factors for daily precipitation (rainfall plus snowfall) were developed by Golder to estimate precipitation at the Beaverdell mine site from the data from the nearby weather stations. Currently, the measured precipitation at Kelowna (62 km distant from the site) is multiplied by a correlation factor of 1.264 to estimate the precipitation at the Beaverdell Mine TSFs.

The estimated monthly precipitation at the Beaverdell Mine TSFs for the last three reporting periods are shown in Figure 3. The composite historical monthly average data (Golder 2021) are also shown.

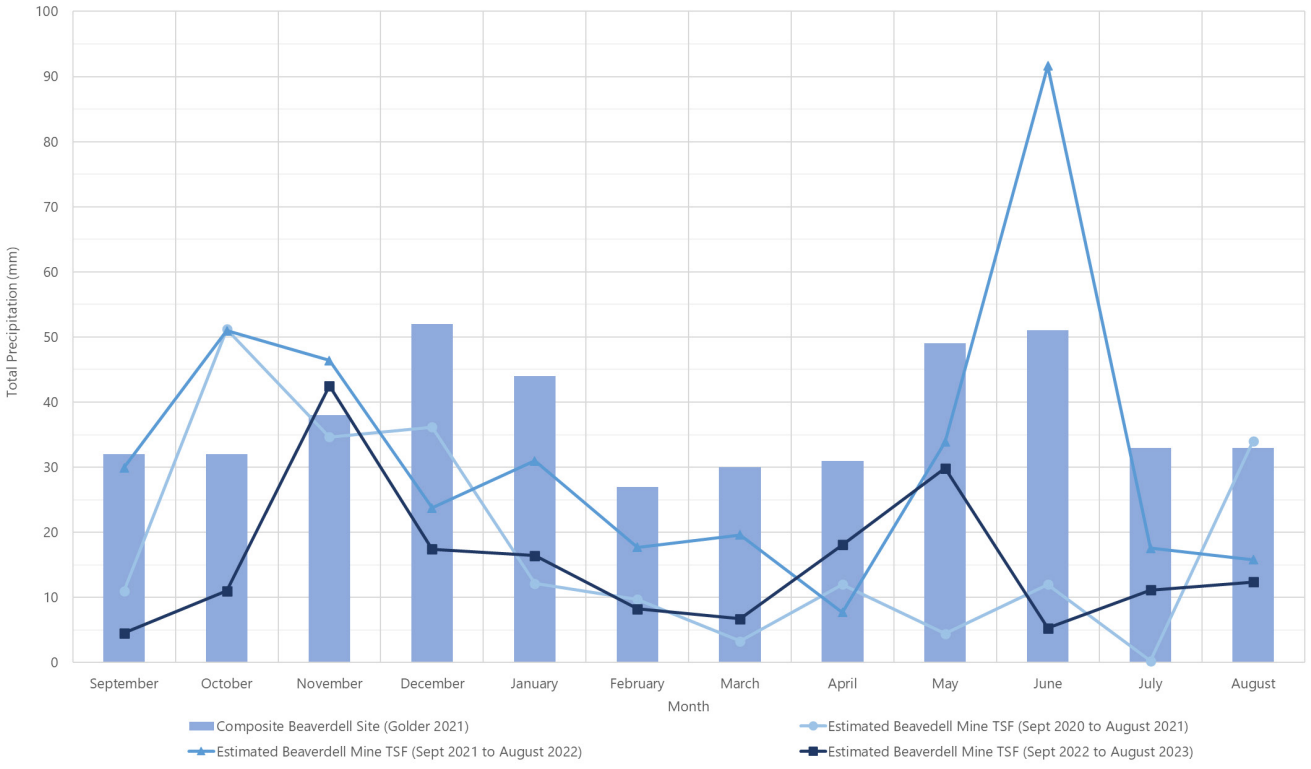

Figure 3: Monthly Precipitation Data at Beaverdell

The estimated total precipitation at Beaverdell for the reporting period is 184 mm. The estimated total when compared to the composite historical Beaverdell precipitation of 452 mm suggests a very dry year.

Peak freshet flow in the WKR occurred on May 5, 2023. The measured flow at the Beaverdell Station on the WKR was 131 m^3/sec. This flow rate is estimated to be an event with an approximate 10-year return period.

3.2 Water Diversion System

A ditch along Beaverdell Station Road directs surface water runoff from Cranberry ridge away from the South TSF. The ditching is sufficient to convey the IDF (Golder 2019c). The catchment area for the South TSF is limited to the surface area of the tailings and upstream slopes of the embankments.

Ditching along the north side of the North TSF directs water around and away from the North TSF. A portion of the ditching is not sufficient to convey the IDF and water could enter Cell 7 during an IDF (Golder 2019c). The available reporting does not include an assessment of the annual exceedance probability (AEP) of the event at which the ditch becomes insufficient and water enters the North TSF. Further assessment will be completed, if required, as the closure planning progresses.

3.3 Water Balance

Developing a quantitative water balance for the Beaverdell TSFs is not currently possible. Inflows to the TSFs during the reporting period were limited to direct precipitation, which is not measured. A precipitation event exceeding the capacity of the North TSF diversion ditch (which could direct surface water runoff from Cranberry Ridge into the North TSF) has not occurred during the reporting period. A weather station is not present at the site.

During the reporting period, the North and South TSFs spillways reportedly did not become active. Ponded water was not observed on the surface of the tailings at the time of the fall 2022 or spring 2023 inspection by Teck, as well as during the July site review by the EOR. There were no observable signs of seepage on the downstream slopes of the TSF embankments.

As the spillways did not become active and there was no apparent seepage though the TSF embankments, outflows during the reporting period were limited to evapotranspiration, infiltration, and sublimation of the snow cover during the winter months. The distribution of the inflow (direct precipitation) to these outflows was not assessed.

The estimated annual lake evaporation is between 600 and 700 mm/year (Golder 2021). Considering the estimated total annual 2023 precipitation of 184 mm, the site has an overall water deficit.

3.4 Flood Storage and Freeboard

Freeboard is not measured directly; however, quantitative performance objectives (QPOs) and a trigger action response plan (TARP) have been developed based on the distance of the seasonal ponds from the upstream crest of the perimeter embankments (Teck 2023).

The surface of the Beaverdell TSFs is generally dry; however, small seasonal ponds historically have formed on the surface of tailings in Ponds 3, 4 and 6. Seasonal ponds were not observed in 2023. Site inspections indicated that flood storage and freeboard remained within the acceptable or green threshold criteria.

3.5 Seepage and Water Discharge Management

There have been no observations of active seepage or evidence of past seepage on the downstream slopes of the TSF embankments during the site inspections. It is anticipated that infiltrating precipitation reaches the groundwater table beneath the TSFs and ultimately discharges to the WKR.

Water did not discharge from the TSFs via the spillways during the reporting period based on observations during the site inspections.

3.6 Water Quality Monitoring

Water quality results are submitted to the Ministry of Environment and Climate Change Strategy (ENV) by Teck in accordance with the requirements of Permit PE-444.

4.0 SITE RECONNAISSANCE

The site reconnaissance was completed on July 13, 2023, by Dixie Ann Simon (EOR) and Sean Birch (deputy EOR) of WSP. They were accompanied by Chris Jeffrey (RTFE) of Teck. The weather at the time of the site reconnaissance was sunny, and the temperature ranged between 26°C and 30°C. Photographs are provided in Appendix C. Inspection forms are provided in Appendix D.

The site reconnaissance included visual observation of the South and North TSFs. General comments are as follows:

- The embankments and spillways are in generally good condition.
- Cracking, settlement or lateral deformation of the crests and side slopes was not observed.
- There were no observations of seepage or evidence of past seepage on the downstream slopes of the embankments.
- Several preferential erosional pathways have developed on the downstream slopes of the North TSF embankments. The preferential erosion pathways are likely the result of animal activity.
- Some perimeter fence posts are broken at the ground surface.
- The surface of the tailings is partially vegetated with grasses, shrubs, and small trees.
- Sinkholes or subsidence of the tailings surface were not noted, though the entire tailings surface was not observable from the embankments.
- The outlet pipe for the Cell 6 decant was dry.
- The protective casings for the newly installed instrumentation as well as the repeater stations and cellular gateways were in excellent condition.

In summary, there have been no significant changes in the TSFs. The Cell 4 and 5 revetment riprap installed in 2019 and 2020 was in good condition at the time of the 2023 site visit. A reserve stockpile of riprap was present at the southeast corner of the South TSF. At the time of the site reconnaissance, the water level in the WKR was recovering from the 2023 freshet peak flow and was lower than the bottom of the high level staff gauge.

5.0 INSTRUMENTATION AND MONITORING

5.1 Geotechnical Instrumentation Monitoring

Geotechnical instrumentation consists of 12 vibrating wire piezometers (VWPs) installed in March 2020. The historical standpipe piezometers are undocumented, considered unreliable and not monitored. During installation, the VWPs were connected to 8-channel VWP interfaces by cable. An interface was installed at each borehole location. The interfaces act as dataloggers. Data is recorded at user specified frequencies and transmitted wirelessly to an on-site cellular gateway. The gateway transmits data from the site to a remote PC via a cellular uplink. The locations of the VWPs, repeater stations and cellular gateways are shown in Figure 2. A summary of the VWP installations is provided in Table 6.

Table 6: Vibrating Wire Piezometer Details

Borehole ID	Teck ID	Serial Number	Sensor Depth (m)	Sensor Elevation (m)	Sensor Location
BH20-01	BEA-VWP-2020-01A	VW65308	6.62	778.50	Tailings
	BEA-VWP-2020-01B	VW65315	10.25	774.87	Foundation
BH20-02	BEA-VWP-2020-02A	VW65307	6.16	778.42	Tailings
	BEA-VWP-2020-02B	VW65316	10.00	774.58	Foundation
BH20-03	BEA-VWP-2020-03A	VW65305	6.64	779.43	Embankment Fill
	BEA-VWP-2020-03B	VW65317	10.13	775.94	Foundation
BH20-04	BEA-VWP-2020-04A	VW65306	7.23	778.13	Embankment Fill
	BEA-VWP-2020-04B	VW65318	9.89	775.47	Foundation
BH20-06	BEA-VWP-2020-06A	VW65310	9.36	788.92	Embankment Fill
	BEA-VWP-2020-06B	VW65314	19.90	778.38	Foundation
BH20-07	BEA-VWP-2020-07A	VW65311	6.32	791.82	Embankment Fill
	BEA-VWP-2020-07B	VW65312	16.61	781.53	Foundation

The available VWP data from 2021, 2022 and 2023 is presented in Appendix D. Piezometric levels below the sensor elevations have been plotted; however, the reader should use judgement when interpreting negative pressure heads. The data have not been corrected for atmospheric pressure. Readings from VWPs at BH20-07 have not been available since June 2021.

The data available to date suggest that piezometric levels are generally at or below the original ground surface. The data also suggest that the water levels beneath the TSFs fluctuate seasonally, as expected.

5.2 INSAR Ground Displacement Monitoring

Ground displacement is monitored periodically by Teck using Interferometric Synthetic Aperture Radar (InSAR) techniques. Ground displacement data was last acquired in November 2021. At that time, areas of minor settlement were identified, generally within the tailings areas around the old decants and seasonal ponds.

Settlement of the tailings surface is not unexpected and is not of concern.

6.0 REVIEW OF OPERATIONAL DOCUMENTS

6.1 Operation, Maintenance and Surveillance Manual

The operations, maintenance, and surveillance (OMS) manual for the TSFs was last updated by Teck (with support from WSP) in September 2023 (Teck 2023).

6.2 Mine Emergency Preparedness and Response Plan

The mine emergency preparedness and response plan (MERP) was last updated in March 2023. Dam safety and MERP training was provided to the EOR as well as the deputy EOR via a PowerPoint presentation provided by Teck. A tabletop exercise of the MERP was held in May 2022.

6.3 Dam Safety Review

A 2021 dam safety review (DSR) of the Beaverdell TSFs was completed by SRK, with report issued in March 2023. The next DSR is scheduled for 2026.

7.0 CREDIBLE FAILURE MODES ASSESSMENT

The annual review of the Beaverdell Mine TSF risk register was completed by Teck and the EOR in July 2023. Only minor edits were required. No new risks were identified.

Likelihood ratings used by Teck for assessing risk are summarized in Table 7.

Table 7: Likelihood Ratings

Likelihood	Description
Negligible	Essentially impossible, not expected to ever occur
Extremely Rare	Extremely low likelihood, improbable even under exceptional circumstance
Rare	Very low likelihood but not impossible, unlikely to occur during the next 100 years
Unlikely	Plausible, could occur during the next 10 to 100 years
Possible	Possible, could occur at least once in a 1 to 10 year period
Likely	High probability, likely to occur approximately once per year
Almost Certain	Very high probability, likely to occur several times per year

Note: For this and subsequent AFPRs, the term “non-credible” will apply to a scenario where the likelihood of a failure mechanism is considered negligible.

TSFs can experience failure by one of three failure mechanisms – instability, internal erosion, and overtopping (ICMM 2021).

- Failure by internal erosion is considered to be extremely rare for both the South and North TSFs. This is primarily because the embankments are unsaturated based on the piezometric and cone penetration data. There has been occasional ponding on the surface of the tailings; however, the extent and depth is not expected to provide the hydraulic gradient required to mobilize finer soil particles through the embankment fill materials.
- Failure by overtopping is considered to be extremely rare for both TSFs. The spillway for Cell 3 was upgraded to pass the 24-hour IDF which is 1/3 between the 1:10,000-year return period flood and the probable maximum flood (PMF) (Golder 2018, 2019a). Cells 6 and 7 have the storage capacity to store the IDF. In the event of a precipitation event greater than the IDF, the Cell 7 spillway will become active.
- At both TSFs, failure by instability in static drained conditions is considered to be extremely rare. Failure by instability for seismic loading, flood and external erosion conditions is considered to be rare for the South TSF and extremely rare for the North TSF. Additional investigations as recommended in the 2020 DSI have been completed. Liquefaction and stability assessment work was completed in 2022 (Golder 2022), which indicated that the embankment fill and foundation materials are not susceptible to liquefaction under a 1:10,000-year return period seismic event, and slope stability factors of safety meet the design criteria under the measured pore pressure conditions. The susceptibility of the South TSF to external erosion from the WKR is further discussed in Section 8.0.
- A credible failure mode scenario assessment is underway, and completion is targeted for early 2024. This work will make use of the existing information from the risk register and the updated Teck Risk Management Standard (which includes changes to the likelihood and consequence definitions and category names). The assessment will use updated Teck criteria to evaluate whether the TSFs have credible failure scenarios that could result in severe downstream impacts.

8.0 WEST KETTLE EROSION POTENTIAL

The proximity of the WKR to the South TSF does pose a concern because of the potential for erosion of the South TSF embankments, specifically Cells 4 and 5. This is primarily based on observed flooding that occurred in 2018 that had the potential to cause erosion but did not do so. In 2020 riprap was installed along the WKR where it is close to the South TSF. The riprap was designed to protect the TSF up to and including a 1:200-year event, which meets minimum regulatory requirements. Teck and WSP are evaluating if further risk reduction opportunities are warranted. This evaluation is planned to be completed in 2024.

The North TSF is separated from the WKR by approximately 50 m horizontally and 10 m vertically, and the flood erosion risk posed to it is negligible.

9.0 CONCLUSIONS AND RECOMMENDATIONS

The Beaverdell Mine TSFs are in good condition and well maintained. Stewardship is appropriate to the level of risk. There is one new recommendation arising in 2023, as indicated in Table 8; previously issued recommendations (and their status) are listed in Table 9.

In 2023 a set of previously issued recommendations were catalogued (i.e., removed from the tables of actionable recommendations). Although the Beaverdell TSFs are closed, under active care, and are in a safe and stable condition, Teck is evaluating additional closure activities that could further stabilize the site and potentially bring it to a state that is compatible with passive care closure.

The full list of catalogued recommendations is given in Table 10. Given that the timeline for potential additional activities is currently undefined, these catalogued recommendations are being reviewed to determine if short-term actions are appropriate and should be implemented prior to Teck's evaluation of additional closure activities. This review will be completed in 2024.

Descriptions of action priorities are provided in Table 11.

Table 8: New Recommendations for 2023

ID Number	Deficiency or Non-conformance	Applicable Regulation or OMS Manual Reference	Recommended Action	Priority
2023-01	In Cell 3, tailings are present at the level of the spillway invert. If the spillway becomes active, tailings could be transported downstream.		Evaluate measures to minimize transport of tailings downstream of the Cell 3 spillway and develop a design for the preferred option by Q4 2024. A follow-up recommendation will then be added to this registry to implement the selected measures.	2

Table 9: Previous Actionable Recommendations

ID Number	Deficiency or Non-conformance	Applicable Regulation or OMS Manual Reference	Recommended Action	Priority	Status (March 2024)
2018-03a,b	*Existing riprap along the toe of Cells 4 and 5 may not be sufficient to prevent erosion of embankment fill during a large river freshet flood event, based on observed changes in river alignment and adjacent riverbank conditions.*	*HSRC §10.1.8*	*Document long-term plan for riprap along West Kettle River considering larger flood events to mitigate risk of erosion along the toe of Cells 4 and 5.*	*3*	*Completed*
2021-03	Broken perimeter fence posts and wires. Possibly insufficient signage along West Kettle River.		Repair perimeter fence and assess need for additional signage.	4	Ongoing
2022-01	Surficial erosion on downstream embankment crest from surface water runoff concentrated in areas disturbed by animal activity.		Mark areas of erosion in the field by flagging or similar means and monitor for changes.	3	Areas are marked with flagging and observed for changes during inspection. To be included in OMS manual and closed in 2024.

Table 10: Catalogued Recommendations

ID Number	Deficiency or Non-conformance	Applicable Regulation or OMS Manual Reference	Recommended Action	Priority
2019-01	The location and alignment of the Cell 5 decant pipe are unknown.	OMS §5.5	Determine the location and alignment of the outlet of Cell 5 decant.	3
2019-04	The outlet structure of the Cell 6 decant accumulates a small quality of water behind a metal weir, which may affect water chemistry when sampled.	OMS §5.5	Review collected water quality data to determine source of the accumulated water. Assess opportunity for maintaining the collection point to inform ongoing geochemistry studies. Consider upgrading to remove steel as a potential source of water contamination. Decommission the outlet if deemed of no value.	3
2020-02	Results of Phase 1 investigation indicated the presence of tailings downstream of toe of Cell 3. As such, the South TSF may be founded on tailings in the area of Cell 3.	HSRC §10.1.4	Additional investigation should be planned to further delineate the extent of tailings downstream of South TSF.	3
2020-03	Results from the Phase 1 geotechnical site investigation indicate that tailings in Cell 4 are finer than then what was used in filter compatibility and internal stability assessment (Golder 2013).	HSRC §10.1.4	Update filter compatibility and internal stability for embankment fill and foundations based on Phase 1 geotechnical investigation laboratory test results.	3
2021-02	Precipitation is based on historical data and a correction factor is used to adjust current precipitation data from surrounding weather stations.		Install an automated weather station at the site. Connect to existing remote monitoring network.	4

Table 11: Priorities and Level of Risks

Priority (Teck)	Description
1	A high probability or actual TSF safety issue considered immediately dangerous to life, health or the environment, or a significant risk of regulatory enforcement.
2	If not corrected could likely result in TSF safety issues leading to injury, environmental impact or significant regulatory enforcement; or a repetitive deficiency that demonstrates a systematic breakdown of procedures.
3	Single occurrences of deficiencies or non-conformances that alone would not be expected to result in TSF safety issues.
4	Best Management Practice as a suggestion for continuous improvement towards industry best practices that could further reduce potential risks.

10.0 CLOSURE

The reader is referred to the Study Limitations section, which follows the text and forms an integral part of this report.

We trust that this report meets your current requirements. Please contact the undersigned if you have any questions or require clarification.

WSP Canada Inc.

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2024-02-28

SB/DAS/sw/lt/hp

Engineers & Geoscientists BC Permit #1000200

https://wsponlinecan.sharepoint.com/sites/ca-ca00076970438/shared documents/06. deliverables/issued/ca0007697.0438-003-r-rev0/ca0007697.0438-003-r-rev0-2023 beaverdell tsf afpr 27feb_24.docx

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STUDY LIMITATIONS

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APPENDIX A

Facility Data Sheets

Table 1 - SOUTH TSF – FACILITY DATA SHEET		
Impoundment Area (tailings and embankment footprint area)	150,000 m^2	Measured from 2018 LiDAR Survey Data
Volume of Stored Tailings	544,000 m^3	Estimated Golder (2019a)
Reservoir Capacity	21,900 m^3 (in Cell 4 and 5 to internal spillway invert levels)	Calculated 2018 LiDAR Survey Data and 2019 Cell 3 spillway as-built survey
Consequence Classification	Significant	Ministry of Energy and Mines (2016) and CDA (2013)
Inflow Design Flood (IDF)	1/3 between the 1-in-975-year flood event and the PMF.	Ministry of Energy and Mines (2016)
Design Earthquake	1/2,475-year event	Ministry of Energy and Mines (2016)
Spillway Capacity	4.8 m^3/s considering a design storm calculated based on 24-hour probable maximum precipitation plus snow melt plus 10% climate change factor. Includes 0.3 m of freeboard.	Calculated Golder (2019e)
Catchment Area	188,000 m^2	Calculated Golder (2017a)
Embankment Type	Earthfill Embankment	Assumed from Binnie (1980a, 1988). No construction record reports available.
Maximum Embankment Height	2 to 10 m	Estimated from 2018 LiDAR Survey Data
Embankment Crest Width	1 to 5 m	Estimated from 2018 LiDAR Survey Data and 2019 spillway as-built survey
Access to Facility	Permanent wire fence installed around South TSF. Access via gate located on access road from west side of Cell 3, adjacent to Cell 2. Vehicle access to embankment crest not generally available.	-

Table 2 – NORTH - TSF – FACILITY DATA SHEET		
Impoundment Area (tailings and embankment footprint area)	90,000 m^2	Measured from 2018 LiDAR Survey Data
Volume of Stored Tailings	384,000 m^3	Estimated Golder (2019a)
Reservoir Capacity	184,600 m^3 (to Cell 7 spillway invert elevation of 797.0 m)	Calculated 2018 LiDAR Survey Data
Consequence Classification	Significant	Ministry of Energy and Mines (2016) and CDA (2013)
Inflow Design Flood (IDF)	1/3 between the 1-in-975-year flood event and the PMF. Available capacity to store the IDF with a duration of 72 hours.	Ministry of Energy and Mines (2016)
Design Earthquake	1-in-2,475-year event.	Ministry of Energy and Mines (2016)
Spillway Capacity	2 m^3/s considering a design storm calculated based on 24-hour probable maximum precipitation plus snow melt plus 10% climate change factor.	Calculated Golder (2019c)
Catchment Area	Internal catchment of Cell 6 and 7 during normal precipitation events: 81,000 m^2 Internal and external catchment of Cell 6 and 7 during IDF event: 171,000 m^2	Calculated Golder (2017a)
Embankment Type	Earthfill Embankment	Assumed from Binnie (1980a, 1988). No construction record reports available.
Maximum Embankment Height	8 to 12 m	Measured from 2018 LiDAR Survey Data
Embankment Crest Width	3 to 4 m	Measured from 2018 LiDAR Survey Data
Access to Facility	Permanent wire fence installed around North TSF. Access via gate located on access road from downstream toe area at southeast corner of facility to crest of Cell 6 embankment. Continuous narrow road around crest of North TSF perimeter, Accessible by all terrain vehicle	-

APPENDIX B

Cross Sections

COMMUNITY OF BEAVERDELL
KETTLE VALLEY TRAIL
WEST KETTLE RIVER
BEAVERDELL STATION ROAD
BASEBALL FIELD
CELL 6
DIVIDER DYKE
CELL 3
CELL 3 SPILLWAY
SPILLWAY (SEE REFERENCE 2)
CELL 3 DAM SURVEY (SEE REFERENCE 4)
CELLULAR GATEWAY (FLP100)
PRIVATE PROPERTY
NORTH TAILINGS STORAGE FACILITY
SOUTH TAILINGS STORAGE FACILITY
CELL 7
CELL 7 DIVERSION AND SPILLWAY
NORTH TSF DIVERSION CHANNEL
CELL 2
CELL 5
CELL 1
CRANBERRY RIDGE
MW18-01
MW18-02
MW18-03
MW18-04
MW18-05
MW18-06A
MW18-06B
MW18-07
MW18-09
BH20-01
BH20-02
BH20-03
BH20-04
BH20-06
BH20-07
A 4
B 4
C 4
D 5
E 5
F 5
348 000 E
347 500 E
5 478 500 N
5 478 000 N
5 477 500 N

LEGEND

- 2018 TOPOGRAPHIC CONTOURS (SEE REFERENCE 1)
- EXTENT OF RIPRAP ARMOURING INSTALLED IN 2019 (SEE REFERENCE 5)
- APPROXIMATE EXTENT OF ARMOURING
- APPROXIMATE DECANT TOWER LOCATION
- APPROXIMATE DECANT OUTLET LOCATION
- APPROXIMATE SIGNAL REPEATER LOCATION (SEE NOTE 5)
- FLOW DIRECTION
- APPROXIMATE M-71 PERMIT BOUNDARY
- APPROXIMATE PROPERTY BOUNDARY
- CRITICAL HABITAT OF SPECKLED DACE (SEE REFERENCE 2)
- GROUNDWATER MONITORING WELLS (BY WOOD PLC, COMPLETED JULY 2018)
- AS-BUILT BOREHOLE LOCATION WITH VIBRATING WIRE PIEZOMETERS
- INDICATIVE LOCATION OF EMERGENCY RIPRAP STOCKPILE

NOTES

1. ALL UNITS ARE SHOWN IN METRES UNLESS NOTED OTHERWISE.
2. COORDINATES ARE IN UTM ZONE 11 NAD83.
3. VERTICAL DATUM IS CGVD2013.
4. CONTOURS SHOWN AT 0.5 m MINOR AND 2.5 m MAJOR INTERVAL.
4. INTERFACES FOR BOREHOLES WITH VIBRATING WIRE PIEZOMETERS ARE WITHIN 2 m OF THE AS-BUILT LOCATION.
5. SIGNAL REPEATERS WERE INSTALLED IN OCTOBER 2020.

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0 100 200
1:4,000 METRES

CLIENT
TECK RESOURCES LIMITED
BEAVERDELL MINE
BEAVERDELL, B.C.

CONSULTANT
GOLDER

YYYY-MM-DD	2021-03-19
DESIGNED	N. CARRIERE
PREPARED	A. KIM
REVIEWED	M. WILLAN
APPROVED	J. CUNNING

PROJECT
BEAVERDELL TAILINGS STORAGE FACILITIES
2020 ANNUAL INSPECTION REPORT

TITLE
DETAIL PLAN

PROJECT NO.	PHASE/TASK/DOC	REV.	FIGURE
20140466	1000/1006/275	0	3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25 mm

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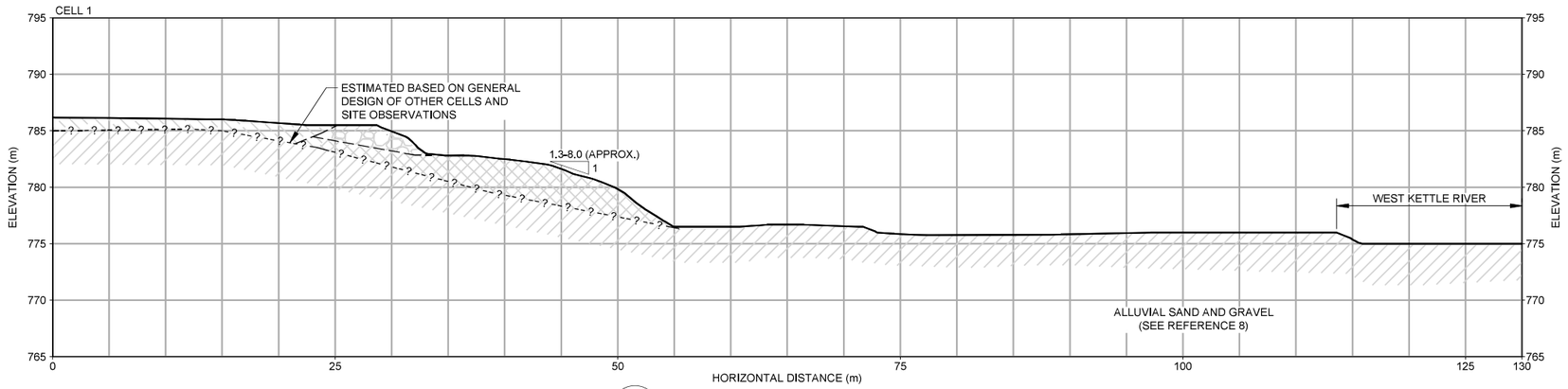

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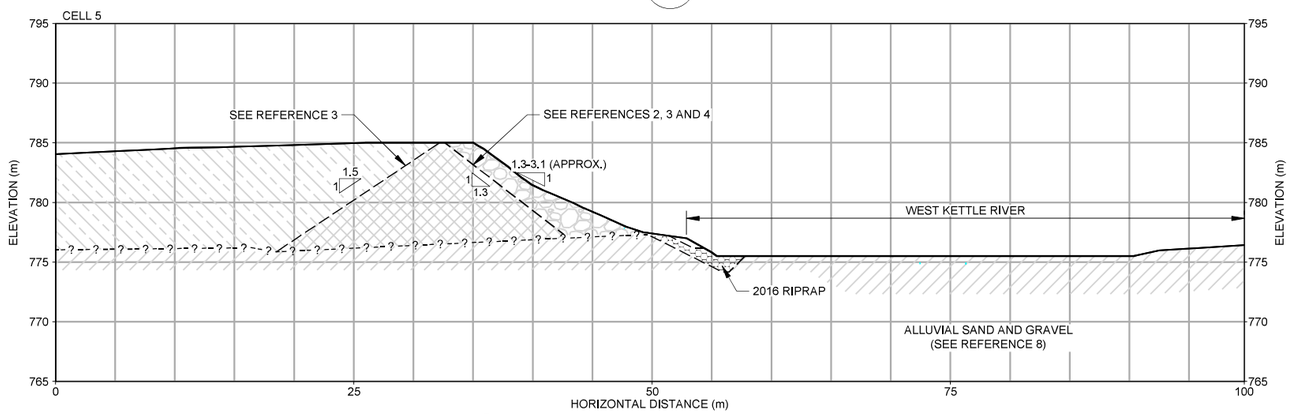

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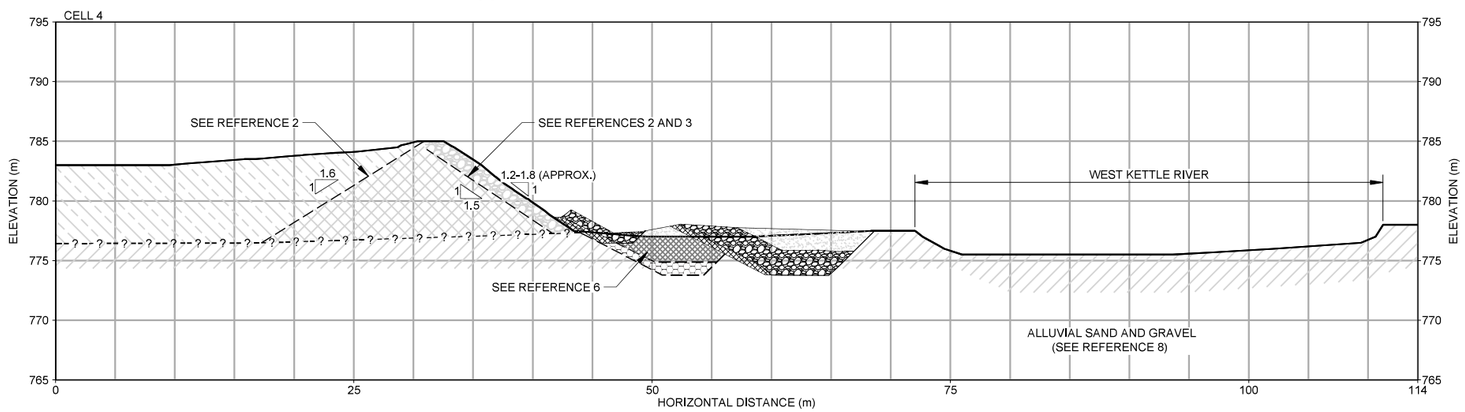


SCALE 1:500 m — C/3 — SECTION THROUGH CELL 4 EMBANKMENT

LEGEND

- EXISTING GROUND SURFACE (SEE REFERENCE 1)
- ESTIMATED ORIGINAL GROUND SURFACE
- INFERRED MATERIAL BOUNDARY
- TAILINGS
- EMBANKMENT FILL
- ALLUVIAL SAND AND GRAVEL
- ALLUVIAL COBBLE COVER
- WASTE ROCK/ALLUVIAL COBBLES
- 2016 RIPRAP MIXED WITH GRANULAR FILL
- BACKFILLED EXCAVATED MATERIAL
- 2019 RIPRAP (SEE REFERENCE 9)
- SALVAGED MATERIAL (ALLUVIAL SAND AND GRAVEL) (SEE REFERENCE 9)
- FILTER MATERIAL (SEE REFERENCE 9)

NOTES

1. ALL UNITS ARE SHOWN IN METRES UNLESS OTHERWISE NOTED.
2. STRATIGRAPHY BENEATH ALLUVIAL SAND AND GRAVEL IS UNKNOWN.
3. GROUND SURFACE UNDER TAILINGS BASED ON 2018 CPT INVESTIGATION. (SEE REFERENCE 7)
4. VERTICAL DATUM IS CGVD2013.

REFERENCES

1. 2018 EXISTING GROUND LIDAR SURVEY AND ORTHOPHOTO BY MCELHANNEY 19 JULY 2018, PROVIDED BY MCELHANNEY, RECEIVED: 24 AUGUST 2018, FILE NAME: 358400VLidarContours.dwg.
2. BINNIE (ROBERT F. BINNIE LTD.). 1971. *REPORT ON STABILITY OF TAILINGS DAM.* REPORT PREPARED FOR TECK CORPORATION LTD., BEAVERDELL, BC. SUBMITTED 8 JUNE 1971.
3. BINNIE. 1973. *REPORT ON PROPOSED NEW TAILINGS POND.* REPORT PREPARED FOR TECK CORPORATION LTD., BEAVERDELL, BC. SUBMITTED AUGUST 27, 1973.
4. BINNIE. 1980A. *REPORT ON TAILINGS DISPOSAL POND NO. 5 AND PROPOSED POND NO. 6.* REPORT PREPARED FOR TECK CORPORATION LTD., BEAVERDELL, BC. SUBMITTED 20 FEBRUARY 1980.
5. BINNIE. 1980C. *REPORT ON STABILITY OF ABANDONED POND NO. 5.* REPORT PREPARED FOR TECK CORPORATION LTD., BEAVERDELL, BC. SUBMITTED 9 DECEMBER 1980.
6. GOLDER. 2016. *2016 CONSTRUCTION COMPLETION REPORT BEAVERDELL MINE RIPRAP EROSION PROTECTION.* REPORT PREPARED FOR TECK RESOURCES LIMITED. REFERENCE NO. 1214280022-036-R-REV0-14000. SUBMITTED 9 DECEMBER 2016.
7. GOLDER. 2019. *INTERIM CONE PENETRATION TESTING SITE INVESTIGATION FACTUAL REPORT FOR BEAVERDELL TAILINGS STORAGE FACILITIES.* REFERENCE NO. 18104486-115-TM-REV1-2000. SUBMITTED 25 MARCH 2019.
8. GOLDER 2020b. BEAVERDELL TAILINGS STORAGE FACILITIES PHASE 1 SITE INVESTIGATION FACTUAL REPORT. REFERENCE NO.1811487-255-R-REV0-2000. SUBMITTED 15 OCTOBER 2020.
9. RECORD SURVEY PROVIDED BY LANDMARK SOLUTIONS, FILE NAME: "9062 asbuild.dwg", RECEIVED: 22 DECEMBER, 2019.

0 10 20
1:500 METRES

CLIENT
TECK RESOURCES LIMITED
BEAVERDELL MINE
BEAVERDELL, B.C.

CONSULTANT
GOLDER

YYYY-MM-DD	2021-03-19
DESIGNED	N. CARRIERE
PREPARED	A. KIM
REVIEWED	M. WILLAN
APPROVED	J. CUNNING

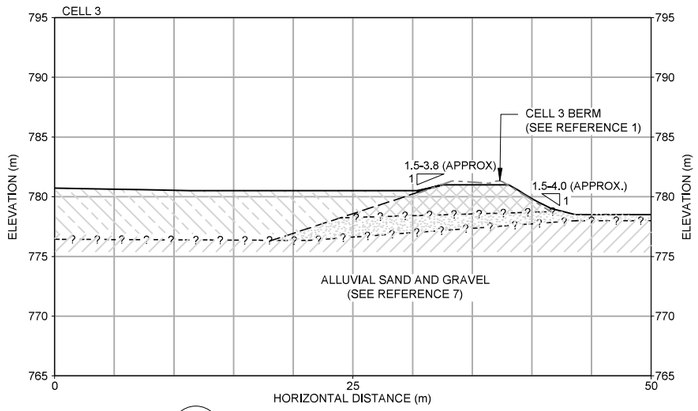
PROJECT
BEAVERDELL TAILINGS STORAGE FACILITIES
2020 ANNUAL INSPECTION REPORT

TITLE
CROSS SECTIONS (1 OF 2)

PROJECT NO.	PHASE/TASK/DOC	REV.	FIGURE
20140466	1000/1006/275	0	4

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25 mm



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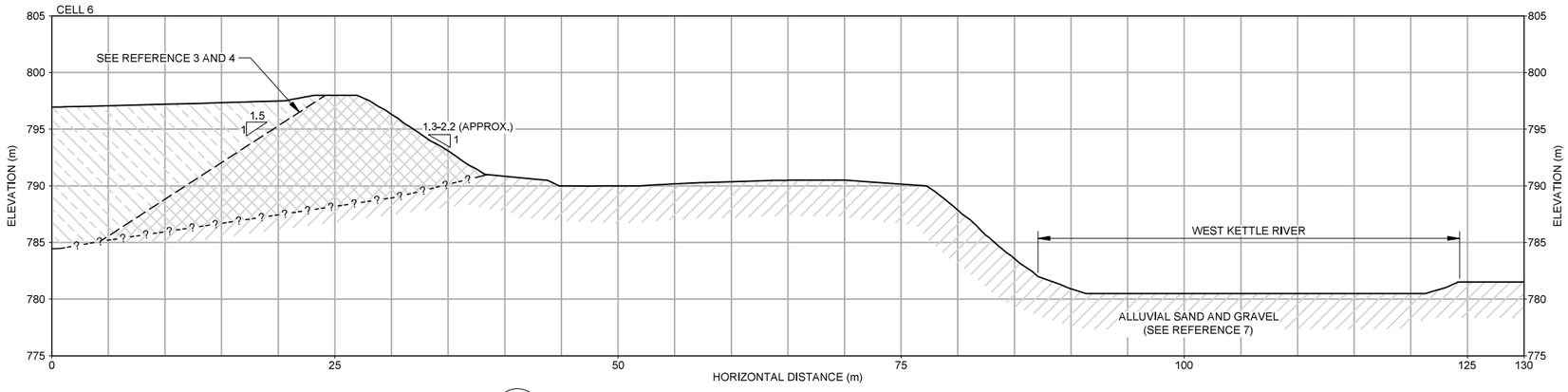

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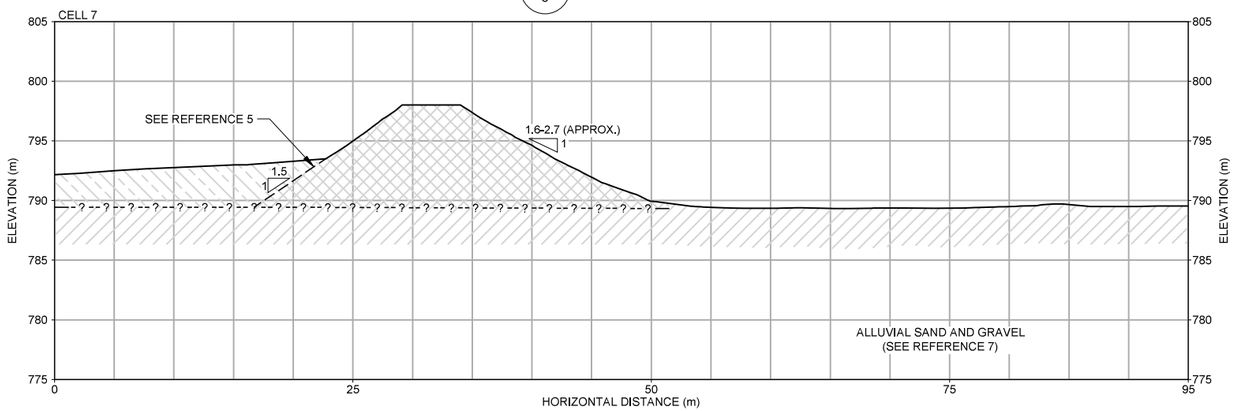

SCALE 1:500 m — F/3 — SECTION THROUGH CELL 7 EMBANKMENT

LEGEND

- EXISTING GROUND SURFACE (SEE REFERENCE 2)
- ESTIMATED SURFACE
- INFERRED MATERIAL BOUNDARY
- CELL 3 BERM (SEE REFERENCE 1)
- TAILINGS
- EMBANKMENT FILL
- ALLUVIAL SAND AND GRAVEL
- TAILINGS AND ALLUVIAL SAND AND GRAVEL (EXTENT TO BE DEFINED) (SEE REFERENCE 7)

NOTES

1. ALL UNITS ARE SHOWN IN METRES UNLESS OTHERWISE NOTED.
2. STRATIGRAPHY BENEATH ALLUVIAL SAND AND GRAVEL IS UNKNOWN.
3. GROUND SURFACE UNDER TAILINGS BASED ON 2018 CPT INVESTIGATION. (SEE REFERENCE 6)
4. VERTICAL DATUM IS CGVD2013.

REFERENCES

1. CELL 3 EAST DAM SURVEY PROVIDED BY WSP. CAD FILE: 181-08185-00-000-00-SRWCA001-R0.dwg, DATE: 23 TO 28 JULY 2018
2. 2018 EXISTING GROUND LIDAR SURVEY AND ORTHOPHOTO BY MCELHANNEY 19 JULY 2018, PROVIDED BY MCELHANNEY, RECEIVED: 24 AUGUST 2018, FILE NAME: 358400VLIDARCONTOURS.DWG.
3. BINNIE. 1980A. *REPORT ON TAILINGS DISPOSAL POND NO. 5 AND PROPOSED POND NO. 6.* REPORT PREPARED FOR TECK CORPORATION LTD., BEAVERDELL, BC. SUBMITTED 20 FEBRUARY 1980.
4. BINNIE. 1980B. *SUPPLEMENTARY REPORT ON PROPOSED POND NO. 6.* REPORT PREPARED FOR TECK CORPORATION LTD., BEAVERDELL, BC. SUBMITTED 31 MARCH 1980.
5. BINNIE (R.F. BINNIE & ASSOCIATES LTD.). 1988. *REPORT ON PROPOSED POND NO. 7.* REPORT PREPARED FOR TECK CORPORATION, BEAVERDELL, BC. SUBMITTED APRIL 1988.
6. GOLDER. 2019. *INTERIM CONE PENETRATION TESTING SITE INVESTIGATION FACTUAL REPORT FOR BEAVERDELL TAILINGS STORAGE FACILITIES.* REFERENCE NO.18104486-115-TM-REV1-2000. SUBMITTED 25 MARCH 2019.
7. GOLDER 2020b. BEAVERDELL TAILINGS STORAGE FACILITIES PHASE 1 SITE INVESTIGATION FACTUAL REPORT. REFERENCE NO.1811487-255-R-REV0-2000. SUBMITTED 15 OCTOBER 2020.

0 10 20
1:500 METRES

CLIENT
TECK RESOURCES LIMITED
BEAVERDELL MINE
BEAVERDELL, B.C.

CONSULTANT
GOLDER

YYYY-MM-DD	2021-03-19
DESIGNED	N. CARRIERE
PREPARED	A. KIM
REVIEWED	M. WILLAN
APPROVED	J. CUNNING

PROJECT
BEAVERDELL TAILINGS STORAGE FACILITIES
2020 ANNUAL INSPECTION REPORT

TITLE
CROSS SECTIONS (2 OF 2)

PROJECT NO.	PHASE/TASK/DOC	REV.	FIGURE
20140466	1000/1006/275	0	5

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B
25 mm
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APPENDIX C

Site Inspection Photographs

CA0007697.0438

Appendix C
Site Photographs

August 1, 2023

Teck Resources Beaverdell 2023 EoR and AFPR Services (Photograph Appendix)

South TSF

Photograph #1

Photograph #1: “Downstream slope and toe of Cell 4”

Photograph #2

Photograph #2: “Downstream slope and toe of Cell 4, riprap and West Kettle River”

Photograph #3

Photograph #3: “Downstream slope and toe of Cell 4, riprap and West Kettle River”

Photograph #4

Photograph #4: “Drainage ditch along the crest of Cell 1”

Photograph #5

Photograph #5: “Crest adjacent to Cell 2”

Photograph #6

Photograph #6: “Vegetation cover on Cell 2”

Photograph #7

Photograph #7: “Cell 1 tailings surface”

Photograph #8

Photograph #8: “Cell 5 tailings surface”

Photograph #9

Photograph #9: “Cell 5 tailings surface”

Photograph #10

Photograph #10: “Decant in Cell 5”

Photograph #11

Photograph #11: “Repeater in Cell 5”

Photograph #12

Photograph #12: “Overflow structure between Cell 5 and Cell 4”

Photograph #13

Photograph #13: “Dry pond in Cell 4”

Photograph #14

Photograph #14: “Surface of dry pond in Cell 4”

Photograph #15

Photograph #15: “Piezometer adjacent to Cell 4”

Photograph #16

Photograph #16: “Cell 4 tailings surface”

Photograph #17

Photograph #17: “Internal dike between Cell 4 and Cell 3”

Photograph #18

Photograph #18: “Overflow structure between Cell 4 and Cell 3”

Photograph #19

Photograph #19: “Instrumentation hub”

Photograph #20

Photograph #20: “Core boxes from piezometer installation”

Photograph #21

Photograph #21: “Locked gate at SW corner of Cell 3”

Photograph #22

Photograph #22: “Cell 3 tailings surface”

Photograph #23

Photograph #23: “Slope of internal dike between Cell 4 and Cell 3”

Photograph #24

Photograph #24: “Cell 3 tailings surface”

Photograph #25

Photograph #25: “Cell 3 tailings surface”

Photograph #26

Photograph #26: “Cell 3 tailings surface”

Photograph #27

Photograph #27: “Cell 3 spillway ”

Photograph #28

Photograph #28: “Interface between tailings and Cell 3 spillway”

Photograph #29

Photograph #29: “Cell 3 spillway”

Photograph #30

Photograph #30: “Downstream slope at Cell 3/4 boundary”

North TSF

Photograph #31

Photograph #31: “Cell 6 crest”

Photograph #32

Photograph #32: “Cell 6 decant structure”

Photograph #33

Photograph #33: “Cell 6 tailings surface”

Photograph #34

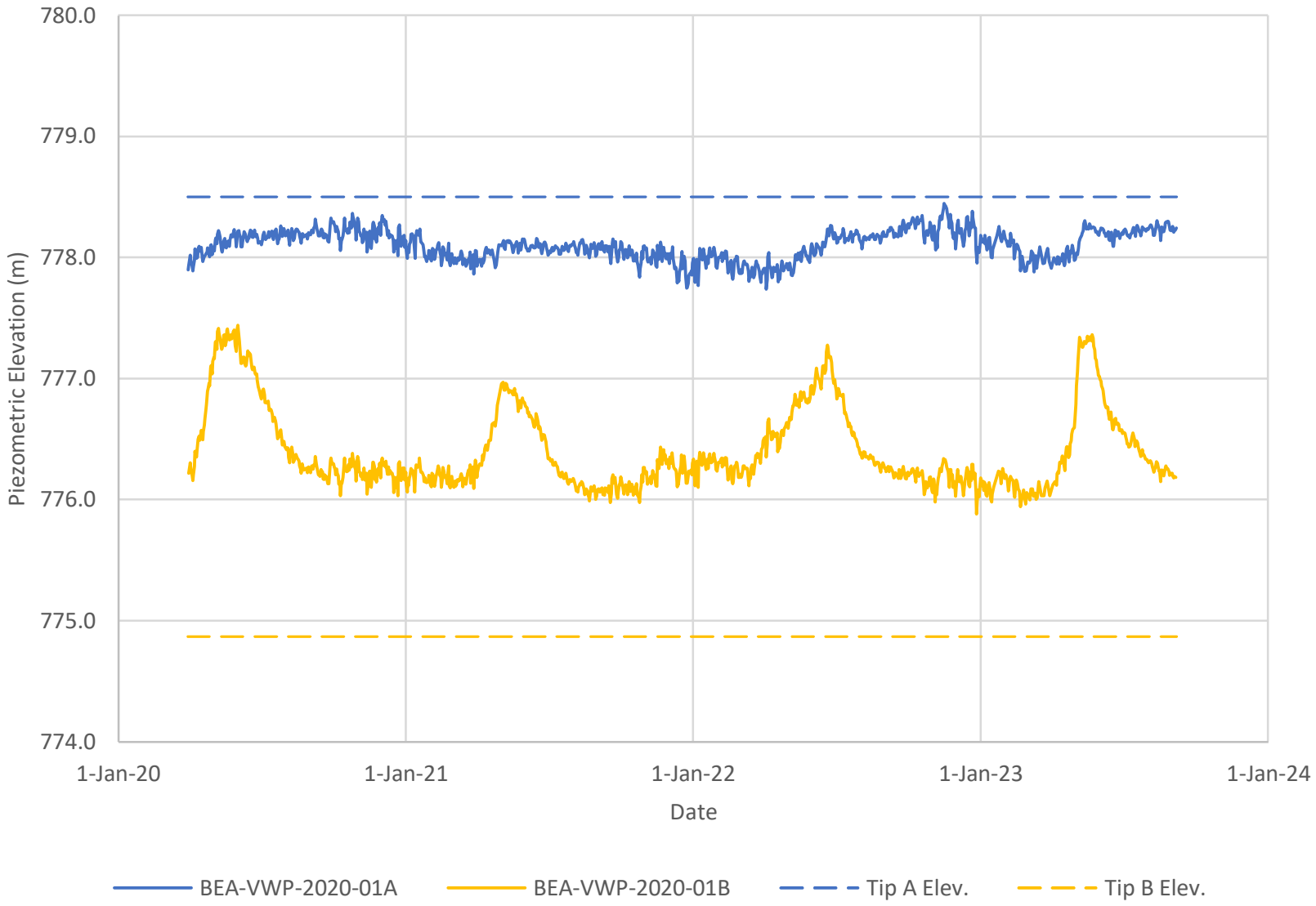
Photograph #34: “Cell 6 decant outlet”

Photograph #35

Photograph #35: “Cell 7 tailings surface”

APPENDIX D

Vibrating Wire Piezometer Data Plots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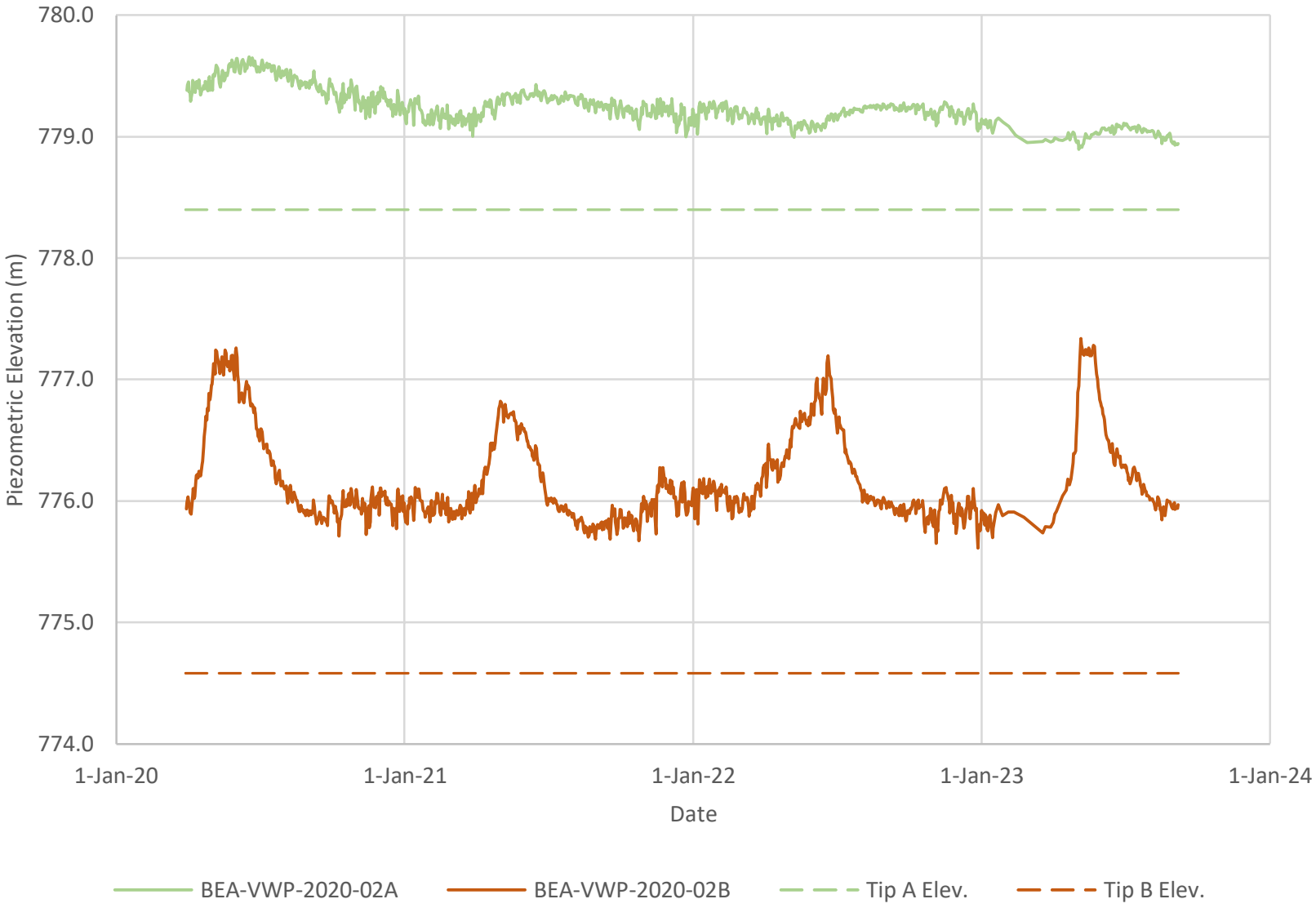
BEA-VWP-2020-01B
Tip A Elev.
Tip B Elev.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BEA-VWP-2020-02B
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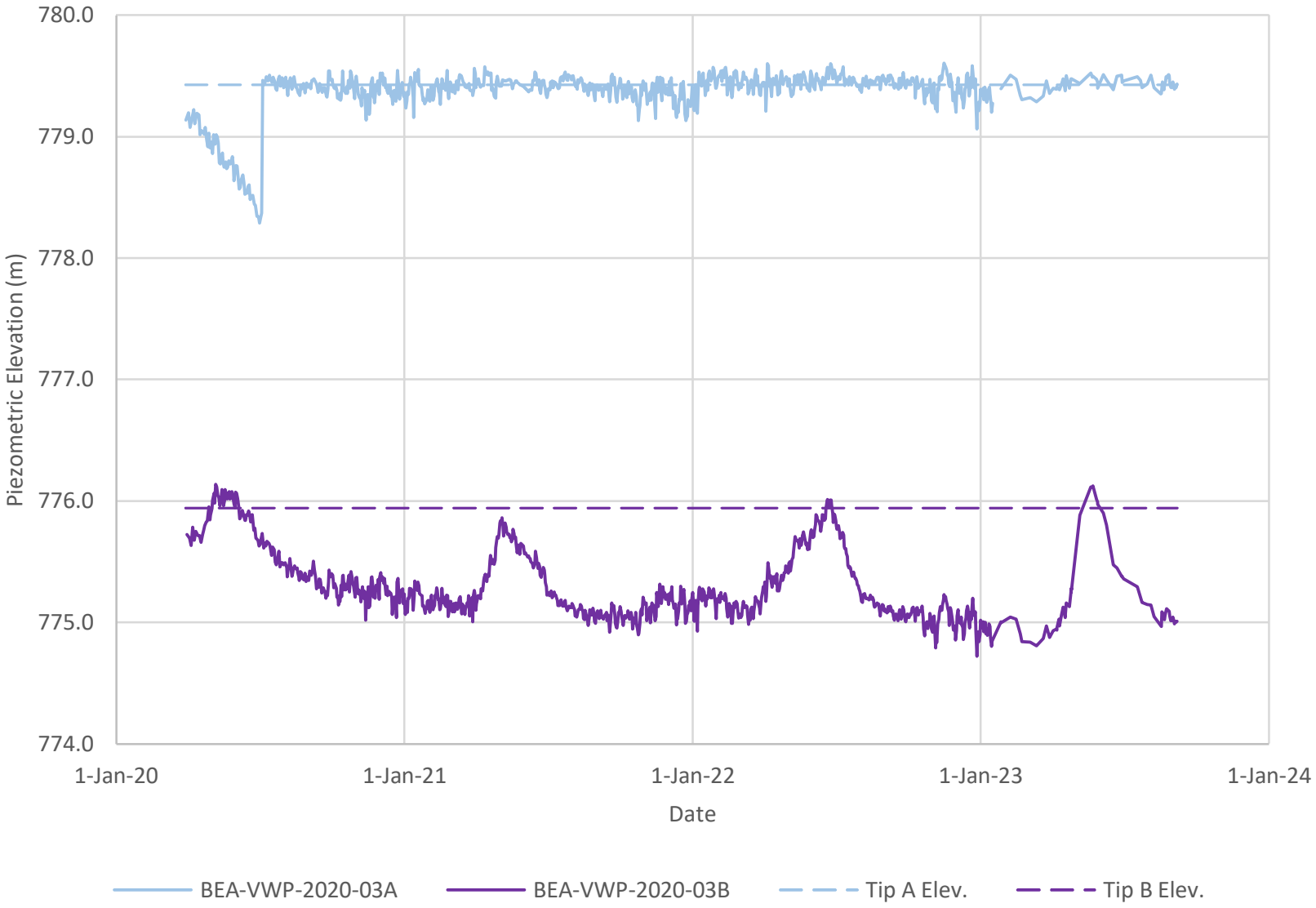
Tip B Elev.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BEA-VWP-2020-03B
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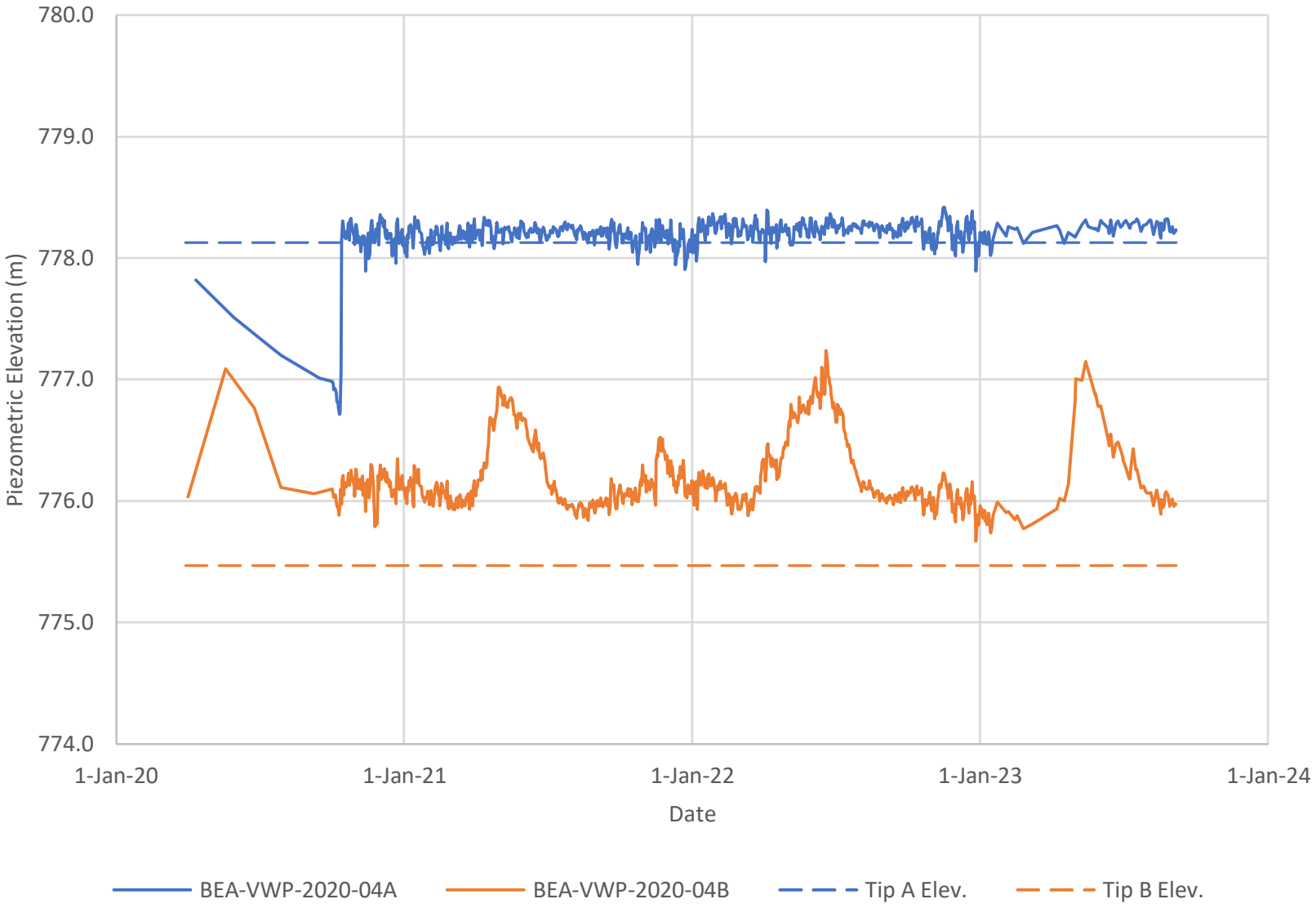
Tip B Elev.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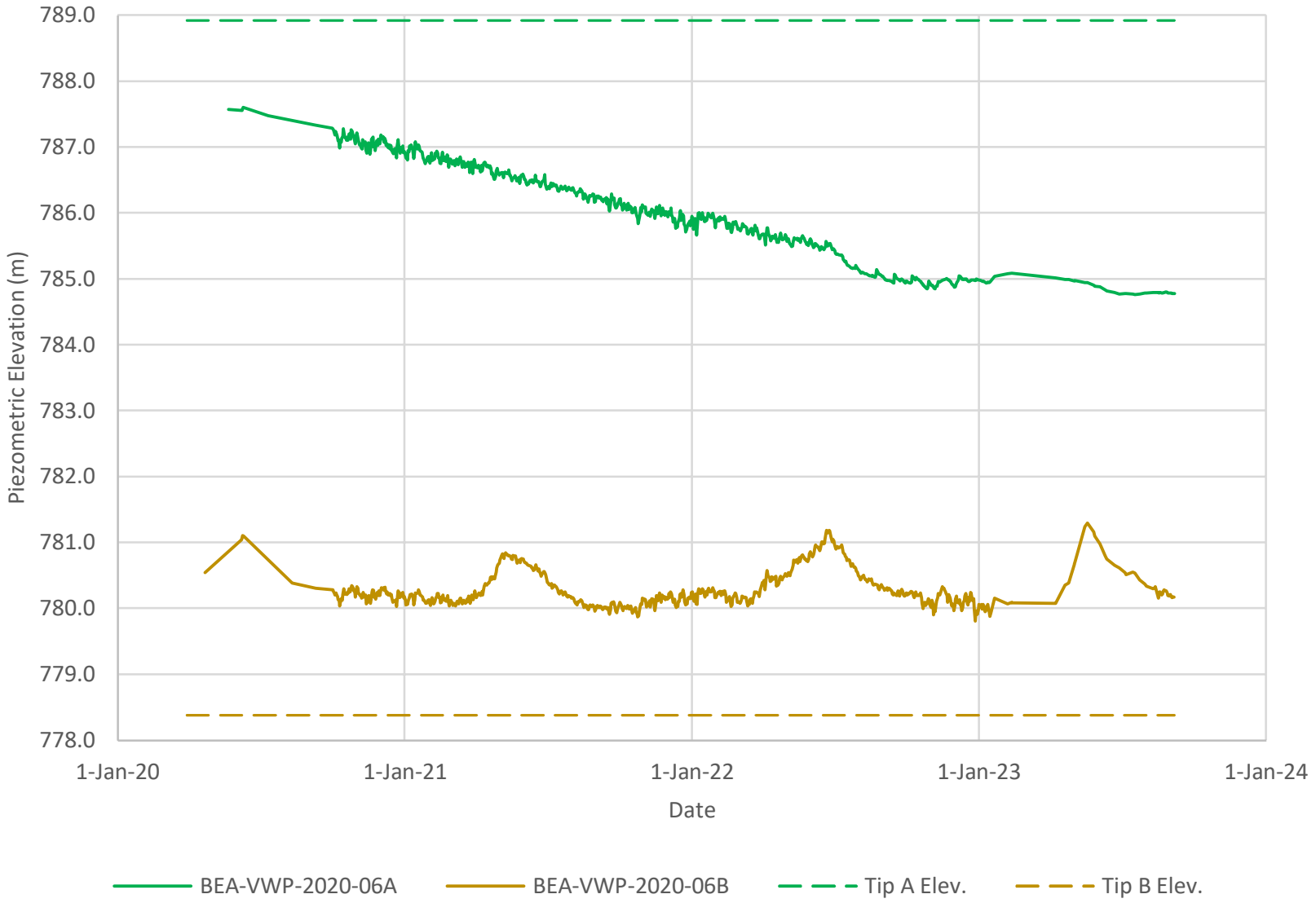
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Date
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Tip A Elev.
Tip B Elev.

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