

**MEMORANDUM**

**To:** Lachlan Maclean  
**From:** Bridget Tutty, Environmental Assessment Branch, ECC  
**Date:** Sept 12, 2022  
**Subject:** **Boat Harbour – Environmental Assessment Provincial Review of Round 2, Part 1 Information Requests**

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**Provincial Comments:**

The following provincial technical review comments are provided to the Impact Assessment Agency regarding the Round 2 Part 1 information request responses from Nova Scotia Lands Inc.

Boat Harbour Remediation Project – Federal Impact Assessment Provincial Technical Review August 2022

NS Environment and Climate Change

Comment #	Reviewer	Department	Information Request #	EIS Section and Page (if applicable)	Context and Rationale	Specific Question/ Request for Information
	Species at Risk Biologist	Natural Resources and Renewables	2.7.2 IAAC-21	Page 32	<p>“A 300 m buffer around Piping Plover nests was conservatively assumed based on professional opinion and previous commitments made for other projects in Eastern Canada.” Statement is not sufficient to assess the basis for establishing a 300 m buffer. No reference to previous literature or expert opinion has been provided. Was ECCC-CWS (Atlantic Region) consulted with respect to this buffer distance?</p>	<p>Please provide the experts contacted and previous literature cited in determining that the 300m buffer was sufficient. Provide information on whether ECCC was consulted with respect to this buffer distance.</p>
	Species at Risk Biologist	Natural Resources and Renewables	2.7.2 IAAC-21	Page 32	<p>Pictou Bar Spit (Lighthouse) has been identified as Core Habitat within the 2021 provincial Recovery Plan for Piping plover (<i>Charadrius melodus melodus</i>) in Nova Scotia. This area has been identified as potential Critical Habitat within the federal <i>Recovery Strategy (Amended) and Action Plan for the Piping Plover melodus subspecies (Charadrius melodus melodus) in Canada [Proposed] (2021-03-25)</i>. The proponent should be aware of threats, recovery objectives, and activities likely to result in the destruction of provincial Core Habitat/federal Critical Habitat and how proposed mitigations will meet recovery planning needs. When the federal Recovery Strategy is finalized, there will</p>	<p>The proponent should provide information to support they recognize their requirement to meeting obligations under the ESA and SARA with respect to recovery of Piping Plover under the provincial recovery plan, and how they will meet obligations under the latest federal recovery strategy (including Critical Habitat) once it is finalized.</p>

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					be an expectation for the province to meet obligations for protection of Critical Habitat as identified within the strategy.	
	Species at Risk Biologist	Natural Resources and Renewables	2.7.2 IAAC-21	Page 32	<p><i>"...in the event that a migratory bird and/or nest is identified, it will be reported to the Contractor's Environmental Manager, Construction Management and Oversight Consultant Environmental Manager, and ECC's Canadian Wildlife Services."</i> There is a responsibility to protect migratory bird species and their nests through the provincial Wildlife Act; consultation with NRR is also required in these situations.</p>	Include consultation with NRR as part of reporting requirements.

General comments on the EIS:

**Boat Harbour Remediation Project – Federal Impact Assessment Provincial Technical Review August 2022**

**Resource Management Unit, Sustainability and Applied Sciences Division, NS Environment and Climate Change**

Comment #	Information Request #	NS Lands – IR(2) Response (July 2022)  Page #	Specific Question/Information Requirement from IAAC (IR-2)	NSE Comment on IR response 2
<p>Previous RMU Response to Information Requests (Dec 6, 2021): <u>Application of Contaminated Sites Regulations (IAAC-53)</u></p> <p><i>Consistent with comments provided to previous submissions, the Response to Information Requests did not acknowledge the requirements of the Nova Scotia Contaminated Sites Regulations. The Contaminated Sites Regulations are supported by seven Ministerial Protocols, which prescribe the minimum requirements applicable to contaminated sites within provincial jurisdiction.</i></p> <p><i>With respect to ground water potability on site, the response to IAAC 53, does not conform to the NS Contaminated Sites Regulations. Regardless of current groundwater use at the site, the site is considered potable according to the Regulations. The Notification Protocol defines potable as “all groundwater in the Province outside of municipal water serviced areas, and as determined following Appendix 2, Figure 3 in this protocol.” As per the Remediation Levels Protocol, “the determination and applicability of land use and potential groundwater potability must be as described in PRO-100, Notification of Contamination Protocol.”</i></p> <p><i>It is inappropriate to remove the potable groundwater exposure pathway based simply on current groundwater use at the site. The remediation project cannot rely on the “likelihood” of future well locations or groundwater use at the site or defer evaluation to potential future developers. The potable groundwater pathway must be considered as part of the remediation project. The application of any administrative controls or groundwater exclusion zones to eliminate the potability pathway, may be addressed through conditional closure under the Limited Remediation pathway.</i></p> <p><i>It is unclear from the information provided what impact the application of potable criteria may have on the design, operation, and management of the proposed project.</i></p>				
	<p>IR(2)-53</p> <p>Original IR IAAC-53</p>	<p>P. 27</p>	<p>A. Update the CSM for Human Receptors and the quantitative risk assessment to include potable groundwater as an applicable exposure media. Provide detailed information about the mitigation measures and administrative controls that will be used to manage any risks identified (including impacts to future land use), and present a high level overview of the monitoring plan to re-evaluate the risk over time.</p>	<p>It is unclear why the response states that updates to the Human Health CSM are not required, while simultaneously acknowledging that a potable water exclusion zone may be required on site. All potentially operable pathways on a site should be included in the CSM. Potential mitigations envisioned for the site to address the potable groundwater pathway should be carried through the CSM, risk assessment and ultimately a risk management plan.</p> <p>As reviewers have previously noted, it is inappropriate to remove the potable groundwater exposure pathway, based simply on current groundwater use at the site. It is not appropriate to rely on the “likelihood” of future well locations or groundwater use at the site.</p>

Comment #	Information Request #	NS Lands – IR(2) Response (July 2022)  Page #	Specific Question/Information Requirement from IAAC (IR-2)	NSE Comment on IR response 2
<p>Previous RMU Response to Information Requests (Dec 6, 2021): <a href="#">Containment cell design and operation (Ref. IAAC-03, 66, 75, 76)</a></p>				
<p>Information requests were not provided to address items previously communicated by reviewers concerning the proposed cell design.</p>				
<p><i>As noted by others, the final cover materials and 4H:1V side slopes assumed in the HELP closure model scenario, as well as the contingency option of 3H:1V side slopes do not align with the guidance outlined in the Nova Scotia Industrial Landfill Guidelines. Furthermore, a significant portion of the waste material proposed to be placed within the containment cell has been defined as hazardous waste. Insufficient information has been provided to demonstrate the cell location and design have been established in accordance with the criteria set out in CCME National Guidelines for Hazardous Waste Landfills. (Issues include depth and permeability of substrate below the cell, thickness of clay and composite layer).</i></p>				
<p><i>The response provided to IAAC 66 noted that the primary purpose of the HELP model is to assist in the comparison of design alternatives as judged by their water balances. The response indicates that historic, site-specific data was used for input parameters for weather/climatic data and soil/design data. It is unclear from this information, what affect potential increases in precipitation, attributed to climate change may have on model outputs.</i></p>				
<p><i>No information was provided concerning the effectiveness of the clay liner system within the existing containment cell or whether the soil beneath the current cell has been impacted by leachate. Beyond the estimated top 0.15 m of clay liner to be removed with existing sludge, due to disturbance from heavy equipment and increased moisture content, it is unclear whether the base of the existing cell will be assessed and remediated if applicable, prior to cell modifications.</i></p>				
<p><i>Although the HELP model reportedly indicated minimal leachate generation following final cover placement and very low leakage, the amount and characterization of noted leakage was not defined.</i></p>				
<p><i>The response to IAAC-66, noted a long-term monitoring program will be in place to sample for all Site leachate indicator parameters to ensure no negative environmental impacts. Details of the sampling program and applicable criteria have not been defined. The proponent has noted that as a conservative measure when designing the containment cell liner system, the worst-case results from bench/pilot scale testing were evaluated against the NSE Tier 2 Table 3 Groundwater Discharge to Surface Water (Greater than 10 m from Surface Water Body, Marine). The response does not acknowledge the potable water designation that is applicable to the site.</i></p>				
<p><i>The response to IAAC -03, indicates that there are no plans to develop a new temporary waste staging area for waste sludges. Sludge in the existing containment cell will be relocated to portions of BHETF (settling basins or ASB) or the pilot scale temporary treatment pad and rely on existing processes used to currently manage waste in those locations, (leachate sent to ASB then to Boat Harbour stabilization basin via a gravity outfall). No additional information was presented to discuss effects of placing approximately 180,000 m3 of waste sludge into the settling basins or ASB. There does not appear to be any plan to isolate materials or prevent interactions with surface water and groundwater.</i></p>				
<p><i>The response to IACC-75 does not address how the end dumped material will be contained within the containment cell or how it would be compacted. IAAC-74 indicates that “non-dredged loose sludge” will be placed in the cell after bulk dewatering has been complete. It is unclear from the information provided how infilling between geotubes will occur or whether the approach could result in cavities within the cell that could result in geotubes shifting during vertical placement.</i></p>				
<p><i>The response to IAAC-76 indicates that material described as “end dumped” will be permitted to “dry out prior to placement in containment cell”. It is unclear how materials will be permitted to dry out or where this material will be staged. It is unclear how associated dewatering effluent/ bulk water/leachate will be managed.</i></p>				

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	<p>IR(2)-76</p> <p>Original IR IAAC-76</p>	<p>P. 34</p>	<p>B. Describe whether cavities would have the potential to occur, and how they would impact the containment cell and Geotubes.</p> <p>C. Describe how materials will be permitted to dry out, where the drying out process will take place, and how the associated dewatering leachate will be managed.</p> <p>D. Clarify whether the Nova Scotia Industrial Landfill Guidelines and CCME National Guidelines for Hazardous Waste Landfills were used when designing the containment cell and determining its location.</p>	<p>B. The latest response indicates that areas of differential settlement will not be addressed through end dumping as previously understood. The response suggests that areas of differential settlement will be addressed exclusively through the placement of the next layer of geotubes. According to the response, it is only following completion of dredging and geotube use that potential reshaping and filling of low areas may be required prior to placement of final cover.</p> <p>C. The response indicates that the material described as end-dumped from mechanically excavated areas will be permitted to dewater prior to placement in containment cell. Although several possible locations for de-watering were identified, details concerning the approach and applicable mitigations (i.e. liners) were not presented. Collected dewatering effluent will reportedly be returned to the active areas of the BHSL or processed through the TLTS before being discharged to the estuary.</p> <p>The response also indicates that once dewatered, the material would be able to be graded and compacted with low ground pressure equipment. It is unclear how this process aligns with the response to “B” above, which noted exclusive use of geotubes to address areas of differential settlement in the containment cell and that filling of low areas would only occur following dredging activities and prior to final cover. Clarification should be provided on how and when the “end-dumped”, dewatered material will be used in the containment cell.</p> <p>D. Although the response does acknowledge the existence of the CCME National Guidelines for Hazardous Waste Materials, the response does not indicate whether they were considered or applied in the design of the containment cell.</p> <p>The response identifies that the Nova Scotia Municipal Solid Waste Guidelines were reviewed with respect to aspects of service life, leachate management and accepted materials.</p> <p>The response indicates that Ontario Regulation 232/98 was applied when designing the containment cell.</p>

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				Both the Nova Scotia Municipal Solid Waste Guidelines and the Ontario Regulation 232/98 are intended for the design of landfills for receiving municipal waste. The dewatered sludges and soils that will be disposed within the CC are classified as hazardous and non-hazardous waste. The CCME National Guidelines for Hazardous Waste Materials should be applied in the siting and design of the containment cell.
<p>Previous RMU Response to Information Requests (Dec 6, 2021): <a href="#">Dust (IAAC-58)</a></p> <p><i>The response to IAAC 58 discusses the control of dust emissions associated with vehicle traffic during the remediation project, however, the issue of dust releases from the open face of the containment cell does not appear to be addressed. Furthermore, the report proposes in IAAC-03 that the materials removed from the containment cell would be stockpiled in the settling basin/ASB and the materials excavated from the ditches, berms, causeway (IAAC-76) would be end dumped and allowed to dry out. In both situations, these stockpiles could be the source of fugitive dust emissions that do not appear to be addressed.</i></p>				
	IR(2)-54 b)/56/58  Original IR IAAC-54b, IAAC-56, and IAAC-58	P. 28	<p>A. Should the post-construction monitoring program identify elevated risks for health impacts (including, but not limited to country foods) from project-associated emissions of VOCs, PAHs, and DPM, describe the mitigation measures or administrative/land use controls in addition to those already proposed, that could be used to manage the risk.</p> <p>B. Provide quantitative evidence to justify a dust control efficiency of 80%. Alternatively, adjust the control efficiency and/or modify the dust suppression plan to be more in line with published data.</p>	The response to IAAC 58 does not appear to address the issue of dust releases from the open face of the containment cell or in relation to stockpiled materials which were excavated from the ditches, berms, causeway, which was discussed in the previous response to information request.

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<p>Previous RMU Response to Information Requests (Dec 6, 2021): <u>Uncertainty regarding waste volumes and lack of contingency plan (Ref. IAAC-73, 74)</u></p> <p><i>Uncertainty remains concerning the total volume of material to be handled, achievable volume reduction, and dewatering time. The response provided to IAAC 73 does not adequately address need/options for a contingency plan, should the final volume of material exceed cell capacity.</i></p> <p><i>Although the proponent has indicated that a 3:1 containment cell side slope scenario provides for 15 percent contingency capacity above the anticipated volume if the cell were to reach capacity, the appropriateness of a 3:1 side slope in the design, or whether 15% contingency capacity is sufficient are uncertain.</i></p> <p><i>As delineation continues in the wetland, it remains unclear how much wetland sludge will be required to be placed in the containment cell. Allowances for additional material, if identified by further sampling during the remediation phase must also be considered.</i></p> <p><i>The overall volume reduction in Geotubes is anticipated to be 50%, based on the second layer volume reduction measured in pilot testing; however, it should be noted that this was not the lowest volume of reduction measured in pilot testing (~30% when sediment present) and may not be a conservative estimate of overall volume reductions.</i></p> <p><i>The percent solids within the slurry were reportedly lower than expected in the pilot study, which may extend Geotube dewatering time. It is also unclear from the information provided how precipitation and the potential for increased precipitation due to climate change in the future may affect dewatering time within an uncovered containment cell.</i></p> <p><i>Insufficient information has been provided to support proposed measures to avoid exceeding containment cell capacity noted in response to IAAC 74.</i></p> <p><i>It is unclear how remedial sequencing to remove all potentially hazardous soil prior to non-hazardous contaminated soil, to accommodate potential offsite disposal of non-hazardous contaminated soil would be achieved. Insufficient information has been provided to support how materials would be segregated, managed, assessed, and ultimately disposed of offsite.</i></p> <p><i>There is also a concern that providing disincentives for the contractor to dredge beyond the allowable tolerances and exceed the containment cell capacity could adversely influence dredging effectiveness.</i></p> <p><i>Significant uncertainty identified in total volumes, achievable volume reduction, and dewatering time, warrant the need for a contingency plan.</i></p>				
	IR(2)-73  Original IR IAAC-73	P. 32	<p>A. Describe how non-hazardous material will be identified, segregated and stored for off-site disposal if the containment cell reached capacity before remedial activities were concluded.</p> <p>B. Update the Accidents and Malfunctions assessment, as necessary, to consider the transportation of non-hazardous materials to an off-site disposal facility.</p>	<p>A. Segregation appears to rely on areas of higher concentration being targeted before areas with lower concentrations. Although this approach sounds reasonable, it is unclear whether sufficient space will be available for all hazardous materials.</p> <p>The process to characterize dewatered sediment and segregate the material below hazardous waste threshold for disposal/treatment off site remains unclear. Details have not been provided concerning the sampling protocol or what measures may be taken to prevent hazardous materials from being mixed with non-hazardous materials during dredging/dewatering activities.</p>



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				Though offsite disposal is proposed as a secondary contingency for excess dewatered sludge, it is unclear that there is the capacity or willingness on the part of the 2 <sup>nd</sup> generation landfill operators or contaminated soil treatment facilities to receive dewatered sludge.
	IR(2)-74/75  Original IR IAAC-74 and IAAC-75	P. 33	A. Describe how conventional compaction equipment can be maneuvered on the containment cell considering the presence of Geotubes, including any limitations or potential issues.	A. Regarding shaping of the final cover, the response indicates the manufacturer of the geotubes will typically specify the minimum amount of fill that needs to be placed in advance of the equipment advancing over the geotubes.  The response also indicates that geotubes without an adjacent tube being filled simultaneously will be supported with dewatered material or strawbales prior to filling. It is unclear if and how conventional compaction equipment may be maneuvered on surrounding geotubes during this stage of the work.

Previous RMU Response to Information Requests (Dec 6, 2021): [Water Management \(bulk water, effluent and Leachate\) \(Ref. IAAC 04, 05, 13, 43, 77\)](#)

*Concern remains whether the proposed process to manage bulk water, dewatering effluent and leachate generated during the remediation phase of the project (i.e. prior to interim cover on containment cell) will effectively ensure potential contaminants are attenuated/treated, instead of being diluted and discharged.*

*The response to IAAC 04 references process flow diagrams, which appear to describe the proposed system to treat leachate generated following interim cell cover to an effluent that can be discharged to BHSL (Point D) only. No additional information has been provided to support proposal to manage surface drainage and groundwater seepage of wastewater (bulk water, effluent and leachate) prior to interim cover placement.*

*Although pilot scale testing of bulk water treatment was reported to be effective at reducing parameter concentrations to below comparison criteria with the addition of an organo-clay media to its four-step system (i.e., between the filtration and adsorption steps) to reduce the concentrations of long-chain organics (e.g., Total Petroleum Hydrocarbons), this treatment was not carried forward in the proposed design. Instead, an untested approach to bulk water management was proposed, which assumes natural attenuation via discharge to the BHSL. An assumption that water quality within the BHSL and at Point C will remain improved because of the cessation of effluent flow into the BHETF in 2020 has been presented; however, no information has been provided to demonstrate that contaminants of concern within the bulk water, effluent and leachate generated during the multi-year remedial phase of the project, will be naturally attenuated.*

*The response to IAAC 05 indicates that the pre-treated effluent from the Temporary Leachate Treatment System (TLTS) will discharge to the estuary without undergoing mixing with the water in the Boat Harbour Stabilization Lagoon (BHSL). It is unclear why effluent proposed to be discharged to the estuary is termed “pre-treated effluent”.*

*The response to IAAC 13 indicates that the forecasted leachate quality was projected based on the pilot scale testing results and reflects maximum concentrations. The forecasted leachate quality presented in Table 2.19 was reported to meet NSE groundwater criteria except for TPH (Lube). No information was provided to indicate that TPH (Lube) exceedances would be treated.*

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<p><i>It is important to note that forecasted Leachate Quality in Table 2.19 was compared to NSE Tier 2 Table 3 GW Discharge to Surface Water (Marine) Greater than 10m from the Surface Water Body. If the “pre-treated effluent” characterized within Table 2.19 is proposed to be discharged directly to the estuary as reported, analytical results should be compared to surface water criteria (i.e. Table 3 - Nova Scotia Tier I Environmental Quality Standards (EQS) for Surface Water and Groundwater Discharging to Surface Water (µg/L) and in particular the values for Surface Water (Including Groundwater &lt; 10m from Surface Water Body). Comparison to the Marine surface water criteria, applicable to a direct discharge scenario would identify exceedances of several parameters beyond those reported. As previously noted, comparison should also be made to potable groundwater criteria.</i></p>				
	IR(2)-13  Original IR IAAC-13	P.34	A. Update Table 2.19 to compare to proper criteria and identify any parameters that exceed guidelines. Describe additional mitigation or treatment measures to ensure compliance.	<p>A. Please clarify the approach to be applied to the treatment of geotube dewatering effluent (estimated to be 12,000 m<sup>3</sup>/day).</p> <p>The response to IR(2)-13 states that “the TLTS will manage leachate from the CC for the period of time between removal of sediment in the BHSL and completion of remediation including final capping of the CC.” This statement implies that the TLTS will operate from the time sediments are removed from the BHSL, which would include subsequent dewatering within geotubes in the CC, until the completion of remediation and final capping.</p> <p>This seems to contradict the Memo, dated Dec 9, 2021 provided within Appendix D of the response, which indicates that “the TLTS will commence operation once the BHSL is remediated and will continue until the final cover is placed on the Containment Cell and the quantity of effluent generated is suitable to be managed through long-term leachate management (i.e., off-site disposal).”</p> <p>The memo also indicates that “during active remediation it is expected that continuous (or nearly continuous) discharge from the BHETF to the estuary will occur. Discharge from the TLTS will be on a continuous or intermittent basis as required.”</p> <p>If the TLTS will operate following removal from sediment from BHSL, will dewatering effluent generated from geotubes within the CC be sent through the TLTS?</p>
	IR(2)-42/43  Original IR IAAC-42 and IAAC 43	P.20	<p>A. Update the CSM for Exposure Assessment for Human Receptors– Waste Management to include an operable exposure pathway for consumption of country foods in the Northumberland Strait.</p> <p>B. Provide a discussion on the potential impacts of the sludge dewatering effluent quality, especially bio accumulative chemicals, to human health</p>	<p>A./B. As an evaluation of the responses provided in relation to country foods are generally reliant on interpretation of Health Canada guidance. NSE reviewers will be informed by Health Canada’s review of the information provided.</p> <p>C. Provide rationale used in water/mass balance assessment for assuming all contributing inputs are fully mixed within the BHSL (i.e., average water quality within</p>

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			<p>through recreational water use and consumption of country food harvested in the BHSL, estuary and Northumberland Strait. Propose monitoring and mitigation measures for potential exposure pathways.</p> <p>C. Provide data for the pilot Geotube effluent samples in a separate table, with clear indications of the type of sample (e.g., removal in the wet, removal in the dry, or composite) and any criteria exceedances. Confirm the number and identity of the pilot Geotube effluent samples tested for TPH. Provide a summary and interpretation of criteria exceedances identified.</p>	<p>the BHSL is equal to discharge at the dam). Please discuss how this relates to the management of dewatering effluent and bulk water during active remediation.</p> <p>Please provide additional information to support the position that exposure to COPC concentrations in the effluent will be short-term (acute) rather than long-term (chronic) within the estuary and Northumberland Strait, given the duration of the remediation project.</p> <p>Please provide information to demonstrate that the removal of the safety factor of 10 from the established criteria, is an appropriate adjustment to develop acute risk-based criteria.</p>
<p>Previous RMU Response to Information Requests (Dec 6, 2021): <u>Effectiveness of Silt Curtains (Ref. IAAC-15)</u></p> <p><i>Response to IAAC 15 on 139/275, does not present additional mitigation measures if silt curtains fail. The proponent proposes to place a single wall of "impermeable" silt curtains between the active dredging area and other cells and open water. It is proposed that the effectiveness of these curtains will be confirmed by checks every 5 hours by a worker with a handheld turbidity meter and if breakthroughs are discovered, work will be halted until turbidity is below authorized levels. It is unclear from the information presented what impact a 25 mg/L increase in TSS value above background concentrations may have on the distribution of contaminants. It is also unclear why only a single wall of curtains with no redundancy is proposed. No information was provided to support why 5-hour checks are proposed and why continuous monitoring is not. It is also not clear if climatic events such as heavy precipitation or high winds could adversely affect this protection system.</i></p> <p><i>The proponent notes that establishing monitoring requirements would be part of the Industrial Approval step; however, a more detailed proposal at this stage would provide greater insight into the proponent's plans to manage the water quality leaving the site and ensure the distribution of fine sediment particles outside of the active dredge area is avoided.</i></p>				
	<p>IR(2)-15</p> <p>Original IR IAAC-15</p>	<p>P. 35</p>	<p>A. Clarify whether single or double silt curtains will be used during dredging activities.</p> <p>B. Provide the location of Drawing DR-C-34 which provides details of how the silt curtains will be installed.</p>	<p>The response indicates that double silt curtains will be used during active remediation. It is assumed that the design is being updated to reflect this reference. It is also assumed that proposed monitoring outside the silt curtains will be improved to respond expeditiously and appropriately to any breakthrough of suspended material.</p>

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<p>Previous RMU Response to Information Requests (Dec 6, 2021): <a href="#">Risk Assessment (Ref. IAAC-33, 35, 39, 41, 42, 50, 53)</a></p> <p><i>NSE Reviewers within SAS are interested in Health Canada’s interpretation of guidance regarding the methodology used to adjust the target Hazard Quotient for vanadium in the HHERA (IAAC-34) and response provided to IAAC-35 concerning the rationale for using sub-chronic Toxicity Reference Values (TRVs) for direct contact exposure to sediment based on intermittent recreational exposure, instead of the more conservative chronic TRVs, required for exposure greater than 90 days.</i></p> <p><i>Response to IAAC 39 provides reference to Section 3.1.5, which does not address the information request. Section 3.1.5 does identify several pathways as inoperable based on concentrations of COPC, rather than potential for exposure, as noted in the information request. The response provides no indication that the recommendation from Health Canada was followed to calculate human health risk based on the total exposure, as lower-level exposures contribute to the overall project-related exposure and risk to human health. No reference to Health Canada guidance or additional rationale was provided to support removal of pathways identified.</i></p> <p><i>Response to IAAC 41 did not sufficiently address the information request. The proponent acknowledges that there may be some elevated concentrations of contaminants above the SSTLs remaining. The proponent notes that exposure to these elevated concentrations over extended periods of time would be unlikely and exposure is better characterized based on an average concentration characterized by the 95 percent UCLM. The elimination of this pathway is not protective of a worst-case scenario and appears to rely on unsupported human mobility patterns.</i></p> <p><i>Response to IAAC 42 does not address the concern expressed in the information request that, “even though their concentrations are below the screening criteria at the discharge point, their characteristics may allow for bioaccumulation at high levels in country foods and lead to potential adverse health effects.” Response also does not address information request for “additional discussion on the expected fate and transport of persistent and/or bio accumulative substances from dewatering effluent as they relate to potential human exposure and subsequent adverse health effects.”</i></p> <p><i>As previously noted, response to IAAC 53 does not align with the NS Contaminated Sites Regulations regarding elimination of the potable groundwater pathway. See previous comments regarding application of Contaminated Sites Regulations within Provincial jurisdiction.</i></p> <p><i>As an evaluation of the responses provided concerning the HHERA and Risk Management Plan are generally reliant on interpretation of Health Canada Risk Assessment Guidance. NSE reviewers will be informed by Health Canada’s review of the information provided.</i></p>				
	IR(2)-33  Original IR IAAC-33	P. 11	A. Update the SAF and SSTL calculations for vanadium to include water and air as applicable exposure media. Should this re-calculation result in an unachievable remediation target, characterize the risk of not meeting the updated SSTL, provide detailed information about the mitigation measures and administrative controls that would be used to manage the risks (including impacts to future land use), and present a  high level overview of the monitoring plan to re- evaluate the risk over time.	A. The excerpt from the HC PQRA Guidance document referenced in the response states that “ <i>not all identified COPC/pathway/receptor combinations necessarily need to be further evaluated quantitatively.</i> ” While this is true, based on the response provided concerning exclusion of pathways, reviewers feel it is important to reiterate that there is still an expectation that relevant pathways that may require management are included in a CSM and undergo an appropriate qualitative assessment.  As stated above, all potentially operable pathways on a site should be included in the CSM. Potential mitigations envisioned for the site to address the potable groundwater

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			<p>B. Update the SSTL for dioxins/furans using one of the following recommended alternative methods:</p> <ul style="list-style-type: none"> <li>● Set the SSTL to background concentration<sup>1</sup> ; or</li> <li>● Calculate provisional SSTLs based on 20% of the TDI, as well as based on 10% of the EDI, in the equations used to calculate the SSTL<sup>2,3</sup>. Select the lower of the two provisional SSTL values as the SSTL. If the SSTL value is lower than background concentration, set the final SSTL to background concentration. When using this approach, chemical-specific scientific rationale should be provided to verify whether the derived SSTL is protective of human health and has considered relevant toxicological data.</li> </ul> <p>Alternatively, should another method be used, provide a detailed rationale for any deviation from the approaches recommended.</p> <p>If the re-calculated SSTL is not technically achievable, characterize the risk of not meeting the SSTL, provide detailed information about the mitigation measures and administrative controls that will be used to manage the risks (including impacts to future land use), and present a high level overview of the monitoring plan to re-evaluate the risk over time.</p>	<p>pathway should be carried through the CSM, risk assessment and ultimately a risk management plan.</p> <p>B. NSECC reviewers will be informed by Health Canada’s review of the information provided.</p>
	<p>IR(2)-35  Original IR IAAC-35</p>	<p>P. 14</p>	<p>A. Provide a discussion on how the selected TRVs are appropriate for intermittent, repeated annual exposures on a chemical-specific basis. The discussion should include:</p> <ul style="list-style-type: none"> <li>- information on chemical half-lives;</li> <li>- duration of the key study that the TRV is based on; and</li> <li>- whether peak exposure or total concentration is driving toxicity using the tiered framework<sup>4,5</sup>.</li> </ul> <p>B. In the event the use of a sub-chronic TRV cannot be justified, update the risk assessment using chronic TRV values. Update any SSTLs, as necessary,</p>	<p>A. NSECC reviewers will be informed by Health Canada’s review of the information provided.</p> <p>B. No response provided based on response to A.</p>

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			based on the results of the risk assessment. If any re-calculated SSTLs result in an unachievable remediation target, characterize the risk of not meeting the updated SSTL, provide detailed information about the mitigation measures and administrative controls that will be used to manage the risks (including impacts to future land use), and present a high level overview of the monitoring plan to re-evaluate the risk over time.	
	IR(2)- 40/41/49/50/52  Original IR IAAC-40 IAAC-41 IAAC-49 IAAC-50 IAAC-52	P. 18	<p>A. Provide a high-level confirmatory sampling plan, including information on:</p> <ul style="list-style-type: none"> <li>- the sediment sampling approach (including how sampling locations and number of samples will be determined);</li> <li>- the methodology/approach used to determine whether the residual contaminant levels would require additional remediation to adequately protect human health from all potential exposure pathways considered;</li> <li>- the methodology/approach used to delineate any additional remediation footprints, if applicable; and</li> <li>- the protocol that will be used for “hot spot” areas identified during confirmatory sampling.</li> </ul> <p>B. Identify available measures to be implemented in the post remediation phase should COPC exceedances be identified during follow-up monitoring and sediments require additional management.</p>	The response notes that in addition to the SWAC, more concentrated confirmation sampling is anticipated to occur in areas expected to be frequented by PLFN residents or recreational users in the future. Details of the confirmation sampling program is currently under development but it is noted that this information will not be available for the Environmental Assessment.
	IR(2)-42/43  Original IR IAAC-42 and IAAC-43	P. 20	<p>A. Update the CSM for Exposure Assessment for Human Receptors– Waste Management to include an operable exposure pathway for consumption of country foods in the Northumberland Strait.</p> <p>B. Provide a discussion on the potential impacts of the sludge dewatering effluent quality, especially bio accumulative chemicals, to human health through recreational water use and consumption of country food harvested</p>	<p>A. Pathway added to CSM but not carried forward in HHRA.</p> <p>ECC reviewers will be informed by Health Canada’s review of the information provided.</p> <p>B/C. Unclear why groundwater discharging to surface water &gt;10m criteria is applied, but not potable groundwater criteria given potable designation for site, or direct surface water criteria given anticipated discharge back to the surface water.</p>

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			<p>in the BHSL, estuary and Northumberland Strait. Propose monitoring and mitigation measures for potential exposure pathways.</p> <p>C. Provide data for the pilot Geotube effluent samples in a separate table, with clear indications of the type of sample (e.g., removal in the wet, removal in the dry, or composite) and any criteria exceedances. Confirm the number and identity of the pilot Geotube effluent samples tested for TPH. Provide a summary and interpretation of criteria exceedances identified.</p>	<p>Uncertainty remains over what the approved water quality guidelines for discharge over the dam will be.</p>
	<p>IR(2)-50 and IR(2)-40/41/49/50/52</p> <p>Original IAAC-40, IAAC-41, IAAC-49, IAAC-50, and IAAC-52</p>	<p>P. 22 and 18 respectively</p>	<p>IR(2)-50</p> <p>A. Clarify how the SSTL approach fits in with the proposed SWAC approach that was proposed to Environment and Climate Change Canada in June 2019. Include whether the maximum criteria have been proposed.</p> <p>B. Clarify whether the SSTL approach will also be used to refine the areas to be dredged in the BHSL and associated basins or if it is proposed for the freshwater wetlands and estuary alone.</p> <p>IR(2)-40/41/49/50/52</p> <p>A. Provide a high-level confirmatory sampling plan, including information on:</p> <ul style="list-style-type: none"> <li>- the sediment sampling approach (including how sampling locations and number of samples will be determined);</li> <li>- the methodology/approach used to determine whether the residual contaminant levels would require additional remediation to adequately protect human health from all potential exposure pathways considered;</li> <li>- the methodology/approach used to delineate any additional remediation footprints, if applicable; and</li> </ul>	<p>A. See previous comments above.</p> <p>B. See previous comments above.</p>

Comment #	Information Request #	NS Lands – IR(2) Response (July 2022)  Page #	Specific Question/Information Requirement from IAAC (IR-2)	NSE Comment on IR response 2
			<p>- the protocol that will be used for “hot spot” areas identified during confirmatory sampling.</p> <p>B. Identify available measures to be implemented in the post remediation phase should COPC exceedances be identified during follow-up monitoring and sediments require additional management.</p>	
	<p>IR(2)-53</p> <p>Original IR IAAC-53</p>	<p>P. 27</p>	<p>A. Update the CSM for Human Receptors and the quantitative risk assessment to include potable groundwater as an applicable exposure media. Provide detailed information about the mitigation measures and administrative controls that will be used to manage any risks identified (including impacts to future land use), and present a high level overview of the monitoring plan to re-evaluate the risk over time.</p>	<p>A. See previous comments above</p>

**General comments on the EIS:**