

Appendix 31

Meadowbank and Whale Tail 2025 Blast Monitoring Report

ANNUAL REPORT MEMORANDUM

Agnico Eagle Mines Ltd Meadowbank Complex

SUBJECT: 2025 Meadowbank and Whale Tail Blast Monitoring Report for the Protection of Nearby Fish Habitat

1. Introduction and Objectives

In accordance with NIRB Project Certificate No.004 Condition 85 and Project Certificate No. 008 Condition 22, Agnico Eagle Meadowbank Complex developed a blasting program which complies with *The Guidelines for the Use of Explosives In or Near Canadian Fisheries Water*¹ (Wright and Hopky, 1998) as modified by the DFO for use in the North and adhere to guidance provided in *Monitoring Explosive-Based Winter Seismic Exploration in Waterbodies*² (Cott and Hanna, 2005). As a result, Agnico Eagle conducts monitoring to evaluate blast related peak particle velocity (PPV) and instantaneous pressure change (IPC) to protect nearby fish bearing waters.

The detonation of explosives in or near water produces compressive shock waves that can cause significant impacts to the swim bladders of fish, rupture other internal organs and/or damage or kill fish eggs and larvae. In addition, the effects of the shock waves can be intensified in the presence of ice. Consequently, the guidelines for the Use of Explosives in or Near Canadian Fisheries Water (Wright and Hopky, 1998) have been developed by DFO to protect fish and fish habitat from works or undertakings that involve explosives in or near fisheries waters. Guidance provided in *Monitoring Explosive-Based Winter Seismic Exploration in Waterbodies* (Cott and Hanna, 2005) was also followed. It includes the following requirements:

1. No explosive is to be detonated in or near fish habitat that produces an instantaneous pressure change (IPC) greater than 100 kPa in the swim bladder of a fish; representatives from DFO requested that Agnico Eagle use a value of 50 kPa instead of 100 kPa; and
2. No explosive is to be detonated in or near fish habitat that produces a peak particle velocity greater than 13 mm/s in a spawning bed during the period of egg incubation (for lakes near the Meadowbank Complex, it takes place between August 15 and June 30).

Peak particle velocity (PPV) and overpressure monitoring data were recorded throughout 2025 during blasting activities at Whale Tail pit, IVR pits and Underground operations for the protection of fish. Additionally, blast monitoring resumed at the Meadowbank Mine site in February 2025 during the construction of a water management infrastructure in the former Quarry 23. A specific Blast Monitoring Program was submitted to DFO and approved in January 2025 regarding this construction activity. The locations of the blast monitoring stations on surface in 2025 are detailed in Table 1 and 2 and Figure 1 and 2, respectively.

¹ Wright, D.G., and G.E.Hopky. *Guidelines for the use of explosives in or near Canadian fisheries Water*. 1998. Can. Tech.Rep. Fish.Aquat. Scie.2107: IV+34P.

² *Monitoring Explosive-Based Winter Seismic Exploration in Waterbodies, NWT 2000-2002 guidelines*.

Table 1: 2025 Surface Blast Monitoring Stations – Whale Tail Mine

Station	Easting	Northing	Status	Period
IVR Pit (Nemo Lake Station)	606,588	7,256,993	Active	August 2020 – Present
IVR Pit (Nemo Lake Station 2)	606,673	7,256,972	Active	May 2022 – Present
Whale Tail Pit (Kangislulik Lake Station 3)	605,872	7,255,000	Inactive	October 2022 – February 2025
Whale Tail Pit (Kangislulik Lake Station 4)	605,913	7,255,160	Active	February 2025 – Present

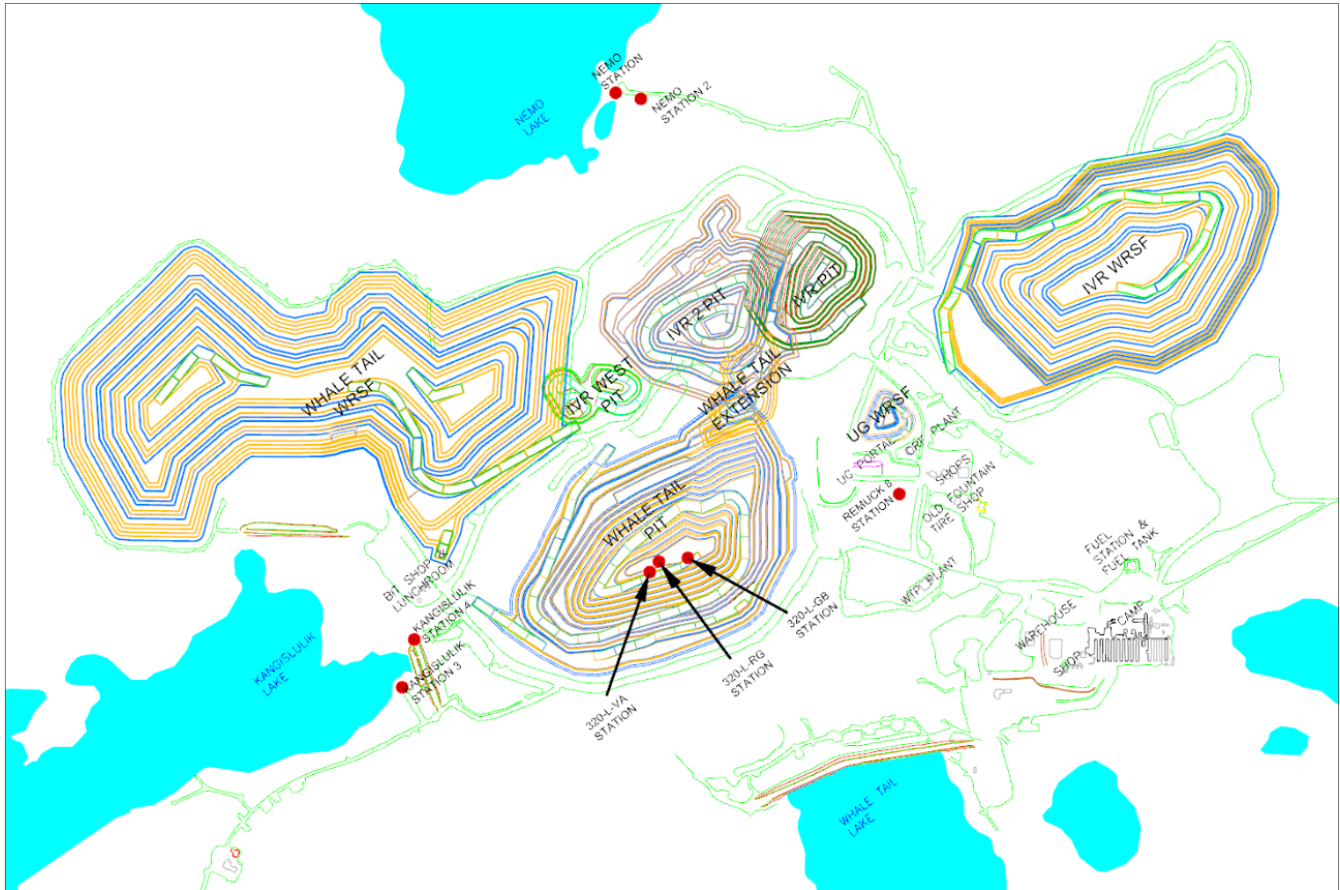


Figure 1 – Whale Tail Blast Monitoring Stations

Table 2: 2025 Surface Blast Monitoring Station – Meadowbank Mine

Station	Easting	Northing	Status	Period
Meadowbank Mine (Airstrip Station)	637,232	7,214,956	Active	February 2025 – Present

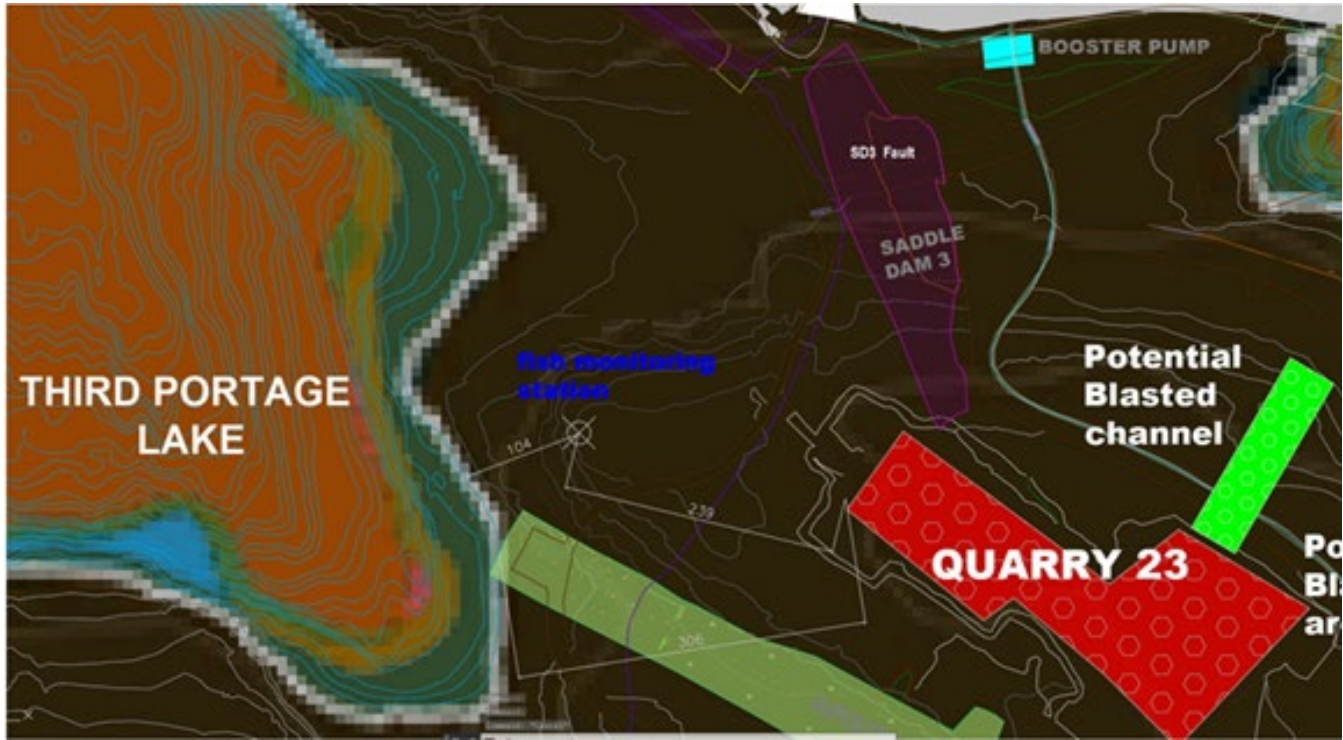


Figure 2 – Meadowbank Mine Blast Monitoring Station

2. Methods

2.1- Blast Monitoring

Blasts were monitored using certified seismographic monitoring units which are fully compliant and are annually calibrated with the international Society of Explosives and Engineers performance specifications for blasting seismographs.

This instrument measures transverse, vertical and longitudinal ground vibrations. Transverse ground vibrations agitate particles in a side-to-side motion. Vertical ground vibrations agitate particles in an up and down motion. Longitudinal ground vibrations agitate particles in a back-and-forth motion. The result is the Peak Vector Sum (PVS) and is the resultant particle velocity magnitude of the event:

$$PVS = \sqrt{T^2 + V^2 + L^2}$$

Where:

T = particle velocity along the transverse plane (mm/s)

V = particle velocity along the vertical plane (mm/s)

L = particle velocity along the longitudinal plane (mm/s)

The instrument is installed as per the model specifications and all monitoring follows the Agnico Eagle Blast Monitoring Program.

2.2- Data Analysis

In 2025, the engineering department continued the work established in previous years of documenting blast patterns, sequences, and detonation results leading to both accurate material documentation and blast design optimization.

The blast monitoring data was screened to ensure blast PPV and IPC monitoring results corresponded to a single blast event. Data is collected for each blast date and may include a composite of blast patterns. As a result, data may include multiple blast patterns that could have occurred during the same monitoring event (i.e., a single PPV and IPC value for 3 blast patterns). The data was screened to remove all redundant data points, such as replicate readings.

2.3- Results, Discussion and Conclusions

Historical PPV and IPC blast monitoring exceedances are presented in Table 3 and results in Table 4. Meadowbank site blasting activities resumed in 2025 with the construction of the water management infrastructure construction, and thus historical information is excluded from Table 3. Blast monitoring results are reviewed after each blast and a blast vibration mitigation (Investigation & Corrective Measures) plan begins immediately, if the vibrations or the overpressure exceed the guidelines.

From January 1st to December 31st 2025, 199 surface blasts were executed at the Whale Tail Mine site, with 28 blasting events occurring in both IVR and Whale Tail pits simultaneously, giving a total of 227 recordable events. For the period of February 1st to May 31st 2025, 18 surface blasts were executed at the Meadowbank Mine site. All vibration data collected from active monitoring stations outlined in Table 1 and Table 2 during this period indicate no exceedance with the aforementioned Guidelines.

At the IVR Pit, 95 blasts were monitored. There were zero (0) blasts exceeding the PPV concentration DFO limit of 13 mm/s and zero (0) blasts exceeding the IPC measurement DFO limit of 50 kPa.

At the Whale Tail Pit, 132 blasts were monitored. There were zero (0) blasts exceeding the PPV concentration DFO limit of 13 mm/s and zero (0) blasts exceeding the IPC measurement DFO limit of 50 kPa.

For the Underground mine, 18 blasts were monitored. There were zero (0) blasts exceeding the PPV concentration DFO limit of 13 mm/s and zero (0) blasts exceeding the IPC measurement DFO limit of 50 kPa. It is to note that only underground blasts located within 950 meters of Kangislulik Station 4 have triggered a recording since anything further from this distance would not trigger any recording from the station's sensor.

At the Meadowbank Mine, 18 blasts were monitored. There were zero (0) blasts exceeding the PPV concentration DFO limit of 13 mm/s and zero (0) blasts exceeding the IPC measurement DFO limit of 50 kPa.

Table 3: Whale Tail Mine PPV and IPC exceedances for the period 2021-2025

Year	PPV exceedances	IPC exceedances
2021	0	0
2022	2	0
2023	0	0
2024	1	0
2025	0	0
Total	3	0

As an effort to uphold continuous improvement within the Drill and Blast department, the mining team has worked on improving several work standards and field implementations to ensure compliance. In summary, these items are as follows:

Item: Recalibrated vibration model with 2025 monitored data.

Objective: Continuously adapt the predictive accuracy of the vibration model by utilizing the most recent and representative data collected from previous blasts.

Item: Reduced maximum charge per delay in geological sensitive areas.

Objective: Known Komatiite areas consist of more brittle and delaminated rock, allowing for an easier transfer of shockwaves, hence a need for a higher vibration control. Timings are designed to mitigate to the lowest possible value of charge per delay, leading to a minimized value of propagatable vibrations.

In addition to the items listed above, each blast design is subject to an approval checklist, that includes a vibration review and timing consideration, completed by a minimum of two (2) qualified people (Designer and Approver). The blasting direction is also considered in the design process to limit shockwave propagation towards sensitive areas.

Vibration prediction, or modeling, is also completed for each blast. The modeling is based on using historical seismograph data to help predict expected vibrations from blasts of similar size, location, geometry, and geology. It is calibrated to overestimate vibration in order to maintain a factor of safety within the calculated values.

In 2025, for Whale Tail Pit, the average PPV was 1.63 mm/s with a maximum of 6.36 mm/s. For IVR Pit, the average PPV was 2.53 mm/s with a maximum of 7.26 mm/s. For the Underground mine, only measured at the surface Kangislulik Station 4, the average PPV was 2.69 mm/s with a maximum of 11.27 mm/s. For the Meadowbank Mine, the average PPV 3.96 mm/s with a maximum of 6.97 mm/s. See Table 4 for detailed information.

Table 4: Maximum and average PPV and IPC per year for 2021-2025

Location	Parameters	2021	2022	2023	2024	2025
Whale Tail Pit	Max PPV (mm/s)	12.7	11.05	6.24	8.42	6.36
	Average PPV (mm/s)	1.6	3.36	2.42	2.45	1.63
	Max IPC (kPa)	14.90	12.93	7.30	9.85	7.45
	Average IPC (kPa)	1.40	3.93	2.90	2.87	1.90
IVR Pit	Max PPV (mm/s)	8.6	17.37	7.37	7.35	7.26
	Average PPV (mm/s)	1.22	3.98	3.01	1.85	2.53
	Max IPC (kPa)	10.10	20.33	8.62	8.60	8.50
	Average IPC (kPa)	1.20	4.66	3.52	2.16	2.96
UG Mine ³	Max PPV (mm/s)	N/A	N/A	N/A	15.97	11.27
	Average PPV (mm/s)	N/A	N/A	N/A	3.88	2.69
	Max IPC (kPa)	N/A	N/A	N/A	18.69	13.19
	Average IPC (kPa)	N/A	N/A	N/A	4.54	3.15

³ No data is available prior to May 2024 for the Underground blasting operations at a surface monitoring station.

Location	Parameters	2021	2022	2023	2024	2025
Meadowbank Mine ⁴	Max PPV (mm/s)	N/A	N/A	N/A	N/A	6.97
	Average PPV (mm/s)	N/A	N/A	N/A	N/A	3.96
	Max IPC (kPa)	N/A	N/A	N/A	N/A	8.16
	Average IPC (kPa)	N/A	N/A	N/A	N/A	4.63

In conclusion, Agnico Eagle is committed to keeping the vibrations below the limit authorized and to monitoring all blasts to fully comply with regulations.

⁴ No data is available prior to February 2025 for the Meadowbank Mine blasting operations at this surface monitoring station