From:	Hudson Kingston
To:	Richards, Jess (DNR); Neuschler, Catherine (She/Her/Hers) (EQB); MnDOT_Commissioner; Nicholas F. Martin; Joseph Bauerkemper
Cc:	Bouchareb, Hassan (He/Him/His) (MPCA); Kessler, Katrina (She/Her/Hers) (MPCA); MN_Commissioner (DNR); Hetzel, Colleen (EQB); Krzenski, Jesse W (EQB); Walsh, Kayla (EQB); Maggie Schuppert; Anne Borgendale; Sarah Mooradian; Env Review (EQB)
Subject:	FW: Mesabi Metallics Project - DNR Environmental Review Need Determination
Date:	Monday, April 14, 2025 10:18:43 AM
Attachments:	image001.png image002.png image003.png image004.png image005.png image006.png image007.png 2025-03-31 MMCL-MesabiRevisedProject-ERND.pdf

Hello EQB staff and leadership, MPCA staff and leadership, and DNR staff and leadership,

Please forgive me for the large email distribution list. Please see attached for a document produced by DNR earlier this month, which provides additional context on the project discussed in this email.

CURE is really let down by the state government that in 2025 seems unwilling to follow the Minnesota Environmental Policy Act that it applied to this project in 2007 and 2011. In the past 14 years this project has significantly changed. Each time it has been revived, it is from a different company, using different technologies, with different mineral leases. The economy and community have changed significantly since 2011. Our understanding of climate change and flooding risk have changed – not too far away the Soudan Underground Mine was totally underwater this entire summer due to historic flooding, yet DNR contends that its dated review is somehow just fine without any consideration of changed circumstances, scientific knowledge, and technologies.

Fundamentally, the point of environmental review is to engender trust within the community (and decision makers), trust that the government knows what it's doing, and has considered foreseeable impacts and preferable alternatives, prior to permitting. That proof, and the comfort it brings, is totally absent here. When St. Paul bureaucrats and lobbyists get together and decide that rural communities aren't deserving of the bare minimum of review that a short and direct environmental assessment worksheet provides, it demonstrates that these DNR representatives simply do not value the health and safety of rural residents in the same way they do those who live in a rich Twin Cities suburb.

Environmental review allows different state agencies to look at the cumulative impacts of a project and other existing projects. In this case, MPCA has identified taconite processing plants as a leading uncontrolled source of toxic mercury air pollution. Since 2007, the state has a statewide TMDL for mercury pollution, and has learned quite a lot about the extent of the damage since 2007. MPCA's knowledge on the role of taconite processing facilities has also developed significantly since 2011, and in recent years it has repeatedly blamed the failure to meet the reduction needed by 2025 on this industry. And yet DNR has decided to ignore its sister agency and the cumulative impacts of mercury air and water pollution, which would naturally have been something assessed under an updated environmental review.

We think the EQB should address this poorly-reasoned attempt to avoid doing environmental review, and do an environmental assessment worksheet in accordance with MEPA to determine if a Supplemental Environmental Impact Statement (SEIS) is called for. Efficient environmental review would not significantly delay the permitting of this or any project – state agencies are allowed to work on permitting tasks while environmental review is being conducted, but need to wait to issue final permits until environmental review is complete and adequate. DNR has wasted six months producing a document to justify why it doesn't have to follow the law, when just following the law would go faster and better serve the public. Engaging in meaningful review would also give the applicants more certainty over their permitting process than they get from this attempt to end-run our transparency and community participation requirements in MEPA. The DNR is letting down the public and the applicant by taking this way out.

CURE does not take a stance on the merits of this proposal because we, like the rest of the public, don't know enough about this project to know if it's good for the community or not. We certainly won't learn more objective facts about it without an unbiased environmental review process. As we watch the federal government upend the environmental regulations and laws that have made our communities cleaner and healthier, it is deeply concerning to see Minnesota state agencies follow a similar path, putting profits over people when state law clearly argues for an open process where community and industry can come to a common understanding of what the best way forward should be.

I will be requesting time to speak at this week's EQB meeting so that the EQB can consider what this example and others does to the public's confidence in environmental review by state agencies.

Thank you for your time,

Hudson

Hudson Kingston
Legal Director
He/Him
P.O. Box 712
Ely, MN 55731

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320-269-2984 • curemn.org

STAY CONNECTED

From: Richards, Jess (DNR) <jess.richards@state.mn.us>
Sent: Wednesday, April 2, 2025 2:28 PM
To: Hudson Kingston <hudson@curemn.org>
Subject: Mesabi Metallics Project - DNR Environmental Review Need Determination

Hi Hudson,

Per our earlier messages, please see the attached decision regarding whether environmental review is needed for the proposed Mesabi Metallics project changes.

Thanks and have a great week!

Jess Richards
MNDNR

DEPARTMENT OF NATURAL RESOURCES

Memo

Date: March 31, 2025

To: Jill Townley, Supervisor, ER Policy & Review Unit

From: Bill Johnson, Mining Planning Director, ER Policy & Review Unit

RE: Mesabi Metallics Project

Environmental Review Need Determination

As the responsible governmental unit for environmental review for mining projects, the Minnesota Department of Natural Resources (DNR) was asked for an environmental review need determination (ERND) by Mesabi Metallics Company LLC to determine if the proposed Mesabi Metallics Project (Mesabi Revised Project) is subject to environmental review under Minnesota Statutes and Rules. [See generally Mesabi Metallics Project Description Update (March 12, 2025)].

1.0 Currently Permitted Facility

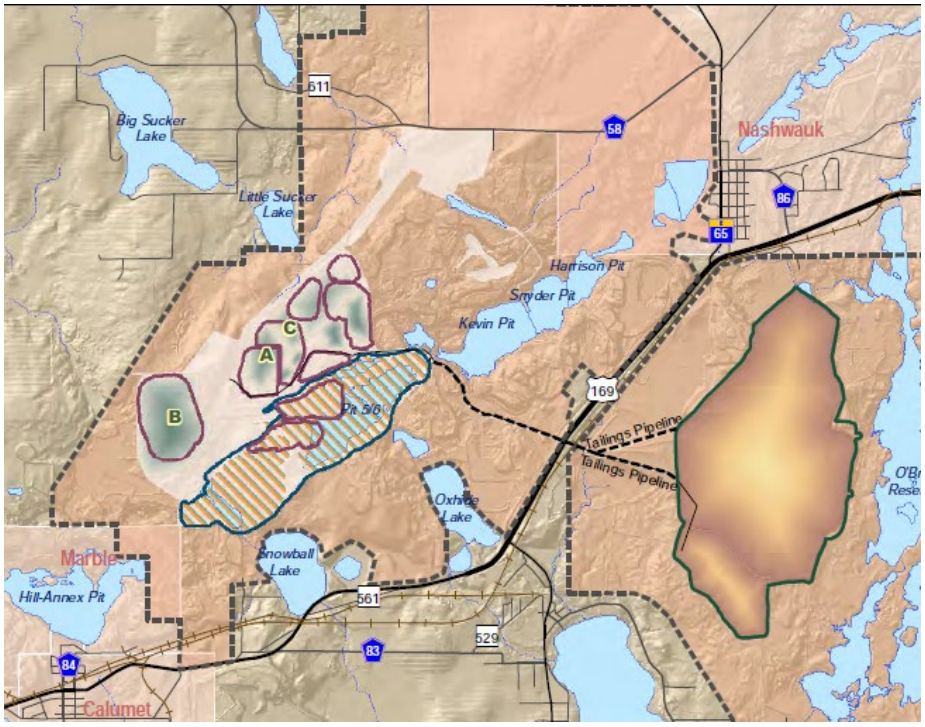
1.1 Overview

Mesabi Metallics Company LLC (Proposer) is currently constructing the Mesabi Metallics Project, which includes an open pit taconite ore mine and adjacent stockpile areas, along with construction of a crusher, concentrator, and pellet plant and new tailings storage basin in Nashwauk, Minnesota. The project site was formerly the Butler Taconite mine and tailings basin area that closed in 1985. The project permitted to date relies on existing infrastructure such as haul roads, including existing mine pit and inter-pit haul roads, as well as new construction of dikes, waste rock stockpiles, and other mine site, plant site, and tailings basin facilities.

The project has operated under 3 ownership groups: Minnesota Steel Industries (MSI); Essar Steel Minnesota Limited (ESML); and Mesabi Metallics Company Limited (Proposer or Mesabi Metallics). The various iterations of the project are described as the MSI Project, ESML Project, and Mesabi Revised Project. The Project currently operates under a DNR Permit to Mine first issued in 2007 and subsequently amended in 2012 and 2016. [See generally: 2007 MSI PTM; 2012 ESML PTM; 2016 ESML PTM]. ERND Section 1.9 provides an overview of key project milestones, including environmental review, ownership, and permitting.

The general layout of the site is provided below:

See below the excerpt of Figure 3-1 of the 2011 Draft SEIS that details the proposed mine pits, stockpiles, and tailings basin footprint. [See 2011 DSEIS at Figure 3-1].



New infrastructure currently under construction includes the crusher, concentrator, and pellet plant as well as haul roads. Once operational, the permitted project features and their nominal capacities would be:

- An open pit taconite mine with a capacity of 24 million metric tons of ore per year over a 15-year mine plan.
- A crusher/concentrator plant with an associated tailings basin, producing approximately 7 million metric tons of concentrate per year.
- A pelletizer that can produce approximately 7 million metric tons of oxide pellets that would be used as feedstock for DRI production or sold.
- A DRI facility producing approximately 2.8 million metric tons per year of iron pellets for direct feed for steel production.
- An electric arc furnace (EAF), ladle metallurgy furnace, slag processing, and a caster to produce 2.5 million metric tons per year of steel slabs for direct feed for steel production. [See Email Query 6].

Collectively the currently permitted project now undergoing construction is the Essar Steel Minnesota Limited (ESML) Project.

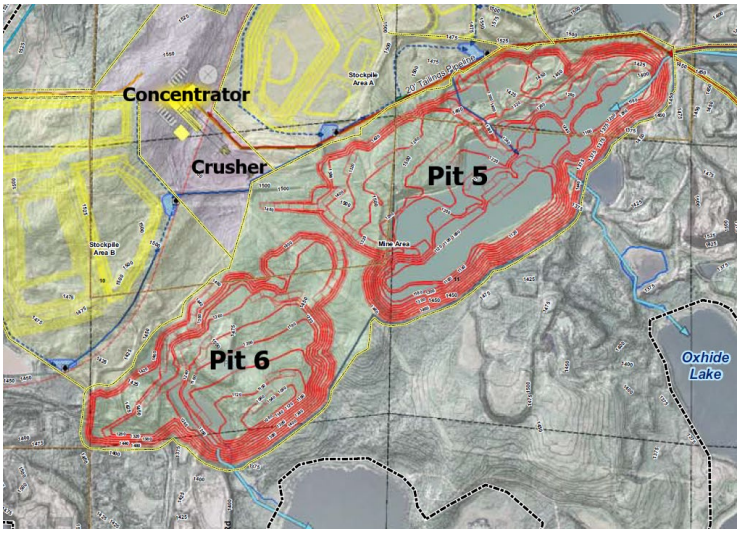
1.2 Mining Process

1.2.1 Hardrock Mining

The currently permitted project plans mining starting at two locations:

- *Pit 5*. The existing pit lake at Pit 5 would be drained with mining resuming at the southwest portion of the mine site. Initially, mining in Pit 5 would begin on the upper benches of the southern end of the pit and would eventually be expanded in all directions.
- *Pit 6*. New mining would occur to the west of Pit 5, creating Pit 6. Mining at Pit 6 would progress southward and westward, eventually consuming the existing Draper Pit.

The figure below details the orientation of Pits 5 and 6 at the site at mining completion. [See 2007 MSI PTM Application - Figure 1].

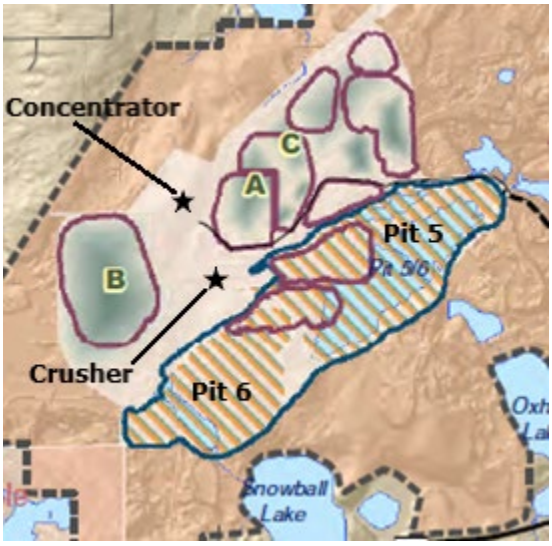


Open-pit mining would be restarted at Pit 5, and new mining is proposed for Pit 6. Pit 5 would be initially dewatered to Oxhide Creek, with mining beginning on the upper benches of the southern end of the pit and eventually expanding in all directions. A saddle would remain between Pits 5 and 6 as it contains non-iron-bearing-rock and low-grade iron ore that cannot be used by the Mesabi Metallics' concentration process. Pit 6 would develop to the west toward the Draper Pit and would expand through the Draper Pit in the last years of mining. After overburden is removed, waste rock and taconite ore would be drilled, blasted, and loaded into mine trucks by diesel-hydraulic shovels. The raw ore would be trucked to the primary crusher for subsequent processing while waste rock would be used to construct dikes and haul roads or placed in waste rock stockpiles. The Proposer estimates that approximately 21-24 million metric tons of ore would be mined per year. [See 2007 FEIS at EX-5].

1.2.2 Stockpiling

Overburden and waste rock would be stored in above-ground stockpiles and inside open pits (i.e., in-pit stockpiles). The stockpiles would be located near the Pits 5 and 6 mine haul roads as well as the crusher site as detailed below. These areas are designated as Stockpile Areas A, B, and C. In-pit stockpiling would be used to the maximum extent feasible in the combined Pit 5/6 where the mine has reached the footwall of the ore body. The actual amount of material that could be placed in-pit was not estimated for the 2011 Final SEIS, however the surface area stockpiles were designed as if there was no in-pit storage and would hold 151.6 million long tons of waste rock and overburden. [See 2011 DSEIS at Table 3-3]. The permitted stockpile capacities for surface stockpiles would be 72 million long tons of material, with an estimated 19 million long tons of material planned for in-pit stockpiling. [See 2011 ESML PTM Application at Table 7.4].

Figure 3-1 of the 2011 Draft SEIS shows the currently permitted stockpile locations. [See 2011 DSEIS]. An excerpt is provided below:



1.2.3 Haul Roads

The project would use the existing Butler facility haul roads to transport: 1) stripping material to the stockpile areas; and 2) taconite ore from the mine to the crusher. As the mine pits are expanded, mine pit and inter-pit haul roads would be expanded to facilitate efficient operations. Overall haul distance for the Pit 5 overburden material will be approximately one mile, with haul road construction required only on in-pit roads as the pits are extended

by mining. The haul distance for Pit 6 material will be about 1.1 miles. Of this, approximately 3,500 feet of new road and in-pit roads will need to be constructed. Haul road and access ramp construction to accommodate this stripping will require an estimated 300,000 tons of crushed rock. Waste rock would be used as road construction material where feasible. [See 2007 MSI PTM Application at Vol. 8-40]. The 2007 Final EIS anticipated use of 240-ton haul trucks at the mine pits. [See 2011 DSEIS at 1.0-1].

1.2.4 Reclamation

The Permit to Mine requires a reclamation plan for mined areas of the project that conforms to the provisions of Minn. R. 6130 for taconite and iron ore mineland reclamation. This would include the mining and stockpile areas, plant site, tailings basin, and other areas disturbed by mining. [See 2007 FEIS at EX-8].

1.3 Concentrating and Pellet Production

The currently permitted project involves production of two types of metallic iron pellets: iron oxide pellets and direct reduced iron (DRI) pellets. The iron content of the mined ore must be concentrated before pellet production can occur.

1.3.1 Concentrating

Concentrating begins with raw ore trucked to the grizzly and then to the primary crusher, which reduces the ore to approximately 12-inches in diameter. This material feeds to the secondary crusher that further reduces the ore to a three-quarters-inch size. Next dry cobbing (magnetic separation) occurs that eliminates the lowest grade ore, with cobbing rejects stockpiled or used as road aggregate. This ore concentration process would be similar to those used at existing Iron Range taconite plants. The magnetic iron oxide minerals (concentrate) would be separated from the nonmagnetic waste (tailings) from the crushed rock. Magnetic concentrate would be further refined by flotation that would remove the more silica-rich material, leaving nearly pure iron oxide concentrate to be pumped to the pellet plant. [See 2007 FEIS at 3-3].

Construction has commenced on the ore storage barn, primary crusher, secondary crusher, grizzly feeder, and concentrator. [See Email Query 3.5]. The Proposer has summarized the current construction status of these facilities as follows:

- *Ore Storage Barn*. Construction is ongoing, with 65% completion. Structural erection and sheeting are in progress, with significant portions of the framework in place.
- *Primary Crusher*. Installation is 90% complete. The equipment is fully installed from a mechanical aspect and electrical work is ongoing to bring in primary power.
- *Secondary Crusher*. Two secondary crushers (1 & 2) have been erected, with all necessary installations (mantle and spider cap) completed. A third crusher for Line 3 is under procurement. The estimated percentage of completeness for the secondary crusher system overall is 75%, accounting for the completed crushers and pending procurement/installation of the third crusher.
- *Grizzly Feeder*. Delivered and installed on-site, with construction and installation ongoing. The estimated percentage of completeness for the grizzly feeder is 75%.

- *Concentrator*. Approximately 70% complete, with significant progress in structural erection, piping, and electrical installations. Conveyor systems and slurry pumps are in the process of installation.

1.3.2 Iron Oxide Pellets

In the pellet plant, wet iron oxide concentrate would be converted to unfired pellets (i.e., green balls) in balling drums or disks. The greenballs would be fired to hardened iron oxide pellets in the indurating furnace and be sold on the open market. After (size) screening, the oxide pellets would be hotcharged directly to the DRI modules or stockpiled. The undersized pellets from the screening process would be ground and recycled to the concentrate slurry (or sold as sinter feed). [See 2007 FEIS at 3-3].

The taconite pelletizing furnace under the permitted project could produce up to 7 million metric tons per year of low flux, DRI-feed grade pellets or 6.5 million metric tons per year of high flux, blast-furnace grade pellets. [See 2011 DSEIS at Table 3-1].

Construction has commenced on the filter/mixing building, balling building, induration building, hearth/layer separation building, stack, and pellet reclaim building. Construction of the pellet plant is 65% complete. The induration furnace and pelletizing systems, including balling discs, are yet to be installed. Construction is currently focused on the air pollution control system. [See Email Query 3.5].

1.3.3 Direct Reduced Iron

The direct reduced iron (DRI) facility would convert iron oxide pellets to nearly pure iron pellets through a reducing reaction at high temperatures that converts the iron oxide to metallic iron. Near the end of the process, the DRI would pass through a mixture of gases that both cools them and increases the iron content of the product. The DRI product would be hot charged to the steel mill electric arc furnaces, or during steel mill down-time would be stockpiled for later use or sale. The currently permitted project could produce up to 2.8 million metric tons DRI product per year. [See 2007 FEIS at 3-3]. Construction has not started for DRI production infrastructure. [See Email Query 7].

1.3.4 Pellet Production Summary

See ERND Section 2.3.4 for a summary of pellet production capacities under the ESML Project and the Mesabi Revised Project.

1.4 Steel Production

Steelmaking would occur through operation of two EAFs along with several other components, including two ladle furnaces, two thick slab casters, a tunnel furnace, a vacuum degasser, a hot strip rolling mill, and a sheet steel coiler. The steelmaking process begins with the DRI pellets being fed into the EAFs, with subsequent transfer of the molten steel first to the ladle metallurgy furnaces and second to the continuous casters where it would be cast into slabs approximately 8-10 inches thick. The slabs could be sold as is or further processed into sheet steel of varying thicknesses. Higher quality steel could be produced by directing the molten steel to the vacuum degasser to remove traces of hydrogen and oxygen. The steel slabs, along with coiled sheet steel, could be packaged for rail or truck shipment. Steel production under the currently permitted project would be 2.5 million

metric tons per year. [See 2007 FEIS at 3-3 to 3-4]. Construction has not started for steel production infrastructure. [See Email Query 7].

1.5 Tailings Management

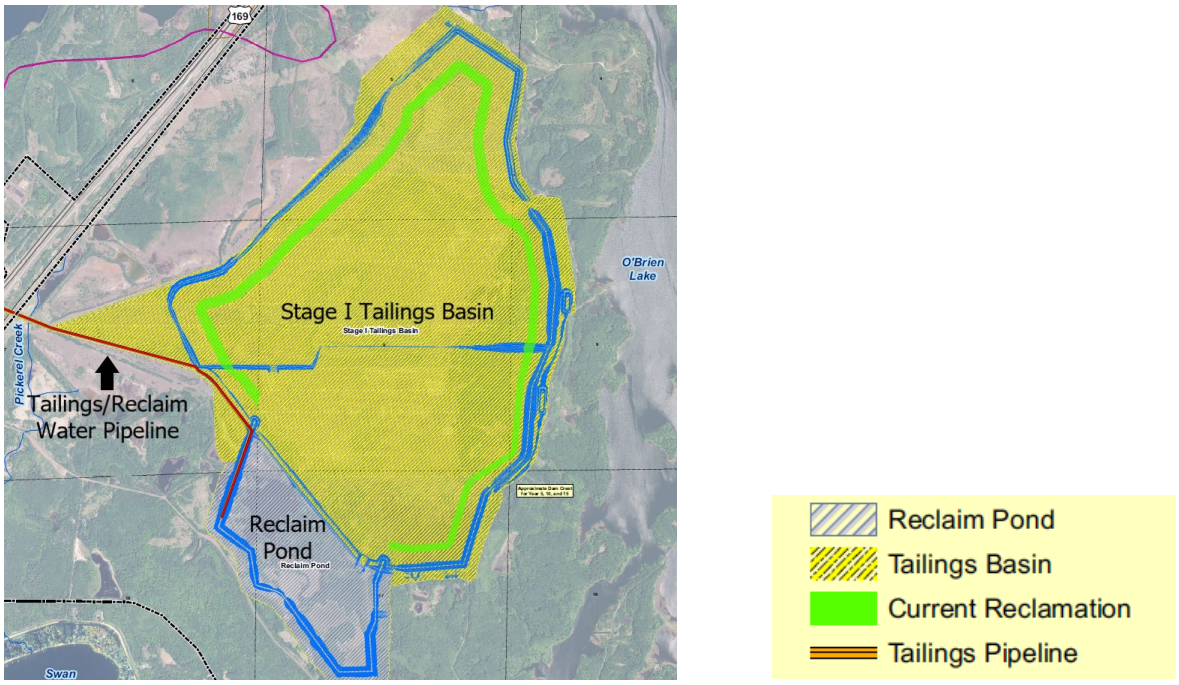
1.5.1 Tailings Production

Tailings is the waste product generated during the concentrating process that is composed of coarse and/or finely ground, non-magnetic waste rock. The currently permitted project would generate 8.82 million long tons of tailings for two (2) years followed by 16.27 million long tons of tailings generated for 13 years. The total estimated amount of tailings generated over the project would be 229.1 million long tons. [See 2011 DSEIS at ES-xxxii].

1.5.2 Tailings Basin

Tailings from the concentrator would be pumped via a pipeline to the tailings thickener where solids would be separated from water by sedimentation. The resulting tailings slurry would be pumped to the proposed tailings basin located on the east side of US Trunk Highway (TH) 169. The annual volume of tailings to be delivered to the facility under the permitted project is 4,051 acre-ft for 2 years, followed by 7,466 acre-ft for 13 years, with a total volume of 105,163 acre-ft over the life of the project. Accordingly, the tailings basin designed storage capacity is 229.1 million long tons with a designed storage area of 1,600 acres; this may be increased to 1,690 acres to accommodate any future potential needs. [See 2011 DSEIS at 3.0-12].

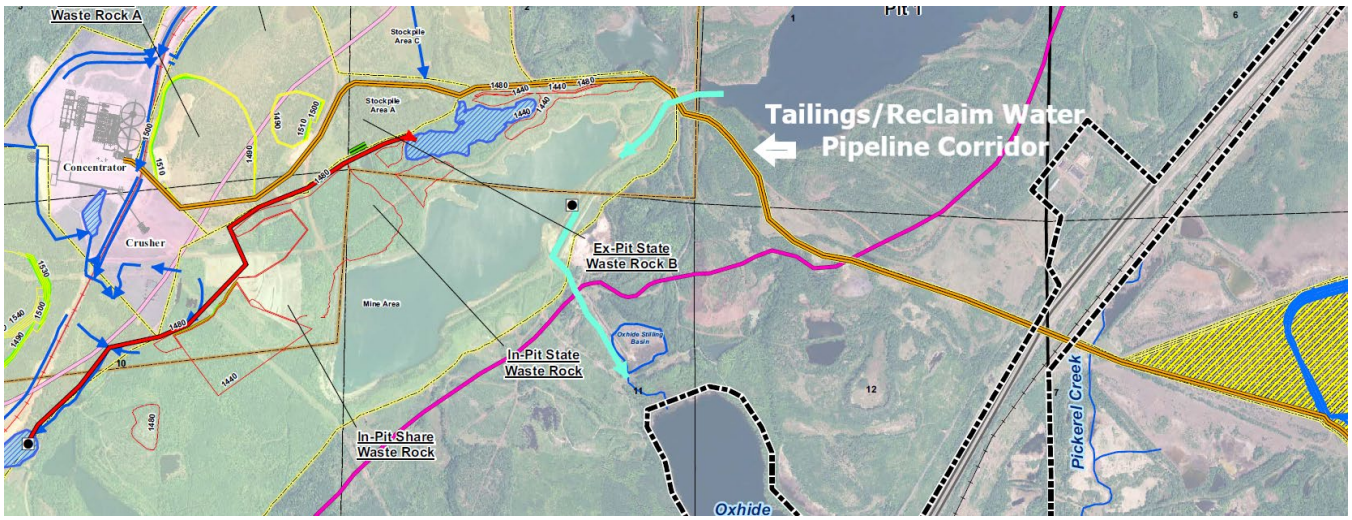
The project requires construction of a new tailings basin at the site of the former Butler facility tailings basin, with tailings production not commencing until the mine and plant facilities are operational. Starter dams must be completed, and pipelines routed around the basin, before the facility is operational; this work can be done concurrent with construction of the mine and plant facilities. The starter dam for the basin is 90% complete. [See Email Query 5]. See the figure below for a general layout of the tailings facility.



Once mine operations begin and tailings are discharged in the basin, the dams would be constructed using the upstream method with a perimeter pipeline constructed around the basin. Dam construction would be phased over the life of the facility, with some areas of the tailings basin raised, flows being rerouted, and weirs constructed throughout. The tailings dam elevation is from 1,545-1,590 ft above sea level at year 15; this results in dams from 110-160 feet above the base surface elevation. [See Email Query 3.2]. A seepage collection system would surround the tailings basin and return collected water to the tailings basin. There would be no direct discharge of process water containing pollutants to downstream waters. [See 2007 FEIS at 3-4]. The tailings basin is regulated under NPDES/SDS Permit MN00688241. [See generally 2012 NPDES Permit]. The facility is also regulated by a DNR Dam Safety Permit. [See generally 2015 Dam Safety Permit].

1.5.3 Tailings/Reclaim Water Pipeline Corridor

Tailings, which are coarse and/or finely ground waste rock from the concentrating process, would be pumped by pipeline as a slurry to the tailings basin. [See 2007 FEIS at 4-78]. The tailings basin also includes an area for reclaim water to collect at the southern end of the facility. This is where clarified water, separated from the solid tailings particles, would be collected and stored thus allowing it to be reused in the mining process. [Id. at 4-69]. The corridor for the tailings/reclaim water pipeline runs along the west and north limits of Pit 5/Sullivan Pit and then along a direct route to the tailings basin. The pipeline will cross TH 169 with an overpass structure. East of TH 169, the pipeline will branch out into two lines that will follow the crest of the tailings basin dikes to facilitate upstream deposition of the tailings within the tailings basin. The tailings/reclaim water pipeline corridor has been approved and is regulated by the Permit to Mine and NPDES/SDS Permit MN0068241. [See generally 2011 Permit to Mine]. [Also see 2012 NPDES Permit at 7]. See the figure below.

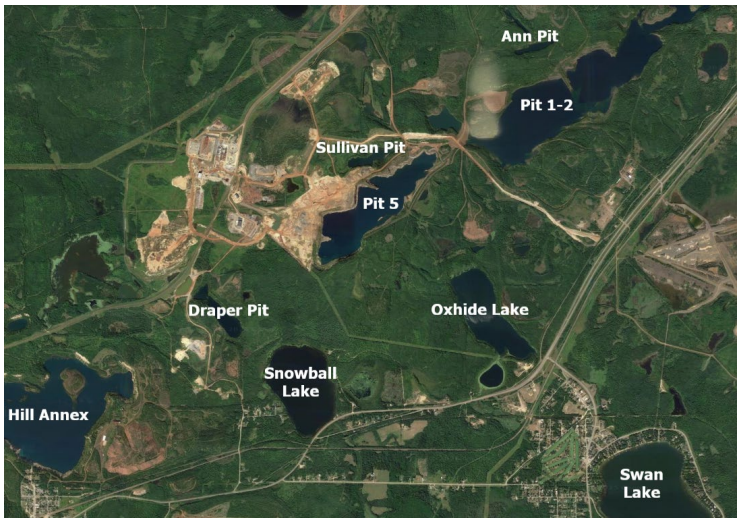


1.5.4 Tailings Management Summary

See ERND Section 2.5.4 for a summary of tailings generation and tailings basin dimensions for the ESML and revised project.

1.6 Water Management

The permitted project requires extensive water management involving both existing natural and taconite ore pits and other waterbodies. The principal water-related features are identified below.



1.6.1 Initial Pit Dewatering

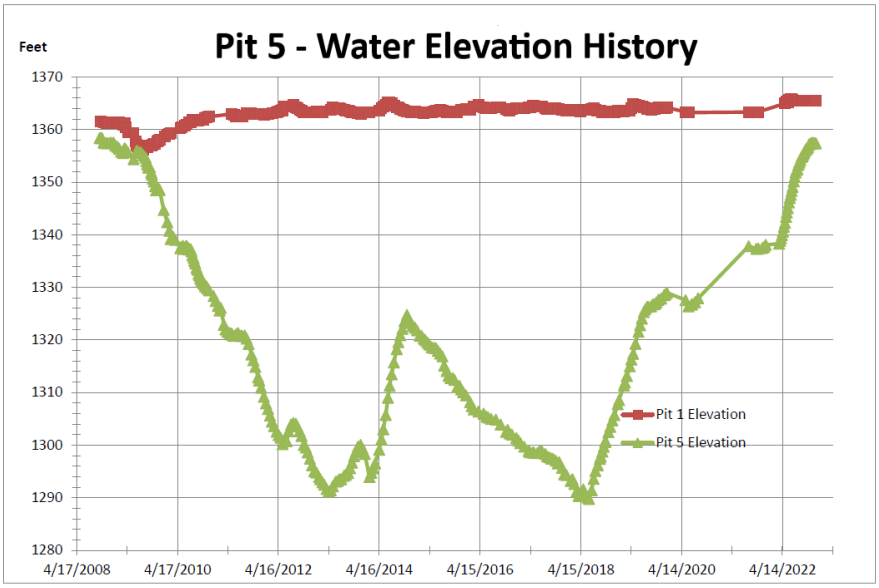
1.6.1.1 Draper Pit

The 2007 Final EIS outlined a nearly 4-year plan to dewater the Draper Pit prior to the beginning of mining. Pit-related dewatering would increase discharges to Snowball Lake and Snowball Creek by approximately 230 gallons per minute (gpm) during project years 2-6. Because the headwater flows would be disrupted once mining begins, augmentation to Snowball Creek would be necessary to sustain instream flows and geomorphology for habitat and biota due to the loss of approximately 800 acres from its upper watershed. [Id. at 4-59].

1.6.1.2 Pit 5

The 2007 Final EIS outlined a nearly five-year plan to dewater Pit 5 prior to the beginning of mining operations. Two years would be used to dewater Pit 1-2 that would be followed by 3 years to completely dewater Pit 5. Transfer of water from Pit 5 would begin after the pre-production phase and be complete in year 6, which means the ore currently underwater in Pit 5 would be available in year 6. [See 2007 FEIS at 4-50]. ESML did start dewatering Pit 5 in 2008, but the pit refilled over the years. Water is currently being pumped from Pit 5 to Oxhide Creek at a rate of 4,500 gpm under a DNR permit, however this activity has been intermittent. [See 2011 Appropriation Permit 2008-0067]. The current Pit 5 dewatering is also meeting augmentation requirements to Oxhide Creek, established at 1,470 gpm in the EISs, to sustain instream flows and geomorphology for habitat and biota. [See 2007 FEIS at 4-56].

The figure below details the Pit 5 water elevation history from 2008 through 2022.



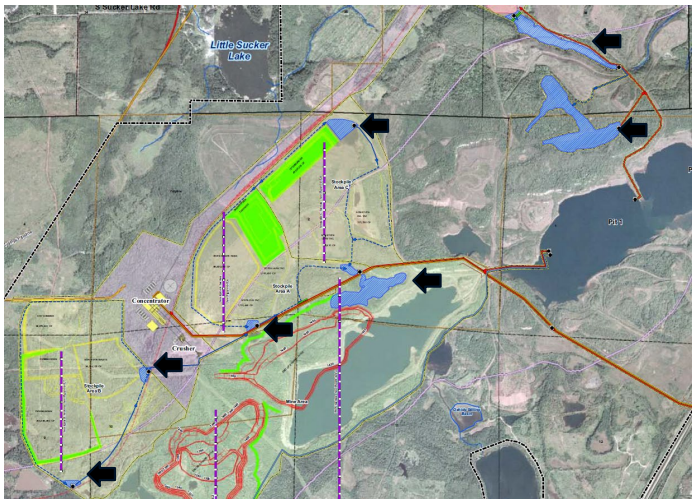
1.6.2 Water Supply

The currently permitted project would use groundwater and surface water that flows into Pit 1-2, Pit 5, and Pit 6 as the primary supply of water for the project. Once Pit 5 has been initially dewatered, ongoing maintenance pumping from Pits 5 and 6 would be pumped directly to the facility for use in processing, or to the Ann and/or Sullivan natural ore mine pits. The Ann and Sullivan Pits would also receive stormwater collected from the operations and stockpile areas. Water in Pit 1-2 would be used as a reservoir to supply water for facility processes and as needed to supply water for Oxhide Creek augmentation to sustain instream flows and geomorphology for habitat and biota. Oxhide Creek currently receives approximately 4,500 gpm in part to maintain flows because Pit 5's natural overflow to Oxhide Creek ended in 2008 due to the lowering the Pit 5 water level below the outlet elevation. [See 2007 DEIS at 3-4]. Make up water supply for the mine processing plant from the Ann Pit is regulated under Appropriation Permit 2008-0066. [See 2011 Appropriation Permit 2008-0066].

1.6.3 Stormwater

In the currently permitted project, stormwater from the plant area, stockpile areas, and the pits would be collected and used for process water, either at the point of collection or discharged to the abandoned Sullivan and Ann Natural Ore Pits. Alternatively, storm water could be used as process water in concentrating and other operations, including DRI and steel production.

See excerpt of Figure 6-E.02 – Mine Stockpile and Tailings Basin Plan Phase 1 (Year 5) below. [See 2007 MSI PTM Application].



The stormwater management system initially includes four areas of stormwater collection and ponding that includes stormwater conveyance through surface ditches (e.g., gravity flowage) and pumped water transfer through pipes. Eventually the Sullivan Pit would be consumed by Pit 5 and would no longer be available for storage. There would be no surface discharge of stormwater to downstream impaired waters. Stormwater management has been approved and is regulated in MPCA NPDES/SDS Permit MN00688241. [See 2012 NPDES Permit].

1.6.4 Stream Augmentation

Historic, pre-project mining activities disrupted the headwater reaches of Oxhide and Snowball Creeks such that post-Butler Taconite flows for each originate from natural overflow of Pit 5 and the Draper Pit respectively. Under the currently permitted project, once Pit 5 dewatering and subsequent mining activity begins, flow augmentation would be required for both Oxhide Creek and Snowball Creek to compensate for the loss of pit overflow waters to sustain instream flows and geomorphology for habitat and biota. The augmentation flow established in the EISs is 1,470 gpm for Oxhide Creek and 220 gpm for Snowball Creek. [See 2007 FEIS at 4-55 to 4-61]. Prior to mining, flow augmentation to Oxhide Creek would be done using water from the initial dewatering of Pit 5 up to the permitted maximum of 4,500 gpm; this is greater than the augmentation rate of 1,470 gpm for Oxhide Creek set in the EISs. [See 2007 FEIS at 4-56]. Stream augmentation from Pit 5 has been approved under Appropriation Permit 2008-0067. [See 2011 Appropriation Permit 2008-0067]. During mining operations once Pit 5 is dewatered, water from Pit 1-2 would be used to replace the loss of flows from the Pit 5 overflow; the maximum permitted flow rate is 4,500 gpm for this augmentation too. Augmentation of Oxhide Creek from Pit 1-2 has been approved and is regulated in Appropriation Permit 2006-0433. [See 2011 Appropriation Permit 2006-0433]. Similarly, the development of Pit 6, including the Draper Pit, would eliminate discharge from the upper watershed of Snowball Creek that would require flow augmentation at a rate of 220 gpm. Augmentation from the Draper Pit has been approved and is regulated under Appropriation Permit 2008-0065. [See 2011 Appropriation Permit 2008-0065]. Water sourced from the Hill Annex Pit is assumed to be the source of augmentation flows for Snowball Creek but may also be used to supplement flows to Oxhide Creek. Augmentation would no longer be required in project closure when the pits refill and once again overflow to downstream receiving waters, thus restoring historic instream flows and geomorphology for habitat and biota.

1.7 Regulatory Controls

The Proposer reports in ERND Table 1 that its ongoing construction and development of the Mesabi Revised Project is currently subject to both federal and state approvals. [See Email Query 1.1]. These include but are not limited to:

ERND Table 1: Status of Required Permits and Approvals

Regulatory Authority	Permit/License/Approval	Status
USACE	Clean Water Act Section 404 Wetlands Permit – No. MVP 2005-546-JKA; Amendment	Pending
	Section 7 Endangered Species Act; Consultation with USFWS	Complete
	Section 106 National Historic Preservation Act	Complete
USEPA	Spill Prevention, Control, and Countermeasure Plan	Pending
FAA	Notice of Proposed Construction or Alteration for Structures of Heights Greater than 200 Feet – No. 2015-AGL-13961-OE	Filing pending
DNR	Permit to Mine – Amendment	Pending
	Permit to Mine/WCA – Amendment	Pending
	Water Appropriation Permit – New	TBD
	Water Appropriation Permit – No. 2006-0433 – Pit 1-2	Active/Amendment Pending
	Water Appropriation Permit – No. 2008-0065 – Draper Pit	Active
	Water Appropriation Permit – No. 2008-0066 – Ann Pit	Active
	Water Appropriation Permit – No. 2008-0067 – Pit 5	Active/Amendment Pending
	Public Waters Permit – No. 2015-0367	Work complete

Regulatory Authority	Permit/License/Approval	Status
	Dam Safety Permit – No. 2010-0360; Reauthorization	Pending
	Dam Safety Permit – No. 2025-0079; New	Pending
	Takings Permit for Threatened and Endangered Species; New surveys to be conducted	To be determined
	License for Utility to Cross Public Waters	Active
	Burning Permit – No. 1030562331; Expired	To be obtained if needed
MPCA	National Pollutant Discharge Elimination System/State Disposal System Permit for Industrial Stormwater and Tailings Basin Operation – No. MN00688241; Reissuance	Pending
	National Pollutant Discharge Elimination System/State Disposal System General Storm Water Discharge for Construction Activity – No. C00023715	Active
	Clean Water Act Section 401 Water Quality Certification – No. CEMVP-OP-R, MVP-2005-546-JKA	Amended if needed
	Air Emissions Permit – No. 06100067-004; Amendment	Pending
	Aboveground Storage Tank Permit	To be applied for
	Hazardous Waste Generator License – No. MNS000186106; Update required	Pending
MDH	Radioactive Materials Registration	Update if needed
Itasca County	County Building Permit	Update if needed
	Zoning Variance or Conditional Use Permit	Update if needed
City of Nashwauk	Zoning Permit	Update if needed

Regulatory Authority	Permit/License/Approval	Status
	City Building Permit – No. 14-2008	Update if needed
	Domestic Sewer and Water Connection Approval	Update if needed

1.8 Key Milestones

The currently permitted project was subject to the 2007 Final EIS, 2011 Final SEIS, and subsequent permitting and construction. Changes in management have impacted the project. More recently, changes in surface and mineral leases have resulted in the Mesabi Revised Project addressed in this ERND. Detailing the entire chronological history of these issues is beyond the scope of this ERND. Below is a partial listing of key milestones for the Mesabi Metallics Project that influence the current project profile.

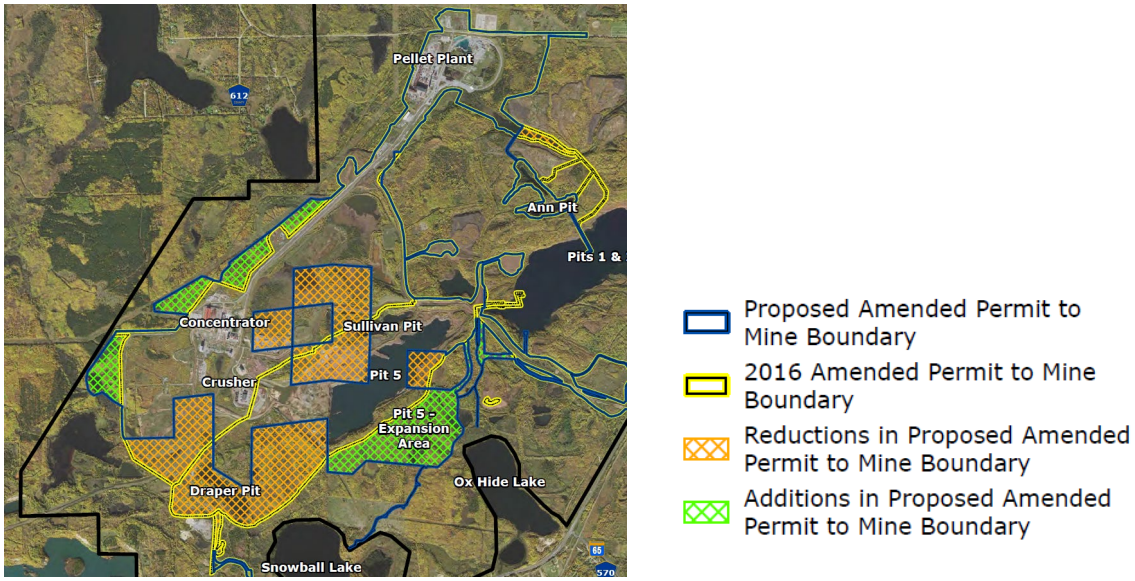
April 2003	Minnesota Steel Industries acquires Minnesota Iron & Steel Company
February 2007	DNR and USACE issue the Draft Environmental Impact Statement for Minnesota Steel, LLC Steel Mill and Taconite Mine Project
June 2007	DNR and USACE issue the Final Environmental Impact Statement for Minnesota Steel, LLC Steel Mill and Taconite Mine Project
August 2007	DNR issues a Permit to Mine to Minnesota Steel Industries
October 2007	Essar Steel acquires Minnesota Steel Industries
September 2008	DNR assigns the Permit to Mine to Essar Steel Holdings Limited and Minnesota Steel Industries, LLC
May 2011	DNR issues the Draft Supplemental Environmental Impact Statement for the Essar Steel Minnesota Modifications Project
December 2011	DNR issues the Final Supplemental Environmental Impact Statement for the Essar Steel Minnesota Modifications Project
April 2012	DNR assigns the Permit to Mine to Essar Steel Minnesota LLC
March 2016	DNR assigns the Permit to Mine to Essar Steel Minnesota LLC, ESML Holdings USA INC., and Essar Tech Minnesota LLC
July 2016	Essar Steel Minnesota LLC files for Chapter 11 Bankruptcy
January 2017	Essar Steel Minnesota LLC changes its name to Mesabi Metallics Company LLC
December 2017	Essar Steel Minnesota LLL, renamed Mesabi Metallics, emerged from bankruptcy

May 2021	DNR terminates leases for state ore near Nashwauk, MN, held by Mesabi Metallics Company LLC
July 2021	Mesabi Metallics acquired 3,200 acres of land in Nashwauk, MN, previously leased to Cleveland-Cliffs
May 2023	Minnesota Executive Council grants the award of leases for state ore near Nashwauk, MN, to Cleveland-Cliffs
September 2024	Arbitration panel rules Mesabi Metallics properly terminated 3,200 acres of private leases to Cleveland-Cliffs on land owned by Mesabi Metallics; this decision has been appealed

2.0 Mesabi Revised Project

2.1 Overview

Mesabi Metallics submitted a revised Project Description, along with related applications for permit amendments, as necessary to relocate facilities that were originally proposed to be located on State parcels no longer within Mesabi Metallics control. This has affected the following project components: pits; stockpiles; haul roads; stormwater management system; stream augmentation; and the tailings/reclaim water pipeline corridor. [See generally Mesabi Project Description Update]. See below for an accounting of reductions and additions in the proposed Permit to Mine mining area boundary.



Once operational, key project features and their nominal capacities are:

- An open pit taconite mine with a capacity of mining approximately 24 million metric tons of ore per year.
- A crusher/concentrator plant with an associated tailings basin, producing approximately 7 million metric tons of concentrate per year.

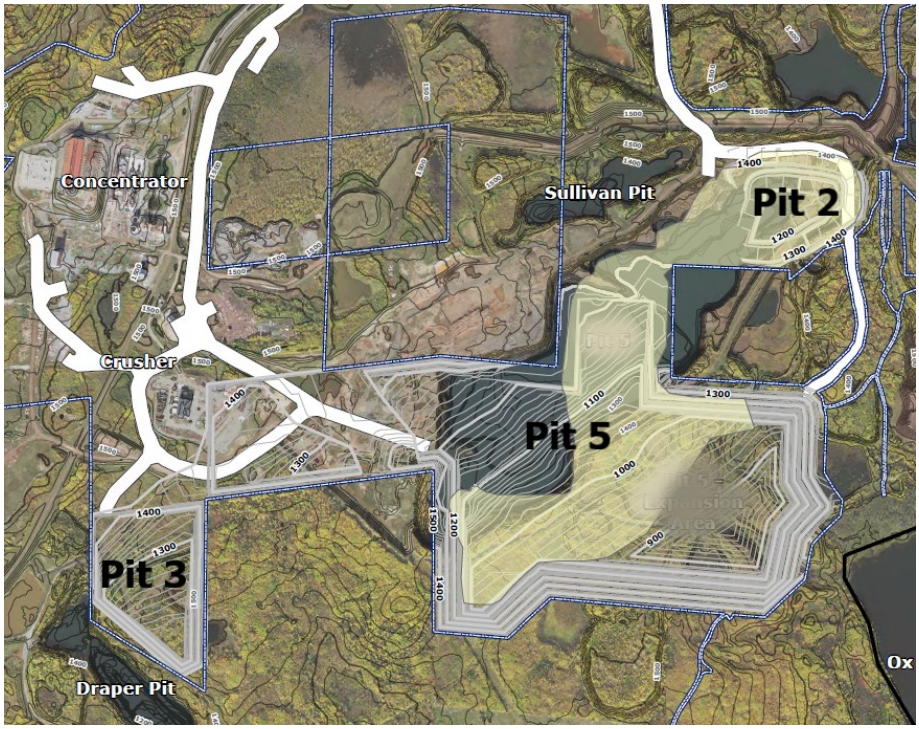
- A pelletizer that can produce approximately 7 million metric tons of oxide pellets that would be used as DRI-grade feedstock for sale. [See Email Query 6].

DNR has identified the following set of actions as constituting the Mesabi Revised Project, which is detailed in the Mesabi Project Description Update of January 29, 2025.

2.2 Mining Process

Mesabi Metallics would continue to obtain its magnetic iron ore from a horizon within the Lower Cherty member of the Biwabik Iron Formation; this is consistent with previous iterations of the project. Mining would be open-pit with mining sloping and benching consistent with the 2007 Final EIS and the current PTM. All mining would occur north of TH 169 and west of Nashwauk, MN. Mining is proposed for Pit 2, Pit 3, and Pit 5.

The figure below shows the major project elements at the mine site. [See Mesabi Project Description Update at .pdf 16].



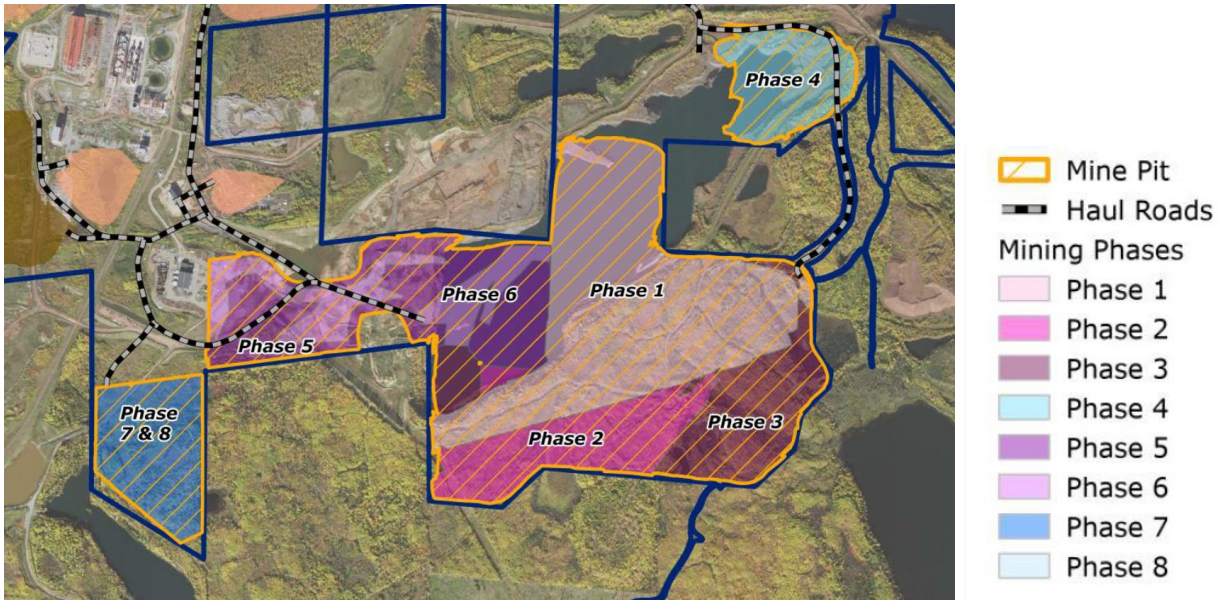
2.2.1 Hardrock Mining

Ore would be hauled by truck from the active pit areas once stripping is complete. The figure below details the pit mining area and proposed phasing under the revised project, which is different than under the current Permit to Mine.

The Pit 5 mining area increases by 160 acres (e.g., Pit 5 Expansion Area) while the original Pit 6 mining area decreases by ~171 acres to approximately 65.6 acres for the new Pit 3. [See Query 9]. Westward expansion into the Draper Pit is no longer proposed. The proposed mining sequence is listed as follows:

- Phase 1 and Phase 2 are mined in the first 3 years.
- Phase 4 begins being mined in Year 4, blending ore mined from the bottom of Phase 2.
- Stripping of overburden, waste rock, and hematite for Phases 3, 7, and 8 begins in Year 5.
- Mining of Phases 5 and 6 begins in Year 6, with stripping continuing in Phase 3.
- Mining of Phases 7 and 8 begins in year 7-8.
- Mining continues with Phase 3 beginning in Year 9. [See Email Query 13].

Mining would start in Pit 5, then continue to Pit 2, and end at Pit 3. [See Email Query 10 – Figure 5].



According to this schedule, the Project's revised mine life is approximately 9 years, which is down from 15 years in the original project. [See Mesabi Project Description Update at .pdf 6]. This is based on roughly 23,000,000 long tons of crude ore be sent to the crusher per year. Finally, electric shovels and drills would be used in the mine. [Id. at 3]. The Proposer has summarized material movement over the life of the project as detailed below in ERND Table 2. [See Email Query 10].

ERND Table 2: Ore and Waste Rock Material Movement

Material Movement (MLt)

Material	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	Total
Overburden (In-Pit)						6.1			0.2	0.3	6.6
Rock (In-Pit 1-8)	4.8	0.2	3.6	18.1	18.03	11.2	18.5	14.15	3.61	1.85	94.04
Hematite (Ex-pit H1-H5)	0.35	4.02	0.08	1.1	0.54		3.46	4.7			14.25
Overburden (Ex-pit)	12.1	5.15	13.31	2.67	4.3	4.72					42.25
Rock (Ex-Pit Rock 1)	1.85	23.73	6.35	0.11							32.04
Taconite (Crusher)	0.1	8.1	22.1	22.3	23	22.5	22.9	22.9	23	13.6	180.5
Total	19.2	41.2	45.44	44.28	45.87	44.52	44.86	41.75	26.81	15.75	369.68

2.2.2 Stockpiling

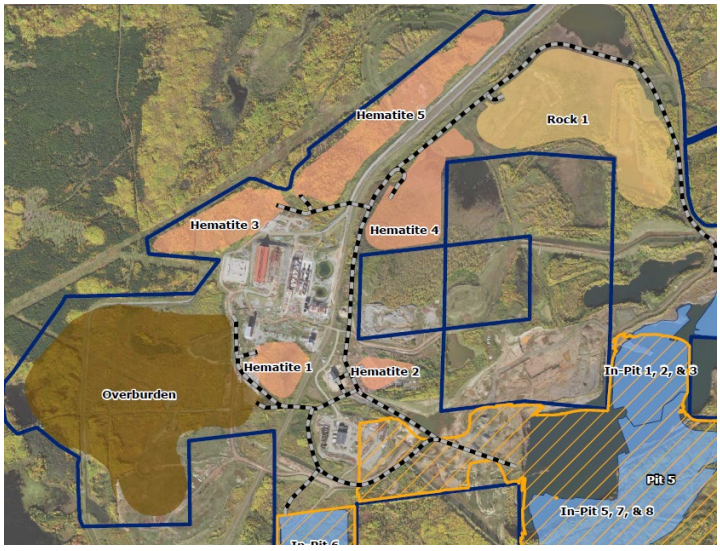
Mesabi Metallics reports the total material that would be stockpiled is approximately 50% on surface with the remaining 50% balance deposited in-pit. Approximately 90% of the in-pit stockpiling occurs in Years 3-8 (fairly equally divided across those years), with approximately 5% in Years 1-2 and 5% in Years 9-10. [See Email Query 22].

2.2.2.1 Surface Stockpiles

Overburden and waste rock would still be hauled by truck from the pit areas to the stockpiles or crusher under the revised project. In-pit roads would continuously change as mining progresses. The capacity of surface stockpiles is an estimated 88.54 million long tons of material. [See Email Query 21]. Specifically:

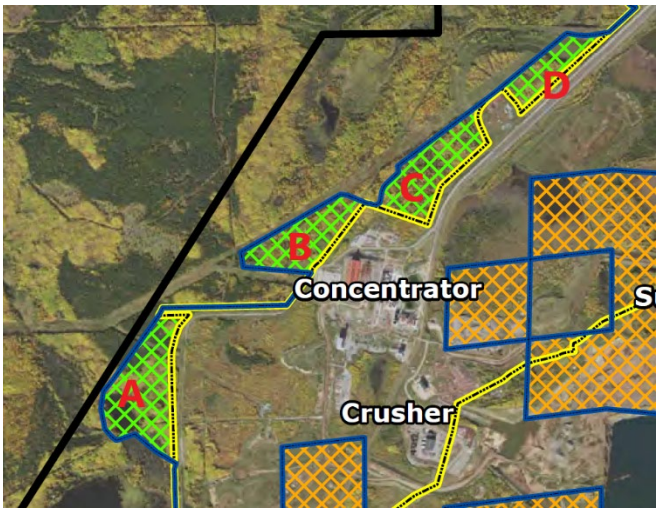
- *Overburden*. The Overburden Stockpile is in the same location as the original Stockpile Area B, but the proposed stockpile extends farther to the west to accommodate additional overburden material. These materials would be hauled west out of Pit 5 and stockpiled in the Overburden Stockpile on the west side of the property. The Overburden Stockpile would receive overburden material in years 1 to 5. Additional overburden material would be used for reclamation and capping of external stockpiles and in pit stockpiles where the elevation would be above the future water level once the pit refills.
- *Hematite*. Hematite would be hauled north from either the east or west side of Pit 5 to one of five Hematite piles that would receive material in years 1-8. Rock 1 would receive rock material generated over years 1 to 3. [See Email Query 14].

The active stockpiles would continue to receive material until completion of mining operations. The revised project would have a total of 7 out-of-pit stockpiles with an approximate footprint of 398 acres, which is a reduction of 125 acres. [See Email Query 10]. See below for the layout of the proposed surface stockpiles.



Ex-Pit Stockpiles	Acres
Hematite – 1	13
Hematite – 2	7
Hematite – 3	26
Hematite – 4	35
Hematite – 5	47
Overburden	175
Rock – 1	95
Total	**398**

Because of the termination of State leases, the revised project utilizes new areas for surface stockpiles not previously slated for any mining-related development. These new areas occur to the north side of the Corridor Road and western end of the Overburden Stockpile. This is depicted below. [See Email Query 15].



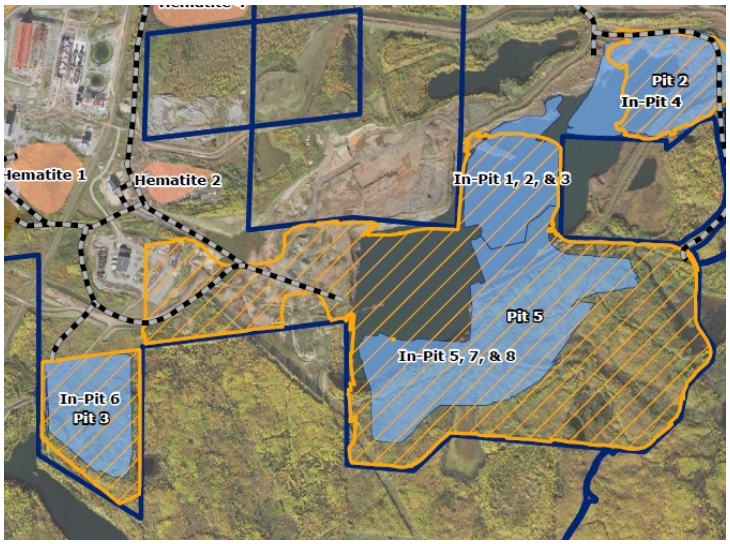
A is part of the Overburden Stockpile, while B-D make up Hematite Stockpiles 3 and 5.

2.2.2.2 In-Pit Stockpiles

The revised project also retains planned in-pit stockpiles with an estimated storage capacity of approximately 100.64 million long tons on approximately 247 acres. [See Email Query 21]. The in-pit stockpiles are described below.

- In-Pit 4 would receive rock material (Years 5 to 6) with overburden capping.
- In-Pit 1-8 would receive rock material (Years 3 to10) with overburden capping.
- In-Pit 6 would receive rock material (Years 6 to 8), but would not receive an overburden cap. [See Email Query 14].

See the figure below that details the in-pit stockpiles. [See Email Query 10].



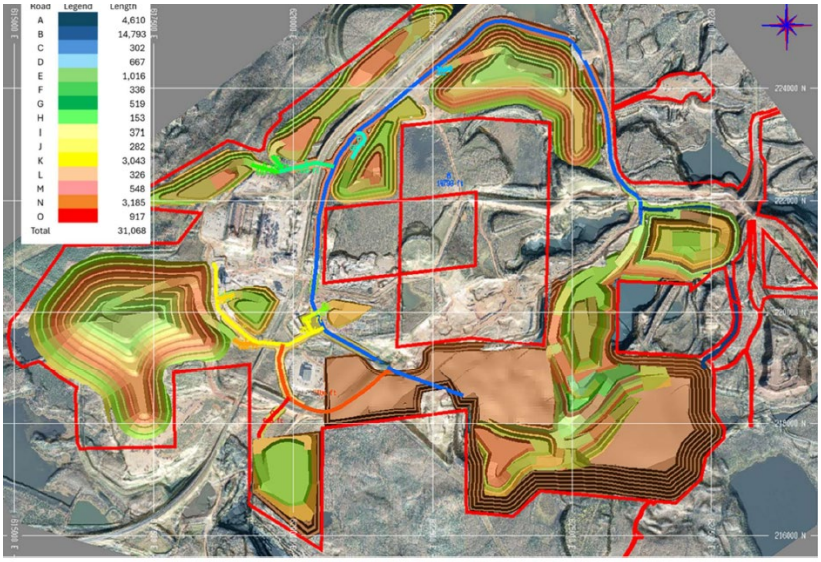
In-Pit Stockpiles	Acres
In-Pits 1, 2, 3, 4, 5, 7, 8	155
In-Pit 4	52
In-Pit 6	40
Total	**247**

2.2.3 Haul Roads

Planning around the proposed haul road network has advanced substantially under the revised project. This is because haul road modifications were necessary to avoid lands no longer under company control, to provide access to additional stockpile locations, and to address air quality permitting requirements. The Proposer reports that external haul roads for all material from Pits 2, 3, and 5 range between 1 and 3 miles, with haul road construction required only on in-pit roads as the pits are extended by mining. [Id.].

Approximately 3.1 million long tons of crushed rock would be required to construct the haul roads and access ramps. In general, overburden, waste rock, and ore would still be hauled by truck from the pit areas to the stockpiles or crusher. In-pit roads would continuously change as mining progresses. 320-ton haul trucks would be used instead to 240-ton trucks to optimize trips and increase capacity; the haul trucks would be equipped with Tier 4 engines. [See Mesabi Project Description Update at .pdf 7].

The haulage networking and mining layout is shown below. [See Email Query 19].



Haulage Layout – Segment Lengths in Feet

The average one-way haul distance in miles for all materials, by year, is shown below in ERND Table 3. [See Email Query 19].

ERND Table 3: Material Routing Summary – Average One-Way Haul in Miles

Material	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Overburden (In-Pit)	-	-	-	-	-	2.03	2.90	-	1.66	2.12
Rock (In-Pit 1-8)	-	-	2.29	2.03	1.56	2.50	2.18	1.31	1.26	1.49
Hematite (Surface H1-H5)	1.76	2.31	2.29	2.52	2.54	4.08	3.37	3.31	-	-

Material	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Overburden (Surface)	2.34	2.18	2.14	1.88	3.23	3.93	-	-	-	-
Rock (Surface Rock 1)	2.83	3.03	3.05	3.20	-	-	2.44	3.17		1.43
Taconite (Crusher)	2.60	2.04	2.12	2.29	1.64	1.55	2.40	2.53	1.79	2.35

2.2.4 Reclamation

No changes are proposed for site reclamation other than accommodating the revised mining area. The Permit to Mine Amendment would still require a reclamation plan for mined areas of the project that conforms to the provisions of Minn. R. 6130 for taconite and iron ore mineland reclamation. This would include the mine area, stockpile area, tailings basin, and other areas disturbed by mining.

2.3 Concentrating and Pellet Production

2.3.1 Concentrating

No changes to crushing infrastructure are proposed under the revised project, however three minor changes to the concentrating components are required. The amount of concentrate production does not change under the revised project. [See Email Query 3.1].

2.3.2 Iron Oxide Pellets

No changes to pellet production infrastructure are proposed under the revised project, including no change to the indurating furnace dimensions. The amount of iron oxide pellet production does not change under the revised project. [See Email Query 3.4].

2.3.3 DRI Pellets

DRI production has been removed from the project. [See Mesabi Project Description Update at .pdf 1].

2.3.4 Pellet Production Summary

See ERND Table 4 below for a comparison of pellet production between the currently permitted ESML Project and the revised project. [See Email Query 3.3].

ERND Table 4: Proposed Pellet Production

Unit Operation	Type of Pellet	ESML Project (million metric tons/year)	Mesabi Revised Project (million metric tons/year)
Taconite Pelletizing Furnace	Low Flux (DRI feed grade)	7	NC
Taconite Pelletizing Furnace	High Flux (blast furnace grade)	6.5	NC
Two DRI Modules	N/A	2.8	N/A

2.4 Steel Production

Steel production has been removed from the project. [See Mesabi Project Description Update at .pdf 1].

2.5 Tailings Management

2.5.1 Tailings Production

There is no change in annual or total projected amount of tailings generated under the revised project. [See Email Query 3.2].

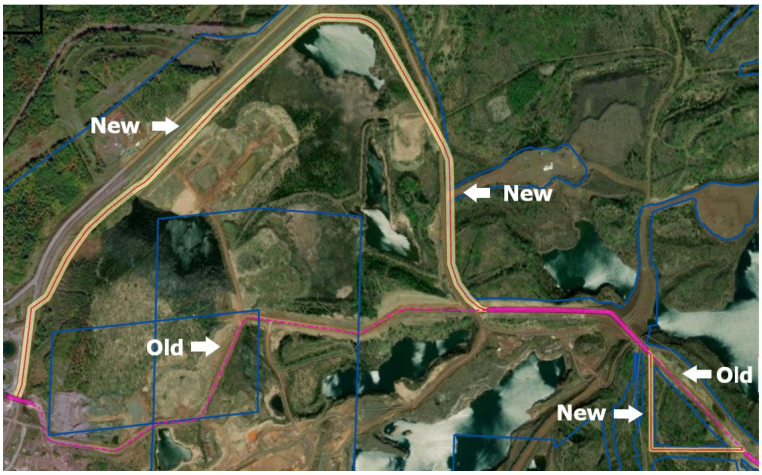
2.5.2 Tailings Basin

No significant changes to tailings management facilities are proposed. The tailings basin design has not changed, and the Proposer would continue to use the upstream construction method of dam construction. The reclaim pond for water to be routed back to the plant as makeup water has its own dam that utilizes a downstream dam construction method. If the revised project is approved, a final operation and maintenance plan, idling plan, and emergency action plan would be submitted to the DNR for review and approval prior to obtaining the authorization to operate.

2.5.3 Tailings/Reclaim Water Pipeline Corridor

The revised project requires two minor reroutes outside of the existing Permit to Mine mining area boundaries to relocate the tailings/reclaim water pipeline corridor to Mesabi Metallics-controlled land in place of the current location on state-owned land. This reroute involves approximately 13,856 feet of tailings pipeline corridor. [See Email Quick Clarification Pipeline Reroute]. The new corridor proceeds northeast from the concentrator along the Corridor Road and turns south around the eastern end of the Rock 1 Stockpile. The reroute then connects with

the pre-existing alignment at the far eastern end of the Sullivan Pit. The corridor deviates from the currently permitted alignment along the western boundary of Itasca County Parcel 18-011-3300 where it rejoins the alignment across TH 169 to the tailings basin.



2.5.4 Tailings Management Summary

See ERND Table 5 below for a comparison of tailings generation and tailings basin dimensions between the currently permitted ESML Project and the revised project. [See Email Query 3.2].

ERND Table 5: Proposed Tailings Production

Process Item	ESML	Mesabi Revised Project
Tailings per Year (million long tons)	8.82 (for 2 years) 16.27 (for 13 years)	No Change
Tailings for Project (million long tons)	229.1	No Change
Tailings Volume in acre-feet per annum (and total)	4,051 (for 2 years) 7,466 (for 13 years) (105,163 total)	No Change
Tailings Basin Designed Storage Capacity (million long tons)	229.1	No Change
Tailings Basin Design Volume (in acre- feet for evaluating height)	105,163	No Change

Process Item	ESML	Mesabi Revised Project
Tailings Basin Area (acres)	1,600 acres (total area, including reclaim basin); up to 1,690 acres for potential future needs	No Change
Tailings Dam Elevation (feet)	1,545-1,590 (110-160 feet above baseline elevation) Year 15	No Change

2.6 Water Management

2.6.1 Pit Dewatering

2.6.1.1 Pit 5

DNR Water Appropriation Permit 2008-0067 currently allows transfer of water from Pit 5 to Oxhide Creek, which flows to Oxhide Lake, at a rate up to 4,500 gpm for pit dewatering. [See 2011 Appropriation Permit 2008-0067]. This was the Pit 5 dewatering rate evaluated in the 2007 Final EIS and subsequently permitted. Mesabi Metallics now requests to increase the initial dewatering rate of Pit 5 by: 1) continuing to dewater to Oxhide Creek from Pit 5 at the current permitted rate of 4,500 gpm; 2) conducting a new water transfer from Pit 5 to Pit 1-2 at a rate of 15,000 gpm; and 3) conducting a one-time water transfer of 400,000 gallons to the Ann Pit. [See 2025 Project Description Update at 4]. Initial dewatering of Pit 5 to Oxhide Creek, Pit 1-2, and the Ann Pit would be complete within 6 to 9 months under the Mesabi Revised Project. [Id.].

2.6.1.2 Draper Pit

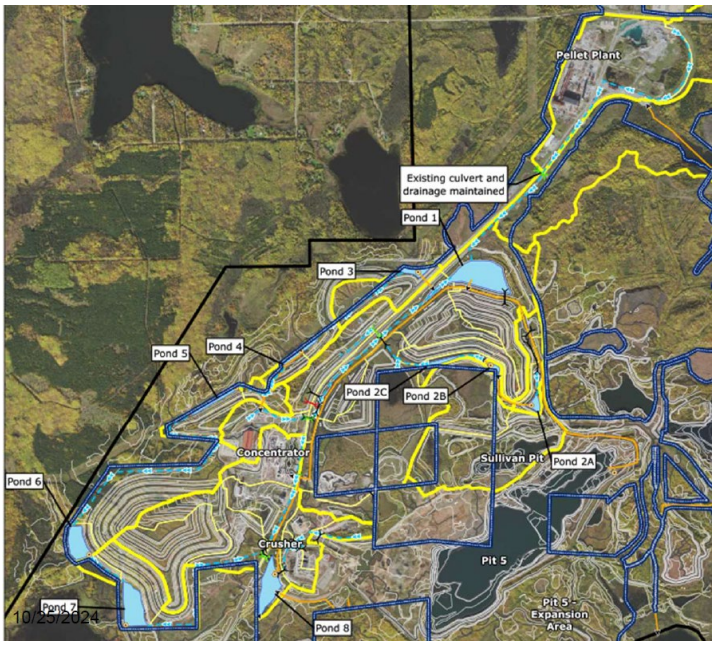
There are no plans to dewater the Draper Pit under the revised project. [See Email Query 16].

2.6.2 Water Supply

Mesabi Metallics proposes to no longer rely on the Sullivan and Ann Pits for water storage and as the principal source of process water; the Ann Pit would only be used to receive flows during Pit 5 dewatering. Process water would come from the stormwater system and Pit 1-2, which would be used for the crusher, pellet plant, and concentrator, and water for dust suppression. Pit 1-2 would receive Pit 5 dewatering water and then be the source of augmentation flows to Oxhide Creek upon completion of Pit 5 dewatering. Maintenance dewatering of Pits 2, 3, and 5 would be directed to the stormwater system or to the crusher and concentrator plant. [See 2024 NPDES Permit Reissuance Application at 12]. Appropriation of water from the Hill Annex Pit has been removed from the project. [See Email Query 17].

2.6.3 Stormwater

The Proposer reports that the termination of state leases and subsequent proposed changes in the mine plan has required revisions to the site's stormwater management plan. Because some of Mesabi Metallics' existing stormwater facilities are located on state land, the revised stormwater management plan moves all stormwater facilities to land controlled by the Proposer and eliminates use of the Sullivan and Ann Pits as part of the stormwater system. Ten different ponds are proposed under the revised system. The proposed stormwater management system under the revised project is detailed below. [See 2024 NPDES Permit Reissuance Application at 3-5].



Industrial stormwater would also be diverted away from Pit 1-2 for the life of the project to preserve the availability of those pits to serve as a source of stream augmentation water.

2.6.4 Stream Augmentation

Augmenting flows in Snowball Creek are no longer required under the revised project because mining the Draper Pit has been dropped. [See Email Query 16]. Appropriating water from the Hill Annex Pit as a potential source for augmenting Oxhide Creek flows is no longer proposed. [See Email Query 17].

Flow augmentation would still be required for Oxhide Creek once Pit 5 dewatering ends to sustain instream flows and geomorphology for habitat and biota. Augmentation to Oxhide Creek is needed to replace the loss of Pit 5 overflow. Oxhide Creek augmentation under the Mesabi Revised Project would still be accomplished using water sourced from Pit 1-2. The rate of augmentation is to be set in the DNR-approved Stream Augmentation Plan that is expected to equal 1,470 gpm established in the 2007 Final EIS. Appropriation Permit No. 2006-0433 allows water transfers from Pit 1-2 to Oxhide Creek up to 4,500 gpm. [See Mesabi Project Description Update at 4]. Once mining ends and Pit 5 refills and overflows, approximately 3,200 gpm would flow from Pit 5 to Oxhide Creek matching pre-2008 conditions. [See Email Query 25].

2.6.5 Landbridge Underdrain Sealing

There is a landbridge between Pit 5 and Pit 1-2 that was constructed in 2011 that provides a route for a service road and pipeline corridor between the two pits. The water level in Pit 1-2 is controlled by an underdrain ditch that allows for water to flow through the landbridge when Pit 1-2's water level is above 1,370 ft amsl. To allow for extra storage capacity in Pit 1-2 and address potential dam safety requirements, both associated with the proposed dewatering of Pit 5 to Pit 1-2, Mesabi Metallics proposes to install a clay seal to allow for 10 additional feet of storage in Pit 1-2 to 1,380 ft amsl. This is necessary because of the permeability of the landbridge. The proposed work would require a new Dam Safety Permit from DNR. [See Email Dam Safety Regarding Landbridge].

2.7 Summary of Changes

Available information including the Mesabi Project Description Update (March 12, 2025) indicates the project changes requested under the Permit to Mine Amendment can be summarized as follows:

- Reducing the permitted mining area by ~350-acres (i.e., ~200-acres for pits; ~150-acres for stockpiles)
- Increasing the footprint of Pit 5 by ~160-acres into Mesabi Metallics' privately leased land
- Reducing the footprint of surface stockpiles by ~121 acres
- Amending the Permit to Mine mining area by a total of 302.28 acres for new footprint of pits, stockpiles, and miscellaneous project features
- Placing ~50% of the surface stockpiles into Pit 5, which reduces haulage distances and associated emissions
- Utilizing 320-ton haul trucks to optimize haul trips, with the trucks equipped with Tier 4 engines
- Redesigning the stormwater ponding and management system to be relocated to Mesabi Metallics-owned properties
- Conducting the initial dewatering of Pit 5 not only to Oxhide Creek, but also to Pit 1-2 and Ann Pit
- Redesigning the tailings and water reclaim pipeline corridor to be relocated to Mesabi Metallics-owned properties
- Utilizing electric shovels and drills in the mine [See Mesabi Project Description Update at .pdf 1]
- Modifying the landbridge between Pit 5 and Pit 1-2 to facilitate additional water storage in Pit 1-2

3.0 Applicable Minnesota Rules (Chapter 4410)

Minnesota Statute § 116D.04, subd. 2a, requires the DNR to undertake environmental review for projects that have the potential for significant effects on the environment. The following provisions of Minnesota Rules Chapter 4410 are potentially applicable to the Mesabi Revised Project:

- Part 4410.0200, subpart 65 – Definition of Project
- Part 4410.4600, subpart 2 – Standard Exemptions
- Part 4410.4400, subpart 8B – Metallic mineral mining and processing
- Part 4410.4300, subpart 11B – Metallic mineral mining and processing
- Part 4410.3000, subpart 3A – Supplementing EIS, Substantial Changes or Substantial New Information
- Part 4410.3000, subpart 3C – Supplementing EIS, Phased and Connected Actions

- Part 4410.3000, subpart 3B – Supplementing EIS, Ongoing Governmental Actions

3.1 The Mesabi Revised Project is a Project within the Meaning of Minnesota Rules 4410.0200, subp. 65

Minnesota Rules 4410.0200, subp. 65, defines "project" as "a governmental action, the results of which would cause physical manipulation of the environment, directly or indirectly. The determination of whether a project requires environmental documents shall be made by reference to the physical activity to be undertaken and not [by reference] to the governmental process of approving the project."

As described in Part 2.0 in this Determination, the Mesabi Revised Project would cause physical manipulation of the environment, through: 1) construction of open-surface mine pits, both surface and in-pit stockpiles, haul roads, and a new route of the tailings/water reclaim pipeline; 2) directing initial dewatering of Pit 5 to Oxhide Creek, Pit 1-2, and the Ann Pit; 3) construction of a stormwater management system; and 4) augmenting the flow of Oxhide Creek. The Project also requires state, federal, and local approvals as detailed in Part 3.0 of this Determination.

Consequently, the Mesabi Revised Project is a "project" within the meaning of Minn. R 4410.0200, subp. 65, because it is a governmental action that if implemented would cause physical manipulation of the environment, both directly and indirectly.

3.2 The Mesabi Revised Project Does Not Qualify for an Environmental Review Exemption

Minnesota Rules 4410.4600 describes those types of projects that are exempted from environmental review. There are five standard exemptions that allow projects to be exempted from environmental review. See Minn. R. 4410.4600, subp. 2A-E. These standard exemptions are:

A. **Projects for which no governmental decisions are required**: As outlined in Part 1.7 of this Determination, there are numerous permits required for the Mesabi Revised Project and, therefore, this exemption does not apply. *See* Minn. R. 4410.4600, subp. 2A.
B. **Projects for which all governmental decisions have been made**: As outlined in Part 1.7 of this Determination, there are several permits required for the proposed expansion. Work on these permits has not begun or is in progress. These permits are required and must be issued before project implementation and construction; therefore, this exemption does not apply. *See* Minn. R. 4410.4600, subp. 2B. *See also* Minn. R. 4410.3100 (precluding the issuance of permits prior to completion of environmental review).
C. **Projects for which, and so long as, a governmental unit has denied a required governmental approval**: The Proposer has not notified DNR, nor is DNR aware, of any denial of any required governmental approval(s), therefore, this exemption does not apply. *See* Minn. R. 4410.4600, subp. 2C.
D. **Projects for which a substantial portion of the project has been completed and an EIS would not influence remaining construction:** Construction has commenced on the ESML Project, however the

project revisions are for project features not yet begun; therefore, this exemption does not apply. See Minn. R. 4410.4600, subp. 2D.

E. **Projects for which environmental review has already been completed or for which environmental review is being conducted pursuant to part 4410.3600 or 4410.3700:** The current project was subject to a joint state-federal EIS and a state supplemental EIS, however some elements of the proposed project were not evaluated in these EISs. Therefore, this exemption does not apply. See Minn. R. 4410.4600, subp. 2E.

Additionally, Minn. R. 4410.4600, subp. 8, exempts mining projects from environmental review if the proposed project "do[es] not result in permanent alteration of the environment," if it is an "[e]xpansion of metallic mineral plant processing facilities that are capable of increasing production by less than 10% per year," or it is a "scram mining operation."

As outlined in Part 2.0 of this Determination, the Mesabi Revised Project would result in a permanent alteration of the environment at the mine site. The Mesabi Revised Project does not expand the taconite ore processing facilities at the Mesabi Metallics Mine. Nor does the Mesabi Revised Project constitute a scram mining operation as defined in Minn. Stat. § 93.46, subd. 10. Therefore, the Mesabi Revised Project does not meet the requirements for the subpart 8 mining exemption.

Having failed to meet any of the exemption qualifications of Minn. R. 4410.4600, subp. 2 or subp. 8, the proposed Project is not exempt from environmental review.

3.3 Application of the Metallic Mineral Mining and Processing Mandatory EIS Category Requirements to the Mesabi Revised Project

Minnesota Rules 4410.4400, subp. 8B, requires DNR to prepare a mandatory EIS "for construction of a new facility for mining metallic minerals or for the disposal of tailings from a metallic mineral mine."

As discussed in Part 2.0 of this Determination, the Mesabi Revised Project does not involve construction of a new mining facility because two EISs have already been completed on, and permits have been issued for, a mine and its tailings basin at this site. The "project" includes the above-described changes to the currently permitted facility, including some changes in the location of the mine pits. Therefore, it is not a new facility within the meaning of Minn. R. 4410.4400, subp. 8B, and a mandatory EIS is not required.

The "project" likewise does not include the "construction of a new metallic mineral processing facility" because the processing facilities have already been reviewed in two prior EISs and are permitted, and no changes are proposed to these facilities except for the removal of DRI processing. Thus, an EIS is not required under Minn. R. 4410.4400, subp. 8(C).

3.4 Application of the Metallic Mineral Mining and Processing Mandatory EAW Category Requirements to the Mesabi Revised Project

Minnesota Rules 4410.4300, subp. 11B, requires the DNR to prepare a mandatory Environmental Assessment Worksheet (EAW) "for the expansion of a stockpile, tailings basin, or mine by 320 or more acres." DNR therefore must first determine whether the proposed project is an expansion, and if yes, then whether the expansion is 320 or more acres in size.

To determine whether a mandatory EAW must be prepared for the Mesabi Revised Project, the DNR must first determine whether the Mesabi Revised Project is an expansion of the permitted Mesabi Metallics Project. Minnesota Rules 4410.0200, subp. 28, defines expansion as "an extension of the capability of a facility," (i.e. tailings basin), "to produce or operate beyond its existing capacity." It excludes "renovations or repairs that do not increase the capacity of the facility." The term "extension" used in the cited rule is not defined, however, the term "extension" is defined in Merriam Webster as "an enlargement in scope of operation," and the Oxford English Dictionary defines the term extension as "a part that is added to something to enlarge or prolong it, a continuation."

DNR has considered whether the Mesabi Revised Project constitutes an expansion of the mine, processing facilities, or tailings basin in light of these definitions. As noted in Section 2.7, the DNR-regulated mining area increases by 302.28 acres under the requested amendment, however the overall footprint changes result in a net reduction in acreage dedicated to mine pits and surface stockpiles. Regardless, the change in mine pit, stockpile, and miscellaneous acreage is below the 320-acre threshold provided in the rule. The project is arguably not an expansion under Minn R 4410.4300, subp. 8, and in any event, it does not require preparation of a mandatory EAW under this rule.

3.5 Application of the Phased and Connected Actions Supplemental EIS Category Requirements to the Mesabi Revised Project

A supplemental EIS is required when one or more phases of a phased action or connected action were addressed in an EIS, and a later phase is proposed that was not evaluated in the EIS. Minn. R. 4410.3000, subp. 3C. No new phased or connected actions pursuant to Minn. R. 4410.0200, subps. 60 and 9c, have been identified for the Mesabi Revised Project. The 2007 Final EIS identified construction of the following project elements as connected actions: gas line; electrical power lines; public roadway; railroads; and water/sewer lines; these were addressed in Section 6.13 of the 2007 Final EIS. The 2011 Final SEIS identified potential mining, processing, pellet and steel production, and tailings management beyond the projected 15-year life of the project as a phased action. Mesabi Metallics does not propose to mine beyond this period under the Mesabi Revised Project. The current project no longer includes DRI or steelmaking.

To the extent that it can be argued that the current proposal is a connected or phased action with the MSI and EMSL projects, the current proposal consists of revisions to the original project, not a later phase of an ongoing project. The entire project was evaluated in the EIS and SEIS.

4.0 Application of the EIS Supplement Requirements to the Mesabi Revised Project

An RGU is required to supplement an EIS when:

1. "substantial changes have been made in the proposed project that affect the potential significant adverse environmental effects of the project;"
2. "there is substantial new information or new circumstances that significantly affect the potential environmental effects from the proposed project that have not been considered in the final EIS; or
3. "there is substantial new information or new circumstances . . . that significantly affect the availability of prudent and feasible alternatives with lesser environmental effects."

Minn. R. 4410.3000, subp. 3A.

4.1 Previous Environmental Review

As discussed below, the Mesabi Metallics Project was subject to a joint state-federal EIS and a state-only supplemental EIS.

4.1.1 2007 Joint State-Federal EIS

DNR was RGU for an Environmental Impact Statement (EIS) that was completed for the "Minnesota Steel, LLC Steel Mill and Taconite Project." [See generally 2007 FEIS]. The US Army Corps of Engineers was the Lead Agency for the federal EIS. The project analyzed in the 2007 Final EIS was described as: "…an open pit taconite mine, adjacent stockpile areas, and the construction of new facilities [including]: a crusher, concentrator, pellet plant, and plant for producing direct reduced iron, and a steel mill consisting of two electric arc furnaces, two ladle furnaces, two thin slab casters, a hot strip rolling mill, and construction of a new tailings basin on the site of the former Butler facility tailings basin; [i]ncluding the utilization of new and existing haul roads to transport overburden, waste rock, and lean ore to the stockpile area and taconite ore from the mine to the crusher." The Final EIS updated the substantive content of the Draft EIS as well as responded to public comments.

4.1.1.1 2007 Final EIS Content

The content of the 2007 Final EIS included:

- Evaluation of the proposed Minnesota Steel Project and the following alternatives: Tailings Basin; Ore Processing; Air Pollution Control Technologies; Stockpiling; On-Site Sanitary Wastewater Treatment; and No-Action.
- Assessment of the following significant impact areas: wetlands; water appropriation; surface waters; surface water runoff; wastewater/water quality; solid waste; stationary source air emissions; fisheries and aquatic resources; wildlife resources; and noise.
- Assessment of the following cumulative effects: Class I air quality – particulates; acid deposition and ecosystem acidification in Class I Areas; mercury emissions, deposition, and bioaccumulation; visibility

impairment; loss of threatened and endangered plant species; loss of wetlands; wildlife habitat loss/fragmentation; and wildlife travel corridor obstruction.
- Identification of measures to mitigate adverse environmental impacts.

The state Determination of EIS Adequacy was rendered on August 10, 2007.

4.1.2 2011 Supplemental EIS

DNR was also RGU for preparation of a Supplemental EIS (SEIS) for proposed "Essar Steel Minnesota Modifications Project." [See generally 2011 DSEIS and 2011 FSEIS]. No federal supplement was prepared. The project analyzed in the 2011 Final SEIS was described as a proposal "to make modifications to its taconite mine and processing plant…that would increase the production of taconite pellets from 3.8 million metric tons per year (mmtpy) of low flux taconite pellets to 6.5 mmtpy of high flux pellets, or 7.0 mmtpy of low flux taconite pellets; [t]his would require the addition of a crusher/concentrator line, and the installation of a larger pellet furnace. The length of the mine plan time period was shortened from 20 years to 15 years."

Permits subsequent to both the 2007 Final EIS and 2011 Final SEIS reflect the refinements to the mine plan, water management plan, and other project components.

4.1.2.1 2011 Supplemental EIS Content

The content of the 2011 Supplemental EIS included:

- Evaluation of the proposed Essar Steel Minnesota Modifications Project and the following alternatives: Air Pollution Control Technologies; and No Action.
- Assessment of the following significant impact areas: water resources and wild rice; air quality; human health risk assessment; ecological risk assessment; and socioeconomics.
- Assessment of the following cumulative effects: air quality Class I particulates and visibility; air quality Class I acid deposition and ecosystem acidification; mercury deposition; and climate change.
- Identification of measures to mitigate adverse environmental impacts.

The Determination of EIS Adequacy rendered on December 29, 2011.

4.2 Ongoing Governmental Action

A supplemental EIS is required when an EIS has been prepared for an ongoing governmental action and the RGU determines that: 1) substantial changes have been made in the proposed project that affect the potential significant adverse environmental effects of the project; or 2) there is substantial new information or circumstances that significantly affect the potential environmental effects from the proposed project that have not been considered in the final EIS or that significantly affect the availability of prudent and feasible alternatives with lesser environmental effects. Minn. R. 4410.3000, subp. 3B. Minnesota Rule 4410.3000, subp. 3B, only applies to "ongoing governmental action" for which an EIS has previously been prepared. The term "ongoing governmental action" is not explicitly defined in Minn. Stat. ch. 116-D, nor in Minn. R. ch. 4410. A "governmental action" is defined by Minn. Stat. § 116D.04, subd. 1a(d) as "activities including projects wholly or partially

conducted, permitted, assisted, financed, regulated, or approved by units of government, including the federal government." The term ongoing is defined by Merriam-Webster as "continuing or still in process."

As noted in Part 1.7 of this Determination, the Proposer's current activities at Mesabi Metallics are authorized under both state and federal permits and approvals. Similarly, since 2007 the Proposer has been constructing parts of the supporting mining infrastructure, along with constructing the concentrating and pelletizing infrastructure, that will become operational in time for mining to begin in Pits 5 and 6. This means the project is an ongoing governmental action for which an EIS had previously been prepared. Consequently, the DNR must determine whether a supplement to the 2011 Final SEIS is required in accordance with the provisions of Minn. R. 4410.3000, subp. 3B.

4.3 Analysis of Whether Substantial Changes Have Been Made to the Project That Affect the Potential Significant Adverse Environmental Effects of the Project

4.3.1 Analysis of Whether There are Proposed Substantial Changes in the Project

Under the criteria set forth in Minn. R. 4410.3000, subp. 3A(1), an RGU is required to supplement an EIS if there has been a substantial change made to a project, and then only if that change affects the potential significant adverse environmental effects of the project. The term "substantial change" is not defined. The term change is defined in Meriam-Webster as: to make something different, to shift from one to another or, to replace one with another. The term substantial is defined by Meriam-Webster as: significantly great or large in amount. Thus, a substantial change means to make something significantly different.

In the case of the Mesabi Revised Project, the initial question posed by Minn. R. 4410.3000, subp. A (1) is whether the Proposer seeks to alter the MSI/ESML Project in a significant way from what was proposed and studied in the 2007 Final EIS and 2011 Final SEIS and subsequently permitted in the 2007 Permit to Mine and 2011 Permit to Mine Amendment along with other permits and approvals. Mesabi Metallics proposes the following changes to the currently permitted project: hardrock mining; stockpiling; haul roads; initial Pit 5 dewatering; water supply; stormwater management; stream augmentation; tailings/reclaim water corridor; landbridge underdrain sealing.

4.3.1.1 Hardrock Mining

4.3.1.1.1 Hardrock Mining as Analyzed in the 2011 Final Supplemental EIS

The currently permitted ESML project accelerated the rate of hardrock mining compared to the MSI project, but the mining area for the ESML Project remained constant at 803.4 acres. Open-pit mining would be restarted at Pit 5 with new mining proposed for Pit 6 after overburden and waste rock were removed (and stockpiled). Compared to the MSI Project, Pits 5 and 6 were combined and mined to a greater depth, with the amount of ore to be mined annually increased to 24 million metric tons per year, which reduced the project life from 20 years to 15 years. Mining in Pit 5 would advance in all directions, including north to consume the Sullivan Pit, while mining in Pit 6 would advance south and west, eventually consuming the Draper Pit. The ESML project shifted to using 240-ton trucks compared to 200-ton trucks proposed for the MSI project. For both the 2007 project and 2011 project, the

raw ore would be trucked to the primary crusher for subsequent processing while waste rock would be used to construct dikes and haul roads or placed in waste rock stockpiles.

4.3.1.1.2 Hardrock Mining Changes for the Revised Project

The proposed project still relies on the open-pit mining method but changes the areas proposed to be mined that would constitute Pits 2,3 and 5 in the end condition. The Pit 5 mining area increases by 160 acres (e.g., Pit 5 Expansion Area) while the original Pit 6 (now Pit 3) mining area decreases by ~171 acres, with the total mining area reduced to 603.5 acres. The sequence of mining is similar with mining commencing in Pit 5 and advancing eastward and south into the Pit 5 Expansion Area and Pit 2. Mining then moves westward with mining in Pit 3 at the end of mine life. No mining is proposed for the Sullivan Pit or Draper Pit under the revised project. The Project's revised mine life is approximately 9 years, which is down from 15 years in the ESML project. This is based on roughly 23 million long tons of crude ore to the crusher per year. Finally, electric shovels and drills would be used in the mine.

4.3.1.1.3 Do the Proposed Changes to Hardrock Mining Constitute a Substantial Change in the Project?

Open-pit mining remains the type of mining that has been a feature of mining operations from the start. Pit development continues to begin by restarting mining in existing Pit 5 (after it is dewatered), with mining extending to the south and east to create a new Pit 2, then expanding west to eventually create Pit 3. Because of termination of state leases, mining is scaled back for Pit 6, including no mining proposed for the Draper Pit or the Sullivan Pit. Mining in Pit 5 is redirected to the south-southeast into the Pit 5 Expansion Area, away from the Sullivan Pit. Although the rate of mining has remained relatively unchanged, the life of mine has dropped from 15 years to 9 years, which is partially due to increasing the size of the haul trucks from 240-ton to 320-ton vehicles. Finally, the area mined decreases under the Mesabi Revised Project by 199.4 acres from the EMSL project.

In summary, while the mining and stockpiling configurations on the site have changed under the Mesabi Revised Project, the same ore body is being mined using the same hardrock mining methods as under the ESML Project. It is still an open pit mine with the changes that are present being due mostly to the termination of state leases and subsequent redefinition of the mining area to other parts of the site controlled by Mesabi Metallics. These changes reduce the total area subject to open-pit mining under the revised action. Given these circumstances, the proposed changes in hardrock mining are not significantly different from the ESML project and thus do not constitute a substantial change in the project.

4.3.1.2 Stockpiling

4.3.1.2.1 Stockpiling as Analyzed in the 2011 Final Supplemental EIS

The 2011 SEIS evaluated both surface and in-pit stockpiles that were located in close proximity to the mine haul roads for Pits 5 and 6 and the crusher site. Above-ground stockpiles would likely include both waste rock and low-grade ore while in-pit stockpiles would be reserved for waste rock only. The amount of stockpiled materials was based on a stripping ratio of 0.47, which was changed from the MSI project by combining Pits 5 and 6 into one pit. Table 3.3 of the 2011 Draft SEIS estimated 151.6 million long tons over the 15-year project life. [See 2011 DSEIS

at Table 3-3]. More detailed mine planning allowed for surface stockpile development for the first five years of the project, with in-pit stockpiling dominating over the remaining 10 years of the project.

At the time of the 2011 Draft SEIS, the areas planned for stockpiling were generalized to Stockpile Areas A, B, and C. Areas A and C were located to the east of the crusher/concentrator while Area B was located west of this infrastructure. The northern borders of Stockpile Areas A and C abutted the Corridor Road connecting the crusher/concentrator to the Plant Site. No stockpiling was proposed on the north side of this corridor, nor was it proposed north of the concentrator.

4.3.1.2.2 Stockpiling Changes for the Revised Project

The current proposed project still relies on stockpiling of overburden and waste rock until mining is completed, however the surface stockpiles are re-arranged to avoid non-Mesabi Metallics controlled parcels while expanding in-pit stockpiling. The revised project would have a total of 7 out-of-pit stockpiles with an approximate footprint reduction of 125 acres. Overburden, hematite, save rock, and waste rock disturbed by mining would be hauled to stockpiles.

It is estimated there would be approximately 179,000,000 long tons of surface stockpiles. The surface stockpiles include: 1) five hematite stockpiles with a capacity of approximately 14,000,000 long tons; 2) one waste rock stockpile with an estimated capacity of 49,000,000 long tons; and 3) one overburden stockpile with an estimated capacity of 116,000,000 long tons. The total estimated capacity of in-pit stockpiles is 92,000,000 long tons. After the stockpiles are completed, they would be graded and reclaimed.

Unlike the currently permitted ESML project, the revised project proposes to expand stockpiling on the north side of the Corridor Road and the concentrator building by approximately 81 acres. This is depicted in Figure 3, Stockpile Layout, from the Mesabi Project Description Update (January 29, 2025) for Hematite Stockpiles 3 and 5. Similarly, the western boundary of the Overburden Stockpile (to the west of the concentrator) is expanded by approximately 43 acres under the revised project.

4.3.1.2.3 Do the Proposed Changes to Stockpiling Constitute a Substantial Change in the Project?

Surface stockpiling of overburden, lean ore, and waste rock, along with in-pit stockpiling of waste rock, remains a project feature under the proposed Mesabi Revised Project. How this actually would be accomplished has been refined in response to the termination of state mineral leases. In terms of stockpile footprint, it is reduced from the 2011 Final SEIS by approximately 120-acres by increased reliance on in-pit stockpiling of waste rock, including new in-pit stockpiling into Pit 3. Stockpiling on the north side of the Corridor Road for Hematite Stockpiles 3 and 5, plus the westward expansion of the Overburden Stockpile, constitute new mining area footprint not addressed in either the EIS or supplement. Although the location of the modified footprint is new, the ore body is the same and there is no change in construction or operational methods for stockpiling at these locations. The total amount of stockpiled material is also reduced, which in turn reduces the resources necessary to meet the stockpiling needs of the mine. Given these circumstances, the proposed changes in stockpiling are not significantly different from the ESML project and thus do not constitute a substantial change in the project.

4.3.1.3 Haul Roads

4.3.1.3.1 Haul Roads as Analyzed in the 2011 Final Supplemental EIS

The project evaluated in the 2011 Final SEIS reflected some differences between the MSI Project and the ESML Project. Regardless, the project would use the existing Butler facility haul roads to transport stripping material to the stockpile areas, and taconite ore from the mine to the crusher. As the mine pits are expanded, mine pit and inter-pit haul roads would be expanded to facilitate efficient operations. Given the hauling distances from Pits 5 and 6, approximately 3,500 feet of new roads and in-pit roads would need to be constructed. Haul road and access ramp construction to accommodate this stripping would require an estimated 300,000 tons of crushed rock. Waste rock would be used as road construction material where feasible. The 2011 Final SEIS anticipated use of 240-ton haul trucks at the mine pits for materials movement.

4.3.1.3.2 Haul Roads Change for the Revised Project

As for the revised Mesabi Revised Project, access across the haul road network has to be modified to avoid lands no longer under company control, however no new surface haul road construction is needed. At this point of project development, new haul road construction involves only in-pit roads as the pits are extended by mining. The average one-way haul ranges from a minimum 1.26 miles to a maximum 4.08 miles. Approximately 3.1 million long tons of crushed rock would be required to construct the haul road and access ramp. In general, overburden, waste rock, and ore would still be hauled by truck from the pit areas to the stockpiles or crusher. In-pit roads would continuously change as mining progresses. 320-ton haul trucks would be used instead to 240-ton trucks to optimize trips and increased load capacity; the haul trucks would be equipped with Tier 2 engines.

4.3.1.3.3 Do the Proposed Changes to Haul Roads Constitute a Substantial Change in the Project?

Haul roads are a standard feature of open-pit mines and remain a major project element under the revised project. With the change in surface ownership, the supporting network of haul roads required some reconfiguration. However, the amount of road development is basically the same, and there is no change in construction methods or materials under the proposed project. Switching to 320-ton trucks should further optimize haul routes in concert with in-pit stockpiling, especially by reducing total vehicle miles relative to the original proposal. Given these circumstances, the proposed haul roads are not significantly different from the ESML project and thus do not constitute a substantial change in the project.

4.3.1.4 Initial Pit 5 Dewatering

4.3.1.4.1 Initial Pit 5 Dewatering as Analyzed in the 2011 Final Supplemental EIS

The 2007 Final EIS evaluated a plan that would dewater Pit 5 prior to mining via a water transfer to Oxhide Creek. This would take nearly five years prior to the beginning of operations; two years would be used to dewater Pit 1-2, followed by 3 years to completely dewater Pit 5. Dewatering of Pit 5 is now underway under current permit 2008-0067, which authorizes the initial transfer of water from Pit 5 to Oxhide Creek at a rate up to 4,500 gpm. Dewatering initially began in 2008, but it has been inconsistent, and Pit 5 has subsequently refilled in recent years as noted in ERND Section 1.6.1.2. [See Email: Question on Pit 5 Dewatering Status]. Under the ESML Project,

transfer of water from Pit 5 would begin after the pre-production phase and be complete in year 6, which means the ore currently under water in Pit 5 would be available in year 6.

4.3.1.4.2 Initial Pit 5 Dewatering Change for the Revised Project

The Proposer still intends to dewater Pit 5 prior to mining operations but proposes to do so faster than evaluated in the 2007 Final EIS and approved in subsequent permitting. This would be done by continuing to transfer water to Oxhide Creek, but also to Pit 1-2 and Ann Pit under the Mesabi Revised Project. Thus, initial dewatering of Pit 5 now includes: 1) continued dewatering to Oxhide Creek from Pit 5 at a rate of 4,500 gpm; 2) transferring water from Pit 5 to Pit 1-2 at a rate of 15,000 gpm; and 3) transferring 400,000 gallons of water to the Ann Pit from Pit 5. For proposed dewatering to Oxhide Creek, it represents no change from current, pre-revised project conditions. The proposed 15,000 gpm rate for the water transfer between Pit 5 and Pit 1-2 would require a new Water Appropriation Permit. The proposed transfer to the Ann Pit falls within how that pit was planned to be used in water management for both the previous MSI and ESML Projects and does not require a permit amendment.

Initial dewatering of Pit 5 would be complete within 6 to 9 months from the start of pumping under the requested water transfers.

4.3.1.4.3 Do the Proposed Changes to Initial Pit 5 Dewatering Constitute a Substantial Change in the Project?

The need to dewater Pit 5 before mining would begin has been a constant project feature, with Mesabi Metallics currently permitted to transfer water to Oxhide Creek at a rate up to 4,500 gpm at the start of the ESML Project. Pit 5 still needs to be dewatered prior to mining under the revised project, but Mesabi Metallics now proposes to transfer water not only to Oxhide Creek, but also to Pit 1-2 and the Ann Pit. For the Ann Pit, there have always been plans to use it for water management, so the one-time transfer of 400,000 gallons of water is consistent with general project water management goals. Regarding Pit 1-2, it has sufficient capacity to receive the requested volume of flow while reducing the total volume of water leaving the site during to Oxhide Creek during Pit 5 dewatering compared to the ESML project. With the addition of Pit 1-2 and Ann Pit as receiving waters, the total volume of water that needs to be moved is not changing but the time needed for Pit 5 dewatering drops from 3 years to 6-9 months. The change also substantially reduces the total amount of water leaving Pit 5 to Oxhide Creek during dewatering compared to the ESML Project. In conclusion, even though the proposed changes in Pit 5 dewatering keep more water on the mine site (e.g., Pit 1-2; Ann Pit) and reduce the time to dewater Pit 5, this is not very different from the ESML project and does not constitute a substantial change in the project.

4.3.1.5 Water Supply

4.3.1.5.1 Water Supply as Analyzed in the 2011 Final Supplemental EIS

The ESML project evaluated in the 2011 Final SEIS relied on two primary sources of process water. One source involves water originating from Pits 5 and 6 and the Sullivan and Ann Pits, while the other is water originating from Pit 1-2. The source of water in all of these pits is groundwater and project stormwater entering each one. Water from these pits can be directed to either the concentrator process stream (for pelletizing and tailings storage) or the DRI/steel mill process stream. Stream augmentation during operations (e.g., Oxhide Creek; Snowball Creek) would be sourced from Pit 1-2; sourcing water from the Hill Annex Pit was an available measure.

Options to recycle water are available between the pellet plant and concentrator, and between the tailings basin and the concentrator.

4.3.1.5.2 Water Supply Change for the Revised Project

Water use changes in the revised project account for the termination of state leases as well as removal of DRI and steelmaking from the proposed project. The change in land control, especially around riparian access, results in eliminating the use of the Sullivan and Ann Pits as water sources for the project. The removal of DRI and steelmaking result in redirection of water originally intended for industrial purposes. Water from Pit 1-2 would be exclusively used for the pellet plant and stream augmentation of Oxhide Creek. Water from Pit 5 (including the expansion area) would be directed to the crusher and concentrator plant and the stormwater system. Water from the stormwater system would be used in the crusher and concentrator plant and the pellet plant. Finally, water would also be taken from the tailings basin and seepage collection system and directed to the crusher and concentrator plant. Any water deficit would be supplied from available water stored in Pit 1-2.

4.3.1.5.3 Do the Proposed Changes to Water Supply Constitute a Substantial Change in the Project?

Water use plans under the revised project are similar to those plans under the ESML project, though comparisons are complicated by the termination of state leases, removal of DRI and steelmaking, and a changed surface footprint for the pits and stockpiles. Still, both the current permitted project and the revised project rely on a combination of surface and groundwater inflows to existing and new pits, the stormwater system, and the tailings basin. While the process flows have changed, some measure of water demand remains for pellet production and augmentation. One difference is increased reliance on Pit 1-2 to make up projected water supply deficits. This is principally a function of removing the Sullivan and Ann Pits from the project, however the estimated water needs are well below the 7,000 gpm maximum withdrawal rate under Water Appropriation Permit 2006-0433 for Pit 1-2. There is also greater reliance on the stormwater management system to supply process water and water for dust suppression. Overall, the circumstances around, and proposed changes in, water supply are not significantly different from the ESML project and thus do not constitute a substantial change in the project.

4.3.1.6 Stormwater Management

4.3.1.6.1 Stormwater Management as Analyzed in the 2011 Final Supplemental EIS

The 2011 Final SEIS proposed that stormwater from the production plant area, stockpile areas, and the pits would be collected and used for process water, either at the point of collection or discharged to the abandoned Sullivan and Ann Natural Ore Pits. The stormwater management system includes four areas of stormwater collection and ponding that relies on stormwater conveyance through surface ditches (e.g., gravity flowage) and pumped water transfer through pipes. At the beginning of the project, ponds would be located near Stockpile A-OB, concentrator, Sullivan Pit, and at the pellet plant, DRI, and mini-mill site. The pond at the Sullivan Pit would be consumed by the northward extension of Pit 5 while the other ponds would remain over the entire mining period. There would be no surface discharge of stormwater to downstream impaired waters.

4.3.1.6.2 Stormwater Management Change for the Revised Project

Stormwater management under the revised project must account for the termination of state leases, rearranged surface stockpiles, and loss of the Sullivan and Ann Pits for water storage relative to the original project. The revised project has 11 separate ponding areas that not only capture runoff but also operate as a main component of the project's water supply. Industrial stormwater would also be diverted away from Pit 1-2 for the life of the project to preserve the availability of those pits to serve as stream augmentation water. The updated project relies more extensively on ditches and pumping to manage stormwater than the currently permitted project. Also of note is that stormwater generated at the Pellet Plant would be directed to Pond 1; there is no ponding at the southeast end of the Pellet Plant site under the revised project.

4.3.1.6.3 Do the Proposed Changes to Stormwater Management Constitute a Substantial Change in the Project?

Stormwater management remains an important project feature under the revised project. The changes in the project stormwater design were necessary to address the altered land control, removal of the Sullivan and Ann Pits for stormwater management, and increased reliance on stormwater for process and other water supply. All precipitation that comes into contact with mining features, including pits, stockpiles, roads, and concentrating and pelletizing infrastructure, is still captured and retained onsite as before; this means the Mesabi Revised Project remains a zero surface discharge facility under NPDES regulations. Although the stormwater management scheme is more complex under the revised project, the proposed changes in stormwater management are not significantly different from the ESML project and thus do not constitute a substantial change in the project.

4.3.1.7 Stream Augmentation

4.3.1.7.1 Stream Augmentation as Analyzed in the 2011 Final Supplemental EIS

For the ESML Project, augmentation of Oxhide Creek would be required pre-mining and during mining, while Snowball Creek would only require augmentation during the mining phase, which would be done in both to sustain instream flows and geomorphology for habitat and biota. Flow augmentation would not be needed for either stream once Pits 5 and 6 fill with water and overflow to the streams returns in closure. The 2007 Final EIS established augmentation flows at 1,470 gpm for Oxhide Creek and that was continued forward into the ESML Project. Dewatering of Pit 5 to Oxhide Creek has been underway since 2008, at times up to a maximum 4,500 gpm but always meeting the 1,470 gpm minimum rate established at the time of the 2007 Final EIS. Once Pit 5 dewatering would end (about 5 years into the ESML Project), augmentation flows to Oxhide Creek would be sourced from Pit 1-2 because mining in Pit 5 would be underway. At this point the augmentation rate would be determined in the DNR-required Stream Augmentation Plan. Snowball Creek would require augmentation once mining at Pit 6 expands into the Draper Pit; the rate of augmentation for Snowball Creek is permitted up to 500 gpm, initially from the Draper Pit. Any deficits in available water supply for augmenting both Oxhide Creek and Snowball Creek could be met by appropriating water from the Hill Annex Pit.

4.3.1.7.2 Stream Augmentation Change for the Revised Project

The revised project would still require stream augmentation for Oxhide Creek, however eliminating mining in the Draper pit eliminates the need for augmentation of Snowball Creek. Pit 5 dewatering at the currently permitted

level of 4,500 gpm would remain under the Mesabi Revised Project, which satisfies augmentation requirements for Oxhide Creek. Once Pit 5 is dewatered, stream augmentation flows would be provided by Pit 1-2 according to a DNR-approved Stream Augmentation Plan to satisfy augmentation requirements to sustain instream flows and geomorphology for habitat and biota. Just as in the MSI and ESML Projects, in closure stream augmentation would no longer be necessary because Pit 5 would fill with water and again overflow into Oxhide Creek, which was the case prior to 2008 when Pit 5 dewatering began. No appropriation from the Hill Annex Pit is planned or needed for the revised project.

4.3.1.7.3 Do the Proposed Changes to Stream Augmentation Constitute a Substantial Change in the Project?

Eliminating mining in the Draper Pit under the revised project removes the need to augment flows in Snowball Creek, which is a change from the currently permitted project. As for the proposed augmentation for Oxhide Creek, it remains to be done first by water sourced from Pit 5 dewatering and second from Pit 1-2; there are no contributions from the Hill Annex Pit under the Mesabi Revised Project. The flow rate under the revised project from Pit 5 dewatering does not change from current levels, with augmentation from Pit 1-2 still being set in the DNR-approved Stream Augmentation Plan once mining begins. There is also no change in when augmentation ends for Oxhide Creek; it would end when mining in Pit 5 is complete, the pit refills with water, and then begins to overflow again into Oxhide Creek thus negating any need for augmentation. Given these circumstances, the proposed change in stream augmentation is not significantly different from the ESML project, and thus does not constitute a substantial change in the project.

4.3.1.8 Tailings/Reclaim Water Pipeline Corridor

4.3.1.8.1 Tailings/Reclaim Water Pipeline Corridor as Analyzed in the 2011 Final Supplemental EIS

The 2011 Final SEIS evaluated the corridor proposed to be used to pump tailings and return reclaim water between the tailings basin and the concentrator. Tailings would be sent for deposition in the tailings basin while clarified water would be recycled and reused by pumping it via pipeline back to the crusher and concentrator plant. The corridor for the tailings/reclaim water pipeline runs along the west and north limits of Pit 5/Sullivan Pit and then along a direct route to the tailings basin. The pipeline will cross TH 169 with an overpass structure. East of TH 169, the pipeline will branch out into two lines that will follow the crest of the tailings basin dikes to facilitate upstream deposition of the tailings within the tailings basin.

4.3.1.8.2 Tailings/Reclaim Water Pipeline Corridor Change for the Revised Project

The revised project requires two minor reroutes outside of the existing Permit to Mine mining area boundaries to relocate this infrastructure to Mesabi Metallics-controlled land. This reroute involves approximately 7,418 feet of tailings pipeline corridor. The new corridor proceeds northeast from the concentrator along the Corridor Road and turns south around the eastern end of the Rock 1 Stockpile to connect with the pre-existing alignment at the far eastern end of the Sullivan Pit. The corridor deviates from the currently permitted alignment along the western boundary of Itasca County Parcel 18-011-3300 where it rejoins the alignment across TH 169 to the tailings basin.

4.3.1.8.3 Do the Proposed Changes to Tailings/Reclaim Water Pipeline Corridor Constitute a Substantial Change in the Project?

The changes in the tailings/reclaim water corridor are all located north of TH 169 where land control changes necessitate relocation of the pipelines connecting the concentrator to the tailings basin. The reroutes do require new construction but with the same methods as required for the original alignment. Other than the new cover type conversion on previously disturbed parts of the site, there is no appreciable difference under the revised project alignment. Given these circumstances, the proposed change in the tailings/reclaim water corridor is not significantly different from the ESML project, and thus does not constitute a substantial change in the project.

4.3.1.9 Landbridge Underdrain Sealing

There is a landbridge between Pit 5 and Pit 1-2 that was constructed in 2011 that provides a route for a service road and pipeline corridor between the two pits. The water level in Pit 1-2 is controlled by an underdrain ditch that allows for water to flow through the landbridge when Pit 1-2's water level is above 1,370 ft amsl. To allow for extra storage capacity in Pit 1-2 and reduce the rate of flow through the landbridge during the proposed dewatering of Pit 5 to Pit 1-2, Mesabi Metallics also proposes to install a clay seal to allow for 10 additional feet of storage in Pit 1-2 to 1,380 ft amsl. This is necessary because the permeability of the landbridge; installation of the clay seal will reduce but not eliminate water flowing back to Pit 5 from Pit 1-2. The proposed work would require a new Dam Safety Permit from DNR.

4.3.1.9.1 Landbridge Underdrain as Analyzed in the 2007 Final EIS

The landbridge underdrain was not a feature of the MSI Project, thus it was not assessed in the 2007 Final EIS.

4.3.1.9.2 Landbridge Underdrain as Analyzed in the 2011 Final Supplemental EIS

The landbridge underdrain was not a feature of the EMSL Project, thus it was not assessed in the 2011 Final SEIS.

4.3.1.9.3 Landbridge Underdrain Change for the Revised Project

The Mesabi Revised Project added a water transfer from Pit 5 to Pit 1-2 as part of the proposal to conduct initial dewatering of Pit 5 prior to the start of mining. The addition of approximately 6,000 acre-feet of water to Pit 1-2 would raise the pit lake elevation above 1,370 ft amsl, which would result in water flowing back into Pit 5 from Pit 1-2. This defeats the purpose of Pit 5 dewatering as the "same" water ends up having to be moved again back to Pit 1-2. While installation of the clay seal will not eliminate this backflow, it can reduce it to manageable levels over the 6-9 months of Pit 5 dewatering and beyond.

4.3.1.9.4 Do the Proposed Changes to Landbridge Underdrain Constitute a Substantial Change in the Project?

Installation of the clay seal is an action necessary to ensure the proposed water transfer from Pit 5 dewatering to Pit 1-2 can account for some degree of backflow once the pit lake elevation in Pit 1-2 exceeds 1,370 ft amsl. This action was not addressed in either the EIS or SEIS, however the construction necessary is well understood and must meet the regulatory requirements of the DNR Dam Safety Program because the landbridge has always been

considered a type of dam. While a clay seal is completely new to the water management program, and with it the landbridge between Pit 5 and Pit 1-2 is considered a type of dam, this does not result in a substantial change to the currently permitted ESML Project. It is needed to improve the efficiency of the water transfer from Pit 5 to Pit 1-2 under the revised Pit 5 dewatering scheme.

Pit 1-2 has always been proposed for use in water management for the mine, and the installation of the clay plug facilitates this use under the revised project. Because the clay plug would be installed downstream of Pit 1-2's flows through the landbridge to Pit 5, there is no opportunity to impact the water quality of Pit 1-2. Similarly, application of water quality BMPs during construction limits potential water quality impacts to Pit 5. To ameliorate potential dam safety concerns, the water transfer from Pit 5 to Pit 1-2 would be staggered to allow for a staged increase in pit lake elevation until the Pit 5 dewatering goals are satisfied. To the extent that installation of the clay plug in the landbridge could be determined to be a substantial change, it does not affect the potential significant adverse environmental effects of the project.

4.4 Analysis of the Availability of Substantial New Information or Circumstances that Significantly Affect the Potential Environmental Effects from the Mesabi Revised Project that Were Not Considered in the 2007 Final EIS and 2011 Final Supplemental EIS

Minnesota Rule 4410.3000, subp. 3A(2), requires an RGU to supplement an EIS when there is substantial new information or new circumstances that "significantly affect the potential environmental effects from the proposed project that have not been considered in the final EIS." This standard requires the agency to determine whether there is new information or circumstances since the 2007 Final EIS, or the 2011 Final SEIS, whether the new information or circumstances are substantial, and whether the new information or circumstances significantly affect the potential environmental effects of the Mesabi Revised Project that were not considered in the EISs. The DNR has identified the following categories of new information and circumstances.

4.4.1 Water Transfers – Stream Augmentation Water Quality

The Mesabi Revised Project requires water transfers in the form of pit dewatering and stream augmentation before mining can proceed. A water transfer is an activity that conveys or connects waters of the United States without subjecting the transferred water to intervening industrial, municipal, or commercial use. According to MPCA the proposed pit dewatering and stream augmentation under the Mesabi Revised Project are water transfers not subject to NPDES permitting, which allows the project to be characterized as a "no surface discharge facility."

The need for water transfers has been a consistent project feature since inception. For water transfers related to augmentation, proposals have been made to augment Oxhide Creek and Snowball Creek to allow for future mining. The targeted taconite deposits are below the headwater reaches of both streams. For Oxhide Creek, historic development of Pit 5 eliminated its headwaters. These lost flows were restored in the 1980s when Butler Taconite closed, Pit 5 filled with water, and then began overflowing to Oxhide Creek thus supplying water to Oxhide Lake, Swan Lake, and the Swan River. Similarly, overflows from the natural ore Draper Pit supply water to

Snowball Creek and Snowball Lake. Any mining that impacts the Draper Pit therefore impacts the Snowball Creek system.

Environmental Review and permitting consider both the volume and quality of proposed water transfers. For this ERND, this section focuses on the water quality of stream augmentation proposals if mining proceeds.

4.4.1.1 Stream Augmentation Water Quality Analyzed in the 2007 Final EIS

Potentially Affected Waterbodies. Section 4.5.1.4 identified the waterbodies that would be involved in potential stream augmentation. These were: Pit 1-2; Pit 5; Hill Annex Mine; Oxhide Creek and Oxhide Lake; Snowball Creek and Snowball Lake; and (eventually) Swan Lake. [See 2007 FEIS at 4-72]. Augmentation water would come from water transfers from Pit 5, Pit 1-2, and Hill Annex Mine to sustain instream flows and geomorphology for habitat and biota in Oxhide Creek.

Timing. Augmentation to Oxhide Creek would be necessary once dewatering of Pit 5 commenced because overflow to Oxhide Creek would end; this was expected to begin in Project Year 3 and be necessary at least through Project Year 20. Augmentation flows would be sourced from Pit 5 over Project Years 3-5 and then shift to Pit 1-2 over Project Years 6-20. Similarly, augmentation of Snowball Creek would be needed when overflow from the Draper Pit stopped; this was expected to begin in Project Year 7 and go through Project Year 20. Augmentation for both would be necessary for the life of the project until Pits 5 and 6 refilled with water and once again overflowed to Oxhide Creek and Snowball Creek respectively, which would likely take several years to happen.

Flow Rate. The rate of augmentation flow established in the 2007 Final EIS for Oxhide Creek was 1,470 gpm, with 220 gpm set for Snowball Creek.

Existing Water Quality. Oxhide Lake, Snowball Lake, and Swan Lake are classified as 2B, 3B, 4A, 4B, 5, and 6 waters of the state. The 2007 Final EIS reported that existing water quality conditions in Pit 1-2, Pit 5, and the Hill Annex Mine met applicable state and federal water quality standards. [Id.]. This is supported by water quality data collected by the Proposer in 2005 presented below in ERND Table 6. [See 2006 Surface Water Quality Monitoring Report at Table 4].

ERND Table 6: Pre-Project Water Quality

Parameter	Unit	Sample Date	Swan Lake (Surface)	Oxhide Creek	Sucker Brook 336	Snowball Creek	Pit 1/2	Pit 5	Sucker Brook 331
BOD	mg/L	4/22 or 4/25, 2005	2.4	2.5	2.5	3.2	2.7	2.5	<2 (3)
Calcium	mg/L	4/22 or 4/25, 2005	31.5	36.8	14.5	26.8	40.4	42.8	12.9
Chloride	mg/L	4/22 or 4/25, 2005	7	6.5	1.4	9.4	8.1	6.3	1.3
COD	mg/L	4/22 or 4/25, 2005	15.1	<2	36.2	<2	<2	<2	38.5
Hardness (Calculated)	mg/L	4/22 or 4/25, 2005	151	174	55.1	107	176	201	52.7
Kjeldahl Nitrogen, Total as N	mg/L	4/22 or 4/25, 2005	0.81	0.83	1.1	0.79	0.51	0.58	0.95
Magnesium	mg/L	4/22 or 4/25, 2005	17.6	20	4.6	9.8	18.3	22.8	5
Methyl Mercury	ng/L	4/22 or 4/25, 2004	(5)	(5)	(5)	(5)	(5)	(5)	(5)
Mercury, Low Level	ng/L	4/22 or 4/25, 2005	<2(1)	<2(1)	<2(1)	<2(1)	0.7	0.7	<2(1)
Nitrogen, Ammonia	mg/L	4/22 or 4/25, 2005	0.16	0.15	0.23	0.3	0.36	0.22	0.73
Nitrogen, Nitrate + Nitrite	mg/L	4/22 or 4/25, 2005	0.14	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Oil and Grease	mg/L	4/22 or 4/25, 2005	<2	<2	<2	<2	<2	<2	<2
Phosphorus, Total (6)	mg/L	4/22 or 4/25, 2005	0.02	0.016 (4)	0.032	0.032	0.002 h (1)	0.007 h (1)	<0.1
Phosphorus, Soluble Reactive	mg/L	4/22 or 4/25, 2005	0.01	0.02	0.01	<0.01	0.02	<0.01	0.01
Potassium	mg/L	4/22 or 4/25, 2005	2.4	2.3	1.3	2	2.4	2.6	1.2
Sodium	mg/L	4/22 or 4/25, 2005	7.4	6.1	2.1	6.4	5.9	6	2.1
Solids, Total Dissolved	mg/L	4/22 or 4/25, 2005	130	134	78	93	144	164	21
Solids, Total Suspended	mg/L	4/22 or 4/25, 2005	2	<1	8	7	<1	4	4
Sulfate	mg/L	4/22 or 4/25, 2005	21.7	29.8	14.3	9.1	33.8	33.5	16.4
TOC	mg/L	4/22 or 4/25, 2005	7.1	3.5	18.4	7.6	2.2	1.7	18.7
Turbidity	NTU	4/22 or 4/25, 2005	0.65	0.55	1.3	1.9	0.25	0.4	0.85

Similarly, because Snowball Creek is sourced from overflow of the Draper Pit, the water quality of Draper Pit can be inferred to have met applicable standards at the time of the 2007 FEIS. Although not listed in Table 1, Final EIS Response to Comments G-02.15 provided information on the water quality for Hill Annex Mine Pit and indicated it was found to meet water quality standards. [See 2007 FEIS Appendix M at .pdf 232].

Although not directly addressed in the 2007 Final EIS, the water quality in closure for Oxhide Creek would likely be similar to the pre-project condition because the source of flow would no longer be from Pit 1-2, but once again be from Pit 5 overflow when augmentation would no longer be necessary. The same goes for Snowball Creek that would receive the overflow from Pit 6 when it filled with water at the completion of mining.

NPDES Permitting. The 2007 Final EIS detailed MPCA's reasoning as to why proposed stream augmentation for the MSI Project was classified as a water transfer not subject to NPDES permitting. Factors considered by MPCA in reaching this determination included:

1. The project would be required to prevent pollutants from entering the source of water.
2. The dewatering or augmentation flows would be conveyed from one "water of the state" to another "water of the state" without subjecting the water to intervening industrial, municipal, or commercial use.
3. Dewatering or augmentation activities (prior to and after initiation of mining at the facility) and any/all potential impacts to the physical integrity of Oxhide Creek/Lake and Snowball Creek/Lake would be controlled by a DNR Water Appropriation Permit.
4. The mine pits serving as source for dewatering or augmentation flows (i.e., Pit 1-2; Pit 5) are currently overflowing into the water bodies that would be receiving the augmentation flows.
5. Available water quality information shows that the water transfer would not negatively impact the receiving waters (and may improve the receiving waters).
6. Available water quality data shows that the water that would be transferred from the pits is in compliance with applicable water quality standards.

[See 2007 FEIS at page 4-45].

Although the water transfers were not classified as NPDES discharges for the above-stated reasons, water quality monitoring was required prior to start-up of tailings basin operation. This included the main body and north bay of Swan Lake, plus Oxhide Lake and Snowball Lake, and included monitoring for sulfate. [See 2011 DSEIS at 4.1-33]. Once issued, NPDES/SDS Permit MN0068241 (2007) included the following surface water stations: SW001/Oxhide Lake; SW002/Snowball Lake; SW003-4/Swan Lake. Ten parameters were to be measured monthly, including sulfate. [See 2007 NPDES Permit at 15].

MPCA 303(d) List of Impaired Waters. Scoping EAW Item 18b, Water Quality: Wastewaters, identified Oxhide Lake, Swan Lake, and Snowball Lake as being impaired for mercury, the latter two based on fish tissue concentrations. Consistent with this classification, the 2007 Final EIS was scoped to assess the potential for increased mercury methylation due to increased sulfate concentrations to downstream waters. This issue was not addressed in the FEIS because the project ultimately avoided surface discharges of process water to offsite waterbodies. In other words, there were no process water discharges to waters of the state that were on the MPCA 303(d) list of impaired waters in 2006. This was also confirmed in Response to Comment G-05.10 regarding a comment that Swan, Snowball, and Oxhide Lakes were listed as impaired for nutrients or dissolved oxygen; the commenter was incorrect, and the response provided the correct status of these waterbodies. [See 2007 FEIS Appendix M at .pdf 231].

Sulfate Concentrations. The 2007 Final EIS did not identify the sulfate concentration of augmentation waters as a source of concern. This is principally because there is no surface water quality standard for sulfate for the Class 2B receiving waters. Sulfate was however identified as a potential factor in changes to internal phosphorus loading of Swan Lake. This was assessed for the EIS, which found internal phosphorus loading of Swan Lake was not expected to change because of (any) increased sulfate concentrations resulting from the MSI project; see Response to Comment G-05-10. [Id.].

ERND Table 6 provides the sulfate concentrations of waterbodies tied to stream augmentation as follows (in SO4 mg/L): Pit 1-2 (33.80 mg/L); Pit 5 (33.5 mg/L); Oxhide Creek (29.8 mg/L); and Snowball Creek (9.1 mg/L). [See 2006 Surface Water Quality Monitoring Report at Table 4]. Response to Comment G-02-15 lists the sulfate concentration of Hill Annex Pit as 60 mg/L. [See 2007 FEIS Appendix M at .pdf 232]. These values represent the pre-project condition for sulfate concentrations in these waters.

The 2007 Final EIS did recommend monitoring of augmentation flows for phosphorus to confirm the nutrient content assumed in the EIS analysis. No monitoring of sulfate was proposed.

Wild Rice. The 2007 Final EIS did not address wild rice resources for any waters of the state, including waterbodies proposed to receive augmentation (e.g., Oxhide Creek; Snowball Creek).

4.4.1.2 Stream Augmentation Water Quality Analyzed in the 2011 Final Supplemental EIS

The SEIS Preparation Notice at Section III.B.2 directed the supplemental EIS to "address the composition of water transferred between waters of the state and from seepage from the tailings basin." For the water transfers, because initial dewatering (for Pit 1-2, Pit 5, and Draper Pit) and stream augmentation (Oxhide Creek; Snowball Creek) did not involve process water (i.e., waters contaminated by mining, stockpiling, processing, pelletizing, DRI/steel production), only proposed release volumes were evaluated, not water quality. [See 2011 DSEIS at 4.1-6].

Regarding tailings basin deep seepage, the 2011 Final SEIS contained a substantial analysis of potential sulfate contributions to Swan Lake and any potential impacts to wild rice. The EIS did not predict adverse impacts to wild rice due to tailings basin deep seepage because increases in sulfate were statistically insignificant. [See 2011 DSEIS at 4.1-37].

Potentially Affected Waterbodies. The water bodies involved in stream augmentation did not change between the EIS and SEIS. Prior to mining, Oxhide Creek would be augmented from water sourced from either Pit 5 dewatering or Hill Annex Pit. Once mining began, Oxhide Creek would be augmented with water from Pit 1-2, and possibly the Hill Annex Pit; this water flowed into Oxhide Lake and then Swan Lake. Similarly, Snowball Creek would be augmented with water from Hill Annex Pit, which then flowed to Snowball Lake.

Timing. There was no change in the timing of augmentation to Oxhide Creek and Snowball Creek for the ESML project reviewed in the SEIS. Augmentation to Oxhide Creek would be necessary once dewatering of Pit 5 commenced such that overflow to Oxhide Creek ceased; since dewatering began in 2008, augmentation began at that time but at the maximum permitted rate of 4,500 gpm (that was higher than the rate needed for augmentation at 1,470 gpm) that would shift to Pit 1-2 in Project Year 6. Similarly, augmentation of Snowball Creek would be needed when overflow from the Draper Pit stopped; this was expected to begin in Project Year 7. Augmentation for both would be necessary for the life of the project until Pits 5 and 6 refilled with water and once

again overflowed to Oxhide Creek and Snowball Creek respectively, which would likely take several years to happen.

Flow Rate. The rate of augmentation flows did not change in the SEIS. The rate for Oxhide Creek was still 1,470 gpm, with 220 gpm still set for Snowball Creek.

Existing Water Quality. The 2011 Draft SEIS and Final SEIS provided some updated existing water quality information. Graph 4.1-3 showed sulfate concentrations for Swan Lake from June 2009 through November 2010 at four locations, with sampling conducted at three Swan Lake locations (SE Bay; Center; West); the findings were commensurate to 2006 data. [See DSEIS at 4.1-35]. Similar information was presented in 2011 Draft SEIS Graph 4.1-4 that listed data from mid-2005 to the end of 2010. Sulfate concentrations within Swan Lake were routinely in the low 20s mg/L concentration for sulfate, with the average concentration for the main body of the lake measured at 24 mg/L. [See DSEIS at 4.1-36].

Although not directly addressed in the 2011 Final SEIS, the water quality in closure would likely be similar to the pre-project condition because the source of flow would no longer be from Pit 1-2, but once again be from Pit 5 overflow when augmentation would no longer be necessary to sustain instream flows and geomorphology for habitat and biota in Oxhide Creek.

NPDES Permitting. The Final SEIS recommended retaining the requirement for two years of sulfate monitoring prior to operations, and two additional years of monitoring once operations begin at the tailings basin, Swan Lake, Oxhide Lake, and Snowball Lake. Other recommendations regarding sulfate were provided, however these were tied to potential seepage-related sulfate concentrations to Swan Lake and not due to water transfers. Surface Water Monitoring Points SW001-4 were still maintained for water quality monitoring for Oxhide, Snowball, and Swan Lakes under NPDES/SDS Permit MN0068241. [See 2012 NPDES Permit at 11].

MPCA Section 303(d) Impaired Waters List. There was no change in impaired waters listing between the 2007 Final EIS and 2011 Final SEIS. Swan Lake, Oxhide Lake, and Snowball Lake were all listed as impaired for mercury for fish consumption.

Sulfate Concentrations. The 2011 Final SEIS included water quality data collection to support the wild rice impact assessment that included sulfate concentrations for Oxhide Creek, Oxhide Lake, Snowball Lake, and Swan Lake Main. The following concentrations were detected (SO4 mg/L):

- Oxhide Creek: 8/5/2009 (28 mg/L)
- Oxhide Lake: 6/24/2010 (29 mg/L); 7/7/2010 (30 mg/L); 7/21/2010 (32 mg/L)
- Snowball Lake: 6/24/2010 (12 mg/L); 7/7/2010 (11 mg/L); 7/21/2010 (16 mg/L)
- Swan Lake Center: 5/1/2010 (29 mg/L); 6/10/2010 (21 mg/L); 8/11/2010 (20 mg/L); 10/4/2010 (21 mg/L)

These values remained similar to the sulfate concentrations collected in 2007. [See 2010 Water Quality and Wild Rice Report at .pdf 17-21, 253].

Wild Rice. While stream augmentation was not expected to result in wild rice impacts, the SEIS conducted an extensive analysis of the potential for tailings basin deep seepage to impact wild rice resources on Swan Lake. The 2011 Final SEIS was scoped to assess changes in water quality impacting wild rice in receiving water bodies due to

tailings basin deep seepage, including preparation of special research or studies. [See SEIS Preparation Notice at 4]. The SEIS scoping document required the EIS to:

- Identify current status of wild rice in receiving waters.
- Model changes to sulfate concentrations for affected water bodies.
- Identify potential changes to wild rice due to changes in sulfate and/or water levels.
- For adverse impacts, identify and/or develop monitoring and/or mitigation to detect changes and to avoid and/or minimize impacts.

Section 4.1 of the 2011 Draft SEIS provided a detailed assessment of project impacts to water resources and wild rice, including identification of: affected environment; environmental consequences; and mitigation. [See 2011 DSEIS at Section 4.1 at 4.1-24 to 4.1-39]. Table 1 of the Final SEIS provides a summary of mitigation measures proposed and identified for the ESML project. [See 2011 FSEIS at xiv].

Specifically, the 2011 Draft SEIS assessment targeted wild rice stands located in Swan Lake South Bay. This part of Swan Lake exhibited wild rice populations on greater than 90% of the shore perimeter area that covered approximately 104 acres, where approximately 50-75% of this zone was wild rice with interspersed occurrences of lily pads and open water. [See 2011 DSEIS at 4.1-37]. Potential impacts were considered in terms of incremental increase in water column sulfate concentrations compared to the original MSI project. Because tailings basin deep seepage estimates declined from the original values predicted for the MSI project, the SEIS found that any potential increases in columnar sulfate concentrations could be detected before adverse impacts to wild rice would occur. [Id.]. While no impacts were anticipated, the 2011 Final SEIS identified mitigation that could address potential adverse impacts resulting from tailings basin deep seepage. [See 2011 FSEIS at xiv].

No other waterbodies were identified with potentially affected wild rice resources from tailings basin deep seepage.

4.4.1.3 New Information or Circumstances Regarding Stream Augmentation Water Quality Since the 2007 Final EIS and 2011 Final Supplemental EIS

Potentially Affected Waterbodies. As noted in ERND Section 4.3.1.7.2, the Mesabi Revised Project no longer requires stream augmentation to Snowball Creek to support water levels in Snowball Lake. This is new information because mining for proposed Pit 3 no longer includes expansion into the Draper Pit, whose current overflow is the headwater source of water into Snowball Creek. Other new information available to DNR is that proposals to rely on water sourced from the Hill Annex Mine pit are no longer viable, which eliminates it as a source of augmentation flows for both Snowball Creek and Oxhide Creek. The proposed augmentation of Oxhide Creek has not changed, with augmentation water now sourced exclusively first from Pit 5 and second from Pit 1-2. Because Oxhide Creek flows to Oxhide Lake and Swan Lake, these also remain waters potentially affected by stream augmentation. No other waterbodies have been identified that could be affected by stream augmentation.

Timing. Augmentation for Oxhide Creek would still be necessary once Pit 5 dewatering begins under the revised project. This began in 2008 and is currently underway. If the revised project proceeds, then complete dewatering of Pit 5 is estimated to take 6-9 months at which time mining could begin. Once mining in Pit 5 begins, flow augmentation would continue from water sourced from Pit 1-2 over the remaining life of the project, which is estimated to be 9 years. When mining in Pit 5 ends, augmentation to Oxhide Creek would likely continue to be

necessary for several years until Pit 5 refills and begins to overflow again into Oxhide Creek, thus restoring historic flows needed for habitat and biota.

Flow Rate. Because there is no change from the current Pit 5 dewatering rate to Oxhide Creek under the Mesabi Revised Project, the EIS-established augmentation flow rate of 1,470 gpm would be exceeded during Pit 5 dewatering (at 4,500 gpm approved in DNR Water Appropriation Permit 2008-0067). Once Pit 5 dewatering is complete, augmentation for Oxhide Creek would be sourced from Pit 1-2 at a rate determined by the Stream Augmentation Plan required by DNR Appropriation Permit No. 2006-0433.

Existing Water Quality. The project proponent (e.g., MSI; Essar; Mesabi Metallics) has collected water quality data to comply with project-related monitoring and reporting requirements that is provided below in ERND Table 7. [See Email Query 34].

ERND Table 7: Current Water Quality

Parameter	Unit	Sample Year (Most Recent)	Swan Lake (Main)	Oxhide Lake	Oxhide Creek	Sucker Brook	Pit 1-2	Pit 5
BOD	Mg/L	2024						<3.00
Calcium	Mg/L	2019	29				35.2	37.2
Chloride	Mg/L	2024	9.79	7.6	9.1	6.7	9.29	7.38
COD	Mg/L	2005						
Hardness (Calculated)	Mg/L	2024	166	168	180	190	200	179
Kjeldahl Nitrogen, Total as N	Mg/L	2019	0.59		0.373	1.3	<0.5	0.60
Magnesium	Mg/L	2024	16.2	19.2	20	5	17	23.4
Methyl Mercury	Ng/L	2024		0.2				<.0002
Mercury, Low Level	Mg/L	2005						
Nitrogen, Ammonia	Mg/L	2024	0.12		<0.1	<0.1	<0.005	<0.020
Nitrogen, Nitrate + Nitrite	Mg/L	2024	<0.1		<0.1	0.020	0.033	0.046
Oil and Grease	Mg/L	2024	<2	0.08	<2	<2	<5.0	<5.0
Phosphorus, Total	Mg/L	2024	<0.1	<0.1	<0.013	<0.1	0.039	.05
Phosphorus, Soluble Reactive	Mg/l	2024	0.024	<0.1	<0.1	0.03	0.013	<.0100
Potassium	Mg/l	2016	2.13					2.5
Sodium	Mg/L	2024	9.78				6.59	6.93
Solids, Total Dissolved	Mg/L	2024	202	205	220	230	245	208
Solids, Total Suspended	Mg/L	2024	5.13	< 5.0	< 5.0	2.00	<5.00	9.33
Sulfate	Mg/L	2024	21.8	23.9 (ave)			22	24.1 (ave)
TOC	Mg/L	2024	7.1					1.71
Turbidity	NTU	2024	0.3		0.35	0.5	<1.0	0.2

The values are commensurate with water quality assessed by MSI in 2005. MPCA continues to report that water quality conditions in Pit 1-2 and Pit 5 meet applicable state and federal water quality standards. Oxhide Creek also meets applicable water quality standards.

Under the Mesabi Revised Project, the water quality in closure would likely be similar to the pre-project condition because the source of flow would no longer be from Pit 1-2, but once again be from Pit 5 overflow when augmentation would no longer be necessary to sustain instream flows and geomorphology for habitat and biota.

NPDES Permitting. According to MPCA the currently permitted stream augmentation from Pit 5 to Oxhide Creek is a water transfer not subject to NPDES permitting requirements; this would also apply to augmentation sourced

from Pit 1-2 once Pit 5 dewatering is complete. Similar however to the existing permits issued in 2007 and 2012, it is likely any reissued permit would include some project narrative describing water transfers and any monitoring requirements.

Ongoing current construction and other activities are regulated under NPDES/SDS Permit MN0068241 (2012), which has not been renewed since 2017 and thus is subject to administrative continuance until the permit is reissued. Mesabi Metallics would submit a revised permit application for the currently proposed project.

MPCA 303(d) Impaired Waters List. As noted above, the MPCA reassesses the waters of the state for placement on the 303(d) list of impaired waters. [See 2024 Impaired Waters List]. New information available to DNR includes that the impaired waters listing status of Oxhide Lake and Swan Lake has changed in 2024 from 2007 and 2011. This is detailed in ERND Table 8 below:

ERND Table 8: 2024 Impaired Waters in Project Vicinity

Water Body Name	Affected Designated Use	Pollutant or Stressor
Oxhide Lake	Wild Rice Production	Sulfate (NEW)
	Aquatic Consumption	Mercury in fish tissue
Swan Lake Southwest Bay	Wild Rice Production	Sulfate (NEW)
	Aquatic Consumption	Mercury in fish tissue
Swan River	Wild Rice Production	Sulfate (NEW)
	Aquatic Recreation	E. coli

Regarding waters impaired for wild rice, the MPCA has developed a list of approximately 2,400 waters used for production of wild rice. In the 2024 Impaired Waters List, the agency has identified a total of 43 waterbodies as impaired due to measured sulfate levels in excess of 10 mg/L. The 10 mg/L sulfate water quality standard is designed to protect wild rice and applies in specific waters called “waters used for the production of wild rice.” Minn. R. 7050.0224.

The USEPA added Swan Lake (SW Bay), Oxhide Lake, and the Swan River to the 2020 Minnesota Impaired Waters List, which for these waters has carried into the 2024 list. [See 2020 USEPA Waters Added to List]. Wild rice has been observed growing in these waterbodies.

Sulfate. The Proposer has provided updated concentrations for sulfate for the waters involved with project-related augmentation. These remain Pit 1-2, Pit 5, Oxhide Creek, Oxhide Lake, and Swan Lake Main. The following concentrations were measured (SO4 mg/L) as shown in ERND Table 9:

ERND Table 9: Sulfate Concentrations in Pits and Waterbodies

Year	Pit 1-2	Pit 5	Oxhide Cr	Oxhide Lk	Swan Lk (Main)
2012	NS	31	26.4*	24.25*	16.83*
2013	NS	NS	25.9*	27.55*	17.2*
2014	NS	NS	NS	19.7	17.1*
2015	NS	37	NS	18.3	18.48*
2016	22	NS	NS	21.55	19.1*
2017	NS	21.73	NS	22.31	21.8*
2018	NS	NS	22.2	24.33*	17.66*
2019	NS	NS	18.8	18.8*	19.1*
2020	NS	NS	NS	NS	NS
2021	NS	NS	NS	14.77	23.19
2022	NS	NS	NS	18.61	15.26
2023	28.1	26.7	NS	19.5	19.76
2024	22	24.21*	NS	23.9*	21.8

* Average of more than one test

These values are commensurate with the sulfate concentrations originally collected in 2007. [See Email Query 33].

Other new information available to DNR includes that Mesabi Metallics conducted mass balance modeling of potential sulfate loading to Oxhide Lake and Swan Lake that would be predicted to result from dewatering Pit 5 to these waterbodies prior to start-up of mining. The analysis evaluated potential sulfate concentrations under the existing transfer volume of 4,500 gpm (e.g., current dewatering or permit scenario) as well as a second transfer volume of 15,000 gpm (proposed scenario); the modeling used an average sulfate concentration for Pit 5 at 27.25 mg/L. [See Email Query 36]. Predicted in-column sulfate concentrations in Oxhide Lake dropped slightly from current conditions under both volume scenarios, with little or no change predicted for sulfate concentrations in Swan Lake with dewatering flows. In summary, sulfate concentrations in Swan Lake remain similar across both scenarios, with slightly lower peak predicted concentrations predicted under the high flow scenario. Additionally, the peak sulfate concentrations reached with the high flow scenario are well within the range of sulfate concentrations measured in the two lakes over the past 15 years. [See generally Pit 5 Dewatering to Oxhide and Swan Lakes].

Total sulfate loading to Oxhide Creek due to augmentation is reduced under the Mesabi Revised Project compared to the ESML Project. This is because the augmentation period is reduced from 15 years under ESML Project to approximately 10 years (i.e., 9 years from Pit 1-2 plus 6-9 months from Pit 5) under the Mesabi Revised Project. In other words, the shorter augmentation period accordingly reduces total sulfate loading under the Mesabi Revised Project than would occur under the ESML Project.

Wild Rice. While the 2011 SEIS identified the potential for impacts to wild rice resources, this was due to tailings basin deep seepage and not pit-related augmentation. This means that the potential for sulfate loading to impact wild rice resources associated with augmentation to Oxhide Creek is new information since the EISs.

Since the EISs, Oxhide Lake has been identified as having wild rice resources present that make it a water used for the production of wild rice. [See 2013 Myrbo Final Report at .pdf 8, 123, 124]. Under the Mesabi Revised Project, total sulfate loading to wild rice waters would decrease due to the greatly reduced timeframe for augmentation from the currently permitted ESML Project. While total sulfate loading is lower under the revised project, this is not expected to appreciably change existing sulfate concentrations around 26.0 mg/L. [See Pit 5 Dewatering to

Oxhide and Swan Lakes at pg. 1-4]. This means that impacts to wild rice resources already present would likely persist through the shorter period of augmentation.

As for wild rice resources at Swan Lake that were considered in the SEIS, it would be helpful to consider the sulfate mass balance modeling done for Oxhide Lake, which assessed a 4,500 gpm scenario matching the existing conditions. Like conditions in Oxhide Lake, similarly it would not be expected for augmentation water sourced from Pit 5 and Pit 1-2 under the Mesabi Revised Project to appreciably change any impacts to wild rice resources at Swan Lake than already present. [Id.]. Of note for Swan Lake, because the wild rice occurs in a hydrologically isolated bay of the lake, water quality there is relatively insensitive to sulfate concentration changes in the main body of the lake. Regardless, new impacts to wild rice resources are not expected due to augmentation under the Mesabi Revised Project.

4.4.1.4 Is the New Information or Circumstances for Stream Augmentation Water Quality Substantial and Does it Significantly Affect the Potential Environmental Effects from the Mesabi Revised Project that Have Not Been Considered in the Final EIS?

Substantial new information available to DNR for stream augmentation is potential sulfate loading to waters on the MPCA Section 303(d) List of impaired waters for sulfate with known wild rice. This information is arguably substantial because the Mesabi Revised Project is upstream from these impaired waters. However, this information does not significantly affect the potential environmental effects of the Mesabi Revised Project as there is either no change from the pre-project condition, or there is a reduced amount of total sulfate loading as compared to the pre-project condition.

In addition, the potential for the ESML Project to impact to wild rice waters was considered in the SEIS. ERND Section 4.4.1.2 indicates the Final SEIS conducted predictive modeling to assess impacts to Swan Lake's wild rice resources due to tailings basin deep seepage containing sulfate. Impacts attributable to deep seepage under the ESML Project were deemed negligible but sulfate monitoring of the tailings basin, Pit 5, Oxhide Lake, and Swan Lake would be required.

Unlike the ESML Project for the tailings basin, stream augmentation under the Mesabi Revised Project does not introduce new sulfate loading and potential impacts to wild rice at Oxhide Lake and Swan Lake. This is because there is no change in the Mesabi Revised Project's augmentation rate from current conditions, with the lower augmentation flow rate specified in the 2007 FEIS to be sourced from Pit 1-2. In addition, Pit 5 dewatering under the Mesabi Revised Project is projected to only take 6 to 9 months versus 3 years under the currently permitted project; similarly, augmentation from Pit 1-2 drops from 15 years to 9 years, after which Pit 5 overflow resumes. Extrapolating from the findings of the SEIS, the potential impacts to impaired waters and wild rice resources from augmentation appear similar to existing conditions but at a much shorter timeframe than originally envisioned under the ESML Project. Thus, total sulfate loading to downstream impaired waters is reduced under the Mesabi Revised Project compared to the ESML Project.

Finally, the water quality in closure would likely be similar to the pre-project condition because the source of flow would no longer be from Pit 1-2, but once again be from Pit 5 overflow when augmentation would no longer be necessary.

Conclusion. Substantial new information available to DNR for Pit 5 dewatering is potential sulfate loading to waters on the MPCA Section 303(d) List of impaired waters for sulfate with known wild rice. DNR believes the 2011 Final SEIS's treatment of potential sulfate loading to designated wild rice production waters is applicable to the substantial new information and circumstances associated with the Mesabi Revised Project. This is informed by sulfate mass balance modeling was conducted by the Proposer in 2011 for the SEIS. For Oxhide Lake and Swan Lake, any sulfate loading impacts from Pit 5 augmentation are likely to be similar to existing conditions because the requested Pit 5 flow volume for dewatering is not changing from current conditions. For augmentation sourced from Pit 1-2, the DNR-approved Stream Augmentation Plan would determine the flow rate consistent with the EIS recommendations (likely to be less than the currently permitted 4,500 gpm). Importantly, both Pit 5 augmentation (sourced from dewatering) and Pit 1-2 augmentation to Oxhide Creek are shortened under the Mesabi Revised Project compared to the ESML Project, which in turn lowers total sulfate loading compared to the ESML Project. While substantial new information is available regarding water quality, changes to the project and potential impacts can be understood in the context of the 2011 Final SEIS analysis that supports the finding that this information does not significantly affect the potential environmental effects of the proposed project that have not been considered in the EISs.

4.4.2 Water Transfers – Initial Pit 5 Dewatering Water Quantity

The Mesabi Revised Project requires water transfers in the form of pit dewatering before mining can proceed. A water transfer is an activity that conveys or connects waters of the United States without subjecting the transferred water to intervening industrial, municipal, or commercial use. Water transfers are subject to DNR Water Appropriation Permit authority that regulates the impacts to the receiving water(s) from proposed timing, rates, and volumes of flows. According to MPCA the proposed pit dewatering and stream augmentation under the Mesabi Revised Project are water transfers not subject to NPDES permitting, which allows the project to be characterized as a "no surface discharge facility."

The need for water transfers has been a consistent project feature since inception. Regarding dewatering, this has included proposals to completely dewater Pit 5 and the Draper Pit, with partial dewatering proposed for Pit 1-2, before mining can commence.

Environmental Review and permitting consider both the volume and quality of proposed water transfers. For this ERND, this section addresses the timing, rates, and volumes of requested flows to dewater Pit 5 before mining would begin.

Pit 5 would be dewatered prior to mining by pumping water to: 1) Oxhide Creek at 4,500 gpm; 2) Pit 1-2 at 15,000 gpm; and 3) and transfer 400,000 gallons of water to the Ann Pit.

4.4.2.1 Initial Pit 5 Dewatering Water Quantity Analyzed in the 2007 Final EIS

As noted in ERND Section 1.6.1, the 2007 Final EIS outlined a nearly five-year plan to dewater Pits 1-2 and 5 prior to the beginning of operations; two years would be used to dewater Pit 1-2 that would be followed by 3 years to completely dewater Pit 5. Dewatering flows to the Oxhide Stilling Basin were expected to range from 8 to 12 cfs, thus averaging 10 cfs (i.e., 4,488 gpm) over the 3 years required to empty Pit 5 for mining; this is the maximum rate in DNR Appropriation Permit 2008-0067. Substantial stream alteration was not anticipated but monitoring was prudent to ensure no significant changes to channel morphology unfolded. If substantial impacts were to

unfold, one option was to divert a portion of the dewatering flows by piping directly to Swan Lake. [See 2007 FEIS at 4-56].

4.4.2.2 Initial Pit 5 Dewatering Water Quantity Analyzed in the 2011 Final SEIS

There was no change in how Pit 5 would be dewatered prior to mining for the 2011 Final SEIS. Dewatering was already underway since 2008.

4.4.2.3 New Information or Circumstances Regarding Initial Pit 5 Dewatering Water Quantity Since the 2007 Final EIS and 2011 Final Supplemental EIS

The Proposer indicates it will request Pit 5 dewatering to be accomplished by: 1) continuing dewatering from Pit 5 to Oxhide Creek at 4,500 gpm; 2) allowing up to a 15,000 gpm water transfer from Pit 5 to Pit 1-2; and 3) allowing a one-time water transfer of 400,000 gallons from Pit 5 for storage in the Ann Pit. Specifically:

Oxhide Creek. There is no new information or circumstances regarding Pit 5 dewatering flows to Oxhide Creek. The Mesabi Revised Project proposes to maintain the existing Pit 5 dewatering flow to Oxhide Creek at 4,500 gpm. This activity is regulated by DNR Water Appropriation Permit No. 2008-0067.

Pit 1-2. Adding Pit 1-2 to receive Pit 5 dewatering flows is new information available to DNR. This is a water transfer from one mine pit to another with negligible impacts. Pit 1-2 has sufficient storage capacity for the estimated 6,000 acre-ft of water that would be transferred. A new DNR Water Appropriation Permit would be required for this activity.

Ann Pit. Using the Ann Pit to receive water from Pit 5 is new information available to DNR. Mesabi Metallics reports there is 400,000 gallons of storage available in the Ann Pit that could be used for dewatering Pit 5. The pumping system would first be used to pump water from Pit 5 to the Ann Pit and then be switched to pump to Pit 1-2. The Proposer indicates based on the distance and elevation difference to the Ann Pit, the likely rate would be approximately 10,000 gpm for less than one day. This activity is regulated under DNR Water Appropriation Permit No. 2008-0066.

The Proposer indicates initial dewatering of Pit 5 would be complete within 6 to 9 months, from the start of pumping, under the requested water transfer to Pit 1-2, Oxhide Creek, and the Ann Pit. As such the proposed appropriation from Pit 5 is temporary.

4.4.2.4 Is the New Information or Circumstances for Initial Pit 5 Dewatering Water Quantity Substantial and Does It Significantly Affect the Potential Environmental Effects from the Mesabi Revised Project that Have Not Been Considered in the Final EIS?

While the need to dewater Pit 5 prior to mining has been a requirement since project inception, use of Pit 1-2 and the Ann Pit for Pit 5 dewatering have not been previously considered to receive water transfers for any volume or duration with the MSI and ESML projects. Directing Pit 5 dewatering flows to Oxhide Creek have been a part of the project since inception.

Because the 2007 Final EIS recognized the potential for the project to impact stream morphology from dewatering flows, information from this EIS is relevant to understanding potential impacts for the current proposal from initial Pit 5 dewatering, including the information outlined in ERND Section 4.3.2.2.3.

Oxhide Creek. The revised project still includes initial Pit 5 dewatering to Oxhide Creek but at the same rate than the ESML Project, basically mirroring stream augmentation requirements detailed in the 2007 Final EIS but over a much shorter period. This means that there is no change from the conditions examined in the EIS for any impacts to instream geomorphology or aquatic habitat under the Mesabi Revised Project. In other words because there is no change from existing conditions, similarly there are no new water quantity impacts under this part of the proposal.

Pit 1-2. Although transferring water to Pit 1-2 was not considered in the EIS, this is similar to the original MSI and ESML water management scheme that utilized Pit 1-2, the Sullivan Pit, and Ann Pit to manage water. In the case of the Mesabi Revised Project, Pit 1-2 is being utilized as available water storage while still serving as the source of augmentation flows and process water (as the need arises). Although using Pit 1-2 to receive Pit 5 dewatering flows was not specifically evaluated in the EIS, any water quantity consequences are of the type and extent considered in the EIS in the context of overall project water management.

Ann Pit. Although using available storage capacity in the Ann Pit for Pit 5 dewatering is a new project feature, this type of water management has always been planned for the Ann Pit. No adverse water quantity impacts are anticipated for this water transfer.

Conclusion. Dewatering Pit 5 prior to mining was anticipated in the 2007 Final EIS; originally limited to Oxhide Creek, the Mesabi Revised Project now includes dewatering Pit 5 to Pit 1-2 and Ann Pit. While a change in circumstances, Pit 1-2 and the Ann Pit were always part of the water management scheme for the project. Importantly, their use in the revised project does not introduce new environmental effects regarding water quantity impacts of initial Pit 5 dewatering beyond those studied in the 2007 Final EIS. Thus, the DNR concluded that the proposed use of Oxhide Creek, Pit 1-2, and the Ann Pit to receive pre-mining dewatering flows from Pit 5 is not substantial new information and does not significantly affect the potential environmental effects of the project that have not been considered in the Final EIS. Thus, the Mesabi Revised Project does not require a supplemental EIS based on dewatering water quantity.

4.4.3 Water Transfers – Initial Pit 5 Dewatering Water Quality

The Mesabi Revised Project requires water transfers in the form of pit dewatering before mining can proceed. A water transfer is an activity that conveys or connects waters of the United States without subjecting the transferred water to intervening industrial, municipal, or commercial use. Water transfers are subject to DNR Water Appropriation Permit authority that regulates the impacts to the receiving water(s) from proposed timing, rates, and volumes of flows. According to MPCA the proposed pit dewatering and stream augmentation under the Mesabi Revised Project are water transfers not subject to NPDES permitting, which allows the project to be characterized as a "no surface discharge facility."

The need for water transfers has been a consistent project feature since inception. Regarding dewatering, this has included proposals to completely dewater Pit 5 and the Draper Pit, with partial dewatering proposed for Pit 1-2, before mining would commence. Under the amended project, Pit 5 would be dewatered prior to mining by

pumping water to: 1) Oxhide Creek at 4,500 gpm; 2) Pit 1-2 at 15,000 gpm; and 3) a one-time transfer of 400,000 gallons to the Ann Pit.

Environmental Review and permitting consider both the volume and quality of proposed water transfers for mining projects. For this ERND, this section addresses the water quality of requested flows to dewater Pit 5 before mining would begin.

4.4.3.1 Initial Pit 5 Dewatering Water Quality Analyzed in the 2007 Final EIS

Potentially Affected Waterbodies. Section 4.3.2.1 identified that Oxhide Creek would receive dewatering flows from Pit 5. [See 2007 FEIS at 4-56]. Oxhide Creek flows to Oxhide Lake and then to Swan Lake. These three are the waters affected by initial Pit 5 dewatering.

Timing. Pit 5 dewatering to Oxhide Creek would be necessary before mining could commence. This was expected to begin in Mining Year 3 and end in Mining Year 5.

Flow Rate. The rate of Pit 5 dewatering to Oxhide Creek established in the 2007 Final EIS for Oxhide Creek was 10 cfs or 4,500 gpm.

Existing Water Quality. Pit 5 is classified as a Class 2B, 3B, 4A, 4B, 5, and 6 waters of the state. The 2007 Final EIS reported that existing water quality conditions in Pit 5 met applicable state and federal water quality standards. [Id.]. This is supported by water quality data collected by the Proposer in 2005 presented in ERND Table 6.

NPDES Permitting. As detailed in ERND Section 4.4.1.1, the MPCA classified initial Pit 5 dewatering to Oxhide Creek as a water transfer not subject to NPDES permitting. [See 2007 FEIS at page 4-45]. This is because the existing water quality conditions in Pit 5 met applicable state and federal water quality standards. Water from this pit may be transferred to Oxhide Creek and Oxhide Lake as part of project dewatering. [See 2007 FEIS at page 4-72]. Although not required to be subject to monitoring during dewatering, the NPDES permit indicates Pit 5 is considered a water of the state until initiation of mining operations. [See 2008 NPDES Permit MN0068241 at 6].

MPCA 303(d) List of Impaired Waters. Scoping EAW Item 18b, Water Quality: Wastewaters, identified Oxhide Lake, Swan Lake, and Snowball Lake as being impaired for mercury, the latter two based on fish tissue concentrations. This was also confirmed in Response to Comment G-05.10 regarding a comment that Swan, Snowball, and Oxhide Lakes were listed as impaired for nutrients or dissolved oxygen; the commenter was incorrect, and the response provided the correct status of these waterbodies. [See 2007 FEIS Appendix M at .pdf 231].

Sulfate Concentrations. The 2007 Final EIS did not identify the sulfate concentration of Pit 5 dewatering waters as a source of concern. This is principally because there was no surface water quality standard for sulfate for the Class 2B receiving waters associated with the project. Sulfate was however identified as a potential factor in changes to internal phosphorus loading of Swan Lake. This was assessed for the EIS, which found internal phosphorus loading of Swan Lake was not expected to change as a result of (any) increased sulfate concentrations resulting from the MSI project; see Response to Comment G-05-10. [Id.].

Table 6 indicated the sulfate concentration in Pit 5 was 33.5 mg/L in 2005, which represents the pre-project condition. [See 2007 FEIS Appendix M at .pdf 232].

Wild Rice. The 2007 Final EIS did not address wild rice resources for any waters of the state, including waterbodies proposed to receive Pit 5 dewatering (e.g., Oxhide Creek; Oxhide Lake; Swan Lake; Swan River).

4.4.3.2 Initial Pit 5 Dewatering Water Quality Analyzed in the 2011 Final SEIS

Section III.B.2 of the 2011 ESML Project EIS Preparation Notice directed the supplemental EIS to "address the composition of water transferred between waters of the state and from seepage from the tailings basin." For the water transfers, because initial dewatering from Pit 5 did not involve process water (i.e., waters contaminated by mining, stockpiling, processing, pelletizing, DRI/steel production), water quality was not evaluated. [See 2011 DSEIS at 4.1-6].

Potentially Affected Waterbodies. The water bodies involved in Pit 5 dewatering did not change between the EIS and SEIS. Water taken from Pit 5 would be directed to Oxhide Creek.

Timing. The timing of initial Pit 5 dewatering did not change between the 2007 Final EIS and the 2011 Final SEIS. Pit 5 dewatering to Oxhide Creek would be necessary before mining could commence. This was expected to begin in year 3 and end in year 5.

Flow Rate. The rate of initial dewatering of Pit 5 to Oxhide Creek did not change between the 2007 Final EIS and the 2011 Final SEIS. It was 10 cfs or 4,500 gpm. Dewatering did begin in 2008 at 4,500 gpm, but as discussed above, it has been intermittent.

Existing Water Quality. The Final SEIS restated the existing water quality condition for Pit 5 as meeting applicable state and federal water quality standards. [See 2011 FSEIS Appendix 2 at 12].

The 2011 Draft SEIS and Final SEIS provided some updated existing water quality information. Graph 4.1-3 showed sulfate concentrations for Swan Lake from June 2009 through November 2010 at four locations, with sampling conducted at three Swan Lake locations (SE Bay; Center; West); the findings were commensurate to 2006 data. [See DSEIS at 4.1-35]. Similar information was presented in 2011 Draft SEIS Graph 4.1-4 that listed data from mid-2005 to the end of 2010. Sulfate concentrations within Swan Lake were routinely in the low 20s mg/L concentration for sulfate, with the average concentration for the main body of the lake measured at 24 mg/L. [See DSEIS at 4.1-36].

NPDES Permitting. The NPDES permit required ESML to divert stormwater from construction and operating areas away from Pit 5 to prevent pollutants from being added to the pit from these activities. [See 2012 NPDES Permit at 4-5]. It was recognized that once mining commenced in Pit 5, it would no longer be classified as a public water but would remain a water of the state. [Id. at 6]. The permit also noted that Pit 5 dewatering flows would be directed to Oxhide Lake [via Oxhide Creek] over a five-to-six-year period. [Id. at 18].

The Final SEIS recommended retaining the requirement for two years of sulfate monitoring prior to operation, and two additional years of monitoring once operation begins at the tailings basin, Swan Lake, Oxhide Lake, and Snowball Lake. Other recommendations regarding sulfate were provided, however these were tied to potential seepage-related sulfate concentrations to Swan Lake and not due to water transfers. Surface Water Monitoring Points SW001-4 were still maintained for water quality monitoring for Oxhide, Snowball, and Swan Lakes under NPDES/SDS Permit MN0068241. [See 2012 NPDES Permit at 11].

MPCA Section 303(d) Impaired Waters List. There was no change in impaired waters listing between the 2007 Final EIS and the 2011 Final SEIS. Swan Lake and Oxhide Lake were listed as impaired for mercury for fish consumption.

Sulfate Concentrations. The 2011 Final SEIS did not directly report sulfate concentrations for Pit 5 but did rely on the study "2010 Water Quality and Wild Rice Monitoring Report" in the assessment of potential sulfate contributions from tailings basin deep seepage to Swan Lake. The report listed the sulfate concentration for Oxhide Creek at 28 mg/L in August 2009, which can serve as a proxy measure for Pit 5 sulfate concentrations. [See 2010 Sulfate & Wild Rice Report at C-2]. This would be commensurate with measured sulfate concentrations for Pit 5 taken in 2005.

Wild Rice. While Pit 5 dewatering was not expected to result in wild rice impacts, the SEIS conducted an extensive analysis of the potential for tailings basin deep seepage to impact wild rice resources on Swan Lake. The 2011 Final SEIS was scoped to assess changes in water quality on wild rice in receiving water bodies due to tailings basin deep seepage, including preparation of special research or studies. [See SEIS Preparation Notice at 4]. The SEIS scoping document required the EIS to:

- Identify current status of wild rice in receiving waters.
- Model changes to sulfate concentrations for affected water bodies.
- Identify potential changes to wild rice due to changes in sulfate and/or water levels.
- For adverse impacts, identify and/or develop monitoring and/or mitigation to detect changes and to avoid and/or minimize impacts.

Section 4.1 of the 2011 Draft SEIS provided a detailed assessment of project impacts to water resources and wild rice, including identification of: affected environment; environmental consequences; and mitigation. [See 2011 DSEIS at Section 4.1 at 4.1-24 to 4.1-39]. Table 1 of the Final SEIS provides a summary of mitigation measures proposed and identified for the ESML project. [See 2011 FSEIS at xiv].

Specifically, the 2011 Draft SEIS assessment targeted wild rice stands located in Swan Lake South Bay. This part of Swan Lake exhibited wild rice populations on greater than 90% of the shore perimeter area that covered approximately 104 acres, where approximately 50-75% of this zone was wild rice with interspersed occurrences of lily pads and open water. [See 2011 DSEIS at 4.1-37]. Potential impacts were considered in terms of incremental increase in water column sulfate concentrations compared to the original MSI project. Because tailings basin deep seepage estimates declined from the original values predicted for the MSI project, the SEIS found that any potential increases in columnar sulfate concentrations could be detected before adverse impacts to wild rice would occur. [Id.]. While no impacts were anticipated, the 2011 Final SEIS identified mitigation that could address potential adverse impacts resulting from tailings basin deep seepage. [See 2011 FSEIS at xiv].

No other waterbodies were identified with potentially affected wild rice resources from tailings basin deep seepage.

4.4.3.3 New Information or Circumstances Regarding Initial Pit 5 Dewatering Water Quality Since the 2007 Final EIS and 2011 Final SEIS

Potentially Affected Waterbodies. As noted in ERND Section 2.6.1.1, the Proposer still intends to dewater Pit 5 to Oxhide Creek but is also requesting permission to transfer water to Pit 1-2 and the Ann Pit. This would provide:

1) 4,500 gpm to Oxhide Creek; 2) up to 15,000 gpm to Pit 1-2; and 3) a one-time transfer of 400,000 gallons to the Ann Pit. Dewatering to Pit 1-2 and the Ann Pit is new information available to DNR.

Timing. Initial dewatering of Pit 5 would still be necessary before mining can begin under the revised project. This dewatering began in 2008 and is currently underway. If the revised project proceeds, new information available to DNR is that dewatering of Pit 5 is estimated to take 6 to 9 months, which is less than the 3 years estimated for the ESML project. When mining begins, maintenance dewatering of Pit 5 would occur over the 9 years of estimated project life.

Flow Rate. The 2007 Final EIS indicated initial dewatering of Pit 5 would average about 10 cfs (~4,500 gpm) over Years 3 through 5 of the project. [See 2007 FEIS at 4-56]. The rate of 4,500 gpm does not change under the Mesabi Revised Project, but the time allocated for it drops from 3 years to 6-9 months. New information since the EISs is the current proposal to: 1) direct Pit 5 dewatering to Pit 1-2 at 15,000 gpm; and 2) direct Pit 5 dewatering to the Ann Pit (at ~10,000 gpm) using 400,000 gallons of available storage.

Existing Water Quality. As previously noted, Pit 5 and Pit 1-2 are classified as a Class 2B, 3B, 4A, 4B, 5, and 6 waters of the state with overall good water quality, including for sulfate absent any wild rice being present. The following list provides the currently available sulfate concentrations (SO4 mg/L) for Pit 5 dewatering-impacted waterbodies: Pit 5 (24.1 mg/L); Pit 1-2 (22 mg/L); Oxhide Lake (23.9 mg/L); Swan Lake (21.8 mg/L). No water quality data is available for the Ann Pit. [See Email Query 40].

NPDES Permitting. According to MPCA the currently permitted Pit 5 dewatering is a water transfer from Pit 5 to Oxhide Creek that is not currently subject to NPDES permitting requirements. The new proposed water transfers from Pit 5 to Pit 1-2 and the Ann Pit would also be classified as water transfers not subject to NPDES permitting requirements according to MPCA. Similar however to the existing permits issued in 2007 and 2012, it is likely any reissued permit would include some project narrative describing water transfers and any monitoring requirements.

MPCA 303(d) Impaired Waters List. ERND Table 8 indicates that Oxhide Lake, Swan Lake Southwest Bay, and Swan River are listed as impaired for sulfate that potentially affects wild rice production in the MPCA's 2024 Section303(d) Impaired List. This is new information available to DNR since the 2007 Final EIS and 2011 Final SEIS. Regarding waters impaired for wild rice, the MPCA has developed a list of approximately 2,400 waters used for production of wild rice. In the 2024 Impaired Waters List, the agency has identified a total of 43 waterbodies as impaired due to measured sulfate levels in excess of 10 mg/L. The 10 mg/L sulfate water quality standard is designed to protect wild rice and applies in specific waters called "waters used for the production of wild rice." Minn. R. 7050.0224.

The USEPA added Swan Lake (SW Bay), Oxhide Lake, and the Swan River to the 2020 Minnesota Impaired Waters List, which for these waters has carried into the 2024 list. [See 2020 USEPA Waters Added to List]. Wild rice has been observed growing in these waterbodies.

In reviewing the amended Pit 5 dewatering proposal, MPCA has commented to DNR that Oxhide Lake (Waterbody ID 31-0106-00), which is located downstream of Oxhide Creek, was listed as impaired for sulfate in 2020 with an average sulfate concentration of 27.2 mg/L that is "well above" the 10 mg/L sulfate water quality standard. [See MPCA Comments to DNR – Permit 2008-0067 at 2].

Sulfate. New information or circumstances regarding potential sulfate loading to Oxhide Creek, Pit 1-2, or the Ann Pit is discussed below.

Oxhide Creek. Because the impaired water status of Oxhide Lake is new information since the EISs, MPCA advised that "the DNR should consider the sulfate levels in Oxhide Lake as it reviews MMCL's existing water appropriation permit." [See MPCA Comments to DNR – Permit 2008-0067 at 2]. As indicated in ERND Section 1.7, DNR Appropriation Permit No. 2008-0067 that authorizes Pit 5 dewatering would require an amendment for the proposed project to proceed.

As noted in ERND Section 4.3.2.1.3, new information available to DNR comes from Mesabi Metallics conducting mass balance modeling of potential sulfate loading to Oxhide Lake and Swan Lake that would be predicted to result from dewatering Pit 5 to these waterbodies prior to start-up of mining. The analysis evaluated potential sulfate concentrations under the existing transfer volume of 4,500 gpm (e.g., current dewatering or permit scenario) as well as a second alternative transfer volume of 15,000 gpm and found minimal change under the higher flow. [See Pit 5 Dewatering to Oxhide and Swan Lakes at 4]. While the rate of flow does not change at 4,500 gpm, total sulfate loading under the Mesabi Revised Project is reduced from the ESML Project because the amount of time needed to dewater Pit 5 is reduced from 3 years to 6 to 9 months.

Pit 1-2. The new proposed water transfer from Pit 5 to Pit 1-2 is expected to have a negligible impact on sulfate concentrations in Pit 1-2. This is because the sulfate concentration in both Pit 5 and Pit 1-2 are basically the same.

Ann Pit. The new one-time proposed water transfer from Pit 5 to the Ann Pit is expected to have a negligible impact on sulfate concentrations in the Ann Pit assuming sulfate concentrations in Pit 5 and the Ann Pit are basically the same.

Wild Rice. While the 2011 SEIS identified the potential for impacts to wild rice resources, this was due to tailings basin deep seepage and not pit-related dewatering. This means that the potential for sulfate loading to impact wild rice resources associated with Pit 5 dewatering to Oxhide Creek is new information since the EISs. There are no known wild rice resources in Pit 1-2 and the Ann Pit.

Since the EISs, Oxhide Lake has been identified as having wild rice resources present that make it a water used for the production of wild rice. [See 2013 Myrbo Final Report at .pdf 8, 123, 124]. Under the proposed project, total sulfate loading to wild rice waters would decrease due to the greatly reduced timeframe under the Mesabi Revised Project from the currently permitted ESML Project. While total sulfate loading is lower under the revised project, this is not expected to appreciably change existing sulfate concentrations currently around 26.0 mg/L. [See Pit 5 Dewatering to Oxhide and Swan Lakes at pg. 1-4]. This means that whatever impacts to wild rice resources are already present under elevated sulfate concentrations and would likely persist through the short remaining period of Pit 5 dewatering.

As for wild rice resources at Swan Lake that were considered in the SEIS, based on the same sulfate mass balance modeling done for Oxhide Lake, it assesses a 4,500 gpm scenario matching the existing conditions. Like conditions in Oxhide Lake, similarly it would not be expected for Pit 5 dewatering under the Mesabi Revised Project to appreciably change any impacts to wild rice resources in Swan Lake than already present. [Id.]. Of note is that because the wild rice occurs in a hydrologically isolated bay of Swan Lake, it is relatively insensitive to sulfate concentration changes in the main body of the lake. Regardless, there would be no new impacts through the shortened period of Pit 5 dewatering.

4.4.3.4 Is the New Information or Circumstances for Pit 5 Dewatering Water Quality Substantial and Does It Significantly Affect the Potential Environmental Effects from the Mesabi Revised Project that Have Not Been Considered in the Final EIS?

Substantial new information available to DNR for Pit 5 dewatering is potential sulfate loading to waters on the MPCA Section 303(d) List of impaired waters for sulfate with known wild rice. Although not listed as impaired for sulfate in the SEIS, ERND Section 4.4.3.2 indicates the Final SEIS conducted predictive modeling to assess impacts to Swan Lake's wild rice resources due to tailings basin deep seepage containing sulfate. Impacts attributable to deep seepage under the ESML Project were deemed negligible but sulfate monitoring of the tailings basin, Pit 5, Oxhide Lake, and Swan Lake would be required.

Unlike the ESML Project for the tailings basin, dewatering Pit 5 under the Mesabi Revised Project does not introduce new sulfate loading and potential impacts to wild rice at Oxhide Lake and Swan Lake. This is because there is no change in the dewatering rate from current conditions. In addition, Pit 5 dewatering under the Mesabi Revised Project is projected to only take 6 to 9 months versus 3 years under the currently permitted project. Extrapolating from the findings of the SEIS, the potential impacts to impaired waters and wild rice resources from Pit 5 dewatering appear similar to existing conditions but at a much shorter timeframe than originally envisioned. Thus, total sulfate loading is reduced under the Mesabi Revised Project compared to the ESML Project.

Conclusion. New information about the impaired status of downstream waters is substantial. DNR believes the SEIS's treatment of potential sulfate loading to designated wild rice production waters is applicable to the new information and circumstances associated with the revised project. Sulfate mass balance modeling conducted by the Proposer in 2011 for the SEIS is helpful for understanding potential impacts to Oxhide Lake and Swan Lake. For Oxhide Lake and Swan Lake, any impacts are likely to be similar to existing conditions because the requested flow volume is not changing from current conditions. In addition, implementing the Mesabi Revised Project is an improvement over the existing condition because Pit 5 dewatering flows would last for a reduced period of time (i.e., six to nine months) relative to the current permitted project (i.e., 3 years). Because total sulfate loading from Pit 5 dewatering does not increase from current conditions, and actually decreases under the Mesabi Revised Project, the new information about the impaired waters listing does not significantly affect potential environmental effects of the project that have not been considered in the Final SEIS, and therefore a supplemental EIS is not required for the Mesabi Revised Project.

4.5 Analysis of Whether There Is Substantial New Information or New Circumstances that Significantly affect the Availability of Prudent and Feasible Alternatives with Lesser Environmental Effects

Minnesota Rules part 4410.3000, subp. 3A(2) requires an RGU to supplement an EIS when there is "substantial new information or new circumstances . . . that significantly affect the availability of prudent and feasible alternatives with lesser environmental effects." The DNR has considered whether there is new information or circumstances that significantly affect the availability of prudent and feasible alternatives.

At the outset DNR notes that the term feasible in terms of alternatives typically means "can it physically be done?" The term prudent is similarly understood to mean "is it wise to pursue?" This is the basis of DNR's analysis as an

RGU which must determine whether, based on any new information or circumstances before the agency, it is reasonable to evaluate an alternative to the Mesabi Revised Project, which is to construct and operate the modified Mesabi Metallics proposal regarding pit development, stockpiling, initial Pit 5 dewatering, and stream augmentation.

4.5.1 EIS Alternatives Analyses

Minnesota Rules part 4410.2300, subp. G, requires an EIS to include one or more of alternative ways of each of the following categories or provide a concise description of why no alternative in a particular category is included in the EIS: alternative sites; alternative technologies; modified designs or layouts; modified scale or magnitude; or alternatives that incorporate reasonable mitigation measures identified through the comment periods for EIS scoping or for the Draft EIS.

An alternative may be excluded from analysis in the EIS if it: would not meet the underlying need or purpose of the project; it would likely not have significant environmental benefit compared to the project as proposed; or an alternative of any type that is analyzed in the EIS would likely have similar environmental benefit but substantially less adverse economic, employment, or sociological impacts.

4.5.1.1 2007 Final EIS

Section 3.3 of the 2007 Final EIS summarized the treatment of alternatives.

- Alternative Sites. The Final Scoping Decision did not require evaluation of alternative mine pit or processing plant sites for the MSI project but did require analysis of the benefits, feasibility, and impacts of locating a tailings basin to the northwest of the mine site in the EIS.
- Alternative Technologies. The Final Scoping Decision noted that two pellet induration processes were commercially available but only carried the Straight Gate Furnace Alternative forward into the EIS. The EIS also addressed alternative air pollution control technologies for both ore processing and the steel mill, and reviewed these alternatives through the MPCA's Best Available Control Technology (BACT) analysis.
- Modified Designs or Layouts. No processing plant layout alternative was carried forward into the EIS. No stockpiling alternative was carried forward, but the EIS would assume in-pit stockpiling of up to 50% of waste rock at a conceptual level, with the balance of impacts coming from surface stockpiles. The EIS did include an alternative for on-site sanitary wastewater treatment as a measure to potentially reduce nutrient loading to Swan Lake.
- Modified Scale or Magnitude. The Final Scoping Decision did not require evaluation of modified scale or magnitude alternatives.
- Incorporation of Reasonable Mitigation Measures. The EIS evaluated the following mitigation measures that could be applied to the project: integrated system; feedstock selection; fuel selection; equipment selection; and water use.

In terms of the proposed project, no alternatives were proposed regarding pit development, initial Pit 5 dewatering, and stream augmentation for the original MSI project. Conducting in-pit stockpiling for up to 50% of the waste rock is still a project feature.

4.5.1.2 2011 Final SEIS

Section 3.4 of the Final SEIS indicated the following alternatives were considered in the SEIS:

- Air Pollution Control Technologies. The 2011 Final SEIS updated the BACT analysis from the 2007 Final EIS.
- Alternative Mine Site and Plant Site. No alternatives to the location of the mine site were evaluated. Although substantial additions to the plant site were part of the ESML project, placing them at an alternative location or site was deemed infeasible.
- Ore Processing Technologies. No evaluation of ore processing technology alternatives was required in the 2011 Final SEIS.
- Onsite Sanitary Wastewater Treatment Systems. The ESML project did not affect the proposed onsite sanitary wastewater treatment system, thus no alternative was evaluated.
- Stockpiling. The SEIS did not address stockpiling alternatives and continued to assume up to 50% of waste rock disposal would use the in-pit method.
- Crusher and Pellet Plant Locations. According to the 2011 Final SEIS, although the configurations of the crusher and pellet plants was modified under the ESML project, the new configuration did not introduce new adverse impacts not already considered in the 2007 Final EIS. While impacts of the modified configurations from the original project configuration were evaluated in the SEIS, no alternatives per se were addressed.
- Scale or Magnitude. The 2011 SEIS did not identify new scale or magnitude alternatives requiring evaluation in the SEIS.
- Mitigation. No new mitigation alternatives were evaluated in the 2011 Final SEIS.

In terms of the proposed project, no alternatives were proposed regarding pit development, stockpiling, initial Pit 5 dewatering, or stream augmentation for the ESML project. Conducting in-pit stockpiling for up to 50% of the waste rock is still a project feature.

4.5.2 Feasible and Prudent Alternatives

To determine whether there is new information or circumstances available that would affect potential feasible and prudent alternatives for the Mesabi Revised Project, it is necessary to first assess whether there are alternatives to the proposed actions under the modified project. Based on the proposed project outlined in ERND Section 2, the DNR identified the following alternatives to the currently proposed revised project:

- Do nothing or null alternative
- Modify the mine pit, haul road, and stockpile locations
- Modify the reclaim water/tailings pipeline corridor
- Modify the Pit 5 dewatering route
- Modify the stream augmentation source
- Modify the stormwater management system

DNR addresses each of these items in the discussion below.

4.5.2.1 Implementing the Do Nothing or Null Alternative is Neither Feasible nor Prudent

The Proposer holds a Permit to Mine that includes state parcels no longer within Mesabi Metallics control, which makes implementing the currently approved project infeasible. Implementing the null alternative would be similar to revocation of the Permit to Mine because mining, stockpiling, and haul road construction could not be carried out due to logistics and ownership issues. Therefore, requiring the applicant to proceed with the currently approved project, which includes parcels no longer controlled by the applicant, is neither feasible nor prudent. Nor is it prudent to close the facility when the site still has recoverable taconite ore reserves under the control of Mesabi Metallics.

4.5.2.2 Modifying the Mine Pit, Haul Road, and Stockpile Locations is Not a Prudent and Feasible Alternative

Similar to the findings of the EIS and SEIS, evaluating alternative mine pit, haul road, and stockpile locations would not meet the underlying need or purpose of the Mesabi Revised Project. This is because the Mesabi Revised Project accounts for the location of recoverable ore reserves and locations appropriate for stockpiling relative to the reconfigured surface control resulting from the termination of State leases. In addition, rather than introducing new elements, the Mesabi Revised Project is essentially rearranging the same project features across the mine site to adapt to the new land control situation. Importantly, the revised project does not introduce appreciably new or different impacts from the currently permitted project. While it may be feasible to further reconfigure these project features, it is not prudent to do so because such an alternative does not provide appreciably less environmental effects than the revised Project, nor does it meet the project purpose to optimize mining of recoverable ore reserves.

4.5.2.3 Modifying the Reclaim Water/Tailings Pipeline Corridor Is Not a Prudent and Feasible Alternative

The Mesabi Revised Project includes two minor reroutes of the reclaim water/tailings pipeline corridor to account for new circumstances associated with the reconfigured surface control due to the termination of State leases. No significant impacts were identified in the EIS and SEIS associated with the proposed use of the original corridor, which is why no alternatives were considered for this project feature. This same reasoning stands under the currently proposed minor modifications to the route. While feasible, it is not prudent to evaluate an alternative route as it would not generate appreciably different environmental effects than the Mesabi Revised Project.

4.5.2.4 Modifying the Initial Pit 5 Dewatering Route Is Not a Prudent and Feasible Alternative

Substantial new information available to DNR is that Oxhide Lake and Swan Lake have been placed on the MPCA Section 303(d) List as being impaired for sulfate in wild rice production waters. Neither the 2007 Final EIS nor the 2011 Final SEIS evaluated the alternative of routing Pit 5 dewatering to a different receiving water than Oxhide Creek, which in turn flows to Oxhide Lake and then to Swan Lake, both of which are now listed as impaired for sulfate. Consideration of an alternative receiving water was not done in the 2007 Final EIS because Oxhide Creek was able to receive the proposed dewatering volumes without adverse flow impacts, while the water quality of Oxhide Creek, Oxhide Lake, and Swan Lake was considered good and essentially the same as Pit 5, including for

sulfate. Similarly, although potential sulfate impacts to wild rice resources from tailings basin deep seepage was identified as a potentially significant impact, no alternative receiving water of any type was considered for Pit 5 dewatering to Oxhide Creek presumably because there is no substantial difference in sulfate concentrations between Pit 5 and Oxhide Creek, Oxhide Lake, and Swan Lake.

In terms of actual Mesabi Revised Project impacts as detailed in ERND Section 4.4.3.3, because the rate of loading from Pit 5 dewatering to Oxhide Creek does not change from current conditions, Pit 5 dewatering to Oxhide Creek under the Mesabi Revised Project is not a source of new impact. In addition, as detailed in ERND Section 2.6.1, Mesabi Metallics added Pit 1-2 and the Ann Pit to the list of water transfers being proposed under the Mesabi Revised Project. This project addition directly addresses potential new impaired waters concerns because neither is listed on the MPCA Section 303(d) List for any impairments, nor is either known to have wild rice present. These two waterbodies themselves are candidate alternatives with lesser environmental effects but they are now incorporated into the project. Taken together, because the Mesabi Revised Project reduces potential sulfate loading to impaired waters compared to both the MSI and ESML project configurations, the new project already incorporates a prudent and feasible alternative with lesser environmental effects than the currently permitted project.

Another available route is to direct Pit 5 dewatering flows to Sucker Brook. This would be a brand-new discharge (not evaluated in either the EIS or SEIS) and would likely require a water appropriation permit amendment (or possibly a new permit). Utilizing Sucker Brook is likely feasible as its headwaters start in wetlands immediately due west of the concentrator building, with a more defined flowage going west to the Prairie River that discharges into Prairie Lake. While neither Sucker Brook, Prairie River, and Prairie Lake are on the MPCA Section 303(d) List for sulfate impairment, Prairie Lake is identified as a wild rice production water, and it is possible that sulfate associated with Pit 5 dewatering could reach the wild rice resources at Prairie Lake. Thus, while it may be feasible to direct part of the Pit 5 dewatering flows to Sucker Brook, introduction of potential new impacts to wild rice resources is not advised. Similarly, Little Sucker Lake could be a feasible receiving water but introducing potentially new impacts to wild rice resources are not advised because water leaving Little Sucker Lake flows into Big Sucker Lake, Third Sucker Lake, and Rice Lake where Big Sucker Lake and Third Sucker Lake are listed as impaired wild rice waterbodies.

Directing Pit 5 dewatering flows to Snowball Creek is also an available route. This would be a brand-new discharge and likely require a water appropriation permit amendment. This is probably feasible given its close proximity to Pit 5, plus Snowball Lake is not impaired for sulfate and is not a wild rice waterbody. However, Snowball Lake drains through a wetland and stream system that in turn discharges to the reach of the Swan River classified as impaired for sulfate, with likely wild rice resources. Thus, while it may be feasible to direct part of Pit 5 dewatering flows to Snowball Creek, it is not advisable to do so given potential wild rice concerns.

Conclusion. The 2020 addition of Oxhide Lake and Swan Lake to the MPCA Section 303(d) List of Impaired Waters is new information that DNR must consider regarding the Pit 5 dewatering routes and whether the act of listing these impaired waters significantly affects the availability of prudent and feasible alternatives with lesser environmental effects. By adding Pit 1-2 and the Ann Pit into the project, this by definition incorporates two feasible and prudent alternatives into the Mesabi Revised Project such that total loading to impaired waters (i.e., Oxhide Lake; Swan Lake) is reduced from the currently permitted ESML Project. Furthermore, whereas Sucker Brook and Snowball Creek may be feasible alternatives, they are not prudent because using these routes introduces potentially new sulfate and wild rice impacts not present under the ESML project. Because the Mesabi

Revised Project actually reduces total sulfate loading from the currently proposed ESML Project, there is no other feasible and prudent receiving water alternative with lesser environmental effects as opposed to continuing to use Oxhide Creek to receive Pit 5 dewatering flows.

4.5.2.5 Modifying the Oxhide Creek Stream Augmentation Source Is Not a Prudent and Feasible Alternative

Substantial new information available to DNR is that Oxhide Lake and Swan Lake have been placed on the MPCA Section 303(d) List as being impaired for sulfate in wild rice production waters. Neither the 2007 Final EIS nor the 2011 Final SEIS evaluated alternative sources for augmenting flow to Oxhide Creek. Augmentation would first be sourced from Pit 5 during its dewatering, second followed by Pit 1-2 while mining was underway, with any deficit made up from water sourced from the Hill Annex Pit. Neither EIS considered alternative augmentation sources because the water quality of Pit 5, Pit 1-2, and Hill Annex Pit were similar to the water quality of Oxhide Creek, Oxhide Lake, and Swan Lake, including for sulfate. Although wild rice resources were known to be present in Swan Lake during scoping of the SEIS, no different potential sources to supply augmentation to Oxhide Creek were considered for alternatives analysis.

Regarding augmentation to Oxhide Creek during Pit 5 dewatering, directing Pit 5 dewatering flows to not only Oxhide Creek but also Pit 1-2 and the Ann Pit shortens the period of Pit 5-sourced augmentation from 3 years to 6 to 9 months. When coupled with the fact that the augmentation rate from Pit 5 dewatering does not change from current conditions (at 4,500 gpm), the total sulfate loading to Oxhide Lake and Swan Lake is reduced compared to the ESML Project. In other words, the changes under Mesabi Revised Project mitigate the potential impacts analogous to an alternative with lesser environmental effects than the currently permitted project.

Considering future augmentation of Oxhide Creek sourced from Pit 1-2, both the Mesabi Revised Project and the ESML Project would conduct augmentation under the rate assigned in the DNR-approved Project Augmentation Plan. Importantly, because the life of mine period drops from 15 years to 9 years, taken together the total sulfate loading to Oxhide Creek from augmentation sourced from Pit 1-2 is reduced from the currently permitted ESML Project over the life of the project. This too mitigates the impacts from the augmentation under the Mesabi Revised Project analogous to an alternative with lesser environmental effects than the currently permitted project.

The only other potential source of augmentation flows to Oxhide Creek is the Hill Annex Pit. Although previously available as a supplemental water source under both the MSI and ESML Projects, this is no longer available. No other water sources are available to meet this project need that are under the control of Mesabi Metallics.

Conclusion. The 2020 addition of Oxhide Lake and Swan Lake to the MPCA Section 303(d) List of Impaired Waters is substantial new information that DNR must consider regarding the augmentation to Oxhide Creek from Pit 5 (during dewatering) dewatering and Pit 1-2 (after mining begins). DNR must answer whether the act of listing these impaired waters significantly affects the availability of prudent and feasible alternatives with lesser environmental effects. By adding Pit 5 dewatering to Pit 1-2 and the Ann Pit as part of the project, this reduces the time needed to empty Pit 5, thus reducing total sulfate loading during this phase of the project. Similarly, by shortening the life of mine from 15 years to 9 years also reduces total sulfate loading compared to the ESML Project. In other words, the Mesabi Revised Project does not result in new impacts and reduces total sulfate loading to downstream impaired waters compared to the ESML Project. Because the Proposed Project reduces

potential impacts and there is no other viable source of water available to the Proposer for stream augmentation, there is no other feasible and prudent water source alternative with lesser environmental effects.

4.5.2.6 Modifying the Stormwmater Management System Is Not a Prudent and Feasible Alternative

The Mesabi Revised Project revises the stormwater management scheme to account for the loss of the Sullivan and Ann Pits for water storage because access to these features was affected by the termination of the State leases. While stormwater management was a significant issue from the Scoping Decision Document, no alternatives were identified or evaluated. This same reasoning stands under the currently proposed project. All stormwaters would be captured and routed to a system of capture ditches and ponds for use as process water. While feasible, it is not prudent to evaluate an alternative stormwater management system as it would not generate appreciably different or lesser environmental effects than the Mesabi Revised Project.

5.0 Determination of Need for Environmental Review

The DNR acting as Responsible Governmental Unit for metallic mineral mining projects has analyzed the Project Description and supporting documents for the Mesabi Metallics Project (i.e., Mesabi Revised Project). The project in totality includes: open pit mining; surface and in-pit stockpiling; haul roads; reclamation; concentrating and pellet production; tailings management; initial Pit 5 dewatering; water management; stormwater management; stream augmentation; and reclamation.

The DNR finds that pursuant to Minn. R. 4410.3000, subp. 3A, a final EIS for the original Minnesota Steel Industries Project and final SEIS for the Essar Steel Modifications Project have been determined adequate, but the revised Mesabi Metallics Project is not exempt from environmental review as additional governmental decisions must be made.

The DNR finds that pursuant to Minn. R. 4410.3000, subp. 3B, the regulation of the Mesabi Metallics Project is an ongoing governmental action.

The DNR finds that pursuant to Minn. R. 4410.4400, subp. 8B, the Mesabi Metallics Project is not construction of a new facility for mining metallic minerals or for the disposal of tailings from a metallic mineral mine, and therefore a mandatory EIS is not required for the Mesabi Metallics Project.

The DNR finds that pursuant to Minn. R. 4410.4400, subp. 8C, the Mesabi Metallics Project is not the construction of a new metallic mineral processing facility, and therefore a mandatory EIS is not required for the Mesabi Metallics Project.

The DNR finds that pursuant to Minn. R. 4410.4300, subp. 11B, the Mesabi Metallics Project is not an expansion of a stockpile, tailings basin, or mine by 320 acres or more acres, and, therefore, a mandatory EAW is not required for the Mesabi Metallics Project.

The DNR finds that pursuant to Minn. R. 4410.3000, subp. 3C, the Mesabi Mesabi Project is not a phased or connected action pursuant to Minn. R. 4410.0200, subps. 60 and 9C, because no other actions are known to DNR

regarding the Mesabi Metallics Project. In addition, the Mesabi Metallics Project is not a subsequent phase of a project that was excluded from the FEIS and SEIS.

The DNR finds that pursuant to Minn. R. 4410.3000, subpart 3A (1)(2), that:

- The new actions proposed by the Mesabi Metallics Project do not result in substantial changes that affect the potential significant adverse environmental effects of the Mesabi Metallics Project.
- DNR has not identified substantial new information or new circumstances that significantly affect the potential environmental effects from the Mesabi Metallics Project that were not considered in the EIS and SEIS.
- DNR has not identified substantial new information or new circumstances that significantly affect the availability of prudent and feasible alternatives with lesser environmental effects that were not considered in the EIS and SEIS.

Therefore, the preparation of a Supplemental EIS for the Mesabi Metallics Project is not required.

5.1 Appeals

This ERND is a final governmental decision subject to appeal under Minn. Stat. ch. 606.

6.0 References

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