



CMD 25-H9.21

Date: 2025-10-24

**Written Submission from
English River First Nation**

**Mémoire de la
Première Nation d'English River**

In the matter of

À l'égard de

Denison Mines Corporation

Licence Application to Prepare Site and
Construct for Denison Mines' Wheeler
River Mine and Mill Project

Denison Mines Corporation

Demande de permis pour la préparation de
l'emplacement et la construction du projet
de mine et d'usine de concentration
d'uranium Wheeler River de Denison Mines

Commission Public Hearing

Audience publique de la Commission

December 2025

Décembre 2025



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October 24, 2025

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**RE: ERFN Intervention- Public Hearing – Denison Mines Corporation (CMD
25-H9)**

This submission is made on behalf of the English River First Nation (ERFN). The proposed Wheeler River Project is of great importance to the people of the ERFN. The Gryphon and Phoenix Uranium deposits are located directly within the Heart of ERFN's Ancestral Lands.

English River First Nation is comprised of 19 reserves located in Northern Saskatchewan. ERFN has a population of approximately 2,100 people. The on-reserve members of the First Nation reside at two small remote Northern Saskatchewan reserves called Wapatuanak and La Plonge. These reserves are located approximately 600 km north of Saskatoon. The people of ERFN have and continue to subsist on this land for generations-fishing, hunting, gathering, and thriving.

The relationship between ERFN and proponents engaging in the harvest of uranium from our Ancestral Lands began in 1980. Cluff Lake Mine opened and precipitated many changes in Northern Saskatchewan. Our Nation's members were transitioning from a land-based livelihood into a wage-based economy driven by the mining sector. Our people quickly adapted. Roads were being built into the North; the airstrip at Patuanak was built; electricity, telephones, and television were appearing on our reserves. 1980 was also the year I was born.

In 1981, as I learned to take my first steps, Cigar Lake's deposits were discovered. In 1983, as I began to speak in sentences Key Lake mine opened. In 1997, I entered grade 12 and McArthur River Mine began construction. Key Lake mill processed its first ore in

2000 – the year I had my first child.

The uranium mining industry has existed since the day I was born, and we have both grown and developed and changed and had impacts on the people of English River First Nation and our Ancestral Lands.

In my lifetime, the Cluff Lake Mine, the Cigar Lake Mine, the Key Lake Mine, the Key Lake Mill, and McArthur River Mine have all come online. And now we have entered a new regime in proponent/Nation relations.

I often liken the early relationship of ERFN and industry proponents to an arranged marriage. The people of ERFN entered into a marriage with industry proponents without ever being asked if that was what we wanted. Over the years, like in a marriage, there have been times of great celebration and success, and there have also been times of difficulty and stress. However, the people of ERFN have exhibited our resilience and ability to adapt to change, collaborating with industry proponents for the life of the mines.

The relationship with Denison Mines is starkly different. I often hear Denison being spoken about as mining differently- and this is true in that their proposed Wheeler River project is to be mined using the in-situ method. However, I would go further and say that Denison Mines is mining differently because they are approaching their relationship with Indigenous Nations in an ethical way that adheres to the principles of the United Nations Declaration on the Rights of Indigenous People, and securing Free, Prior, and Informed Consent to build a mine within ERFN Ancestral lands.

In 2016- 9 years before this licensing hearing, David Cates, CEO of Denison Mines sat with ERFN's late Chief Lawrence McIntyre. They spoke about the history of the uranium industry and the impacts it has had on our people. This was the beginning of the consultation and accommodation process.

In 2019 we spoke with Denison Mines, more specifically Carolanne Inglis-McQuay, informing her that ERFN did not want our Indigenous Knowledge in the Environmental Impact Study (EIS) to be in the form of an appendix. We wanted to integrate our Indigenous Knowledge into every section of the EIS. Denison heard ERFN, and we spent the next two years doing exactly that.

In 2020 ERFN and Denison began working together to compile two studies: the English River First Nation Traditional Knowledge Study and the English River First Nation Health and Socio-Economic Study. The final documents were completed in 2021. The Indigenous Knowledge from those studies were then integrated into every section of

Denison's EIS.

In August of 2022, ERFN was given the opportunity to pre review and comment on the Draft EIS. ERFN reviewed and accepted the draft document, and Denison then submitted the Draft EIS to the CNSC in October of 2022.

In 2022, I was invited by the CNSC to join the Federal Indigenous Review Team (FIRT) as a subject matter expert on Indigenous Knowledge. The FIRT began our review of the EIS in November of 2022 and completed it in November of 2024. In December of 2024, the CNSC accepted the final EIS.

English River First Nation has the right to speak on behalf of our Ancestral Lands. We have been handed this right from our ancestors and Elders who have come before us and so we must speak for the land today in order to carry out our sacred duty to protect it so that we may pass this right on to our next generation.

Part of speaking for the land is to ensure that protocols are adhered to and that ceremony is not forgotten. Denison recognized, facilitated, and welcomed our right to do this. In 2023 ERFN members attended the Wheeler River site. Elder Fred Campbell and I offered tobacco to the land. We do not take anything from the land without first making an offering, and so before mining begins, we gave tobacco offerings to the land. We made our offerings and gave thanks to our Creator, smudged and prayed at the site- a site where in past generations my Mother, my Grandmother, and my Great-Grandmother have done the same.

After years of working on the EIS with our partner scientist Robin Kush, ongoing community engagement, speaking with our Elders, and discussing the potential impacts and benefits of the Wheeler River project with our community leaders, ERFN Chief and Council were ready to discuss the issue of granting consent to Denison Mines for the Wheeler River Mine. And so in 2023, ERFN held more formal community consultation meetings informing our membership about what granting consent would mean for the land and our people.

Seven years after that first meeting between David Cates and Chief Lawrence McIntyre, English River First Nation held a ratification vote on whether or not to consent to the Wheeler River Mine. Ultimately, a strong majority of ERFN people voted in favour of consenting to the Wheeler River Mine. For the first time in my lifetime, Free, Prior, and Informed Consent by ERFN was recognized as a requirement and was obtained in a ethical, inclusive, and transparent process prior to a new mine on ERFN Ancestral Lands being sanctioned by the regulator.

After a thorough exercise in cooperative, comprehensive environmental assessment and

protection mitigations, ERFN can confidently say that we are in support of the Denison Wheeler River Mine and its opportunity for shared prosperity.

Sincerely,

A handwritten signature in blue ink that reads "Cheyenne Hunt". The signature is fluid and cursive, with a long horizontal line extending from the end of the name.

Cheyenne Hunt BA, LL.B.
English River First Nation
Director, Lands & Consultation

Summary of the Canadian Nuclear Safety Commission's Environmental Assessment Report: Wheeler River Project (August 2025)

October 22, 2025

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Background Information

Review Report Scope

This review report has been prepared for the English River First Nation (ERFN) to support the First Nation's review of the Wheeler River Project (the Project). Previously provided on the same Project was the review of the Wheeler River Project Final Environmental Impact Statement (October 2024) and comparison to the draft document (July 2024) as part of the Ministry of Saskatchewan review process. Objectives were to confirm ERFN review comments were addressed as understood and summarize technical content. Provided in this submission is the review of the Environmental Assessment Report (EA; [LINK](#)) for the Project as part of the Canadian Nuclear Safety Commission (CNSC) project review process. The EA Report summarizes the assessment conducted by CNSC staff, including analysis on the potential environmental effects of the Project.

For convenience, an overview of the EA Report context documenting background information (i.e., context prior to the CNSC's evaluation conclusions) is provided in Table 1, as well as in the 6th and 7th columns the general CNSC's conclusions and my comments pertaining to the post-project-approval phase (ongoing engagement) for the Project are provided. The report section to follow Table 1 provides a more detailed summary of the CNSC's evaluation and conclusions.

The review focused on the EA Report itself (305 pages) within minimal revisitation to previous submissions made (e.g., Federal project review process documents (i) ERFN Main Areas of Concern Submission and (ii) Denison Response to ERFN Main Areas of Concern). The review focus was concerns expressed by ERFN in relation to uranium mining and milling in northern Saskatchewan. Concerns expressed pertain in general to environmental protection of their Ancestral lands (Nuhtsiye-kwi Benéne in Dene), safeguarding their traditional, current and foreseeable way of life and reclaiming their identity and heritage (culture). Specifically, concerns were related to the preservation of their people's ability to hunt, fish and gather country food and advocate for their devotional connections with the lands of Nuhtsiye-kwi Benéne and its intrinsic value.

English River First Nation

ERFN is a Dene and Cree First Nation located in Northern Saskatchewan. ERFN's Nuhtsiye-kwi Benéne encompasses 75,000 km² of the boreal forest in central-northern Saskatchewan, stretching from the Churchill River in the south to Wapata Lake in the north. ERFN has seven historical settlements located at Sucker Creek, Cree Lake, Elak Dase, Knee Lake, Dipper Rapids, Wapachewunak and La Plonge. Since 1992, an additional twelve reserve parcels have been added to their land base through the Treaty Land Entitlement process, which aims to resolve outstanding Treaty land obligations. ERFN's two largest reserves are La Plonge Reserve and Wapachewunak, located approximately 600 km north of Saskatoon, Saskatchewan.

ERFN's main settlement area is located along the Churchill River, about 500 km north of Saskatoon at the Wapatuanak Reserve, Saskatchewan. The ERFN is a signatory to Treaty 10 (1906) and is comprised of nineteen different reserves:

- La Plonge 192,
- Elak Dase 192A,
- Knee Lake 192B,
- Dipper Rapids 192C,
- Wapachewunak 192D,
- Ile a la Crosse 192 E,
- Primeau Lake 192F,
- Cree Lake 192G,
- Grasswood 192J,
- Leaf Rapids 192P,
- English River (Porter Lake) 192H,
- English River FN Barkwell Bay No. 192I,
- English River FN Haultain Lake No. 192K,
- English River FN Flatstone Lake No. 192L,
- English River FN Cable Bay No. 192M,
- English River First Nation Cable Bay Cree Lake 192N,
- English River FN Beauval Forks No. 192O,
- Slush Lake Reserve No. 192Q, and
- Mawdsley Lake Reserve No. 192R.

The ERFN's total membership is 1,927, with approximately 810 members living on reserve lands (Cheyenna Hunt, personal communication, September 2025). Comprised of both Cree and Dene people, the "people of the river" are known for their bold and collaborative spirit and trusting and humble nature (CanNorth 2017).

The ERFN name originates from the English River area, which was inhabited by the Poplar House People for periods during the year. Most of the families that now live at the Wapachewunak Reserve and La Plonge reserve, traditionally lived along the Churchill River system at Primeau Lake, Knee Lake, Dipper Lake and/or Cree Lake to the north. Summers were spent primarily fishing along the river system. For the rest of the year, family units would spread out through the northern forests for trapping and subsistence hunting. Commonly used winter trapping areas included Haultain Lake, Costigan Lake, Foster Lake and the area between Cree Lake and the Churchill River (Jarvenpa 1980, CanNorth 2017, SVS 2022).

The community is shaped by its respected Elders who are widely consulted for decisions, wisdom and strength. ERFN is dedicated to stewardship of the land and the education of future generations through land-based learning youth camps and other opportunities to share knowledge on the land (Cameco 2021). ERFN is rising to the challenge of ensuring sustainable development in the vicinity of their communities and within their Nhutsiye-kwi Benéne and recognizes the unique and important role they have to play in the protection of Northern Saskatchewan. While remaining true to traditional values as "keepers of the land," members also pursue opportunities to participate in the development of ERFN's resources (e.g., forestry, industry and workforce).

ERFN established Des Nedhe Group of Companies in 1991 to create sustainable employment and business opportunities for English River members. Since its inception, Des Nedhe Group has invested in established companies that are leaders in Saskatchewan's mining and construction industry and expanded its portfolio into the areas of retail and real estate development and management. The company takes pride in its strong focus on growth through investment, experienced management team and history of delivering solid financial results. Looking forward, Des Nedhe Group is exploring new opportunities across the Country, in multiple sectors, and is positioned to play an important role in Canada's economic future.

Saskatchewan Uranium Industry

The Athabasca Basin of northern Saskatchewan has been the site of several major uranium discoveries and Saskatchewan is recognized as a world leader in uranium production. The uranium is exclusively used for electricity generation at nuclear power plants, which is a non-carbon emitting energy source and provides about 15% of Canada's electricity needs. The uranium industry is a significant economic driver in northern Saskatchewan. Within ERFN's Nhutsiye-kwi Benéne three uranium operations are currently operating or in a state of care and maintenance: Key Lake Mill, McArthur River Mine, and Cigar Lake Mine; and there are two additional operations just northeast of ERFN Traditional Lands near Wollaston Lake: McClean Lake Mine and Mill and Rabbit Lake Mine and Mill.

Wheeler River Project Location

As acknowledged in Section 1 of the Final EIS, the Wheeler River Project is located within the boundaries of Treaty 10 and the Nhutsiye-kwi Benéne of ERFN. The main land use activities in the area by Indigenous and other land users are hunting, trapping, and fishing. The closest recreational lease and traditional resource lease are 2.5 km and 12 km away, respectively.

Shared Prosperity Agreement

After ten years of thoughtful negotiation and an opportunity for all members to weigh in through a ratification vote, ERFN and Denison Mines signed a Shared Prosperity Agreement on September 26, 2023 in connection with the proposed development of the Denison Wheeler River Project in Northern Saskatchewan. The agreement acknowledges that the proposed project is located within ERFN's Ancestral Lands and provides consent from ERFN to advance development of the uranium mine.

These agreements are part of the effort undertaken in recent history to engage and respect local communities, First Nations, Metis Nations and local land users during the planning and execution of industrial developments. Execution of these agreements ensures that engagement occurs with the intent to minimize the potential and perceived negative impacts from a development, as well as optimize potential positive impacts. Signing of these agreements conveys a general trust in the industry's performance and is recognition of a positive working relationship with the industry leaders.

Consultation

The Government of Canada (federal government) has a duty to consult and, where appropriate, accommodates Indigenous Nations and communities when it considers conduct that might adversely impact potential or established Indigenous or treaty rights. The duty to consult is an important part of CNSC's activities, as an agent of the Crown, including for licensing and for decision making in environmental reviews. The CNSC staff's Consultation Report that details the consultation and engagement process conducted for the Project is provided as part of the Commissioning Member Documents ([LINK](#)).

Leadership Role

Key concerns of the ERFN communities continue to include:

- Operation and ultimate closure of the Key Lake Operations, due to the long-term (1000s of year) management of tailings and linkages to Wheeler River system that is an area of heightened value; and
- Operation and ultimate closure of McArthur River Operation and Key Lake Operations, due to potential for cumulative effects on the Wheeler River system.

Key concerns of the ERFN communities now include:

- Development of the proposed the Project; specifically, concerns regarding cooperation among existing and proposed operations to confirm adverse environmental and social impacts minimized and cumulative effects assessed sufficiently.

The Wheeler River region is recognized as an important cultural, ecological, and sustainability resources (i.e., drinking water, food and air) area for the communities of ERFN. The prevalence of the importance of the resources (clean air, water, soil, and country foods) in this area is considered likely to increase in value to local land users following closure of local operations.

ERFN is dedicated to stewardship of the land for future generations and doesn't take this responsibility lightly. Often in relation to First Nation consultation and engagement the focus is on the spatial extent of their traditional and current land use, and it is conveyed that their concerns should be limited to these areas. However, it is recognized that the climate and environments around the world are changing, and there is no way to know in the future where the traditional resources that could be necessary to support future generations will be located within northern Saskatchewan or even Canada. As such, ERFN has interest in uranium operations and sites from two perspectives: (1) protection of all lands in northern Saskatchewan and (2) gaining an increased understanding of operational and long-term tailings management methods / technologies relevant to post-closure conditions.

EA Report Background and Conclusion Summary Table

Table 1: Overview of the EA Report Summary and Conclusions

Component	Project Component / Activities	Proponent's Assessment	CNSC Summary of ERFN's Draft EIS Review Comments	Selection of Related Follow-up / Commitment	CNSC Final EIS Conclusion	EA Report Reviewer Comments (i.e., not report contents)
Air Quality (Section 6)	(i) Traffic on unpaved roads, (ii) Site clearing, (iii) Fuel combustion (e.g., power generators, diesel-powered mobile equipment, (iv) Drilling, (v) Operation of the ISR wellfield, (vi) Operations of the ISR processing plant, and (vii) Storage and disposal of drilling waste rock and process precipitates.	Residual effects unlikely to have significant adverse effect on receptor valued components (VC)	General concerns regarding the project's impact on air quality in relation to increased traffic, and site preparation and construction activities that can increase dust and emissions. In addition to the general concerns raised, there would be exceedances of NOx, PM10 and uranium and these constituents were not identified as part of the Human Health Risk Assessment.	Refer to Table 6.5. Denison committed to mitigate any potential adverse effects. Denison committed to engaging Indigenous Nations and communities on air emissions monitoring program. Environmental Management System (EMS) being developed to include an Environmental Protection Plan (EPP), with environmental monitoring and compliance with regulatory standards. Dust Management Plan to be developed.	Taking into account the implementation of mitigation measures and recommended follow-up program measures, CNSC staff found that the project is not likely to cause adverse effects on air quality, the acoustic (noise) environment, or Greenhouse Gas emissions.	ERFN understanding of potential mitigation measures (Tables 6.3) and performance effectiveness is high. The commitment is to being compliant with the federal guidelines during both construction and operation = no significant adverse effect. In generally, ERFN would not consider this to be rigorous but minimal commitment.
Ambient Noise (Section 6)			Baseline data was not sufficient to assess the potential impacts of noise.	Refer to Table 6.6. Denison committed to follow-up / ongoing monitoring that will be used to refine the model prediction and ensure that the environment remains protected. Denison committed to mitigate any potential adverse effects. EMS will incorporate a noise management and monitoring plan in collaboration with ERFN and Kineepik Metis Local of Pinehouse (KML). Specifically, develop noise complaints registry and modify monitoring as necessary.		ERFN understanding of potential mitigation measures for workers and performance effectiveness is high. Understanding of potential mitigation performance beyond site boundaries in relation to wildlife or land user protection is less well understood; specifically, success of contingency measures during operations (mitigation listed in Table 6.4).

Component	Project Component / Activities	Proponent's Assessment	CNSC Summary of ERFN's Draft EIS Review Comments	Selection of Related Follow-up / Commitment	CNSC Final EIS Conclusion	EA Report Reviewer Comment (i.e., not report contents)
Geology (Section 6.2)	Changes to soil terrain and subsidence at ground surface from ISR mining.	Residual effects unlikely to have significant adverse effect	-	Denison committed to a Subsidence Monitoring Program to ensure expected magnitude of change, as well as contingency plan. Denison has committed to providing additional detailed geomechanical studies during licensing.	Taking into account the implementation of mitigation measures and follow-up monitoring program proposed for each phase of the project, CNSC staff conclude that changes to geology and groundwater quantity and quality are not likely to cause adverse effects to the receiving environment.	Some ERFN community members are uncertain about subsidence effects, including the potential for effects to not be observable until years after mining (not within 10 years), the monitoring and reporting, and particularly the updated modelling, will be valuable. Mitigation in Table 6.7 is limited.
Groundwater (Section 6.2)	(i) Changes to soil terrain and subsidence at ground surface from <i>in-situ</i> recovery (ISR) mining, (ii) Changes to groundwater quantity from alteration in precipitation infiltration, groundwater extraction and effluent release, and (iii) Changes to groundwater quality from construction activities, operation of site infrastructure, ISR mining and groundwater remediation		Concerned of potential for mining recovery fluids to contaminate groundwater in the event the containment system fails. Concerned that any groundwater contamination could lead to impacts to waterbodies such as the Wheeler River and Cree Lake given the complex flow pathways of groundwater.	Denison has committed to avoiding residual effects to groundwater and surface water beyond the mining area during operations and decommissioning. Committed to pipeline leak detection and secondary containment for wellfield and contingency plans for recovery of mining solution. Denison committed to avoiding effect to surface water from changes to groundwater in the vicinity of the project during operations and decommissioning. Denison will implement an Environmental Code of Practice with action levels and steps to take to confirm concentration of chemical and radiological constituents in discharge at acceptable levels. Denison committed to monitoring treated effluent and surface water and applying adaptive management, if necessary. Denison committed to engagement and input on the Environmental Management Plan (EMP), Emergency Preparedness and Response Plan (EPRP), and the Environmental Effects Monitoring Programs (EEMPs). Denison committed to additional characterization and assessment during licensing and revisiting and updating the groundwater models as necessary based on the findings through the follow-up monitoring program.		ERFN community members are uncertain about groundwater quality protection during operations (mitigations in Table 6.9) because (a) effective monitoring requires thorough understanding of groundwater flow pathways under varying environmental conditions and (2) the expectation that surface water effects would not be observable until many years (beyond 10 years) after mining. The updated groundwater modelling during operations would be valuable.
Surface Water Quantity (Section 6.3)	(i) Loss of drainage areas from infrastructure, (ii) Intake of surface water for use, and (iii) Surface water discharge to Whitefish Lake and downstream receiving environments.	Residual effects to surface water quantity are unlikely to have significant adverse effects on receptor VCs.	Denison's water recycling program lacks clarity, further engagement with ERFN to explore the best available technology options. Ensuring transparency, effective communication, and consideration of community perspectives are essential in evaluating and mitigating the environmental implications of this mining method.	Denison committed to surface and groundwater monitoring program, maximizing the recycling and reuse of process water to reduce freshwater intake and release into Whitefish Lake.	CNSC staff concurs with Denison's conclusion that no adverse residual effects were identified related to the assessment of the Project's effects on surface water quantity taking into account identified design, mitigation and follow-up monitoring program measures.	ERFN community members identified potential factor in potential effects over long-term is drawdown in relation to the mining area but would be localized and risk less than traditional underground mining; mitigation described in Table 6.8.

Component	Project Component / Activities	Proponent's Assessment	CNSC Summary of ERFN's Draft EIS Review Comments	Selection of Related Follow-up / Commitment	CNSC Final EIS Conclusion	EA Report Reviewer Comment (i.e., not report contents)
Surface Water Quality (Section 6.3)	(i) Site water management, (ii) Mobilization of suspended materials due to erosion and sedimentation, (iii) Controlled discharge of treated effluent to Whitefish Lake and receiving environments, and (iv) Long-term transport of groundwater solutes from the remediated ore zone area to Whitefish Lake (in "future" centuries).	Residual effects to surface water quality are unlikely to have significant adverse effects on receptor VCs.	Concerned about the ISR mining method and its potential environmental impacts. Concerned about the potential escape of mining fluids beyond the freeze wall containment system, potentially contaminating surrounding surface water - key water bodies of concern include Cree Lake and Wheeler River. Given the toxic nature of these mining fluids and the complex flow pathways of ground and surface water in the vicinity, any escape would significantly impact the regional ecosystem and downstream water bodies. Concerned that the project may adversely impact or contaminate the aquatic environment, waterways, fish, and fisheries, affecting their traditional way of life, including water use, fishing, and land harvesting practices tied to Nuhtsiye-kwi Benéne. Indicated the lack of detailed modeling for the dispersion of radioactive materials if they were to enter Wheeler River raised further concerns. Highlighted the importance of safeguarding waterways and fish spawning areas to prevent contamination.	Denison committed to a groundwater monitoring network with a focus on conditions within and on the outside of the perimeter freeze wall, and continued remediation until groundwater quality in the mining area meets acceptable levels. Denison committed to no effect to surface water from changes to groundwater in the vicinity of the project during operations and decommissioning. Denison committed to having a site water management plan and spill response plan to account for management of all potential contact water on site. Denison committed to treated effluent diffuser design during licensing that will confirm EA conclusions and water quality will remain below guidelines. Denison has committed to identifying and implementing mitigation measures (e.g., treatment) to ensure that the environmental assessment conclusions of risk to aquatic receptors will not change, and that water quality will remain below guidelines.	Taking into account the implementation of mitigation measures and recommended follow-up program measures, CNSC staff conclude the Project is not likely to cause adverse effects on surface water quantity related to (i) effect to drainage areas from footprint, (ii) surface water withdrawal, (iii) surface water discharge to Whitefish Lake for maintenance of mine site water balance, and (iv) from mobilization of suspended materials and long-term transport of groundwater solutes to Whitefish Lake. The Project has some potential to cause moderate adverse effects to surface water quality from the controlled discharge to the receiving environment due to copper. CNSC staff concurred with Denison's assessment of Project activities that may interact with sediment and benthic invertebrates and cause residual effects during construction, operation, and decommissioning.	ERFN recognizes the intrinsic value of surface water, groundwater, sediment and soil as such believe these environmental components should be protected to the extent possible, i.e., not just to avoid significant effects to VC receptors. Expressed by ERFN via message that western science and regulatory requirements are not necessarily going to satisfy their communities; this aligns with CNSC referring to As Low As Reasonably Achievable (ALARA) principle in relation to the wastewater treatment system design (pg 219/305) and effects of accidents and malfunctions (pg 241/305).
Sediment and Invertebrates (Section 6.4)	(i) Mobilization of suspended material, (ii) Loss of habitat for infrastructure, (iii) Changes in chemistry from controlled discharge during operations and long-term transport of groundwater solutes to Whitefish Lake, and (iv) Changes in water levels and flows.	Residual effects to sediment quality are unlikely to have significant adverse effects on receptor VCs. Residual effects of the Project are expected to result in no significant adverse effects to benthic invertebrates.	Concerned metal concentrations in sediment will have a potential adverse impact to benthic invertebrate composition and abundance. Concerned potential contamination of sediments from effluent release and the potential for adverse impacts to bottom-feeding fish such as white sucker. Recommended additional sediment samples be taken to get a more representative baseline of sediment makeup and health. Raised concerns that sediment baseline conditions were predicted from surface water conditions and requested additional monitoring sites for sediments within Northern Pike spawning habitat. Recommended benthic invertebrate sampling upstream of South Whitefish Lake to sufficiently characterize the benthic invertebrate community. Recommended that additional benthic invertebrate sampling as benthic invertebrates are sensitive end points in aqueous and sediment metal concentrations.	Denison committed to mitigation and monitoring to limit any adverse effects on sediment and benthic invertebrates, including at the point of discharge in Whitefish Lake South, reference location upstream (Whitefish Lake North) and downstream in Whitefish Lake South upstream of discharge to McGowan Lake. Denison committed to finalizing approach (e.g., Before-After-Control-Impact [BACI]) following consultation with Indigenous groups and other relevant groups.	Taking into account the implementation of mitigation measures and recommended follow-up program measures, CNSC staff conclude the Project is not likely to cause significant adverse effects on sediment quality and benthic invertebrates.	None

Component	Project Component / Activities	Proponent's Assessment	CNSC Summary of ERFN's Draft EIS Review Comments	Selection of Related Follow-up / Commitment	CNSC Final EIS Conclusion	EA Report Reviewer Comment (i.e., not report contents)
Fish and Fish Habitat (Section 7)	(i) Change to surface water quality and subsequently to sediment quality, including future centuries scenario (ii) Loss of habitat for infrastructure (discharge pipeline / diffuser - 135 m²= 0.05% of the lake) including fish salvage for construction, and (iii) Change in surface water quantity.	No significant adverse effects to fish, fish habitat and fish health. The Environmental Risk Assessment (ERA) concluded minor exceedances of copper screening values protective of aquatic life and some potential risk of adverse effects to aquatic receptors.	Concerned that Project has potential to adversely impact aquatic environment including water bodies and fish and fish habitat. Given the potential for accidental releases, e.g., impacts to groundwater and surface water, could have negative impact on fish and fish habitat, including fish spawning areas. Potential for effluent discharge outlets to result in fish entrapment / impingement and need for bottom-feeding fish to be excluded from the outlet mixing zone.	Denison committed to mitigating any potential adverse effects on fish and fish habitat. Denison committed to collecting additional aquatic baseline characterization data, including wetlands data to refine effects predictions to fish and fish habitat. Denison committed to additional water and sediment quality baseline data prior to disturbance. Denison has committed to sensitivity analysis for variable flow and sediment coefficients to update the ERA. If there are any increases to the risk profiles of receptors exceeding EA predictions due to updates from the incorporation of additional baseline data into the ERA, Denison has committed to addressing these concerns through the implementation of additional mitigation measures, monitoring, and/or adaptive management as needed. Denison has committed to collaborating with Indigenous Nations and communities to ensure these outcomes. This includes engagement and input on the EMP, EPRP and EEMP. Denison committed to conducting a pre-operations EEM study to allow for assessment of potential changes to the environment from project.	Taking into account implementation of mitigation measures and recommended follow-up program measures, CNSC staff conclude the Project is not likely to cause significant adverse effects on fish and fish habitat from (a) changes in fish habitat (habitat overprinting) and (b) changes in flows or water levels in lakes and rivers, or (c) changes in surface water quality due to the mobilization of suspended materials, controlled discharge to the receiving environment, or the long-term transport of groundwater solutes to Whitefish Lake in a future centuries scenario. Not likely to cause significant effects on fish health from changes in (a) water and sediment quality, and (b) constituent concentrations in fish tissues due to the mobilization of suspended materials, controlled discharge to the receiving environment, or the long-term transport of groundwater solutes to Whitefish Lake in a future centuries scenario.	None
Terrain, Soil and Organic Matter (Section 6.5)	(i) Change in terrain morphology and stability, (ii) Change in soil quantity and quality, and (iii) Change in quantity of organic matter/peat.	Denison concluded that the residual effects of the Project are expected to result in no significant adverse effects to soil, vegetation and ecosystems.	Concern samples of terrestrial lichens, blueberry and soils showed consistent radionuclide levels when compared to Rio Tinto's Roughrider Project; several metal parameters for these samples were elevated in comparison.	Denison committed to mitigate adverse effects to soil and vegetation, monitor conditions, and conduct reclamation activities during decommissioning. Denison committed to, wherever possible, avoid wetlands through project design and buffer space. Construction and geotechnical monitoring will be implemented in accordance with the EMS, which will include erosion and sediment controls, soil and vegetation monitoring and the Preliminary Decommissioning Plan. Salvaging sediment and peat/organic matter before construction, reducing disturbance through all project phases, reclaim the site to an ecological trajectory that aligns with end land uses and regulatory requirements. Monitoring progressive reclamation during decommissioning and employing adaptive management if necessary. Conducting pre-construction listed plant surveys, and targeted monitoring to ensure mitigation measures are effective for projecting vegetation during the project. Develop the specific seed mixture and reclamation plan through updates to the decommissioning plan and provide opportunities for interested parties to review and provide input.	Taking into account the implementation of mitigation measures and recommended follow-up program measures, CNSC staff conclude the Project is not likely to cause significant adverse effects to (i) soil from changes in terrain morphology and stability, (ii) soil quantity and quality, (iii) organic matter / peat, (iv) vegetation, and (v) ecosystems.	None
Vegetation and Ecosystems (Section 6.5)	Change in (i) the areal extent of habitat types, (ii) the areal extent of wetlands, (iii) the number of plants of conservation concerns, and (iv) concentration of constituents in plant tissue.		Requested using seed mix certified weed-free for revegetation / reclamation, also include plants of medicinal and traditional importance in revegetation/reclamation plans. Requested prepare the site in ways that will promote natural revegetation of areas that will not need to remain cleared.			None

Component	Project Component / Activities	Proponent's Assessment	CNSC Summary of ERFN's Draft EIS Review Comments	Selection of Related Follow-up / Commitment	CNSC Final EIS Conclusion	EA Report Reviewer Comment (i.e., not report contents)
Terrestrial Biota (7.2)	(i) Alteration and/or loss of habitat due to disturbance or removal to the extent that the area is functionally unsuitable for wildlife, and (ii) Change in mortality, both directly and indirectly.	Residual effects of the Project are expected to result in no significant adverse effects to terrestrial biota.	<p>Importance of documenting caribou and moose calving locations and participating in mitigation efforts. Loss of wetland areas and lichen could significantly impact habitat and food availability during critical life stages. Noise generated by Project-related activities may affect ungulates. Concerned increased access to Cree Lake could adversely impact caribou and moose populations. Importance of furbearing species (e.g., Lynx, Muskrat, Fisher, Otter, Mink, etc.) were erroneously omitted from the wildlife valued component given these are culturally important species. Believed that monitoring changes in wetland aerial extent alone (as a single monitoring point) was insufficient, given that wetlands serve as key lifecycle habitats for species of concern, including furbearing species such as Beaver and Mink. Reclamation priorities should include meeting objectives for Woodland Caribou and that any work related to Woodland Caribou must consider the federal recovery strategy for the species. High disturbance activities should consider Rusty Blackbirds to determine setback distances during sensitive timing windows. Concerned amphibians were not included in the EIS as part of a valued component or key indicator species given amphibians were included in wildlife surveys.</p>	<p>Reducing the project footprint, placing footprint primarily within previously disturbed areas, timing activities to avoid disturbing wildlife during sensitive periods, and conducting pre-clearing wildlife surveys to identify sensitive wildlife habitat features or the presence of species at risk. Committed to continue to conduct nocturnal amphibian call surveys at representative ecosites and wetlands. Reduce noise and disturbance by using high-quality, low sound emitting equipment and conducting regular maintenance, situating noise generating equipment behind on-site obstructions, monitoring sound levels during operation. To reduce attracting ungulates to roadways in the winter, committed to using gravel or sand, instead of salt, whenever possible. Prohibit employees and contractors from feeding, approaching, or harassing wildlife within the Project Area and installing appropriate road signage to minimize wildlife-vehicle collisions. Mitigate adverse effects related to the operating airstrip and flights, committed to maintaining direct flight paths, leaving the area as quickly and safely as possible, and adjusting flight paths based on Woodland Caribou observations / important locations. Committed that contaminated areas such as waste ponds and pads and landfill will be fenced to avoid contact with wildlife. Committed to the monitoring of terrestrial wildlife including small mammals, furbearers, ungulates, and species at risk. Committed to a Wildlife Management Plan for terrestrial and avian species and a Woodland Caribou Management Plan. Committed to working with its Indigenous communities of interest to develop and implement the monitoring approach and the framework for sharing monitoring results. Committed to a habitat offsetting plan to satisfy the requirements of the Province of Saskatchewan offsetting framework to fulfil objectives of the Woodland Caribou Recovery Strategy. Conduct at least one more year of additional bat baseline surveys.</p>	<p>Taking into account the implementation of mitigation measures and recommended follow-up program measures for the terrestrial biota assessed in this section, including: furbearers, ungulates, caribou, arthropods, amphibians, bats and birds, CNSC staff conclude the Project is not likely to cause significant adverse effects.</p> <p>The conclusion is inclusive of terrestrial species at risk listed under Schedule 1 of SARA. CNSC staff will work with ECCC to ensure that measures taken by Denison will be consistent with applicable recovery strategies for the identified species at risk.</p>	None

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Human Health (Section 7.3)	(i) Air emissions, (ii) Release of treated effluent via drinking water, fish consumption and dermal contact, and (iii) Long-term transport of groundwater solutes to Whitefish Lake in future centuries.	Concluded that the residual effects of the Project are expected to result in no significant adverse effects to human health.	Concerned potential impacts from the proposed Project and cumulative effects in the region will adversely impact community health. Concerns regarding health are due to the potential impacts from contaminants of potential concern being present in receiving environments and impacting citizens via pathways of effects. Concerned noted exceedances in air quality parameters but these parameters were not brought forward into the EIS Appendix 10A Human Health Risk Assessment (HHRA) for the Project. Concerns that the HHRA should include vulnerable populations such as pregnant women, youth and Elders to determine potential impacts to area residents.	Committed to no significant adverse effects to human health and monitoring surface water, sediment, soil, fish tissue, benthic invertebrate tissue and country foods (e.g., blueberries) for radionuclides and non-radionuclides. Committed to monitoring surface and groundwater, sediment, soil samples, fish tissue, benthic invertebrates, and country foods for radionuclides and non-radionuclides; monitoring will be used to verify predictions made by the ERA, refine models and reduce uncertainty in the ERA predictions. This monitoring will take place in Whitefish Lake, McGowan Lake, and Russell Lake. Committed to collaborating with Indigenous Nations and communities, including engagement and input on the EMP, EPRP, and the EEMs.	Taking into account the implementation of mitigation measures and recommended follow-up program measures, CNSC staff conclude the Project is not likely to cause significant adverse effects on human health from changes in changes in non-radiological and radiological constituents of potential concern (COPCs) from Project air and liquid emissions. Taking into account the implementation of mitigation measures and recommended follow-up program measures, CNSC staff conclude the Project is not likely to cause significant adverse effects on Nuclear Energy Workers (NEWs) and worker health from radiological COPCs and conventional safety hazards due to occupational activities.	Understanding / input on monitoring locations and frequency, particular on site far-field surface water and vegetation areas, important to reassuring community members adequate predictions.
Accidents and Malfunctions (Section 8.1)	(i) Vehicle accident and aquatic release of radioactivity (low risk), (ii) Vehicle accident and aquatic release of fuel and hazardous chemicals (low risk), (iii) Loss of freeze capacity (moderate risk), (iv) Failure of freeze wall (moderate risk), (v) Process vessel and piping system failure (low risk), (vi) Facility fire and/or explosion and release of radioactivity and uranium concentrate powder to the atmosphere, and (vii) Vehicle accident and terrestrial release of radioactivity and chemicals.	Potential effects addressed through engineering design and compliance with industry best practices that reduced risk associated with hazard scenarios to ALARA.	Concerned around a spill that occurred at the Wheeler River site during feasibility testing; perceived this as reminiscent of spill that occurred at Cameco's Key Lake facility, which was concerning to members. Concerned possibility of underground spills, discrete spills on site and spills arising from a vehicular accident. Concerned underground scenarios may go undetected and potentially contaminate the surrounding environment, while discrete spills and spills arising from vehicular accidents may contaminate waterbodies near the proposed Project Area. Raised missing information concern on how malfunctions evaluated, with limited discussion of food web dynamics for the aquatic section of the EIS. Asserted must consider all worker safety risks and potential consequences associated with accidents and malfunctions and questioned use of Indigenous Knowledge in its monitoring and/or response to an accident or malfunction.	Vehicle accidents – (1) traffic control measures such as speed limits, (2) travel management plans, (3) spill and emergency response planning and (4) driver training. Underground – (1) ensure freeze plant maintained in good working order, (2) maintain the structural stability of the freeze wall with great effort, (3) maintaining inward hydraulic gradient created by the recovery wells pump, (4) monitoring of groundwater and freeze wall thickness, and (5) pumping within and outside the freeze wall if accident occurs. Accidents and Malfunctions program information provided during engagement session insufficient as lack of contingency planning, and deferred responses to as-yet-undrafted documents. Potential contamination from accidents and malfunctions may impact traditional land users' perception of health and safety of plants and animals; may lead to avoidance behaviours and impact their enjoyment of, and connection to the land. Committed to developing contingency, emergency response, and spill prevention plans, managing hazardous substances safely, and ensuring secondary containment for chemicals. Committed to immediate cleanup of spills, limiting wildlife access, preventing runoff and groundwater penetration, and prohibiting storage or refueling within 100 m of waterbodies.	CNSC staff conclude that Denison's assessment of potential accidents and malfunctions associated with the Project are not likely to cause significant adverse effects on health, safety of workers and the public, and on the environment.	Understanding / input on monitoring locations and frequency, particular on site and near-field groundwater areas, important to reassuring community members adequate predictions over long-term because of how difficult to ensure monitoring would capture effects to groundwater before abandonment.

Component	Project Component / Activities	Proponent's Assessment	CNSC Summary of ERFN's Draft EIS Review Comments	Selection of Related Follow-up / Commitment	CNSC Final EIS Conclusion	EA Report Reviewer Comment (i.e., not report contents)
Effects of the Environment on the Project (Section 8.2)	(i) Seismic events, (ii) Forest fires, (iii) Major precipitation events (e.g., severe rainstorms, snowbelts or flooding), (iv) Drought, (v) Extreme high air temperatures, (vi) Extreme low air temperatures, and (vii) Extreme high winds.	Potential effects of the environment on the project can be addressed through engineering best practices and compliance with current regulations and building codes. Adverse effect of these events on the project's components and activities is unlikely.	Concerned that habitats in and around the proposed Project Area may be permanently altered as a result of increasing wildfire, which interacts with the potential cumulative impacts resulting from climate change. Recommends implementation of meaningful and realistic approaches to minimizing greenhouse gas emissions from its operation to reduce the proposed Project's impact on climate change. Requests additional information be provided on fire mitigation and suppression activities. Permafrost may not have been adequately delineated within the proposed Project Area to determine climate change impacts on permafrost.	Committed to meet all applicable regulatory requirements. Committed to address concerns through additional analyses of estimated major precipitation event. Committed to provide more information on likelihood and consequences of pertinent climate related hazards on the project components.	Proposed design features, mitigation measures and response measures are appropriate to account for the potential effects of the environment on the Project. Project is not likely to cause significant adverse effects on health, safety of workers and the public, and on the environment taking into account the implementation of mitigation measures, design considerations, emergency preparedness and response program, and the views and concerns expressed by Indigenous Nations and communities.	Ongoing monitoring important component of reassuring community members adequate predictions.
Cumulative Environmental Effects (Section 8.3)	(i) Air quality, noise and greenhouse gases emissions, (ii) Surface water quality, (iii) Soil and terrain, (iv) Vegetation and ecosystems, and (v) Terrestrial biota	Noise – potential cumulative effects at sensitive location near the highway. The risk is low with no cumulative effects anticipated.	Concerns about decreasing wildlife numbers and increased access to the area, both of which have been incorporated into the cumulative effects assessment. Worry that forest fires, compounded by cumulative effects from industry and climate change, could permanently alter wildlife habitat. Concerned cumulative effects through climate change and vulnerability of northern environments on permafrost. Cumulative and long-term impacts of uranium mining, other development, and other environmental changes in Nuhtsiye-kwi Benéne on the community as a key consideration.	Committed to follow-up monitoring to verify predictions (air quality, ambient noise, aquatic environment and terrestrial environment), including mitigation effectiveness monitoring.	CNSC staff agree that the risk is low with no cumulative effects anticipated. Satisfied with cumulative effects assessment as it relates to considered and addressed concerns regarding cumulative effects raised by Indigenous Nations.	Understanding / input on monitoring locations and frequency important to reassuring community members adequate predictions.

Component	Project Component / Activities	Proponent's Assessment	CNSC Summary of ERFN's Draft EIS Review Comments	Selection of Related Follow-up / Commitment	CNSC Final EIS Conclusion	EA Report Reviewer Comment (i.e., not report contents)
Land Use (Section 7.4)	Changes in (i) Quality and quantity of hunting, fishing, trapping, and gathering activities as a result of the Project, (ii) Access to lands and water s available to conduct traditional harvesting and cultural activities, and (iii) Number of known heritage resources.	Effects on availability of terrestrial wildlife and plant species were not expected to affect subsistence hunting, trapping, and gathering because the effects were anticipated to be of low magnitude and reversible.	<p>Concerned about Denison's understanding of their land use; there is a discrepancy between individual and collectively held rights, inaccurately represented as "limited" or "absent" in the study. Emphasizes that their actual current use of the land is much more extensive than portrayed. Portrayal of the ERFN community through Bobby John's trapline and land use has raised concerns but has since been updated for the final EIS. Former ERFN Chief McIntyre also spoke of the origins of local place names and the presence of important cultural sites in the Project Area: "Since 1906, the area where you're working has been Treaty 10 land...[and] those lands were the primary area of ERFN and contain burial sites and birth sites of ERFN members. The Dene name of the Wheeler River, Russell Lake and Cree Lake all come from the Denésuliné of English River. The Elders have always expressed that it's a primary area of ERFN. One of our late Elders was born north of there in 1922. Our traditional gathering place is there." Concerns around cumulative effects of industry fragmenting landscape impacting environment and community health as well as ability to practice traditional activities through harvesting, trapping, fishing or hunting. Concerns around decommissioning, remediation and the reclamation process at the end of the mining process. There are questions about the management of financial guarantees, cavities and wells once mining is complete. This could result in long-term effects on the land and the potential for these effects to negatively affect traditional lifeways. Concerned that increased access to the Cree Lake area could adversely impact caribou and Moose populations, potentially affecting members' ability to engage in traditional hunting practices; concerned about Province of Saskatchewan's plan to redesign and provide unimpeded road access to the north, which may lead to an influx of people into the Cree Lake area to set up cabins and fishing lodges. This influx into the area may threaten the region's remoteness, tranquility, and the quality of fishing. Moreover, it could erode the practice of traditional activities and subsistence harvesting. Concerned mine truck traffic would impact access to blueberry harvesting areas and impact the berries themselves, that access to hunting areas would be cut off, and that potential mine contamination could impact Moose, Woodland Caribou, and/or fish in the area. ERFN Trapper stated that more cabins are being built in the area which <i>"has affected me because there are more boats on the lakes. More boats on the lakes leads to more overfishing, anglers also cut access trails to lakes."</i> Concerns that noise from the Project has potential to affect human health and change animal behaviors. Would like to be included in all environmental monitoring so they can ensure their ancestral homelands of "Nuhtsiye-kwi Benéne" are being protected. Apprehension about potential negative effects on community health resulting from the project. During interviews, community members highlighted significant perceived health impacts arising from cumulative environmental and wildlife effects within ERFN Traditional Territory. These impacts have implications for overall well-being, leading to negative psycho-social consequences and perceived risk that traditional foods are not safe to eat. ERFN also expressed concern that potential effects on the Traditional Economy are underestimated and erosion of traditional economic practices from cumulative effects of resource projects will occur. Concerned that the socio-economic data from census desktop studies are not accurate.</p>	Mitigations, accommodations and commitments to Indigenous Nations and communities, CNSC staff's responses to concerns raised by Indigenous Nations and communities are addressed in section of the Consultation Report, in the responses to Issues and Concerns (Appendix A of the Consultation Report – Volume II) and will be included as in a supplemental submission to in advance of the Part 2 hearing.	<p>When taking into consideration the combined magnitude, geographic extent, duration, and context of the potential residual adverse effects on Indigenous health, and the mitigation measures to address effects on exposure to the traditional land user, CNSC staff have determined that the magnitude of these residual effects are expected to be low.</p> <p>When considering the mitigation measures proposed and applied to Heritage Resources, CNSC staff conclude that there will be no residual adverse effects to changes in access to cultural and heritage resources for ceremonial purposes.</p>	None

CNSC Staff Analysis / Conclusions

The EA Review Report captures the progression of the Draft EIS to the Final EIS, as well as the CNSC Staff review conclusion. The Final EIS has been accepted by CNSC Staff.

Provided below is a selection of milestones in developing the Final EIS:

- ERFN provided Pre-review Comments on the Draft EIS Aug 8, 2022
- Denison submits Draft EIS October 21, 2022
- CNSC conformity review of the Draft EIS initiated Oct 21, 2022
- CNSC / FIRT¹ technical review is initiated Nov 21, 2022
- Public comments were invited on the draft EIS Nov 21, 2022
- Public comments closed February 18, 2023
- CNSC / FIRT initial technical review completed March 21, 2023
- Public comments consolidated for response by proponent/regulators June 27, 2023
- ERFN provided Areas of Concern Memo of the Pre-review Comments July 26, 2023
- Denison submits responses to CNSC / FIRT review comments Aug 29, 2023
- FIRT begins the technical review phase of the Denison's responses Aug 30, 2023
- Denison Response to ERFN Areas of Concern Memo Nov 1, 2023
- FIRT review results completed and submitted to Denison Dec 8, 2023
- Denison re-submits Draft EIS package to FIRT Feb 10, 2024
- FIRT begins the technical review of Draft EIS package Feb 21, 2024
- FIRT completes the technical review of Draft EIS package Oct 11, 2024
- Denison submits responses to technical review conclusion Oct 18, 2024
- FIRT completes review of Denison's response to review conclusion Nov 20, 2024
- Denison submits Final EIS Dec 4, 2024
- CNSC Staff Acceptance of Final EIS Dec 24, 2024

In the EA Review Report, CNSC Staff refer to various commitments made in the Final EIS; the Denison's Commitments Table for the Final EIS can be accessed online here: [Commitments Register](#). As well, in the EA Review Report, five EA Conditions are proposed for inclusion in the issued License, these are provided in Table 12.1 (page 270/305) of the report, as well as below in this summary. The Draft License Conditions Handbook can be accessed online here: [163030E.pdf](#) (page 565/631). Overall, the CNSC Staff determination is that:

Taking into account the implementation of the proposed mitigation measures, follow-up monitoring program measures and commitments made by Denison to Indigenous Nations and communities, CNSC staff recommend that the Commission conclude that the Project is not likely to cause significant adverse environmental effects.

¹ Federal-Indigenous Review Team

In this following section, if additional details provided in the EA Review Report illustrate deviation from the above general determination additional details are summarized. No additional context is provided for the following sections: (1) Air Quality, (2) Surface Water Quality – Mobilization of Suspended Materials, (3) Surface Water Quality – Long-Term Transport of Groundwater Solutes to Whitefish Lake (in future centuries), (4) Benthic Invertebrates - Changes to Sediment Quantity and Particle Size, (5) Benthic Invertebrates - Change to Aquatic Habitat Area, (6) Benthic Invertebrates - Change in Water Level or Flow, (7) Benthic Invertebrate – Changes in Sediment Quality – Long-Term Transport of Groundwater Solutes to Whitefish Lake (in Future Centuries), (8) Soil – Changes in Terrain Morphology and Stability, (9) Soil – Changes in Organic Matter / Peat, (10) Vegetation and Ecosystems – Change in Areal Extent of Habitat Types, (11) Fish and Fish Habitat – Changes in Water Quality – Mobilization of Suspended Materials, (12) Fish and Fish Habitat – Changes in Water Quality – Long-Term Transport of Groundwater Solutes to Whitefish Lake (in Future Centuries), and (13) Fish and Fish Habitat – Changes in Sediment Quality – Long-Term Transport of Groundwater Solutes to Whitefish Lake. No further details were provided on these effects or effects pathways as adequately addressed in the Draft EIS.

Atmospheric Environment (Section 6.1)

Air Quality

Air quality feeds into other assessment endpoints (e.g., terrestrial, aquatic), so the residual effects for air quality do not require significance determinations of their own.

Greenhouse Gas Emissions

Denison has committed to re-evaluating the greenhouse gases and climate change components once more detailed site-specific data is available including a more detailed assessment of mitigative options, best available technology and best environmental practices. Greenhouse gases will be further evaluated under licensing through a Best Available Technology Economically Achievable (BATEA) for air emissions and treatment technologies and techniques assessment. CNSC staff conclude that the project is not likely to cause a significant adverse effect.

Acoustic Environment

With respect to the acoustic (noise) environment, CNSC staff reviewed Denison's assessment and determined that the expected increase in daytime noise levels during the construction phase would be limited to a period of about 3 years, and mitigation measures proposed will help attenuate the noise to some extent. Follow-up / ongoing monitoring using appropriately calibrated equipment will be used to refine the model predictions and ensure that the environment remains protected.

Acoustic environment feeds into other assessment endpoints (e.g., terrestrial, human), so the residual effects do not require significance determination of their own.

Geology and Groundwater

Geology

CNSC staff reviewed Denison's effect assessment on geology, related to changes in terrain morphology (subsidence) and stability during operations. CNSC staff confirmed that Denison conducted a

comprehensive analysis of effects to geology and identified mitigation and follow-up monitoring program measures that are adequate. The review considered IRs raised by the Federal-Indigenous Review Team (FIRT) related to geology covered topics such as potential induced seismicity, ground subsidence, and rock stability. CNSC staff requested clarification on the potential induced seismicity at the Project site. Denison explained the different possible sources of induced seismicity at the site (e.g., collapse of cavity voids, hydraulic fracturing, and permeability enhancement techniques) and presented their basis for justifying the absence of any potential for mining-induced seismicity under normal operating conditions. The CNSC inquired into Denison's strategy for dealing with subsidence related to the extraction of rock mass within the active mining area. The Project is designed to minimize disturbance to the natural geological environment beyond the mining area. Subsidence at the ground surface, resulting from rock mass consolidation about 400 m below ground from within the mining chamber, is predicted to be minimal (2-3 mm) and unlikely to be measurable. Denison committed to proposed monitoring program (**Commitment 7-1²**). This program will include a contingency plan with the aim of facilitating the timely identification and response to subsidence that exceeds the expected range of subsidence from modelling. CNSC requested more details on how Denison plans to reduce the uncertainties and risks associated with the stability and deformation analyses of the ore zone rock matrix and its overlying rock mass formation. Denison indicated that an appropriate level of conservatism has been applied and has carried out sensitivity analyses to fulfill the requirements of the Canadian Environmental Assessment Act (CEAA 2012). Denison has committed to providing additional detailed geomechanical studies during licensing to reduce uncertainties and risks, as well as assess any potential impacts on the mine operation and closure (**Commitment 7-23³**).

Taking into account the implementation of mitigation measures and follow-up monitoring program proposed for each phase of the project, CNSC staff conclude that changes to geology are not likely to cause adverse effects to the receiving environment.

Groundwater

CNSC staff reviewed Denison's effect assessment on groundwater quantity and quality, related to changes from ISR mining operations and the impact of surface facilities and activities. CNSC staff confirmed that Denison conducted a sufficient analysis of effects to groundwater quantity and quality and identified mitigation and follow-up monitoring program measures. However, CNSC staff have proposed an Environmental Assessment Condition (**EA Condition**; EA1 has been inserted below from **Table 12.1, EA1** in EA Review Report) for Denison to address during licensing for additional characterization and assessment to address information requests.

CNSC staff and other FIRT members reviewed the calibration of the 3D groundwater flow model and raised concerns about the conservativeness of the hydraulic conductivity value used for the Desilicified Zone. This zone represents a key potential pathway for contaminant transport to Whitefish Lake. In response, Denison has committed to conducting a follow-up study to supplement existing data on hydraulic conductivity within the Desilicified Zone, quantifying horizontal and vertical flow gradients, and

² Injection and recovery wells will be collared at surface and surveyed regularly to monitor for any changes in the collar height over time. An associated monitoring program will be developed and will include a contingency plan whose objective would be to facilitate the timely identification of, and response(s) to, potentially emerging conditions whereby routine monitoring data indicate performance is not meeting expectations.

³ Further detailed geomechanical studies will be carried out to reduce the uncertainties and risks in association with the stability and deformation analyses of ore zone rock matrix and its overlying rock mass formations and assess their potential impacts on the mine operation and closure.

mapping geological structures such as fractures and fault zones (**Commitment 7-20⁴**). Additionally, Denison has committed to revisiting and updating the groundwater models as necessary based on this study and other data collected through the EA follow-up monitoring program (**Commitment 7-24⁵**). This follow-up study is necessary to improve the understanding of groundwater flow, constituents of potential concerns (COPC) transport, and potential environmental impacts.

CNSC staff and other FIRT members also raised concerns on the monitoring plan for freeze wall integrity, the adequacy of available tritium concentration data for refining the hydrogeological conceptual model, and uncertainty in reactive transport predictions related to long-term COPC source concentrations and sorptive capacity of the bedrock matrix. Denison has committed to addressing these issues through different programs (**Commitments 7-11, 7-21⁶, and 7-22⁷**).

Further concerns were raised regarding the representativeness of the calibrated hydraulic conductivity values compared to the field measured data, uncertainty in effective porosity values and longitudinal and transverse dispersivity values. CNSC staff have proposed an EA Condition – EA1 for Denison to address during licensing.

EA1 Proposed Environmental Assessment Condition (License Condition Handbook [LCH] Section G.5 and related Appendix D.1⁸) – *The Licensee shall conduct further characterization and assessment of geological and hydrogeological conditions and update the groundwater flow and contaminant transport models and the EA follow-up monitoring programs and mitigation measures as necessary.*

Taking into account the implementation of mitigation measures and follow-up monitoring program proposed for each phase of the project, CNSC staff conclude that changes to groundwater quantity and quality are not likely to cause adverse effects to the receiving environment.

Aquatic Environment

Surface Water Quantity

CNSC staff reviewed Denison's effect assessment of surface water quantity and the aquatic environment, related to changes in flows and water levels in receiving surface water environment due to project overprinting of drainage areas, surface water taking and surface water discharging as well as climate change. CNSC staff confirmed that Denison conducted a comprehensive analysis of surface water quantity effects and identified mitigation and follow-up monitoring program measures that are acceptable. However, CNSC staff have proposed licensing commitments (**LCH Appendix D.2, PD-03**) for Denison to

⁴ Follow-up commitments related to the desilicified zone: 1. assessment of vertical hydraulic conductivity; 2. quantification of horizontal and vertical flow gradients; and 3. identification and mapping of any structures with the potential to influence groundwater flow in the DSZ, such as fractures/fault zones

⁵ Denison will revisit and update the groundwater models as necessary, as more data becomes available through the EA follow-up monitoring program to improve confidence on the hydraulic values of the desilicified zone. Denison will take the commitment into account when developing the EA follow-up monitoring program.

⁶ Tritium concentrations in groundwater will continue to be measured as part of the routine groundwater sampling, to further evaluate the usefulness of this approach for refining the conceptual site model developed for the Wheeler River Project.

⁷ Metallurgical testing and further test work will support refinement of sorptive capacity and understanding of the potential for a long-term source of COPCs (including Pb) from the remediated ore zone. Information from that test work will then be used to direct testing and monitoring during the operational phase.

⁸ Draft LCH Section G.5 Indigenous Engagement and Appendix D.1 Regulatory Commitments

address during licensing related to proponent's reported values of intensity duration frequency (IDF) and probable maximum precipitation (PMP) extreme rainfall event.

CNSC staff and other FIRT participants reviewed the 100-year 24-hour precipitation and PMP values as well as proponent's approach to factoring climate change into the estimates and determined the estimates will need to be updated or revisited during the licensing phase as the final estimates will be required at the detailed design stage of the project. Denison has committed to address this concern through additional analyses, as applicable.

CNSC staff have reviewed Denison's climate change effects assessment to the aquatic environment, related to the changes in surface water quantity in the receiving environment due to climate change. CNSC staff confirmed that Denison conducted a sufficient analysis of these effects on surface water quantity and identified mitigation and follow-up monitoring program measures that are adequate. Climate change effects on water quality were raised through the environmental assessment process by the FIRT and Denison concluded that climate change is not anticipated to have significant impact on water quality due to identified design, mitigation and follow-up monitoring program measures. However, CNSC staff have proposed an **EA Condition – EA2** that Denison complete a sensitivity analysis as part of the Environmental Risk Assessment (ERA) update to assess variable low and high flows, how flow rates may change under future climate conditions, and if this influences the assimilative capacity of the receiving environment and has any potential implications to water quality predictions made during the EA review.

EA2 Proposed Environmental Assessment Condition (LCH Section G.5 and related Appendix D.1) – *(1) collect additional baseline water and sediment quality data to supplement existing baseline characterization data. (2) The licensee shall update the ERA and near-field water quality modelling with the additional baseline data collected. (3) The licensee shall review the option of calculating site-specific sediment coefficients (i.e. Kd values) for use in future licensing phase ERAs.*

Taking into account the implementation of mitigation measures and recommended follow-up program measures, CNSC staff conclude the Project is not likely to cause adverse effects on surface water quantity related to overprinting of flow contributing drainage areas for site footprint development, surface water withdrawal or taking from Whitefish Lake for purposes of mine process water and site water balance, and surface water discharge to Whitefish Lake for maintenance of mine site water balance.

Surface Water Quality

Mobilization of Suspended Materials

Water quality feeds into other assessment endpoints (e.g., terrestrial, aquatic, human).

Controlled Discharge to Receiving Environments

CNSC staff reviewed Denison's effects assessment of surface water quality and the aquatic environment, related to the changes in surface water quality in the receiving environment due to the controlled discharge of treated effluent. CNSC staff confirmed that Denison conducted a sufficient analysis of these effects and identified mitigation and follow-up monitoring program measures that are mostly adequate. CNSC staff and other FIRT participants reviewed the baseline water quality data collected in the LSA and RSA and raised concerns related to the quality and quantity of the baseline data, and how this could

impact the near-field and far-field models' calibration, accuracy and ability to address natural variability and climate change. FIRT baseline data concerns included poor baseline sampling effort that did not capture consecutive years or seasons of data, pooling of data from all sampled waterbodies into a singular dataset for each parameter, use of the geometric mean versus the arithmetic mean for calculation of parameters, high occurrence of samples below method detection limits, lack of baseline data in wetlands, use of regional sediment coefficients instead of site-specific sediment coefficients in model calibration, and lack of climate change considerations in far-field modelling. Despite these factors, Denison has incorporated a high level of conservatism into their effects assessment such as the assumption of continuous discharges when discharges are more likely to be intermittent, safety factors applied to predicted effluent concentrations of COPCs, use of 95th percentile concentrations of effluent instead of average concentrations, etc. CNSC staff concur that the likelihood of significant adverse effects to the aquatic environment and receptors are low. However, model uncertainty is high, therefore CNSC staff have proposed an **EA Condition – EA2** for Denison to improve confidence in the modelling. Denison has committed to addressing concerns through the implementation of additional mitigation measures, monitoring, and/or adaptive management as needed.

CNSC staff have also established a licensing commitment to be completed during licensing to address concerns related to the design of the IWWTP and final discharge point (**LCH Appendix D.2, EP-01**). Denison has committed to confirming that the design of the effluent discharge diffuser will not change the environmental assessment conclusions of risk to aquatic receptors. If there are deviations from predicted effluent and near-field surface water concentrations of COPCs and risk to aquatic receptors due to the finalized diffuser design, Denison has committed to identifying and implementing mitigation measures (e.g., treatment) to ensure that the environmental assessment conclusions of risk to aquatic receptors will not change, and that water quality will remain below guidelines.

Considering the implementation of mitigation measures and recommended follow-up program measures, CNSC staff conclude the Project has some potential to cause moderate adverse effects to surface water quality from the controlled discharge to the receiving environment due to copper. However, water quality is an intermediate VC and is assessed further as a KI of potential residual adverse effects significance determinations for the receptor VCs Fish, Fish Habitat, and Fish Health Benthic Invertebrates, Terrestrial Biota, and Human Health. The assessments of project related effects to receptor VCs accounting for changes to surface water quality concluded no significant adverse effects considering the implementation of mitigation measures and follow-up monitoring programs.

Long-Term Transport of Groundwater Solutes to Whitefish Lake (in Future Centuries)

CNSC staff reviewed Denison's conclusions that with the implementation of appropriate mitigation measures, and the effects being characterized as low magnitude, localized, and fully reversible, the residual effects on surface water quality from mobilization of sediment and long-term transport of groundwater solutes are predicted to be not significant. Water quality feeds into other assessment endpoints (e.g., terrestrial, aquatic, human).

Sediment and Invertebrates

Change in Sediment Quantity and Particle Size

Sediment quantity and particle size feeds into other assessment endpoint (e.g., benthic invertebrate community).

Change in Aquatic Habitat (Area)

Sediment quantity and particle size feeds into other assessment endpoint (e.g., benthic invertebrate community).

Change in Water Level or Flow

Sediment quantity and particle size feeds into other assessment endpoint (e.g., benthic invertebrate community).

Effects on Sediment and Benthic Invertebrates

CNSC staff reviewed the assessment of predicted residual effects on sediment quality and benthic invertebrates due to change in sediment quantity and particle size, change in sediment quality (chemical), change in aquatic habitat (area), and change in water level or flow. CNSC staff reviewed Denison's conclusions that with the implementation of appropriate mitigation measures and the effects being characterized as low magnitude, localized, and fully reversible, the residual effects on sediment quality and benthic invertebrates are predicted to be not significant. CNSC staff verified Denison's determination that surface water quality in the receiving environment is likely to be moderately adversely impacted by the controlled discharge of effluent from the Project throughout the operation and decommissioning phases and that there are potential low levels of risk to benthic invertebrates from surface water quality. However, residual effects are expected to be localized and fully reversible following Project post-decommissioning, and benthic invertebrate communities will likely be resilient to potential changes.

CNSC staff also conducted an effects significance determination for the identified effects, taking into account input from other federal departments, provincial ministries, Indigenous Nations and communities and the public, and determined that the identified changes to sediment quality and benthic invertebrates are expected to be not significant due to the implementation of mitigation measures and not cause significant changes to the sediment quality or benthic invertebrate population health.

Change in Sediment Quality (Chemical)

Controlled Discharge to the Receiving Environment

CNSC staff reviewed Denison's effect assessment on sediment and benthic invertebrates related to the change in sediment quality (chemical) and confirmed that Denison conducted a comprehensive analysis of these effects and that identified mitigation and follow-up monitoring program measures are mostly adequate. However, CNSC staff have proposed several **EA Conditions – EA2** for Denison to address during licensing, including some additional baseline data collection and modelling updates.

In the proposed EA conditions, CNSC staff require that Denison collect additional baseline data for water and sediment quality and update the ERA with this data to address these concerns, for CNSC review and acceptance prior to any in-water works for construction. Although this baseline data is not anticipated to

alter the determination of significant adverse effects, the additional baseline data will inform future environmental risk assessments and strengthen future analysis. Specific concerns regarding sediment baseline data focused on the lack of sediment characterization data in wetlands, which are typically depositional areas that could have higher risk factors for aquatic receptors occupying habitat in these areas, and use of regional sediment coefficients (i.e., Kd values)⁹ for model calibration in the ERA, rather than site-specific Kd values calculated from measured data. Denison will submit an updated ERA incorporating additional baseline water and sediment quality data for CNSC review and acceptance during licensing, prior to any in-water works for construction. Denison will also validate measured water and sediment quality data against regional Kd values, and once sufficient monitoring data is available, review calculating site-specific Kd values as needed and incorporate site-specific Kd values as part of required ERA updates for licensing. If there are any increases to the risk profiles of receptors exceeding EA predictions due to updates from the incorporation of additional baseline data into the ERA, Denison has committed to addressing these concerns through the implementation of additional mitigation measures, monitoring, and/or adaptive management as needed.

In addition to these requirements, Denison has also committed to collect additional baseline characterization data of wetlands including sediment quality and benthic invertebrate community data (Commitment 8-45), and will include adding mercury and methylmercury to the aquatic environmental sampling plans to confirm there are no unexpected effects of the project on methylmercury levels, and to satisfy stakeholder concerns (**Commitment 8-44**¹⁰).

Long-Term Transport of Groundwater Solutes to Whitefish Lake (in Future Centuries)

CNSC staff reviewed Denison's effect assessment on sediment quality and benthic invertebrates related to the long-term transport of groundwater solutes to Whitefish Lake in the future centuries scenario and confirmed that Denison conducted a comprehensive analysis of these effects and that identified mitigation and follow-up monitoring program measures are adequate.

Terrestrial Environment

Soil Change in Quantity and Quality

CNSC staff reviewed Denison's effect assessment to soil quantity and quality and confirmed that Denison conducted a comprehensive analysis of these effects and that identified mitigation measures are adequate. Since Denison plans to use stockpiled soil in reclamation activities, CNSC staff asked whether

⁹ Sediment Kd refers to sediment to water distribution coefficient for a chemical. The ratio comparing the concentration of a chemical in the sediment to its concentration in the water, which indicates the chemical's tendency to adsorb onto sediment rather than remain in water column.

¹⁰ 1. The intent is not to include mercury (and methylmercury) as a COPC for the assessment. As indicated in EIS Section 8.4.6.1, Residual Effects Characterization, mercury is not associated with the local geology and is not expected to be released in the effluent at measurable levels and was therefore not identified as a COPC. Denison notes that there is potential for increased methylmercury production in the receiving environment under a certain combination of factors to which the Project may contribute, such as increased nutrient levels in the environment; however, prediction of methylmercury production is not practical. Denison commits to monitoring mercury and methylmercury in the aquatic environment over the life of the Project to determine the potential changes in mercury concentrations in fish tissue over time. 2. As the Project advances and operational monitoring is underway, Denison will assess health risks from fish consumption by comparing fish tissue data collected during operation from the monitoring program against applicable human health risk-based maximum permissible concentrations. As part of the country food monitoring document developed to support operational licensing, any site-specific contaminant criteria or trigger mechanisms will be developed in consultation with Indigenous Nations and communities. 3. Mercury data presented throughout the draft EIS represents total mercury. Denison agrees to include methylmercury, and other relevant COPCs such as lead, arsenic, and cadmium as part of the constituents monitored in fish throughout all project phases.

Denison's periodic monitoring includes analysis of COPCs that could be deposited from dust-generating project activities. Denison clarified that monitoring of COPCs in soil stockpiles is not planned, but the need could be revisited in case COPCs in sources are detected at concentrations exceeding predictions. In addition, Denison proposed to support reclamation research including investigations into soil conditions which may include analysis of COPCs as warranted. CNSC staff verified in the **Appendix 10A: Environmental Risk Assessment** of the environment assessment of COPC concentrations in soil on-site from atmospheric deposition are predicted to be below soil quality guidelines for protection of human health and environmental health. In addition, Denison proposed to support research on soil preparation techniques and amendments to inform the revegetation strategy. CNSC staff note that this research will support reclamation given that soil suitability is expected to be poor, due to the predominance of sandy soils characterized by a thin surface organic layer and low fertility. Taking into account this information, CNSC staff concluded that Denison's follow-up monitoring program measures for the identified effects are adequate.

Taking into account the implementation of mitigation measures and recommended follow-up program measures, CNSC staff conclude the Project is not likely to cause significant adverse effects to soil from changes in terrain morphology and stability, soil quantity and quality, and organic matter/peat.

Vegetation and Ecosystems

Change in the Areal Extent of Wetlands

CNSC staff reviewed Denison's effect assessment to the areal extent of wetlands and noted that direct disturbance is limited to a small area (0.5 ha). CNSC staff confirmed that the directly affected wetland ecosites (black spruce treed bog, Labrador tea shrubby bog, and willow shrubby rich fen) remain abundant throughout the Regional Study Area (RSA). CNSC staff sought clarification from Denison with regard to the impact of indirect disturbance on comparably rare wetland ecosites that occur only in small areas (< 30 ha) in the RSA. Particularly, CNSC staff noted that for the graminoid bog/fen ecosite (BS19/24), 0.8 ha of a total of 1.2 ha are predicted to be disturbed. Denison clarified with respect to the ecosite BS19/24 that this is not a unique ecosystem and is instead an artifact of mapping uncertainty, as baseline mappers were unable to distinguish between BS19 (graminoid bog) and BS24 (graminoid fen) ecosites within these areas due to a lack of available information (e.g., soil information, vegetation field plots, water quality data). If all BS19, BS24 and BS19/24 were combined into a single combined "graminoid peatland" category, only 3.6 ha of 170.7 ha would be indirectly disturbed. Since the rare wetland ecosites rely on high water tables and existing water bodies, Denison noted that alteration of water quantity would be expected to have the highest potential to cause an adverse effect, and thus maintenance of wetland hydrology is expected to be the most effective mitigation to sustain these wetland ecosites. Denison confirmed that surface drainage continuity and hydrologic connectivity is expected to be maintained through surface water management such as culverts and ditches. The post-construction surface water management monitoring program is expected to identify issues in a timely manner and allow for an adaptive management process. Overall, Denison confirmed that no direct disturbance of rare wetland ecosites is anticipated.

CNSC staff also questioned whether adequate other habitat is available for species impacted by disturbance to rare wetland ecosites. Denison responded that no plants of conservation concern have been observed in rare wetlands, and that these wetlands are not limiting habitat for ungulates, furbearers, woodland caribou, raptors, or migratory breeding birds. Taking into account this information, CNSC staff

concluded that Denison's mitigation and follow-up monitoring program measures for the identified effects are adequate.

Change in the Number of Plants of Conservation Concern

CNSC staff reviewed Denison's effect assessment to the number of plants of conservation concern and noted that wetlands tend to support a high species diversity and are considered to have a moderate to high potential to support plant species of conservation concern. Thus, CNSC staff asked Denison whether disturbance of rare wetlands would negatively affect sensitive species. Denison responded that the only listed plant species observed during baseline surveys was Alaskan Clubmoss, associated with open jack pine stands and transitional areas between upland and wetland/riparian areas.

Regarding the baseline surveys, CNSC staff recognized uncertainty whether the surveys conducted in 2017 are conservative, as the project footprint had been revised since. Moreover, CNSC staff found that Denison's ecosite factsheets include observations of two provincially listed plant species (Angle-leaved Sundew, Neat Spike-rush) although these were not detected in baseline surveys. Because rare plant surveys were completed only in one summer, they could have missed annual species that may be dormant in the seed bank in some years due to specific seed emergence requirements. Based on these observations, CNSC staff requested more information on potential risks from indirect effects on ecosites with plants of conservation concern as well as the planned pre-construction listed plant surveys. Denison responded that listed plants may be affected indirectly by the introduction and proliferation of invasive plants, dust deposition, edge effects, and changes to water quantity and quality, and referred to several mitigation measures to address these effects. Denison acknowledged that effects on a given listed plant population are dependent on a suite of site-specific factors, including the life requisites of the listed plant species, the species' resilience to disturbance, the size of the population, and the location of the population in relation to project activities. Denison clarified that the pre-construction listed plant surveys will be conducted in ecosites with the potential to support listed plants that may be directly or indirectly affected by the project. This includes ecosites where Alaskan Clubmoss was historically observed, ecosites within the Project Area that were not previously surveyed, and ecosystems known to support Angle-leaved Sundew and Neat Spike-rush populations. Lastly, Denison indicated that in the case that listed plants are identified in the Project Area, site- and species-specific mitigation measures will be developed by a qualified vegetation ecologist. Taking into account this information, CNSC staff concluded that Denison's mitigation and follow-up monitoring program measures for the identified effects are adequate.

CNSC staff conclude the Project is not likely to cause significant adverse effects to soil from changes in terrain morphology and stability, soil quantity and quality, and organic matter/peat.

Change in Concentrations of COPC in Vegetation

CNSC staff reviewed Denison's effect assessment to concentrations of COPCs in vegetation, along with the Appendix 10A Environmental Risk Assessment for COPC concentrations in terrestrial vegetation. Appendix 10A Environmental Risk Assessment effects assessed terrestrial vegetation as a group at the community level, although different plant types (blueberry, lichen, browse, and Labrador tea) were specifically included as food in the ecological and human health models that estimate exposure from the diet. CNSC staff noted that the exposure pathway for lichen was indicated as direct contact on soil, whereas contact with air would be a more applicable pathway since airborne COPCs can deposit on lichen. CNSC staff also noted that lichen samples collected as part of the 2017 baseline studies

frequently contained higher concentrations of COPCs than blueberry. CNSC staff requested Denison to include the exposure pathway of direct deposition (dry and wet) of airborne contaminants on lichen in the quantitative assessment. Denison agreed that the air-to-lichen pathway is the primary exposure route for lichen and clarified that the model had considered this pathway. Denison updated the tables and conceptual model in the Appendix 10A Environmental Risk Assessment to reflect this.

CNSC staff took into account that Indigenous Nations and communities have raised concerns over potential changes in the quality of berries. CNSC staff reviewed the Appendix 10A Environmental Risk Assessment and noted that it considered relevant potential sources of COPCs including air emissions, fugitive dust, fossil fuel combustion, effluent, and surface runoff, along with COPC potential to partition to soil. CNSC staff confirmed that the assessment determined that there are no exceedances of the 2.4 mGy/d radiation dose benchmark for terrestrial vegetation as per the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), representing berries among other plant types, during any phase of the project or in future centuries at the possible exposure locations around Whitefish Lake, McGowan Lake, and Russell Lake. Similarly, no significant adverse effects on vegetation were predicted from exposure to hazardous substances. Aligned with the requirements in REGDOC 2.9.1, section 4.1, Denison indicated that the licensing ERA will be periodically updated with data collected from monitoring programs. CNSC staff confirmed that the vegetation monitoring program will include blueberry samples. The results of the vegetation monitoring program will confirm whether blueberries are accumulating COPCs, and any risks would be identified through the iterative licensing ERA update process. Taking into account this information, CNSC staff concluded that Denison's mitigation and follow-up monitoring program measures for the identified effects are adequate.

Effects to Vegetation and Ecosystems

Taking into account the implementation of mitigation measures and recommended follow-up program measures, CNSC staff conclude the Project is not likely to cause significant adverse effects to vegetation and ecosystems from changes in the areal extent of habitat types, areal extent of wetlands, number of plants of conservation concern, and concentrations of COPCs in vegetation.

Fish and Fish Habitat

Overprinting (loss) of Fish Habitat

CNSC staff reviewed Denison's effect assessment to fish and fish habitat from the overprinting of fish habitat and found that Denison conducted a comprehensive analysis of these effects and that identified mitigation and follow-up monitoring program measures are adequate. Denison has committed to collecting additional baseline fish habitat characterization data within wetlands to inform future assessments and improve follow-up monitoring programs (**Commitment 8-46¹¹**).

¹¹ To further supplement existing information that exists for the LSA wetlands, Denison is committed to undertaking wetland surveys including the collection of water quality, sediment quality, benthic invertebrates and fish and fish habitat surveys prior to the construction to provide an updated baseline for assessing the success of mitigation measures and to assess potential effects of the project on wetlands. These locations will then be further considered as part of the EMP for continued monitoring for these media and biota.

Change in Water Levels and Flows

CNSC staff reviewed Denison's effect assessment of surface water quantity to fish and fish habitat due to changes in flows and water levels in receiving surface water environment considering all phases of the project including additional potential effects due to climate change. CNSC staff confirmed that Denison conducted a comprehensive analysis of surface water quantity effects and identified mitigation and follow-up monitoring program measures that are acceptable. CNSC staff have proposed **EA Conditions - EA2** for Denison to address during licensing.

CNSC staff concurs with Denison's conclusion that no significant residual effects were identified related to the assessment of Projects effects on fish and fish habitat from changes in flows or water levels taking into account identified design, mitigation and follow-up monitoring program measures.

Changes in Water Quality - Controlled Discharge to Receiving Environments

CNSC staff reviewed Denison's effects assessment of surface water quality to fish, fish habitat, and fish health from changes in surface water quality in the receiving environment due to the controlled discharge of treated effluent. CNSC staff confirmed that Denison conducted a sufficient analysis of these effects and identified mitigation and follow-up monitoring program measures that are mostly adequate. CNSC staff have proposed several EA Conditions for Denison to address during licensing, including **EA Condition – EA2**, which stipulates some additional baseline data collection and modelling updates.

Change in Sediment Quality - Controlled Discharge to Receiving Environments

CNSC staff reviewed Denison's effect assessment on sediment quality to fish, fish habitat, and fish health from the change in sediment quality due to the controlled discharge of treated effluent. CNSC staff confirmed that Denison conducted a sufficient analysis of these effects and identified mitigation and follow-up monitoring program measures that are mostly adequate. CNSC staff have proposed several EA Conditions for Denison to address during licensing, including **EA Condition – EA2**, which stipulates some additional baseline data collection and modelling updates.

Change in the Concentration of Constituents in Fish Tissues

CNSC staff reviewed Denison's effect assessment to fish health from the change in concentrations of constituents in fish tissues due to the controlled discharge of treated effluent. CNSC staff confirmed that Denison conducted a sufficient analysis of these effects and identified mitigation and follow-up monitoring program measures that are adequate. CNSC staff have proposed **EA Condition – EA2** for Denison to address during licensing improve the quality of future licensing ERAs and further refine predicted levels of risk to aquatic receptors.

The FIRT raised concerns related to bioaccumulation of selenium in fish tissues and the use of the recently published Federal Environmental Quality Guidelines (FEQGs) for whole body and egg-ovary fish tissue concentrations of selenium. The FEQGs for selenium have a high degree of conservatism and were published in 2022. The FIRT strongly recommended the use of the FEQG for comparison against model predicted selenium concentrations in fish tissue during operations, to conservatively determine if there as any risk to fish health. Denison updated the assessment in Appendix 10A Environmental Risk Assessment to address FIRT concerns and utilize the FEQG in the assessment, including an additional

uncertainty assessment utilizing upper and lower bound fish tissue concentrations of selenium to reduce uncertainty and improve confidence in the assessment.

The FIRT also raised concerns related to mercury and methylmercury concentrations in the receiving environment and for project related activities to increase the risk for bioaccumulation of methylmercury in fish tissues. The CNSC agrees with Denison's conclusions that risk from mercury and methylmercury is low, as baseline surface water sampling did not identify measurable concentrations of total mercury in the Local Study Area or RSA, and effluent concentrations of mercury are negligible. However, the CNSC supports Denison's assessment that conditions that could increase mercury methylation processes have the potential to occur due to effluent deposition (e.g., nutrient enrichment). Denison has committed to monitoring mercury and methylmercury in the aquatic environment over the life of the Project to determine the potential changes in mercury concentrations in fish tissue over time (**reader is referred to Table 7.12: Follow-up Program Measures for Effects on Fish Health of the Review Report is actually numbered Table 7.11 on page 165/305 and I couldn't find a Table 7.12 or 7.13 in the review report document**). Denison will assess health risks from fish consumption by comparing fish tissue data collected during operations from the monitoring program against applicable human health risk-based maximum permissible concentrations. As part of the country food monitoring document developed to support operational licensing, any site-specific contaminant criteria or trigger mechanisms will be developed in consultation with Indigenous Nations and communities.

The proposed **EA Condition – EA2** includes collection of additional baseline data for water and sediment quality and update the licensing ERA with this data to address FIRT concerns regarding surface water and sediment quality data are unlikely to alter the determination of significant adverse effects to fish health from changes in concentrations of constituents in fish tissues. However, if there are any increases to the risk profiles of receptors exceeding EA predictions due to updates from the incorporation of additional baseline data into the licensing ERA, Denison has committed to addressing these concerns through the implementation of additional mitigation measures, monitoring, and/or adaptive management as needed.

Effects to Fish and Fish Habitat

Taking into account the implementation of mitigation measures and recommended follow-up program measures, CNSC staff conclude the Project is not likely to cause significant adverse effects on fish and fish habitat from changes in fish habitat (habitat overprinting), changes in flows or water levels in lakes and rivers, or from changes in surface water quality due to the mobilization of suspended materials, controlled discharge to the receiving environment, or the long-term transport of groundwater solutes to Whitefish Lake in a future centuries scenario.

Taking into account the implementation of mitigation measures and recommended follow-up program measures, CNSC staff conclude the Project is not likely to cause significant adverse effects on fish health from changes in water and sediment quality, and changes in constituent concentrations in fish tissues due to the mobilization of suspended materials, controlled discharge to the receiving environment, or the long-term transport of groundwater solutes to Whitefish Lake in a future centuries scenario.

In order to ensure that the aforementioned assessment conclusions remain valid, CNSC staff recommend that the Commission include the following **EA Condition – EA2**, should it issue a licence.

Terrestrial Biota

Direct Mortality

CNSC staff reviewed Denison's draft effect assessment for change in mortality to Furbearers, Ungulates - Moose, Arthropods, Amphibians, and Bats and confirmed that Denison conducted a comprehensive analysis of these effects and that identified mitigation and follow-up monitoring program measures are adequate. Additional information and assessment effort was required prior to this conclusion as briefly described below.

For Woodland Caribou, as part of evaluating potential toxicity of dietary exposure Denison was asked to consider a higher consumption rate of lichen (20% to 70%). The revised ERA showed radiological dose remained well below radiation dose benchmark for terrestrial biota. Additional information was also discussed in relation to impacts of predation and competition on Woodland Caribou.

For Birds, Denison was asked to consider the potential for exposure to hazardous materials through contact with contaminated waste ponds and further consider the potential for Common Nighthawk collisions with vehicles and bird collisions with infrastructure in general. Comparison of expected water quality to Canadian Council of Ministers of the Environment (CCME) water quality guidelines for the protection of livestock indicated elevated selenium, molybdenum and sulphate levels. Mitigation measures were identified for implementation to minimize the potential exposure (Appendix 9-D Wildlife Species at Risk). As well, Denison has committed to a Road and Traffic Management Plan and Wildlife Monitoring Plan.

Loss of Habitat

CNSC staff reviewed Denison's draft effect assessment for alteration and/or loss of habitat to Pine Marten, Mink, Muskrat and Moose and confirmed that Denison conducted a comprehensive analysis of these effects and that identified mitigation and follow-up monitoring program measures are adequate. Denison will conduct pre-clearance surveys specific to the species in potentially suitable habitats.

For species at risk, including Wolverine, Caribou, Nine-spotted Lady Beetle, Transverse Lady Beetle, Yellow-banded Bumble Bee, Northern Leopard Frog, Little Brown Myotis, Northern Myotis, and Bird Species at Risk (Schedule 1 of Species At Risk Act), Denison committed to routine monitoring throughout the project lifecycle (**Commitment 9-31**¹²), as well as documentation as part of the Environmental Management Program. CNSC also proposes **EA Condition – EA5** that requires follow-up monitoring for all listed species at risk and their critical habitat over the project lifecycle consistent with applicable recovery strategies and action plans, including identification of circumstances under which corrective measures may be needed.

¹² Targeted monitoring programs (described below) will be completed during the Construction, Operation, and Decommissioning phases to verify design and mitigation measures (Section 9.3.5) have been appropriately applied and maintained. Following verification, the success of Project design and mitigation measures will be evaluated to assist in the determination of additional mitigation measure requirements. (i) Wildlife species routinely monitored (e.g., through the Project-wide implementation of the current wildlife card system) throughout the life of the Project in accordance with the management and monitoring plans within the EMS (including implemented setback distances during sensitive time periods, if applicable); and (ii) Progressive reclamation and revegetation of disturbed areas (i.e., transitioning into wildlife habitat) monitored in accordance with the Reclamation and Closure Plan.

EA5 Proposed Environmental Assessment Condition (LCH Section G.5 and related Appendix D.1) – *The licensee shall submit plans for the monitoring of adverse effects of the project on listed wildlife species and their critical habitat over the lifecycle of the project.*

Caribou (Woodland Caribou)

As part of the EIS update, Denison provided updated maps in Appendix 9-F Supplemental Information Generated During the Draft EIS Review (Section .1) of seasonal use of terrestrial habitat within the study areas, along with habitat potential for different life history requirements (i.e., foraging, refuge and calving). Denison has committed to routine monitoring wildlife species throughout the project lifecycle (**Commitment 9-31**) and **EA Condition – EA5**. In addition, there is the Denison's Woodland Caribou Management Framework (Appendix 9-E Caribou Management Framework), which will detail compliance with relevant recovery strategies and action plans for species at risk. CNSC proposed **EA Condition – AE3** identifies the federal strategy.

EA3 Proposed Environmental Assessment Condition (LCH section G.5 and related Appendix D.1) – *The licensee shall submit a woodland caribou mitigation and offset plan based on site-specific information to evaluate effects to woodland caribou and includes a plan for habitat offsetting. The plan must ensure that measures are taken to avoid or lessen any adverse effects to woodland caribou and monitor those effects. The plan shall be consistent with the Government of Canada's Amended Recovery Strategy for Woodland Caribou (*Rangifer tarandus caribou*), Boreal Population, in Canada.*

Bats (Little Brown Myotis, Northern Myotis)

CNSC had Denison include Little Brown Myotis and Northern Myotis in the revised effects assessment (Appendix 9-D). Further, **EA Condition – EA4** requires additional pre-construction baseline surveys and additional assessment work, including update of the ERA accordingly, and mitigation to confirm EA predictions and conclusions remain valid.

EA4 Proposed Environmental Assessment Condition (LCH section G.5 and related Appendix D.1) – *The licensee shall conduct additional bat baseline surveys to supplement existing baseline characterization data in order to obtain a basic understanding of within-year and between-year variation for bat species, and to inform the environmental risk assessment.*

Birds¹³

Additional baseline data was collected in 2024. Denison updated the EIS to include: (i) Discussion of guilds/focal species, specifically context of the habitat-based assessment to link habitat-related effects to bird species identified in the study area. (ii) All habitat ecosite types, including low use/suitability (i.e., open fen, graminoid bog, graminoid fen).

The new Appendix 9-D Wildlife Species at Risk lists and assesses all bird species at risk and Appendix 9-F Supplemental Information Generated During the Draft EIS Review (Section 2.2) that discusses nesting habitat requirements and the results of habitat-based assessment. Denison was advised to consider any trends and changes to the avian community during pre-construction, construction, and operational monitoring, including the key indicator species which are representative of other species that may be more difficult to monitor for implementation of adaptive management. It was requested that the Pre-

¹³ Bank Swallow, Barn Swallow, Common Nighthawk, Horner Grebe, Olive-sided Flycatcher, Rusty Blackbird, Short-eared Owl, Yellow Rail, waterbirds and waterfowl, upland game birds, migratory songbirds, Bald Eagle, Osprey

Clearance Wildlife Monitoring Plan include any open and already cleared areas as potential target areas for Common Nighthawk. Denison committed to implementing measures to manage effects of light pollution and noise on migratory birds and species at risk. It was also recommended that Denison avoid active nest surveys to accommodate vegetation clearing during breeding season but rather complete all vegetation outside the breeding bird window. Denison committed to routinely monitoring avian species throughout the project lifecycle (**Commitment 9-34**¹⁴) and to ongoing monitoring for species at risk.

Human Environment

Human Health (Public) – Non-Radiological COPCs

During the EIS review, CNSC staff noted that there is risk of selenosis in exposed individuals given that the fisher/trapper receptor will likely be exposed to higher concentrations of selenium from the consumption of fish. CNSC staff recommended that should it be determined that selenium concentrations are increasing in the environment at such levels as there may be an impact to the environment or human health, installation of a selenium removal circuit into the effluent treatment process should be considered. Denison stated selenium abatement technologies will be considered through the BATEA process during licensing. During the licensing process, CNSC staff will review the BATEA to verify that the proposed wastewater treatment system design further considers selenium effluent treatment technologies to ensure selenium in effluent is ALARA.

Taking into account the implementation of mitigation measures and recommended follow-up program measures, CNSC staff conclude the Project is not likely to cause significant adverse effects on human health from changes in changes in non-radiological and radiological COPCs from Project air and liquid emissions.

Human Health – Radiological Contaminants

Denison's responses to the IRs were accepted by CNSC staff and incorporated in the final EIS, along with revised supporting worker dose assessments. Taking into account the implementation of mitigation measures and recommended follow-up program measures, CNSC staff conclude the Project is not likely to cause significant adverse effects on NEWs and worker health from radiological COPCs and conventional safety hazards due to occupational activities.

Indigenous Land and Resource Use

If granted a licence by the CNSC, Denison is required to implement an EMP consistent with Canadian Standards Association for nuclear facilities and uranium mines. The environmental monitoring program will focus on providing data to verify the predictions made by the ERA, to refine the models used in the ERA, and to reduce the uncertainty in the predictions made by the ERA. The EMP will include collection

¹⁴ Targeted monitoring programs (described below) will be completed during the Construction, Operation, and Decommissioning phases to verify that Project design and mitigation measures (Section 9.4.5) have been appropriately applied and maintained. Following verification, the success of Project design and mitigation measures will be evaluated to assist in the determination of additional mitigation measure requirements. (i) Pre-construction nest surveys conducted in accordance with the EMS prior to the commencement of any vegetation clearing or soil disturbance; (ii) Avian species routinely monitored throughout the life of the Project (e.g., through the Projectwide implementation of the current wildlife card system) in accordance with the EMS (including implemented setback distances during sensitive time periods, if applicable); and (iii) progressive reclamation and revegetation of disturbed areas (i.e., transitioning into avian habitat) monitored in accordance with the Reclamation and Closure Plan.

of surface water, sediment, plants, and soil samples as well as fish tissue, benthic invertebrates, and traditional foods in collaboration with potentially affected Indigenous Nations and communities.

Denison has completed the required archaeology assessments in accordance with provincial regulations and has also committed to developing a Heritage Resources Management Plan (HRMP) to help protect and mitigate any potential effects of the Project to Heritage Resources with potentially affected Indigenous Nations and communities to ensure the Project effects are being monitored and appropriately mitigated.

CNSC staff reviewed Denison's assessment of potential impacts on ILRU due to decreased access and to the quality and quantity of hunting, fishing, trapping and gathering activities and perceived changes to the environment and on heritage resources. The Project effects resulting from changes to the biophysical environment are predicted to be primarily indirect effects.

Accidents and Malfunctions

Taking into account the implementation of mitigation measures and emergency response procedures, and the views and concerns expressed by Indigenous Nations and communities, CNSC staff conclude that Denison's assessment of potential accidents and malfunctions associated with the Project are not likely to cause significant adverse effects on health, safety of workers and the public, and on the environment. CNSC staff will work with Denison to ensure communication plan for spills, and other accidents and malfunctions to identified Indigenous Nations and communities developed and follow-up engagement activities provided as part of the development of the Spill Management and Emergency Response Plan.

Effects of the Environment of the Project

CNSC staff are satisfied with Denison's assessment of Effects of the Environment on the Project related to natural hazards and climate change pertinent to the project and that the proposed design features, mitigation measures and response measures are appropriate to account for the potential effects of the environment on the Project.

The Project is not likely to cause significant adverse effects on health, safety of workers and the public, and on the environment taking into account the implementation of mitigation measures, design considerations, emergency preparedness and response program, and the views and concerns expressed by Indigenous Nations and communities.

Cumulative Environmental Effects

CNSC staff reviewed Denison's cumulative effects assessment for air quality and noise, and confirmed that Denison conducted a comprehensive analysis of these effects and that identified mitigation and follow-up monitoring program measures are adequate. CNSC staff verified that Denison had identified applicable projects and activities that could cumulatively interact with the project effects. The analysis considered climate change impacts and emissions to air from project activities and traffic associated with Cameco's operations, which are captured by the regional background concentrations used in the air dispersion model.

CNSC staff agree with Denison's conclusions that the risk is low with no cumulative effects anticipated. In addition, CNSC is satisfied with Denison's cumulative effects assessment as it relates to how Denison considered and addressed concerns regarding cumulative effects raised by Indigenous Nations.

With respect to noise, CNSC staff reviewed Denison's cumulative effects assessment for noise and confirmed that Denison conducted a comprehensive assessment of these effects. Applicable reasonably foreseeable projects and activities that could cumulatively interact with the proposed Project have been assessed, including but not limited to climate change and noise from project works and traffic on Highway 914 associated with Cameco operations. These cumulative effects did not change the predicted noise levels when added on a logarithmic basis, and therefore do not change the assessment results based on Health Canada guidelines.

CNSC staff conclude that there are no anticipated cumulative effects to the atmospheric environment. The Project's follow up monitoring will verify these conclusions.

ERFN Background Specific to Technical Reviewer Conclusion

Key to ERFN comments provided / concerns expressed during review of the Draft EIS is their understanding that:

- (1) ERFN community members will be present during and long after the project, as such the quality of life of the local community members need to be safeguarded and land and resource user rights need to be ensured.
 - ERFN northern community members already express concern with impacts of mining to resource distribution (e.g., moose and caribou) and easier access to resources by the public.
 - ERFN northern community members already express dissatisfaction with traffic and dust conditions on local roadways.
 - ERFN northern communities already have significant health issues.
 - Even low-risk effects or perceived risks can have an impact on a community. Stress is a significant health issue when it persists and being listened to and having your concerns taken seriously is critical. ERFN commends Denison and the CNSC for their contributions to the significant improvement in recent history to both engagement and consultation efforts.
- (2) Water Treatment Facilities in the region, at least for a time, have not been able to ensure all environmental effects assessment predictions have been met at near-field monitoring stations downstream of uranium mining and milling. Unpredicted changes have been observed even if regulatory water quality guidelines met.
 - ERFN does not believe that committing to meet regulatory guidelines is enough.
 - ERFN does support the CNSC ALARA principle.
 - ERFN does support ERA being updated regularly during operations with monitoring data.

- (3) It can take groundwater a 100-years to resurface (i.e., generally moves at a speed of a few centimetres per day [cm/day] or less [e.g., 7 cm/day]), as such there is the potential for a leak or spill to go undetected until it has resurfaced. This is particularly concerning if there is uncertainty in the predicted groundwater flow path used to establish monitoring locations.
- ERFN understands that the flow path of groundwater can be dependent on factors that vary overtime due to human activity (e.g., water table draw down) or weather / climate (e.g., recharge and discharge areas, porosity).
 - ERFN does understand that during operations the hydraulic gradient established would essentially isolate the mining area and the freeze wall would prevent groundwater from outside the mining area flowing inward.
 - ERFN supports and commends Denison's commitment to have no residual effect to groundwater or surface water outside the mining area during operations and decommissioning activities.
 - ERFN focus includes ensuring accurate planning that potential accidents or malfunctions do not pose an imminent threat in the short-term or cannot be rectified over the long-term.
 - ERFN focus is ensuring long-term solute transport of groundwater from the mining area post-decommissioning is accurately predicted prior to closure and that the environment including groundwater quality is protected.

Technical Reviewer's Conclusions

A memorandum of understanding was signed between Denison and ERFN in 2018 and an additional agreement was signed in 2021. These agreements formalize how Denison and ERFN would work together during the assessment to identify means to avoid, mitigate, or otherwise address potential effects of the project on the exercise of rights. On September 27, 2023 ERFN provided a letter to the CNSC that outlined consent for the Project, subject to Denison fulfilling its commitments to ERFN.

From the review of the Final EIS and the CNSC Review Report, I have made the following conclusion:

- (1) Final EIS reflects discussions between ERFN and Denison on the 15 areas of concerns identified during the Draft EIS review that were to be addressed during the Project's approval phase.
- (2) Final EIS reflects commitments Denison has made to ERFN during the draft EIS review process.
- (3) CNSC's review acknowledges all areas of concern expressed by ERFN during their review of the Draft EIS.

Sincerely,



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