

## **Appendix 31**

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# **Whale Tail 2023 Report on the Implementation of Measures to Avoid and Mitigate Serious Harm**

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**AGNICO EAGLE**

MEADOWBANK COMPLEX

WHALE TAIL MINE

**2023 REPORT ON THE IMPLEMENTATION OF  
MEASURES TO AVOID AND MITIGATE SERIOUS  
HARM TO FISH**

In Accordance with

DFO Fisheries Act Authorization 16-HCAA-00370

and

DFO Fisheries Act Authorization 20-HCAA-00275

Prepared by:

Agnico Eagle Mines Limited – Meadowbank Complex

March, 2024

## **EXECUTIVE SUMMARY**

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In July, 2018, and July, 2020, Agnico Eagle Mines Ltd. (Agnico) was issued Fisheries Act Authorizations (FAAs) 16-HCAA-00370 and 20-HCAA-00275 for the Whale Tail Mine.

Conditions 2.1 - 2.3 of FAA 16-HCAA-00370 and Conditions 2.1 and 2.2 of 20-HCAA-00275 describe a suite of measures and standards to avoid and mitigate impacts to fish and fish habitat that are required to be implemented while mine activities are ongoing, to ensure impacts to fish and fish habitat are limited to those authorized.

This report has been developed in fulfillment of Condition 3 of these FAAs, which indicates that Agnico Eagle will monitor the implementation of these avoidance and mitigation measures and provide a stand-alone report to DFO annually.

In fulfillment of Condition 3.1, this document summarizes the implementation of the specified measures and standards to avoid and mitigate serious harm to fish. Photos and/or figures of the mitigation measures are included, as applicable (according to Condition 3.1.3 of 16-HCAA-00370 and Condition 3.1.1 of 20-HCAA-00275), along with a commentary on effectiveness based on relevant monitoring results, and any required contingency measures in the event that the mitigation did not function successfully (according to Condition 3.1.4/3.1.2).

As required by FAA 16-HCAA-00370 Condition 3.1.1, an evaluation of the effectiveness of the FAA-listed monitoring programs (and other relevant monitoring programs) in validating changes to fish and fish habitat predicted in the Project FEIS is provided in Section 12.5.1.3 of the 2023 Meadowbank Complex Annual Report to the NIRB as a component of the Post-Environmental Assessment Monitoring Program. This approach was adopted beginning in 2021, in an effort to reduce redundancy in reporting and better focus this report on the implementation and effectiveness of the avoidance and mitigation measures.

In summary, all measures and standards to avoid and mitigate serious harm to fish identified in Condition 2 of FAA 16-HCAA-00370 and 20-HCAA-00275 were implemented as required in 2023. In all cases, monitoring results demonstrated these primary mitigation and avoidance measures to be effective. The implementation of contingency mitigation was not required. The FAA-listed and FEIS-planned mitigation measures and standards (see Appendix A) were therefore considered effective in limiting impacts of construction activities to fish and fish habitat to those authorized.

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## SECTION 1 • INTRODUCTION

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In July, 2018, and July, 2020, Agnico Eagle Mines Ltd. (Agnico) was issued Fisheries Act Authorizations (FAAs) 16-HCAA-00370 and 20-HCAA-00275 for the Whale Tail Mine. Approved fish habitat offsetting related to these FAAs is described in the *Fish Habitat Offsetting Plan for Whale Tail Pit* (March, 2018) and the *Whale Tail Pit Expansion Project - Fish Habitat Offsetting Plan* (March, 2020).

This report was developed in response to Condition 3 of these FAAs, which relates to monitoring and reporting of specified measures and standards to avoid and mitigate serious harm to fish. In particular, this report addresses Condition 3.1 of both FAAs:

**Condition 3.1:** *The Proponent shall monitor the implementation of avoidance and mitigation measures referred to in section 2 of this authorization, and provide a stand-alone report to DFO, by March 31, annually and indicate whether the measures and standards to avoid and mitigate serious harm to fish were conducted according to the conditions of this authorization.*

In fulfillment of Condition 3.1, Section 2 of this document summarizes the implementation of the specified measures and standards to avoid and mitigate serious harm to fish, as identified in Section 2 of FAA 16-HCAA-00370 and 20-HCAA-00275. Where appropriate and available, dated photographs with GPS coordinates (or other identifiers) and inspection reports are provided or referenced, as required in FAA 16-HCAA-00370 Condition 3.1.3 and FAA 20-HCAA-00275 Condition 3.1.1.

While presented somewhat differently between the two FAAs, these measures and standards may be summarized as:

1. Sediment and erosion control - Sediment and erosion control measures must be in place and shall be upgraded and maintained, such that release of sediment is avoided at the location of the authorized work, undertaking, or activity. And: *Before commencing any works, undertakings and/or activities that have the potential to release sediment into waters frequented by fish, the Proponent shall prepare and implement site specific sediment and erosion control plans for any near or in-water works under the guidance of a certified Professional in erosion and sediment control (CPESC or equivalent).*
2. Adherence to the *General Fish-out Protocol for Lakes and Impoundments in the Northwest Territories and Nunavut* (Tyson et al., 2011) and approved fish-out work plans;
3. Adherence to the *Freshwater Intake End-of-Pipe Fish Screen Guideline* (Fisheries and Oceans Canada, 1995) (FAA 16-HCAA-00370) or the *Interim code of practice: End-*

*of-pipe fish protection screens for small water intakes in freshwater* (<https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecran-eng.html>) (FAA 20-HCAA-00275) for any and all intake in waterbodies that support fish;

4. Development of a Blasting Mitigation Plan, which shall adhere to the guidance in *Monitoring Explosive-Based Winter Seismic Exploration in Waterbodies, NWT 2000 – 2002* (Cott and Hanna, 2005);
5. Adherence to the *Protocol for Winter Water Withdrawal from Ice-Covered Waterbodies in the Northwest Territories and Nunavut* (Fisheries and Oceans Canada, 2010);
6. Ensure that all project infrastructure in watercourses is designed and constructed in such a manner that it does not unduly prevent or limit the movement of water or fish species in fish bearing streams and rivers, unless otherwise authorized by Fisheries and Oceans Canada. And: *The Proponent shall provide detailed engineering plans to DFO for review and approval for construction works that have the potential to impact fish and fish habitat, at least 90 days prior to the commencement of the works.*

Section 2 of this report also provides a commentary on the effectiveness of the measures and standards, based on results of relevant monitoring programs, including those specified under Condition 2.4 of FAA 16-HCAA-00370 and Condition 2.3 of FAA 20-HCAA-00275 where applicable:

1. Most recent Core Receiving Environment Monitoring Program;
2. Most recent Water Quality and Flow Monitoring Plan;
3. Most recent Water Quality Monitoring and Management Plan for Dike Construction and Dewatering; and
4. Most recent Blast Monitoring Program.

In the event that avoidance and mitigation measures did not function properly according to monitoring results, Section 2 of this report further provides details of any contingency measures that were required to be followed to prevent further impacts (in fulfillment of FAA 16-HCAA-00370 Condition 3.1.4 and FAA 20-HCAA-00275 Condition 3.1.2).

Finally, while not included in this report, Section 12.5.1.3 of the 2023 Meadowbank Complex Annual Report to the NIRB further provides an evaluation of the effectiveness of the above-described monitoring programs (and other relevant monitoring programs) in validating changes to fish and fish habitat predicted in the Project FEIS, as required by FAA 16-HCAA-00370 Condition 3.1.1 (discussed in Section 3).

## **SECTION 2 • AVOIDANCE AND MITIGATION MEASURES**

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A commentary on the implementation of each FAA-listed measure to avoid or mitigate serious harm to fish and fish habitat in 2023 is provided below.

### **2.1 SEDIMENT AND EROSION CONTROL**

According to FAA 16-HCAA-00370 and 20-HCAA-00275, “before commencing any works, undertakings and/or activities that have the potential to release sediment into waters frequented by fish, the Proponent shall prepare and implement site specific sediment and erosion control plans for any near or in-water works under the guidance of a certified Professional in erosion and sediment control (CPESC or equivalent).”

Further: “Sediment and erosion control measures must be in place and shall be upgraded and maintained, such that release of sediment is avoided at the location of the authorized work, undertaking, or activity.”

The authorized works, undertakings, and activities, according to these FAAs, include:

1. *Construction of Whale Tail and Mammoth Dikes (**complete**);*
2. *Dewatering of the north basin of Whale Tail Lake (**complete**);*
3. *Construction of the freshwater jetty in Nemo Lake (**complete**);*
4. *Fish-out and dewatering of specified IVR area waterbodies and watercourses (**complete**);*
5. *Water withdrawal for the purposes of operations from A16 (Kangislulik/Mammoth Lake) (**intake not constructed**);*
6. *Construction and operation of the IVR pit, waste rock storage facility, and attenuation pond (**ongoing**);*
7. *Construction of 2 groundwater storage ponds (**not constructed**).*

The preparation and implementation of sediment and erosion control plans for any construction works initiated in 2023 is described below in Sections 2.1.1. The ongoing monitoring and maintenance of sediment and erosion control measures for previously constructed water management infrastructure is described in Section 2.1.2.

#### **2.1.1 Preparation and Implementation of Sediment and Erosion Control Plans**

Sediment and erosion control measures for any construction work, undertaking, or activity having the potential to impact waters frequented by fish (including but not limited to the DFO-

Authorized works listed above) are described in design reports that are prepared by professionals and stamped by a Professional Engineer. These reports are sent to the NWB for review at least 60 days prior to the intended construction initiation. These reports are available for DFO comment during the NWB review period, and construction is not initiated until a positive response is received from NWB. Any designs with the potential to impact waters frequented by fish are also provided directly to DFO, with 90 days notice.

During construction activities, sediment and erosion control measures are implemented for projects, as described in the Design Reports. Following the completion of construction activities, Construction Summary Reports are submitted to the NWB, and are available for DFO review. Construction Summary Reports fully describe the mitigation measures that were implemented (either according to design reports, or contingency measures as necessary) to reduce sedimentation and erosional concerns, along with as-built designs and photographic records (before, during, after construction).

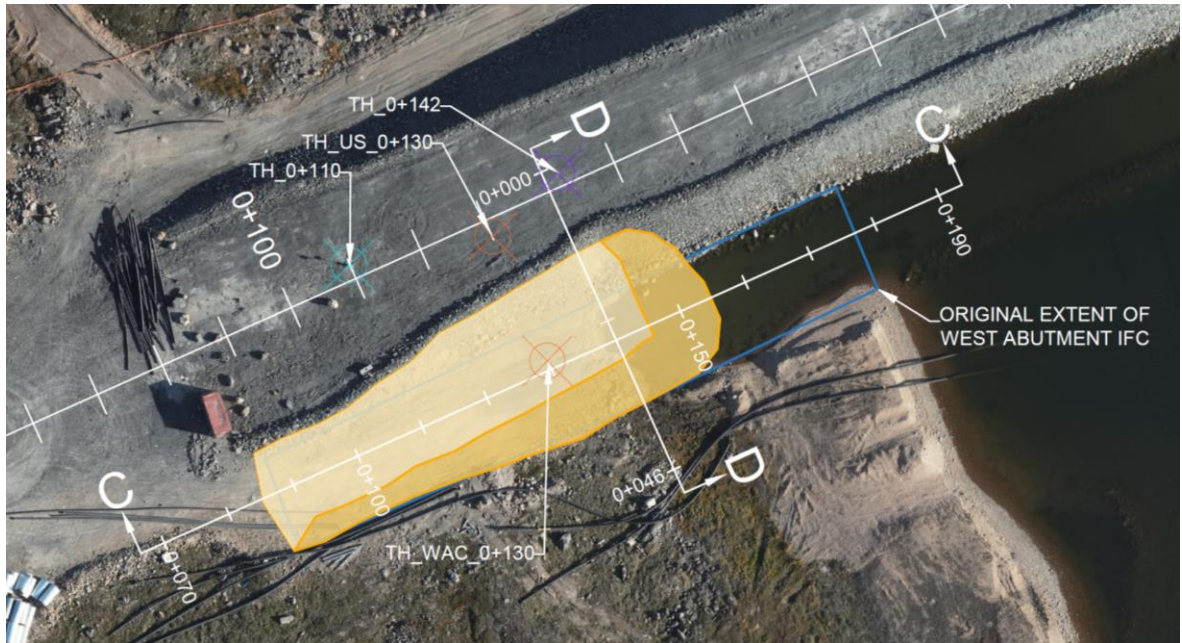
In 2023, one construction activity was conducted with the potential to impact waters frequented by fish. **Whale Tail Dike Abutment Thermal Capping** was carried out from September 19 – 29, 2022 and April 10 – 22, 2023, as detailed in the Construction Summary Report, dated July 17, 2023. The design, implementation, and monitoring of sediment and erosion control measures for the construction of the east abutment occurring in September, 2022 was previously reported in the 2022 version of this report and are not re-visited here. An update on the April, 2023 construction was provided to DFO during the annual meeting on this report, held November 30, 2023, as further described below.

#### ***Whale Tail Dike Abutment Thermal Capping, Phase II (April, 2023 construction)***

- *Design Report Date:* December 16, 2022 (provided to DFO by email on December 19, 2022)
- *Construction Summary Report Date:* July 17, 2023 (also includes September 2022 activities)
- *Construction Dates:* April 10 - 22, 2023 (frozen conditions)
- *Summary:*
  - West side (Figure 1 to 3) - A berm was constructed on the downstream side of the west abutment of the Whale Tail Dike. A portion of the construction footprint was in-water, but overprints the dike foundation. This is a former terrestrial area that became temporarily flooded following dike construction, and will be drawn down at closure.
  - East side (Figure 4 & 5) – Capping material (NPAG, rockfill) was added to the above-water portion of the thermal berm previously constructed on the east side of the Whale Tail Dike.



- *Sediment and erosion control strategy.* Due to the shallow depth of water and the winter construction period, no free water was expected nor encountered during construction. As such, sediment control and monitoring measures were not specifically required.



**Figure 1. Final location of the Whale Tail Dike West Abutment Thermal Capping construction footprint (light and dark yellow).**



**Figure 2. Snow removal on upstream slope at west abutment on April 13, 2023.**





Figure 3. Compaction of completed lift # 2 at west abutment (April 16, 2023).

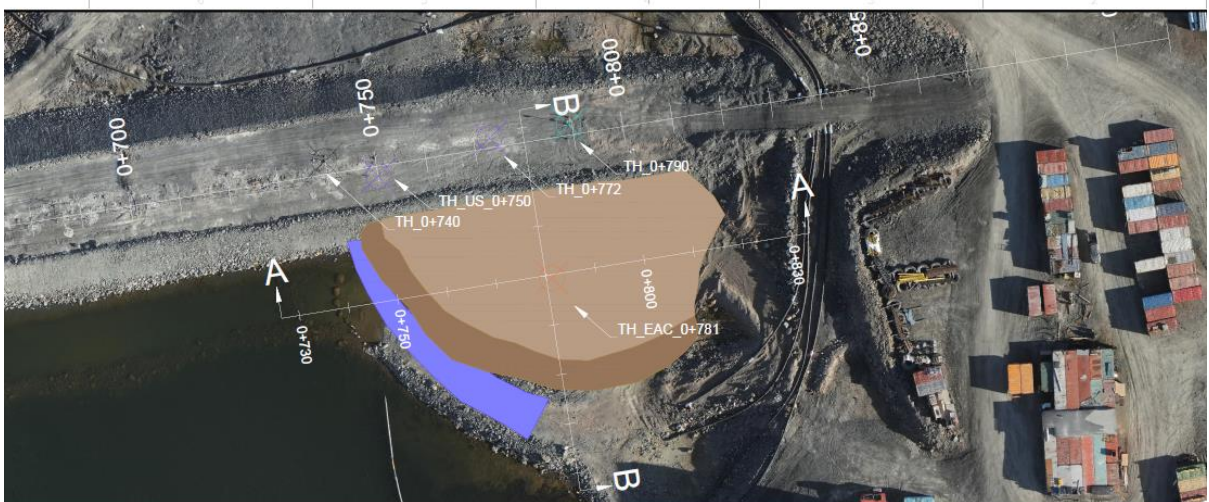


Figure 4. Final location of the Whale Tail Dike East Abutment Thermal Capping construction footprint (brown and purple area). In-water construction occurred in September, 2022 and is described in the 2022 version of this report.



**Figure 5. Final compaction of completed east abutment thermal capping (looking north).**

### **2.1.2 Maintenance of Sediment and Erosion Control Measures**

Under the Freshet Action Plan and Erosion Management Plan, visual inspections of Whale Tail Mine water management infrastructure (including but not limited to bridges, culverts, ditches, Whale Tail South Channel, IVR Diversion Channel) are conducted daily to weekly by dedicated personnel starting in May to document and address any turbidity or erosional concerns, and to ensure mitigation measures in place are functioning as intended to minimize transport of sediment towards receiving environment waterbodies.

Water quality monitoring for turbidity/TSS is also conducted as required based on visual observations, to inform management action and/or to comply with license conditions. When turbid water is observed in any location with potential for interaction with the receiving environment (e.g. Whale Tail Haul Road culverts) grab samples are collected and analyzed in the field for turbidity, and at Agnico's onsite laboratory for TSS. For some constructed non-contact water management infrastructure (WRSF Pond discharge, IVR Diversion Channel, WTS Channel), sampling is conducted on a regular schedule according to NWB Water License requirements, with analysis by an accredited laboratory. TSS limits apply for the WTS and IVR Channels. Any discharge to the receiving environment exceeding license limits (30 mg/L in a grab sample) is reported to the NWB/ECCC.

For all sediment and erosion monitoring events, an inspection log is maintained, documenting general conditions at each location, observations on flow rates and clarity, turbidity sample collection (as required), and any mitigation measures that are implemented to prevent erosional concerns.

For Whale Tail Haul Road infrastructure (culverts, bridges), no major erosion or turbidity concerns were identified during daily to weekly inspections in 2023, no water quality samples

were required to be collected, and no contingency mitigation measures (e.g. straw booms or woodchip booms) were required to be installed.

For onsite infrastructure (e.g. sumps, ponds, ditches, culverts, areas of recent construction), no major erosional concerns were observed requiring management action. Water quality samples were collected monthly during open water from the WRSF Pond, WTS Channel, and IVR Diversion Channel. All results for the Whale Tail South Channel and IVR Diversion Channel were below NWB Water License limits for TSS (30 mg/L grab, 15 mg/L for the monthly mean).

Under the Freshet Action Plan, the following situation with potential to lead to erosional concerns has been identified in previous years, with actions taken as described.

### **Mammoth Road Culverts**

- In August 2020, culverts were installed across the road leading to the emulsion plant, near the Mammoth Dike south abutment, after ponding water was observed on the upstream (south) side of this road during freshet.
- In 2021, overland flow was again observed across this road in May, while culverts were blocked with ice and snow. Attempts were made to thaw the culverts, but some flow across the road continued until mid-June (in 2020 prior to culvert installation, the overland flow continued until mid-July). Sediments control measures (straw and woodchip booms) were installed downstream of the road to avoid potential sediments transportation.
- In 2022, plywood was installed to stop snow accumulating in the culverts over winter, and in the spring, snow was cleared from the culvert areas and the plywood was removed. No flow over the road was recorded during freshet, but booms were still installed on the south side of the road in late May and these successfully addressed turbidity concerns, as determined through visual assessment.
- Minor flow over the road and some signs of road erosion were observed in 2023, despite use of plywood covers at the culvert openings to prevent blockage over winter, and snow removal prior to freshet. A low level of turbidity in meltwater flowing through the culverts was visually identified, and to avoid transportation of sediment to Kangislulik Lake (formerly Mammoth Lake) (located approx. 50 – 100 m downslope, to the north), mulch booms were again installed on the downstream side of the road.
- The installation of silt fences or booms in mine site footprint areas such as this is a planned mitigation measure as described in the FEIS (see Appendix A) and implemented under the Freshet Action Plan.

Results of receiving environment TSS monitoring in the nearest downstream waterbody (Kangislulik Lake) were reviewed in the context of this report to confirm the success of these measures. As shown in Figure 4, TSS remained below the CREMP trigger value in Kangislulik Lake throughout 2023.

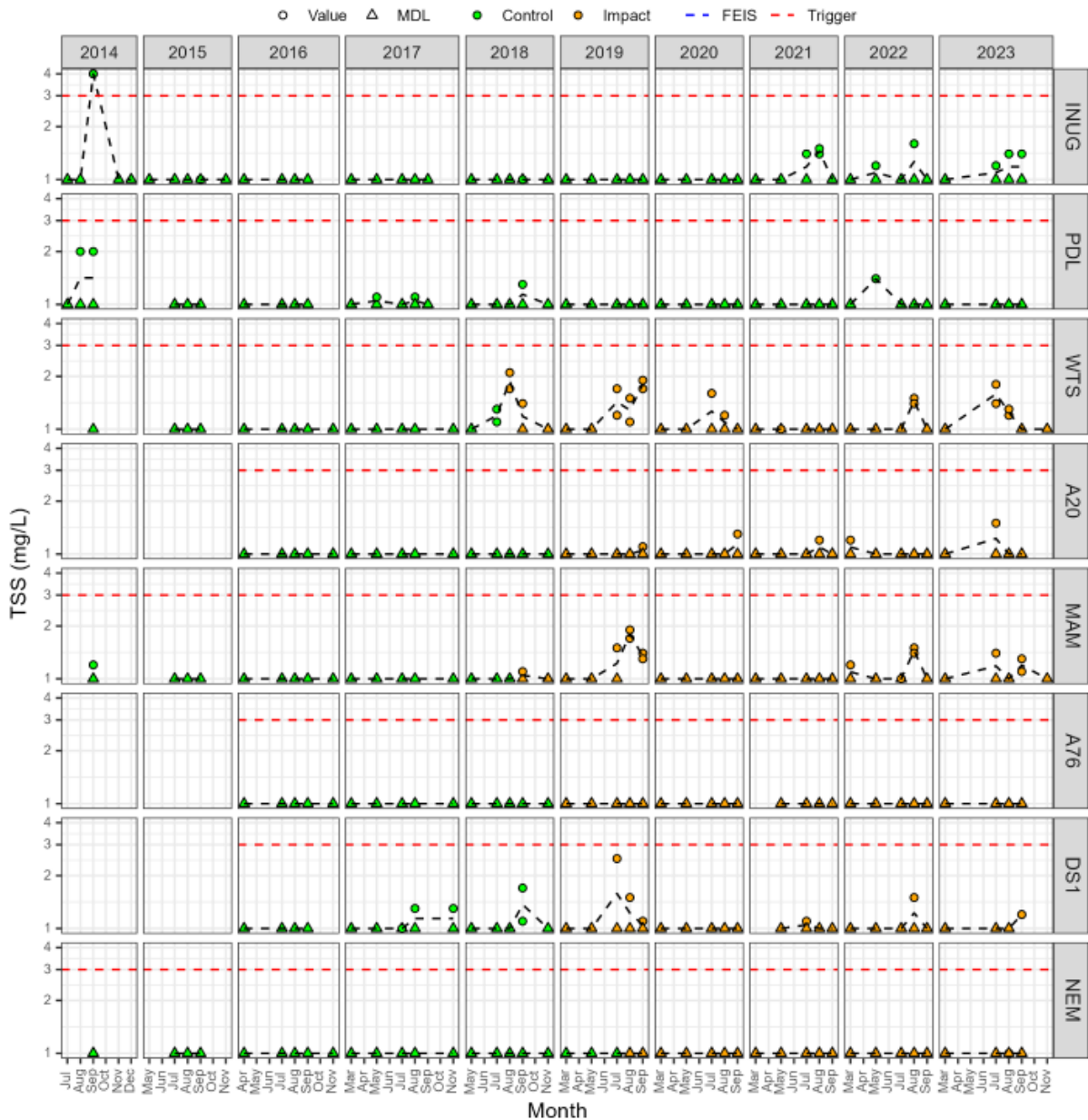


Figure 6. Measured concentrations of TSS in Whale Tail area lakes (from the 2023 Core Receiving Environment Monitoring Report). MAM = Mammoth (Kangislulik) Lake.

## 2.2 ADHERENCE TO THE FISH-OUT PROTOCOL AND APPROVED FISH-OUT WORK PLANS

In accordance with the FAAs, Agnico adhered to the Fish-out Protocol for Lakes and Impoundments in the Northwest Territories and Nunavut (Tyson et al., 2011) and approved fish-out work plans for the Whale Tail Mine when fish-outs of Whale Tail Lake (North Basin)



and the IVR area waterbodies were conducted in 2018 and 2020 (see previous versions of this report).

No fish-outs occurred at the Whale Tail Mine in 2023.

### **2.3 ADHERENCE TO FRESHWATER INTAKE END-OF-PIPE FISH SCREEN GUIDELINES**

In accordance with the Fisheries Act Authorizations, Agnico adheres to the Freshwater Intake End-of-Pipe Fish Screen Guideline (Fisheries and Oceans Canada, 1995) or the Interim Code of Practice: End-of-Pipe Fish Protection Screens for Small Water Intakes in Freshwater (<https://www.dfo-mpo.gc.ca/pnw-ppe/codes/screen-ecran-eng.html>) for any and all intakes in waterbodies that support fish.

No new freshwater intakes in fish-bearing waterbodies were installed in 2023.

The only operating freshwater intake in a fish-bearing waterway was the Nemo Lake intake. Construction of this intake occurred in 2018 and has been previously reported.

### **2.4 DEVELOPMENT OF A BLASTING MITIGATION PLAN**

In accordance with Condition 2.3.3 of FAA 16-HCAA-00370 and Condition 2.2.3 of FAA 20-HCAA-00275, Agnico has developed a Blast Monitoring Program (Version 9, February 2024) that adheres to the guidance in the document “Monitoring Explosive-Based Winter Seismic Exploration in Waterbodies, NWT 2000 – 2002” (Cott and Hanna, 2005) and “Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters” (Wright and Hopky, 1998) as modified by the DFO for use in the north.

A report on blast monitoring according to the Blast Monitoring Program is provided every year in the Meadowbank Complex Annual Report to the NIRB. Every blast is monitored with an InstanTel Minimate Blaster to ensure that vibrations generated by blasting (peak particle velocity; PPV) are less than 13 mm/sec and the overpressure (instantaneous pressure change; IPC) is under 50 KPa at the nearest fish-bearing waterbody (on recommendation of DFO). The results of blast monitoring are systematically analyzed by the Engineering Department within 24 hours following the blasting operation. The blast monitoring results are interpreted and a blast mitigation plan is implemented immediately if the vibrations or the overpressure exceed guidelines. Further, Agnico will submit technical memorandums to DFO regarding blast monitoring and mitigation for blasting activity that occurs outside the limits of the current Blast Monitoring Program (none were required in 2023).

Based on comments from DFO received during the November 2022 meeting in review of the 2021 Report on the Implementation of Measures to Avoid and Mitigate Serious Harm to Fish (March, 2022), a historical summary of blast monitoring and mitigation for the Whale Tail Mine was provided and discussed in that report, for reference.

In 2023, 147 blasts occurred and were monitored at the IVR pit. No blasts exceeded the peak particle velocity (PPV) limit of 13 mm/s or the instantaneous pressure change (IPC) limit of 50kPa. For the Whale Tail Pit, 357 blasts were monitored and none exceeded PPV or IPC limits.

The Drill and Blast department works to continually improve blast mitigation measures, and the following work standards were improved or implemented in 2023, helping to achieve full compliance with DFO blast limits:

- Full implementation of Electronic Initiation System detonators (EIS) for all blasts effective on the 12<sup>th</sup> of November 2023 with use of advanced timing design software.
- Third party review to enhance and audit our Engineering best practices and help with the transition towards EIS technology.
- Recalibrated vibration model with 2023 monitored data.
- Maximum reduced charge per delay in geological sensitive area, and patterns with smaller hole diameters as needed.
- Seismograph installation form.

Table 1. Instances of PPV and IPC measurements exceeding DFO limits at the Whale Tail Mine from 2018 to 2023.

Year	PPV Measurements > 13 mm/s	IPC Measurements > 50 kPa
2018	2	0
2019	8	0
2020	4	0
2021	0	0
2022	2	0
2023	0	0

## 2.5 ADHERENCE TO THE PROTOCOL FOR WINTER WATER WITHDRAWAL

In 2023, under-ice water withdrawal occurred for the freshwater intake from Nemo Lake only. Withdrawal volumes conformed with the *Protocol for Winter Water Withdrawal from Ice-Covered Waterbodies in the Northwest Territories and Nunavut* (Fisheries and Oceans Canada, 2010) – i.e. total under-ice withdrawal did not exceed 10% of the available water volume.

As described in Agnico's response to DFO's Technical Comment 2.2.2 on the Whale Tail Pit Expansion Project Water License Amendment application (October 7, 2019), the available under-ice volume of Nemo Lake was calculated as 6,169,226 m<sup>3</sup>. For calculating under-ice volumes, hydrological statistics were extracted from the elevation-volume table (Table A-19) provided in Appendix 6-M of the Final Environmental Impact Statement (FEIS) for the Whale Tail Pit Project. The calculations assumed a 2-m ice thickness during winter.

Conservatively, water withdrawals from September through June are assumed here to have occurred under ice. Estimated total under-ice water withdrawal from Nemo Lake for the winter of 2022-2023 was 66,863 m<sup>3</sup>, which is less than 10% of the available under-ice volume (10% of 6,169,226 m<sup>3</sup> = 616,923 m<sup>3</sup>).

## **2.6 PROJECT INFRASTRUCTURE IN WATERCOURSES**

In accordance with the FAAs, Agnico will ensure that all project infrastructure in watercourses is designed and constructed in such a manner that it does not unduly prevent or limit the movement of water or fish species in fish bearing streams and rivers, unless otherwise authorized by Fisheries and Oceans Canada.

Further, Agnico will provide detailed engineering plans to DFO for review and approval for construction works that have the potential to impact fish and fish habitat, at least 90 days prior to the commencement of the works.

As discussed in Section 2.1.1, Design Reports are provided to the NWB for review at least 60 days prior to any construction activity, and these reports are available for DFO comment. Reports are also provided to DFO at least 90 days prior to any construction works that have the potential to impact fish and fish habitat. Following construction, Construction Summary Reports are provided to the NWB, providing details of the final construction methods. All Design Reports and Construction Summary Reports provided to the NWB/DFO in 2023 are summarized in Section 2.1.

In 2023, no project infrastructure was designed or constructed in any fish-bearing stream or river.

In 2022, a design report was submitted to DFO in December, 2022, for construction of the Whale Tail Dike West Abutment Thermal Berm to be built in March-April, 2023. No comment from DFO was received regarding this design report, and construction proceeded as described in Section 2.1.1.1 of this report. While this project overprints the footprint of the Whale Tail Dike, it was partially constructed in an area of temporary flooding that was created when the water level of Whale Tail Lake was raised against the dike for water management purposes in 2019. However, this area is planned to be drawn down at closure (2026) and for the purposes of fish habitat offsetting calculations, it was not assumed to provide fish habitat during the period of temporary flooding.



No other works were designed or constructed in 2023 with the potential to impact fish or fish habitat.

### **SECTION 3 • VALIDATION OF FEIS-PREDICTED IMPACTS**

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In accordance with Condition 3.1.1 of DFO Authorization 16H-CAA-00370 and following Agnico’s discussions with DFO and KivIA in October 2021 on the content of this report, a review of FEIS-predicted impacts to fish and fish habitat is provided in Section 12.5.1.3 of the 2023 Meadowbank Complex Annual Report to the NIRB as a component of the Post-Environmental Assessment Monitoring Program. This approach was proposed in an effort to reduce redundancy in reporting and better focus this report on the implementation and effectiveness of the DFO specified avoidance and mitigation measures, as listed in Section 2 of the FAAs. It is noted that validation of FEIS predictions is not a condition of the DFO FAA for the Whale Tail Pit Expansion Project (20-HCAA-00275) but nevertheless the PEAMP evaluation includes the relevant assessment of predictions for that Project phase.

In line with Condition 3.1.1 of 16-HCAA-00370, the purpose of the PEAMP evaluation is to:

1. Summarize predicted residual impacts to fish and fish habitat valued components (VCs).
2. For each prediction, present historical and current-year results from relevant monitoring programs.
3. When current monitoring results do not support an impact prediction (i.e. current-year measured impacts are outside of the range of predicted impacts), a trend analysis is conducted to review baseline and all monitoring data to date. A discussion of those results is provided.
4. Previously reported trend analyses are updated, regardless of current year monitoring results. In this way, discussions and trend analyses will be presented in the PEAMP moving forward for all instances where impact predictions have historically been exceeded on one or more occasions.
5. Effectiveness of the monitoring programs at assessing impact predictions is discussed. A summary of the FEIS-planned mitigation measures for each VC is provided, along with a description of implementation in the current monitoring year. Where monitoring results indicate that impact predictions can no longer be supported, a description will be provided of the proposed adaptive management approaches.

## SECTION 4 • SUMMARY

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As described in Section 2 of this report, all of the measures and standards to avoid and mitigate serious harm to fish identified in Section 2 of FAA 16-HCAA-00370 and 20-HCAA-00275 were implemented as required in 2023.

With regards to **sediment and erosion control**, only one construction project occurring in 2023 had the potential to release sediment into waters frequented by fish (Whale Tail Dike Abutment Thermal Capping). Due to the shallow depth of water and the winter construction period, no free water was expected nor encountered during construction. As such, sediment control and monitoring measures were not specifically required. Sediment and erosion control for previous construction projects was monitored and maintained through the Freshet Action Plan and Erosion Management Plan. In 2023, mulch booms were installed in an area of managed overland flow (under-road culverts) to reduce turbidity and limit potential for TSS release to Kangislulik Lake. Visual inspections were conducted to ensure this mitigation measure was effective, and those results were confirmed through review of receiving environment water quality monitoring. As a result, no contingency mitigation was required.

With regards to **adherence to fish-out protocols**, no fish-outs were conducted at the Whale Tail Mine in 2023.

With regards to **end-of-pipe fish screens**, no new fresh-water intakes were installed in fish-bearing waterbodies in 2023.

With regards to **blast mitigation**, a Blast Monitoring (& Mitigation) Program is maintained as required by the DFO Authorizations, and in 2023 no blasts exceeded PPV or IPC limits.

With regards to **under-ice water withdrawal**, total under-ice water withdrawal from Nemo Lake for the winter of 2022-2023 was less than 10% of the available under-ice volume.

With regards to notification of **construction works with the potential to impact fish and fish habitat**, in 2022 Agnico sent to DFO one design report for construction works (Whale Tail Dike West Abutment Thermal Berm) that were scheduled for 2023, and did not receive comments. Construction proceeded in 2023 as described in Section 2.1.1 of this report. No other construction activities with potential to impact on fish bearing-waterbodies were designed or carried out in 2023.

Since no contingency mitigation was required in 2023, these and other mitigation measures implemented as part of the Project (Appendix A) were therefore considered effective in limiting impacts on fish and fish habitat to those authorized.

Further validation of all FEIS-predicted impacts is discussed in Section 12.5.1.3 of the 2023 Meadowbank Complex Annual Report to the NIRB as a component of the Post-Environmental

Assessment Monitoring Program, using current-year and historical monitoring results from all relevant programs.

## **APPENDIX A**

### **Summary of FEIS-Designed Mitigation Measures**

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2023 Report on the Implementation of Measures to Avoid and Mitigate Serious Harm to Fish  
Agnico Eagle Mines Ltd. – Meadowbank Complex

A complete list of the Project’s mitigation measures related to fish and fish habitat, as designed in the FEIS is provided in Table A-1, along with a commentary on implementation in 2023.

**Table A- 1. Mitigation measures described in the FEIS Addendum (Agnico Eagle, 2018; Table 3-C-7) to reduce impacts of the project to fish and fish habitat, and commentary on current implementation.**

<b>Project Activity</b>	<b>Planned Mitigation Measure (FEIS Addendum, Table 3-C-7)</b>	<b>Implementation (2023)</b>
Mine infrastructure footprint	Best management practices for erosion and sedimentation control (e.g., ground cover, silt fences and curtains, runoff management), where needed.	<b>Yes</b> – Freshet Action Plan
Site water management (road infrastructure) and Whale Tail Haul Road operation	Where possible, in-stream works will be constructed in winter when watercourses are frozen. In-stream works will be conducted according to DFO timing windows to avoid critical periods for fish.	<b>N/A</b> (no construction in fish-bearing watercourses in 2023)
	Mining staff will not be allowed to hunt or fish while on their work rotation; Agnico Eagle will develop and enforce “no hunting, trapping, harvesting or fishing policy” for employees and contractors, which will be consistent with the Meadowbank Mine.	<b>Yes</b>
	Watercourses will be inspected upstream and downstream of the crossings for, erosion, scour, and flow blockages	<b>Yes</b> – Road Inspection
	Regular inspection of the road to identify any areas where ponding of water along the road represents a risk, and installing additional culverts or drains to alleviate risk, where required.	<b>Yes</b> – Road Inspection
	Rock aprons at culvert inlets and outlets will provide erosion protection and prevent localized erosion from concentrated high velocity flows above the peak 1:10 year rainfall event.	<b>Yes</b> – Road Inspection
	Use of staggered culvert configuration, and removal of snow at the culvert inlet and outlet prior to the freshet to promote drainage and increased conveyance of flow during spring thaw and freshet.	<b>Yes</b> – Road Inspection
Earthworks: Drilling, blasting and excavation (includes Quarry/Borrow Pit) and Crushing activities	Only the required amount of explosive will be used as necessary for the amount of rock or borrow material to be blasted	<b>Yes</b> – Blast monitoring Program
	Applicable guidelines for set-back distances and quantities of explosives will be followed.	<b>Yes</b> – Blast monitoring Program
	Where possible, stockpiling of rock and fill from quarries and borrow sites will be placed such that surface water is not diverted through the piles with runoff to surface waterbodies; drainage from quarries will not flow directly into any waterbodies or watercourses.	<b>Yes</b> - Mine Waste Rock Management Plan
	Borrow and rock quarry activity will be at least 31 m from the high water mark of any waterbody	<b>Yes</b> - Mine Waste Rock Management Plan
	Borrow pits and quarry will be excavated and sloped for positive drainage	<b>Yes</b> - Mine Waste Rock Management Plan
	Quarries will be inspected on a regular basis to monitor water ponding, particularly at spring melt.	<b>Yes</b> - Mine Waste Rock Management Plan
	Drainage from borrow pits and quarry will not flow directly into any waterbodies or watercourses.	<b>Yes</b> - Mine Waste Rock Management Plan
	When there is ponded water in the rock quarry or borrow pits that could enter a waterbody or watercourse, a water quality sample will be collected and analyzed, and the	<b>Yes</b> - Mine Waste Rock Management Plan

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Project Activity	Planned Mitigation Measure (FEIS Addendum, Table 3-C-7)	Implementation (2023)
	results used to determine appropriate mitigation measures (e.g., prevent runoff from entering waterbody or watercourse).	
	To avoid and mitigate Serious Harm to Fish, Agnico Eagle will continue to adhere to blasting requirements and will continue to use practices consistent with those used at the Meadowbank Mine. Agnico Eagle will engage with DFO, when required.	<b>Yes</b> – Blast monitoring Program
	Use of non-acid generating material at watercourse crossings; testing will verify lack of acid rock drainage and metal leaching potential.	<b>Yes</b> - Mine Waste Rock Management Plan
	Any PAG or high metal leaching waste rock will be segregated at source and placed into designated areas within the waste rock storage facilities.	<b>Yes</b> - Mine Waste Rock Management Plan
General Construction /Decommissioning Activities	Best management practices for erosion and sedimentation control (e.g., silt curtains, runoff management, armouring of banks), where needed to limit disturbance to lakes and streams.	<b>Yes</b> - Mine Waste Rock Management Plan
	In-stream works will be in winter, when possible, to avoid increased TSS and turbidity, and changes to water quality	<b>Yes</b>
	Where applicable, runoff from construction / decommissioning activities will be captured and managed to minimize suspended solids (e.g., discharged into an attenuation pond to settle out suspended sediments)	<b>Yes</b> – Design report
	Where possible, in-stream works will be constructed in winter when watercourses are frozen. In-stream works will be conducted according to DFO timing windows to avoid critical periods for fish.	<b>Yes</b>
	Bridge abutment installation will span majority of the active channel (i.e., outside of the high-water mark), and if feasible, construction will occur in winter	<b>N/A</b> – no bridge installation in 2023
	Disturbed areas along the streambanks will be stabilized and allowed to revegetate upon completion of work	<b>Yes</b> – streambanks allowed to revegetate
Site Water Management	A Surface Water Management Plan will be implemented	<b>Yes</b> – Water Management Plan
Dike Construction / Decommissioning causing release of sediment	Use of the Dewatering Dikes, Operations, Maintenance and Surveillance Manual developed by Agnico Eagle.	<b>Yes</b> - Water management infrastructure OMS
	Best management practices for erosion and sedimentation control (e.g., ground cover, silt fences and curtains, runoff management), where needed.	<b>Yes</b> – Water Quality Monitoring Plan for Dike Construction and Dewatering + Freshet Action Plan
	During summer construction, turbidity curtains will be installed near the portion of the alignment where dike construction will occur, which is an approach demonstrated at other northern mining projects	<b>Yes</b> – Water Quality Monitoring Plan for Dike Construction and Dewatering
	Non- potentially acid generating, chemically inert material (i.e., granite) will be used to construct the dike to prevent leaching of metals into water.	<b>Yes</b> – Design construction report
	Turbidity monitoring will be conducted at designated locations throughout open water and under-ice conditions, within and outside of the zone of the turbidity curtains. In the event that TSS concentrations approach monitoring thresholds, a review of local conditions and activities will be conducted.	<b>Yes</b> – Water Quality Monitoring Plan for Dike Construction and Dewatering

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Project Activity	Planned Mitigation Measure (FEIS Addendum, Table 3-C-7)	Implementation (2023)
General mining activities and use of vehicles causing fugitive dust & other air emissions	Implement dust control measures, if needed on mine roads.	<b>Yes</b> – Air Quality and Dustfall Monitoring Plan
	Equipment and vehicles will comply with relevant non-road emission criteria at the time of purchase	<b>Yes</b> – Air Quality and Dustfall Monitoring Plan
	Enforcing speed limits (maximum speed 50 km/h) to suppress dust production.	<b>Yes</b> – Whale Tail Transportation Management Plan
	If deemed necessary through monitoring, dust from roads will be managed through use of dust suppressant	<b>Yes</b> – Air Quality and Dustfall Monitoring Plan
	The running surface of the road will be maintained thereby reducing the generation of dust.	<b>Yes</b> – Air Quality and Dustfall Monitoring Plan
	Adherence to the Air Quality and Dustfall Monitoring Plan	<b>Yes</b> – Air Quality and Dustfall Monitoring Plan
	Most personnel arriving at or leaving the site will be transported by bus, thereby reducing the amount of traffic (and dust).	<b>Yes</b>
	Adherence to water quality monitoring and adaptive management in the CREMP to detect changes in water quality	<b>Yes</b> - CREMP
	Construction equipment and trucks will be equipped with industry-standard emission control systems.	<b>Yes</b>
	Compliance with regulatory emission requirements will be met.	<b>Yes</b>
	Exhaust emissions from non-road vehicles will be managed through regular and routine maintenance of vehicles	<b>Yes</b> – Maintenance logs
SO <sub>2</sub> emissions from non-road vehicles and stationary equipment will be reduced through the use of low emission diesel fuel.	<b>Yes</b>	
Waste Rock Storage Areas and Stockpiles	A Water Management Plan has been developed and describes the containment and management of contact water on-site.	<b>Yes</b> – Water Management Plan
	Contact water will be monitored and managed through the Storage and Attenuation Ponds. The IVR Diversion will divert clean runoff from the upper watershed of the IVR Pit to the Nemo Lake watershed.	<b>Yes</b> – Water Management Plan
	Seepage will be captured at sumps and diverted to the Attenuation Pond.	<b>Yes</b> – Water Management Plan
	Facility discharge water will be monitored for water quality, and treated as required, prior to discharge	<b>Yes</b> – Water Management Plan
	Performance of the dikes will be monitored throughout their construction and operating life.	<b>Yes</b> – Water Management Plan
Site Water Management	Manage pumping rates so total annual discharge from Whale Tail and Nemo Lake does not drop below the 10-year dry condition	<b>Yes</b> – Water Management Plan
	Water withdrawal rate(s) will be controlled to avoid effects on the source water lake(s).	<b>Yes</b> – Water Management Plan
	Capture and reuse site water to reduce freshwater requirements	<b>Yes</b> – Water Management Plan
	Pumped water from the dewatered lakes will be directed through properly designed structures to prevent erosion in the receiving waterbodies	<b>Yes</b> – Water Management Plan
	Pumped discharge will be directed to the lake environment, and not directly to outlets, to attenuate flow changes	<b>Yes</b> – Water Management Plan

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Project Activity	Planned Mitigation Measure (FEIS Addendum, Table 3-C-7)	Implementation (2023)
	Best management practices for erosion and sedimentation control (e.g., silt curtains, runoff management, armouring of banks, sloping of banks), where needed	<b>Yes</b> – Water Management Plan
	Water Management Plan will be implemented	<b>Yes</b> – Water Management Plan
	A fish-out of the diked area of Whale Tail and Mammoth lakes, and smaller waterbodies in the northeast area for the Expansion Project, will be conducted before and during dewatering phase; the fish-out plan will be designed and implemented in consultation with DFO and local Inuit communities, and will consider recommendations in Tyson et al. (2011).	<b>NA</b> - fish-out complete
	Appropriately sized fish screens, which meet DFO guidelines, will be fitted to pumps to limit fish access and to limit fish entrained to the smaller species and life stages	<b>Yes</b>
	Runoff and seepage from the Project site will be diverted to sumps and the attenuation pond (and treated if required) prior to release.	<b>Yes</b> – Water Management Plan
	Water quality in attenuation ponds will be monitored and managed such that the discharge meets discharge limits.	<b>Yes</b> – Water Management Plan
	Potential acid generating rock and metal leaching waste rock will be segregated at source and placed into designated areas within waste rock locations	<b>Yes</b> - Mine Waste Rock Management Plan
Fuel Storage and use (includes Chemical and Hazardous material Storage and Explosives Storage Area)	The Spill Contingency Plan will be implemented, including ready access to an emergency spill clean-up kit for cleaning up any spills	<b>Yes</b> - Spill Contingency Plan
	Hazardous materials and fuel will be stored according to regulatory requirements to protect the environment and workers and will be stored at the Meadowbank Mine.	<b>Yes</b> – Hazardous Management Plan
	Storage tanks (e.g., fuel, engine oil, hydraulic oil, and waste oil and coolant) will be double walled, or located in lined and bermed containment areas	<b>Yes</b> – Hazardous Management Plan
	Hazardous wastes will be temporarily stored at Whale Tail Pit site and then transported to the Meadowbank Mine in appropriate containers to prevent exposure until they are shipped off site to an approved facility	<b>Yes</b> – Hazardous Management Plan
	Individuals working on site and handling hazardous materials will have appropriate training (e.g. WHMIS)	<b>Yes</b> – Hazardous Management Plan
	Soils from petroleum spill areas will be deposited at the Meadowbank Mine Landfarm	<b>Yes</b> – Landfarm Management Plan
	Equipment will be re-fueled, serviced, or washed away from the watercourse crossings.	<b>Yes</b> – best practices
	Fuel, lubricants, hydraulic fluids, and other chemicals will be stored at least 31 m away from the high water mark of any waterbody.	<b>Yes</b> – Weekly Inspection
	Construction equipment will be regularly maintained	<b>Yes</b> – Maintenance Logs
	Emergency spill kits will be available wherever toxic materials or fuel are stored and transferred	<b>Yes</b> – Spill Contingency Plan
Enforced speed limits	<b>Yes</b>	
Mining Activities and Water Management – effluent release	Adherence to Water Management Plan	<b>Yes</b> – Water Management Plan
	Runoff and seepage from the Project site will be diverted to sumps and the attenuation pond	<b>Yes</b> – Water Management Plan
	Treated sewage will be piped to the attenuation pond	<b>Yes</b> - Completed



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	Water quality in Attenuation Ponds will be monitored and managed such that the discharge entering Mammoth Lake, Whale Tail Lake, or the alternative discharge locations (Lake 1 or Lake 5) meets discharge limits. If water quality does not meet discharge limits, it will be circulated and re-treated.	<b>Yes</b> – Water Management Plan