

Appendix 39

Whale Tail 2020 Water Quality Monitoring Report for Dike Construction and Dewatering



MEADOWBANK COMPLEX

**2020 Water Quality Monitoring Report
for Dike Construction and Dewatering**

In Accordance with NIRB Project Certificate No.008
and
NWB Type A Water License 2AM-WTP1826
and
NWB Type A Water License 2AM-WTP1830

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EXECUTIVE SUMMARY

The Water Quality Monitoring and Management Plan for Dike Construction and Dewatering (the Plan; Version 1, January, 2017) was developed to provide details of water quality monitoring and management actions for dike construction and dewatering activities for the Whale Tail Pit Project. Activities monitored and reported under this plan include the construction of two dewatering dikes (Whale Tail Dike and Mammoth Dike, in 2018 and 2019), and the dewatering of Whale Tail Lake – North Basin (Whale Tail North; 2019 – 2020).

Version 3 of this Plan (May 2020) describes monitoring and management actions associated with dewatering and dike construction for the Whale Tail Pit Expansion Project. This includes water quality monitoring for dewatering of various waterbodies in the area of the IVR Pit, IVR Waste Rock Storage Facility, and IVR Attenuation Pond, as well as water quality monitoring for construction of the IVR water management dikes.

The objective of this report is to:

- Describe the implementation of mitigation measures that were planned in conjunction with dike construction and dewatering to control the release of total suspended solids (TSS) in the environment and thereby avoid and mitigate serious harm to fish and fish habitat;
- Describe results of water quality and lake level monitoring that were conducted in accordance with the Plan; and
- Describe any supplemental management actions that were implemented based on monitoring results to ensure impacts to fish and fish habitat remain within predictions.

In 2020, no dike construction activities occurred. Dewatering of Whale Tail North began in 2019 and was completed on May 15, 2020, so monitoring results from January – May 2020 are reported here. Dewatering of the IVR area waterbodies also occurred in 2020 (August and September) and results of associated water quality monitoring are described in this report.

Water quality monitoring for dewatering effluent from Whale Tail North and the IVR waterbodies occurred daily at the water intake pump or after TSS treatment, if required. Parameters measured daily in dewatering effluent for compliance with the Plans and NWB Type A Water License criteria included TSS (for both Whale Tail North and IVR waterbodies), as well as turbidity, pH, and total aluminum (Whale Tail North only). No exceedances of NWB Type A Water License criteria for the Short-Term Maximum (STM) or the Maximum Monthly Mean (MMM) occurred. Based on standard operating procedures identified in the Plans, supplemental management actions or mitigation measures were therefore not required in 2020.

Receiving environment monitoring at the discharge location (Whale Tail South) was conducted approximately weekly for TSS, according to the Plans. No NWB Water License criteria apply in this location, and results are reviewed against CCME guidelines, for reference. No exceedances of the long-term exposure guideline (background + 5 mg/L) occurred.

Water level monitoring for Whale Tail South and Mammoth Lake is also reported under these Plans while dewatering activities are ongoing. In 2019, pumping of water from Whale Tail South to Mammoth Lake was required to manage water levels after record rainfall occurred in that year. Construction of the Whale Tail South Channel between Lake A20 and Mammoth Lake was completed in April 2020, and this channel now passively manages water levels in Whale Tail South. Maximum water levels in Whale Tail South in 2020 reached 155.7 masl following freshet (June 17), and declined to a low of 155.1 masl on December 27, 2020. This range is slightly lower than FEIS Addendum modelling results,

which predicted that a water level near 156.0 masl would be maintained throughout the operations phase. This change follows an amendment to the final design of the South Whale Tail Channel, which included a decrease in the inlet elevation by 0.5 m, to 155.3 masl. Operational water levels moving forward are therefore predicted to be lower than the 156.0 masl mark.

In 2020, water levels for Mammoth Lake ranged from 152.2 masl (August 14 and November 12) to 153.0 masl (May 28). A detailed monthly water balance with water levels predictions for Mammoth Lake was not a component of FEIS documents, and as a result, quantitative comparison of measured values to predictions for this waterbody is difficult. However, to date, measured water levels have not declined below available baseline measurements from 2015.

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APPENDICES

APPENDIX A: Water Quality Monitoring Results

SECTION 1 • INTRODUCTION

In 2018, Agnico Eagle Mines Ltd. (Agnico) was issued NIRB Project Certificate No. 008 and NWB Type A Water License 2AM-WTP1826 for the development of Whale Tail Pit, a satellite deposit at the Meadowbank Mine. The Water Quality Monitoring and Management Plan for Dike Construction and Dewatering (the Plan; Version 1, January 2017) provides details of water quality monitoring and management actions for dike construction and dewatering activities associated with the Whale Tail Pit project. This has included construction of two dewatering dikes (Whale Tail Dike and Mammoth Dike) and dewatering of the north basin of Whale Tail Lake (Whale Tail North).

Construction of the Whale Tail Dike began on July 27 2018. In-water construction was complete in 2018, but water quality monitoring was conducted in relation to associated construction activities in January and February, 2019. In-water construction of the Mammoth Dike occurred from February 15 - March 17, 2019. These activities were reported in the 2018 and 2019 versions of this report.

Dewatering of the north basin of Whale Tail Lake ("Whale Tail North") began on March 5, 2019, and was complete on May 15, 2020¹. Water quality monitoring conducted in 2020 in association with Whale Tail North dewatering is reported here.

In 2020, Agnico was issued NWB Type A Water License 2AM-WTP1830 for the Whale Tail Pit Expansion Project. Construction of three water management dikes (IVR-D1, IVR-D2, IVR-D3) will be required as a component of this project, along with dewatering of a series of waterbodies in the IVR area. The Water Quality Monitoring and Management Plan for Dike Construction and Dewatering (Version 3, May 2020) was developed to provide details of water quality monitoring and management actions for these dike construction and dewatering activities.

Dewatering of IVR-area waterbodies occurred in August and September 2020, and results of associated water quality monitoring are reported here².

No dike construction activities occurred in 2020.

The objective of this report is to:

- Describe the implementation of planned mitigation measures for the protection of fish and fish habitat during dewatering activities in 2020;
- Describe the results of associated water quality monitoring in accordance with the Plans; and
- Describe the implementation of any supplemental mitigation measures that were required to control the release of total suspended solids (TSS) in the environment based on monitoring results.

¹ The complete construction summary report for the dewatering of Whale Tail North is available through the NWB public registry: <ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-WTP1830%20Agnico/3%20TECH/D%20CONSTRUCTION/D16/>

² The complete construction summary report for the IVR-area dewatering is available through the NWB public registry: <ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-WTP1830%20Agnico/3%20TECH/D%20CONSTRUCTION/D16/>

SECTION 2 • STANDARDS FOR THE PROTECTION OF FISH AND FISH HABITAT

During dike construction and dewatering, standards for the protection of fish and fish habitat (mitigation measures) will be implemented to manage TSS. In addition to the measures described below, supplemental mitigation actions are triggered based on results of the monitoring programs described in Section 3. Complete SOPs for monitoring and management of suspended sediment during dike construction and dewatering are provided in Sections 4 and 5 of the Plans. Any supplemental mitigation measures required to be implemented based on monitoring results are described in this report.

2.1 DIKE CONSTRUCTION

No dewatering dike construction activities occurred in 2020. Mitigation measures for dike construction are described in the 2018 and 2019 reports.

2.2 DEWATERING

During dewatering, there is potential for sediments to become suspended as exposed substrates slump. Suspended sediments could then enter the water pipe(s) and be discharged with dewatering effluent to the receiving environment. In addition, the discharge itself could disturb bottom sediments in the receiving lakes and lead to increased levels of suspended sediments.

The following measures were planned to mitigate against possible problems with suspended sediments and other associated key parameters (i.e., pH and aluminum) during dewatering:

- Intake pipe(s) will be located at a sufficient distance from shore (minimum 10 meters) and, to the extent possible, in the deepest water areas. As dewatering progresses, intakes will be re-located to deep basins.

During lake dewatering in 2020, these measures were implemented. Intake pipes were installed in the deepest areas of the lakes and adjusted as needed to control impacts. Photos of this process are available in the construction summary report for IVR dewatering (see footnote 2).

As mentioned above, additional mitigation or management actions are implemented as described in the Plan, based on daily monitoring results. Any supplemental mitigation actions required in 2020 based on water quality monitoring results are described below in Section 4.2.

SECTION 3 • MONITORING METHODS

3.1 DIKE CONSTRUCTION

No dike construction occurred in 2020.

3.2 DEWATERING

3.2.1 Summary of Dewatering Activities

Dewatering of Whale Tail North to Whale Tail South occurred from January 1 – 26, February 11 – 23, February 29 – March 8, March 15 – 22, and March 30 – April 3, April 15 – 20, April 25 – 30, and May 7

- 15. At that time, the dewatering of Whale Tail North was complete. Treatment of effluent for TSS at the water treatment plant (WTP) prior to discharge occurred throughout dewatering of Whale Tail North in 2020. No dewatering discharge of Whale Tail North to Mammoth Lake occurred in 2020.

The dewatering of waterbodies in the footprint of the future IVR Pit began in August and was completed in September. These waterbodies included A46, A47, A49, and A-P38. Water from these waterbodies was pumped to the Whale Tail Attenuation Pond as per the approved Dewatering Phase Pumping System Design Report, and monitoring under this Plan was not required.

Dewatering of waterbodies A50, A51 and A53 (in the footprint of the future IVR Waste Rock Storage Facility and Attenuation Pond) occurred in September. As per the approved Dewatering Phase Pumping System Design Report, dewatering effluent from A50 and A51 was sent to Lake A53 and then discharged to Whale Tail South, if it met the discharge criteria, or the Whale Tail Attenuation Pond if water quality was not suitable for direct discharge to the environment. Discharge of A53 to Whale Tail South, without treatment, occurred from September 1 to September 14 monitoring under this Plan occurred. From September 15 to September 27, water from A53 was sent to the Whale Tail Attenuation Pond and managed as part of this facility.

Two additional ponds (A-P21 and A52) were planned to be dewatered, but were found to be dry during the 2020 season.

3.2.2 Water Quality Monitoring

In 2020, water quality monitoring was conducted in association with Whale Tail North dewatering to Whale Tail South (January – May) and A53 discharge to Whale Tail South (September). Sampling was conducted primarily for effluent prior to discharge, but also included the receiving environment of Whale Tail South, as detailed below.

3.2.2.1 Dewatering Effluent (ST-DD-7, ST-DD-15)

In accordance with the Plans, daily water quality samples were collected for Whale Tail North discharge (ST-DD-7) and A53 discharge (ST-DD-15) from the sampling valve located onshore prior to the diffuser location in Whale Tail South.

Analysis at the commercial laboratory was completed on daily samples for TSS and weekly samples for total aluminum (ST-DD-7 only), according to NWB Type A Water License requirements (see Section 3.3). H2Lab (Val d'Or) provided all of the sampling containers, filters, and appropriate preservatives. All samples were stored in the dark and kept on ice immediately following collection and during transport to the laboratory. A completed chain-of-custody form accompanied the samples during transport. Samples collected for QA/QC purposes included field blanks, travel blanks, and field duplicates (see Section 3.4).

Field-measured turbidity and pH were also recorded daily during dewatering for these stations, and TSS measurements were performed daily by the onsite assay lab for use in decision-making related to supplementary mitigation measures (see Section 3.3.1).

3.2.2.2 Receiving Environment (ST-DD-8)

In accordance with the Plans, water samples were collected approximately weekly (weather permitting) during dewatering activities in the receiving environment of Whale Tail South at a depth of approximately 1 m and a distance of 30-100 m from the water discharge location (ST-DD-8). This station was sampled during dewatering of both Whale Tail North and A53, since discharge occurred through the same diffuser in Whale Tail South.

For the purposes of dewatering water quality monitoring, laboratory analyses were completed for TSS. H2Lab (Val d'Or) provided all of the sampling containers, filters, and appropriate preservatives for the samples. All samples were stored in the dark and kept on ice immediately following collection and during transport to the laboratory. A completed chain-of-custody form accompanied the samples during transport. Samples collected for QA/QC purposes included field blanks, travel blanks, and field duplicates (see Section 3.4).

Field-measured TSS, turbidity, and conventional parameters (dissolved oxygen, pH, conductivity, temperature) were also recorded for depth profiles at 1-m intervals.

Table 1. UTM coordinates of Whale Tail dewatering monitoring stations in 2020 (NAD 83).

Activity	Location	Station ID	UTM
Whale Tail North Dewatering	Intake pipe in Whale Tail North for discharge to Whale Tail South	ST-DD-7	NA
	Whale Tail South receiving environment	ST-DD-8	14W 607686 7254521
		Diffuser location	Approx. 14W 607629 7254674
IVR Dewatering	Intake pipe in Lake A53 for discharge to Whale Tail South	ST-DD-15	NA
	Whale Tail South receiving environment	ST-DD-8	14W 607686 7254521
		Diffuser location	Approx. 14W 607629 7254674

3.2.3 Water Level Surveys and Visual Inspections

3.2.3.1 Water Level Surveys

Water levels in Mammoth Lake and Whale Tail South were surveyed at locations of sufficient distance from their outlets to limit potential lake level drawdown effects. Lake water levels were planned to be monitored weekly during the freshet and ice-free period, and weekly during the ice-up period, dependent of the ice conditions and worker safety. However, piezometers were installed in Whale Tail South for the purposes of water level analysis, and measurements were recorded every 3 – 6 hours beginning on February 19, 2019. Piezometers were also installed in Mammoth Lake, and measurements were recorded at 3-h intervals beginning January 14, 2020.

Water levels have also been recorded in Whale Tail South and Mammoth Lake by GPS survey beginning August 3, 2018. Frequency of these GPS surveys has varied from daily to monthly.

3.2.3.2 Visual Inspections

The outlets of the raised Whale Tail South and Mammoth Lake were visually inspected to confirm that no significant erosion of the channel bed or channel banks, or ice damming occurred. Significant ice damming observed within the outlets is to be removed as soon as possible to minimize potential reductions in channel capacity. This regular inspection program occurs during the freshet and ice-free period at a minimum of once every two weeks.

Results are reported in the 2020 Annual Report under the Erosion Management Section.

3.3 DATA EVALUATION AND REGULATORY CRITERIA

Under the Water Quality Monitoring and Management Plans for Dike Construction and Dewatering (Version 1 and 3), water quality monitoring during dewatering is conducted for two purposes:

1. Evaluation of compliance with NWB Type A Water License criteria for dewatering effluent from the specified waterbodies.
2. Evaluation of TSS results for comparison with trigger values specified in the Plans. Exceedances of trigger values results in the implementation of pre-determined management actions, according to Standard Operating Procedures identified in the Plans (e.g. cessation of discharge, moving the intake pipe). Trigger values are based on the NWB Type A Water License criteria.

The evaluation of effluent and receiving environment samples for both of these purposes is described below. Additional analysis of samples collected in these locations may be conducted for compliance with other regulations (e.g. MDMER) or plans (e.g. Water Quality and Flow Monitoring Plan) are reported elsewhere.

3.3.1 Effluent Samples

3.3.1.1 NWB Water License Criteria

The NWB Type A Water License criteria for dewatering discharge from Whale Tail North and the IVR waterbodies is indicated below. Results of water quality monitoring were compared to these criteria and provided monthly to NWB during dewatering.

According to the Plan (Version 1, January 2017) and NWB Type A Water License 2AM-WTP1826 Part D Item 7, the dewatering effluent from Whale Tail North (ST-DD-7) shall not exceed the following quality limits:

Table 2. Maximum allowable water quality concentrations for effluent from dewatering of Whale Tail North. *Field-measured. ^Laboratory-measured.

Parameter	Maximum Monthly Mean (MMM)	Short Term Maximum (STM)
Total Suspended Solids^	15 mg/L	22.5 mg/L
Turbidity*	15 NTU	30 NTU
pH*	6.0 – 9.0	6.0 – 9.0
Total Aluminum^	1.5 mg/L	3.0 mg/L

According to the Plan (Version 3, May 2020) and NWB Type A Water License 2AM-WTP1830 Part D Item 8, the effluent from IVR waterbody dewatering activities (ST-DD-15) shall not exceed the following quality limits:

Table 3. Maximum allowable water quality concentrations for effluent from dewatering of the IVR waterbodies. ^Laboratory-measured.

Parameter	Maximum Monthly Mean (MMM)	Short Term Maximum (STM) Grab Sample
Total Suspended Solids^	15 mg/L	30.0 mg/L

3.3.1.2 Trigger Values

In addition to NWB compliance criteria, the Water Quality Monitoring and Management Plans for Dike Construction and Dewatering (Version 1 and 3) describe “trigger values” for the management of TSS during dewatering. These trigger values are:

- a single TSS sample or 24-h average exceeding the STM,
- the 7-d moving average TSS concentration exceeding the MMM, and/or
- the 30-d moving average TSS concentration exceeding the MMM.

The complete standard operating procedure (SOP) for supplemental management actions is provided in Sections 4 and 5 of the Plans, and any implementation is described in this report. Possible management actions associated with exceedances of the trigger values include:

- changing the location of the intake,
- changing the rate of water intake,
- ceasing dewatering until weather improves,
- putting the water treatment plant in recirculation mode.

For the purposes of this evaluation, TSS concentrations are planned to be calculated from daily field-measured turbidity values using a site-specific linear regression equation described in the Plan, and moving average concentrations reviewed daily. In this way, supplemental management actions can be implemented rapidly, as necessary, without waiting for commercial laboratory results.

In 2020, TSS values measured daily by the onsite assay laboratory were used for this evaluation rather than TSS calculated from field-measured turbidity values.

3.3.2 Receiving Environment Samples

Under the Water Quality Monitoring and Management Plans for Dike Construction and Dewatering, receiving environment samples are analyzed weekly for TSS at an accredited laboratory. No NWB Water License criteria apply to these results, but they are used as part of the SOP for dewatering monitoring and management to identify potential sources of TSS.

For the purposes of this report, results of laboratory water quality analyses for receiving environment samples are also compared to CCME Water Quality Guidelines for the Protection of Aquatic Life, for reference. These guidelines are intended to provide a conservative level of protection to freshwater aquatic life from anthropogenic contaminants or other physical changes.

3.4 QA/QC METHODS

The objective of QA/QC is to assure that data collected are representative of the media being sampled, are of known quality, are properly documented, and are scientifically defensible. Data quality was assured throughout the collection and analysis of samples by using standardized procedures, by the

employment of laboratories that have been certified for all applicable methods, and by staffing the program with experienced technicians.

Field-level QA procedures are described below.

Turbidity Monitoring – Field QA included consistently adhering to the monitoring program and using properly maintained and calibrated instruments.

Water Sampling – Throughout routine water quality sampling, field QA standards, as documented in Agnico Eagle's QA/QC Plan (Version 6, July 2020) were maintained. This included thoroughly flushing the flexible tubing and pump to prevent cross-contamination between stations and rinsing the sample containers with site water prior to sample collection. Field duplicates, equipment blanks and trip blanks were collected at a subset of stations.

The field duplicates were used to assess sampling variability and sample homogeneity; a Relative Percent Difference (RPD) of 40% for concentrations that exceed 10x the MDL is considered acceptable. The equation used to calculate RPD is:

$$RPD = (A - B) / ((A + B) / 2) \times 100$$

where: A = analytical result; B = duplicate result.

Trip blanks and field blanks were used to assess whether any travel-related or equipment-related cross contamination may have occurred.

SECTION 4 • 2020 MONITORING RESULTS

4.1 DIKE CONSTRUCTION

No dike construction occurred in 2020.

4.2 DEWATERING

4.2.1 Water Quality

As described in Section 3.2, water quality monitoring was conducted in association with Whale Tail North dewatering (January – May) and A53 discharge to Whale Tail South (September).

4.2.1.1 Dewatering Effluent (ST-DD-7, ST-DD-15)

All results of calculated 30-d moving averages at ST-DD-7 (Whale Tail North) under the Plan (Version 1) and for compliance with the NWB Type A Water License 2AM-WTP1826 Part D Item 7 are provided in Figure 1 and Appendix A, Table A-1. Daily sampling results are also provided in Appendix A, Table A-1.

All results of calculated 30-d moving averages at ST-DD-15 (Lake A53) under the Plan (Version 3) and for compliance with the NWB Type A Water License 2AM-WTP1830 Part D Item 8 are provided in Figure 2 and Appendix A, Table A-2. Daily sampling results are also provided in Appendix A, Table A-2.

No exceedances of NWB Water License compliance criteria occurred for the STM or MMM.

No single samples for TSS measured daily by the onsite assay laboratory exceeded trigger values, so no supplemental management actions were required to be implemented during dewatering. This internal monitoring is not provided, because accredited laboratory TSS measurements were also recorded daily (Appendix A, Tables A-1 and A-2) and represented the actual conditions during dewatering.

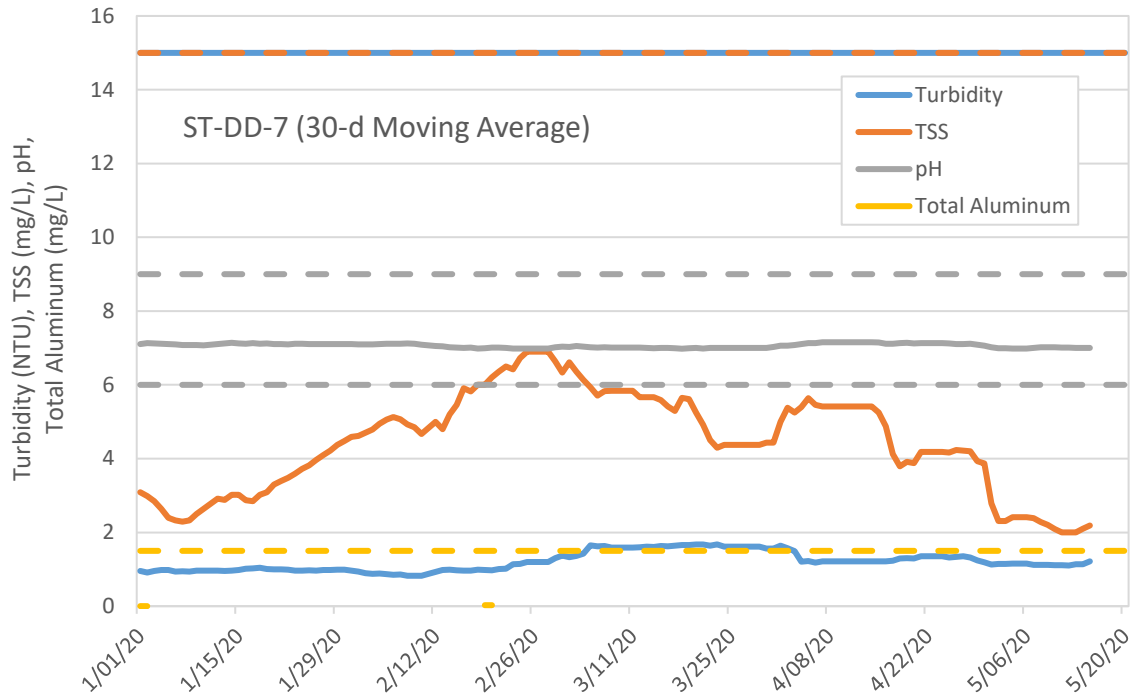


Figure 1. Calculated 30-d moving averages for turbidity, TSS, pH, and total aluminum in dewatering effluent from Whale Tail North Basin. Dashed lines indicate the NWB Water License criteria for the Maximum Monthly Mean for comparison to 30-d moving averages (for pH, a range of 6-9).

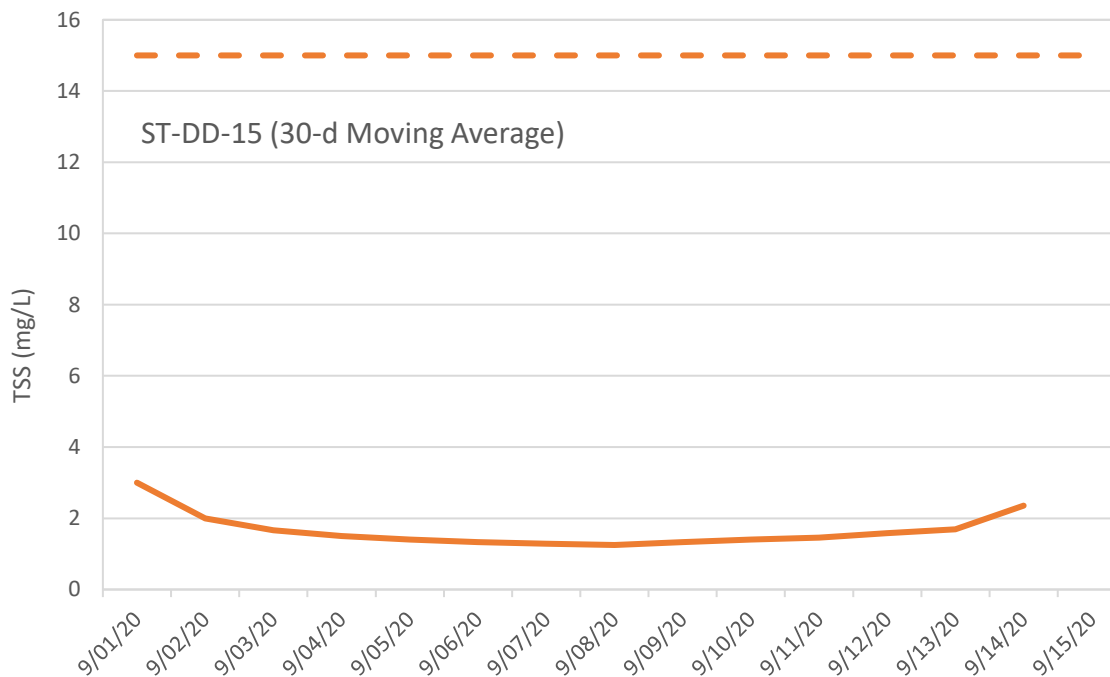


Figure 2. Calculated 30-d moving average for TSS in dewatering effluent from Lake A53. Dashed line indicates the NWB Water License criteria for the Maximum Monthly Mean for comparison to the 30-d moving average.

4.2.1.2 Receiving Environment (ST-DD-8)

All results of receiving environment sampling for effluent discharge into Whale Tail South (ST-DD-8) are provided in Appendix A, Table A-3.

No NWB Water License compliance criteria apply to these data. However, results of the laboratory analyses for TSS are compared to the CCME guideline, for reference (long-term inputs - background + 5 mg/L). No exceedances occurred.

4.2.1.3 QA/QC

In total, 15 duplicates, 16 trip blanks, and 2 field blanks were analyzed for dewatering effluent in 2020.

For receiving environment samples associated with dewatering, 4 duplicates, 5 trip blanks, and 1 field blank were analyzed in 2020.

All results of QA/QC analysis for dewatering water quality samples are provided in Appendix A, Tables A-4, A-5, and A-6. No RPDs were calculated because no concentrations measured in field duplicates exceeded 10x the MDL.

Results of trip and field blanks are also provided in Appendix A. Technically, no parameter measured in a trip for field blank should exceed detection. Exceedances indicate the potential for cross contamination of samples, which may result in higher measured concentrations than actually occur in

the environment. In line with CREMP protocols, samples were flagged (underlined) when the associated trip or field blank exceeded the MDL and the sample result was less than 5x the measured trip or field blank result. For dewatering samples in 2020, samples flagged through this process included one total aluminum sample (March 16) and one TSS sample (April 26). Analysis of water quality results was done on the complete dataset, including the flagged data. No analyte that was flagged exceeded the NWB Water License criteria for the corresponding sample date. Therefore overall, any potential cross-contamination is considered unlikely to bias interpretation of dewatering water quality results.

4.2.2 Lake Levels

4.2.2.1 Discharge Volumes

Total volumes of water discharged to Whale Tail South during dewatering of Whale Tail North and Lake A53 (including volume from A50 and A52) in 2020 are shown in Table 4. Volumes discharged from Whale Tail North include Whale Tail Dikey seepage water, as this was managed as part of Whale Tail North dewatering through May 2020.

Table 4. Dewatering volumes sent to Whale Tail South during dewatering of Whale Tail North and the IVR area waterbodies in 2020.

Date	Volume Discharged (m ³)	
	Whale Tail North	A53
January 2020	217,066	
February 2020	156,361	
March 2020	173,565	
April 2020	138,987	
May 2020	55,641	
June 2020		
July 2020		
August 2020		
September 2020		146,293
October 2020		
November 2020		
December 2020		
<i>Total</i>	<i>741,620</i>	<i>146,293</i>

4.2.2.2 Water Levels

4.2.2.2.1 Whale Tail Lake

Water levels in Whale Tail South as measured throughout 2019 and 2020 using piezometric data are shown in Figure 3a and b, along with measurements during the construction phase (2018; measured by GPS survey during open water), available baseline measurements (2015), and FEIS predictions (from FEIS Addendum Appendix 6-O, Table D-14). Figure 3a shows the long-term trend in predicted water levels in relation to available baseline, dewatering- and operations-phase measurements. However, it is noted that FEIS-predicted water levels were calculated as monthly timesteps in a mean annual water balance, whereas measured water levels are assessed every 3 hours. Measured values may therefore be expected to vary around the prediction, due to both inter-annual climate variability and scale of measurement. Figure 3b more closely examines this variability for the period since flooding began (2019), and demonstrates in particular how the very rapid flood peak that is observed during freshet with daily water level measurements is substantially smoothed when monthly means are plotted.

Maximum predicted water levels in the Whale Tail South flood zone are shown in Figure 4 (156.0 masl), along with measured peak flood levels in 2020 (155.7 masl on June 17), and post-freshet low water levels in 2020 (155.1 masl on December 27, 2020).

Due to record rainfall, peak water levels in 2019 exceeded predictions in July (up to 155.8 masl), but did not reach the maximum predicted final flood level of 156.0 masl, which was planned to occur in 2020 (Figure 3a). Following discussions with NWB, Agnico pumped in 2019 non-contact water from the Whale Tail South flood zone directly to Mammoth Lake. This activity temporarily substituted for the passive flow which now occurs through the South Whale Tail Channel (SWTC). The SWTC was constructed from December 2019 – April, 2020 to direct water from the flooded lake A20 to Mammoth Lake. During freshet in 2020, water flowed through the SWTC as planned.

Water levels in Whale Tail South in 2020 were lower than FEIS model results, which predicted a level of 156.0 masl would be maintained throughout the operations period. This change follows an amendment to the final design³ of the South Whale Tail Channel, which included a decrease in the original inlet elevation by 0.5 m, to 155.3 masl. Operational water levels moving forward are therefore predicted to be lower than the 156.0 masl mark.

³ The completed construction summary report for the South Whale Tail Channel is available through the NWB public registry here: <ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-WTP1830%20Agnico/3%20TECH/D%20CONSTRUCTION/D16/South%20Channel/>

2020 Water Quality Monitoring Report for Dike Construction and Dewatering
Agnico Eagle Mines Ltd. - Meadowbank Complex

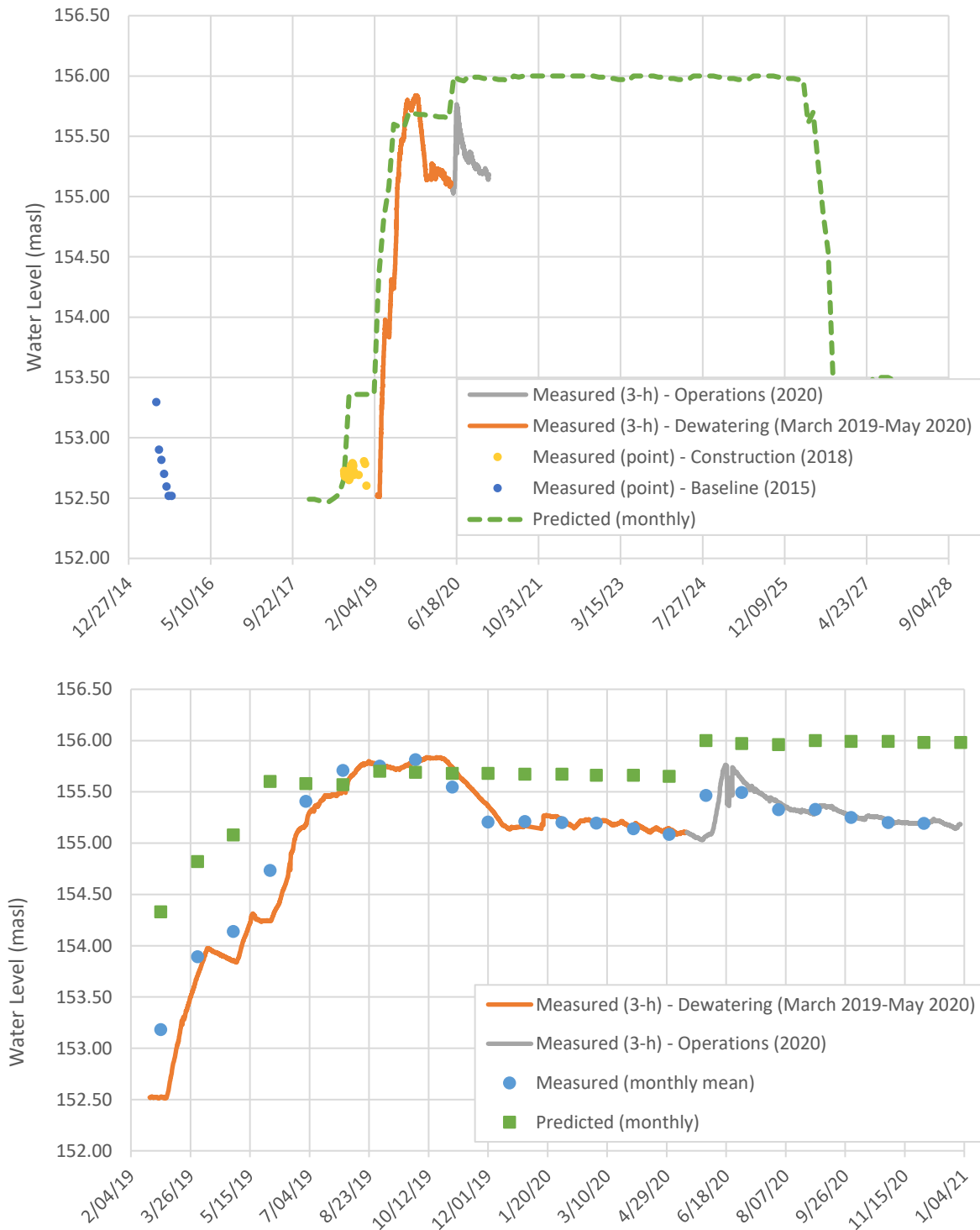
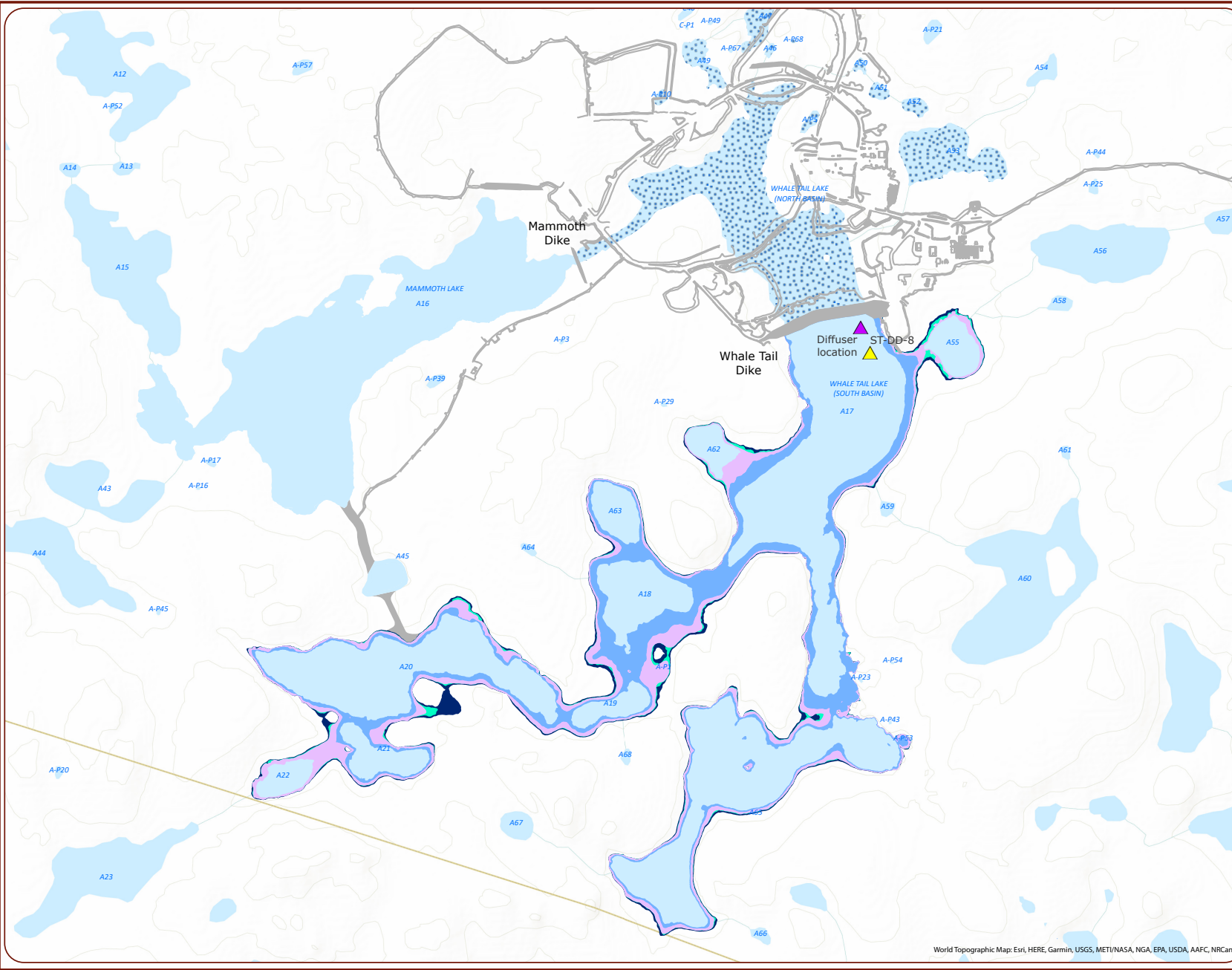


Figure 3a and b. Measured (3-h interval and monthly mean, as indicated) and predicted water levels in the Whale Tail South flood zone. Predicted water levels from FEIS Addendum for the Whale Tail Pit Expansion Project, Appendix 6-O, Table D-14. Monthly mean water levels are plotted by the month start date.



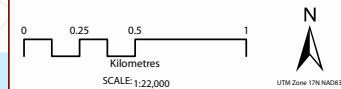
Whale Tail South Flood Zone Water Levels (2020)

Legend

- Dewatering Monitoring Locations
- Diffuser location
- Infrastructure
- Dewatered Lake

South Whale Tail Lake Elevations

- Baseline Water Level
- 2020 Post-Freshet Low Water Level (155.1 masl, December 27)
- 2020 Measured Peak Flood Level (155.7 masl, June 23)
- Measured Peak Flood Level (155.84 masl, 2019)
- Max Predicted Water Level (156 masl)



AGNICO EAGLE
Disclaimer:
The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations, features, or roads, nor as a guide to navigation.

4.2.2.2.2 Mammoth Lake

According to the Water Quality Monitoring and Management Plan for Dike Construction and Dewatering (Version 1, January 2017), water levels in Mammoth Lake are required to be monitored during for dewatering of Whale Tail North. In 2020, piezometers were installed to measure water levels continuously (3-h intervals) and became operational on January 14.

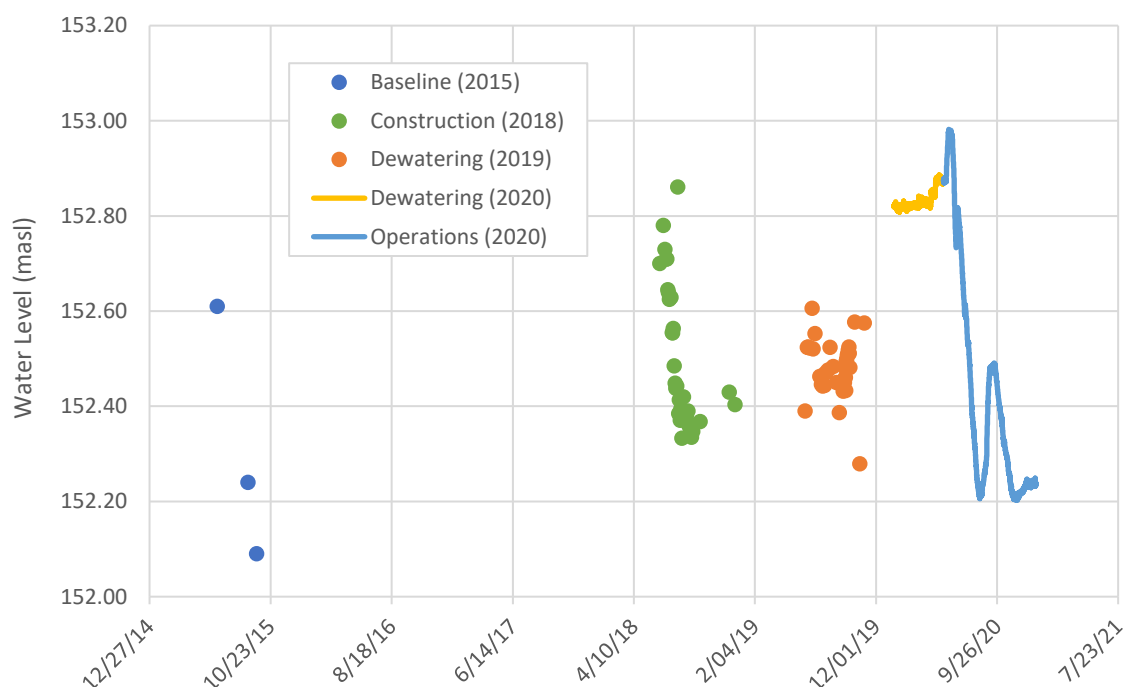
Water levels in Mammoth Lake as measured primarily throughout the open water seasons of 2018 (construction period) and 2019 (dewatering period) by GPS survey are shown in Figure 5, along with available baseline measurements (2015) and 2020 piezometer results.

As shown in Table 5, FEIS predictions (Agnico Eagle, 2016 - FEIS Appendix 6-E) indicated that mean monthly water levels in Mammoth Lake would decline up to 16 cm below baseline during the construction phase (2018), and 12 cm below baseline during the dewatering phase (2019). Predictions for the operations phase (2020 – 2025) were updated in the FEIS Addendum (Volume 6, Section 6.3.3.1.4.2, Table 6.3-3) and indicated that mean monthly water levels may increase up to 5 cm from baseline, prior to a decline during closure (2026 – 2051).

Modeled mean monthly baseline water levels were not specified in the FEIS documents, and measured baseline data for Mammoth Lake is only available for 3 time points in 2015. As a result, quantitative comparison of measured values to FEIS predictions is difficult. However to date, measured water levels have not declined below available baseline values measured in 2015.

Table 5. Predicted change in water levels from baseline in Mammoth Lake during the construction and dewatering phases (from FEIS Appendix 6-E) and operations phase (from FEIS Addendum Section 6.3.3.1.4.2, Table 6.3-3) under mean monthly discharge scenarios.

Project Phase	June	July	August	September	October
Construction (m)	-0.16	-0.16	-0.11	-0.14	-0.13
Dewatering (m)	-0.12	-0.04	-0.05	-0.09	-0.10
Operations (m)	+0.05	+0.02	+0.03	+0.04	+0.03
Closure (m)	-0.20	-0.20	-0.14	-0.14	-0.13



Receiving environment monitoring at the discharge location (Whale Tail South) was conducted approximately weekly for TSS, according to the Plans. No NWB Water License criteria apply for these samples, and results are reviewed against CCME guidelines, for reference. No exceedances of the long-term exposure guideline (background + 5 mg/L) occurred.

Water levels in Whale Tail South and Mammoth Lakes are also monitored under this program while discharge is ongoing. Due to record rainfall in 2019, water levels in the Whale Tail South flood zone exceeded FEIS predictions for the end of July, 2019. Active pumping of water from Whale Tail South to Mammoth Lake began in October, and by mid-November, water levels declined below predictions. Construction of the SWTC between Lake A20 and Mammoth Lake was completed in April 2020 to passively manage water levels in Whale Tail South. Maximum water levels in 2020 reached 155.7 masl following freshet (June 23), and declined to a low of 155.1 masl on December 27, 2020. This is lower than FEIS modelling results, which predicted a level of 156.0 masl would be maintained during the operations phase. This difference is due to a change in designs for the South Whale Tail Channel, which lowered the inlet elevation by 0.5 m to 155.3 masl. In 2020, water levels for Mammoth Lake ranged from 152.2 masl (August 14 and November 12) to 153.0 masl (May 28). FEIS predictions were not available for quantitative comparison to measured water levels in Mammoth Lake.

APPENDIX A

Water Quality Monitoring Results

Table A-1. Water quality monitoring results and calculated means for comparison to NWB Water License criteria for dewatering effluent station ST-DD-7. As reported monthly to NWB in 2020.

Date (DD/MM/YYYY)	Daily Measurements				30-d Moving Average*			
	Turbidity ¹	TSS ²	pH ¹	Total Aluminum ²	Turbidity ¹	TSS ²	pH ¹	Total Aluminum ²
	NWB Water License Criteria (STM)				NWB Water License Criteria (MMM)			
	30 NTU	22.5 mg/L	6.0 - 9.0	3 mg/L	15 NTU	15 mg/L	6.0 - 9.0	1.5 mg/L
01/01/2020	1.66	2	7.13	<0.005	0.96	3.09	7.11	0.002
02/01/2020	1.53	4	7.36	0.01	0.91	2.98	7.13	0.003
03/01/2020	1.89	3	7.07		0.96	2.84	7.12	
04/01/2020	1.28	3	7.11		0.98	2.64	7.11	
05/01/2020	0.66	2	6.98		0.98	2.40	7.11	
06/01/2020	1.34	3	6.92	0.007	0.94	2.33	7.09	0.004
07/01/2020	1.12	4	7.10		0.95	2.29	7.08	
08/01/2020	0.74	6	7.09		0.94	2.33	7.08	
09/01/2020	1.41	7	7.03	0.01	0.96	2.50	7.08	0.005
10/01/2020	0.85	6	7.18		0.96	2.64	7.08	
11/01/2020	0.84	7	7.50		0.96	2.78	7.09	
12/01/2020	0.63	7	7.32		0.96	2.91	7.10	
13/01/2020	0.51	3	7.38		0.95	2.88	7.12	
14/01/2020	0.92	7	7.32		0.96	3.02	7.14	
15/01/2020	0.96	3	7.20		0.98	3.02	7.13	
16/01/2020	1.4	Sample Frozen	7.14		1.02	2.88	7.12	
17/01/2020	0.84	2	7.18		1.03	2.84	7.13	
18/01/2020	0.85	6	7.14		1.04	3.02	7.11	
19/01/2020	0.59	4	6.96		1.01	3.09	7.12	
20/01/2020	0.68	7	6.60	0.011	1.00	3.29	7.11	0.007
21/01/2020	0.95	5	6.94		1.00	3.40	7.10	
22/01/2020	0.75	Sample Frozen	6.86		0.99	3.48	7.10	
23/01/2020	0.9	Sample Frozen	7.10		0.97	3.59	7.12	
24/01/2020	0.79	4	7.15		0.97	3.72	7.11	
25/01/2020	1.02	3	7.01		0.97	3.81	7.11	
26/01/2020	0.57	5	7.07		0.96	3.96	7.10	
27/01/2020	No discharge				0.98	4.10	7.11	
28/01/2020	No discharge				0.98	4.22	7.11	
29/01/2020	No discharge				0.99	4.38	7.11	
30/01/2020	No discharge				0.99	4.48	7.11	
31/01/2020	No discharge				0.96	4.59	7.11	
01/02/2020	No discharge				0.94	4.62	7.10	
02/02/2020	No discharge				0.90	4.70	7.10	
03/02/2020	No discharge				0.88	4.79	7.10	
04/02/2020	No discharge				0.89	4.94	7.10	
05/02/2020	No discharge				0.87	5.06	7.11	
06/02/2020	No discharge				0.85	5.13	7.11	
07/02/2020	No discharge				0.86	5.07	7.12	
08/02/2020	No discharge				0.83	4.93	7.12	
09/02/2020	No discharge				0.83	4.85	7.12	
10/02/2020	No discharge				0.82	4.67	7.09	
11/02/2020	1.43	9	7.02	0.055	0.88	4.83	7.07	0.033
12/02/2020	1.25	NA	7.14		0.93	5.00	7.06	
13/02/2020	1.7	NA	7.12		0.98	4.80	7.04	
14/02/2020	1.16	7	6.87		0.99	5.20	7.02	
15/02/2020	1.05	8	7.03	0.018	0.97	5.45	7.01	0.028
16/02/2020	0.75	7	7.04		0.96	5.91	7.00	
17/02/2020	0.85	5	7.18	0.017	0.96	5.82	7.01	0.025
18/02/2020	0.95	NA	6.58		0.99	6.00	6.98	
19/02/2020	0.56	7	6.78	0.019	0.98	6.00	6.99	0.027
20/02/2020	0.84	7	7.18	0.012	0.97	6.20	7.01	0.024
21/02/2020	1.29	8	6.84		1.01	6.36	7.01	
22/02/2020	1.04	8	6.99		1.02	6.50	7.00	
23/02/2020	2.65	3	6.97	0.011	1.14	6.42	6.99	0.022
24/02/2020	No discharge				1.15	6.73	6.99	
25/02/2020	No discharge				1.19	6.90	6.98	
26/02/2020	No discharge				1.19	6.90	6.98	
27/02/2020	No discharge				1.19	6.90	6.98	
28/02/2020	No discharge				1.19	6.90	6.98	
29/02/2020	2.76	4	7.57		1.31	6.64	7.02	
01/03/2020	2.24	3	7.18		1.37	6.33	7.03	
02/03/2020	0.75	10	6.94	0.027	1.33	6.62	7.03	0.023

Table A-1. Water quality monitoring results and calculated means for comparison to NWB Water License criteria for dewatering effluent station ST-DD-7. As reported monthly to NWB in 2020.

Date (DD/MM/YYYY)	Daily Measurements				30-d Moving Average*			
	Turbidity ¹	TSS ²	pH ¹	Total Aluminum ²	Turbidity ¹	TSS ²	pH ¹	Total Aluminum ²
	NWB Water License Criteria (STM)				NWB Water License Criteria (MMM)			
	30 NTU	22.5 mg/L	6.0 - 9.0	3 mg/L	15 NTU	15 mg/L	6.0 - 9.0	1.5 mg/L
03/03/2020	1.95	3	7.5		1.37	6.36	7.05	
04/03/2020	2.36	3	6.75		1.42	6.13	7.04	
05/03/2020	5.82	3	6.73	0.017	1.65	5.94	7.02	0.017
06/03/2020	1.03	2	6.8		1.62	5.71	7.01	
07/03/2020	1.78	8	7.12		1.63	5.83	7.02	
08/03/2020	0.67	6	6.82		1.59	5.84	7.01	
09/03/2020	No discharge				1.59	5.84	7.01	
10/03/2020	No discharge				1.59	5.84	7.01	
11/03/2020	No discharge				1.59	5.84	7.01	
12/03/2020	No discharge				1.59	5.67	7.01	
13/03/2020	No discharge				1.61	5.67	7.00	
14/03/2020	No discharge				1.61	5.67	6.99	
15/03/2020	Restarted during the night				1.63	5.59	7.00	
16/03/2020	0.99	5	7	0.008	1.63	5.41	7.00	0.016
17/03/2020	1.01	5	6.94		1.64	5.29	6.99	
18/03/2020	1.15	11	6.94		1.66	5.65	6.98	
19/03/2020	0.93	5	6.85		1.66	5.61	6.99	
20/03/2020	0.85	<1	6.88	<0.006	1.67	5.25	7.00	0.013
21/03/2020	0.84	1	6.97		1.67	4.92	6.99	
22/03/2020	0.64	<1	7.05	<0.006	1.64	4.50	7.00	0.012
23/03/2020	No discharge				1.67	4.29	7.00	
24/03/2020	No discharge				1.61	4.38	7.00	
25/03/2020	No discharge				1.61	4.38	7.00	
26/03/2020	No discharge				1.61	4.38	7.00	
27/03/2020	No discharge				1.61	4.38	7.00	
28/03/2020	No discharge				1.61	4.38	7.00	
29/03/2020	No discharge				1.61	4.38	7.00	
30/03/2020	2.02	5	7.54		1.56	4.44	7.00	
31/03/2020	2.23	3	7.57		1.56	4.44	7.03	
01/04/2020	1.97	19	7.58		1.64	5.00	7.07	
02/04/2020	0.91	9	7.41	<0.006	1.58	5.38	7.06	0.007
03/04/2020	1.09	1	7.13		1.50	5.25	7.08	
04/04/2020	No discharge				1.21	5.40	7.11	
05/04/2020	No discharge				1.22	5.64	7.13	
06/04/2020	No discharge				1.18	5.46	7.13	
07/04/2020	No discharge				1.22	5.42	7.16	
08/04/2020	No discharge				1.22	5.42	7.16	
09/04/2020	No discharge				1.22	5.42	7.16	
10/04/2020	No discharge				1.22	5.42	7.16	
11/04/2020	No discharge				1.22	5.42	7.16	
12/04/2020	No discharge				1.22	5.42	7.16	
13/04/2020	No discharge				1.22	5.42	7.16	
14/04/2020	No discharge				1.22	5.42	7.16	
15/04/2020	0.9	3	6.94		1.21	5.25	7.15	
16/04/2020	1.04	<1	6.49	0.014	1.21	4.88	7.11	0.006
17/04/2020	1.34	2	7.00		1.23	4.13	7.12	
18/04/2020	1.7	1	7.07		1.29	3.79	7.14	
19/04/2020	0.95	2	6.98		1.30	3.92	7.14	
20/04/2020	0.78	<1	6.69		1.30	3.88	7.12	
21/04/2020	No discharge				1.36	4.18	7.13	
22/04/2020	No discharge				1.36	4.18	7.13	
23/04/2020	No discharge				1.36	4.18	7.13	
24/04/2020	No discharge				1.36	4.18	7.13	
25/04/2020	0.86	4	7.08		1.32	4.17	7.12	
26/04/2020	1.58	5	6.91		1.34	4.23	7.11	
27/04/2020	1.57	4	7.09		1.35	4.21	7.11	
28/04/2020	0.88	4	7.18		1.32	4.20	7.11	
29/04/2020	0.86	1	7.19		1.24	3.93	7.09	
30/04/2020	1.35	2	7.15	0.019	1.19	3.87	7.06	0.012
01/05/2020	No discharge				1.13	2.79	7.02	
02/05/2020	No discharge				1.15	2.31	6.99	
03/05/2020	No discharge				1.15	2.31	6.99	

Table A-1. Water quality monitoring results and calculated means for comparison to NWB Water License criteria for dewatering effluent station ST-DD-7. As reported monthly to NWB in 2020.

Date (DD/MM/YYYY)	Daily Measurements				30-d Moving Average*			
	Turbidity ¹	TSS ²	pH ¹	Total Aluminum ²	Turbidity ¹	TSS ²	pH ¹	Total Aluminum ²
	NWB Water License Criteria (STM)				NWB Water License Criteria (MMM)			
	30 NTU	22.5 mg/L	6.0 - 9.0	3 mg/L	15 NTU	15 mg/L	6.0 - 9.0	1.5 mg/L
04/05/2020	No discharge				1.15	2.42	6.98	
05/05/2020	No discharge				1.15	2.42	6.98	
06/05/2020	No discharge				1.15	2.42	6.98	
07/05/2020	0.73	2	7.27	<0.006	1.12	2.38	7.00	0.012
08/05/2020	1.14	1	7.27		1.12	2.29	7.02	
09/05/2020	1.08	1	6.92		1.12	2.20	7.02	
10/05/2020	0.96	<1	7.06		1.11	2.09	7.02	
11/05/2020	1.18	<1	6.92	<0.006	1.11	2.00	7.01	0.010
12/05/2020	1.02	2	6.91		1.11	2.00	7.01	
13/05/2020	1.61	2	6.91		1.13	2.00	7.00	
14/05/2020	1.3	4	7.02	0.026	1.14	2.10	7.00	0.013
15/05/2020	2.74	4	6.92		1.22	2.19	7.00	
16/05/2020	No discharge							
17/05/2020	No discharge							
18/05/2020	No discharge							
19/05/2020	No discharge							
20/05/2020	No discharge - dewatering complete.							

1 - Field-measured

2- Laboratory-measured

Where results were below the laboratory method detection limit ("<"), half the detection limit was used in the 30-d mean calculation.

Table A-2. Water quality monitoring results and calculated means for comparison to NWB Water License criteria for dewatering effluent station ST-DD-15. As reported monthly to NWB in 2020.

Date (DD/MM/YYYY)	Daily Measurements			30-d Moving Average*
	Turbidity ¹	TSS ²	pH ¹	TSS ²
	NWB Water License Criteria (STM)			NWB Water License Criteria (MMM)
		30 mg/L		15 mg/L
01/09/2020	1.62	3	7.11	3.00
02/09/2020	2.01	1	7.30	2.00
03/09/2020	1.83	1	7.41	1.67
04/09/2020	2.15	1	7.56	1.50
05/09/2020	2.64	1	7.11	1.40
06/09/2020	2.59	1	7.21	1.33
07/09/2020	2.24	1	7.16	1.29
08/09/2020	2.15	1	7.12	1.25
09/09/2020	2.46	2	7.52	1.33
10/09/2020	2.49	2	7.38	1.40
11/09/2020	2.3	2	7.41	1.45
12/09/2020	2.37	3	7.38	1.58
13/09/2020	3.16	3	7.44	1.69
14/09/2020	5.3	11	7.60	2.36
15/09/2020	Discharge to Whale Tail South complete			

1 - Field-measured

2- Laboratory-measured

Where results were below the laboratory method detection limit ("<"), half the detection limit was used in the 30-d mean calculation.

Blank cells indicate samples that were not required to be collected.

NA indicates sample was not collected due to inclement weather or the sample was lost in transit.

Table A-3: Water quality monitoring results for dewatering effluent station ST-DD-8 (field- and laboratory-measured).

ST-DD-8		Sample date	1/09/20	1/15/20	1/15/20	1/15/20	1/15/20	1/15/20	1/20/20	1/20/20	1/20/20	1/20/20	1/20/20	1/20/20	1/26/20
Start depth (m)		Guideline^	0	0	3	4	5	6	0	2	3	4	5	6	0
Parameter	Units		-	-	-	-	-	-	-	-	-	-	-	-	-
Field Measured															
Temperature	°C		0.83	0.67	0.67	0.79	0.92	1.03	0.57	0.54	0.57	0.8	0.92	1.09	0.65
pH	-	6.5-9	6.82	7.02	7.02	6.97	6.95	6.94	7.07	6.84	7.07	7.05	6.99	6.94	6.68
Total Suspended Solids	ppm		-	2	-	-	-	-	-	-	-	-	-	-	-
Conductivity	uS/cm		91.4	98.1	110.1	110.2	111.3	111.4	68.9	102.1	68.9	78.4	79.2	92.8	113.3
Dissolved oxygen	mg/L		15.25	110.1	13.84	13.65	13.64	13.61	15.32	13.16	15.32	14.97	14.41	13.97	13.57
Dissolved oxygen	%		-	13.84	98.1	98.5	98.7	98.9	109.6	94.4	109.6	108	103.9	101.3	97.6
Turbidity	NTU		0.46	0	0	0	0	0	0	0	0	0	0	0	0
Conventional Parameters (Laboratory Measured)															
TSS	mg/L	6**	3	-	-	-	-	-	4	-	-	-	-	-	2

^CCME Guideline for the Protection of Aquatic Life

**limit for long-term inputs (5 mg/L above background)

Table A-3: Water quality monitoring results for dewatering effluent station ST-DD-8 (field- and laboratory-measured).

ST-DD-8		Sample date	1/26/20	1/26/20	1/26/20	1/26/20	1/26/20	2/18/20	2/18/20	2/18/20	2/18/20	2/18/20	2/18/20	2/23/20	2/23/20
		Start depth (m)	2	3	4	5	6	0	2	3	4	5	6	0	2
Parameter	Units	Guideline^	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Measured															
Temperature	°C		0.41	0.65	0.82	0.91	1.11	0.27	0.26	0.27	0.65	0.82	1.06	0.57	0.05
pH	-	6.5-9	6.57	6.68	6.77	6.77	6.79	6.67	6.77	6.67	6.73	6.72	6.7	6.85	6.87
Total Suspended Solids	ppm		-	-	-	-	-	-	-	-	-	-	-	-	-
Conductivity	uS/cm		103	113.3	109.8	114.7	112.5	156.2	127.2	156.2	137.9	134.4	130.4	115.5	98.2
Dissolved oxygen	mg/L		13.36	13.57	13.4	13.24	13.04	14.68	14.33	14.68	14.83	14.97	15.03	14.21	14.73
Dissolved oxygen	%		96.2	97.6	96.6	95.7	94.3	-	-	-	-	-	-	101.6	103.5
Turbidity	NTU		0	0	0	0	0	-	-	-	-	-	-	0	0
Conventional Parameters (Laboratory Measured)															
TSS	mg/L	6**	-	-	-	-	-	4	-	-	-	-	-	2	-

^CCME Guideline for the Protection of Aquatic Life

**limit for long-term inputs (5 mg/L above background)

Table A-3: Water quality monitoring results for dewatering effluent station ST-DD-8 (field- and laboratory-measured).

ST-DD-8		Sample date		2/23/20	2/23/20	2/23/20	2/23/20	3/05/20	3/05/20	3/05/20	3/05/20	3/05/20	3/18/20	3/18/20	3/18/20	3/18/20
		Start depth (m)	Guideline^	3	4	5	6	0	3	4	5	6	0	2	3	4
Parameter	Units			-	-	-	-	-	-	-	-	-	-	-	-	-
Field Measured																
Temperature	°C			0.57	0.84	1.04	1.18	0.53	0.53	0.63	0.82	1.21	0.33	0.24	0.33	0.49
pH	-	6.5-9		6.85	6.79	6.69	6.6	6.94	6.94	6.87	6.84	6.81	6.88	6.92	6.88	6.88
Total Suspended Solids	ppm			-	-	-	-	-	-	-	-	-	-	-	-	-
Conductivity	uS/cm			115.5	115	117	122.3	129.8	129.8	128.7	126	119	135.5	129.9	135.5	131.9
Dissolved oxygen	mg/L			14.21	13.89	13.56	13.01	12.92	12.92	12.85	12.66	12.39	12.6	12.73	12.6	12.57
Dissolved oxygen	%			101.6	100.2	97.3	94.3	925	92.5	92.3	91.5	90.1	89.7	92.2	89.7	89.9
Turbidity	NTU			0	0	0	0	0	0	0	0	0	0	0	0	0
Conventional Parameters (Laboratory Measured)																
TSS	mg/L	6**		-	-	-	-	2	-	-	-	-	<1	-	-	-

^CCME Guideline for the Protection of Aquatic Life

**limit for long-term inputs (5 mg/L above background)

Table A-3: Water quality monitoring results for dewatering effluent station ST-DD-8 (field- and laboratory-measured).

ST-DD-8		Sample date	Guideline^	3/18/20	3/18/20	3/22/20	3/22/20	3/22/20	3/22/20	3/22/20	3/22/20	3/31/20	3/31/20	3/31/20	3/31/20	3/31/20
		Start depth (m)		5	6	0	2	3	4	5	6	0	3	4	5	6
Parameter	Units		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Field Measured																
Temperature	°C		0.8	1.11	0.53	0.37	0.53	0.74	0.79	1.12	0.38	0.38	0.56	0.83	1.05	
pH	-	6.5-9	6.88	6.87	6.88	6.91	6.88	6.87	6.84	6.82	7.08	7.08	7.05	7.04	7.03	
Total Suspended Solids	ppm		-	-	2	-	-	-	-	-	-	-	-	-	-	
Conductivity	uS/cm		122.7	117.4	133.2	139.3	133.2	125.2	130.5	130.2	149.7	149.7	145.9	138.3	133.3	
Dissolved oxygen	mg/L		12.49	12.35	12.9	13.01	12.9	12.8	12.72	12.51	12.32	12.32	12.26	12.17	12.05	
Dissolved oxygen	%		90	89.8	92.4	92.7	92.4	92.2	91.7	91	87.9	87.9	87.9	87.8	87.6	
Turbidity	NTU		0	0	0	0	0	0	0	0	0	0	0	0	0	
Conventional Parameters (Laboratory Measured)																
TSS	mg/L	6**	-	-	<1	-	-	-	-	-	<1	-	-	-	-	

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**limit for long-term inputs (5 mg/L above background)

Table A-3: Water quality monitoring results for dewatering effluent station ST-DD-8 (field- and laboratory-measured).

ST-DD-8		Sample date		4/15/20	4/15/20	4/15/20	4/15/20	4/15/20	4/15/20	4/15/20	4/15/20	4/15/20	4/19/20	4/19/20	4/19/20	4/19/20
		Start depth (m)	Guideline^	0	2	3	4	5	6	7	8	9	0	3	4	5
Parameter	Units			-	-	-	-	-	-	-	-	-	-	-	-	-
Field Measured																
Temperature	°C			0.61	0.38	0.61	0.77	0.89	1.23	1.51	1.62	1.75	0.5	0.5	0.82	1.06
pH	-	6.5-9		6.96	7.07	6.96	6.93	6.91	6.9	6.88	6.87	6.85	7.01	7.01	6.96	6.95
Total Suspended Solids	ppm			-	-	-	-	-	-	-	-	-	-	-	-	-
Conductivity	uS/cm			93.8	130.1	127.3	127.5	127.1	125	123.1	122.3	122.1	117.2	117.2	118.7	118.8
Dissolved oxygen	mg/L			127.3	13.64	13.07	12.92	12.72	12.49	12.24	11.92	11.55	13.8	13.8	13.54	13.24
Dissolved oxygen	%			13.07	97.5	93.8	93.1	92	91	89.8	88	85.6	98.6	98.6	97.5	96.1
Turbidity	NTU			0	0	0	0	0	0	0	0	0	0	0	0	0
Conventional Parameters (Laboratory Measured)																
TSS	mg/L		6**	1	-	-	-	-	-	-	-	-	<1	-	-	-

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**limit for long-term inputs (5 mg/L above background)

Table A-3: Water quality monitoring results for dewatering effluent station ST-DD-8 (field- and laboratory-measured).

ST-DD-8		Sample date		4/19/20	4/19/20	4/19/20	4/19/20	4/26/20	4/26/20	4/26/20	4/26/20	4/26/20	4/26/20	5/08/20	5/08/20	5/08/20
		Start depth (m)	Guideline^	6	7	8	9	0	3	4	5	6	7	0	3	4
Parameter	Units			-	-	-	-	-	-	-	-	-	-	-	-	-
Field Measured																
Temperature	°C			1.42	1.53	1.7	1.79	0.62	0.62	0.88	1.05	1.39	1.59	0.66	0.66	1.07
pH	-	6.5-9		6.93	6.9	6.86	6.81	6.95	6.95	6.91	6.89	6.88	6.85	7.09	7.09	7.09
Total Suspended Solids	ppm			-	-	-	-	-	-	-	-	-	-	-	-	-
Conductivity	uS/cm			121.9	122.6	121.6	120.7	128.9	128.9	126.7	125.7	122.6	123.2	140.3	140.3	137
Dissolved oxygen	mg/L			12.88	12.53	12.12	11.5	13.18	13.18	12.83	12.67	12.36	11.96	10.92	10.92	10.84
Dissolved oxygen	%			94.2	92	89.2	85	94.1	94.2	92.7	91.8	90.4	87.9	78.6	78.6	78.8
Turbidity	NTU			0	0	0	0	0	0	0	0	0	0	0.62	0.62	0
Conventional Parameters (Laboratory Measured)																
TSS	mg/L		6**	-	-	-	-	4	-	-	-	-	-	<1	-	-

^CCME Guideline for the Protection of Aquatic Life

**limit for long-term inputs (5 mg/L above background)

Table A-3: Water quality monitoring results for dewatering effluent station ST-DD-8 (field- and laboratory-measured).

ST-DD-8		Sample date		5/08/20	5/08/20	5/08/20	5/08/20	5/10/20	5/10/20	5/10/20	5/10/20	5/10/20	5/10/20	5/10/20	9/02/20
		Start depth (m)	Guideline^	5	6	7	8	0	3	4	5	6	7	8	0
Parameter	Units			-	-	-	-	-	-	-	-	-	-	-	-
Field Measured															
Temperature	°C			1.23	1.4	1.62	1.77	0.35	0.35	0.64	1.33	1.62	1.73	1.76	9.6
pH	-	6.5-9		7.07	7.05	7.03	7.01	7.03	7.03	7.01	6.99	6.97	6.94	6.92	7.46
Total Suspended Solids	ppm			-	-	-	-	1.5	-	-	-	-	-	-	-
Conductivity	uS/cm			135	133.3	132	132.9	132.3	132.3	129	123.9	120	118.5	119.4	87.1
Dissolved oxygen	mg/L			10.73	10.62	10.41	10.24	12.3	12.3	12.12	11.82	11.5	11.1	10.75	9.89
Dissolved oxygen	%			78.4	77.8	76.9	75.9	87.7	87.7	87.1	86.3	84.6	82.2	79.2	98.3
Turbidity	NTU			0	0	0	0	0	0	0	0	0	0	0	0.77
Conventional Parameters (Laboratory Measured)															
TSS	mg/L		6**	-	-	-	-	< 1	-	-	-	-	-	-	1

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**limit for long-term inputs (5 mg/L above background)

Table A-3: Water quality monitoring results for dewatering effluent station ST-DD-8 (field- and laboratory-measured).

ST-DD-8		Sample date	9/06/20	9/16/20
Start depth (m)		Guideline^	0	0
Parameter	Units		-	-
Field Measured				
Temperature	°C		7	4.4
pH	-	6.5-9	7.34	-
Total Suspended Solids	ppm		-	-
Conductivity	uS/cm		76.8	-
Dissolved oxygen	mg/L		10.73	-
Dissolved oxygen	%		99.1	-
Turbidity	NTU		0.75	1.1
Conventional Parameters (Laboratory Measured)				
TSS	mg/L	6**	3	2

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**limit for long-term inputs (5 mg/L above background)

Table A-4. QAQC results for water quality analysis at dewatering effluent monitoring location ST-DD-7.

ST-DD-7 QAQC	Sample Date >	MDL	1/07/20			1/13/20			1/20/20			1/26/20			2/11/20			2/17/20			2/23/20			3/03/20	
Parameter	Units		FD	N	TB	N	FD	TB	FD	N	TB	FD	N	TB	FD	N	TB	FD	N	TB	FD	N	TB	N	TB
Conventional Parameters																									
pH	pH units		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.1	-	-	-	-
Turbidity	NTU		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.23	-	-	-	-
TSS	mg/L	1	5	4	<1	3	7	<1	5	7	<1	8	5	1	10	9	<1	4	5	<1	9	3	<1	3	<1
Total Metals																									
Aluminum	mg/L	0.006	-	-	-	-	-	-	0.014	0.011	< 0.006	-	-	-	0.052	0.055	< 0.006	0.017	0.017	< 0.006	-	0.011	-	-	-

ST-DD-7 QAQC	Sample Date >	MDL	3/16/20			3/22/20			3/31/20			4/16/20			4/26/20			5/08/20			5/14/20				
Parameter	Units		FD	N	TB	FD		N	TB	FD	N	TB	FD	N	TB	FD	N	TB	FD	N	TB	TB	FB	FD	N
Conventional Parameters																									
pH	pH units		7.2	7	5.08	7.13		7.16	5.05	-	7.23	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Turbidity	NTU		0.9	1	0.31	1.81		1.4	0.16	-	1.35	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TSS	mg/L	1	6	5	<1	3		<1	<1	3	9	<1	<1	<1	5	5	2	1	1	<1	<1	<1	4	4	4
Total Metals																									
Aluminum	mg/L	0.006	0	0	0.01	<0.006	<0.006	<0.006		-	-	-	0.012	0.01	<0.006	-	-	-	-	-	-	<0.006	<0.006	0.012	0.026

FD = field duplicate; N = original sample; TB = trip blank; FB = field blank

Trip and field blanks exceeding MDL are in **bold**.Samples and duplicates are underlined when the associated trip or field blank exceeded the MDL and the sample result was less than 5x the measured trip or field blank result.

MDL = method detection limit

RPD = relative percent difference (calculated when duplicate and original samples are >10x MDL)

Table A-5. QAQC results for water quality analysis at dewatering effluent monitoring location ST-DD-15.

ST-DD-15 QAQC	Sample Date >	MDL	9/13/20			
Parameter	Units		FB	FD	N	TB
Conventional Parameters						
TSS	mg/L	1	< 1	2	3	< 1
Total Metals						
Aluminum	mg/L	0.006	< 0.006	0.045	0.051	< 0.006

FD = field duplicate; N = original sample; TB = trip blank; FB = field blank

Trip and field blanks exceeding MDL are in **bold**.

Samples and duplicates are underlined when the associated trip or field blank exceeded the MDL and the sample result was less than 5x the measured trip or field blank result.

MDL = method detection limit

RPD = relative percent difference (calculated when duplicate and original samples are >10x MDL)

Table A-6. QAQC results for water quality analysis at receiving environment monitoring location ST-DD-8.

ST-DD-8			1/09/20	1/09/20	1/09/20	2/23/20	2/23/20	3/05/20	3/05/20	3/05/20	4/15/20	4/15/20	4/15/20		9/02/20	9/02/20	9/02/20	9/02/20
Sample date Sample type			FD	N	TB	N	TB	FD	N	TB	FD	N	TB		FB	FD	N	TB
Parameter	Units	MDL	-	-	-	-	-	-	-	-	-	-	-		-	-	-	-
Conventional Parameters																		
TSS	mg/L	1	4	3	< 1	2	< 1	2	2	< 1	1	1	< 1		< 1	2	1	< 1

FD = field duplicate; N = original sample; TB = trip blank; FB = field blank

Trip and field blanks exceeding MDL are in **bold**.

Samples and duplicates are underlined when the associated trip or field blank exceeded the MDL and the sample result was less than 5x the measured trip or field blank result.

MDL = method detection limit

RPD = relative percent difference (calculated when duplicate and original samples are >10x MDL)