Enclosure 1: Federal Authority Advice Record - Crawford Nickel Project

Please submit the completed form by **February 2, 2026**, to Crawford@iaac-aeic.gc.ca.

Department Contact Information

Submission Date	February 2, 2026
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1. Review the assigned proponent responses to IAAC's comments on the Impact Statement and provide views for IAAC's consideration in the analysis of the project's effects and preparation of the Impact Assessment Report (in Table 1). Also using Table 1, provide an answer to each of IAAC's targeted questions outlined in Table 2 that is assigned to your department or agency.

Fisheries and Oceans Canada

Name of Departmental / Agency Responder

FFHPP Biologist

Title of Responder

February 2, 2026

Date

Table 1. Advice to Inform the Impact Assessment

Table 1 should be used to provide views for IAAC's consideration in the analysis of the project's effects[1] and preparation of the Impact Assessment Report and potential conditions. Expert advisors should consider project and regulatory context and provide risk-proportional, solution-oriented advice that allows the assessment to proceed to decision-making. Advice should include responses to, but not be constrained by, the targeted questions in Table 2.

Comment ID	Reference to IAAC's Comment	Description of View or Concern Related to an Effect	Advice to Inform the Impact Assessment
Please identify comments by organization and comment number. *e.g.: IAAC-01*	*Identify the specific Comment ID associated with IAAC's comments on the Impact Statement to which your comment applies.* *e.g.: FFH-01*	*Provide a brief description of the view or concern for IAAC's consideration in the analysis of effects, based on available information, such as:* • *a missing pathway of an adverse federal effect that may increase the overall extent of significance;* • *inaccurate characterization of an adverse residual effect; or* • *sources of uncertainty that, in your organization's view, may weaken conclusions*	*Considering project and regulatory context, provide solution-oriented advice that allows the assessment to proceed to decision-making. For example:* • *Characterize residual effects and associated uncertainty, as predicted by your organization, based on available information. Explain the uncertainty. Consider describing a range of possible effects scenarios. Consider qualitative descriptions of effects, if needed.* • *Suggest other mitigation and follow-up measures or adaptive management that may reduce predicted adverse federal effects, increase certainty in predictions, or help manage uncertainty, including operational guidance or standards, and well-understood practices.* • *Describe any other federal or provincial legislative frameworks, policies, programs, and potential complementary measures that may provide another means to address adverse federal effects, including predictable outcomes and whether other tools set conditions on the proponent.* • *Identify those mitigation measures and project design elements that are necessary to limit the extent of significance of adverse federal effects, and those follow-up program measures that address substantial uncertainty with the accuracy of predictions and the effectiveness of mitigation, in relation to key issues that are material to decision-making.* • *Provide advice on risk (likelihood and severity of effects), using applicable frameworks relevant to your mandate, to support IAAC's risk-based decisions.* *Based on current knowledge, IAAC does not intend to ask more questions of the proponent. If you are not able to respond to the specific prompts for advice outlined here and in Table 2, IAAC requests a discussion to better understand your views.*
DFO-01	**FFH-01**	The potential effects of predicted flow changes have been incompletely characterized and still have high uncertainty. DFO's understanding of flow effects on fish and fish habitat is based on three levels of modelling and analysis that are interconnected: <u>Groundwater</u>: It appears that the Proponent has not used outputs from groundwater modelling to inform surface water quantity models. It remains unclear how the Proponent intends to predict how surface water will interact with groundwater throughout the life of the project (NRCan-01 ECCC-02).	The Proponent's ability to characterize changes in fish habitat as a result of changes in water quantity is low due to compounding uncertainty in the utilization of a groundwater model, the surface water model, water management plans, limited baseline data, and limited understanding of how flow mitigations will be implemented. At the same time, the Proponent has identified this as an initial assessment, and they have provided a snapshot of the scale of effects that are likely to occur in the mainstem river of the sub-watersheds between the project area and the regional study area. That is, that harmful alteration of fish habitat is likely but it is unlikely that severe effects (e.g. complete destruction of habitat, fish passage concerns) will be realized because a) the Proponent can continue to refine and update their understanding of effects before impacts, and b) measures exist that can mitigate flow effects. The Proponent is encouraged to refine modelling of surface water and groundwater through the continued collection of baseline data and comparisons of model outputs to observed conditions. Decreasing uncertainty in the analysis of effects to fish and fish habitat from flow changes will require continued biological baseline data collection and refinement of approaches. HSI modelling may be an appropriate tool

[1] "Effects" means adverse effects within federal jurisdiction and direct or incidental adverse effects (as defined in section 2 of the *Impact Assessment Act*).

		There was no analysis as to whether groundwater contributes to fish habitat as a temperature or oxygen refugia, and no discussion of this as a potential pathway of effect within the zone of influence of the project. <u>Surface water</u>: The Proponent provided an estimate of fish habitat that will be impacted in the North Driftwood River downstream of the project area based on both hydrologic and hydraulic models. There remains high uncertainty in the outputs of both (ECCC-01, 02, 04). Further, because only results of the hydraulic HEC-RAS 2D model from one segment of the North Driftwood River at one point in time were presented in the response, it is unclear how overall impacts to river mainstems were quantified. To quantify impacts to waterbodies and watercourses associated with first- to third-order streams, the Proponent provided a simpler estimate of habitat alteration by calculating loss of watershed area. This approach is not well described or substantiated; whether it is a conservative approach is not discussed; it doesn't account for the potential for habitat disconnection (*i.e.*: fish passage concerns); and it doesn't account for losses resulting from decreases in groundwater inputs to surface water. Water management plans and flow mitigations are still vague. Further details about water management and flow mitigation will be required to reduce uncertainty with regard to fish and fish habitat. <u>Fish Habitat</u>: There are inherent uncertainties in the use of Habitat Suitability Indices (HSI); however, it is a reasonable approach to allow for a before-after comparison of habitat area availability as described by two variables: depth and velocity. Beyond the inherent uncertainty, the Proponent's choice of analysis created further unknowns because it was limited in spatial and temporal scale and was	to quantify fish habitat, but the Proponent should expand the analysis to include other species, life-history needs, and habitat attributes (e.g. substrate, water temperature, food supply, refugia). The detailed accounting of impacts, associated monitoring, and refinement of offsetting measures can be addressed during the *Fisheries Act* Authorization process.

		only calibrated based on two flow measurements and will therefore need to be updated as more data becomes available. The Proponent has failed to attempt to characterize consequences of a highly variable, unnatural, and frequently higher-than-normal flow regime that has been predicted to occur as a result of the project. Fish interact with many physical, biological, and chemical variables in their habitat, and thus the HSI used by the Proponent provides a limited representation of the impacts to fish and fish habitat. Additional pathways of effects will need to be considered to help better represent the suite of changes that could result from changes in the natural flow regime.	
DFO-02	**FFH-02**	The Proponent provided a conceptual discussion about the feasibility of the North Driftwood River Diversion Channel (NDR Diversion) and how they will incorporate natural channel design. This analysis outlined potential issues that may be encountered during the design, construction, and operation of the channel, and mitigations that could be implemented should certain scenarios arise. To date, the Proponent has based the feasibility on four boreholes and four cone penetration tests – none of which were conducted directly along the proposed NDR Diversion route. Overall, the NDR Diversion is still conceptual as no additional technical information or design effort has been presented since the IS.	While uncertainty associated with the NDR Diversion offset measure remains high, DFO is confident that it could become an acceptable portion of the Proponent's offsetting plan should technical feasibility investigations increase confidence. DFO is available to continue working with the Proponent and provide guidance as they plan and develop the technical design. Finalized plans for the NDR Diversion will require: development by an interdisciplinary team of experts, support of in-situ data, application of natural design principles, project-specific mitigations, and robust contingencies.
DFO-03	**FFH-03**	The Proponent provided a more detailed offsetting plan, decreasing the uncertainty that the impacts from the Project could be offset. The offsetting plan has since been updated to include an accounting of the harmful alteration, disruption or destruction of fish habitat that includes flow impacts, a list of proposed offsets, and an equivalency analysis that factors in time lag, uncertainty and relative habitat value.	The list of offsetting measures provided by the Proponent outlines an appropriate level of detail for this stage of the Project. DFO is confident that the Proponent will be able to generate a plan that effectively offsets residual impacts to fish and fish habitat from the Project. The Proponent is encouraged to continue collecting baseline data to support the accounting and assessment of impacted habitat, and develop detailed plans for the design, feasibility, and implementation of each measure. DFO assessors are available to continue working with the Proponent and provide guidance as they develop the offsetting plan.

		A total estimate of habitat loss of 115 ha has not been well supported by methodological descriptions, data summaries, or maps. Variables associated with uncertainty and relative habitat value in the offsetting plan will need further rationale and approval from DFO.	

Please insert additional rows as necessary.

Table 2. Targeted Questions to the Guide the Technical Review

Table 2 is a reference to help guide advice provided in Table 1. It outlines: the federal and provincial authorities assigned to review each of the proponent's responses to IAAC's comments on the Impact Statement; context on how IAAC will use the information to develop the Impact Assessment Report; and targeted questions to guide the technical review. Answers to the targeted questions should be provided as distinct row entries to Table 1 and consider the relevant prompts provided.

Comment ID	Relevant Authorities	IAAC's Focus for the Impact Assessment Report	Targeted Questions
1) Fish and Fish Habitat			
FFH-01-FFH03	DFO, ECCC, NRCan	In the Impact Assessment Report, IAAC will describe the likely adverse residual effects to fish and fish habitat (using magnitude, geographic extent, duration, uncertainty etc.), taking into account both direct loss from overprinting and loss through alteration of flows. Primarily, IAAC's focus is whether the anticipated harmful alteration, disruption, or destruction of fish habitat can be reasonably offset, accounting for any uncertainty in conceptual offset options (e.g., North Driftwood Diversion Channel). IAAC will rely on authorizations needed under the *Fisheries Act* to further refine the effects predictions, mitigation measures, and follow-up programs.	• Describe your level of confidence in the proponent's analysis of effects to fish and fish habitat from changes to groundwater and surface water flows, including the overall predicted magnitude and geographic extent of fish habitat loss in water courses. • Describe your level of confidence that, with ongoing refinement through permitting, there are likely to be sufficient offsetting measures available for the harmful alteration, disruption, or destruction of fish habitat. If needed, suggest feasible offsetting concepts. • Describe any outstanding uncertainty in the geotechnical feasibility of the Natural Driftwood Diversion Channel including its ability to function as an offset for fish habitat and a location for effluent discharge. Outline any next steps for the proponent to increase certainty. If there is insufficient confidence in the information provided by the proponent, provide advice to IAAC informed by the prompts in the "Advice to Inform the Impact Assessment" column of Table 1.
2) Groundwater-Surface Water Interactions, where Changes May Affect Fish Habitat and Indigenous Peoples			
GW-01(a-e)	ECCC, MECP, NRCan	In the Impact Assessment Report, IAAC will describe the likely adverse residual effects to fish and fish habitat (using magnitude, geographic extent, duration, uncertainty etc.), as well as the likely adverse impacts on the current use of lands and resources for traditional purposes by Indigenous peoples, resulting from changes to water quantity. Understanding how reasonably the groundwater model performs is necessary to interpret how well the surface water model reflects project-related changes in groundwater-surface water interactions. This information will inform IAAC's conclusions on potential adverse effects to fish habitat and impacts to Indigenous use. IAAC will rely on authorizations under the *Fisheries Act* and on provincial regulatory frameworks (e.g., *Ontario Water Resources Act, Lakes and Rivers Improvement Act*, etc.) to further refine the effects predictions, mitigation measures, and follow-up programs.	• Describe your level of confidence in the proponent's analysis of changes to groundwater-surface water interactions. • Would surface water model predictions (changes to surface water levels, flow and quantity) reasonably reflect project-related groundwater drawdown and mounding? • Describe implications of uncertainty in the groundwater-surface water interactions (see questions 3 and 4, which may overlap). Use geographic scenarios for changes to springs and surface water levels, if needed. • Consider any follow-up program and adaptive management measures proposed by the proponent, or your authoritative ability to require adaptive management, to manage uncertainty in your response. If there is insufficient confidence in the information provided by the proponent, provide advice to IAAC informed by the prompts in the "Advice to Inform the Impact Assessment" column of Table 1.
3) Surface Water Quantity, where Changes May Affect Fish Habitat and Indigenous Peoples			
SW Quan-01(a-d) and 02(a-b)	ECCC, MECP	In the Impact Assessment Report, IAAC will describe the likely adverse residual effects to fish and fish habitat (using magnitude, geographic extent, duration, uncertainty etc.), as well as the likely adverse impacts	• Describe your level of confidence in the proponent's analysis of changes to surface water levels, flows, and quantity to inform effects on fish and fish habitat, use of waterways by Indigenous peoples.

		on the current use of lands and resources for traditional purposes by Indigenous peoples, resulting from changes in flows. IAAC will take into account the level of confidence in the surface water hydrological model's ability to reasonably predict potential changes to surface water levels and flows to inform predicted effects to fish habitat and use of waterways by Indigenous peoples. IAAC will rely on authorizations under the *Fisheries Act* and on provincial regulatory frameworks (e.g., *Ontario Water Resources Act, Lakes and Rivers Improvement Act*, etc.) to further refine the effects predictions, mitigation measures, and follow-up programs.	• Describe implications of uncertainty in the surface water model. Use geographic scenarios for changes to surface water levels, if needed. • Consider any follow-up program and adaptive management measures proposed by the proponent, or your authoritative ability to require adaptive management, to manage uncertainty in your response. If there is insufficient confidence in the information provided by the proponent, provide advice to IAAC informed by the prompts in the "Advice to Inform the Impact Assessment" column of Table 1.
Species of Importance to Indigenous peoples, where Habitat is Lost due to Changes in Groundwater and Surface Water			
IP-01	ECCC, MECP, NRCan	In the Impact Assessment Report, IAAC will consider the predicted changes to the availability of species of importance for Indigenous peoples (e.g., waterfowl, moose, etc.) and describe the likely adverse residual effects to current use of lands and resources and cultural heritage (using magnitude, geographic extent, duration, uncertainty etc.). This will take into account habitat loss from changes in groundwater and surface water levels, including drawdowns, mounding and flooding. Understanding this habitat loss is necessary to describes residual changes to resources available to Indigenous peoples for traditional purposes. IAAC will rely on provincial regulatory frameworks (e.g., *Ontario Water Resources Act, Lakes and Rivers Improvement Act*) to refine the predicted quantity of effects, mitigation measures, and follow-up programs.	• Describe your level of confidence in the proponent's analysis of changes to the habitat of species of importance to Indigenous peoples (e.g., waterfowl, moose) from changes in groundwater and surface water levels (including drawdowns, mounding and flooding). • Describe implications of uncertainty in the groundwater and surface water model. Use geographic scenarios, if needed. For example, where might wetlands be drained or flooded? If there is insufficient confidence in the information provided by the proponent, provide advice to IAAC informed by the prompts in the "Advice to Inform the Impact Assessment" column of Table 1.
Surface Water Quality, where Changes May Affect Fish or Indigenous peoples			
SW Qual-01 - 06	ECCC, MECP, NRCan	In the Impact Assessment Report, IAAC will describe the likely adverse residual effects to fish and to the health conditions of Indigenous peoples or their current use of resources (using magnitude, geographic extent, duration, uncertainty etc.), resulting from changes in surface water quality. Changes in surface water quality may arise from controlled effluent, uncontrolled effluent (seepage), methylmercury production, and sediment-bound contaminants from the project. Understanding the geographic extent of surface water quality changes is necessary to determine potential chronic effects to fish health and	• Describe your level of confidence in the proponent's analysis of changes to surface water quality from planned effluent, unplanned effluent (seepage), methylmercury production, and sediment contamination. • Consider any follow-up program and adaptive management measures proposed by the proponent to manage uncertainty in your response. Where applicable, outline any next steps that may be necessary through provincial regulatory requirements to improve confidence. • Describe your level of confidence that, with ongoing refinement, the current project design will result in an effluent mixing scenario that can feasibly align with provincial policies that support issuance of an Environmental Compliance Approval for Industrial Sewage Works. Outline any next steps that may be necessary through provincial regulatory requirements to improve confidence or make a future determination.

		measures needed to mitigate health risks to Indigenous peoples from their use of water or fish. Further, IAAC seeks to understand the potential for future project redesigns and to build confidence in the management of mine effluent in considering federal (i.e., *Fisheries Act*, *Metal and Diamond Mining Effluent Regulations* Schedule 4) and provincial (*e.g.,* Environmental Compliance Approval for Industrial Sewage Works) regulatory frameworks. IAAC will rely on these federal and provincial regulatory frameworks to further refine the effects predictions, mitigation measures, and follow-up programs.	• Describe your level of confidence in the proponent's analysis of changes to surface water quality from a potential rail accident resulting in the release of nickel concentrate, including the geographic extent of potential effects. If there is insufficient confidence in the information provided by the proponent, provide advice to IAAC informed by the prompts in the "Advice to Inform the Impact Assessment" column of Table 1.
Geochemistry, where Conditions Influence Water Quality and Effects to Fish and Fish Habitat and Indigenous peoples			
GCH-01(a-e) – 02 (a-d)	NRCan, MECP	In the Impact Assessment Report, IAAC will describe the potential adverse residual effects to fish and fish habitat and impacts to Indigenous peoples (using magnitude, geographic extent, duration, uncertainty etc.), considering changes in surface water quality which are modelled based on the geochemical properties of mine materials. Understanding any uncertainties in the geochemical characterization program is necessary to understand effects to fish and fish habitat and to Indigenous peoples. IAAC will rely on provincial regulatory frameworks (e.g., *Ontario Water Resources Act, Mining Act*) to refine the effects predictions, mitigation measures, and follow-up programs.	• Describe your level of confidence in the proponent's geochemical characterization program to understand potential changes to surface water quality. Consider any future sampling, follow-up program, specific mine waste management strategies, water management plans, or other plans, and requirements of provincial regulatory frameworks to manage uncertainty in your response. If there is insufficient confidence in the information provided by the proponent, provide advice to IAAC informed by the prompts in the "Advice to Inform the Impact Assessment" column of Table 1.