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Jennifer Winsor
Senior Environmental Engineer
Environmental Approvals Branch
Manitoba Environment & Climate Change
Box 35, 14 Fultz Boulevard
Winnipeg, MB R3Y 0L6

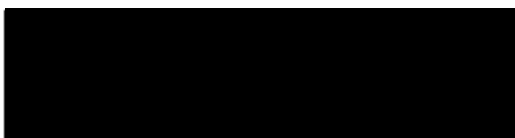
Re: **Updated Notice of Alteration for 378 Backfill Plant and Tailings Dewatering
Environment Act Licence 960VC**

Ms. Winsor,

Please accept the enclosed Notice of Alteration (NOA) Form and Detailed Report following ongoing dialogue between Vale Canada Limited (Vale) and Manitoba Environment & Climate Change relative to two prior alterations requests to Environment Act Licence 960VC. This updated NOA package brings together information from the Notice of Alteration submitted by Vale in March 2023 proposing the installation and operation of a modular backfill plant to support its T3 Mine, as well as subsequent request to consider additional alterations that would see the installation of tailings dewatering facility at the Thompson Mill such that dewatered tailings could supplement the use of alluvial sands at the 378 Backfill Plant.

Should you have any questions or concerns, please do not hesitate to reach out at your convenience.

Regards,



Allison Merla

Notice of Alteration Report
Environment Act License 960VC

378 Backfill Plant & Associated Infrastructure
Use of Dewatered Tailings for Backfill

Preface

The following Notice of Alteration Report serves to bring together two previous requests made by Vale Canada Limited (Vale) to Manitoba Environment & Climate Change relative to alterations to the backfill operations needed to support the T3 Mine in Thompson, Manitoba. A Notice of Alteration was submitted in March 2023 proposing the installation and operation of a modular backfill plant to support T3 Mine and to be located adjacent to the 378 Return Air Raise on existing site footprint area. Subsequently, a request was made by Vale to consider additional alteration that would see the construction of tailings dewatering and storage facility at the Thompson Mill, such that dewatered tailings could supplement the use of alluvial sands at the 378 Backfill Plant.

In November 2024, Manitoba Environment & Climate Change requested that Vale submit an updated package for review that includes both the backfill plant and the dewatered tailings facilities to a combined Notice of Alteration Report that identifies the changes to the site, any potential environmental impacts and, if any, the mitigative measures that will be taken.

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1.0 Alteration Description

A modular backfill plant utilizing locally sourced alluvial sands is currently in use at Vale's T3 Mine and replaced a historical batch plant that was taken out of service as it no longer met the needs of the mining operations.

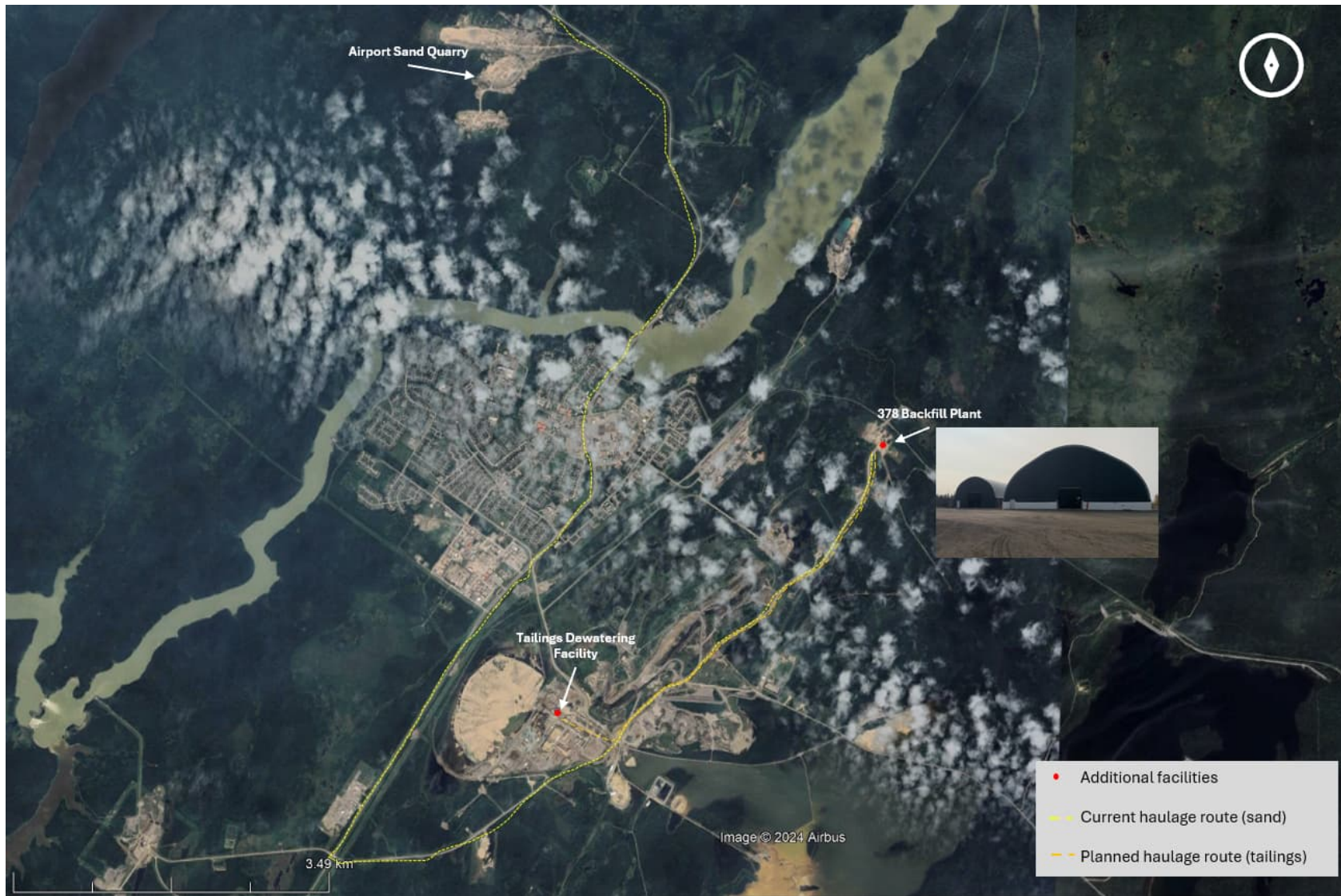
Note that the backfill plant is needed to support ongoing operations at Vale's T3 Mine. While originally contemplated as part of a mine expansion project that Vale has not yet advanced, the 378 Backfill Plant was identified as a component required to ensure T3 operations could safely achieve the existing life of mine plan, exclusive of any mine extension. Backfill deficits were identified in review of the operations which would put the life of mine plan at risk, and the installation and operation of this facility is needed to allow for existing operations to continue as planned.

The 378 Backfill Plant is located adjacent to the 378 Return Air Raise and was sited on existing disturbed footprint in the area. The 378 Backfill Plant is a mobile Aran plant that is capable of mixing a combination of alluvial sand, classified tailings, water, and binder at specified ratios and at an average throughput of 200 ton/hour.

Currently, the 378 Backfill Plant utilizes alluvial sand in its process, with the sand being sourced from the Thompson Airport Sand Quarry (Airport Quarry). The Airport Quarry lease was transferred to Fisher Wavy, who provide the sandfill and currently operate the 378 Backfill Plant for Vale. The current backfill mix consists of approximately 9.1% general use limestone cement and approximately 90.9% alluvial sand. The haulage route bringing sand from the quarry to the backfill plant is approximately 20km and includes travel along public roadway (Highway 6) as well as Vale's internal site roads (turning off the highway onto the Birchtree haulage route into the Thompson complex). Sand is offloaded into a dedicated storage facility, and material is fed directly from the storage tent to the backfill plant ensuring enclosed material handling operations.

To improve sustainability within its backfilling operation, Vale proposes to dewater tailings generated from its milling operations in Thompson and recycle this waste product for use in underground backfill. As noted above, backfill used to support underground mining operations at T3 is currently prepared using sand imported to the site from the Airport Quarry, and waste tailings from the milling process are disposed of within a Tailings Storage Facility. The 378 Backfill Plant can accept alluvial sand, dewatered classified tailings, or a combination of the two, and the benefits from the use of tailings in backfill include reducing the need for new resource extraction to source sand, reducing haulage on public roadways, and providing an alternate use for waste tailings that would otherwise need to be deposited into permanent storage. No increases to milling capacity are required to support the supply of dewatered tailings to the backfill plant, rather it will utilize existing tailings waste generated.

Figure 1 below provides an overview of the siting of facilities and activities described within this Notice of Alteration, including the location of the 378 Backfill Plant and the tailings dewatering facility, as well as respective haulage routes to the backfill plant for each feed type.



2.0 Scope of Alteration

The scope to alteration includes both operation of the 378 Backfill Plant currently using alluvial sand feed, as well as the planned recycling of waste tailings for backfill.

Summary scope includes:

- Installation and operation of a modular Aran backfill plant and associated tented buildings,
- Haulage of alluvial sand from the Airport Quarry to the 378 Backfill Plant,
- Construction of a tailings dewatering and storage facility at the Thompson Mill, and
- Haulage of dewatered tailings from the mill to the storage facility at the 378 Backfill Plant

Appendix A includes an overview of the conceptual plan for the backfill plant and tailings dewatering facilities, with Appendices B and C providing specifications and drawings specific to the respective alterations.

The 378 Backfill Plant was brought to site and put into service on August 28, 2024. The 378 Backfill Plant and fabric Quonset buildings are located on Vale's Thompson Complex, adjacent to the 378 Return Air Raise and within a smaller lease footprint provided to Fisher Wavy who operate the plant for Vale. Vale understands that it is responsible for the development alteration and any potential environmental changes and works closely with its contractor on operational and environmental needs.

Following commissioning of the 378 Backfill Plant utilizing alluvial sand, Vale began to look forward towards replacing some of the sandfill with use of classified tailings. Detailed engineering and procurement for the tailings dewatering facility required at the Thompson Mill to support this changeover were initiated in 2023. Construction on the foundation of the facility and erection of the building has begun, with a target date for the plant to be operational by August or September 2025.

The tailings dewatering facility will be a separate building adjacent to the existing mill that will include dewatering equipment, as well as tailings storage and loadout areas. It will be a pre-engineered building with concrete floors and push up walls in the stockpile bays. Tailings will be dewatered using horizontal vacuum belt filtration, with classified tailings slurry pumped directly from the dewatered tailings cyclone underflow sump in the mill building to the filter feed chute of the horizontal vacuum belt. The dewatered tailings will be stored in two stockpiles within the building, fed by a stacking conveyor from the belt filter. Filtrate and seal water generated in the tailings dewatering facility will be returned to a sump within the mill building for ultimate disposal in the Tailings Storage Facility using the existing wastewater system. The loadout will be located in a separate area inside the tailings dewatering facility where a loader will load haul trucks from the stockpile; the truck bay will include two overhead doors and be a drive through facility to eliminate the need for trucks to back up and to minimize potential track out. Track out control procedure will be implemented at the facility by operations.

Following loading within the tailings dewatering facility, haul trucks will transport the dewatered tailings cake to the 378 area via internal Vale plant roads. It is anticipated that trucks used for hauling will be John Deere 310 articulated trucks, or similar, with truck boxes heated from the truck exhaust to mitigate freezing of dewatered tailings during transport. The tailings will be dewatered to reach a moisture content of approximately 15%, which will mitigate against the potential for fugitive emissions from the tailings material during transport, however they will be susceptible to freezing in winter conditions.

Dewatered tailings will be offloaded to the fully enclosed pre-engineered building at the 378 Backfill Plant. Surge storage in the existing building is available for approximately 2000 tons of dewatered tailings, and the tailings will be fed directly into the backfill plant for use underground.

3.0 Summary of Potential Environmental Effects

Any potential impacts from the scope of backfill alterations will be mitigated through design, best practices and existing Vale standards and procedures. In considering potential effects resulting from the proposed alterations, this was done in the context of effects from the existing development at Vale's Thompson operations and considered effects on the terrestrial, aquatic, and atmospheric environments. The alteration will not significantly change the environmental effects of the operations.

3.1 Health Effects

Vale's contractor Fisher-Wavy operates the 378 Backfill Plant. Health, safety, environment and hygiene procedures, as per their company policies, will be developed to mitigate potential risk to their workers.

For the dewatered tailings facilities and activities by Vale personnel, all applicable Vale health and safety policies and procedures will apply to Vale employees and contract workers (and anyone else working on site). Vale's occupational health programs include measuring and monitoring workroom environment and personnel exposure.

3.2 Terrestrial Environment

The proposed alteration does not involve major excavation, nor will there be new footprint required. The modular backfill plant and the pre-engineered storage tent were mobilized to existing site footprint at the 378 RAR and 378 Shaft area. The tailings dewatering facility will also be constructed on the existing site footprint immediately adjacent to the mill building. Truck movement, both current movement of sand and planned movement of tailings, will use existing internal haulage roads to reach the 378 backfill plant.

Sand sourcing for backfill included the expansion of the existing Airport Quarry, within the existing lease area and including accounting of the areas cleared and grubbed to support the expansion. Sand is offloaded to an enclosed storage building at the 378 Backfill Plant, with all material handling then enclosed to mitigate any potential track out.

Tailings will be dewatered, handled and stockpiled inside fully enclosed buildings, with no material handling activities to occur outdoors. All material handling, including loading and unloading of haulage trucks, will occur with the doors to the handling facilities closed to mitigate any potential for entrainment outside of the building. And concrete floors and walls around stockpiles and handling areas will mitigate against potential for impacts to the ground.

Spill containment and fire prevention measures are planned for both buildings to reduce the likelihood and severity of potential environmental incidents that could affect the terrestrial environment. Existing site control measures and procedures exist to address issues should they arise.

3.3 Aquatic Environment

The 378 Backfill Plant, as well as the internal haul route, are located on existing site footprint and within the catchment areas that contain and direct all surface contact waters to the existing wastewater management system. The fabric Quonset buildings at the 378 Backfill Plant include concrete pad foundations, and the tailings dewatering facilities will also include concrete foundations. Any process water generated from the backfill are returned down hole to the underground work environment for subsequent collection and pumping up to the wastewater management system.

The planned tailings dewatering and storage facilities at the mill, as well as the haulage route, are also all located within the existing plant footprint and within catchment areas that contain and direct surface contact waters to the existing wastewater management system.

As such, all wastewaters from the alterations will be transmitted to the Tailings Storage Facility using existing systems, and, following treatment, effluent discharge will ultimately be through the weir at the outlet of Area 5. The modification will not increase the amount of wastewater to be managed, nor will it affect influent water quality within the Tailings Storage Facility or the final effluent discharge quality.

Dewatering tailings offers a sustainable recycling option for the solids fraction of tailings that avoids disposal to the Tailings Storage Facility and provides then additional capacity as well as freeboard within the facility. And management of the dewatered liquid fraction offers no change from the current management of the water fraction of slurry tailings within the Tailings Storage Facility.

3.4 Atmospheric Environment

Prior to installation of the 378 backfill plant, a previous cemented rockfill slurry batch plant provided backfill to areas of T3 mine. The new plant then serves to replace and not add to suite of backfill services at the Thompson complex. The 378 Backfill Plant includes a baghouse to collect point source emissions from the process.

Vale also considered the potential for fugitive dust emissions from truck haulage of sand, and subsequently of dewatered tailings from the mill, to the backfill plant storage building. Haulage of both feed materials includes travel on internal Vale roads; all internal site roads have dust control measures applied, including sweeping of the paved portion of the haul route at the main plant site and application of calcium chloride to the unpaved haul road from T1 to T3. The haulage of sand from the Airport Quarry to the Birchtree haul road is along existing well-maintained roadways suited to heavy industrial traffic. There have been no concerns raised to Vale by any level of government related to increased truck traffic nor emissions.

There are no expected changes to air emissions from dewatering of tailings for use as backfill. All material handling will occur in fully enclosed facilities, and the dewatered tailings will carry a target moisture content of 15-16% therein precluding potential for fugitive emissions during material handling or haulage.

The transition to use of dewatered tailings for backfill will also see the haulage route constrained to be entirely within the Thompson operations complex and thus reduce any potential for dust generation in the community when compared to the existing practice of hauling sand for backfill from offsite along Highway 6 (despite no complaints having yet been registered related to sand haulage). The onsite potential for dust generation from haulage will also be reduced, as the current maximum haulage rate of sand to the backfill plant is six trucks per hour hauling 34-36 tons of sand, while the proposed alteration will see a maximum expected rate of five trucks per hour hauling 30 tons of dewatered tailings.

3.5 Noise

There are no changes to noise levels expected from this modification. Tailings dewatering and material handling will occur within enclosed facilities within the existing plant site and are expected to have negligible impact on existing plant noise levels. Truck haulage will be along the existing haulage route that is away from community and internal to the Thompson operations.

3.6 Potential for Community Impact

Given that all material handling will occur indoors with mitigative measures included to the design of the storage and handling facilities and equipment, and also given the moisture content of the tailings material which precludes fugitive emission generation, changes to air and noise emissions profiles within the community are not expected.

Further, the use of dewatered tailings for backfill will reduce the need for sand haulage into the Thompson operations from the Airport Quarry. This will reduce truck traffic in the community currently providing sand delivery to the 378 backfill plant.

3.7 Closure

The 2024 Thompson Mine Closure Plan includes the 378 backfill plant. Section 5.4.2 of the Closure Plan provides a description of backfill practices and includes the following text:

"A new plant is being engineered and constructed to provide backfill to the T3 Mine. The plant is called the 378 Hydraulic Backfill Plant and it is a Fisher-Wavy mobile unit that Vale is building on a pad. There is an accompanying storage facility for stockpiling alluvial sand and/or dewatered tails to supply to the plant. The plant is adjacent to the existing T3 Mine 378 headframe, cement silo, and rockfill plant."

The tailings dewatering facility proposed to be added to the Thompson Mill has not yet been accounted for in the Thompson Closure Plan but will be incorporated to a future Closure Plan update. At this time, it is unclear whether a Notice of Expansion was previously submitted, but Vale will provide this Notice of Alteration detailed report to Manitoba Mines and communicate intent to include, upon NOA approval, the dewatered tailings facilities to the next Closure Plan amendment.

4.0 Conclusion

Vale trusts that the preceding report meets the requirements in published guidance to provide a detailed description of the proposed changes to the development as licensed and to describe any potential environmental effects (specifically including consideration for effects on the terrestrial, aquatic and atmospheric environments) and human health effects from the alteration. It is Vale's assessment that there will be no significant adverse effects from the proposed alterations. We also hope that this report provides responses to additional questions received through Notice of Alteration reviews related to leased lands, Closure Plan, and concerns from other regulators.

APPENDIX A

Available on OneDrive shared folder

Report:
TME 378 Backfill Plant Scope Summary

APPENDIX B

Available on OneDrive shared folder

Photos:

378 Backfill Plant & Storage Building

Drawings:

Small Tent Drawing Package

Small Tent Slab Drawing No. S1

Large Tent Drawing Package

Large Tent Foundation Drawings No. S1, S2

Specification:

Backfill Plant Data Sheets

APPENDIX C

Available on OneDrive shared folder

Drawings:

45-145-B-14727 Tailings Dewatering System & Facility General Arrangement Overall Site Plan

45-145-B-14728 Tailings Dewatering System & Facility General Arrangement Plan

45-145-B-19457 Tailings Dewatering System & Facility General Arrangement Sections