Reference Number	Status	Project Effects Link to CEAA 2012	Reference to EIS Guidelines	Comment Source	Chapter or Appendix	EIS/A Section	Information Request	Context and Rationale	IR Date	Proponent Response	Link	Date
FISH-01	Open	5(1)(a)(i) Fish and Fish Habitat		DFO-004	Chapter 12	12.4.1	Confirm whether Appendix 10A details how the contruction of the pits and the destruction of the wetlands and aquifers in their lower reaches and along West Alexander Creek will affect the runoff pattern. For example, will the loss of these natural storage features result in increased runoff during freshet and early summer and decreased discharge from West Alexander Creek during the fall and winter? If it does not, provide that information.	Figure 12.4-2 shows the project footprint overlapping with several tributaries of Upper Alexander Creek.	29-Apr-24			
FISH-02	Open	5(1)(a)(i) Fish and Fish Habitat		DFO-005, IAAC_FFH_01	Chapter 12	12.4.2	It appear that the upper extent of fish habitat has not been adequately characterized. Johnston and Slaney (1998) is a procedure for assessing fish habitat condition. It is not the correct procedure to assess fish habitat extent. An example of an acceptable procedure to determine the extent of fish habitat is Fish Stream ID Guidebook (BC 1998). Provide the methodology that was applied and your QEPs determination of the upper extent of fish habitat for each tributary and West Alexander Creek.	"Interactions between the Project and fish and fish habitat are further discussed in Section 12.5. Reaches with the potential for direct habitat loss were assessed following the B.C. Fish Habitat Assessment Procedures (FHAP) Level 1 (Johnston and Slaney, 1996). The baseline fish habitat surveys were completed on the fish bearing reaches of Alexander Creek (ALE7 to ALE10) and West Alexander Creek (WAL1 and WAL2), as described in the Fish Community methods section below. Fish inventories were not completed on reaches with prior knowledge of fish bearing status in the provincial Habitat Wizard Fish and Fish Habitat Database (ALE7, GRA1 to GRA4; Government of B.C., 2018)."	29-Apr-24			
FISH-03	Open	5(1)(a)(i) Fish and Fish Habitat		DFO-006	Chapter 12	12.4.2	Given the sensitivity of the fish population in Grave Creek (see DFO memo from January 2023) and the potential for effect from road construction including sediment inputs and water diversion, describe the baseline habitat conditions in Grave Creek.	"Lower Alexander Creek, Grave Creek, and the two unnamed Grave Creek tributaries did not require a Level 1 FHAP survey because the Project is not anticipated to affect those areas." The sentence suggests there are no Project effects in Grave Creek, but part of the Project footprint overlaps with an unnamed tributary of Grave Creek and the access roads leading to the mine are generally located within the Grave Creek watershed.	29-Apr-24			

FISH-04	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-007	Chapter 12	12.4.2	Provide the following: 1- the page in the document titled Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators BC Ministry of the Environment, 2016, that indicates that no additional screening is required if the number of days when below 20% MAD does not increase. 2- Given the sensitivity of the westslope cutthroat trout population in Grave Creek, and recent recruitment failures, complete a robust environmental flow needs assessment (for example, the 2022 British Columbia Environmental Flow Needs Policy identifies cumulative diversion amount thresholds for high senstivity habitats). 3- Confirm and provide rationale showing that the estimates of cumulative diversion quantities from water use and mining related hydrologic change are protective of aquatic life. 4- Provide the citation for the peer-reviewed passage methodology and modified instream flow study that were applied.		29-Apr-24
FISH-05	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-008, IAAC_FFH_02	Chapter 12	12.4.2	Clarify whether effects to Upper Alexander Creek (e.g., changes to flow and consequent impacts to fish) have been adequately assessed, and whether the upper reaches are appropriate as reference areas given their proximity to the Project. Provided maps (e.g., Figure 12.4-2) show the project footprint overlapping with several tributaries of Upper Alexander Creek.	"Alexander Creek was delineated into 11 reaches; 7 of these were studied in detail during the baseline programs. Alexander Creek Reaches 7, 8, and 9 are immediately downstream or adjacent to the Project (Figure 12.4-5). Reaches 1 and 2 are also downstream, but further afield, and mark the downstream limit of the Fish and Fish Habitat LSA in the Alexander Creek watershed. Reaches 10 and 11 are upstream of the Project and are not expected to be affected by the Project and, are therefore considered to be reference areas."	29-Apr-24
FISH-06	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-009	Chapter 12	12.4.2	Provided maps (e.g., Figure 12.4-2) show the project footprint overlapping with considerably more tributaries on West Alexander Creek. Confirm whether or not these tributaries were surveyed and assessed, and the location of that information.	"West Alexander Creek has four non-fish bearing tributaries: Unnamed West Alexander 1 (UWA1; first order tributary), Unnamed West Alexander 1b (UWA1b; first order tributary), Unnamed West Alexander 2 (UWA2), and Unnamed West Alexander 3 (UWA3; first order tributary)."	29-Apr-24

FISH-07	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-010	Chapter 12	12.4.2	Clarify the presence/absence of fish in UWA1b. It appears that that the confluence to UWA1b is located in Reach 1 (WAL1) of West Alexander Creek, which is fish-bearing. There is no explanation provided as to why UWA1b Reach 1 and the inital portion of Reach 2 are considered non-fish bearing. It appears from the above paragraph that the 200 m stretch of >30% gradient is considered a barrier to fish movement, suggesting the creek below this is accesible to fish. As previously stated, provide the methodology that was used to determine the upstream extent of fish habitat, a non-fish bearing status report for each reach where you have assigned this status, and a corresponding map of apprpriate scale.	"Unnamed West Alexander Creek 1b (UWA1b) is a first order, unnamed tributary on the east side of West Alexander Creek, which is located approximately 5.57 km northwest from the Alexander Creek/West Alexander Creek confluence. There are two reaches on this stream, UWA1b-1 and UWA1b-2. Unnamed West Alexander Creek 1b Reach 1 is 0.18 km long with an average gradient of 10%. The stream is deeply channelized near the confluence with West Alexander Creek. Unnamed West Alexander Creek 1b Reach 2 is 1.39 km long with an average gradient of 20.0%. Unnamed West Alexander Creek 1b Reach 2 starts at the increase in gradient upstream of UWA1b-1 and ends at the headwaters. The slope increases to >30% for 200 m and this steep gradient is considered a barrier to fish movement. Unnamed West Alexander Creek 1b Reach 2 is classified as a step-pool morphology and is considered non-fish bearing based on gradient (FPCBC, 1998)."	29-Apr-24
FISH-08	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-011	Chapter 12	12.4.2	Confirm that this description is correct for UWA1, because Sections 12.4.2.2.1 & 12.5.4.1.1 describe a 10-m high waterfall on Unnamed West Alexander Creek 2 (UWA2), located 15 m from the confluence with WAL3. Assuming the above statement is correct, does that mean it is fish-bearing, and if so, was that section of the tributary included in the calculation of the total habitat loss footprint?	"All four unnamed tributaries of West Alexander Creek were also observed to be non-fish bearing due to the presence of waterfall barriers and/or gradients >30%, with the exception of the first 15 m of UWA1."	29-Apr-24
FISH-09	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-012	Chapter 12	12.4.2	Table 12.4-7 is missing habitat data, which are available elsewhere in the chapter. For example, Section 12.4.2.2.1 describes habitat metrics (e.g., reach lengths) of WAL3 and West Alexander tributaries and those data are also provided in Table 12.5-8. Update the table to include all data. The table should also present the gradients at each site, given that this metric is relied upon to determine fish-bearing status.		29-Apr-24

FISH-10	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-013	Chapter 12	12.4.2	Clarify the presence/absence of fish in WAL4, as the first sentence quoted suggests that it is fish-bearing. Also clarify the presence/absence of fish in the unnamed tributiares - there are sections of the EIS that suggest that portions of some of the unnamed tributaries are fish-bearing. For example, in the section preceding the above excerpt, the EIS states that "*all four unnamed tributaries of West Alexander Creek were also observed to be non-fish bearing due to the presence of waterfall barriers and/or gradients >30%, with the exception of the first 15 m of UWA1*. " In addition, the EIS does not make it clear why UWA1b is considered non-fish bearing- p[rovide additional information to clarify this.	"The gradient barrier and frequent dewatering of WAL3 was noted to prevent fish migration into WAL4 within West Alexander Creek, which was also confirmed to be fish bearing. All of the unnamed tributaries to West Alexander Creek (considered non-fish bearing) were noted to contain either gradients that are not conducive to fish passage, or waterfalls."	29-Apr-24
FISH-11	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-015	Chapter 12	12.4.2	Clarify the definitions of Lower, Middle, and Upper Alexander creek. The defintions of each do not appear to be provided in the Fish and Fish Habitat or in the Surface Water Quantity Assessment.		29-Apr-24
FISH-12	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-016, IAAC_FFH_03	Chapter 12	12.4.2	Provide rationale as to why spawning surveys were not conducted in Alexander Creek at a later date. This is particularly important given that the EIS proposes to salvage and translocate westlope cutthroat trout from West Alexander Creek into Alexander Creek.	"These fish were present in Upper Alexander Creek (or the upstream portion of Middle Alexander Creek) during the overwintering and spawning periods. Spawning surveys were not conducted in this portion of Alexander Creek (or other downstream portions) due to time constraints."	29-Apr-24
FISH-13	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-018	Chapter 12	12.4.2	Update Table 12.4-10 to provide the survey data from ALE1 and ALE2.	"Surveyed reaches considered to be fish bearing included ALE1 to ALE10, WAL1, and WAL2. The fish species captured included WCT, Bull Trout, Mountain Whitefish, and Eastern Brook Trout (Table 12.4-10)."	29-Apr-24
FISH-14	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-019, IAAC_FFH_04	Chapter 12	12.5.2	How were the rankings in Table 12.5-1 derived for each activity-VC interaction? This should be made clearer by providing the Pathway(s) of Effect (PoE) for each activity-VC interaction as an additional column. For example, what is/are the PoE(s) for excavation of road bed materials from the North Pit for use on Grave Creek road? This would also prove useful later in the assessment to show how proposed mitigation measures would reduce the potential impact from a higher (pre-mitigation) to lower (post-mitigation) ranking.		29-Apr-24
FISH-15	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-022	Chapter 12	12.5.3	The proponent is proposing a mitigation strategy of adding anti-scalant agents to minimize the potential for calcite formation. Calcite precipitation from rock spoiling will occur in perpetuity. Water treatment may not be sustainable in perpetuity. Why has the proponent not applied source control as the preferred avoidance measure? As an avoidance measure, source control is at the top of the mitigation heirarchy. In terms of risks, there is no proven technology to remediate calcified streams. Indicate why source control is not selected as the mitigation option. Detail the uncertainties and risks with the treatment option (addition of anti-scalant agents) to address calcite. Include cost and funding information for operating these treatment facilities in perpetuity.		29-Apr-24

FISH-16	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-024	Chapter 12	12.5.3	Update the section to include Principle 4 from the *Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act* (DFO 2019) - currently only three of the four guiding principles are provided.	Principle 4: Measures to offset should generate self-sustaining benefits over the long term. The benefits of the measures to offset fish and fish habitat should last at least as long as the adverse effects from the works, undertakings or activities being authorized.	29-Apr-24
FISH-17	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-025	Chapter 12	12.5.3	Confirm that the calculations of riparian habitat footprint for each reach are correct, and if required update the table. Section 12.5.4.2.5 (pg 12-137 to -138) implies that a 31.5 m buffer zone was used to calculate the riparian habitat loss. While the total riparian habitat on fish-bearing streams appears to be correct (i.e., approximately 36.1 ha) the calculations for each reach do not, assuming the reach lengths in the table are correct: WAL1 u/s of Spillway: 5,002 m x 63 m = approx. 31.5 ha WAL2: 174 m x 63 m = 1.1 ha WAL1 d/s of Spillway: 550 m x 63 m = 3.5 ha		29-Apr-24
FISH-18	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-026	Chapter 12	12.5.3	Upate Figure 12.5-2 to include all the fish habitat loss in West Alexander Creek, including the riparian buffer. If necessary, provide more than one figure. The figure currently only shows the fish-bearing habitat loss due to mine design and development. It does not show the habtiat loss due to changes in surface water quantity (i.e., loss of habitat in West Alexander Creek from the Main Sediment Pond to its confluence with Alexander Creek). Moreover, the figure does not show the non-fish bearing habitat loss. The riparian buffers in both the fish-bearing and non-fish bearing watercourses should also be shown.		29-Apr-24
FISH-19	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-027	Chapter 12	12.5.3	Update Table 12.5-8 to include the area for UWA1, and subsequently incorporate that area into the total area of non-fish bearing habitat loss.		29-Apr-24
FISH-20	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-028	Chapter 12	12.5.3	Update Table 12.5-8 to include the loss of riparian habitat associated with non-fish bearing streams, as their benefit will be lost to downstream fish productivity (e.g., nutrient and food input).		29-Apr-24

FISH-21	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-029, IAAC_FFH_05	Chapter 12	12.5.3	Update the offsetting plan to address the comments provided by DFO in the Context and Rationale column.	"The likelihood that most of the offsetting available will come from outside of the Fish and Fish Habitat LSA is a key topic for DFO and Indigenous consultation. DFO consultation is in progress and the decision of whether the effect on habitat loss due to the Project can be adequately compensated for will reside outside of the scope of this assessment. Offsetting a potentially resident population's home range is a policy decision and will be driven by DFO goals and is therefore outside the scope of this assessment. For the purpose of this assessment; however, it is assumed that should the Project proceed, DFO will have made a policy decision to issue an authorization under the Fisheries Act and that the offsetting measures ultimately selected in support of that authorization will be sufficient at offsetting the residual effects of the Project such that they are not significant. This is a reasonable conclusion since development of the Project would obviously not be able to	29-Apr-24
FISH-22	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-030, IAAC_FFH_06	Chapter 12	12.5.3	Provide more detail regarding the derivation of the relative habtiat values (RHVs) in Table 12.5-9. Provide the rationale and citations for the RHVs. Explain how the habitat in the proposed offsetting measures at Elk River Side Channel and Brule Creek can be 2-3 times more valuable than the West Alexander Creek habitat? The habitat of the resident fish populations in the headwaters of Alexander Creek is the most valuable habitat. If the SARA status of the Pacific population of westslope cutthroat trout is upgraded to Threatened, those areas would be candidates for Critical Habitat designation. The Elk River and Brule Creek may not. In addition, per the *Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act* (DFO 2019) the equivalency analysis must account for time lag, uncertainty, and, in the case of habitats being proposed for restoration/enhancement, the relative value of the exsiting habitat.		29-Apr-24
FISH-23	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-031	Chapter 12	12.5.4	Clarify if UWA1 and UWA1b are separate tributaries of West Alexander Creek. It appears that UWA1 and UWA1b are distinct tributares of West Alexander Creek, and that UWA1b-1 and UWA1b-2 are two reaches on the unnamed tributary, UWA1b.	"UWA1b-1 and UWA1b-2 are two reaches on a tributary (UWA1) that enters on the eastern bank of West Alexander Creek. This tributary (both reaches) is considered non-fish bearing due a very steep gradient"	29-Apr-24

FISH-24	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-032	Chapter 12	12.5.4	Elaborate on the effects of reduced inputs (e.g., e.g., organics, nutrients) from West Alexander Creek to the biomass of invertebrates in downstream reaches of Alexander Creek (i.e., the local sources of invertebrates for downstream fish). Is inverterbrate biomass also dependent on local (short-range) input of food and nutrients, or will the loss of habitat in West Alexander Creek affect the productivity of reaches of Alexander Creek downstream of the confluence? While Section 12.5.4.2.1 concludes a minor impact because insectivorous fish rely on short-range invertebrate drift, it does appear to take into account the potential reduction in nutrients and food that may affect downstream invertebrate biomass, and in turn, fish productivity (i.e., bottom-up effects).	"As drift-feeding fish further downstream of West Alexander will likely continue to rely on more local sources of invertebrates, the potential impact on the aquatic food web and productivity is predicted to be minor."	29-Apr-24
FISH-25	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-033	Chapter 12	12.5.4	Update Table 12.5-11 to include the area for UWA1, and subsequently incorporate that area into the total area of non-fish bearing habitat loss. For a given tributary, the table should differentiate between reaches that are fish-bearing and non-fish bearing. For example, the first 15 m of UWA1 is potentially fish-bearing (Section 12.4.2.2.1) and it is not clear about the presence/absence of fish in UWA1b.		29-Apr-24
FISH-26	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-034	Chapter 12	12.5.4	To support this statement, provide the following information: (1) The coarse filter EFN assessment methodology that was applied does not consider the sensitivity of the habitat and fish populations. Select an appropriate methodology and redo the assessment. (2) Provide a fish periodicity table that includes all fish species and their seasonal flow requirements at the specific stations in Alexander Creek, West Alexander Creek and Grave Creek. (3) The authors do not provide an estimate of flows and cumulative diversion quantities during low flow years. Figure 12.5-4 is limited to average monthly flow only. Provide the dry year stream flows and diversion estimates during those years. (4) Confirm that the assessment nodes are located in the most flow sensitive locations within the streams of interest. Streams in the Elk River watershed contain gaining and losing reaches. Confirm the locations of any important losing reaches that have been identified during the fish habitat assessments. (5) Address the concerns provided below on Chapter 3 regarding water demand estimates. Then, if required, adjust the diversion quantities that are used in the EFN assessment to ensure they are accurate. (6) Refer to sediment pond / mine infrastructure operating plans that will minimize potential operational impacts on flow that may cause a HADD, such as ramping.	On this page the authors state: “None of the flow nodes were found to exceed the 20% MAD threshold during low flow periods. This means that the Project is not anticipated to result in reduced flows below 20% MAD at any time during Construction and Pre-Production, Operations, Reclamation and Closure, or Post-Closure, which would result in significant residual effects on fish and fish habitat.”	29-Apr-24

FISH-27	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-035, IAAC_FFH_07	Chapter 12	12.5.4	Provide additional detail in the EIS showing that all options to conserve the lowest reach of West Alexander Creek have been considered. This includes an alternate design and adjustment of water management strategy to increase the flow regime in West Alexander Creek below the Main Sediment Pond, so that there are no adverse impacts to fish and fish habitat as a result of changes to surface water quantity. Installation of a permanent fish barrier at the confluence and exclusions of fish from that section of the reach must be proven to be the last resort.	"During spawning months for Westslope Cutthroat Trout (April and May), flows will meet the thresholds and therefore not result in an effect to fish and fish habitat due to the Project. However, due to reduced flows exceeding the thresholds during already naturally low flow periods on the hydrograph (November to March) and during summer low flows (July to September), overwintering and rearing potential of habitat below the Main Sediment Pond will be lost. This loss in habitat function will require offsetting to compensate for the loss in fish habitat use." However, it appears that not all possible avoidance and mitigation strategies have been applied.	29-Apr-24
FISH-28	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-036	Chapter 12	12.5.4	Update the offsetting plan to address the comments provided by DFO in the Context and Rationale column.	"The significance of the loss of instream habitat due to mine design is rated as significant. The Project will result in direct habitat loss due to mine design, removing 31,928 m2 of high value Westslope Cutthroat Trout habitat, as well as habitat used by Bull Trout in WAL1. The Westslope Cutthroat Trout occupying this section of the Fish and Fish Habitat LSA are suspected to be a resident population using this habitat for all life stages. How the removal of this home range will impact the potential population and how they use habitat in the rest of the Fish and Fish Habitat LSA is unknown. Any direct habitat losses (as classified under HADD) will need to be compensated for in an offsetting strategy. Offsetting measures will need to ensure the Project's effect on fish and fish habitat in West Alexander Creek, due to HADD, results in no-net loss of available habitat to both fish and benthic invertebrate communities. Thus, resulting in no net loss of instream habitat due to the Project renders the significance of the	29-Apr-24

FISH-29	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-037, IAAC_FFH_08	Chapter 12	12.6	Should there be residual project-related effects to Westslope cutthroat trout (WCT) as suggested in Section 12.5.3.19 , those residual effects must be carried forward to assess the cumulative impacts to WCT.	The residual effects of habitat loss are not carried through the cumulative effects assessment because the EIS concludes that there will not be a net loss of habitat in the Aquatic RSA. The conclusion assumes that the loss of WCT habitat will be fully offset; however, Section 12.5.3.19 acknowledges a low confidence that destruction of a resident WCT population's habitat can be adequately offset and claims that this decision resides outside of the scope of this assessment. Per the Technical Guidance for Determining Whether a Designated Project is Likely to Cause Significant Adverse Environmental Effects under the Canadian Environmental Assessment Act, 2012, mitigation measures are the elimination, reduction or control of the adverse environmental effects of a project and include restitution for any damage to the environment caused by those effects through the replacement, restoration, compensation or any	29-Apr-24

FISH-30	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-038	Chapter 12	12.6.3	Add the present cumulative effects from Elkview Operations that are present in the Grave Creek watershed. These include: (1) calcification - Dry Creek, a tributary to Harmer Creek in the Grave Creek watershed is one of the most heavily calcified streams in the Elk Valley (Smit and Robinson 2023). Furthermore, the most recent monitoring report indicates that no remediation has been completed to date and that conditions are continuing to deteriorate. Smit, R. and M.D. Robinson. 2023. Teck Coal Ltd. 2022 Calcite Monitoring Program Annual Report. Prepared for Teck Coal Ltd. by Lotic Environmental Ltd. 48 pp + appendices. Report available on teck.com . (2) In the Grave Creek subpopulation, specific concerns related to westslope cutthroat trout recruitment, or the addition of new individual fish to a population as a result of successful reproduction, have been identified (Harmer Creek Evaluation of Cause Team 2023). Those recruitment concerns are: In the Harmer Creek subpopulation, reduced recruitment in the 2017, 2018 and 2019 spawn years, with the magnitude of reduced recruitment in 2018 significant enough to constitute a recruitment failure; and In the Grave Creek subpopulation, reduced recruitment in the 2018 spawn year. The Harmer Creek Evaluation of Cause Team (2023) concluded that selenium concentrations, which have increased in recent years, were one of the factors that contributed to the reduced west slope cutthroat trout recruitment within the Harmer Creek. Harmer Creek Evaluation of Cause Team. 2023. Evaluation of Cause – Reduced Recruitment in the Harmer Creek Westslope Cutthroat Trout Population. Report prepared for Teck Coal Limited. Available on teck.com. (3) Harmer Dam currently undergoing removal.		29-Apr-24
FISH-31	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-039, IAAC_FFH_09	Chapter 12	12.8	Provide more detail regarding the technical feasibility and effectiveness of conducting a salvage of West Alexander Creek and translocating to Alexander Creek or another location. The Mitigation Measures section (Section 12.5.3) states that it will conduct a fish salvage as a mitigative measures and simply concludes in that section that fish mortality will be fully mitigated and therefore the potential effect is not carried forward for further assessment. Although some detail regarding the methods are provided in the Conceptual Fish Habitat Offsetting Plan (Appendix 12-E), this does not address concerns regarding the feasibility and effectiveness of this proposed mitigation measure.	"The potential of the Project to result in fish mortality was found to be not significant. This is due to the ability of the Project to mitigate all potential mortality pathways around aquatic habitats during all Project phases. The primary mitigative measure will be the salvage of fish from all directly impacted areas."	29-Apr-24
FISH-32	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-040	Chapter 12	12.8	Provide more details regarding the barrier and the anticipated effects to fish and fish habitat, noting that this barrier is not discussed elsewhere in the chapter. Was this barrier accounted for in the total footprint representing habitat loss?	"In addition, a permanent fish barrier will need to be designed and installed at the confluence of West Alexander and Alexander Creeks"	29-Apr-24

FISH-33	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-042	Appendix 12-B Fish and FIsh Habitat Baseline Assessment	1.1	Provide rationale for why the lowest reaches of Alexander Creek (ALE1 and ALE2) were sampled for fish community (fish use and basic habitat data) but no other data were collected, while the upper reaches (ALE3 to AL6) were not sampled. For habitat data, include a statement about the sensitivity of the habitat to reductions in flow. Channels with a high width-to-depth ratio, braiding, or multiple channels typically contain fish habitat that is very sensitive to flow reductions.		29-Apr-24
FISH-34	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-043	Appendix 12-B Fish and FIsh Habitat Baseline Assessment	2	Provide a single summary table listing all fish sampling sites, the rationale for site selection, and the data collected (i.e. spring and fall spawning habitat, overwintering habitat, Level 1 Fish Habitat Assessment Procedures, Fish and Fish Habitat Inventory Standards and Procedures, fish community, calcite assessment, periphyton sampling, benthic invertebrate sampling).		29-Apr-24
FISH-35	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-044	Appendix 12-B Fish and FIsh Habitat Baseline Assessment	2.3.1	Provide additional information regarding the methods used to determine fish presence and the rationale for method use (e.g. were multiple fishing methods used at all site deemed non fish-bearing?; was sampling conducted over different seasons?; how was seasonal timing of sampling selected?). In cases where sites were classified as non fish-bearing due to gradient, provide the gradient profile for the watercourse and confirm that no perennial fish habitat exists upstream of gradient barriers. Confirm the specific standard method employed to determine fish-bearing status at each site and describe any deviation that occurred from this method.	"As per the Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators (BC MOE 2016), in order to confirm a site as non-fish bearing it had to be sampled for two consecutive years, both ending in no capture or observations."	29-Apr-24
FISH-36	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-045	Appendix 12-B Fish and FIsh Habitat Baseline Assessment	2.3.1	Provide rationale for why greater electrofishing effort was not deemed necessary. There is potential to miss fish with only one pass of electrofishing, particularly in larger watercourse or in habitat with high instream cover. Additionally, identify the approved methodology that the QEP used (BC Fish Stream ID Guidebook, BC RIC standards for fish collection / fish habitat maps, etc). Provide all information that was used to assign a non-fish bearing designation for any such reaches.	"Electrofishing was completed as a single, open pass over a site length of greater than 100 m or that of 10 times the bankfull width, whichever was longer."	29-Apr-24
FISH-37	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-046	Appendix 12-B Fish and FIsh Habitat Baseline Assessment	2.3.1	Provide rationale for why a second fishing method was employed after fish presence had been established. Why was minnow trapping not employed at sites where electrofishing yielded no catch? Employing a second sampling method can aid targeting of different habitat types and fish lifestages.	"Minnow traps were only deployed when fish were captured during the first pass of electrofishing or when the stream was established as fish bearing."	29-Apr-24
FISH-38	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-047, IAAC_FFH_10	Appendix 12-B Fish and FIsh Habitat Baseline Assessment	2.3.3	Provide rationale for why fall spawning surveys were not conducted in other reaches of Alexander Creek and West Alexander Creek. Given the connectivity through these watercourses, it appears that spawning potential exists outside ALE10 and WAL1.	"Fall spawning surveys were initially conducted at ALE10 and WAL1 since juvenile BT and EB (fall spawning species) were observed within these reach.... A follow-up survey was completed from September 23-25, 2019 to include ALE7."	29-Apr-24

FISH-39	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-048	Appendix 12-B Fish and FIsh Habitat Baseline Assessment	2.3.4	Provide more information on overwintering survey methods. For the reaches listed, was the full length of each reach surveyed. Were pool habitat sites identified prior to snow cover and these sites then assessed for the overwintering survey? Clarify if specific sites were selected prior to snow cover to identify pools. Site ALE9 is mentioned in the results but not listed as a site in the methods.	"Overwintering surveys were conducted in the upper portions of the Alexander Creek watershed where safely accessible. ALE7, ALE8, ALE10, WAL1d/s, WAL2, and UTG2-1 (selected based on Figure 2) were all surveyed for overwintering potential on March 14, 2014."	29-Apr-24
FISH-40	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-049	Appendix 12-B Fish and FIsh Habitat Baseline Assessment	2.3.4	Provide rationale as to the adequacy of a one-day survey to characterize overwintering habitat in the LSA. This is particularly important given the influence of overwintering habitat on WCT stocks in the region.	"ALE7, ALE8, ALE10, WAL1d/s, WAL2, and UTG2-1 (selected based on Figure 2) were all surveyed for overwintering potential on March 14, 2014."	29-Apr-24
FISH-41	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-050	Appendix 12-B Fish and FIsh Habitat Baseline Assessment	2.3.5	Provide further information on the spatial extent of the fishing, snorkel, and spawning surveys in West Alexander Creek. Did the surveys cover the full extent of all fish-bearing reaches?		29-Apr-24
FISH-42	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-051	Appendix 12-B Fish and FIsh Habitat Baseline Assessment	3.1	Clarify how the average gradient of 0.89% was calculated, and what field measurement techniques and equipment were used.	“Reach 7 has a low average gradient of 0.89% and is categorized as a riffle-pool morphology.”	29-Apr-24
FISH-43	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-052	Appendix 12-B Fish and FIsh Habitat Baseline Assessment	3.1	Provide the measured or estimated height and length of these falls.	“Alexander Creek Reach 11 begins at a long bedrock falls, which was determined to be a barrier to fish migration and is considered a reference reach as it is upstream of mine impacts. These falls have resulted in a gradient greater than 20% for 20 m, limiting fish access into ALE11.”	29-Apr-24
FISH-44	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-053	Appendix 12-B Fish and FIsh Habitat Baseline Assessment	3.3.4	Clarify why depth was not recorded for pool habitat.	“Depth and velocity were recorded for glide habitat….riffle habitat”.	29-Apr-24
FISH-45	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-054	Appendix 12-B Fish and FIsh Habitat Baseline Assessment	3.4	Clarify this statement. How much higher were the calcite levels than the mean values measured elsewhere in the Elk River watershed? Are these the calcite levels that the proponent will use for baseline monitoring to identify any additional calcite deposition after the onset of mining?	"A low amount of calcite was observed in ALE7, ALE8, and ALE9 (Table 15). The amount observed is higher, but within range for reference streams (i.e. no upstream mining) within the Elk River watershed."	29-Apr-24
FISH-46	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-055	Appendix 12-B Fish and FIsh Habitat Baseline Assessment	3.5	Provide any additional information that may aid in interpreting these results (e.g. was there any change noted between sampling years for factors such as physical habitat features, flow levels, specific sampling location, recent or seasonal weather patterns etc.?) Additionally, the opposite result was recorded in Grave Creek, where specimen abundance was considerably higher in 2014 compared with 2017.	“There were more than twice as many invertebrates collected in samples from 2017 at ALE7, ALE8, and ALE10 compared with samples in 2014.”	29-Apr-24

FISH-47	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-056	Appendix 12-B Fish and FIsh Habitat Baseline Assessment	5.2	Provide more data on how wetlands were assessed as non fish-bearing. For example, W17 has an outflow and water depth to 0.3 m. The wetland was sampled with only one method, on one occasion. Could there be a connection to fish habitat during higher flows?		29-Apr-24
FISH-48	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-057, IAAC_FFH_11	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	1	Provide a more detailed description of the offsetting measures and how those measures would counterbalance negative effects to fish habitat. Data gaps remain which limit the ability to determine whether there are effective means of mitigating (offsetting) the predicted significant adverse effects on fish habitat. The description of the offsetting measures should include, but not be limited to, the following: • A description of the effectiveness of the offsetting plan i.e. an equivalency analysis that demonstrates how the offsetting plan will fully counterbalance the loss of the WCT spawning, rearing, and overwintering habitat in West Alexander Creek; • Plans and descriptions of proposed permanent structures (e.g. culverts and bridges) and a detailed evaluation of their benefit to fish and fish habitat; • A detailed description of the habitat condition and function, food supply and hydraulic conditions in Brule Creek; • A detailed description of the data and analysis used to determine the technical feasibility of establishing a self-sustaining WCT population upstream of the falls in Brule Creek;	A high degree of uncertainty remains regarding the technical feasibility of establishing a self-sustaining Westslope cutthroat trout (WCT) population upstream of the falls in Brule Creek. Without sufficient data and analysis by the proponent on habitat condition and function, food supply, and in particular, hydraulic conditions, DFO will be unable to provide advice on whether this offset would be an effective measure to offset the destruction of WCT habitat. DFO also recommends that you obtain written support from the Province of British Columbia (the government agency responsible for management of this freshwater population) and Indigenous communities to support the permitting process.	29-Apr-24
FISH-49	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-058, IAAC_FFH_12	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	2.2.1	Provide more detail regarding the technical feasibility and effectiveness of conducting a salvage of West Alexander Creek and translocating to Alexander Creek or another location. In order to assess the feasibility and effectiveness of the proposed fish salvage, provide more detail regarding the predicted outcome of the fish salvage (e.g. expected fish mortality, change in fish density in the receiving habitat). The offsetting plan states that fish salvage impacts to the fish population in the receiving environment are not expected due to the low numbers of transferred fish. However, no data are provided to support this assertion. The proponent must demonstrate that the proposed receiving waterbody is historically under-stocked, and that the movement of fish will result in the long-term augmentation of the population. Otherwise, if the receiving waterbody is at carrying capacity, competition for limited resources will result in death of the transplanted fish, or death of fish that are already there. Support from the Province and Indigenous communities is required before this mitigation measure to avoid death of fish can be applied.		29-Apr-24

FISH-50	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-059	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	2.2.1	Clarify whether the barrier that is proposed to be installed at the confluence of West Alexander and Alexander creeks will be permanent or semi-permanent. The proponent refers to a "semi-permanent barrier" in the Offsetting Plan, while the Summary and Conclusions section (Section 12.8) of the Fish and Fish Habitat Assessment (Chapter 12) refers to a "permanent barrier". No further details are provided regarding this barrier.	"A semi-permanent fish barrier (e.g., a fish fence or steel weir with a fish screen to prevent upstream movement) will be installed at the downstream extent of West Alexander Creek at the confluence with Alexander Creek, with an additional exclusion net installed approximately 100 m upstream of the barrier."	29-Apr-24
FISH-51	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-060	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	2.2.1	Clarify how it will be determined whether or not multiple seasons are needed to fully salvage West Alexander Creek.	"Salvages will be conducted in multiple seasons as needed, to allow for any young-of-year or fry missed during the original salvage to mature, as they may evade capture due to their ability to hide in the interstitial spaces of coarse substrates."	29-Apr-24
FISH-52	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-061	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	2.2.1	Provide details regarding follow-up monitoring and how effectiveness of the salvage and relocation will be determined (e.g., success criteria).		29-Apr-24

FISH-53	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-062	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	3.2.1	Update the section with a summary of the local fisheries management objectives and restoration priorities that were identified for the Elk Valley Region. Prior to updating, it is recommended: i) that the proponent familiarize themselves with, the *Management Plan for the Westslope Cutthroat Trout (Oncorhynchus clarkii lewisi), British Columbia Population, in Canada* (DFO 2017), which establishes goals and objectives for management of the species. The overarching management goal is the long-term persistence of the species within its native range. The management objectives include: to maintain the native distribution and genetic diversity of populations; to maintain wild populations at abundance levels that prevent at-risk status assessment; and to maintain, or rehabilitate, the capacity of natural habitat to meet abundance targets for populations. Westslope cutthroat trout, British Columbia population was designated as Special Concern due to concerns regarding the introduced species (hybridization and competition), habitat loss and degradation, and increasing exploitation. ii) that the proponent engage with Indigenous peoples potentially affected by the offsetting plan. DFO notes that the section refers to engagement with regulators and other local groups (i.e., stakeholders), but there is no mention of early engagement with Indigenous peoples (i.e., rights holders). The following section states that "no specific feedback on fish habtiat offsetting has been provided to NWP by Indigenous communities", but it is not clear that the proponent solicited feedback on the offsetting plan. In preparing an offsetting plan, the *Policy for Applying Measures to Offset Adverse Effects on Fish and Fish*			29-Apr-24
FISH-54	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-063	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	3.2.2	Clarify whether feedback was solicited from Indigenous groups regarding the offsetting plan.	"No specific feedback on fish habtiat offsetting has been provided to NWP by Indigenous communities." DFO recommends that the proponent engage with Indigenous peoples potentially affected by the offsetting plan. In preparing an offsetting plan, the Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act (DFO 2019) highlights the importance, and good practice, for proponents to engage Indigenous peoples early in the planning phase of the offsetting plan. Indigenous peoples and the knowledge of the Indigenous peoples of Canada can inform the design of measures to offset residual effects on fish and fish habitat.	29-Apr-24

FISH-55	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-064	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	3.2.3	Update Table 3 to include a summary of any proponent engagement with rights holders (i.e, Indigenous Peoples) on the fish habitat offsetting to date.		29-Apr-24
FISH-56	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-065	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	3.3.2	Provide details regarding the level of effort expended assessing potential offsetting measures in the Alexander Creek watershed. Field assessments were conducted over just three days. In addition, with the exception of the proposed Elk River Side Channel, it appears that the field assessment focussed on sites requiring restoration or enhancement, and not on potential opportunities for habitat creation. While DFO gives priority to offsetting measures that focus on the restoration of degraded fish habitat pursuant to paragraph 34.1(1)(f) of the *Fisheries Act* , habitat creation may be the preferred option in some cases. Per the *Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act* (DFO 2019), offsetting measures are most likely to balance the residual effects when they benefit the specific local fish populations and fish habitat that are affected by works, undertakings or activities. It is preferable that they be located within the vicinity of a work, undertaking or activity or within the same waterbody, or watershed.	"Field assessments were conducted at the following locations within the Aquatic RSA: • Brûlé Creek; • Coal Creek; • Elk River Oxbow; • Elk Valley Heritage Conservation Area (multiple sites); • Hosmer Creek; • Ingham Channel (at Ingham Rest Area); • Morrissey Meadows Conservation Area; and • Weigert Creek. A field assessment was also conducted at the following location within the Fish and Fish Habitat LSA: • Alexander Creek."	29-Apr-24

FISH-57	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-066	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	3.4	i) Provide rationale for the considerable downstream offset habitat gain associated with the crossing replacements. Rutting and compaction of the bed and banks were observed at the fording crossings, as well as a lack of riparian vegetation at and near the crossings. However, there is no information provided regarding the magnitude and extent of the downstream effects of the fording activities, apart from speculation that sedimentation could be occurring downstream of the crossing for at least 100 to 200 m based on a desk-top literature review. Despite the lack of supporting data, the proponent proposes a large habitat gain downstream of the crossings. In order to monitor the effectiveness of the restoration to the downstream habitats, baseline data of the current downstream effects (e.g., sedimentation) that are occurring is required. ii) Clarify how the proposed offsetting measure will increase habitat connectivity given that the current crossings are fordings, not culverts. iii) Provide traffic use data to confirm activity at the crossings (i.e., vehicle types, numbers, and users). The proponent proposes undertaking effectiveness monitoring to confirm that the offsetting habitats are functioning as intended, including installing traffic counters prior to construction to determine the number of vehicles typically fording the creek and comparing to the number of vehicles utilizing the proposed bridge crossings. However, this must be done prior to proposing the crossings as restoration options, in order for DFO to determine whether this would be an effective offsetting measure. iv) Identify if any party is responsible for vehicle access on the forest service road and clarify whether they can implement a vehicle access	"A forest service road runs alongside Weigert Creek, used by hunters and trappers. Two fording crossings were identified through Weigert Creek, which impacts fish habitat through rutting and compaction of the bed and banks from vehicle use, loss of riparian habitat at the crossing due to vegetation removal, and sedimentation of downstream habitat when in use." "Fording crossings may contribute to sedimentation of downstream fish habitat.."	29-Apr-24
FISH-58	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-067	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	3.4	Clarify whether the crossings identified on Grace Creek are the responsibility of CanWel. Per Principle 3 of the *Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act* (DFO 2019), the restoration of orphaned sites (those with no known responsible party or owner or with no possibility of restoration due to company closure, bankruptcy or other similar circumstance) could be considered an appropriate measure; however, restoration of degraded sites, for which the proponent, another person, or an organization is responsible for the environmental damage, should not be considered appropriate measures to offset because such sites should be brought into compliance by the responsible party. It is also important to note, that removal of anthropogenic barriers to fish migration must not provide opportunites for the introduction of non-indigenous species. For Grave Creek, barriers in the lower section of the creek are the reason that the isolated pure-strain population in the upper watershed has persisted. DFO acknowledges that additional work is required to determine how much credit would be given for this type of barrier removal.	"To improve habitat connectivity within Grace Creek, NWP is proposing to replace current road crossing structures downstream of the railway to restore habitat connectivity to Grace Creek." "The proposed Grace Creek crossing replacements are located within CanWel's land tenure. NWP has an ongoing relationship with CanWel, has permission from CanWel for land access and land use, and expects to be able to get an agreement in place for the proposed offsets."	29-Apr-24

FISH-59	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-068	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	3.4	Provide an assessment of the feasibility of the proposed offsetting measure.	"Prior to the introduction of any WCT to Brûlé Creek, a detailed feasibility study will be conducted pending Project approval to determine whether a population of WCT can be sustained long-term within the watercourse." A high degree of uncertainty remains regarding the technical feasibility of establishing a self-sustaining Westslope cutthroat trout (WCT) population upstream of the falls in Brûlé Creek. Without sufficient data and analysis by the proponent regarding the habitat condition and function, food supply, and in particular, hydraulic conditions, DFO will be unable to provide advice on whether this offset would be an effective measure to offset the destruction of WCT habitat.	29-Apr-24
FISH-60	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-069	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	3.4	Clarify whether the restoration of the degraded habitat is the responsbility of Garrett Ready Mix or another organization.	"Scour leading to bank collapse at the Garrett Ready Mix operation site on the left downstream bank caused deposition of concrete and asphalt and other deleterious materials on the slope of the bank, further confining the Elk River. The banks of the side channel consist of silty deposition material (downstream right bank) and the heavily scoured, debris covered bank lacking riparian vegetation."	29-Apr-24
FISH-61	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-070, IAAC_FFH_13	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	3.4	Provide a more detailed assesment of the feasibility of the proposed offsetting measure. It appears that the conclusion that the offsetting measure will be feasible is contingent on important analyses that have not yet been conducted.	"Creation of a permanent bed and banks of the channel of the watercourse will require analysis of substrate and underlying geology, a review of the anticipated hydroperiod to accommodate snow-melt runoff and dry periods in the fall, and the quantification of available habitat upstream and downstream of the proposed channel restoration area. With proper analysis and engineering it is anticipated that the restoration of the wetted channel and associated habitat will be feasible and long-lasting."	29-Apr-24

FISH-62	Open	5(1)(a)(i) Fish and Fish Habitat	DFO-071	Appendix 12-E Crown Mountain Conceptual Fish Habitat Offsetting Plan	4	Provide more detail regarding the development of Relative Habitat Values (RHVs). Provide a better understanding of how the RHVs were calculated. A summary table should be provided showing: • initial RHVs of the existing and proposed habitat types based on literature, guidance, and professional opinion • the sequence of steps that were factored in to account for uncertainty, time lag, and, in the case of restoration/enhancement offsets, the value of the existing degraded habitat. • final RHVs Given that the intention of the offsetting measures is to countebalance the particular adverse effects associated with the Project, the Proponent should consider the scientific soundness of assigning a final RHV greater than 1.0 for an offsetting measure that does not provide functioning habitat for WCT. Further guidance regarding determining the amount of measures to offset is provided in the *Policy for Applying Measures to Offset Adverse Effects on Fish and Fish Habitat Under the Fisheries Act* (DFO 2019)	29-Apr-24
FISH-63	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-13, IAAC_FFH_14	Executive summary	E.7.7.2	The loss of fish habitat in West Alexander is significant, however it sounds like there is limited offsetting opportunities in the LSA. The alternative design (fig 2.5.1) called saddle mine rock placement avoided West Alexander altogether and may be a preferable option. Can more information be provided about the potential design of that option, and the limitations of that design?	29-Apr-24
FISH-64	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-14	Executive summary	E.7.7.2	On page 46 it says the potential of the Project to result in fish mortality was found to be not significant as the main mitigation is a fish salvage and barrier. West Alexander is fish bearing for >5km (reaches 1 and 2). How will fish be captured and transported for relocation in a way to ensure no fish mortality? It is well known that salvage programs result in mortality- Teck's Upper Fording River Westslope Cutthroat Trout Fish Handling Evaluation (2020) discusses a possible mortality rate of 27% for salvage and relocation programs. Also, the Appendix 12E says the salvage will be done 100 m at a time, how will it be managed to ensure fish are not overshocked through multiple passes iof the same area?	29-Apr-24

FISH-65	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-15	12. Fish and Fish Habitat	12.3 Regional overview	Page 30 says "Although many healthy WCT populations persist in the East Kootenay, the species faces severe reductions to distribution and abundance throughout its range due to over-harvest, habitat fragmentation and degradation, water quality impacts, hybridization and competition with non-native salmonids, and climate change impacts to streamflows and thermal regimes (Davidson et al., 2018)." Habitat fragmentation and degradation is one of the main causes of WCT population decline and the Project is proposing to remove 6 km of habitat in West Alexander. The telemetry data on page 12-55 of Chapter 12 shows that West Alexander population are fluvial residents and are likley not moving into Alexander Creek. Grave Creek also had a reported WCT population decline which led to the fishery closure. Impacts to WCT should be avoided or greatly minimized to avoid additional cumulative effects in the region. Further to the above comment West Alexander (WAL1) was unique that WCT fry were captured and it had the highest fish density (14/100m3) of all sites. This further shows the improtance of West Alexander for fish use and highlights the importance of protecting this creek.	29-Apr-24
FISH-66	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-18	12. Fish and Fish Habitat	Fig 12.5-2	The figure 12.5-2 shows fish habitat that will be lost. In the subset image the red line should be extended to the reach break with UWA2 as WAL2 is fish bearing. Currently it looks like WAL2 is not fish bearing	29-Apr-24
FISH-67	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-19	12. Fish and Fish Habitat	Figure 12.5-4	This figure is comparing predicted flows to the 20% MAD threshold. It appears the figure is using average flows. Flows should be shown for low flow and high flow years as well.	29-Apr-24
FISH-68	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-20, IAAC_FFH_14	12. Fish and Fish Habitat	12.5.4.2.2	Water use and availability is of great concern to KNC in the Elk Valley. What are the impacts of water use and water management on flows in Michel Creek and the Elk River, which already have significant withdrawals permitted? The cumulative effects assessment in chapter 10 (as summarized in chapter 12) stated that water withdrawals do not pose a signficant risk to flows in the area. The Kootenay Boundary Water tool shows that Michel Creek immediately downstream of Alexander is showing a moderate flow sensitivy in March (i.e % MAD is less than 20%).	29-Apr-24

FISH-69	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-21	Executive summary & Chapter 12	12.5.4.2.4	The project has a significant risk for aggradation from the changes in flows. The executive Summary acknowledges this and states that "The section of Alexander Creek below the confluence with West Alexander Creek is less resilient to changes in flow and sediment load and could become aggraded. While the effects of potential changes in geomorphology do not pose substantial risk to fish and fish habitat, continued monitoring will be required to ensure sediment and erosion plans are effective in mitigating the potential risk posed by the Project activities to geomorphology below the confluence". The risk of aggradation is very serious as it can significantly impact fish migration and reduce overwintering habitat that is already limited in the LSA, particulary when combined with changes in the hydrograph due to mining ,water management, and water use activities. Simply monitoring for aggradation is not enough. What steps will be taken to reduce the risk of an aggraded channel and mitigate the aggradation if monitoring is showing that it is occurring?		29-Apr-24
FISH-70	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-24, IAAC_FFH_15	Appendix 12E		Salvages are never 100% successful and fish suffer post salvage injuries and mortalities that reduce their survival after relocation. Moreover, fish may not thrive in the relocated habitat. This should be considered in the HADD and accounted for in offsetting.		29-Apr-24
FISH-71	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-170	12. Fish and Fish Habitat	12.4.1	It appears that the baseline data relied upon in the application from third-parties is not recent (i.e., some collected prior to 2015). The EIS should include more recent sampling that verifies that the older data are still representative, and also should incorporate more recent available baseline data (for example, data collected and reported on by Teck) to support the effects assessment. It is important to include a more recent snapshot of the state of the envrionment.		29-Apr-24
FISH-72	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-173		Appendix 22-B Addendum to HHERA: Supplementary Assessment of Selenium	Provide a comparison of trophic transfer of selenium from benthic invertebrates to fish species that are considered in the study area (i.e., westslope cutthroat trout, bull trout, burbot, and mountain whitefish). If variability among species is found, include a sensitivity analysis.	The approach used to predict egg tissue concentrations for the assessment assumes that trophic transfer of selenium from benthic invertebrates to fish is similar among the fish species that are considered in the study area (i.e., westslope cutthroat trout, bull trout, burbot, and mountain whitefish). While Teck in the EVWQP assumed similar assimilation between brown trout and WCT to derive the benchmarks, assimilation by other fish species was not assessed, and is considered a shortcoming of the approach.	29-Apr-24

FISH-73	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-174		Appendix 22-B Addendum to HHERA: Supplementary Assessment of Selenium	The assessment of surface water downstream of proposed sedimentation ponds has not considered organo-selenium generation, nor has this current assessment presented in Appendix 22-B. This is a major short-coming of the risk assessment. Conduct a robust sensitivity analysis of the potential for organo-selenium generation and the implications on fish egg tissue concentrations or provide more robust rationale for its exclusion.	The approach to predicting egg tissue concentrations assumes that the selenium in the receiving environment is predominantly in the form of selenate. For example, the aqueous concentrations of selenate in the samples used in the development of the EVWQP and subsequent models exceeded 98% of total selenium. However, it has been observed that the generation of organo-selenium species in sedimentation ponds enhances organo-selenium generation to levels that pose risk to fish species (i.e., exceed tissue-based benchmarks).	29-Apr-24
FISH-74	Open	5(1)(a)(i) Fish and Fish Habitat	YQT-22	CHAPTER 12 - FISH AND FISH HABITAT ASSESSMENT		Provide more information on the importance of West Alexander Creek for spawning (WCT and BT) compared to Upper Alexander Creek. Redds and WCT fry were observed in West Alexander Creek indicating it is used for spawning; however, there's less information on confirmed spawning in Upper Alexander Creek, and the fish inventory data in Appendix 12B doesn't show fry being captured at other locations. The discussion on West Alexander Creek focuses on Westslope cutthroat trout; however, Appendix 12B indicates that bull trout were also observed. Does West Alexander Creek also provide spawning habitat for BT? Is the resident WCT population in West Alexander Creek genetically unique? Fish salvage in advance of infilling by the MRSF is proposed, with captured fish released in Alexander Creek. Has there been any consideration as to the carrying capacity of the habitat in Alexander Creek to which the WCT will be relocated? It is not clear if the Grave Creek Reservoir will be located on the stream or off-stream. If on-stream, will the reservoir be designed to allow fish passage along Grave Creek past the reservoir?	The Project footprint overlaps with two watersheds: Alexander Creek and Grave Creek. The principal overlap is within the Alexander Creek watershed, where the mine footprint overlaps with most of West Alexander Creek. Access roads and some project components are in the Grave Creek watershed. Upper Alexander Creek and West Alexander Creek support Westslope cutthroat trout and bull trout. Westslope cutthroat trout include two life-histories – a resident population that spends its entire lifecycle in West Alexander Creek, and a larger, fluvial population that migrates between the Elk River and West Alexander and Alexander Creek to spawn. There are no permanent barriers in West Alexander or Alexander Creeks and fish have the potential to move freely throughout the watershed. Bull trout are also likely an adfluvial migratory life history and use Alexander Creek for spawning and juvenile rearing. An isolated, resident Westslope	29-Apr-24

FISH-75	Open	5(1)(a)(i) Fish and Fish Habitat	Piikani-20	Chapter 12	12.5.4.2.2	It is unclear how the Proponent has accounted for total habitat lost due to effects of reduced flows in West Alexander Creek, below the Main Sediment Pond. The text indicates that all of West Alexander Creek requires offsetting but Figure 12.5-2 only shows fish habitat loss to the end of the Main Sediment Pond. Figures showing the total estimated loss of fish habitat are likely an underestimate, as they appear to only account for West Alexander Creek to the outlet of the Main Sediment Pond (Figure 12.5-2). The remaining section of West Alexander Creek, below the Main Sediment Pond is likely to experience signficant lack of function due to a combination of effects from the Project. This includes: -potential substrate cementation from increased calcite concentrations, reducing productivity of benthic invertebrates and availability of spawning gravel substrates. -increased sedimentation and generally impaired water quality -reduced water quantity, including at site WAL1d/s, where mean flows are expected to be reduced by significant amounts, including by >60% in June, after WCT spawning has occured and sensitive swim-up fry stage are expected to be present (Table 12.5-13). If this area hasn't been accounted for in offsetting calculations, it is necessary that the Proponent increase the area of estimated habitat loss, to include the in-stream portion of West Alexander Creek to the confluence with Alexander Creek.		29-Apr-24
FISH-76	Open	5(1)(a)(i) Fish and Fish Habitat	Piikani-21	Chapter 12 and Appendix 12-E	15.5.3.1.9	The substantial loss of fish habitat is not being adequately compensated by the conceptual offsetting plan. There are high quality rearing, spawning, and overwintering habitat in West Alexander Creek (Figures 12.4-13, 12.4-14 and 12.4-16). These are areas of high importance for both WCT and bull trout as spawning and overwintering habitat may be limiting factors for these species. Furthermore, there are signficant deficiencies in the proposed offsets (Appendix 12), with a high focus on creating off-channel habitat in the Elk River, or fish introductions in higher order, non-alpine streams (i.e. Brule Creek). These habitats are very different than what is being lost and cannot be considered reasonable replacements. It is necessary for the Proponent to engage in substantial dialogue with Piikani to inform and develop an improved offsetting plan. Furthermore, given the irreplaceable nature of fish habitat that would be destroyed if this Project advances, there is a need for the Proponent to consider a multitude of approaches, beyond simply creating habitat offsets. Piikani recomends that offsetting strategy therefore must include funding for fisheries research and Guardians programs in the area (in addition to more standard habitat-based enhancements/offsets).		29-Apr-24

FISH-77	Open	5(1)(a)(i) Fish and Fish Habitat	Piikani-24	Chapter 12	12.2.3.1	Portions of Harmer Creek above Harmer Pond are not included in LSA despite the presence of roads which would extend along the western side of the creek. This includes some crossings of tributaries (Figure 12.2-1 page 25). Piikani requests that these areas be included within the LSA. Standard baseline assessments and mitigation measures should be applied within these areas.		29-Apr-24
FISH-78	Open	5(1)(a)(i) Fish and Fish Habitat	Piikani-25	Chapter 12	12.4.2.2.1	Has the Proponent assessed the potential for loss of genetic diversity associated with the destruction of West Alexander Creek?	The WCT in West Alexander Creek represent a unique life-history strategy, overwintering and spawning in this area. This subpopulation also likely represent a unique genetic structure. The Project will likely result in a total loss of these resident fishes.	29-Apr-24
FISH-79	Open	5(1)(a)(i) Fish and Fish Habitat	Piikani-26	Chapter 12	12.4.2.2.1	Given the high amount of fish habitat being affected by the Project, it is important to understand what habitat types are limiting within the LSA. This information is crucial to understand how changes to the aquatic ecosystem will effect fish populations. Piikani requests that the Proponent undertake research to evaluate what habitat types are limiting for WCT and bull trout within the LSA. This requires the detailed characterization of spawning, rearing, and overwintering habitat for both species within the LSA. The Proponent must also conduct an analysis of how these habitat types will be affected by the Project should be undertaken. Then efforts to mitigate and/or offset these changes should be included as part of the offsetting plan to ensure that there are no population level effects from habitat-type bottlenecks.		29-Apr-24
FISH-80	Open	5(1)(a)(i) Fish and Fish Habitat	Piikani-27	Chapter 12	12.5.2.2.7	Drawing on the information of habitat type requested above (e.g. spawning/rearing/overwintering), the Proponent should evaluate potential for overlapping areas of calcite formation and spawning habitat for WCT or Bull trout. This is important as calcite formation would be highly detrimental to spawning, and additional mitigation measures would be required where this occurs. Part of the solution for this issue can be to ensure treatment of effluent to a calcite saturation index to below 0.5 prior to discharge.		29-Apr-24
FISH-81	Open	5(1)(a)(i) Fish and Fish Habitat	SB-56	Chapter 12 - Fish & Fish Habitat Assessment	Section 12.4.2.2.	This section states that "spawning occurs in Reach 1 of West Alexander Creek: Spawning may occur in other reaches, but continued assessment would be required to confirm this. Additional studies are required to confirm this observation; and fluvial resident fish likely spawn in Upper Alexander Creek." It should be known where all of the spawning occurs within the LSA and especially within the project footprint. When will the additional spawning surveys be completed?		29-Apr-24
FISH-82	Open	5(1)(a)(i) Fish and Fish Habitat	SB-64	Chapter 12 - Fish & Fish Habitat Assessment	Section 12.4.2.1.1.	This section states that twenty-two lotic sites were surveyed for fish and fish habitat within Alexander Creek, West Alexander Creek, four unnamed tributaries on West Alexander Creek. Clarify which of these sites were within the regional study area, local study area or project area.		29-Apr-24

FISH-83	Open	5(1)(a)(i) Fish and Fish Habitat	SB-65	Chapter 12 - Fish & Fish Habitat Assessment	Section 12.4.2.1.1.	This section states that Alexander Creek Reaches 10 and 11 and Grave Creek Reach 4 were considered reference areas for the Project since they are upstream of potential aquatic effects that may result from the Project (Figure 12.4-5). Clarify whether these sites influenced by other mining operations.	29-Apr-24
FISH-84	Open	5(1)(a)(i) Fish and Fish Habitat	SB-69	Chapter 12 - Fish & Fish Habitat Assessment	Section 12.4.2.1.1.	This section states that in order to confirm a site as non-fish bearing, it had to be sampled for two consecutive years resulting in no captures or observations but it also says that the fish sampling occurred in 2014 and 2017, although later in the section it says that Lotic Environmental completed the assessments for two consecutive years. This is confusing, which years were the two consecutive years?	29-Apr-24
FISH-85	Open	5(1)(a)(i) Fish and Fish Habitat	SB-70	Chapter 12 - Fish & Fish Habitat Assessment	Section 12.4.2.1.1.	Overwintering fish survival relies heavily on water temperature; therefore, 1°C was set as the lower threshold of a “good” thermal habitat range. However, at this temperature WCT are barely able to swim. Provide additional rationale for this selection.	29-Apr-24
FISH-86	Open	5(1)(a)(i) Fish and Fish Habitat	SB-75	Chapter 12 - Fish & Fish Habitat Assessment	Section 12.4.2.1.1.	Clarify methodology for minnow trapping in wetlands: How many times were the minnow traps placed in the wetlands overnight and how many minnow traps were placed on each occurrence? How big were the wetlands? Where were the traps placed? Minnow trapping is limited in its effectiveness at detecting fish unless several minnow traps are placed for several days.	29-Apr-24
FISH-87	Open	5(1)(a)(i) Fish and Fish Habitat	SB-78	Chapter 12 - Fish & Fish Habitat Assessment	Section 12.4.2.2.	Why is the likely presence of fish not discussed in Unnamed West Alexander Creek 1 b Reach 1? It is not steep and is connected to a fish bearing water body.	29-Apr-24
FISH-88	Open	5(1)(a)(i) Fish and Fish Habitat	SB-81	Chapter 12 - Fish & Fish Habitat Assessment	Section 12.4.2.2.	The section states that "the gradient barrier and frequent dewatering of WAL3 was noted to prevent fish migration into WAL4 within West Alexander Creek, which was also confirmed to be fish bearing". Does this sentence mean that fish were present in WAL4 or Alexander Creek?	29-Apr-24
FISH-89	Open	5(1)(a)(i) Fish and Fish Habitat	SB-84	Chapter 12 - Fish & Fish Habitat Assessment	Section 12.4.2.2.	This section states that "spawning occurs in Reach 1 of West Alexander Creek: Spawning may occur in other reaches, but continued assessment would be required to confirm this. Additional studies are required to confirm this observation; and Fluvial resident fish likely spawn in Upper Alexander Creek." Again, it should be known where all of the spawning occurs within the LSA and especially within the project footprint. When will the additional spawning surveys be completed?	29-Apr-24
FISH-90	Open	5(1)(a)(i) Fish and Fish Habitat	SB-89	Chapter 12 - Fish & Fish Habitat Assessment	Section 12.4.2.2.	This section discusses sediment quality in wetlands and sends the reader to Appendix 12-D for information on metals and PAH results. Does this mean that there were no exceedances in these parameters?	29-Apr-24

FISH-91	Open	5(1)(a)(i) Fish and Fish Habitat	SB-93	Chapter 12 - Fish & Fish Habitat Assessment	12.5.2.2.5	This section states that "decommissioning of the Main Sediment Pond has the potential to affect surface water quality in the receiving environment by the continued leaching of metals into the receiving environment". How will this leaching be mitigated? Will the Main Sediment Pond really remain active into the post closure phase until water quality objectives are met? Indefinitely? Will additional water quality measures not be employed rather than continuing water quality monitoring indefinitely?	29-Apr-24
FISH-92	Open	5(1)(a)(i) Fish and Fish Habitat	SB-94	Chapter 12 - Fish & Fish Habitat Assessment	12.5.2.2.7	Similar to above, this section indicates that "calcite will continue to leach from contact water in the West Alexander Creek Mine Rock Storage Facility. With the decommissioning of the Main Sediment Pond, calcite could pose a potential long-term threat to streambed structure downstream of the Project footprint. What mitigations will be in place to ensure this does not occur?	29-Apr-24
FISH-93	Open	5(1)(a)(i) Fish and Fish Habitat	SB-97	Chapter 12 - Fish & Fish Habitat Assessment	12.5.4.1.3	This section states that if contaminants were found not to be bioaccumulative they were excluded from the detailed assessment. Was this decision based on a specific protocol? Some contaminants like nitrate, may not be accumulative but can be very toxic.	29-Apr-24
FISH-94	Open	5(1)(a)(i) Fish and Fish Habitat	SB-208	Chapter 24 Shuswap Band (Kenpesq't)	24.2.5	Cite the specific baseline fish community study mentioned here.	29-Apr-24
FISH-95	Open	5(1)(a)(i) Fish and Fish Habitat	SB-209	Chapter 24 Shuswap Band (Kenpesq't)	24.2.5	Cite the specific surveys referenced here. Shuswap Band requests that these surveys and assessments be shared.	29-Apr-24

FISH-96	Open	5(1)(a)(i) Fish and Fish Habitat	ECCC-IR-76	6.3.1 Fish and Fish Habitat	12.5	Clarify which thresholds are used to characterize the significance of the predicted water quality changes; and If BC water quality guidelines are to be used as a threshold for significance, present rationale as to why the identified exceedances are not considered significant.	Page 12-79 of the EIS/A states “B.C. WQG [water quality guideline] for the protection of aquatic life is the threshold for significance for fish and fish habitat health.” (p. 12-79). ECCC notes that typically, significance is based on the integration of the six residual effects criteria (CEAA 2018). However, if it is based on the BC WQG as stated in Section 12.5.1 of the Application, it is unclear why the changes in water quality to Fish and Fish Habitat were determined to be not significant when the EIS/A demonstrates that water quality exceeds BC water quality guidelines in West Alexander Creek (throughout the mine life and post-closure) and in Alexander Creek at AC-3 in 2026 (Appendix 11F). Reference: Canadian Environmental Assessment Agency (CEAA). 2018. Technical Guidance for Determining Whether a Designated Project is Likely to Cause Significant Adverse Environmental Effects under the Canadian	29-Apr-24

FISH-97	Open	5(1)(a)(i) Fish and Fish Habitat	ECCC-IR-77	6.3.1 Fish and Fish Habitat	12.5.4.1.3	Provide additional rationale or revise the characterization of residual effects to Fish and Fish Habitat from changes in water quality, in consideration of uncertainties in the duration, magnitude and geographic extent.	Characterization of residual effects to Fish and Fish Habitat from changes in water quality may be underestimated. Duration may be underestimated: The EIS/A states that the potential effects are “long-term”. “Long-term” is defined as “Effect lasts greater than 19 months and less than 34 years over the course of the Operations, Reclamation and Closure, and Post-Closure phases” (Table 5.3-9). However, the potential for ML/ARD from the MRSF persists beyond the 34-year temporal boundary according to water quality model (Appendix 11F). Furthermore, in Chapter 11, the “Change in Surface Water Quality from Disposal of Mine Rock and Coal Rejects” and the “Change in Surface Water Quality from Surface Water-Groundwater Interactions” were both characterized as “Permanent”. Magnitude may be underestimated: The EIS/A characterization that the magnitude of the effect is “low” because tissue concentrations of	29-Apr-24
FISH-98	Open	5(1)(a)(i) Fish and Fish Habitat	ECCC-IR-85	8.2 Monitoring	33.4.1.5	Include the following information on the aquatic effects monitoring follow up program in the EIS/A: a) frequency of tissue sampling for each organism typeperiphyton, benthic invertebrates, and fish; b) frequency of fish egg sampling; c) the meaning of “periodic as required” and a description of how this frequency of sampling will verify the accuracy of the effects assessment; and d) sampling in Michel Creek, Elk River, and Lake Koocanusa.	It is unclear whether the proposed aquatic effects monitoring program will be able to verify the accuracy of the environmental assessment, determine the effectiveness of mitigation measures, and ensure that effects remain within the range predicted by the assessment. ECCC also notes that the frequency of aquatic health sampling is described as “periodic as required” for Operations through to Post-Closure (Tables 33.4-15 and 33.4-16).	29-Apr-24
FISH-99	Open	5(1)(a)(i) Fish and Fish Habitat	US EPA	12	12.4.2.2.1 paragraph 1	This paragraph discusses selenium concentrations in fish tissues and compares those values to B.C. and U.S. EPA guidelines. Specify what fish tissues were sampled/analyzed (e.g., filet, whole body, egg-ovary), as this is important when determining what guideline with which to compare the values.		29-Apr-24

FISH-100	Open	5(1)(a)(i) Fish and Fish Habitat		US EPA	12	12.4.2.2.4 paragraph 1	This paragraph discusses selenium concentrations in benthic invertebrate tissues and compares those values to B.C. and U.S. EPA guidelines. The U.S. EPA guideline mentioned in this paragraph of 8.5 mg/kg dw is applicable to whole body fish tissues not to benthic invertebrate tissues. Revise for accuracy.		29-Apr-24
MB_01	Open	5(1)(a)(i) Fish and Fish Habitat 5(1)(a)(iii) Migratory Birds	6.1.6.	ECCC IR-01,02,03		Chapter 22 (p.22, 34) Appendix 22-A (p.28, 58-59)	Update the Human and Ecological Risk Assessment to incorporate data from all existing sources, and to include all potential pathways of effects, to inform the assessment of potential adverse environmental effects of the Project on fish and migratory birds. 1. Include biological and health data from existing wildlife monitoring programs in the Elk Valley, BC to inform and provide additional context to the ecological health assessment. 2. Provide additional information to demonstrate how ingestion of benthic invertebrates was evaluated as a source of contaminant exposure to avian receptors from the Project. If ingestion of benthic invertebrates was not evaluated, evaluate this exposure pathway for avian receptor species or provide a justification for why this is not required. 3. Include a comparison of the results of the bioaccumulation modelling of selenium in bird eggs (located on page 28 of Appendix 22A) to the toxicological benchmark for selenium in bird eggs (e.g., 6 µg/g dry weight; BC MOE, 2014) to assess the potential effects to migratory birds as a result of the Project.	The EIS/A Guidelines indicate the assessment of exposure to relevant contaminants of concern for migratory birds should be based on data from existing sources. Table 22.4-1 of the EIS/A outlines the parameters evaluated as part of the ecological risk assessment, and all contaminant data for various receptors of interest (e.g. fish eggs, bird tissue, bird eggs, etc.) appear to be modelled from measured abiotic environmental values (e.g., surface water and soil contaminant concentrations). Biological monitoring data exists for various receptor species sampled in the Elk Valley, BC. For example (but not limited to), selenium tissue data are available for an avian valued component, the American dipper (Cinclus mexicanus) (English et al., 2022; available here: https://doi.org/10.1016/j.envres.2022.112702). Clarification around the potential effects observed (or not observed) in various valued ecological components, specifically related to aquatic-dependent egg laying	29-Apr-24
MB_02	Open	5(1)(a)(iii) Migratory Bir	6.1.6.	ECCC IR-05		Chapter 22 (p	Incorporate potential exposure of contaminants (including selenium) from Project-related water management ponds into the Ecological Risk Assessment for wildlife. Provide a description of mitigation measures that will be implemented to limit migratory birds exposure to water management ponds that may contain elevated concentrations of selenium. Alternatively, provide a rationale for why this is not required.	Ecological health effects were predicted at various assessment nodes throughout the Local Study Area (LSA) and Regional Study Area (RSA). For surface water quality, these nodes are situated at different locations within various watercourses surrounding the Project (e.g. Grave Creek, Alexander Creek, etc). Water management ponds may pose a health risk to fish and migratory birds, since they contain mine contact water with higher concentrations of contaminants than nearby natural waterbodies: however. wildlife	29-Apr-24

MB_03	Open	5(1)(a)(iii) Migratory Birds s.79 SARA	6.1.6, 6.1.7	ECCC IR-07	Chapter 15.6, 15.7.3	Provide additional information on the potential effects of artificial lighting at night, in order to adequately characterize Project effects on migratory birds and bats. Assess light attraction by nocturnal migrants and horizontal light tresspass. Indicate whether any additional mitigation measures are being considered to address these effects, and update the residual effects characterization accordingly.	ECCC notes several deficiencies in the assessment of effects of light on migratory birds and bats, including: •Light attraction by nocturnal migrants (due to nighttime floodlighting of the Project area for nocturnal mining activities) is not considered. •While some light management methods are outlined, including shielding of lights and other considerations to reduce visual impact to humans and to reduce skyglow, significant horizontal light	29-Apr-24
MB_04	Open	5(1)(a)(iii) Migratory Birds s.79 SARA	6.1.6, 6.1.7, 6.1.8	ECCC IR-08, 10, 11	Chapter 15.6	Update the effects assessment to: Provide a description of potential effects on forage availability for insectivorous birds and bats resulting from Project-related changes to insect communities and aquatic ecosystems. Describe the timing windows for road-side brush clearing, as well as the mitigation measures that will be implemented to reduce the mortality of bird and amphibian species at risk from this maintenance activity. Clarify the mortality reduction potential of proposed mitigation measures to reduce mortality from vehicle collisions, and provide an updated characterization of residual effects to migratory birds from vehicle collisions and glass structures that remain after these mitigation measures are implemented.	The EIS/A does not describe changes to insect community structure or biomass reduction from contaminants and changes to aquatic ecosystems, which could impact forage availability for insectivorous bats and birds. ECCC notes that damage to aquatic insect habitat and populations may have adverse effects on a range of insectivorous birds in the region, including Olive-sided Flycatcher, Black Swift and Common Nighthawk. Further, Table 15.6-4 identifies potential Project impacts to bats from changes to prey availability resulting from the loss or degradation of native vegetation, but not from contaminants. The EIS/A indicates that all clearing of vegetation will take place outside of the migratory bird breeding season. It is unclear whether this includes road-	29-Apr-24

MB_05	Open	5(1)(a)(iii) Migratory Birds	6.1.6	ECCC IR-33 Shuswap 150	Ch 15, Appendix 15E	Update the effects assessment to woodpeckers to reflect ECCC technical advice provided in July 2023, or provide a scientific rationale for why the current assessment is representative of effects to all other migratory woodpecker species. Justify the timing for the baseline surveys and detection methodology used in consideration of ECCC technical advice, and discuss any limitations including potential implications for detection success.	On July 28, 2023, ECCC provided early technical advice to the Impact Assessment Agency of Canada (IAAC) regarding the Proponent's methods for woodpecker surveys (provided by the Proponent to IAAC on June 23, 2023); however, this information has not been incorporated into the bird community baseline survey appendix in the EIS/A/A. ECCC's July 28, 2023 advice is as follows: 1. In their survey methods description, the Proponent states that they will conduct call playback surveys for all three species-at-risk woodpeckers (i.e., Wilson's sapsucker, Lewis's woodpecker and pileated woodpecker). However, ECCC notes that other woodpecker species (e.g., Northern flicker, hairy woodpecker, American three-toed and red-naped sapsucker) are also commonly found in the Elk Valley. ECCC recommends that these species also be surveyed in order to inform the assessment of impacts of the Project on woodpeckers.	29-Apr-24
MB_06	Open	5(1)(a)(iii) Migratory Birds	6.1.6	Agency		Provide additional information to support the conclusion that no additional habitat loss will occur during reclamation and closure. If additional habitat loss or disturbance from phase-specific activities are likely to occur (for example, from monitoring or clean up activities), incorporate it into the effects assessment. Additionally, provide additional rationale to support the statement that stockpiling of wood waste in the Operations phase will have a negligible interaction with birds, as wood stockpiles can often be used as a temporary refuge.		29-Apr-24

SAR_01	Open	s.79 SARA	6.1.7	ECCC IR-06, 09	S. 15.6.3.3.1 Appendix 15C, s. 1.2.5.14	Describe how roost sites will be identified in order to mitigate impacts to at-risk bats species. Assess the performance (i.e. validate) the bat habitat suitability model using data collected via acoustic and live capture surveys.	Mitigation measures for increased mortality risk to at-risk bats include that, if an active roost site is identified, the tree will not be felled and a buffer zone will be maintained during the maternity season. It is unclear how roost sites are to be identified, and whether the Proponent will utilize active capture surveys and telemetry work to track back to roosts or take more of an incidental reporting approach for bats and bat tree roosts. ECCC notes there is an extremely low	29-Apr-24
SAR_02	Open	s.79 SARA	6.1., 6.1.7	ECCC IR-13, 14, 19, 20, 22 KNC 10, 28, 184 Piikani 10	15.5.2.2, 15.5.3.2.1 15.5.3.3.4	Provide additional information on baseline studies conducted for grizzly bear and American badger, as well as mitigation measures to reduce potential adverse effects from avalanche control work and blasting activities on all potentially-affected species at risk. Provide an updated effects characterization for Grizzly Bear, given the removal of 18% high or very high suitability habitat and 32% of avalanche chute ecosystems, and potential for disruption of north south movement. Specifically: Clarify the exact dates that grizzly bear collaring occurred, and whether collaring took place between 2003 and 2008 or 2003 and 2019. Provide information on the type of methods used for the ground transect surveys, and justification for why that method was chosen. Include a description and map of the locations of the observed grizzly bear den and the inferred den locations in relation to the Project footprint, LSA, and RSA. Provide information on: • the type of grizzly bear and American badger den survey methods that will be used; • the timing of when the den surveys will be conducted; • the methods for clearing, grubbing and construction activities; and • details on how carnivore escape will be ensured. Update the EIS/A to include information on the avalanche control work to be conducted for the Project, including type, location, frequency and methods, as well as the mitigation measures that will be used to prevent harm to grizzly bears and suitable denning habitat.	ECCC Comments: ECCC notes a discrepancy between Table 15.5-9, which indicates Grizzly Bear GPS collaring survey dates occurred from 2003-2008, and the description on page 15-175, which indicates the surveys were conducted from 2003-2019. Additional details on methods for ground transect surveys (depictured in Figure 15.5-) are also lacking. ECCC requires this information to understand the reliability of the baseline data used to inform the effects assessment for the Project. Page 15- 175 of the EIS/A states, “Winter den sites for grizzly bears were also determined from GPS location data during November to April. Den site locations were inferred based on clustering of GPS location data during the expected denning period (Apps and Lamb, 2019)” and “a grizzly bear den was incidentally observed in the avalanche chute directly west of Crown Mountain during July 2018. Baseline surveys showed evidence of breeding females throughout the	29-Apr-24
SAR_03	Open	s.79 SARA	6.1.7	ECCC-IR-18	15.5.2.3.2	Clarify whether the habitat suitability model for American Badger includes year-round habitat. It is unclear whether Table 15.5-22 describes year-round habitat for American badger, or only spring/summer habitat. If the latter, include information on winter and fall habitat, as well as core and safe movement critical habitat.	Spring and summer habitat suitability for American badger is depicted in Figure 15.5-16, and Table 15.5-22 describes habitat suitability for American badger. It is unclear if Table 15.5-22 includes year-round habitat or only spring and summer. As described in the federal Recovery	29-Apr-24

SAR_04	Open	s.79 SARA	6.1.7	ECCC IR-21, 23, 24	15.5.3.3.3	Provide additional information on the effectiveness of mitigation measures for wildlife SAR, and potential follow up monitoring and adaptive management plans to verify their accuracy. Specifically: Follow-up monitoring and adaptive management plans should be implemented to increase certainty in the effectiveness of the conveyor underpasses. These plans should be detailed in the EIS/A, including any additional mitigation measures that may be required. Include information on whether culverts and wildlife underpasses were considered at other known wildlife crossing areas, such as Grave Creek Road, and the justification for not implementing such measures along service corridors and haul roads in addition to those proposed below the conveyor. Update Section 15.5.3.3.4 of the EIS/A to describe how effects from increased hunting will be addressed and mitigated. Update the EIS/A to describe which feasible mitigation measures would be implemented should there be a need to further mitigate collision risks for grizzly bears or effects on western toad, and incorporate these into the effects assessment.	Page 15-221 of the EIS/A states, "the conveyor underpasses are expected to allow passage of carnivore VCs beneath the conveyor; however, the degree of use is unknown. This mitigation is predicted to have moderate effectiveness with moderate uncertainty". Furthermore, Figure 15.5-13 shows very high, high, and moderate suitability fall and winter, and patches of high suitability spring and summer, grizzly bear habitat surrounding Grave Creek Road. Grizzly bear occurrences are also confirmed along Grave Creek Road, as shown in Figure 15.5-5. These results indicate that Grave Creek Road is a high use movement corridor, and increased road traffic as a result of the Project could increase the risk of mortality and reduce movement and connectivity. ECCC notes that mitigation measures to prevent hunting and poaching are not included in the section describing mitigation measures for increased risk of mortality of carnivore VCs.	29-Apr-24
SAR_05	Open	s.79 SARA	6.1.7	ECCC IR-15, 25	15.5.3.4.3	Provide a rationale to justify the statement that American badger are resilient to sensory disturbance, including any references or studies that show that American badger are not impacted by noise and vibration. Provide details on the nighttime threshold for noise disturbance, and on how seasonality and life history were considered in the sensory disturbance effects assessment. Expand the terrestrial LSA to include the Lower Elk Valley Road, and assess potential effects to carnivore VCs in this area (including road mortality from potential vehicle collisions). Alternatively, provide a scientific rationale for why no effects are predicted to occur in this area.	Page 15- 246 of the EIS/A states, "potential effects arising from vibration, light, dust, and human presence would be expected to be less than those arising from noise", and that the context for effects of sensory disturbance is categorized as high because "American badger has high resilience to sensory disturbance and will adapt to effects." No rationale or evidence is provided to substantiate these statements. In addition, it is unclear why the nighttime threshold for noise disturbance is lower than the daytime threshold, and whether seasonality or life history considered (e.g. hibernation, maternity periods) in	29-Apr-24

SAR_06	Open	s.79 SARA	6.1.7	ECCC IR-26 Agency	15.5.4.4.1	Update the cumulative effects assessment for wildlife to include effects from past mining operations, and current hunting activities, or provide a detailed supporting rationale for why these effects are negligible/do not interact cumulatively with the residual effects of the Project. Specifically, evaluate physical activities related to past mining operations, including clearing and other impacts to habitats and ecosystems, to understand whether they may contribute to cumulative effects to VCs for the Project. Further rationale should be provided to justify the exclusion of these activities from the cumulative effects assessment and demonstrate the impacts of the past mining activities are no longer in effect. Include hunting in the list of Project activities likely to impact carnivore VC's. Alternatively, provide a justification to demonstrate that hunting has been considered under Recreation and Tourism or that hunting will not result in adverse effects to carnivore VCs.	Table 15.5-39 of the EIS/A categorizes "Natural Resources Extraction – Mining (past)" as "1- projects or activities have been or will be carried out and are not hypothetical", but did not carry it forward to the cumulative effects assessment because it occurred in the past. ECCC notes that impacts from past mining activities can have lasting effects upon the landscape for decades and ecosystems may take a very long time to recover to their former state. Table 15.5-39 also characterizes Recreation and Tourism as "1- projects or activities have been or will be carried out and are not hypothetical", but did not carry them forward to the cumulative effects assessment because the effects are expected to be "absent" or "minimal". ECCC further notes that effects of hunting and poaching are not included in Table 15.5-39.	29-Apr-24
SAR_07	Open	5(1)(a)(iii) Migratory Birds SARA s.79	6.1.6, 6.1.7	ECCC IR-27, 31 Agency	15.5.4.4.2	Update the cumulative effects assessment for Grizzly Bear, American Badger and other wildlife and vegetation Valued Components, as per the Agency's *Operational Policy Statement on Assessment Cumulative Environmental Effects under the Canadian Environmental Assessment Act, 2012* . Include information on how the magnitude of the effect is derived, including the quantitative thresholds that were used to determine what amount of habitat loss will have a biologically significant impact on a species' ability to persist in the altered landscape, as losses of 3-4% may be ecologically significant depending on the species needs and existing conditions. Assess the cumulative effects on grizzly bear in their entirety (i.e., not reduced to the Project's contribution to the cumulative effect), and that the characterization of the magnitude of loss of grizzly bear habitat be reconsidered in light of spring, summer and fall habitat loss.	Regarding the magnitude of the effect of grizzly bear habitat loss, ECCC notes that change in grizzly bear habitat in the RSA is predicted to be 3% in high quality fall habitat and 4% in high quality summer habitat; though the magnitude of the effect was characterized as low. ECCC also notes that the magnitude for effects of habitat loss for American badger (6.8% loss of year-round habitat) was assessed as moderate. ECCC further notes that, although the Project's contribution to these cumulative losses is low, the cumulative effects assessment should consider the cumulative effects on the VC as a whole, in order to align with the Impact Assessment Agency of Canada's Operational Policy Statement on Assessment Cumulative	29-Apr-24

SAR_08	Open	SARA s.79	6.1.7	ECCC IR-28, 29 SB 468	15.5.3.4.2	Include information on how indirect effects of functional habitat loss were considered in the assessment of habitat loss to grizzly bear, particularly in the LSA which includes high quality fall (6,195 ha), winter (3,225 ha), spring (3,863 ha), and summer (6,481 ha) habitat. For the effects assessment for grizzly bear habitat loss and degradation, consider the combined effects of fall, spring and summer habitat in the significance determination for magnitude of effects. Provide a rationale for the estimations of road density (or the location in the EIS/A this information can be located) in Section 15.5.4.4.2. Reassess the characterization of magnitude for cumulative effects of mortality risk, given exceedance of the maximum road density threshold for grizzly bear habitat values. Provide a rationale to justify the appropriateness of the Habitat Suitability Model for Grizzly Bear at a TEM scale of 1:20,000, as opposed to a smaller scale approach.	Grizzly bear may avoid certain areas where sensory disturbance or human presence is high, resulting in functional loss of habitat but information on indirect effects is missing from the habitat loss and degradation effects assessment. Furthermore, the EIS/A assessed the magnitude of grizzly bear habitat loss and degradation as low but only cites a loss of 3.7% high-quality fall habitat in the LSA and does not appear to consider the combined effects of loss of fall (3.7%), spring (3.3%), and summer (2.2%) habitat. Page 15-286 of the EIS/A states, “the change in road density between the Base Case and Future Case can be used as an index that reflects the degree to which the risk of mortality may change. Road density for the Base Case is 1.7 km/km2 and estimated to be 1.4 km/km2 in the Future Case, a decline of 18%.” The magnitude of this	29-Apr-24

SAR_09	Open	SARA s.79	6.1.7	ECCC IR-34. 35, 36, 38, 39, 41	14.3.3.4.2 14.5.1.3.1 14.5.2.1.4 14.6.5.3.2	Provide additional baseline data to support the effects assessment on whitebark pine. Notably: Provide information on occurrence, stand density and tree health, in order to assess Project effects on whitebark pine stands and determine appropriate mitigation measures to be implemented. Describe the types of baseline data (e.g. desktop studies) used to establish the whitebark pine baseline for the RSA. Conduct refined site-specific mapping and incorporate it into the EIS/A to better characterize residual and cumulative effects on whitebark pine in the Project footprint, LSA, and RSA. Update the baseline and Project effects assessments for whitebark pine to include suitable habitat areas below 1750 m asl, and include information on the maximum elevation that was used in the models to generate the TEM polygons shown in Section 14.5.2.2.2 and Table 14.5-3. Provide supporting references to justify the decision to define trees <1.3 m as seedlings, and provide a rationale for the exclusion of trees classified as seedlings from basal area calculations. Update habitat estimations for whitebark pine to more accurately represent the habitat needs and requirements of the species.	ECCC notes some important parameters (e.g., occurrence, stand density, tree health, etc.) are not included in the baseline data and technical boundaries. Without more detailed information on these parameters, ECCC is unable to assess potential impacts to whitebark pine individuals and critical habitat from the Project, especially if using a before-after-control-impact (BACI) assessment. Page 14-82 of the EIS/A states, “given that field surveys used to ground truth vegetation resources were limited to the Landscapes and Ecosystems LSA… it is not necessarily technically feasible to extrapolate species occupancy or habitat suitability to the regional scale… Consequently, it is not feasible to predict the extent of populations and/or habitat of listed plant communities and species, including whitebark pine, in the Landscapes and Ecosystems RSA.” ECCC notes that whitebark pine surveys were only conducted in the	29-Apr-24
SAR_10	Open	5(1)(b)(i) Federal Lands 5(1)(b)(ii) Another province 5(1)(b)(iii) Another country SARA s.79	6.1.7	ECCC IR-37 Agency	14.6.5.1.3	Include additional information to describe the potential transboundary effects of the Project on whitebark pine in Alberta, the US and on federal lands, including any applicable mitigation measures. Provide additional rationale to support the conclusion that effects are “negligible”, or revise this characterization based on the new/additional information that will be provided by the Proponent.	Page 14-20 of the EIS/A states, “Clark’s Nutcracker plays an important role in seed dispersal, dispersing seeds up to a maximum of 36 km away from the seed source (Lorenz et al., 2011), which could include forests in Alberta and Montana. Given the exceptional dispersal distances of white pine blister rust spores and Clark’s Nutcracker, there is potential for Project impacts to whitebark pine to occur in the adjacent jurisdictions of Alberta and Montana or on federal lands located in B.C. and Alberta (refer to Chapter 1, Section 1.3.3 for a description of federal lands near the Project)."	29-Apr-24

SAR_11	Open	SARA s.79	6.1.7	ECCC IR-40, 42, 43, 44, 47	14.5.2.1.4 14.5.2.2.4 14.7.6.2.1	Update the effects assessment on whitebark pine to include all habitat classification types as defined in the Recovery Strategy, and ensure methods used to define critical habitat are consistent with the Recovery Strategy. Notably: Assess not only the polygons defined as potential critical habitat by the Proponent, but all critical habitat as outlined in the recovery strategy (i.e. from location and description of regeneration habitat in the Recovery Strategy "…where landscape inventory polygons have a high density of Whitebark Pine (i.e., threshold level of greater than or equal to 2 m2/ha basal area as averaged across the landscape inventory polygon), the entire landscape inventory polygon is identified as seed dispersal and regeneration habitat…"). Describe the different types of critical habitat shown in Figure 14.5-9. Provide the values of DBH for cone-producing trees to confirm whether >10 cm DBH is the correct cut-off for this determination. Update the EIS/A to include the correct classification of whitebark pine critical habitat types and to ensure that these definitions are truly understood in the context of the EIS/A and effects assessments. Revise the footnote on page 14-45 to reflect the importance of both types of critical habitat for whitebark pine. Clearly describe when and where removal of individuals will occur. Describe the methods used to define and determine critical habitat in order to ensure alignment with critical habitat definitions in the Recovery Strategy for the Whitebark Pine (Pinus albicaulis) in Canada [Proposed]1 and to better understand the potential underestimation of critical	Figure 14.5-4 shows whitebark pine sampling locations and whitebark pine critical habitat study areas, and Figure 14.5-9 depicts several types of whitebark pine critical habitat. It is unclear whether the yellow polygons in Figure 14.5-4 (critical habitat study area) correspond with mapped critical habitat polygons in the Recovery Strategy for the Whitebark Pine (Pinus albicaulis) in Canada [Proposed]1. For Figure 14.5-9, it is unclear whether the yellow critical habitat polygons correspond with seed dispersal habitat, how "Recovery/ Regeneration" critical habitat is defined in comparison to the definitions of critical habitat in the Recovery Strategy for the Whitebark Pine (Pinus albicaulis) in Canada [Proposed]1, and what the relevance of the "Potential Whitebark Pine Seed" polygon is and how does it also overlap with the "Recovery/ Regeneration" critical habitat. Reference	29-Apr-24

SAR_12	Open	SARA s.79	6.1.7	KNC 33, 262, 266 Piikani 15 YQT 24	14	Provide additional information on the location and elevation of the larger diameter whitebark pine trees. Confirm exact percentages of CH expected to be adversely affected and then reclaimed by the Project. Provide additional rationale to justify the conclusions presented in the EIS. Provide rationale as to why a different definition of terminally ill whitebark pine was applied by the proponent, vs. the definition in the Recovery Strategy.	KNC Comment: In Appendix 14D - "However, significant large diameter (circa 60 cm DBH) trees were observed as part of the field studies within the LSA on west facing slopes well below the top of Crown Mountain...The size, abundance, and health of these large trees is unusual for the Rocky Mountains of the East Kootenays". Provide additional information on the location and elevation of the larger diameter trees. This information is not discernible within the figures. Provide this information as a separate table, including location (and proximity to Project footprint), elevation, tree diameter, and approximate tree age. Whitebark Pine (1 of 3 VC's) is a highly sensitive species which depends on survival, seed dispersal, availability of regeneration habitat and recovery via research and restoration. As in previous comment, clearly state .	29-Apr-24

							Page 14-73 of the EIS/A states, "With successful implementation, the restoration of ecological conditions will reverse (at least in part) the loss of whitebark pine and associated habitat in the Project footprint."	
SAR_13	Open	SARA s.79	6.1.7	ECCC IR-45, 46 KNC 250, 254, 263 YQT 56	14.6.5.1.1 14.6.5.2.1	Update the EIS/A to describe the uncertainty associated with the potential outcomes of restoration activities, and how this uncertainty is considered in the assessment of Project effects. Detail how follow-up monitoring and adaptive management plans for whitebark pine will monitor the effectiveness of restoration activities, especially if the post-closure phase is only predicted to be 15 years in length, and what additional mitigation measures could be implemented. Include the Whitebark Pine Salvage, Propagation and Restoration Plan, including the elements outlined on page 14-75- and 14-76, in the description of the Ecological Restoration Plan in Chapter 33. Discuss potential threats to successful re-establishment due to climate change. Provide examples of whether this mitigation measure has demonstrated effectiveness on other reclaimed mine sites.	Page 14-78 the EIS/A acknowledges that "mitigation measures proposed to reduce potential effects to the mortality of and/or loss of habitat for whitebark pine are generally experimental, under ongoing development with little demonstration on projects of similar context. Consequently, the associated effectiveness of the recommended measures for mitigation of mortality of and/or loss of habitat for whitebark pine is considered to be unknown." ECCC notes that restoration cannot reverse the loss of seed dispersal critical habitat and, at best, only a small part of baseline ecological conditions will be 'reversed'. Once established, it takes 30-50 years for a tree to begin producing cones and 60-80 years to produce cones in a	29-Apr-24

SAR_14	Open	SARA s.79	6.1.7	ECCC IR-48, 49	14.7.6.2.1 14.7.7	Describe in detail the Project-specific analysis used to determine the extent of whitebark pine critical habitat for the Cumulative Effects Project Case, including the methods used in the analysis, and rationale as to why the actual extent of whitebark pine critical habitat loss is expected to be less than the extent of critical habitat proposed in the Recovery Strategy. Describe the noted uncertainty in the confirmed extent of whitebark pine in the RSA, in consideration of comment ECCC-IR-35 which notes a lack of baseline data in the RSA. Include additional rationale to reconcile the high likelihood yet low confidence in the residual cumulative effects assessment for whitebark pine.	Page 14-98 of the EIS/A states, "although as much as 1,176 ha of critical habitat proposed by ECCC (2017) is intersected by the Project footprint, Project-specific analysis confirmed that the actual extent will be closer to 802 ha, or less than 1% (i.e., 802 ha of 236,671 ha) of the total extent of potential whitebark pine critical habitat in the Landscapes and Ecosystems RSA". The EIS/A does not adequately explain the Project-specific analysis used to determine the extent of whitebark pine critical habitat. ECCC also notes that page 14-101 of the EIS/A identifies "...uncertainty in the confirmed extent of whitebark pine in the Landscapes and Ecosystems RSA". Page 14-101 of the EIS/A characterizes the likelihood of residual cumulative effects to whitebark pine as high, however, the level of confidence of the significance prediction on mortality of whitebark pine and/or loss of habitat is characterized low, given uncertainty in the confirmed extent of whitebark pine	29-Apr-24
SAR_15	Open	5(1)(b) Federal and Transboundary Lands SARA s.79 5(1)(c)		Agency Kainai Nation 24 Siksika Nation 23 Public		Provide a detailed effects assessment of the potential for the Project to affect the migration corridors of ungulates and/or large carnivores into the province of Alberta / nearby federal lands, as the home ranges of ungulate / carnivore VCs may extend into these regions. Discuss whether any important ungulate mineral licks will be affected by the Project in these movement corridors. Discuss how adverse impacts on the health, migration patterns and habitats of these species will adversely impact Blackfoot Treaty Rights, including cumulatively.	Kainai / Siksika Comment: Kainai remains concerned about the impact of contaminants on ungulates that travel across the border into Blackfoot Treaty territory. Adverse impacts on the health, migration patterns, and habitats of these species will adversely impact our Blackfoot Treaty rights and contribute to the existing degradation of Treaty rights in Alberta. Crown decision-making must incorporate an assessment of impacts to Treaty rights outside of the site-specific approach taken in this Application.	29-Apr-24

SAR_16	Open	5(1)(c) SARA s.79	Agency KNC 08, 30, 265 Piikani 11		Provide a discussion of the effects to Species at Risk from the destruction or degradation of high-elevation grasslands, including both direct and indirect effects.	KNC Comment: "There are 5 high elevation grassland (HEG) types in the Elk Valley that are red- or blue-listed within British Columbia due to their rarity and high threats from permanent conversion to coal mines and mine infrastructure. The rough fescue type (Gg16, red-listed in 2021, 1280 ha in 2021) and the Idaho fescue type (Gg14, red-listed in 2021, 420 ha in 2021) are restricted to the Kootenays and cover less than 0.01% of British Columbia's land base and 0.5% of the Elk Valley CEMF area. They are not known to occur elsewhere in British Columbia. Almost all significantly sized occurrences of the rough fescue type (Gg16) occur within the east side of the Elk Valley. These HEGs represent critical habitat and winter range for a variety of Species at Risk (SAR), including Bighorn sheep (provincially blue-listed), Grizzly bear (COSEWIC Special Concern; SARA Schedule 1; provincially blue-listed), Wolverine (COSEWIC Special Concern; SARA Schedule 1), Mountain goat	29-Apr-24
SAR_17	Open	5(1)(a) (i) Fish and Fish Habitat 5 (1)(a) (iii) Migratory Birds SARA s.79 5(1)(c) s.19	Agency Shuswap 168 US EPA	12 12.4.2.1.1	Provide a scientific rationale to justify the frequency of surveys conducted to characterize baseline studies for selected valued components related to fish and fish habitat, migratory birds, species at risk, effects of the environment on Indigenous peoples, and effects of the environment on the Project. Baseline datasets used in the EIS/A range in age with some being around ten years old. Some older datasets may still be good representations of current conditions whereas others may not. For datasets that are four years old or more provide context on whether or not local conditions may have changed. For some VCs, sampling may be required to confirm whether or not older data is still suitable in the assessment. If additional baseline studies are required, conduct these, and update the effects assessment.	Shuswap comment: When RISC protocols are available, it is unclear why these are not used, rather guidelines from SK and AB are used in their place? Also curious to understand why many if not most of the surveys were only completed once for the entire project when most RISC protocols require three times during the active season at a minimum? ex: owl surveys, species likely to occur within the RSA are very diverse particularly considering the ecosystems and habitat types recognized in Chpt 13. A few days in one year with roadside surveys is not sufficient to capture this diversity	29-Apr-24

HH_01	Open	5(1)(c)		HC_IR_01	6.2.3, pdf p.1	Provide a non-carcinogenic and carcinogenic assessment of project-related DPM. Note that HC's 2016 guidance (HC, 2016) provides short-term and long-term guidelines for the assessment of non-carcinogenic effects of DPM. In addition, HC's 2023 guidance (Appendix C) provides a sample calculation on how to conduct a carcinogenic assessment of DPM (HC, 2023). HC. 2016. Human Health Risk Assessment for Diesel Exhaust. Available online at: http://publications.gc.ca/site/eng/9.810907/publication.html HC. 2023. Guidance for Evaluating Human Health Effects in Impact Assessment: Air Quality. Available online at: https://publications.gc.ca/collections/collection_2024/sc-hc/H129-54-1-2023-eng.pdf	Diesel Particulate Matter (DPM) was not assessed. Table 6.2-2 states that "Diesel particulate matter [DPM] was quantified in the modelling." Health Canada (HC) agrees that DPM could be produced from diesel engines and equipment during Project activities. However, HC is unable to locate the assessment in the EIS.	29-Apr-24
HH_02	Open	5(1)(c)		HC_IR_02 Piikani 31, 41	6.5.2 6.5.4.2	Assess the health risks of project-related VOCs using Health Canada Toxicological Reference Values (HC, 2021) and Indoor Air Reference Levels (HC, 2018). Where criteria are not available from a Canadian jurisdiction, criteria from other jurisdictions (e.g., U.S. EPA) may be used, along with sufficient justification. HC. 2021. Federal Contaminated Site Risk Assessment in Canada: Toxicological Reference Values (TRVs), version 3.0. Available online at: https://publications.gc.ca/collections/collection_2021/sc-hc/H129-108-2021-eng.pdf HC. 2018. Indoor Air Reference Levels. Available online at: https://www.canada.ca/en/health-canada/services/publications/healthy-living/indoor-air-reference-levels.html Specify how trace metals in project-related particulates will be monitored.	HC Comment: Volatile Organic Compounds (VOCs) were not assessed. Table 6.5-4 (PDF p. 55) predicts the ground-level concentrations of volatile organic compounds (VOCs) for the Project case, but no further assessment is conducted due to the minimal Project emissions and lack of provincial or federal criteria for ambient VOCs. HC notes in cases where there are no screening criteria available, contaminants of potential concern (COPCs) may be carried forward into a quantitative risk assessment to determine whether there may be health risks associated with the predicted concentrations. Given VOCs could be emitted from the Project, instead of considering the concentration of total VOCs (for which there is no applicable toxicological reference value) when assessing health risk, individual VOCs could be assessed. Piikani Comment: NWP acknowledges that Project-related particulates including Total Suspended Particulate	29-Apr-24

HH_03	Open	5(1)(c)	HC_IR_03 Piikani 36	6.5.4.2 6.5.4.3.1, PP.64-65 Appendix 6C, p. 109	Provide additional justification to support the conclusion of “not significant” residual effects on human health from exposure to NO2 and PM2.5. Include NO2 and PM2.5 in the Human Health and Environmental Risk Assessment (HHERA), especially given the non-threshold nature of these air pollutants (e.g., potential health effects could occur at any level of exposure to the air pollutants). Given the AQMS designation, identify additional mitigation measures that could be implemented to reduce the project’s NO2 and PM2.5 emissions to as low as reasonably achievable.	The predicted regular exceedance of ambient air quality criteria does not support the conclusion of “not significant” residual effects. Section 6.5.4.3.1 of Chapter 6 predicts regular exceedances of the British Columbia (BC) Ambient Air Quality Objectives (AAQO) for certain air pollutants (e.g., nitrogen dioxide: NO2, fine particulate matter: PM2.5) at some of the sensitive receptors located to the northwest of the rail loadout (e.g., Receptor S202 PDF p. 65, S200 PDF p. 57). For NO2 (1-hour), PDF p. 55 indicates that the average and maximum exceedances of the Canadian Ambient Air Quality Objectives (CAAQS) could occur less than 5% and 24% of the time, respectively. For NO2 (annual metrics), Appendix 6-C (Table 31, PDF p. 109) indicates there will be potential 2025 CAAQS exceedances. Regarding PM2.5 (24-hour), the average and maximum exceedances of BC AAQO are 10% and 100%, respectively. For PM2.5 (annual), the average and maximum exceedances of BC AAQO are both 100% of the time	29-Apr-24

HH_04	Open	5(1)(c)		HC_IR_04	6.7.1., P.90-9	Clarify what action will be taken if monitoring results differ from the ambient air quality predictions. Confirm that baseline concentrations and guidelines such as CAAQS also inform the trigger levels for implementing adaptive measures.	It is unclear what action will be taken if monitoring results exceed the ambient air quality predictions. Section 6.7.1 commits to conduct Project-specific air quality follow-up monitoring , and one of the objectives is to verify the environmental assessment (EA) predictions related to air quality. However, it is unclear what action will be taken if and when the EA predictions are exceeded. PDF p. 93 states: “If monitoring results exceed the relevant criteria at a monitoring location, appropriate NWP Coal Canada Ltd (NWP) personnel will be notified immediately so that appropriate steps can be taken, including an investigation to identify the potential cause(s) of the exceedance.” There is however no discussion of other scenarios (e.g., exceedances of EA predictions) in relation to action and adaptive management measures. When developing a monitoring plan and mitigation measures, the most conservative approach for dealing with exposure to non-threshold air pollutants such as NO2 and PM2.5 is	29-Apr-24
HH_05	Open	5(1)(c)		HC_IR_05	Appendix 6C, p.109	Include a comparison of predicted concentrations of air pollutants (e.g., NO2, SO2) against the most updated CAAQS in Chapter 6 of the EIS including Table 6.5-4 (PDF p. 55).	Incomplete information is provided on NO2 and SO2 CAAQS exceedances. Appendix 6-C (Table 31) compares air pollutants (i.e., NO2 and SO2) with the 2025 CAAQS. For NO2 (1-hour), the table indicates that "% of receptors which exceed objective" is 0.2%, but for "Maximum frequency of exceedance of objective" and "Average exceedance frequency for receptors with exceedances" are described as "N/A". It is unclear why no numeric values were calculated for the frequency of exceedances. In addition, it is unclear whether this scenario	29-Apr-24

HH_06	Open	5(1)(c)		HC_IR_06	Ch 7 (p.7, 16)	Collect background sound level measurements at R9 or provide detailed rationale to support using ML2 measurements to represent R9. The rationale should include a list of all the key noise sources that contribute to the baseline at each location, and a characterization of noise types with descriptors (e.g., continuous, intermittent, regular impulsive, highly impulsive, high-energy impulsive, continuous tonal and intermittent tonal). Alternatively, the most conservative baseline for a quiet rural area (e.g., 45 dBA during the day and 35 dBA during the night) could be considered for R9. Clarify why the noise baseline for ML2 is higher than ML4.	Background sound level measurements were not taken at locations identified by potentially affected Indigenous groups. Chapter 7 indicates that the Ktunaxa Nation Council (KTC) provided the locations of sensitive receptors within the Project footprint that relate to current and rights-based use in order to inform various assessments, including the acoustic assessment. However, because these sensitive receptor locations were provided after the baseline noise monitoring program was completed, background sound level measurements were not taken at these locations. Instead, it was assumed that the results from the closest ambient monitoring locations (ML1-6) would be representative of the	29-Apr-24
HH_07	Open	5(1)(c)		HC_IR_07	Ch 7 (p.9, 49)	Discuss the types of noise produced regionally, and justify why there is no potential for these to interact cumulatively with Project-related noise at receptor locations. Specify how LFN was considered when developing the study area boundaries for acoustics.	Regional noise sources were not considered in the establishment of the study area boundaries for acoustics. Chapter 7 indicates that the boundary of the acoustic Local Study Area (LSA) is based on identified sensitive receptors and environments within a 3 km radius surrounding the boundary of the Project footprint. A Regional Study Area (RSA) for the Project was not assessed for noise and vibration effects, owing to "...the fact that noise and vibration levels from a source are generally not distinguishable from background levels beyond 2 to 3 km of the source...". As well, "... given that there are no other substantial sources of human-made noise and vibration within the immediate vicinity of the Project, there would be no spatial and temporal overlap of the Project with other past, present, or reasonably foreseeable future project activities that would lead to cumulative effects" (PDF p. 9). However, HC notes the presence of several existing mining operations (e.g., Elkview Operations, 8 km southwest of the Project), various	29-Apr-24

HH_08	Open	5(1)(c)		HC_IR_08	Ch 7 (p.10)	Assess construction and operation noise separately, otherwise explain how the noise assessment results are representative of all Project phases given the different noise sources between phases. Describe any tonal, regularly impulsive, highly impulsive, or high-energy impulsive noise anticipated during each Project phase.	Noise effects were only assessed for the operational phase of the Project. For the purposes of the acoustic assessment, operational Year 10 of the Project was used as the single worst-case year for noise and vibration effects from the Project on surrounding sensitive receptors. This was to ensure that "Project-related noise and vibration levels during other Project phases, along with the resulting environmental effects, are not underestimated." Although the potential change to the acoustic environment from construction and pre-production activities is generally described in Section 7.5.2.2.1, HC guidance (HC, 2023) recommends that the worst-case year for each Project phase (e.g., both construction and operations) be fully assessed and presented, since there will be different noise sources at each Project phase (as indicated in Table 7.5-4). HC. 2023. Guidance for Evaluating Human Health Effects in Impact Assessment: Noise. Available at: https://publications.gc.ca/collections/	29-Apr-24

HH_09	Open	5(1)(c)		HC_IR_09	Ch 7 (p.13, 50)	Specify whether the Project is expected to generate LFN, and how the baseline monitoring results will be used to assess Project-related effects. Assess the effects of Project-related LFN using C-weighted decibels (dBC) or Z-weighted decibels (dBZ) thresholds: 60 dBC and 70 dBZ, respectively.	Noise monitoring did not record C-weighted decibels that are more appropriate for low frequency sounds. Chapter 7 indicates that an ambient noise monitoring program was undertaken by gathering hourly A-weighted sound level equivalents, and that A-weighted decibels (dBA) are sound levels (as measured on a sound meter) that emphasize the middle-frequency components of sound that is similar to the response of the human ear. If the potential for LFN exists (e.g., from regional rail activity, nearby mining activities), HC recommends that ambient measurements also be recorded using C-weighted decibels (dBC) using the criteria of 60 dBC (Broner, 2011). C-weighting represents the response of the human ear to very loud sounds and emphasizes the low frequencies of sound much more than the A-weighting (HC, 2023). Measurements for dBC can be made using two concurrently monitoring sound level meters, a dual-channel sound level meter, or other equipment capable of	29-Apr-24

HH_10	Open	5(1)(c)		HC_IR_10	Ch 7 (p.19) Appendix 7-A (p.13)	Assess the potential for sleep disturbance as per World Health Organization (WHO, 1999, 2009) guidelines, using the following criteria and thresholds: • Nighttime equivalent sound level (LAeq) -threshold: 45 dBA outdoors (for continuous noise); and • Maximum A-weighted sound level (LAmax) -threshold: 60 dBA outdoors (for intermittent noises, 10-15 times per night). For blasting activities greater than a year, assess noise impacts through a calculation of the change in percent of highly annoyed (%HA) using ISO 1996-1:2016 (as specified in Appendix E and F of HC's 2023 noise guidance). WHO. 1999. Guidelines for Community Noise. Berglund, B., Lindvall, T. and Schwela, D.H (Eds.). Available at: https://www.who.int/publications/i/item/a68672 WHO. 2009. Night Noise Guidelines for Europe. Hurtley, C. (Ed). Available at: https://apps.who.int/iris/handle/10665/326486 HC. 2023. Guidance for Evaluating Human Health Effects in Impact Assessment: Noise. Available at: https://publications.gc.ca/collections/collection_2024/sc-hc/H129-54-3-2023-eng.pdf	The potential for sleep disturbance was not assessed. HC has additional guidance for assessing blasting effects. Table 7.5-1 provides noise criteria and thresholds that were used in the acoustic assessment for human receptors. This included only the following two metrics from HC's (2023) noise guidance: • Change in percent highly annoyed (%HA) -threshold: 6.5%; and • Day-night sound level (Ldn) from the Project that demands mitigation – threshold: 75 dBA. With respect to the potential for sleep disturbance, HC notes that human receptor R7 (a representative location of a possible Indigenous seasonal dwelling), may be expected to experience sleep disturbance during continuous operations, since the predicted Project nighttime noise (without baseline) at this location is 47.7 dBA (Chapter 7, Figure 7.5-4, PDF p. 34). With respect to the effects of blasting, vibration guidelines (peak particle velocity) and noise levels (air	29-Apr-24

HH_11	Open	5(1)(c)		HC_IR_11	Ch 7 (p.26), Appendix 7-A (p.49-50), Appendix 7A (p.52)	Describe whether and how a noise complaint mechanism will be made available and advertised to community members (e.g., phone line, website), allowing noise concerns to be reported for further investigation. Develop a community consultation plan to mitigate Project-related noise impacts, as per HC (2023).	A noise complaint mechanism hasn't been specified. The noise mitigation and best management practises also do not include a community consultation plan. Appendix 7-A indicates that there will be regular continuous noise monitoring to assess noise impacts associated with the normal operation of the Project, with data downloads at regular weekly intervals or upon receipt of a noise complaint. Community consultation can be helpful when a project predicts noisy work outside of normal working hours or extended work that produces high levels of noise, such as blasting. When the community receives information about expected changes in sound levels through a consultation process, and feels that concerns with respect to noise will be addressed, the incidence of noise-related complaints is often reduced (HC, 2023). HC. 2023. Guidance for Evaluating Human Health Effects in Impact Assessment: Noise. Available at: https://publications.gc.ca/collections/	29-Apr-24

HH_12	Open	5(1)(c)		HC_IR_12	Ch 9 (p.7, 30-34)	Assess groundwater quality impacts at additional Control Points reflective of nearby drinking water well(s) to better understand potential Project-related and cumulative impacts on drinking water supplies and health. Alternatively, provide an appropriate rationale to justify the exclusion of these wells in the groundwater assessment.	The assessment locations do not represent current drinking water users. Chapter 9 indicates there are four nearby drinking water wells within the regional study area (RSA) (used by the nearby Teck Resources Ltd. mines), as well as municipal wells (likely in close proximity to the RSA). However, the five Control Points (as outlined in PDF p. 92) selected to assess potential Project impacts on groundwater did not include any of the above-mentioned drinking water wells near the Project. HC notes that Control 2 ("Podrasky Cabin") is identified as a potential groundwater user (PDF p. 30). It is unclear whether the Control Points are representative of all identified drinking water users. This is particularly important given that baseline water quality data for the local study area (PDF p. 59) indicates there are elevated concentrations above guidelines for several COPCs (e.g., cobalt, lithium, sodium, chloride, fluoride). In addition, there are cumulative effects related to selenium, cadmium, nitrate, and	29-Apr-24

HH_13	Open	5(1)(c)		HC_IR_13	Ch 9 (p.59)	Compare baseline and predicted groundwater quality against the most stringent drinking water criteria.	The groundwater quality assessment does not use the most stringent criteria. HC notes that manganese is listed as a key constituent of concern due to elevated baseline concentrations in local groundwater (Table 9.5-7, PDF p. 115). Manganese is reported to exceed the BC Drinking Water Quality Guideline of 0.12 mg/L in the baseline groundwater quality assessment at several of the 26 monitoring wells sampled between 2018 and 2020 (Table 9.4-12, PDF pp. 63-65). However, on PDF p. 59, only parameters exceeding the BC Contaminated Sites Regulation (CSR) drinking water criteria are noted: "Within the LSA, baseline groundwater quality exceeds B.C. CSR drinking water criteria for several parameters (cobalt, lithium, sodium, chloride, and fluoride)." HC is of the opinion that the most stringent drinking water quality criterion should be applied. For example, in the case of manganese the BC CSR standard is 1.5 mg/L while the BC drinking water criterion is a	29-Apr-24

HH_14	Open	5(1)(c)		HC_IR_14	Ch 9 (p.63-65)	Assess the health risks to drinking water users by using the 95th percentile of the baseline dataset for Control Point 2 (and any additional control points as per HC-IR-14).	The groundwater quality predictions use average baseline concentrations rather than worst case scenarios. In Table 9.4-12, HC notes that there are some exceedances over the health-based guidelines for certain COPCs (e.g., manganese, fluoride) in the baseline monitoring data for individual well samples. However, these values are not reflected in the modelled baseline data that are assumed for each of the five selected control points (Appendix 9-E, Table 9-D.1) and used in the effects assessment. This is likely due to the following: "Baseline concentrations for each control point were chosen based on groundwater quality from the closest monitoring well. Average concentrations were used to represent baseline conditions for each control point" (Chapter 9, PDF p. 116). In particular, HC notes that manganese concentrations approach the BC drinking water maximum acceptable concentration (MAC) of 0.12 mg/L (BC MOE, 2020) at Control Point 2 (potential groundwater user)	29-Apr-24

HH_15	Open	5(1)(c)	HC_IR_16 Agency	Ch 9 (p. 119-122) Appendix 9E	Conduct a cumulative effects assessment in the regional study area (RSA) to better understand the Project-related impacts on groundwater quality including drinking water wells. Provide rationale supporting the plan to mitigate groundwater quality effects through a mine rock layering approach, including the basis for assuming its effectiveness and success. Consider whether it would be beneficial to present several scenarios of efficiency (e.g., 70%, 95%). Consider alternate mitigation approaches should the rock layering prove less effective than expected, to prevent further impact on elevated baseline levels.	The Cumulative Effects Assessment does not consider the incremental effect of the Project on groundwater quality, including regional drinking water wells. Chapter 9 (Section 9.5.4.2) and Appendix 9-E conclude that regarding groundwater quality, there will be guideline exceedances related to cobalt, lithium, phosphorus and vanadium. Except for cobalt, the exceedances (for the remaining COPCs noted above) are a result of elevated baseline. In addition, Chapter 9, Section 9.5.4.4 characterizes the residual effects for groundwater quality as “not significant”, assuming the proposed mitigation measures would be working effectively to alleviate the Project-related impacts (including above noted guideline exceedances). The outputs of the water quality model assume the mine rock layering approach is successful at reducing oxidation of pyrite, thereby minimizing the release of sulphate, acidity, and trace elements including selenium and other metals.	29-Apr-24
HH_16	Open	s.19 Factors to be Considered	HC_IR_17	Ch 21 (p.47, 50)	Consult with local health authorities (e.g., Interior Health Authority and First Nations Health Authority) and other local health and emergency service providers to verify the current status of the area's response services, and their ability to cope with any future impacts from the Project. If emergency response services are found to be constrained in the LSA, discuss the mitigation measures that will address a potential impact on these services from Project activities.	It is unclear how the existing limited health services would respond to project-related vehicle or equipment accident scenarios. Although motorized and non-motorized recreational activities are acknowledged, PDF p. 50 concludes: "[a]s with any other vehicle collision that might occur along the provincial highway system, it is unlikely that any vehicle collision scenario would exceed the capacity of area emergency response services." However, Chapter 18, Section 18.3 (PDF p. 12) states that "[h]ealth services overall are lacking in the Socio-Community LSA communities."	29-Apr-24

HH_17	Open	5(1)(c)		HC_IR_18	Ch 22 (p.25-26)	Describe whether and how potentially impacted Indigenous groups were engaged in developing the baseline conditions for country food quality, as per HC (2010, 2023). If they were not, engage with potentially impacted Indigenous groups to update the baseline conditions. HC. 2010. Federal Contaminated Site Risk Assessment in Canada, Part V: Guidance on Human Health Detailed Quantitative Risk Assessment for Chemicals (DQRAChem). Available at: https://publications.gc.ca/collections/collection_2011/sc-hc/H128-1-11-639-eng.pdf HC. 2023. Guidance for Evaluating Human Health Effects in Impact Assessment: Country Foods. Available at: https://publications.gc.ca/collections/collection_2024/sc-hc/H129-54-5-2023-eng.pdf	While the use of a food chain model is appropriate for predicting future concentrations in the Application case (baseline plus Project), HC recommends considering the collection of tissue samples of country foods that are being consumed by local communities to determine baseline concentrations. Regarding baseline studies, Section 22.4.2.1 states that "…baseline food chain modelling was conducted to ascertain the baseline dietary exposure and risk to wildlife health and human health." HC is of the opinion that a more accurate assessment of baseline concentrations in country food tissues would result from the Proponent's collaboration with local First Nation members to obtain representative samples of tissues during the hunting season(s), where possible. This method reduces costs, tends to be more reflective of the actual species and tissues that are consumed, and makes use of traditional ecological knowledge (HC, 2023). Food chain models (which use	29-Apr-24
HH_18	Open	5(1)(c)		HC_IR_19 Agency	Ch 22 (p.39) Appendix 22A (p.68)	Include mine effluent transport to suface water or groundwater as an exposure pathway. Alternatively, justify why the mine effluent transport to surface water or groundwater pathway has not been included in the conceptual exposure model as a potential exposure route.	The conceptual exposure model for human receptors does not identify mine effluent transport to surface water or groundwater as an exposure pathway. Additional justification is needed to support exclusion of this exposure pathway, which can lead to an underestimation of health risks from all contaminant sources. HC notes that the same symbol (an 'x') is used to define both the "incomplete pathway" and the "complete but insignificant" pathway in the conceptual exposure model, which creates confusion.	29-Apr-24

HH_19	Open	5(1)(c)	HC_IR_20	Ch 22	If any PFAS-containing products will be used or produced as a result of the Project, assess PFAS as part of the HHERA. Given the concerns associated with these COPCs, like other hazardous chemicals/substances that might be used on-site during any phase of the Project, a site management plan for these substances may be warranted. Discuss the need for such a plan, and any associated mitigation measures to reduce the risk of these contaminants entering the environment.	Emerging concerns regarding per- and polyfluoroalkyl substances (PFAS) do not appear to be considered in the HHERA. It is unclear if PFAS or PFAS containing materials/products etc. will be used as part of any activities (e.g. drilling, ore processing or fire suppression systems) related to this Project. For example, HC is aware that PFAS uses may include ore flotation, and as fluoropolymer in pipes, cables, hoses, and conveyor belts, among other uses. Additionally, PFAS may be present for uses that are ancillary to mining operations, such as in aqueous film forming foams for fire suppression/firefighting activities, for cleaning of metal surfaces, and for use as a foaming agent in drilling fluids, paints, and coatings.	29-Apr-24
HH_20	Open	5(1)(c)	HC_IR_24, 25, 26	Appendix 22A (p.71, 72, 77)	Use a target HQ of 0.2 or provide additional rationale for each COPC to support the use of an HQ of 1.0. Where the target values are exceeded (e.g., HQ > 0.2, ILCR > 1x10-5), refine the HHERA to reduce uncertainty and/or identify mitigation measures that would reduce exposure to COPCs in media which may result in unacceptable risks. Provide context for what is meant by a “small increase”. Discuss why an increase of <10% relative to the Base Case would be acceptable for each COPC.	Insufficient rationale is provided for using an hazard quotient of 1.0 to assess health risks. Section 6.3.2 states “In the present study, as described in subsequent sections, the HHRA evaluates exposure from a traditional food diet that is based on Aboriginal data, and also includes additional background contributions from sources that are not considered to be potentially affected by the Project (e.g., Elk meat). Accordingly, the benchmark for acceptable risk as expressed by the HQ metric is a value equal to or less than unity (1.0), in alignment with Health Canada policy respecting a comprehensive dietary exposure.” HC HHRA guidance (HC, 2023) states “[f]or HHRAs, a target HQ of 1.0 is considered applicable for threshold chemicals, assuming all potential exposure media and pathways are considered, including background dietary intake. Where an HHRA evaluates only project-related exposures (excluding background estimated daily intake for sources not related to the project, including	29-Apr-24

HH_21	Open	5(1)(c)	HC_IR_27	Appendix 22A (p.77-90)	In regards to receptor characteristics, refine the HHERA scenarios where overly conservative assumptions are made, to reduce uncertainty (e.g., sensitivity analysis). Identify mitigation measures that would reduce exposure to COPCs in media which result in unacceptable risks.	The conservatism inherent in a selected TRV is not considered a valid rationale on its own for considering the use of other, less conservative TRVs to calculate the risk to human health. In some cases, the HHERA argues that human health risk is overestimated due (in part) to the more conservative toxicity reference values (TRV) selected. The HHERA provides rationale for why a less conservative TRV would be more appropriate. For example, cadmium slope factor (PDF p. 81), cobalt tolerable daily intake (PDF p. 84), and nickel tolerable daily intake (PDF p. 88). HC notes that conservatism is built into TRVs to be protective of human health. For chromium (Cr), the HHERA uses the HC number for CrVI in drinking water but argues that a CrIII number might be more relevant. HC notes that updated TRVs for chromium were published in version 3.0 of the Federal Contaminated Site Risk Assessment in Canada TRV list (published in 2021), including a TRV for trivalent chromium. However, the maximum acceptable concentration (MAC) for chromium	29-Apr-24
HH_22	Open	5(1)(c)	HC_IR_28	Ch 22 (p. 96-97) Appendix 22A (p. 131-133) Appendix J, p. 139	Provide example calculations for one carcinogen and one non-carcinogen for each of the applicable pathways. These examples should provide a step-by-step method showing the exposure dose calculations and how the results were derived. Provide summary tables of the exposure estimates, HQs and ILCRs. Provide a sample calculation of how the sediment ingestion rate was derived in kg/d for each receptor (toddler, child, teen adult).	It is difficult to review the risk characterization and conclusions of the HHERA without accessing the data. Regarding the data and methodology used to calculate the estimated exposure doses for different pathways, Appendices A and J refer readers to the GoldSim player file and (associated software) for details. Unfortunately the GoldSim software is not available to HC at this time. At a minimum, data summaries should be provided in an accessible format.	29-Apr-24

HH_23	Open	5(1)(c)		HC_IR_29	Appendix 22A (p.120-126)	Discuss the emissions inventory for the Project to understand how the COPCs were selected. For subsistence foods, at a minimum, assess the risks of exposures to inorganic arsenic (assessed, clarify if “arsenic” refers to total arsenic), methylmercury, cadmium (assessed) and lead. Clarify how potential risks from exposure to PAHs were assessed based on direct contact with water and ingestion of country foods. Assess thallium in the HHRA.	Insufficient rationale is provided for the exclusion of certain contaminants. The screening framework outlined on PDF p. 121 was applied to Tables 1 and 3. However, it is unclear why several COPCs (e.g., acridine and titanium in soil, bismuth, and benzo(a)pyrene in surface water) were excluded from the risk assessment. It is also unclear if PAHs were considered for consumption of country foods. Thallium was identified as a COPC but not carried forward in the HHRA. HC does not consider the rationale (PDF p. 67) for excluding thallium (“toxicological data set relevant to human health is considered weak”) to be sufficient. Toxicological data is available and should be used. A discussion of the adequacy of the toxicological data can be included in the uncertainty assessment.	29-Apr-24

HH_24	Open	5(1)(c)	HC_IR_31	Appendix 22A (p.136-137)	Confirm that the most recent Toxicological Reference Values (TRVs) are used to assess human health risks.	The most recent TRVs published by Health Canada have not been used. HC notes that several of the TRVs were sourced from the Federal Contaminated Site Risk Assessment in Canada, Part II: Health Canada Toxicological Reference Values TRVs and Chemical Specific Factors, Version 2.0, guidance document which was published in 2010. Version 3.0 of this document was published in 2021, in which several of the TRVs cited in this HHERA have been updated or removed (e.g., benzo(a)pyrene, arsenic, cadmium, chromium, nickel). Version 3.0 was published in March of 2021 and would have been available prior to publication of the HHERA and Appendix 22-A in November 2021. The footnotes for several of the TRVs listed in Table 1 of Appendix I are either missing or incorrect. Specifically, footnote “e” indicating the source of the thallium TRV is missing from the list and the footnote indicating the source of the arsenic tolerable daily intake (TDI) is incorrect and instead refers the source of the	29-Apr-24
HH_25	Open	5(1)(c)	HC_IR_32	Appendix 22A	Identify mitigation and follow-up measures that would reduce exposure to COPCs in media which are predicted to result in unacceptable risks (e.g., HQ > 0.2, ILCR > 1x10-5).	Based on the DQERA, there is currently no discussion of mitigation measures for human health and no commitment has been made to conduct follow-up monitoring.	29-Apr-24

HH_26	Open	5(1)(b)(ii) Another Province 5(1)(c)	Agency Piikani 70 Kainai Nation 06 Siksika Nation 05 Public	Ch 32	Provide additional evidence to support the rationale that no adverse effects to air quality (including from fugitive dust) are predicted to the Province of Alberta, located 5 km from the Project and within both the Atmospheric LSA and RSA. Mine-related dust from Elk Valley mines have been demonstrated to blow into Alberta and settle onto alpine lakes there. Discuss the potential for this to occur from the Project, especially during dry periods, and the resulting potential adverse environmental effects.	There is limited research on the transport and deposition of fugitive dust emissions from mountaintop coal mines in the Elk River Valley region, the recent study conducted by Petryshen (Spatial distribution of selenium and other potentially toxic elements surrounding mountaintop coal mines in the Elk Valley) underscores the critical need for additional investigation into particulate and trace metal deposition, particularly on the eastern slopes of the Kootenay Mountains. Petryshen's findings revealed elevated concentrations of selenium and other potentially toxic elements (PTEs) near coal mining sites, with prevailing wind patterns identified as a significant factor influencing the distribution of contaminants, resulting in an accumulation of dust in specific areas. These observations emphasize the necessity for further research to comprehensively assess the sources, pathways, and potential risks associated with particulate and trace metal deposition in the region.	29-Apr-24

HH_27	Open	5(1)(c)		KNC-144, 154	Ch 22	Revise the risk assessment for selenium in the HEHA, and present the conclusions in the context of a realistic land use scenario. Notably: 1. Revise the TRV/TDI and present a full assessment of the risk of Se exposure, including the exposure/intake from different sources at different CRIDs for all age groups. 2. Use the higher-resolution classification of traditional food use patterns compiled by KNC to decrease the uncertainty of the risk characterization. Less than 14 days – CRID 2,3, and 8, Between 14 to 90 days – CRID 6,7,9,12 and 15, and 365 days per year for lifetime – CRID 1,4,5,10,11,13, and 14. 3. Present the results for each human receptor for each age group, for Se. 4. Justify the approach used to estimate the site-specific incremental concentrations and the associated risk. Create a new scenario of a resident of the Elk River who eats local fish regularly and estimate the changes in the cumulative risk of Se exposure due to the Project.	The main concern is the mistake in the unit for TDI for selenium (Se). Table 1 of Appendix I of Appendix 22A shows that the TDI used ranged from 5.5 to 6.3 mg/kg/day for different age groups. This is 1000-fold higher than the Health Canada TRV (Health Canada 2021 Federal Contaminated Site Risk Assessment in Canada, Toxicological Reference Values). The result is the underestimation of the risk of Se exposure by 1000-fold. Since Se is the major COPC in the region, a detailed presentation of results from each step of the risk assessment for all the possible receptors is needed. Another key concern is the human receptor assumption. The scenario of a family of all age groups spending 365 days a year and getting all food and water from each CRID is unrealistic. This over-conservative assumption often leads to inconclusive results of the risk characterization. Many of the conclusions state the risk is low even though the HQ is high because of this conservative assumption. This results in the risk of a more realistic land use scenario not being characterized.	29-Apr-24

							KNC comment: The conceptual site model is not clear. What are the predicted total loadings of COPCs in the area? What is the percentage of increase in the area? The impacted area is not fully described in the HEHA. Which area/locations are predicted to be impacted by air dispersion? Which creek and watershed is predicted to be impacted?	
HH_28	Open	5(1)(c)		KNC-145, 147, 148, 149 Shuswap 162	Ch 22	Update the HEHA to clarify the spatial boundaries of impacted areas. Provide additional baseline data that informed the HEHA, and summary statistics to demonstrate predicted total loadings of COPCs.	The spatial boundaries are confusing. The Project footprint is located within portions of two watersheds, Grave Creek and Alexander Creek. The majority of the Project footprint is located within the Alexander Creek watershed, including the effluent discharge and the access roads leading to the mine are generally located within the Grave Creek watershed. The spatial boundaries of the HEHA defined in Chapter 22- 2-2 are different from those shown in Appendix A in Figure 2-2. Recommendations: Add more summary statistics on the	29-Apr-24

HH_29	Open	5(1)(c)		KNC-150	Ch 22	Provide additional information on location of wildlife receptors of importance to Indigenous peoples, and site-specific HQ's.	The presentation used the estimate for the aquatic species and terrestrial mammals is inconsistent and confusing. Table 22-4.4 shows the calculated HQs for wildlife receptors. There is no information on the locations/sites. Figure 4-3 and 4-4 in the AECOM report show that site-specific information is available. Table 22 4.5 and 4.6 show the calculated HQ for aquatic species by location. In order to understand the site-specific impacts, it is important to show the HQs at different locations under the Base, Project and Cumulative Case. Many small mammals show HQ>1. For example, Deer Mouse 11, American Marten, 4.2, Masked Shrew, 140, Little Brown Myotis, 5, Least Chipmunk 3.5. Where are the locations? Where are the hotspots? How does the site-specific HQ compare among the Base, Project and Cumulative Cases? It will be much easier to understand the results if the HQs of the three cases of each COPC are put in the same table.	29-Apr-24

HH_30	Open	5(1)(c)		KNC-152, 153	Ch 22	Discuss the need for an ecological assessment at Critical Human Receptor locations (CRIDs) that show high HQs. Use the risk category system to define whether the increased risk to an already high-risk species of importance to Indigenous peoples/location will change the risk category due to the Project.	There are statements in the HEHA that need more evidence to justify: The collective results suggest existing baseline chemistry as reported by baseline studies and then applied in conservative ecological food chain exposure models largely present negligible ecological health risk; but for certain species/diets with limited range and inhabiting precise locations, exposures to substances may present a borderline health risk. It is unlikely, however, that this presents a risk to the species population as a whole. A high HQ in localized species, such as small mammals and fish, can potentially affect the species density and negatively impact the traditional harvest by KNC members. Table 22-4-5 HQ>1 for Se for Aquatic community (Elk River), amphibians and fish from ER1, GC1, 2 and 4. A footnote states that locations are inherently considered as cumulative assessment nodes as predicted water quality is influenced primarily by	29-Apr-24

HH_31	Open	5(1)(c)		6.5	ECCC IR-88 KNC 235	6.6.6.1.4	Identify additional mitigation measures (e.g., existing technologies, best practices, etc.), to address the predicted exceedances of BC AAQOs and issues related to dust management, to inform the effects assessment on the health of Indigenous peoples. Discuss the effectiveness of water suppression on haul roads to control fugitive dust, espectically in the context of extreme drought conditions. Update Management Plans to reflect clear commitments to application of mitigation measures should a response be triggered. Discuss the feasibility for real time source monitoring.	The EIS/A indicates that predicted exceedances of some BC ambient air quality objectives (AAQOs) are mostly concentrated within 2 km of the Project footprint, where no permanent residences exist. While it is possible that people or wildlife could be occasionally exposed to such concentrations, a continuous exposure would not be expected. Therefore, the residual effects of the Project from a change in ambient criteria air contaminant concentrations were characterized as not significant. ECCC notes that dust management in this region is an ongoing issue with potential environmental and health impacts to the surrounding areas, such that Teck Resources Ltd. has been conducting ongoing monitoring and dust mitigation in the area (Teck 2023). Current and emerging best practices for dust management may help mitigate Project effects related to dust management. References:	29-Apr-24

							The cumulative effects assessment completed for terrestrial and aquatic wildlife health considers other ongoing or reasonably foreseeable future projects, as well as temporal effects associated with the Project (e.g., incremental changes to soil contaminant concentrations over the lifespan of the Project).	
EffectsEnv_01	Open	s.19 Factors to be Considered	6.6.2, 6.6.3, 6.1.6	ECCC IR-04, 89 YQT 36 Stefan	Ch 22.6.4, p. 22-58 to 63 Appendix 20A	Include precipitation and/or changes to the amount of expected precipitation (i.e., climate change) in the Elk Valley when modelling the degree to which selenium is expected to seep from waste rock piles. Provide additional details on the anticipated effects of climate change on Project hydrology and describe how related uncertainties are taken into account in the determination of Project effects, adaptive management plans, design of mine infrastructure (i.e., ponds, haul roads, etc.) and reclamation planning.	Selenium is mobilized when rock overburden and waste materials are crushed and exposed to natural weathering processes (US EPA, 2018). It is not clear whether environmental factors that contribute to selenium mobilization (e.g., precipitation, climate change, etc.) were considered in the cumulative effects assessment. Reference: US EPA, 2018: DRAFT Aquatic Life and Aquatic-Dependent Wildlife Selenium Water Quality Criterion for Freshwaters of California The EIS/A indicates that the effects of climate change on hazards related to	29-Apr-24

EffectsEnv_02	Open	s.19 Factors to be Considered	6.6.2	ECCC-IR-50	Ch 3, 20, Appendix 20A	Clarify how climate change has been or will be considered in the project design and management, including: a) Where design values for long-lived project infrastructure (that are sensitive to extreme precipitation, e.g., water management infrastructure) are derived from historical climate data, explain how climate change has been or will be considered. b) Regarding the risk interaction related to the sedimentation pond, describe the risks posed, the time period they are relevant, and any additional assessment that may be required (e.g., timing, methods, and how it will inform planning, design and management and adaptation measures).	In Appendix 20A, climate model projections indicate that there may be changes in: (i) the intensity/frequency of occurrence of extreme short-duration precipitation events and (ii) drought frequency/extent in the Project area over the Project's lifetime. The EIS/A also indicates (Section 3.6) that the operational lifetime is 15 years but that the closure and post-closure activities will extend for an additional 17 years, such that the overall Project lifetime is roughly 34 years (i.e., into the late 2050s assuming a 2024/5 start). Chapter 20 and the supporting appendix discuss potential climate change hazards and Project sensitivities in an overall evaluation of risks posed to the Project by climate change. These are not broken down into the different phases of the Project and it is unclear how the climate change projections have been considered in some aspects of design. Although adaptation measures are listed, it is not clear if climate change has been considered in design of	29-Apr-24

EffectsEnv_03	Open	s.19 Factors to be Considered	NRCan_IR_01, 02, 03	Ch 20 Appendix 8C	Provide additional justification to support the assessment of residual effects of landslides on the Project, as the Terrain Stability and Geohazards Mapping Report (Appendix 8C) seems to indicate the opposite, i.e., that the severity of the effects of landslides is not low. For example, in Table 3.1, Distribution of Terrain Stability Classes within the LSA, shows 46% of the terrain in the project footprint is rated as a level IV (20%=potentially unstable) or V (26% =unstable). Furthermore, and similarly, in Appendix 8C, the Executive Summary mentions that (p.ii, 1st para. 1st line): “Almost half of the study area lies within TS Class IV and V terrain and most of the infrastructure overlaps at least portions of the TS Class IV and/or V terrain”. Clarify the approach to geohazard risk assessment throughout the duration of the Project. Assess the potential effects of landslides resulting from climate change on the Project, or provide a rationale for why this is not required.	In section 20.4.3.3, the proponent states: “Further, the severity of effects on the Project by landslides is predicted to be low. Therefore, the residual effects of landslides on the Project are not expected to be significant.” Appendix 8C Section 5.2, the consultant recommends detailed geohazards risk assessments throughout the duration of the project following the Risk Management Framework (Fig. 5.1; D. VanDine 2012). Ref: VanDine, D.F. (2012). Risk Management – Canadian Technical Guidelines and Best Practices Related to Landslides; Geological Survey of Canada, Open File 6996, 8 p. Sections listed address the potential effects of climate on the Project. The Proponent has considered several climate hazards listed and shown in Figure 20.6.1. e.g., high and low temperatures, heavy precipitation, freeze thaw cycles, etc., but has not included landslides.	29-Apr-24
EffectsEnv_04	Open	s.19 Factors to be Considered	NRCan_IR_05, 06	Ch. 20	Confirm that there is no evidence for active (Holocene) faulting at the Project site. Confirm if there are any hydraulic-fracturing activities underway in the area that may produce induced seismicity.		29-Apr-24

EffectsEnv_05	Open	s.19 Factors to be Considered	KNC 202. 203, 204, 206	6.4.1.1	As per SAR_17, justify the use of older datasets to characterize the baseline environment for meteorology. Provide a rationale for having not collected snowpack data.	Cursorary review of meteorology section indicates utilization of long-term data sets up from 1981 through 2010. Reporting date is understood to be 2020, was the 1981-2010 the recently complete climate normals period at time of analysis? Data set incorporated appears to be over 20 years old (2002), was this the most recent data set at time of analysis?. Site specific climate station did not monitor snowpack, and it is understood that snow pack measurements were not completed. Is there a reason that snowpack measurements were not part of the chracterization? What site specific assessment or assumptions were used regarding snowpack at the proposed mine site?	29-Apr-24
EffectsEnv_06	Open	s.19 Factors to be Considered	Agency KNC 220	20.3.1 Appendix 8C	Discuss the potential effects of extreme drought on the Project, including how the Proponent intends on sourcing enough water to continue operations if Creek flows are substantially reduced for an extended period of time. Confirm if the water reservoir and planned mine water recycling activities will be enough to satisfy water requirements in this situation. Clarify whether the MRSF will be constructed and maintained following closure of the Project to withstand extreme precipitation events, and if so, to what return period is it being engineered (i.e. 1:100 year flood, 1:500 year flood, etc.). Provide an assessment of effects of wildfires on the MRSF, especially in the post-Closure Phase. Provide a discussion of whether a wildfire could compromise the integrity and proper functioning of the MRSF, and resulting adverse environmental effects, including from unabated selenium/nitrate leaching.	The EIS lacks an assessment of extreme drought. Analysis focuses on historical monthly averages but lacks detail on extreme hourly or daily events, and return period probability.	29-Apr-24

Alternatives_01	Open	s.19 Factors to be Considered		Agency KNC 227	Ch 3	Clarify whether BC Hydro has confirmed that it will be able to supply enough electrical power to operate the Project. If they have not, what alternatives are being considered to supply/generate sufficient electricity for the Project, and what are the potential adverse environmental effects and resulting impacts to Indigenous rights of these alternatives?	It is indicated that Electrical power for the Project will be solely supplied from BC Hydro's nearby 138 kV transmission line, and will require 11.6 MW of electrical power. Has NWP confirmed with BC Hydro that enough power will be available? Teck's current baseline of demand of 140 MW has already oversubscribed the BC Hydro power supply, such that BC Hydro is proposing to expand the distribution system just to meet Teck's demand, which includes the electrification of mining equipment to a " zero-emission fleet. (https://www.bchydro.com/energy-in-bc/projects/teck-electrification.html). Will this project require further expansion of BC Hydro's power supply, and where will that power be supplied from by BC Hydro?	29-Apr-24
Alternatives_02	Open	s.19 Factors to be Considered		Agency YQT 03 KNC		The Proponent has publically stated (in meetings with regulators, Indigenous nations, and the in-person TAC meeting on April 10-11, 2024) that it intends to select a new location for the proposed Rail Load Out Facility, an integral project component. Provide the new location of the RLO, and update the effects assessment for each applicable Valued Component relating to federal jurisdiction. Should more than one location be under consideration, update the effects assessment for each proposed location. Following this, update the sections on effects to the environment on Indigenous peoples, and Impacts to Indigenous rights.		29-Apr-24
AM_01	Open	s.19 Factors to be Considered	6.1.6, 6.1.7	ECCC IR-12	21.4.2.3.7	Provide references and rationale to substantiate the claim of habitat and food availability increase following completion of post-spill restoration activities, and updated relevant sections of the EIS/A to include details on timelines for vegetation re-establishment.	Page 21-16 of the EIS/A states, "habitat and food availability are predicted to increase following completion of spill response efforts and restoration activities to re-establish vegetation communities within the area affected by a release, over time." ECCC notes that, depending on the habitat and/or food type, and the nature of the restoration work, increased habitat and food availability could take decades to achieve meaningful functional recovery.	29-Apr-24

TB_01	Open	5(1)(b)(i), (ii), (iii)	6.1.7	ECCC IR-17	15.5.2.3.2	Include details on how transboundary effects to carnivore VCs were assessed, including: •maps; •methodologies; •results of the analysis; and •a description of how these effects were considered in the significance determination for Project effects on grizzly bear movement and connectivity.	Page 15-217 of the EIS/A states, "Grizzly bear, wolverine, and Canada lynx are highly mobile and wide-ranging animals. It is likely that individuals present in the Terrestrial LSA make seasonal or occasional movements into Alberta and possibly the U.S.A and into federal lands located within the Grizzly Bear and Terrestrial RSAs…Residual effects to carnivore VCs (if present) have the potential to be considered transboundary effects with Alberta and U.S.A and on federal lands." Figures depicting the results of the habitat suitability models do not include results within the RSA, despite the importance of understanding the habitat types surrounding the Project and the full effects on habitat loss and connectivity regarding transboundary effects.	29-Apr-24
GG-01	Open	5(1)(a)(i) Fish and Fish Habitat	6.1.2 Geology and Geochemistry geochemical characterisation of leaching potential, including, but not limited to, contaminants of concern from waste rock, pit walls, coal stockpiles, coarse coal rejects, and tailings.	NRCan-IR-11	Table 4-1 of Appendix 11C	Clarify whether the four drillholes without samples associated with them in Table 4-1 of Appendix 11C were included in the geochemical sampling plan or not. If they were included, update the EIS with their information and results. If they weren't included, clarify what the intentions are with these drillholes and why they are included in this table. Include information on any intentions to further sample the East block.	Table 4-1 of Appendix 11C lists sixteen drill holes selected as part of the sampling plan for the geochemical characterization of waste rock. Four of those drillholes, including two of the three drill holes from the East block, do not have any samples associated with them.	29-Apr-24

GG-02	Open	5(1)(a)(i) Fish and Fish Habitat	6.1.2 Geology and Geochemistry the bedrock and host rock geology of the deposit, including a table of geologic descriptions, geological maps, and cross-sections of appropriate scale. the geochemical characterisation of expected mine material such as waste rock, tailings, coal, reject material, overburden, and potential construction material in order to predict metal leaching and acid rock drainage.	NRCan-IR-12	Chapter 3 and Appendix 11C; Section 4.3.1 of Appendix 11C; Appendix C of Appendix 11C; Table 3.7-7 in Chapter 3 and Appendix 11C (pp 22-23)	a. Provide cross sections or block model images that show the source location of all samples used in the geochemical testing program. At a minimum, the images must clearly show the borehole traces, stratigraphy, coal seams, the anticipated location of the open pit, and a legend to allow for interpretation of these images. The images must be accompanied by a plan geological map, similar to Figure 3.3-4 of Chapter 3, identifying drillholes from which samples used in the geochemical testing program were sourced. Drill hole IDs should be clearly identified and should correlate to drill hole IDs associated with sample IDs provided in the EIS. b. Provide tonnages for each of the lithologies identified in the formations listed in Tables 5-1, 5-2. and 5-3 in Appendix 11C (pp 22-23). Provide a comparison of the tonnages against the number of samples analysed for each lithology. Provide summations of the lithology tonnages by stratigraphic package, separated by block (i.e., North, East, South) to complement the sample distribution information provided in Table 4-3 of Appendix 11C. c. Provide quantitative justification for the number of samples collected in each stratigraphic package of each block taking into consideration the initial sampling frequency provided in MEND (2009). A statistical analysis of each lithology is recommended to demonstrate that sufficient samples were collected to capture the potential compositional variability of each sample group with respect to the parameters of environmental interest. d. Provide a detailed summary of the method for sample selection, including if the site geologist selected the samples alone or through consultation with third party; how samples were collected from intervals where visible sulphide was identified; justification for the length of the	As detailed in MEND report 1.20.1 (Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials, 2009), the waste rock sampling program must be representative of the spatial, geological, and geochemical variability of the deposit. MEND (2009) recommends that samples collected from drill core be recorded in block models and shown on cross sections and plan view maps in order to best display how the sample spatially fits within the material it was intended to represent. Figure 3.3-4 of Chapter 3 provides a plan view of the project surface geology, the location of all drill holes, and the project outline. Geological cross sections with associated borehole locations are given in Figures 3.3-5, 3.3-6, 3.3-7 and 3.3-8 of Chapter 3, with the location of those cross-sections identified in Figure 2-2 of Appendix 11C. The waste rock sampling plan described in section 4.3.1 of Appendix 11C identifies 6 stratigraphic	29-Apr-24
GG-03	Open	5(1)(a)(i) Fish and Fish Habitat	6.1.2. Geology and Geochemistry the bedrock and host rock geology of the deposit, including a table of geologic descriptions, geological maps, and cross-sections of appropriate scale. the geochemical characterisation of expected mine material such as waste rock, tailings, coal, reject material,	NRCan-IR-14	Section 4.3 of Appendix 11C	a. Detail where the five samples listed in Table 4-3 in Appendix 11C were sourced. Include their sampling locations on geological plan and cross-section maps, as requested in NRCan-IR-12. b. Provide justification for why drillholes through the Fernie Formation within the planned pits from the North, East, and South blocks were not selected as part of the geochemical sampling plan. c. Describe plans to further sample the Fernie Formation to ensure its complete and representative characterization.	The Fernie Formation appears in the geological cross-sections for the North, East and South blocks in both the footwall and hangwall units. Although the outline of the pit was not included on the geological cross-sections, the potential exposure of the Fernie Formation on the pitwall cannot be excluded. Table 5-4 of Appendix 11C reports test results for two samples in the sampling package “8U Hangingwall”. In Figure 2-1 of Appendix 11C, the hanging wall represented by these samples comprises the Fernie Formation, suggesting that these two samples represent Fernie Formation. This sampling package generated acid	29-Apr-24

GG-04	Open	5(1)(a)(i) Fish and Fish Habitat	6.1.2. Geology and Geochemistry the geochemical characterisation of expected mine material such as waste rock, tailings, coal, reject material, overburden, and potential construction material in order to predict metal leaching and acid rock drainage.	NRCan-IR-15	Section 4.4.3 of Appendix 11C; Figs. 5-14, 5-15, and 5-16 in Appendix 11C	a. Provide a clear and complete rationale for the selection of kinetic test samples including a detailed quantitative review of the representativeness of each kinetic test sample with respect to the material type / lithology that they represent and parameters of interest with respect to ML/ARD. Specify the selection criteria used and how typical and upper limit values for those criteria were selected. b. Highlight samples selected for kinetic testing on Figs. 5-14, 5-15, and 5-16 in Appendix 11C to support the evaluation of their selection.	MEND (2009) provides detailed considerations to support the design of a kinetic test program. This includes sample representativeness with respect to the material type and lithology they represent, particularly mineralogy, ARD potential, metal(loid) content, and elevated metal leaching potential. Section 4.4.3 of Appendix 11C reports that the samples for kinetic testing (i.e., HCT) were selected using the static test results and that the selection was designed to represent typical and upper limit characteristics and rock types. The kinetic test program includes 12 samples of waste rock and 2 plant reject samples, along with 1 duplicate and 1 blank. Based on this number of tests, it is not possible to test both a typical and upper limit characteristics of all rock types (16 lithologies were distinguished in static test results figures presented in Appendix 11C). A kinetic test sample selection	29-Apr-24

GG-05	Open	5(1)(a)(i) Fish and Fish Habitat	3.1. Project Components waste rock, overburden, topsoil, tailings, coal storage, and stock piles (footprint, locations, volumes, UTM coordinates, height from ground of each component, development plans, and design criteria). 6.1.2. Geology and Geochemistry the geochemical characterisation of expected mine material such as waste rock, tailings, coal, reject material, overburden, and potential construction material in order to predict metal	NRCan-IR-16	Appendix A1 of Appendix 3B; Appendix B of Appendix 11C	a. Update Appendix A1 of Appendix 3B with drillhole ID, from-to data, and the stratigraphic package from which each sample was sourced. b. Provide analysis of the split duplicate results. c. Clarify if the five samples labelled 'Fernie Formation?' in Appendix A1 of Appendix 3B are Fernie Formation samples and provide the original lab certificates for their analysis.	Tabulated static testing results are reported in Appendix A1 of Appendix 3B with associated metadata, such as formation, lithology, location type, etc. Drillhole ID and stratigraphic sampling package information is absent from the data. Based on the information provided, it was not possible to associate tabulated results with information provided in the sampling plan. Cole et al. (2023) provides NRCan's recommendations for information provision to enable efficient reviews of impact assessment data. Cole, J., Cleaver, A., Berryman, E., Price, B., Goulet, R. (2023, December 6-7). Lessons Learned in the Reporting of Geochemical Characterization Studies in Canada [Conference presentation]. 30th Annual BC MEND Metal Leaching/Acid Rock Drainage Workshop, Vancouver, BC, Canada. https://bc-mlard.ca/files/presentations/2023-13-COLE-ETAL-lessons-learned-reporting-geochemical-characterization.pdf	29-Apr-24

GG-06	Open	5(1)(a)(i) Fish and Fish Habitat	6.1.2. Geology and Geochemistry the geochemical characterisation of expected mine material such as waste rock, tailings, coal, reject material, overburden, and potential construction material in order to predict metal leaching and acid rock drainage. geochemical characterisation of leaching potential, including, but not limited to, contaminants of concern from waste rock, pit walls, coal stockpiles, coarse coal rejects, and tailings.	NRCan-IR-17	Table 3-1 of Appendix 11C, Appendix A of Appendix 11C	a. Provide complete information on the samples selected and their selection criteria for the mineralogical testing done in support of ABA. b. Provide all mineralogical data to justify the source of acid potential and neutralization potential, including any data that has become available since the generation of the report in Appendix 11C in 2021.	The study design components summarized in Table 3-1 of Appendix 11C report that mineralogical testing (X-ray diffraction, i.e., XRD) of representative waste rock samples covering the range of observed characteristics would be done to support ABA, as well as mineralogical testing (XRD, optical mineralogy and Electron Probe Micro Analysis, i.e., EPMA) of all samples undergoing Humidity Cell Testing is planned. However, only the XRD results for the two process plant reject samples are presented in the EIS (Appendix A of Appendix 11C). Mineralogy data to justify the source of AP and NP is therefore currently absent.	29-Apr-24

GG-07	Open	5(1)(a)(i) Fish and Fish Habitat	6.1.2. Geology and Geochemistry the geochemical characterisation of expected mine material such as waste rock, tailings, coal, reject material, overburden, and potential construction material in order to predict metal leaching and acid rock drainage. geochemical characterisation of leaching potential, including, but not limited to, contaminants of concern from waste rock, pit walls, coal stockpiles, coarse coal rejects, and tailings.	NRCan-IR-18	Appendix 11C; Section 5.1.3 Acid Rock Drainage Potential of Appendix 11C	a. Provide justification for the classification of samples as non-PAG based on <0.1% sulfide sulfur b. Elaborate how the neutralization potential of samples with <0.1% sulfide sulfur concentrations was determined to be sufficient to neutralize any acid generated during weathering, particularly in the case of samples with low or negative NP/AP.	Section 5.1.3 Acid Rock Drainage Potential of Appendix 11C details how ARD potential was classified as PAG, uncertain, or non-PAG. Specifically, it describes how samples with concentrations below 0.1% ICP-MS sulfur were classified as non-PAG, regardless of the modified NP/AP ratio, with the justification that acid generated during the oxidation of the low concentrations of sulfide would be readily neutralized by the host rock. This is not consistent with the classification of non-PAG and PAG material in MEND (2009) and it should be noted that a small amount of sulfide in a rock can produce deleterious amounts of acid given the scale of waste rock being displaced if insufficient reaction of neutralizing minerals takes place to neutralize the acid. It should also be noted that the neutralization potential for some of the samples is reported as low, sometimes negative. A negative neutralization potential is indicative of the absence of neutralization potential	29-Apr-24
GG-08	Open	5(1)(a)(i) Fish and Fish Habitat	6.1.2. Geology and Geochemistry geochemical characterisation of leaching potential, including, but not limited to, contaminants of concern from waste rock, pit walls, coal stockpiles, coarse coal rejects, and tailings.	NRCan-IR-19	Figures 5-14, 5-15, 5-16 in Appendix 11C; Appendix A1 of Appendix 3-B	Include results for all samples in figures reporting results. If the figure axes are not compatible with all results for all samples, NRCan recommends that an inset figure is included.	Samples with negative modified NP values generated acid during modified Sobek NP testing. Following MEND (2009), these samples are considered acid generating and may need extra consideration during waste management. Figures 5-14, 5-15, 5-16 in Appendix 11C do not include the samples with reported negative modified NP values.	29-Apr-24

GWMODEL-01	Open	5(1)(a)(i) Fish and Fish Habitat	6.1.4 – Groundwater and surface water	NRCan-IR-08	Chapter 9, Appendix 9A, Section 4.1.1, Table 4-1, Appendix B of Appendix 9A, Section B.8, Table B-1, Page B-8 Appendix B of Appendix 9A, Section B.8, Figure B-5, Table B-2, Page B-9 Appendix D of Appendix	a) Provide the rationale for representing the bedrock as a single hydrostratigraphic unit with anisotropic/depth dependant hydraulic conductivity. b) Provide a plan view map and cross-sections through the entire model domain showing the areas where each anisotropy tensor in Table B-2 is applied. Include cross-sectional maps of the entire model domain showing the hydraulic conductivity in each primary direction. c) Provide north-south, and east-west cross-sections through the RSA showing the stratigraphic sequence of the units shown on Figure 3-3 of Appendix 9A.	As a component of the hydrostratigraphical context of the project (Guidelines 6.1.4), hydraulic conductivity is a primary parameter in the determination of groundwater flow direction, and groundwater quantity. Groundwater quantity in turn impacts fish and fish habitat through groundwater discharge to surface water. Understanding of the bedrock hydraulic conductivity representation, and the relationship between stratigraphy and hydraulic conductivity is required. The proponent has collected detailed hydraulic conductivity data, and presented a hydrostratigraphic	29-Apr-24
GWMODEL-02	Open	5(1)(a)(i) Fish and Fish Habitat	6.2.2 - Changes to groundwater and surface water	NRCan-IR-09	Chapter 9, Appendix 9A, Section 4.1.2, Section 5.1.2, and Table 5-2 Appendix B of Appendix 9A, Chapter 9, Section B.9, Figure B-10, Figure B-16 Appendix D or Appendix B of	a) Provide additional details on the understanding of groundwater surface water interactions in West Alexander Creek. Ensure that the text accurately describes the model boundary conditions used to represent West Alexander Creek (i.e., are constant head nodes used for a portion). b) Include a discussion of the potential source of water that results in the high baseflows in the lower reaches of West Alexander Creek. c) Characterize Grave Creek to the same extent as Alexander Creek and West Alexander Creek by including: 1) a description of, and cross-sectional figure showing the subsurface materials underlying the creek 2) a characterization of gaining and losing segments within the LSA 3) the rational for the northern boundary of the LSA in proximity to Grave Creek 4) an assessment of the calibration of the groundwater model to baseflow within Grave Creek	Groundwater discharge to surface water regulates stream temperature and maintains flow during low flow periods, impacting fish and fish habitat. The conceptual model of groundwater flow includes delineation of stream segments that are losing (surface water is entering the groundwater system) and gaining (groundwater is entering the surface water flow system). These zones are noted as groundwater discharge zones (gaining), and groundwater recharge zones (losing) on Figure 4-7 for Alexander and West Alexander Creeks. On this figure the losing reach of West	29-Apr-24
GWMODEL-03	Open	5(1)(a)(i) Fish and Fish Habitat		US EPA	9.4.3.5.2 Conceptual Groundwater Model Figure 9.4-15	a) Discuss post mining hydrogeological conditions using Figure 4-8 in Appendix B of Appendix 9A. b) Address how predictions of the layer-cake waste rock disposal design performance would be affected in reducing selenium and nitrate leaching using Figure 4-8 in Appendix B of Appendix 9A.	This figure and section depict the hydrogeological conceptual model for baseline conditions. A similar figure is not presented for post-mining conditions in Section 9. However, a post mining conditions conceptual model is shown in Appendix B (Figure	29-Apr-24

GWMODEL-04	Open	5(1)(a)(i) Fish and Fish Habitat	6.2.2 - Changes to groundwater and surface water	NRCan-IR-10 US EPA	Appendix 9A of Chapter 9, Section 5.1.2, Table 5-2 Appendix B of Appendix 9A of Chapter 9, Figures B-18 Figure B-24, Figure B-26 11.5.2.4	Provide the following: a) Steady-state particle tracking results for surface and in-pit waste rock disposal under long-term closure conditions b) Discuss the plan for waste rock backfill into the mined-out pits including the planned elevation of the backfill relative to the spill point elevation, and confirming whether portions of the waste rock will be present above the water level in the pits. Confirm whether saturated rock treatment of mine water is planned for within the backfilled pits. c) Provide the quantity of seepage from the surface and in-pit waste rock dumps that reports to Alexander Creek, West Alexander Creek, and Grave Creek under long term closure. Compare those quantities to the	Seepage from mine rock disposal can become groundwater discharge to surface water. Water quality within surface water can be a function of the quantity of seepage discharge relative to other groundwater discharge. This can impact fish and fish habitat. Although changes to baseflow in Alexander Creek, West Alexander Creek, and Grave Creek are reported in Table 5-2, the source of the baseflow at the end of mine and long-term closure is not clear.	29-Apr-24
GWMODEL-05	Open	5(1)(a)(i) Fish and Fish Habitat		Kainai 07 Siksika 06	Executive Summary E.7.4.2 Groundwater Assessment Paragraph 2	a) Provide detail on how the effects assessment has considered overall reduction in water quantity due to drought conditions in the region. b) Provide detail about how this assessment incorporates climate change modelling over the life-cycle of the Project. c) Explain if the reduction of baseflow at Alexander Creek and Grave Creek will be more significant in the later years of the Project than it is against today's baseline.	Application states that "[a]t their maximum extent, the predicted effects on groundwater quantity are in the range of a 5% reduction of baseflow at Alexander Creek (below the confluence of West Alexander Creek and Upper Alexander Creek), and a 2% reduction of baseflow at Grave Creek". The Proponent states that after mitigation measures, the residual effects are predicted to be "not significant". The Proponent further notes at p 39, "this area is characterized by low precipitation and dry summers, cold and dry winters, and low-to-moderate snow pack (Columbia Basin Trust, 2017)".	29-Apr-24
GWMODEL-06	Open	5(1)(a)(i) Fish and Fish Habitat 5(1)(c)		KNC-117	Chapter 4 (Consultation and Engagement)	a) Provide more information on the water balance model and explain if the calculated contact water seepage reporting to the toe could be underestimated significantly. b) Explain if the mine contact water could migrate to Harmer Creek via the groundwater pathways (through the mapped karst potential bedrock) from the mine. Was this considered in the GoldSim model predictions for water quality? If not, would the predicted results be reliable? c) Explain the reason that only Selenium was selected as one of the key species for the water quality prediction at the nodes, why other metals of concern including cadmium were not included?	• Appendix 4-QQ (Water Quality Meeting - October 2021): (1) pdf Pages 13: the conceptual diagram of the water balance mode for the waste rock dump shows the groundwater discharge from the valley slopes and valley base into the dump was not considered but would expect to be in high volume. The waste rock dump is on the valley base which expect to receive high volume of groundwater recharge from the valley slopes and base, as well as slope	29-Apr-24

GWMODEL-07	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-119	Chapter 9 (Groundwater Assessment)	a) Provide more information on the rising of water level under and within the waste rock dump due to water mounding effect. b) Provide a rationale for setting the current model domain boundary in the west with Harmer Creek excluded since this could possibly cut off or artificially prevent the seepage migrating toward Harmer Creek. Extend the model domain to include Harmer Creek and then simulate particle-tracking and solute transport to demonstrate if any seepage from the mine facilities would migrate to Harmer Creek or not. c) Provide more information to support the statement that no carbonate rocks were identified in the geological mapping and drill core for the Project.	• Section 9.2.2 (Indigenous and Stakeholder Consultation), Table 9.2-2, on Pages 9-6 and 9-7: KNC/Waterline raised a question in the June 2020 meeting that West Alexander was a "losing creek" that could result in seepage from the waste rock dump infiltrating to deeper formations and hence bypass the sediment ponds. The proponent responds here that "Water quality modelling assumes that all water collecting load from the MRSF or pits ultimately reports to surface water receptors". The groundwater modeling presentation (Appendix 4-OO) show that the simulated particle-tracking pathlines indicate that the mine seepage could bypass the sediment ponds and could even migrate towards East Alexander Creek. As commented in Appendix 4-OO, the mine seepage could potentially even migrate toward Harmer Creek in the west via the deeper groundwater pathways through the karst potential bedrock, and the model domain set in the west could possibly cut off or artificially prevent	29-Apr-24

GWMODEL-08	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-120	Chapter 9 (Groundwater Assessment)	a) Clarify if faults were modelled in the baseline model or explain why they were not modelled and how they will affect the credibility of the calibrated baseline model. b) Provide the calibration recharge rates in the baseline model in Section 9.4.2.7.4, together with the K values. c) Specify which well(s) will be suitable and used as the background water wells of groundwater monitoring & sampling for the quantity and quality effect assessment of the mine project. d) Explain how the available data was used to assess groundwater flow in the bedrock formations and provide a rationale to support the statement that "discharge of deeper groundwater does not appear to be significant close to the Project". e) Explain why mitigation measures, such as diversion ditches, basal rock drains and even liners to help reduce water contacting with waste rocks, were not in the mine designs. f) Explain if the losing creeks of West Alexander and Alexander main downgradient of the mine site could discharge toward Harmer Creek and/or even Erickson Creek as driven by the regional hydraulic gradients. g) Explain why the inflow and outflow rates, from the groundwater model results, are not balanced.	• Section 9.4.2.5 (Determination of Hydraulic Properties), on Page 9-36: The hydraulic conductivity data appears limited. • Section 9.4.2.7.2 (Model Domain and Model Mesh) on Page 9-37: It was stated that "The domain is set to encompass the East Alexander, West Alexander, Lower Alexander and the upper portion of the Grave Creek catchments, with the external boundaries considered to be sufficiently distant from the mining area to minimize the influence of the boundary conditions on model predictions.". The boundary in the west is too close (< 1km) to the mine footprint (especially to the rock dump) and is recommended to be extended to include Harmer Creek, to eliminate boundary effect. See comments above about the rationale. • Section 9.4.2.7.3 (Boundary Conditions) on Page 9-40: The model boundary along the west (which coincide with ridges forming surface water catchment divide) was assigned	29-Apr-24

GWMODEL-09	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-122	Chapter 9 (Groundwater Assessment)	a) Provide a rationale for only quantifying and assessing flow across cross-sectional areas to 50 m depth in the West Alexander and Alexander Creek valleys, as well as groundwater discharge to West Alexander, Upper Alexander, Alexander and Grave creeks. b) Provide more information to show where the mine contact water from the MRSF would migrate to, particularly to show if any seepage would migrate towards Harmer Creek catchment. Also, indicate the mitigation options considered downstream the pond and before the confluence with Alexander Creek. c) Explain how the majority of potentially impacted surface water and groundwater will be captured by the sediment ponds. d) Provide more information on the expected effect of the MRSF to groundwater quality, the assumption of being irreversible, the determination of significance, and the characterization of likelihood. d) Explain the potential cumulative effects caused by the overlap between this project and Teck's Elkview Operations from the groundwater quantity and quality perspective.	• Section 9.5.4.1 (Groundwater Quantity and Quality Assessment Methods) on Page 9-109: It was stated that "Groundwater flow was quantified across cross-sectional areas to 50 m depth in the West Alexander and Alexander Creek valleys, as well as groundwater discharge to West Alexander, Upper Alexander, Alexander and Grave creeks.". How about groundwater flow in depths of > 50 m? Explain how defensible by only assessing the groundwater effects within 50 m depth. Deeper groundwater should be assessed, including potential seepage migration towards Harmer Creek catchment. It was stated that on Page 9-110 that particles were assigned at the sediment pond and simulated as backward tracking. KNC would recommend to place particles within the footprint of the WRSF and the pits and simulate forward tracking to show where the mine contact water would migrate to, particularly to show if any	29-Apr-24

GWMODEL-10	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-123	Chapter 9: Appendices 9A (Groundwater Technical Report)	a) Explain if the monitoring wells used to collect data were only drilled to a maximum depth into the bedrock of ~40 m since it appears no wells were drilled in any major faults/karst bedrock to obtain critical information for the baseline, the groundwater modeling, and the groundwater effect assessment. b) Explain if during the overburden geology investigation, geophysical survey was done across and along the West Alexander Creek valley where the MRSF and sediment ponds are proposed to get a full picture of the overburden distribution along this valley. c) Provide more information on the tested K data collected since it seems insufficient for the trend analysis and the karst potential bedrock and deeper bedrock . d) Consider the use of transducers to measure water levels in the future instead of manual measurements and also ensure to measure the water levels for > 1 year continuously as well as be sampled on a consecutive quarterly basis. e) Clarify if the calibrated K values (Table 4-1) lower or near the lower bounds of the measured indicate a possible underestimations of groundwater flow and plume migration. f) Clarify why on Page 29 (Appendix 9-1) Figures 4.5 and 4.6 in the report text do not match the figure numbers of the actual figures (pdf pages 320 and 321 show Figures 4.6 and 4.7 respectively).	• Appendix 9-A, Section 3.4 (Monitoring Network) on Page 8: Among all the monitoring wells listed in Table 3-3, the maximum depth into the bedrock was ~40 m, which suggests that no information and data was collected to understand the bedrock deeper than 40 m. All the bedrock wells were drilled into the bedrock wells is sandstone, mudstone/shale, and no wells were drilled into karst rocks (limestone, dolomite) that is shown on the geology map. It appears no wells were drilled in any major faults. Lack of the critical information for the bedrock would be considered as a major gap for the baseline, the groundwater modeling, and the groundwater effect assessment. Section 3.5 described the karst potential has >50% soluble bedrock (Figure 3-3), and monitoring wells are highly recommended to target the karst bedrock (e.g., in the west of the WRSF). • Appendix 9-A, Section 3.4 (Overburden Geology) on Page 10: The overburden was investigated from a	29-Apr-24

GWMODEL-11	Open	5(1)(a)(i) Fish and Fish Habitat		YQT-19	CHAPTER 9 - GROUNDWATER ASSESSMENT	a) Explain why the current groundwater monitoring network only includes 28 monitoring wells considering the large scale of works and the extent of proposed clearings and mining activities. b) Explain why future groundwater quality predictions are admittedly conservative but are highly contingent on the layer cake waste rock dump performing as designed, downgradient redox conditions, and natural attenuation mechanisms. c) Explain how the stratigraphic units were distributed amongst the 16 layers in the groundwater flow model , and how the K values were assigned to each layer. Are varying overburden thicknesses accounted for in the model? d) Explain why the recharge to overburden and bedrock surfaces were assumed to be 15% and 10% respectively, without reference. Are these consistent with industry-standard/ literature-derived groundwater recharge rates from precipitation in mountainous hydrological /hydrogeological regimes? e) Explain how the West Alexander Creek baseflow (table 9.5-4) estimate of 3280 m3/day (38 L/s) compares to the groundwater flux of ~200 m3/day estimated by the FEFLOW model? f) Clarify which of the following statements are true: - Section 9.5.4.1.2 states that “near surface seepage (in the overburden unit) would not extend beyond approximately 500 m down-gradient of the MRSF (to approximate area of sediment pond) within 100	The groundwater assessment provides an overview of baseline/pre-existing hydrogeological conditions within and downstream of the Crown Mountain Coking Coal Project (the Project) area, along with anticipated project-specific and area-wide cumulative effects from the proposed Project. A 3D numerical groundwater model was developed using FEFLOW. The Project is predicted to cause adverse effects on both water quantity and quality, specifically: ● Baseflow contribution to nearby surface watercourses is expected to be reduced anywhere from 2% to 30%, largely owing to mine pit development and dewatering, altered mine site drainage patterns and groundwater-surface water interaction, and water table elevation changes near the pits during filling. ● Groundwater quality is expected to be impacted by infiltration of mine contact water, seepage from the Mine Rock Storage Facility and groundwater-surface water interactions with West Alexander Creek (which will	29-Apr-24
SWMODEL-01	Open	5(1)(a)(i) Fish and Fish Habitat	4.2 Study Strategy and Methodology 6.1.4 Groundwater and Surface Water 6.2.2 Changes to Groundwater and Surface Water	ECCC-IR-59	Appendix 10A Flow and Water Quality Impact Assessment Modelling Appendix 11F Water Quality Prediction Model	Provide the referenced report on geochemical source term development (i.e., the geochemical modeling report, SRK 2020) for review, or describe in detail how geochemical source terms have been developed and applied to the water quality model. Provide the following information: a) methods used to calculate all geochemical source terms with sufficient detail such that they can be recalculated; b) units for the source terms in Tables 22 to 27 in Appendix 11-F; c) size of the MRSF in hectares over time; d) area of MRSF assumed to be exposed, covered, and reclaimed by year; e) specifications for the cover and final remediation that support the runoff and infiltration parameters in Table 18 of Appendix 11-F; and f) tabular streamflow and water quality prediction results (note Attachments 2 and 3 of Appendix 10A were not provided at the time of	The EIS/A lacks details on the inputs and outputs of water quality model. For example, the EIS/A does not describe how geochemical source terms for water quality modelling have been derived from geochemical characterization and testing results. Although Section 3.5.1 of Appendix 11-F states that such information was provided in a separate report (i.e., the geochemical modeling report, SRK 2020), this referenced report cannot be found in the EIS/A. The following geochemical information	29-Apr-24

SWMODEL-02	Open	5(1)(a)(i) Fish and Fish Habitat		KNC-176	Appendix 3C Appendix 11F	a) Provide a rationale for the Nickel removal not being supported like it is for Se and Nitrate in relation to the layer cake approach (e.g., Appendix 3C appears focused on Se and Nitrate only). b) Explain why the source term derivation has not been provided, not having the source term derivation is critical/fatal gap in truthing the substantiation of the water quality projections especially for the Layer Cake mitigation.	The layer cake approach is modelled to release on average 80% less Se and 98% less NO3. Nickel reduced by 57% (P50) to 6% (P95), but the rationale for the Nickel removal not supported like it is for Se and Nitrate (e.g. Appendix 3C appears focused on Se and Nitrate only). These %removal values were calculated from the From Table 25 and 26 in Appendix_11F. To be able to vet the source terms, there is a critical missing report in the info provided.	29-Apr-24
SWMODEL-03	Open	5(1)(a)(i) Fish and Fish Habitat	6.1.2 Geology and Geochemistry 6.2.2 Changes to Groundwater and Surface Water	ECCC-IR-60	Appendix 11C Geochemical Baseline	Describe how geochemical source terms for the Project have been developed from analogue data and, if applicable, geochemical testing data from the Project be compared to data from analogue sites in the Elk Valley in a manner that allows for detailed comparison of the range in selenium content and release rates (for example in box plots, grouped by waste rock type, and with all data points included in the graph).	The source term derivation is indicated in Chapter 11 as being “described in the geochemical baseline report (SRK, 2021d)”. However: The use of analogue data from other coal mines in the Elk Valley creates uncertainty in the geochemical source terms for MRSF effluent chemistry predictions. Geochemical static testing and whole rock elemental analysis have been conducted on 235 mine rock and two coal plant reject samples. Among them, twelve samples have been selected for further kinetic testing (i.e., humidity cell test). Section 3.2 of Appendix 11C states that one of the objectives of these tests is to demonstrate the close similarity in geochemical characteristics between mine waste rock from the Project and that of other coal mines in the Elk Valley, so that observations made from the other coal mines could be used as analogue data	29-Apr-24
SWMODEL-04	Open	5(1)(a)(i) Fish and Fish Habitat s. 19 Factors to be Considered	6.2.2 Changes to Groundwater and Surface Water	ECCC-IR-65	Appendix 11F Water Quality Prediction Model	Include rationale to explain why the contaminant concentrations in effluent do not scale with the source terms.	It is unclear whether the water quality modelling predictions scale correctly with changes to source terms. For example, in the 50th percentile successful layer approach scenario (scenario B1a), the selenium source term for the Waste Rock Dump (WRD) seepage is 0.028 in mine year 16. In	29-Apr-24

SWMODEL-05	Open	5(1)(a)(i) Fish and Fish Habitat	6.2.2 Changes to Groundwater and Surface Water	ECCC-IR-67	Appendix 11I Mass Comparison Nitrate Selenium and Sulphate Contribution	a) provide discharge rates and concentrations to support all loading calculations b) describe the total amount of Project-related loading of all contaminants of potential concern in all affected watercourses (i.e., West Alexander Creek, Alexander Creek, Michel Creek, Elk River, Grave Creek, and Koocanusa Reservoir).	The EIS/A is not clear on the total loading (i.e., mass addition) of the contaminants of concern that the Project will add to affected watercourses: a) Appendix 11I states that the annual mass contribution of the Project to	29-Apr-24
SWMODEL-06	Open	5(1)(a)(i) Fish and Fish Habitat		KNC-179	Appendix 11F; Appendix 10	a) Clarify how the climate was modelled and indicate if KNC's understanding of it reflects in simple terms what was done. b) Clarify the statement in Appendix 10, section 2.2: “The model was constructed to use both historical records as well as stochastically generated climate, although the stochastic climate generator was not used for this modeling effort.” and explain the degree to which potential variability in the potential climate - i.e. outside of the range or sequence of weather events observed in the last 20+ years - has been considered in the modelling. e) Explain if the integration of the Crown Mountain Water and Load Balance with the Elk Valley Regional Water Quality Model could only be performed using average values and thus will be unable to capture the extreme events that may be experienced in the future by either model.	KNC requests some clarification on how the climate was modelled. From Appendix 11F, KNC understands in simple terms that an extended time series was developed for the 1972–2018 water years, from which statistics for air temperature and precipitation were then utilized in the WGEN weather generator to generate stochastic climate predictions. The stochastic climate predictions were then utilized in a snowpack and runoff model. The water and load balance model was run for 250 iterations to provide a range of potential flow predictions for a variable sequence of wet and dry years.	29-Apr-24
SWMODEL-07	Open	5(1)(a)(i) Fish and Fish Habitat		KNC-127	Chapter 10, Appendix 10-A (Flow and Water Quality Impact Assessment Modelling Technical Memo)	a) Explain why the conceptual flow diagram shows the flow of water from East and North Pits is directed to Upper Grave Creek if Figure 3.1-1 - General Site Layout in Chapter 3) shows some water from these pits will flow toward Alexander Creek. Also, confirm if all the contact water from these pits were actually modelled to discharge into Grave Creek along, or to Alexander Creek as well. b) Explain why the conceptual flow diagram shows that all seepage from the WRD will discharge to the sediment pond. This may not be true if some seepage from the WRD discharge towards Harmer Creek along the longer pathways via deep groundwater particularly through the karst potential bedrock and faults. c) Clarify if all the groundwater discharge from the valley slopes of Alexander was modelled to discharge into the WRD (as there are no diversion ditches considered in the project plan, according to the Project	• Section 2.6 (Mne Components), Figure 1, on Page 5: The conceptual flow diagram shows the flow of water from East and North Pits is directed to Upper Grave Creek. This seems wrong. The Project Description (Figure 3.1-1 - General Site Layout in Chapter 3) of the EA shows some water from these pits would flow toward Alexander Creek. Confirm if all the contact water from these pits were actually modelled to discharge into Grave Creek along, or to Alexander Creek as well. • Section 2.6 (Mne Components), Figure 1, on Page 5: The conceptual	29-Apr-24

SWMODEL-08	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-128	Chapter 10, Appendix 10-B (Hydrology Baseline Report)	a) Explain the difference between the measured and derived mean precipitation of 585.7 mm/year at Crown Mountain weather station and the mean precipitation of 709.8 mm/year calculated from the total monthly rate. Also, clarify which one was used in the GoldSim water balance and quality modeling. b) Explain the implications associated with the discrepancies between the mean annual precipitation values reported in Chapter 10 (761 mm/year for the RSA and 814 mm/year for the LSA) and the value reported in Appendix 9A (i.e., 717.0 mm/year). c) Clarify if the mean annual precipitation number for the water balance and quality modeling and groundwater modeling should be the same and also if the precipitation observed at the climate station on site is	• Section 5.1.2 (Precipitation), Table 11 on Page 38 and Table 12 on Page 39: At the Crown Mountain weather station, the measured and derived mean precipitation was 585.7 mm a year (Table 11) but the mean precipitation calculated from the total monthly rate is 709.8 mm a year. Explain this difference and which one was used in the GoldSim water balance and quality modeling. As commented in Chapter 10 - Section 10.4.1 (Existing Regional and Local Information), 10.4.1.1 (Hydrology):	29-Apr-24
SWMODEL-09	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-132	Chapter 11, Appendix F (Water Quality Prediction Model)	a) Explain if some mine seepage from the MRSF could discharge into deeper groundwater (and even to Harmer Creek), bypass the lined sediment ponds and migrate to the downgradient West Alexander Creek and extend into Alexander Creek. b) Explain if the water quality model was done by incorporating the groundwater model predictions from the sensitive analysis scenarios (e.g., higher permeability, higher or lower recharge). How about the predictions for the climate changes (e.g., wet, dry climates)? c) Provide the contingency plan to mitigate the mining impacts on water quality if the layering approach doesn't work as expected. d) Provide a rationale for using a saturated hydraulic conductivity (K) of 53.4 m/day (= 6e-4 m/s) in the 1D model. Explain if the waste rock dump could be more permeable than this number and if a sensitivity analysis was done for the permeability.	• Appendix 11-F: (1) Executive Summary, Page xi: It was concluded that "All mining discharges are collected in the WRD Sediment Pond, either the Interim Pond during Mine Years 0-4 or the Ultimate pond after Mine Year 4.". This may not be true, because some mine seepage would discharge into deeper groundwater (and may even to Harmer Creek), and seepage from the WRSF would bypass the lined sediment ponds and migrate to the downgradient West Alexander Creek and extend into Alexander Creek as predicted. On the average climate and hydrologic conditions, assuming the WRD layering approach would work,	29-Apr-24
SWMODEL-10	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-133	Chapter 20 (Effects of the Environment on the Project)	a) Provide more information on mitigation options and the potential impacts on the project under extreme precipitation events. b) Clarify if the water balance and quality model was simulated for a scenario with storm precipitation event (e.g., once in 200 years). c) Explain if the sediment ponds will be designed to accommodate potential high inflows due to the storm events, and if the ponds were to overflow, what contingency measures would be used to prevent potential disasters of failure (e.g., dams and berms) and what would be the effects to the downstream water quality?	• Section 20.3.1 (Extreme Precipitation Events), on Pages 20-3 to 20-5: It appears that the potential impacts on the project under the extreme precipitation events were described and assessed in general with the mitigations lack of details. Was the water balance and quality model simulated for a scenario with storm precipitation event (e.g., once in 200 years)? Would the sediment ponds be designed to accommodate potential high inflows due to the storm events, and could the ponds overflow	29-Apr-24

SWMODEL-11	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-140		Provide the mean annual precipitation rate used in the groundwater model and water balance / quality model.	KNC would like to know if the mean annual precipitation rate used in the groundwater model and water balance / quality model is identical for consistency. It appears there are some inconsistencies in the	29-Apr-24
SWMODEL-12	Open	5(1)(a)(i) Fish and Fish Habitat 5(1)(c) s. 19 Factors to be Considered	KNC-146	Chapter 22-Human and Ecological Health Assessment	a) Explain why sulphate and nitrate are not identified as COPCs and why they are not included in the HEHA. b) Clarify what is the likelihood of the success/failure of the layer cake technology and update HEHA information to also include the risk assessment for the scenario where the “layer cake” technology fails.	The SRK report on the water quality model predicted that the leaching of the waste rock will increase levels of Se, sulphate and nitrate to impact downstream water quality negatively. Why sulphate and nitrate are not identified as COPCs and not included in the HEHA?	29-Apr-24
SWMODEL-13	Open	5(1)(a)(i) Fish and Fish Habitat 5(1)(c)	KNC-156	11. Surface Water Quality Assessment	Clarify why certain parameters are presented and not others including substances that have been previously identified as mining-influenced in the Elk Valley through Teck's monitoring programs.	The SRK report presents the results on water quality under the scenarios There are a number of parameters that have been identified as mine-related through Teck's monitoring programs, including: dissolved cadmium, nitrate, selenium, sulphate, antimony, barium, boron, dissolved cobalt, lithium, manganese, molybdenum, nickel, nitrite, total dissolved solids,	29-Apr-24
SWMODEL-14	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-162	11. Surface Water Quality Assessment 11.5.4.1	Include model results for EV_MC2 compliance point to assess the potential for the project to influence water quality conditions at EV_MC2 that may be important for assessing compliance.	EV_MC2 (on Michel Creek), downstream of Elkview Operations is a compliance point in PE107517 (Teck's valley-wide permit). I recommend that the proponent include model results for this node to assess the potential for the project to influence water quality conditions at EV_MC2 that may	29-Apr-24
SWMODEL-15	Open	5(1)(a)(i) Fish and Fish Habitat 5(1)(c)	KNC-177	Appendix 11F Table 25 and 26	a) Explain why the wording “Initial Soluble Load” does not appear to be present in NWPs model report (Appendix 11F) and clarify if NWP’s consultants considered an equivalent concept to Teck’s “Initial Soluble Load”. b) Explain if the approach of using the “Interim Sediment Pond” to capture all site mine affected water during Years 0 to 4, to be recycled for use in Coal Handling Process Plant (CHPP) is in part to ensure that no initial soluble load is released to the environment.	“Initial Soluble Load” (the release of an immediately soluble component of selenium and sulphate that arrives with waste rock as it is placed in the spoil) in new spoils is a significant consideration in Teck’s publicly available 2020 RWQM, as it “could can result in an increase in initial release rates until oxidative processes within the spoil dominate constituent release or that the hydraulic lag through newer spoils is shorter resulting in rapid flushing of soluble load prior to wet up of the spoil”. The wording ““Initial Soluble Load” does not appear to be present in NWPs model report (Appendix 11F). Did NWP’s consultants consider an	29-Apr-24

SWMODEL-16	Open	5(1)(a)(i) Fish and Fish Habitat 5(1)(c) s. 19 Factors to be Considered	KNC-178	Chapter 11; Appendix 11-I	a) Explain why EV_MC2 was not modelled if this node is in Teck's RWQM and clarify why water quality in Michel Creek downstream of Alexander Creek could not be predicted using the SWWQ model if other models have included the EV_MC2 node, and this location is critical for effects assessment and compliance in Michel Creek. b) Explain why the mass loading analysis for Michel Creek provided (Appendix 11-I) is only based on comparing to 2019 data, not the go forward projection (which is very different from 2019) nor what the loads could be if the layer cake fails. Also, explain why the loading assessment for Michel is missing Nickel and other important COI. c) Explain how the apportionment of compliance between Teck and NWP (and potentially other proponents) at EV_MC2 and in the Elk River/Koocanusa will be handled. Also, provide more information on a regulatory pathway for this issue to be able to assess the impacts from	EV_MC2 was not modelled. Only nodes within Grave, Alexander and Elk River (order stations ER1, ELKORES and DSELK) were modelled, the latter using access to Teck's RWQM data via a data sharing agreement. But EV_MC2 is in the RWQM so it's not clear why it couldn't be modelled. Page 11-113 states Water quality in Michel Creek downstream of Alexander Creek could not be predicted using the SWWQ model due to a lack of sufficient regional water quality and flow data available for Michel Creek. Further clarification on this is required given that other	29-Apr-24
SWMODEL-17	Open	5(1)(a)(i) Fish and Fish Habitat 5(1)(c)	YQT-07	Appendix 3-B: Geochemical Test Data Sediment Pond Water Quality and Leachate Flow Rates	Indicate if NWP obtained forecasts for the levels of cadmium, cobalt, and nickel in the Elk River and its tributaries. If so, provide the information to enable the understanding of the potential effects of these geochemical elements on water quality.	NWP Coal Canada has engaged SRK Consulting to address a second set of information requests from the federal government's Impact Assessment Agency of Canada (IAAC) regarding the revised Crown Mountain Environmental Impact Statement. Geochemistry and surface water modelling are contemplated. The document details the results from	29-Apr-24

SWMODEL-18	Open	5(1)(a)(i) Fish and Fish Habitat 5(1)(c) s. 19 Factors to be Considered	YQT-21	CHAPTER 11 - SURFACE WATER QUALITY ASSESSMENT	a) Explain if groundwater will move from the north pits towards Grave Creek or the east pit towards upper Alexander Creek. b) Provide a rationale to support the assumption that the sediment ponds will be 100 % effective in detaining all sediment (particularly fine sediment), and explain the potential for downstream impacts from the transport of sediments to downstream environments. c) Provide a rationale for assuming that the proposed MRSF technology (the layer cake) will function effectively in attenuating Se, etc., when evaluating the determination of significance (rated as not significant) and characterization of likelihood (rated as moderate) in Section 11.5.4.3.1. d) Provide a rationale to support the cumulative effects assessment at EV MC2 (Michel Creek), and explain why Teck discharge permit targets of 6 mg/L NO3 and 20 ug/L Se are being considered as “low magnitude” impacts instead of “moderate impacts” since the targets are above WQG.	Surface water quality is an intermediate VC and constitutes a pathway to receptor VCs including fish, wildlife, vegetation, and humans. It also has linkages to other intermediate and receptor VCs. Project activities are expected to influence surface water quality within and downstream of the project footprint, primarily in West Alexander Creek/Alexander Creek. Thresholds for effects for surface water quality are water quality guidelines and the EVWQP long-term water quality targets. A significant adverse environmental effect was defined as one where the project degrades the physical and chemical characteristics of surface water to the extent that interaction with local surface water results in chemistry changes that may adversely affect aquatic life. A site-wide water quality prediction model was developed with 12 scenarios modelled (with/without project, with/without climate change, MRSD success or fail, 50th or 95th percentile source terms). Two	29-Apr-24
SWMODEL-19	Open	5(1)(a)(i) Fish and Fish Habitat	EVMN-08		Provide a response sufficient to address the comments provided by EVMN on: - the hydrology assessment methods - the climate change scenarios and associated mitigation and monitoring programs - the complexity of groundwater-surface water interactions especially when it comes to pit dewatering. - the larger basin wide cumulative impacts for surface and groundwater.	2.2.3 Hydrology Assessment Methods The use of stochastic precipitation, temperature, and solar radiation inputs to mimic historical climate introduces uncertainty in the model predictions. While this approach provides a range of possible outcomes, it may not capture extreme weather events or sudden climate shifts accurately. For EVMN who use local water resources, underestimating the impact of extreme conditions could lead to inadequate preparation and response strategies. EVMN appreciates that	29-Apr-24

SWMODEL-20	Open	5(1)(a)(i) Fish and Fish Habitat		YQT-20		CHAPTER 10 - SURFACE WATER QUANTITY ASSESSMENT	a) Provide a rationale for comparing baseline to mine plus climate change scenario instead baseline with climate change to mine plus climate change scenario. b) Explain how realistic is the simulated flow data since the hydrology baseline data report shows that little to no discharge measurements were completed during high flows and there seems to be little correlation between adjacent stations. c) Provide information on the water required from Grave Creek. The project identifies that most of the water required will come from other sources and that the Grave Creek reservoir would be a back up. How long can the reservoir supply water for, and how much water would it take from Grave Creek, particularly during winter low flows? d) Explain the reasons for the reduced flows predicted by the model in West Alexander Creek during all months of the year. e) Explain if the sediment pond will potentially attenuate flows while increasing downstream flows during low flow months in Alexander Creek, or will it ultimately act as a flow through pond and not shift the hydrograph?	The project footprint is almost entirely in the West Alexander Creek valley. The North, East and South Pits also overlap a small portion of the upper Alexander Creek and Grave Creek watersheds. After closure, these areas would drain to West Alexander Creek. Baseline data collection include stream gauging at key locations for 2-7 years, and the development of stage discharge curves. The main pathways for effects were identified as change in landcover/drainage during construction operation and subsequent reclamation, surface water withdrawals during operations, and water management during operations. A water and load balance model was developed which simulates climate of the region using precipitation, temperature, solar radiation, and estimates flows in and out of the project on a daily or 4x/day timesteps. Note that this model does not rely on the baseline stream flow data that was collected, and it used historical streamflow data for Grave Creek for validation. Climate change	29-Apr-24			
SWMODEL-21	Open	5(1)(a)(i) Fish and Fish Habitat		DFO-074		Mine Components Appendix 10A 2.6 pg. 5	Clarify how the conceptual diagram is linked with Chapter 3 water use. Does this Appendix focus on changes in runoff due to alterations in seepage, evaporation and groundwater flow while excluding changes in flow due to consumptive water uses within the mine?	The most significant changes in flow would occur during the lowest flow months. The figures are designed in such a way that the magnitude of	29-Apr-24			
WQS-01	Open	5(1)(a)(i) Fish and Fish Habitat	6.1.4 Groundwater and Surface Water 6.2.2 Changes to Groundwater and Surface Water	ECCC-IR-52		9.5.4 Groundwater Assessment – Characterization of Residual	Assess predicted effects from groundwater quality considering more relevant and protective guidelines such as the standards set out in the Contaminated Sites Regulation for freshwater aquatic life use and/or the Federal Interim Water Quality Guidelines.	The effects on aquatic life from groundwater discharging to surface water have not been adequately characterized. Page 9-1 of the EIS/A states, “groundwater baseflow contributions to surface water constitute a pathway	29-Apr-24			
WQS-02	Open	5(1)(a)(i) Fish and Fish Habitat		US EPA		11.5.4.1.1 Water Quality Model.	Clearly identify what those parameters are and describe this as a source of uncertainty in this screen.	The text states "Parameters without established guidelines were not screened or considered further in the assessment"	29-Apr-24			
WQS-03	Open	5(1)(a)(i) Fish and Fish Habitat		US EPA		11.5.4.1.1 Water Quality Model	Provide more information in the text about how decisions were made to eliminate 37 contaminants of potential concern. This could possibly be done by including and referencing a detailed summary table.	The text states "The result of the screening analyses were used to focus the assessment moving forward and	29-Apr-24			

WQS-04	Open	5(1)(a)(i) Fish and Fish Habitat	6.2.2 Changes to Groundwater and Surface Water	ECCC-IR-57	11.5 Surface Water Quality Assessment – Project Effects Assessment Appendix 22B Supplementary Assessment of Selenium Bioaccumulation Risk to Fish	Assess impacts to water quality and tissue quality for all contaminants of potential concern for the Project, in all potentially affected aquatic receiving environments.	The EIS/A identifies six contaminants of potential concern for the Project: cobalt, cadmium, nickel, nitrate, selenium and sulphate (Section 11.5.4.1.1, pg. 11-70); however not all six contaminants of concern were assessed for watercourses potentially impacted by the Project, including the Elk River, Koocanusa Reservoir, West Alexander Creek, and Alexander Creek: a) In the Elk River and Koocanusa Reservoir, changes to water quality are only assessed for selenium, nitrate and sulfate. The EIS/A does not assess how the other contaminants of concern (i.e., cadmium, cobalt,	29-Apr-24
WQS-05	Open	5(1)(a)(i) Fish and Fish Habitat		SB-38	Chapter 11 - Surface Water Quality 11.5.2.2.4 Change in Surface Water	Explain why cadmium is not included as a primary constituent of concern when almost every site exceeded guidelines for this metal.	Why is cadmium not included as a primary constituent of concern when almost every site exceeded guidelines for this metal?	29-Apr-24
WQS-06	Open	5(1)(a)(i) Fish and Fish Habitat		KNC-164	11. Surface Water Quality Assessment Table 11.5-6	Clarify if the assumed hardness for the nickel threshold of 0.096 mg/L is 100 mg/L and explain how 100 mg/L was selected.	Confirm whether the assumed hardness for the nickel threshold of 0.096 mg/L is 100 mg/L. How was 100 mg/L selected?	29-Apr-24

WQS-07	Open	5(1)(a)(i) Fish and Fish Habitat	6.2.2 Changes to Groundwater and Surface Water	ECCC-IR-62		Chapter 11 Surface Water Quality Assessment Table 11.5-6	Use nickel thresholds that are protective of all endpoints and species (including reproduction in mayflies), and amend the screening criteria appropriately.	Effects to aquatic life from predicted nickel concentrations for the Project may be underestimated. The EIS/A establishes screening threshold levels based on current provincial and federal guidelines (Table 11.5-6). For nickel, the BC water quality guideline (150 µg/L with hardness > 180 mg/L as CaCO3) was used as a screening threshold. However, recent work in the Elk Valley has linked effects in benthic invertebrates to nickel concentrations at levels below current guidelines (Teck 2022 Ltd). This finding is also supported by the scientific literature which reports effects at nickel concentrations well below established guidelines (e.g., EC 20 growth and reproduction for mayflies of 7-53 ug/L) (Besser et al.2013; Besser et al. 2011 and Soucek et al. 2020). ECCC is aware that updates to the CCME and BC nickel guidelines are currently	29-Apr-24			
WQS-08	Open	5(1)(a)(i) Fish and Fish Habitat		KNC-182		33.4.1.8 Site Water Management Plan	a) Clarify when and how NWP intends to incorporate Nickel concentration modelling, particularly for node EV_MC2 as this location is a significant gap. b) Explain if the effects assessment for Nickel considered the new Teck benchmarks or new provincial WQG since these do not appear to be considered in section 5.1.2 of Appendix 22A, for which only cadmium cobalt and selenium were carried forward in the aquatic risk assessment. c) Explain the reason Nickel was missing as a KPI in Section 33.4.1.8 Site Water Management Plan.	KNC acknowledges that although only screened against 0.096 BC WQG Acute, Nickel was “selected [for modelling] because it was identified as a parameter of potential concern in the Elk Valley by the Ktunaxa Nation Council”. Nickel was not however modelled/projected for RWQM nodes as Nickel not in the RWQM output that was shared with NWP. The application indicates that “NWP is currently working with Teck to obtain RWQM predictions for these parameters” Clarify when and how NWP intends to incorporate Nickel concentration modelling, particularly for node EV_MC2 as this location is a significant gap. It is well known that the BC WQG for Nickel are not protective of mayflies	29-Apr-24			

WQS-09	Open	5(1)(a)(i) Fish and Fish Habitat	6.2.2 Changes to Groundwater and Surface Water	ECCC-IR-78	22.5.4.2.2 Human and Ecological Health Assessment – Potential Project Effects to Aquatic Wildlife	Use the selenium FEQG as screening criteria in the assessment of effects of selenium on fish.	The EIS/A uses the US EPA selenium benchmark, instead of the recently developed Canadian Federal Environmental Quality Guideline (FEQG) for selenium, as screening criteria to determine effects to fish and fish habitat. Since the proposed Project occurs in Canada, the recently developed FEQG value (14.7 mg/kg dw) should be used as the screening criteria to assess	29-Apr-24
WQS-10	Open	5(1)(a)(i) Fish and Fish Habitat		Kainai 34 Siksika 33	11. Surface Water Quality Assessment	Identify how this Project will contribute to the health of the waterways. Identify how this Project will align with all federal, provincial, and international requirements with regard to selenium and other contaminant pollution, including new draft coal mining effluent regulations that may come into force.		29-Apr-24
WQS-11	Open	5(1)(a)(i) Fish and Fish Habitat		SB-39	Chapter 11 - Surface Water Quality 11.5.2.2.6.	Provide a rationale for having "elevated levels of TSS, selenium, nitrate, sulphate, and other trace elements" if water quality objectives need to be met before water is released into the receiving environment.	If water quality objectives need to be met before water is released into the receiving environment why is it expected to have "elevated levels of TSS, selenium, nitrate, sulphate, and	29-Apr-24
WQS-12	Open	5(1)(a)(i) Fish and Fish Habitat		Piikani-05	11. Surface Water Quality Assessment 11-H	Provide the expected concentrations of cobalt in the sediment ponds and explain the intent to manage cobalt in mine effluent if it is in exceedance of FEQGs.	Figure 11.H-3 appears to show that the predicted (50th percentile) concentrations of cobalt in the interim and main sediment ponds will exceed Federal Environmental Quality	29-Apr-24
WQS-13	Open	5(1)(a)(i) Fish and Fish Habitat		SB-16	Chapter 2 - Project Alternatives Table 2.5-7 Explosives Usage	Explain if testing will be done to ensure the new explosives method is working before the nitrate levels impact water quality.	"The use of conventionally loaded explosive agents result in higher nitrate levels in the mine-affected water, as demonstrated at other operating mines in the area. Nearby operators have since moved away from this practice and now use bagged explosive agents. The mitigation	29-Apr-24

						Apply Health Canada's drinking water quality guidelines to the Project's effects assessment, or provide a scientific rationale for why this is not required/applicable.	• Section 11.1.1 Regulatory and Policy Settings, Table 11.1-1 on Page 11-2, Section 11.2.3.3 (Administrative Boundaries), Table 11.2-3, on Page 11-9: Explain why the Health Canada's drinking water quality guidelines were not applicable to the project's effects assessment. Local community people (e.g., campers, hikers, residents) could take the stream, spring and lake water for drinking.	
WQS-14	Open	5(1)(a)(i) Fish and Fish Habitat 5(1)(c)		KNC-129	Chapter 11 (Surface Water Quality Assessment)		• Section 11.4.1.1.2 (Active Coal Mining Operations in the Aquatic Regional Study Area), Tables 11.4-1 and 11.4-2, on Pages 11-16 and 11-17: The data presented in these tables show that surface water quality in the region has been badly contaminated with high exceedances of those chemicals of concern. This shows an urgency in taking actions by all parties and stakeholders to mitigate the impacts and improve the water environment, and careful studies and reviews of this project application must be done. Refer to the previous comment with regard to the groundwater model domain boundary	29-Apr-24
SELBIO-01	Open	5(1)(a)(i) Fish and Fish Habitat	6.2.2 Changes to Groundwater and Surface Water	ECCC-IR-58	Chapter 11 Surface Water Quality Assessment Table 11.5-4 Appendix 11B Surface Water Quality Baseline Report Table 1	Include water quality and selenium bioaccumulation predictions for Michel Creek.	No water quality prediction nodes or selenium bioaccumulation prediction nodes are located in the Michel Creek mainstem, despite baseline surface water quality sampling being conducted in Michel Creek (M1, upstream of confluence with Alexander Creek; and M2, downstream of confluence with Alexander Creek). The only water quality prediction nodes provided to assess the effects of the Project downstream of the Alexander Creek are located on the mainstem of the Elk River or in	29-Apr-24

SELBIO-02	Open	5(1)(a)(i) Fish and Fish Habitat	6.2.2 Changes to Groundwater and Surface Water	ECCC-IR-79	22.5.4.2.2 Human and Ecological Health Assessment – Potential Project Effects to Aquatic Wildlife Health Table 22.5-4 22.5.4.3.2 Human and Ecological Health	Add the following information to the EIS/A: a) validation of the bioaccumulation model using site-specific data collected for water, periphyton, invertebrate, and fish tissue; b) maximum water quality concentrations used for fish tissue predictions, and/or confidence intervals for the water quality concentration input values, for each of the four project phases; c) confidence intervals for fish tissue predictions which are reflective of underlying data used to develop 3-step model; and d) discussion on the limitations of the bioaccumulation model in terms of assumptions regarding selenium speciation.	The selenium bioaccumulation model may underestimate impacts to fish and other aquatic life, for the following reasons: a) The bioaccumulation model uses inputs that were developed for a different project, and does not validate bioaccumulation model predictions using site-specific water, periphyton, invertebrate and fish tissue data. This is particularly important given the insensitivity of the model at lower water concentrations (i.e., a range in aqueous concentrations of 0.85 ug/L and 8.79 ug/L translate to differences in egg selenium concentrations of just 0.04 mg/kg dw). b) Water quality concentration inputs to the bioaccumulation model do not	29-Apr-24
SELBIO-03	Open	5(1)(a)(i) Fish and Fish Habitat		KNC-158	11. Surface Water Quality Assessment 11.5.2.2.3 Change in	Provide more information on the EIS/A to address the potential for organo-selenium generation in the pit water during Operations and explain how it will be managed.	The application does not identify the potential for organo-selenium generation in the pit water during Operations. Based on current understanding of the project, pit water	29-Apr-24
SELBIO-04	Open	5(1)(a)(i) Fish and Fish Habitat	6.3.1 Fish and Fish Habitat 6.4 Mitigation	ECCC-IR-82	33.4.1.8 Management and Monitoring Plans – Site Water Management Plan 11.5.4.1.1 Surface Water Quality Assessment Methods – Water	a) Describe measures to mitigate the generation of organic selenium in the proposed sedimentation ponds, and/or potential alternatives to sediment ponds, as appropriate. b) Outline the plans for monitoring and adaptive management of organoselenium generation in the sediment ponds and subsequent bioaccumulation in receiving environment biota.	No mitigation measures are identified in the EIS/A for the prevention of organic selenium generation in the interim and ultimate sedimentation ponds. Organic selenium is more bioavailable than inorganic selenium, and when generated in the sediment pond, can travel downstream and bioaccumulate in fish and invertebrates. ECCC understands that the interim and ultimate sedimentation ponds would be designed to treat high concentrations of suspended solids by removing the smallest particles, in	29-Apr-24

BASELINEWATER-01	Open	5(1)(a)(i) Fish and Fish Habitat	6.1.4 Groundwater and Surface Water	ECCC-IR-56 IAAC	Chapter 9 Groundwater Assessment Appendix 9D Characterization of Groundwater -Surface Water Interactions Chapter 11 Surface Water Quality Assessment Chapter 12 Fish and Fish Habitat Assessment Appendix 12D Aquatic Health Baseline Sampling	Update the EIS/A to integrate more recent information available on water quality and aquatic health, including but not limited to: a) two years of more recent data for existing conditions of surface water quality (monthly) and aquatic health for the LSA and RSA; b) the integration of updated Elk Valley Water Regional Water Quality Model predictions into the water quality model or a discussion of the implications of not including this information; and c) discussion of recent effects to aquatic life in the Elk Valley to provide a local and regional context to the effects proposed by the Project.	Information to support aquatic health and surface water quality characterization and predictions is inadequate and does not reflect recent impacts to aquatic life. ECCC notes that the information used to characterize baseline conditions and predict water quality downstream of the Project is more than 5 years old. Considerable changes in water quality and effects to aquatic life have been recently observed that are not represented by the outdated information used in the EIS/A. Inadequate existing conditions information Most of the existing conditions water quality data for the Project was collected in 2013 and 2014, with 1-2 sampling events in 2018 and 2019. Similarly, aquatic health and fish tissue data are limited, with samples for periphyton, benthic invertebrates, and fish tissue collected in just one year at each site in either 2017 or 2019, and no samples collected from Michel or Grave Creeks. Typically, a	29-Apr-24
BASELINEWATER-02	Open	5(1)(a)(i) Fish and Fish Habitat		KNC-195	10. SURFACE WATER QUANTITY ASSESSMENT Appendix_10B_Hydrology_Baseline_Report_Januar	Provide a justification for not including the nearly 4 years of additional data at several stations, and whether this additional data could materially influence the outcomes of this assessment.	While it is understood that the report was published in April 2020, nearly 4 years of additional data is available at several stations. It would be useful to understand if this additional data could materially influence the outcomes of this assessment.	29-Apr-24

BASELINEWATER-03	Open	5(1)(a)(i) Fish and Fish Habitat	6.2.2 Changes to Groundwater and Surface Water	ECCC-IR-61	Appendix 11B Surface Water Quality Baseline Table 3 Appendix 11F Water Quality Prediction Model Figure 31	Provide more information on the EIS/A to use updated baseline and predicted water quality concentrations for selenium, as well as any other parameters that may be affected by current mining activities (i.e., including but not limited to sulphate, nitrate, cobalt, calcite, and nickel).	ECCC notes that the EIS/A may underestimate the concentration of contaminants in Grave Creek by using either outdated baseline chemical information and/or an outdated water quality model: a) Measured selenium concentrations from the BC EMS database (i.e., 29.9 ug/L dissolved Se in Grave Creek near the mouth of the Elk River; RG_GRDS, E326844, September 9, 2023) are higher than the selenium predictions from the water quality model for the same location and time (i.e., ~18 µg/L at Lower Grave Creek station GC-1, September 2023; Appendix 11F, Figure 31). b) The baseline data (collected from 2012-2019) no longer reflects current (pre-project) selenium concentrations in Grave Creek. The Project uses a median total selenium in Lower Grave Creek of 22.7 µg/L (station H1, Appendix 11B, Table 3), which is lower	29-Apr-24
BASELINEWATER-04	Open	5(1)(a)(i) Fish and Fish Habitat		SB-399	Chapter 24 Shuswap Band (Kenpesq't) 24.2.4 Groundwate	Explain if the baseline groundwater quality results are a result of existing mining operations in the EV or naturally occurring.	"Within the LSA, baseline groundwater quality exceeds B.C. CSR drinking water criteria for several parameters (cobalt, lithium, sodium, chloride, and fluoride)."	29-Apr-24
BASELINEWATER-05	Open	5(1)(a)(i) Fish and Fish Habitat		SB-400	Chapter 24 Shuswap Band (Kenpesq't) 24.2.4	Explain if the baseline results are in any way related to existing mining operations in the EV.	"Elevated concentrations of total aluminum and copper were identified in surface water collected from the Alexander Creek watershed during a high-magnitude precipitation event in	29-Apr-24
BASELINEWATER-06	Open	5(1)(a)(i) Fish and Fish Habitat		SB-35	Chapter 11 - Surface Water Quality 11.4.2.1	Provide a scientific rationale for why there are no sample sites in West Alexander Creek in the project area.	Why are there no sample sites in West Alexander Creek in the project area? Won't this be valuable information after the mine is closed and the creek is reestablished?	29-Apr-24
BASELINEWATER-07	Open	5(1)(a)(i) Fish and Fish Habitat		KNC-199	10. SURFACE WATER QUANTITY ASSESSMENT Appendix_10B_Hydrology	Clarify the intended use of peak flows and explain if the intent is to develop regional regressions for use across the mine site. If so, where can this be found? Are peak flows found to scale with area or elevation?	It is unclear what the intended use for these peak flows is. Is the intent to develop regional regressions for use across the mine site? If so, where can this be found? Are peak flows found to scale with area or elevation?	29-Apr-24

BASELINEWATER-08	Open	5(1)(a)(i) Fish and Fish Habitat		KNC-200	10. SURFACE WATER QUANTITY ASSESSMENT Appendix_10B_Hydrology	Explain if statistical analysis was completed on the trends presented since some plots are evidently trending while others have significant scatter and may or may not be statistically significant.	Has the author completed any statistical analysis on the trends presented? While some plots are evidently trending, others have significant scatter and may or may not be statistically significant.	29-Apr-24
BASELINEWATER-09	Open	5(1)(a)(i) Fish and Fish Habitat		KNC-201	10. SURFACE WATER QUANTITY ASSESSMENT Appendix_10B_Hydrology	Explain why the statement "Annual streamflows are expected to increase in the Upper Columbia River for the 2050s" in Appendix 10-B is not supported by the plots provided in the previous pages where mean annual flows are shown to decrease, not increase.	"Annual streamflows are expected to increase in the Upper Columbia River for the 2050s" This statement is not supported by the plots provided in the previous pages where mean annual flows are shown to decrease, not increase. While past	29-Apr-24
BASELINEWATER-10	Open	5(1)(a)(i) Fish and Fish Habitat		KNC-223	20. EFFECTS OF THE ENVIRONMENT ON THE PROJECT 20.3.4 Extreme	Confirm if there was any comparison to the Water Survey of Canada sites.	"A baseline hydrology monitoring program was completed for the Project, in which five hydrometric monitoring stations were established in three watercourses in the Aquatic Local Study Area (LSA): Alexander Creek, West Alexander Creek, and Grave Creek (Appendix 10-A). Based	29-Apr-24
BASELINEWATER-11	Open	5(1)(a)(i) Fish and Fish Habitat	6.1.4 - Groundwater and Surface Water 6.2.2 - Changes to groundwater and surface water	IAAC	10.4.2 Baseline Programs 33.4.1.8 Site Water Management Plan	a) Update Section 10.4.2 to include information about the development of the hydrometric monitoring station's discharge relationships with nearby WSC's stations including limitations of the methods, and distinguishment of actual recorded data (i.e., period of available data) from discharge curve-generated data. Part of this information is provided in the hydrology baseline report (Appendix 10-B), but mostly excluded in Chapter 10, the only information provided about limitations of baseline data collection is briefly mentioned in Section 10.2.3.4. b) Indicate the reason for decommissioning the hydrometric stations located within the aquatic LSA and used for the baseline assessment (A1, A3, A3b and WA1). Section 10.4.2.1 mentioned that monitoring ended in 2016 and 2019 instead of continuing with the collection of key surface water data.	The methods used for the hydrology baseline conducted in the LSA are not described in the report. The dicharge hydrographs presented in Figure 10.4-2 to Figure 10.4-5 provide daily flow data at each monitoring station without further explaining or documenting the collection and analysis of baseline data and the limitations when comparing recorded versus simulated flow values. Providing information about the collection and development of baseline data is important to understand the adequacy and quality of the hydrologic data since this will form the basis of the natural and/or current state of the available resources in the area which is required to address the potential effects caused by the proposed mine development.	29-Apr-24

BASELINEWATER-12	Open	5(1)(a)(i) Fish and Fish Habitat	6.2.2 Changes to Groundwater and Surface Water	ECCC-IR-92	Chapter 10 Surface Water Quantity Assessment	a) Clarify which streamflow data was used to calibrate and validate water balance models, water quality models and water management plans. b) Describe how surface water quantity data was collected (i.e., measurement technique, rating curve, etc.) c) Provide information supporting the quality of the data.	Insufficient details are provided in the EIS/A to support the quality and validity of the baseline information for water quantity, and ECCC identified many inaccuracies and inconsistencies in the information that is provided. It is unclear if and how the baseline hydrometric information was used to inform other sections of the EIS/A.	29-Apr-24
RESIDUALWATER-01	Open	5(1)(a)(i) Fish and Fish Habitat	6.2.2 Changes to Groundwater and Surface Water 6.3.1 Fish and Fish	ECCC-IR-72	11.5 Surface Water Quality Assessment	a) Provide rationale for the different threshold levels that they have indicated would result in “low” magnitude of effects, particularly when these thresholds are well above the normal range of variation and vary by an order of magnitude.	ECCC notes that the criteria used to determine the magnitude (expected size or intensity) of a residual effect on water quality changes is not consistent throughout the EIS/A. The	29-Apr-24
RESIDUALWATER-02	Open	5(1)(a)(i) Fish and Fish Habitat	6.2.2 Changes to Groundwater and Surface Water	ECCC-IR-68	11.5.4.3 Surface Water Quality Assessment – Characterization of Residual Effects Table 11.5-8	Characterize the residual effects consistently throughout the EIS/A. Provide details on what additional steps can be taken to reduce the uncertainty and make a more confident determination on effects to surface water.	ECCC notes the following discrepancies in the EIS/A for residual effects characterization of magnitude and context for: a)Change in surface water quality from disposal of mine rock and coal rejects: Section 11.5.4.3 identifies the magnitude as “High” and context as “Neutral” (Chapter 11, p. 11-93), whereas Table 11.5-8 identifies	29-Apr-24
RESIDUALWATER-03	Open	5(1)(a)(i) Fish and Fish Habitat		Kainai 12 Siksika 11	Executive Summary		Concern expressed that the effects assessment which found that there may be residual affects across the full life-span of the Project but are "considered not significant" is only provided with a "moderate level of confidence". Given the impact of coal mining in the area, it seems prudent that surface water impacts should be known to a high degree of certainty.	29-Apr-24

RESIDUALWATER-04	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-108	Executive Summary	Provide a response sufficient to address the comments provided by KNC on section E.7.5.	• Section E.7.5 (Surface Water Quantity Assessment), on Page E-35: (1) The significance of the residual effect on surface water quantity was assessed to be not significant but with a moderate level of confidence. How would this significance of the effect be considered reliable or defensible, given the level of confidence was not high? This suggests more studies with more data collection would be required to bolster the level of confidence to be high. (2) It was stated: "With respect to the future case, a qualitative assessment was not possible due to the unavailability of adequate information related to the reasonably foreseeable future projects in the	29-Apr-24
RESIDUALWATER-05	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-109	Executive Summary	Provide a response sufficient to address the comments provided by KNC on section E.7.6.	• Section E.7.6 (Surface Water Quality Assessment), on Page E-37: (1) It was stated that "Model predictions for the Project effects assessment showed localized elevated levels of some parameters (i.e., cadmium, cobalt, selenium) in West Alexander Creek and Alexander Creek.". The significance of the residual effect on surface water quantity was assessed to be not significant but with a moderate level of confidence. How would this significance of the effect be considered reliable or defensible	29-Apr-24

RESIDUALWATER-06	Open	5(1)(a)(i) Fish and Fish Habitat s. 19 Factors to be Considered	6.2.2 Changes to Groundwater and Surface Water 6.4 Mitigation Application Information Requirements Section 3.5	ECCC-IR-64	11.5.4.2 Surface Water Quality Assessment – Potential Residual Effects Assessment Appendix 10A Flow and Water Quality Impact Assessment	Clearly describe potential effects to VCs resulting from MRSF failure and reflect this in the characterization of residual effects for each VC (e.g., Surface Water Quality, Groundwater Quality, Fish and Fish Habitat, etc.).	Water quality modelling scenario B.1.c (50th percentile) and B.2.c (95th percentile) predict increased impacts to water quality in Alexander Creek should the MRSF fail but these predictions were not carried forward into the effects assessment for Valued Components, including surface water quality. Of the 12 water quality scenarios modelled, only two scenarios were considered in the surface water quality effects assessment in Chapter 11, Scenario B.1.a (50th percentile) and B.1.b (95th percentile), both of which assume the MRSF lowering design is successful	29-Apr-24
RESIDUALWATER-07	Open	5(1)(a)(i) Fish and Fish Habitat	3.2.1 Site Preparation and Construction	ECCC-IR-55	Chapter 9 Groundwater Assessment Appendix 9D Characterization of Groundwater -Surface Water Interactions	Extend the groundwater LSA to incorporate all Project components and their potential effects; or rationale be provided to support the characterization of “local” extent for the residual effect “Changes to Groundwater Quality due to Infiltration of Contact Water”, given the occurrence of Project activities and components outside the groundwater LSA as well as the measured hydraulic horizontal conductivities. See also related comment in Annex 2 (reference ECCC-IR-55).	Impacts to groundwater from surface water may be underestimated due to uncertainty regarding the geographic extent (characterized in the EIS/A as “local”) and magnitude (characterized in the EIS/A as “low”) of the residual effect “Changes to Groundwater Quality due to Infiltration of Contact Water (i.e., Surface Water and Mine Site Drainage) to Groundwater”. For example: a) The spatial boundaries for the groundwater LSA do not include all areas potentially impacted by the Project that might contribute contact surface water to groundwater (Figure 9.2-1). For example, there are Project components located outside of the LSA, including the site access road, rail loop, clean coal stockpile and truck dump, and rail loadout road. b) Groundwater modelling suggests near surface seepage would not extend beyond 500 m down-gradient of MRSF within 100 years (with deeper bedrock seepage travelling a maximum of 1000m in the same time period; page 9-121). Table 9.4-11	29-Apr-24

RESIDUALWATER-08	Open	5(1)(a)(i) Fish and Fish Habitat	6.2.2 Changes to Groundwater and Surface Water	ECCC-IR-69	11.5.4.3.1 Surface Water Quality Assessment – Characterization of Residual Effects – Change in Surface Water Quality from Disposal of Mine Rock and Coal Rejects	Justify or revise the residual effects characterization for change in surface water from disposal of mine rock and coal rejects, in consideration of uncertainties in the geographic extent and reversibility of Project effects.	The residual effects characterization for changes in surface water quality may be underestimated for the residual effect “Change in Surface Water Quality Disposal of Mine Rock and Coal Rejects”. Similar comments have been made for all three residual effects to surface water and the residual effect to Fish and Fish Habitat (see ECCC-IR-70, ECCC-IR-71 and ECCC-IR-77). Geographical extent may be underestimated The EIS/A characterizes that the geographical extent as “discrete”, meaning effects will occur within the Project Footprint. This characterization is based on the assumption that “surface runoff or seepage from the Mine Rock Storage Facility will be contained in the Interim or Main Sediment Ponds within the	29-Apr-24
RESIDUALWATER-09	Open	5(1)(a)(i) Fish and Fish I	6.2.2 Changes to Groundwater and Surface Water	ECCC-IR-70	11.5.4.3.2 Surface Water Quality Assessment – Characterization of Residual Effects – Change in Surface Water Quality from Surface Water – Groundwate	Justify or revise the residual effects characterization for change in surface water from surface water-groundwater interactions, in consideration of uncertainties in the magnitude, geographic extent and reversibility of Project effects.	The residual effects characterization for changes in surface water quality may be underestimated for the residual effect “Change in Surface Water Quality from Surface Water – Groundwater Interactions”. Similar comments have been made for all three residual effects to surface water and the residual effect to Fish and Fish Habitat (see ECCC-IR-69, ECCC-IR-71, and ECCC-IR-77). <u>Magnitude may be underestimated</u> The EIS/A states that the magnitude is “low” because the majority of potentially impacted groundwater will	29-Apr-24

RESIDUALWATER-10	Open	5(1)(a)(i) Fish and Fish Habitat s. 19 Factors to be Considered	6.2.2 Changes to Groundwater and Surface Water	ECCC-IR-71	11.5.4.3.3 Surface Water Quality Assessment – Characterization of Residual Effects – Change in Surface Water Quality from Sediment Pond Discharge	Justify or revise the residual effects characterization for change in surface water from sediment pond discharge, in consideration of uncertainties in the magnitude, geographic extent and context of Project effects.	The residual effects characterization for changes in surface water quality may be underestimated for the residual effect “Change in Surface Water Quality from Sediment Pond Discharge”. Similar comments have been made for all three residual effects to surface water and the residual effect to Fish and Fish Habitat (see ECCC-IR-69, ECCC-IR-70 and ECCC-IR-77). <u>Magnitude may be underestimated</u> The EIS/A states that the magnitude is “moderate” because exceedances of BC water quality guidelines for cadmium, cobalt and selenium are	29-Apr-24
RESIDUALWATER-11	Open	5(1)(a)(i) Fish and Fish Habitat		KNC-126	Chapter 10 (Surface Water Quantity Assessment)	a) Detail the mitigation measures to reduce/minimize the effect and compensate the loss of flow in West Alexander Creek downstream of the sediment pond. i) Describe how this would affect the fish and aquatic life there. ii) Provide additional rationale as to why there are significant reductions of surface water flow at the RSA nodes located downstream of the mine LSA. iii) Confirm whether any cumulative effects at the RSA nodes from neighbouring mines (e.g., Teck EVO, GHO) were accounted for. b) Explain if the confidence for the predicted effect is low due to "Limited information was available" and "Uncertainty is considered to be higher in the future over the longer-term", considering the GoldSim model was relying on a lot of data including climate, groundwater, topography,	• Section 10.5.4.2 (Potential Residual Effects Assessment), on Pages 10-37 to 10-50: The effect on the surface water quantity in West Alexander Creek downstream of the sediment pond (AC-6) was predicted to be significant, (up to 100% reduction from the baseline). What would be the mitigation to reduce / minimize the effect and compensate the loss of flow? How would this affect the fish and aquatic life there? In addition, it is quite difficult to understand why quite significant reductions of surface water	29-Apr-24
RESIDUALWATER-12	Open	5(1)(a)(i) Fish and Fish Habitat		YQT-36	CHAPTER 20 - EFFECTS OF THE ENVIRONMENT ON THE PROJECT	a) Describe how climate change will be incorporated into reclamation planning.	This document assesses potential climate change related impacts on project infrastructure. The following climate change hazards were identified: • High temperatures • Low temperatures • Heavy precipitation • Freeze/thaw cycles • Snow events (regular and extreme) • Drought • Wind events (regular and extreme) • Avalanche threats • Forest Fires	29-Apr-24

RESIDUALWATER-13	Open	5(1)(a)(i) Fish and Fish Habitat		KNC-180	Appendix 3B1; Chapter 11 Table 10-C.3; Page 11-109	Provide a response sufficient to address the comments provided by KNC on climate change.	Notwithstanding the previous comment, KNCs reviewer acknowledges that largely the modelling for the effect of climate change appears to be reasonable, and is similar to PCIC projections for EV ER1, with a generally earlier	29-Apr-24
RESIDUALWATER-14	Open	5(1)(a)(i) Fish and Fish Habitat		SB-14	Chapter 1 - Introduction 1.2 Project Overview Table 1.2-2, Construction and Pre-Construction; and Operations	Describe: i) How and where the explosive factory will store toxic chemicals. ii) What type of explosives will be used and what negative environmental effects their residual chemicals will have on local and downstream aquatic habitat and surface water quality.		29-Apr-24
CUMULATIVEWATER-01	Open	5(1)(a)(i) Fish and Fish Habitat 5(1)(b)(iii) Another country	6.3.4 Transboundary Environment	ECCC-IR-73 IAAC	11.6 Surface Water Quality Assessment – Cumulative Effects Assessment 12.6 Fish and Fish Habitat Assessment – Cumulative Effects Assessment	Provide justification as to why the US portion of Koocanusa Reservoir is not included in the study area for the cumulative effects assessment. ECCC recommends that the Proponent review IAAC's Cumulative Effects Assessment Guidance for CEAA 2012 Projects for strategies on assessing cumulative effects when there is uncertainty regarding the future state of a Valued Component (e.g., scenario building).	The cumulative effects assessment boundaries for the Surface Water VC and Fish and Fish Habitat VC do not include the US portion of Koocanusa Reservoir. ECCC is of the view that the Proponent's rationale for not including the US portion of Koocanusa Reservoir is insufficient for the following reasons: •Historical and ongoing coal mining activities have resulted in elevated selenium concentrations throughout the Elk Valley, including Koocanusa Reservoir; •The Project is predicted to contribute additional selenium loading to Koocanusa Reservoir; and •The EIS/A acknowledges that "there is the potential for transboundary cumulative effects to surface water quality in Lake Koocanusa to occur during the Operations, Reclamation and Closure, and Post-Closure phases of the Project as a result of the Interim and Main Sediment Pond discharges to the receiving environment in West Alexander Creek" (Section 11.6.2.1, PDF pg. 105)	29-Apr-24

CUMULATIVEWATER-02	Open	5(1)(a)(i) Fish and Fish Habitat s. 19 Factors to be Considered 5(1)(b)(iii) Another country	6.6.3 Cumulative Effects Assessment	ECCC-IR-74	11.6 Surface Water Quality Assessment – Cumulative Effects Assessment 12.6 Fish	In the assessment of cumulative effects to water quality: a) Use the most recent updated Elk Valley Water Quality model results (including cadmium, cobalt and nickel concentrations in the Elk River and Koocanusa Reservoir and prediction of all COPCs in Michel Creek); b) Consider selenium fish tissue predictions for Koocanusa Reservoir, Michel Creek, and the Elk River; c) Consider the MRSF failure scenario; and, Justify or revise the cumulative effects assessment for water quality and fish, in consideration of the uncertainties in the duration, magnitude, geographic extent, and context.	ECCC notes that the cumulative effects assessment for surface water quality (Chapter 11) and fish and fish habitat (Chapter 12) do not take into account all available information on potential effects, and therefore may not assess cumulative effects accurately. For example, the cumulative effects assessment, did not consider: "Updated Elk Valley Water Quality The characterization of cumulative effects on water quality and fish may be underestimated. <u>Duration may be underestimated</u>	29-Apr-24
CUMULATIVEWATER-03	Open	5(1)(a)(i) Fish and Fish I	6.6.3 Cumulative Effects Assessment	ECCC-IR-75	11.6.6 Surface Water Quality Assessment – Cumulative Effects Assessment – Characterization of Residual		The EIS/A states that the potential cumulative effects are “long-term”, however “long-term” is defined as “effect lasts greater than 19 months and less than 34 years over the course of the Operations, Reclamation and Closure, and Post-Closure phases” (Table 5.3-2); Cumulative effects of	29-Apr-24
CUMULATIVEWATER-04	Open	5(1)(a)(i) Fish and Fish Habitat		Kainai 08 Siksika 07	Executive Summary E.7.4.2 Paragraph 1	a) Identify the reason why there is a reduction in groundwater quantity in Alexander Creek and Grave Creek. i) Identify how a reduction in water quantity for those two creeks will be limited to the Groundwater LSA.	The Proponent states that a cumulative effects assessment for groundwater quantity is not required. This determination is based on (1) there being "no measurable change to groundwater quantity ... anticipated for groundwater flowing through bedrock, and (2) "no mapped aquifers ... identified within the Project footprint or Groundwater LSA". Identify the reason why there is a reduction in groundwater quantity in Alexander Creek and Grave Creek. Also identify how a reduction in water quantity for	29-Apr-24
CUMULATIVEWATER-05	Open	5(1)(a)(i) Fish and Fish Habitat		KNC-107	Executive Summary E.7.4	Clarify what cumulative effects would be mitigated if no cumulative effects assessment was conducted (regarding the statement "Key mitigation measures to reduce the potential for adverse effects to groundwater quantity and quality related to Project and cumulative effects include but are not limited to").	• Section E.7.4 (Groundwater Assessment), on Page E-32: (1) It was stated that "Historical and current mining activities in the Elk Valley have resulted in elevated concentrations of selenium, nitrate, sulphate and cadmium in local surface waters, as well as calcite formation in some watercourses.",	29-Apr-24

CUMULATIVEWATER-06	Open	5(1)(a)(i) Fish and Fish Habitat		KNC-111	Chapter 1 (Introduction)	a) Confirm if seepage collection facilities are included in the project designs. b) Justify or revise the cumulative effects assessment for groundwater, surface water, and air quality considering the project's proximity to Teck's Elkview Operations.	• Section 1.1.3.2 (Project Evaluation History), on Page 1-8: It is a surprise to see no hydrogeology and geochemistry listed among the environmental baseline studies since 2013. See the same comment in the Executive Summary of the EA, Section E.2.3 (Project History). Also in Table	29-Apr-24
CUMULATIVEWATER-07	Open	5(1)(a)(i) Fish and Fish Habitat		KNC-135	Chapter 34 (Summary and Conclusions)	Provide a response sufficient to address the comments provided by KNC on residual and cumulative effects.	• Section 34.3 (Summary of Project, Residual, and Cumulative Effects), Table 34.3-1, on Pages 34-4 and 34-9 to 34-14: It was concluded that "No significant adverse residual	29-Apr-24
CUMULATIVEWATER-08	Open	5(1)(a)(i) Fish and Fish Habitat 5(1)(c)		KNC-118	Chapter 5 (Effects Assessment Scope and Approach)	a) Confirm whether the intermediate VCs of groundwater, surface water, and soil quantity and quality would affect the community health and well-being, human health, wildlife health, and recreation and tourism (Table 5.3-7). b) Provide a rationale as to why a typical cumulative effects assessment for water quality is not required for this project.	• Section 5.3.4.2.1 (Receptor and Intermediate Valued Component Interactions), Table 5.3-7 on Page 5-37: the intermediate VCs of groundwater, surface water, and soil quantity and quality would affect the community health and well-being, human health, wildlife health, and recreation and tourism. Right? Chapter 9 (Section 9.1) described that "Within the Elk Valley, groundwater is a primary source of drinking water for residents (Teck Coal Limited, 2014), and is a potential future water usage within the vicinity of the Project." and that "Groundwater baseflow contributions to surface water constitute a pathway to receptor VCs	29-Apr-24
CUMULATIVEWATER-09	Open	5(1)(a)(i) Fish and Fish Habitat	6.6.3 Cumulative Effects Assessment	ECCC-IR-81	33.4.1.8.9 Management and Monitoring Plans – Site Water Management Plan – Individual Management Plans	Clearly describe the approach for cumulative effects management in Michel Creek, including any applicable water quality targets.	It is unclear which water quality targets will be used for cumulative effects management in Michel Creek, noting: a) page 33-158 of the EIS/A states, "The Project will adhere to the Water Quality Targets provided in the EVWQP to mitigate potential cumulative effects on water quality caused by the Project", but b) page 33-158 of the EIS/A also states the Proponent would "[work] with the provincial government and	29-Apr-24
HHERAGW-01	Open	5(1)(a)(i) Fish and Fish Habitat 5(1)(a)(iii) Migratory Birds 5(1)(c)	6.3.5. Aboriginal Peoples 6.3.2. Migratory birds 6.3.1. Fish and Fish Habitat	IAAC	22.2 Scope of the Assessment - Table 22.2-3: Identified Valued Component	Provide additional details in the HHERA on the effects to human and ecological health in terms of groundwater impacts to food chain (i.e., from benthic invertebrates to fish, waterfowls and to humans.)	Potential groundwater impacts to benthic invertebrates were highlighted in Table 22.2-3, however, it was not fully assessed in the rest of the HHERA chapter. Benthic invertebrates is a food source for fish and migratory birds which may have potential to	29-Apr-24

HHERAGW-02	Open	5(1)(a)(i) Fish and Fish Habitat	SB-196	Chapter 22 - Human & Ecological Health 22.5.2.2.5 Activities Potentially Affecting Groundwater Quality	Groundwater could be contaminated by mining constituents or through contamination from spills etc. Provide further details on how groundwater will interact with surface water (ie., springs, through fractured/mined rock, etc.) and possibly spread contamination to water sources that are consumed by humans/animals. Describe how NWP proposes to clean up groundwater that has been impacted by a hydrocarbon release.	"According to the groundwater effects assessment (SRK, 2021b), the predicted effect of the Project activities on groundwater quality is not significant. In addition, impacts to groundwater quality are not anticipated to have a measurable impact on water quality where people obtain drinking water. Impacts to groundwater quality are	29-Apr-24
GWHYDROCARBONS-01	Open	5(1)(a)(i) Fish and Fish Habitat	SB-192	Chapter 21 - Accidents & Malfunctions 21.4.2.3.3 Groundwater		"Given the preventative and spill response measures that will be in place during all phases of the Project, the potential residual environmental effects of an accidental release on groundwater will be short-term in duration, low to moderate in magnitude (depending on the volume of the release), discrete to local in extent, and reversible upon completion of the clean-up efforts. As	29-Apr-24
GWHYDROCARBONS-02	Open	5(1)(a)(i) Fish and Fish Habitat	SB-19	Chapter 3 - Project Description 3.7.6 Mine Infrastructure and Supporting Facilities	a) What measures will be taken to ensure that contaminants will not be transported to groundwater or natural watercourses via runoff? b) Will these areas be lined?	"The fueling stations have been laid out with the diesel filling station for heavy mine equipment having four 45,000 litre tanks (double-walled) and two fueling stations. The light vehicle station has a single 7,000 litre tank and a single fueling station. " It is not uncommon that many fuels happen at refueling stations which can result in an accumulation of hydrocarbons in the soil.	29-Apr-24
MRSF-01	Open	5(1)(a)(i) Fish and Fish Habitat 5(1)(b)(iii) Another country 5(1)(c) s. 19 Factors to be Considered	IAAC		Update the EIS/Application to reflect this project design change. Update the water quality modelling, as appropriate, as well as the effects assessment to applicable Valued Components. Then, make corresponding updates to the effects assessment to Indigenous peoples and impacts to Indigenous rights.	In the Technical Advisory Committee meetings on April 10-11, 2024, NWP committed to including active water treatment to their mine design, in addition to the proposed layer cake method, to provide an effective mitigation measure / contingency measure should the MRSF not function as intended.	29-Apr-24

MRSF-02	Open	5(1)(a)(i) Fish and Fish Habitat	6.2.2 Changes to Groundwater and Surface Water changes to groundwater and surface water quality	NRCan-IR-21 US EPA	Appendix 3C section 2.1 11.5.3.4 Mitigation	a) Detail how the waste rock samples from Sukunka mine site were established to be comparable to waste rock expected to be produced at Crown Mountain mine in terms of its geochemistry, mineralogy, and microbiology. b) Detail how the residence time in the column tests (74.8 days and	Experiments are reported to assess the oxygen consumption and the reduction of nitrate and selenate in bench-scale column tests designed to simulate the proposed layer cake waste rock storage facility. These	29-Apr-24
MRSF-03	Open	5(1)(a)(i) Fish and Fish Habitat	6.2.2 Changes to Groundwater and Surface Water changes to groundwater and surface water quality attributed to acid or neutral rock drainage and metal leaching associated with the storage of waste rock, coal, tailings, overburden, and potential construction material: surface and seepage water quality from the waste rock dumps, tailings/waste rock impoundment facility, stockpiles, and other infrastructure during operation and post-closure;	NRCan-IR-22	Chapter 33, Section 33.5.1.6.11 and Section 33.4.1.8	a. Provide a study plan to initiate the test dump and possible smaller scale field tests (e.g., field cells) to evaluate the geochemical performance of the proposed “Layer Cake” approach. Justify the timing for the construction of the test dump at the onset of mining. b. The Study Plan should describe how leachate from the test dump will be monitored (i.e. sampling frequency and duration and MLARD indicators). The study plan should also describe how the leachate data will be used to update the geochemical model predictions. c. Explain how these test dump predictions and monitoring data will be used to propose Key Performance Indicators and Action Triggers for the management of the Mine Rock Storage Facility. The placement of the compliance monitoring point must be explicitly defined, located within and at the base of the test pile and MRSF, rather than situated at a considerable distance from the mine site in the receiving environment. Additionally, it is crucial to specify the MLARD indicators to be utilized and establish the threshold levels that will prompt the implementation of the specified mitigatory measures. For instance, this may involve installing a low-permeability barrier downhill from the initial MRSF zone and uphill from the Interim Sediment Pond.	Section 33.5.1.6.11 of the EIS describes “ a test dump to be constructed using the same techniques as other mine rock dumps on site as part of pit development”. The purpose of the test dump is to provide performance data on the mine rock storage facility and the efficacy of the proposed “Layer Cake” approach to mitigating selenium, nitrate, and metal leaching. Lead times on the collection of leachate from test dumps can take years (e.g., Diavik Waste Rock Project (Wilson et al., 2018), (Deilmann North Waste Rock Pile, Key Lake Operations). For results from the test dump to be available to support detailed design and adaptive management of the mine rock storage facility, it is necessary for the test dump to be initiated as far in advance of the onset of mining as possible.	29-Apr-24
MRSF-04	Open	5(1)(a)(i) Fish and Fish Habitat		SB-17	Chapter 2 - Project Alternatives Table 2.5-3	a) Provide evidence of where this method has been used in similar coal mining operations. b) When and how will it be determined that the selenium reduction is working as designed. i) What steps will occur if it is not? c) Are there any expected constituents that will leach from plant reject materials?	Section 33.4.1.8 reports the Key Performance Indicators (KPI) to be used to assess water quality in the far- "Environmental Assessment: The Layer Cake MRSF Design method of selenium reduction has been shown to reduce selenium release by up to 90% compared to a conventionally designed MRSF. The Layer Cake MRSF Design also has the benefit of achieving a self-sustaining landform as the selenium reduction technology is based on creating a low oxygen environment within the MRSF. Layer Cake MRSF design limits the oxygen ingress and slows down the flow	29-Apr-24

MRSF-05	Open	5(1)(a)(i) Fish and Fish Habitat s. 19 Factors to be Considered	6.1.2 Geology and Geochemistry 6.1.4 Groundwater and Surface Water 6.2.2 Changes to Groundwater and Surface Water	ECCC-IR-51	Chapter 3 Project Description Appendix 3C Denitrification and Selenium Reduction in Unsaturated Rock and	a) Conduct further laboratory experiments and field-based pilot studies to demonstrate the validity and effectiveness of the “layer cake” approach b) the residual effects assessment for water quality take into account the uncertainty in the predicted effectiveness of the MRSF. Potential effects to VCs resulting from MRSF failure should be clearly described in the EIS/A and reflected in the characterization of residual effects for each VC (e.g., Surface Water Quality, Groundwater Quality, Fish and Fish Habitat, etc.) (See also ECCC-IR-64); and c) Include in the contingency plans proven mitigation measures that are	Insufficient evidence is provided in support of the claimed validity/ effectiveness of the “layer cake” mine rock storage facility (MRSF) as the primary mitigation measure for managing selenium and nitrate leaching from mine waste rock. The Project is expected to produce around 733 million tonnes of mine waste rock, which will be stored in the MRSF. Geochemical testing of the	29-Apr-24
MRSF-06	Open	5(1)(a)(i) Fish and Fish Habitat s. 19 Factors to be Considered	6.4 Mitigation	ECCC-IR-80	33.4.1.6.6 Management and Monitoring Plans – Landform Design and Reclamation Plan – An Adaptive Management Strategy for	a) Describe how the MRSF will provide effective source control in perpetuity. b) Describe whether surface water quality monitoring and groundwater quality monitoring will continue into closure and post-closure. c) Describe any economically and technically feasible contingency mitigation measures that could be implemented during closure or post-closure.	Contingency plans for the MRSF may not be effective. The MRSF represents perpetual storage for 270 million cubic meters of waste rock. This storage facility needs to remain suboxic (i.e., oxygen and water ingress restricted), possess sufficient carbon to support nitrate and selenium reduction, and remain without preferential flow paths, among other requirements, to remain an effective form of source control. If these requirements are not	29-Apr-24
MRSF-07	Open	5(1)(a)(i) Fish and Fish Habitat	6.4 Mitigation	ECCC-IR-83	33.4.1.8 Management and Monitoring Plans – Site Water Management Plan 33.4.1.6.6 Management and Monitoring Plans –	Include a fully developed contingency plan that details proven mitigation measures, timelines, and triggers for implementation. The contingency plan should demonstrate that effects to water quality and related Valued Components (e.g., Fish and Fish Habitat) would remain the same as those assessed within the EIS/A even if the MRSF does not work to its expected efficiency; otherwise, the effects assessments may need to be revised accordingly.	Page 33-163 of the EIS/A states, “the contingency plans noted above have not been fully developed or assessed by NWP and their effects on Project success cannot be quantified at this time”. ECCC notes that contingency planning is especially important for the Project because the primary mitigation measure for water quality (i.e., the MRSF layer cake method) is considered an emerging technology (see ECCC-IR-51). A detailed plan that includes proven and effective	29-Apr-24

					Describe to what degree the Active Water Treatment (AWT) will have nickel removal.	KNC heard at the NWP open houses for the project that NWP is now acknowledging that the “layer cake” design is unlikely to meet BC’s technical readiness criteria, and NWP need to include active water treatment (AWT) as primary mitigation, with the potential that the layer cake can possibly be proven over time so that AWT can be removed at later date. This revised approach is consistent with KNC comment 175 However this creates a gap for review	
MRSF-08	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-236				29-Apr-24
MRSF-09	Open	5(1)(a)(i) Fish and Fish Habitat s. 19 Factors to be Considered	KNC-175	Chapter 33.4.1.8 Site Water Management Plan	Assess whether it is possible to model the layer-cake performance in a stochastic/probabilistic manner rather than just a “succeeds” or “fails” evaluation.	NWP is proposing a Layer Cake method within the Mine Rock Storage Facility (MRSF), which intends to mitigate both selenium and nitrate simultaneously while reducing selenium release	29-Apr-24
MRSF-10	Open	5(1)(a)(i) Fish and Fish Habitat	Piikani-09	3. Project Description 3.7.3.6	Provide information on the following: i) How inflow into the mine rock stockpile will be managed and controlled. ii) How issues will be identified. iii) Action plans to address any excessive seepage.	The Proponent has noted the risk of infiltration of water into the Mine Rock Stockpile creating preferential flow pathways through the facility which could potentially have significantly less reducing conditions depending on the rate of flow. This risk is challenging to mitigate given the possibility of relatively minor bedrock fractures or talus deposits creating preferential flow paths for surface water into the mine rock facility. It is not clear to Piikani Nation how the Proponent will	29-Apr-24
MRSF-11	Open	5(1)(a)(i) Fish and Fish Habitat	IAAC US EPA	9.4.3.5.3 Groundwater flow Figure 9.4-15	Discuss how upwelling groundwater underneath the MRSF will be managed post-mining.	West Alexander Creek is shown to be a gaining stream. Post mining, not only would it be predicted for groundwater to discharge to its former creek channel and saturate the bottom of the waste rock disposal facility (this is depicted in the groundwater modeling	29-Apr-24
MRSF-12	Open	5(1)(a)(i) Fish and Fish Habitat	Piikani-02	3. Project Description Appendix 3-C	Provide information on the expected relative proportions of selenite and selenate in the waste rock and how the mine rock disposal areas may be able to be modified to facilitate increased removal of selenium species from solution.	The Crown Mountain Coal Project has proposed to employ a novel method of waste management in coal operations wherein the proponent has proposed to deposit themine rock and coal rejects in sequential layers to create low oxygen conditions that would reduce the release of selenium from	29-Apr-24

MRSF-13	Open	5(1)(a)(i) Fish and Fish Habitat	Public Comment 229		Provide evidence that the reject surface can sustain vegetation.	NWP proposes to cap the final dump platform at closure with rejects to maintain anoxic conditions within the dump. It goes on to say it will reclaim that reject surface. There are no examples, after decades of trials and on the ground evidence that suggests rejects will sustain a vegetated	29-Apr-24
MRSF-14	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-183	Chapter 11 and 12	Clarify whether anti-scaling agents will be used as a planned mitigation, or only if triggered.	The application indicates that the layering approach is also expected to reduce, but not eliminate, the potential for calcite precipitation due to reduced oxygen entry (SRK, 2021c; Appendix 11-D). The calcite assessment indicates “that deposits can be expected to form in West	29-Apr-24
MRSF-15	Open	5(1)(a)(i) Fish and Fish Habitat s. 19 Factors to be Considered	SB-40	Chapter 11 - Surface Water Quality 11.5.3.4.Mitigation Measures	Identify the alternatives if the co-disposal method fails to successfully mitigate the mobilization of selenium and nitrate species in mine rock stockpile runoff.	If the co-disposal method does not prove successful, what is Plan B? Plan B if the co-disposal method fails to successfully mitigate the mobilization of selenium and nitrate species in mine rock stockpile runoff.	29-Apr-24
MRSF-16	Open	5(1)(a)(i) Fish and Fish Habitat	SB-41	Chapter 11 - Surface Water Quality 11.5.3.4.Mitigation Measures for Change	Assess whether the water within the pit walls will move through the ground and become oxidized when it resurfaces.	This section states that water accumulating inside the pits will saturate the lower portions of the mine rock fill, limiting oxidation and subsequent selenium release. Won't the water move through the ground and become oxidized when it resurfaces?	29-Apr-24
WATERMANAGEMENT-01	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-17	10.5.2.2.2 Surface water quantity	a) Confirm if the reservoir is being built in the creek or adjacent to it. i) If being built in the creek, has impacts to EFN and fish habitat been looked at?	Page 34 of Chapter 10 says there is a potential for streamflows to be reduced in the downstream reaches of Grave Creek with construction and withdrawls from the reservoir. Chapter 3 provides some information around the volume (100,000 m3) but is calling it an off-channel reservoir. Is the reservoir being built in the creek or adjacent to it? Has impacts to EFN and fish habitat been looked at if it is inchannel? The WCT popluation in Grave Creek had a major decline	29-Apr-24

WATERMANAGEMENT-02	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-188	3. PROJECT DESCRIPTION 3.7.5: Water Management Infrastructure	Describe how the sediment ponds will be hydraulically connected to the rock dump.	In Figures 3.7-1 through 3.7-8 show the sediment ponds hydraulically connected to the rock dump, which overlies West Alexander Creek. It is unclear how this interface is planned. Is infiltration water collected via a drain that freely discharges to the conveyance channel or is the dump designed to shed water to peripheral ditches? Similar questions on hydraulic connectivity apply to the	29-Apr-24
WATERMANAGEMENT-03	Open	5(1)(a)(i) Fish and Fish Habitat 5(1)(c)	KNC-237	Addendum A	Provide a projection, based on currently known/proven information, how many years of water treatment will be required after the project is completed, and the undiscounted cost for this treatment.	Ktunaxa consider the next seven generations in their decisions, and do not necessarily discount future costs to present, as this could require an endless cycle of “more mining to cleanup past mining”. Therefore it is important for KNC to receive a projection, based on currently	29-Apr-24
WATERMANAGEMENT-04	Open	5(1)(a)(i) Fish and Fish Habitat	SB-10	Chapter 1 - Introduction 1.2 Project Overview Page 1-14, second paragraph after	Confirm whether heated water will be added back into tributaries of Alexander Creek as part of the process. i) Describe what protective measures are in place to protect surface water quality from the impacts of coal dewatering.		29-Apr-24
WATERMANAGEMENT-05	Open	5(1)(a)(i) Fish and Fish Habitat	SB-12	Chapter 1 - Introduction 1.2 Project Overview Table 1.2-2, Construction and Pre-Constructio	Confirm how big the Grave Creek Reservoir will be. i) Explain whether its construction and decommissioning will have negative impacts on aquatic habitat and surface water quality. ii) Describe how these impacts will be mitigated and compensated for.		29-Apr-24
WATERMANAGEMENT-06	Open	5(1)(a)(i) Fish and Fish Habitat	SB-13	Chapter 1 - Introduction 1.2 Project Overview Table 1.2-2, Operations	a) Explain how the Main Pond discharge will be handled so that there are no negative impacts to downstream aquatic habitat and water quality. i) Confirm if the Main Pond will be lined and bermed. b) Describe where toxic waste materials will go.		29-Apr-24
WATERMANAGEMENT-07	Open	5(1)(a)(i) Fish and Fish Habitat	SB-20	Chapter 3 - Project Description 3.7.6.11.1 Fresh Water Supply System	Explain how water will be made up if Grave Creek is experiencing low water flow. Management of water flow (limits to what can be withdrawn) is necessary to limit impacts to natural streams.	"The common water tank is supplied by two different primary water sources supplemented by the Grave Creek off-channel reservoir throughout the life of mine."	29-Apr-24

WATERMANAGEMENT-08	Open	5(1)(a)(i) Fish and Fish Habitat		SB-42	Chapter 11 - Surface Water Quality 11.5.3.5.Mitigation	Clarify what lined or equivalent means in regard to sediment ponds.		29-Apr-24
WATERMANAGEMENT-09	Open	5(1)(a)(i) Fish and Fish Habitat		SB-48	Chapter 11 - Surface Water Quality Table 11.5-3 Page 11-62, first row	Clarify why there is potential for seepage of contaminated groundwater to surface water downstream of the sediment ponds if the "impermeable geomembrane liners are proven to be effective in preventing leakage/seepage to groundwater".		29-Apr-24
WATERMANAGEMENT-10	Open	5(1)(a)(i) Fish and Fish Habitat	6.1.4 - Groundwater and Surface Water 6.2.2 - Changes to groundwater and surface water	IAAC	10.4.2 Baseline Programs 10.5.4 Characterization of Residual Effects, Significance, Likelihood and	a) Confirm if the Project footprint is entirely located within the West Alexander Creek and Grave Creek watersheds of if it extends outside the West Alexander Creek watershed. Also, clarify how the mined footprint shown on Figure 10.4-1 was delineated with respect to the overall mine facilities and layout i.e. setback distances from mined areas, west dump, etc. b) Clarify the drainage pathway of the northeast side of the East Pit and South Pit since the outline boundaries of their mined areas are shown outside the West Alexander Creek watershed. Also, clarify if these pits will drain into West Alexander Creek watershed. c) Provide a rationale for having the hydrometric stations, used in the collection and analysis of surface water baseline information, located	The geographical extent of the project used for the surface water quantity assessment includes the Project footprint, the Aquatic Local Study Area (LSA) and the Aquatic Regional Study Area (RSA). Figure 10.4-1 shows that the northeast side of the Project footprint extends outside of West Alexander Creek watershed and covers the Alexander Creek watershed	29-Apr-24
WATERMANAGEMENT-11	Open	5(1)(a)(i) Fish and Fish Habitat	6.1.4 - Groundwater and Surface Water 6.2.2 - Changes to groundwater and surface water	IAAC	10.5.4 Characterization of Residual Effects, Significance, Likelihood and Confidence 12.4.2 Baseline Programs	a) Provide information on how the wetlands and their hydrological functions in the LSA were simulated in the water balance model to evaluate the potential effects of project development on water surface quantities, attenuation of peak flows during major floods and groundwater recharge. b) Confirm if West Alexander Creek Reach 4 (WAL4) is the only wetland area within the West Alexander Creek watershed and address its significant to the effects of project development.	As part of the wetland ecosystem baseline assessment, a total of 27 wetlands were surveyed for fish habitat in the LSA, from which only 6 (W4, W5.1, W6, W11.1, W17 and W21) were considered of high importance to fish. The West Alexander Creek Reach 4 (WAL4) area has a wetland of 4,407 m2 located at the headwaters of the watershed with no inflows from tributaries and overland outflows going quickly underground throughout most of the year. Understanding the function	29-Apr-24

WATERMANAGEMENT-12	Open	5(1)(a)(i) Fish and Fish Habitat	6.1.4 - Groundwater and Surface Water 6.2.2 - Changes to groundwater and surface water	IAAC	10.6.2 Identifying Past, Present, and Reasonably Foreseeable Projects and/or Activities	a) Provide more information for the Natural Processes or Events mentioned in Table 10.6-1 since its ranking of potential cumulative effect, as a reasonably foreseeable future activity, has been assigned “I” by assuming the impacts of extreme floods (i.e., 2013 flood event) are short-term and fully reversible. This assumption may not be adequate when considering that flood events may become more frequent and intense, and thus result on long-term changes to water quantities. b) Clarify if the design of water management facilities included extreme events such as the 2013 event.	The cumulative effects assessment considers the past, present, and reasonably foreseeable projects or activities that are expected to interact with surface quantity. Table 10.6-1 describes "Natural Processess or Events" as a reasonably foreseeable future activity with a ranking of "I" which means that the residual project effects do not act cumulatively with those of other reasonably foreseeable future projects and/or activities and therefore, it is not carried forward in the assessment.	29-Apr-24
WATERMANAGEMENT-13	Open	5(1)(a)(i) Fish and Fish Habitat	6.2.2 Changes to Groundwater and Surface Water	ECCC-IR-91	Chapter 10 Surface Water Quantity Assessment	a) Provide details on the selection of the design storm parameters (storm intensity and duration) and its impact on pond design, including: i. pond capacity to collect and retain storm water; and ii. impacts on erosion and sedimentation potential in the pond. b) Clarify if other types of peak flow events, such those resulting from rain or snow flooding were considered in the design of the pond.	The report also documents the residual effects on surface water Sedimentation basins and sediment ponds are important measures for mitigating potential turbidity impacts downstream of a project. They must be sized appropriately to detain a certain magnitude of flow while allowing fine sediments to settle. Typically, they are sized based on a rainfall intensity	29-Apr-24
WATERMANAGEMENT-14	Open	5(1)(a)(i) Fish and Fish Habitat	6.2.2 - Changes to groundwater and surface water	IAAC	3.7.5 Water Management Infrastructure 3.7.6.10 Water	a) Update Section 3.7.5 to include the hydraulic design information of the Stantec report: Water management design report for environmental assessment submission (Stantec, 2021). b) Provide a rationale for the temporary sedimentation basins (initial construction ponds) being sized using 2011 Alberta Transportation guidelines. Also, clarify the dimensions provided in Table 3.7-10 and add the disturbed area draining to each pond which is relevant to the calculation of the pond volume.	There are many inconsistences found in the design of the water infraestructure including the construction ponds, the interim sediment pond and the main sediment pond: - The dimensions of the pre-production construction ponds provided in Table	29-Apr-24
WATERMANAGEMENT-15	Open	5(1)(a)(i) Fish and Fish Habitat	6.2.2 - Changes to groundwater and surface water	IAAC	33.4.1.8 Site Water Management Plan	a) Confirm that the construction of the proposed non-contact water diversion channel (a.k.a. West Diversion channel) was unfeasible and thus non-contact water infrastructure is no longer part of the SWMP. Also, clarify if contact water will be free of contaminants prior to entering the main sediment pond.	Two of the objectives of the Site Water Management Plan (SWMP) to address the adverse effects and minimize disruptions to flow conditions within the receiving waters are: - Managing non-contact water is one of the objectives of the Site Water - Restoration of natural flow conditions	29-Apr-24
WATERMANAGEMENT-16	Open	5(1)(a)(i) Fish and Fish Habitat		IAAC	12.5.2.2. 4 Habitat Loss Due to Chapter 9.5.3.2.2 pg. 97 Chapter 33.4.1.8 pg. 144	b) Provide more information about the dam breach of the main sediment pond during the PC phase and clarify if it involves partial (i.e., only breach) or full dam decommissioning (i.e., entire dam structure gets Detail how impacted water will be managed if it fails water quality testing for discharge into West Alexander Creek.	The EIS states that "The primary measure to mitigate potential effects on groundwater quality from other constituents contained in mine-site drainage will be to direct all contact water to the Interim and Main Sediment Ponds for settling and removal of suspended solids, followed by testing of water quality prior to	29-Apr-24

WATERMANAGEMENT-17	Open	5(1)(a)(i) Fish and Fish Habitat		DFO-072	3.7.6.11 Other Water Requirements pg. 3-86	1) Complete an environmental flow needs assessment for each of the two source streams Grave Creek and Alexander Creek. In this assessment confirm your estimate of the cumulative diversion amount (e.g., 640,000 m3/year) and provide a monthly breakdown. Do these values align with the values that will be included in your water license applications? 2) The Grave Creek Reservoir has a storage capacity of 100,000 m3. Clarify what is the water source after the storage is exhausted during the fall fish migration and overwintering period (Sept - Mar)?	How does your estimate of dust suppression / vehicle washing compare to other coal mines in the Elk Valley? For example, Fording River Operations is licenced for 30,000 m3/day for dust suppression and 5,184 m3/day for vehicle washing or 12,842,000 for year for these two activities. For "Other Usage", your numbers seem low at 130,000 m3 per year . This is 1% of Fording River demand for their other usage. The statement of no significant effects from water diversion in Chapter 10 doesn't appear plausible given the	29-Apr-24
CWD-01	Open	5(1)(a)(i) Fish and Fish Habitat	6.2.2 Changes to Groundwater and Surface Water 6.3.1 Fish and Fish Habitat	ECCC-IR-66	11.5.3 Surface Water Quality Assessment – Mitigation Measures Chapter 12.5.3 Fish and Fish	a) Clarify whether clean water diversions are or are not planned for the Project. b) Update all parts of the EIS/A accordingly, including the water quality model and effects assessment. c) Describe in the EIS/A the impacts to water quality due to the lack of clean water diversions and propose alternative mitigation measures, as needed.	It is unclear how lack of clean water diversions will affect water quality. Page 3-65 of the EIS/A states “Clean water diversion infrastructure is not planned at site”; however, there appears to be conflicting information in other sections of the EIS/A. Chapters 9, 11, 12, and 33 reference clean water diversions as a mitigation measure for water quality, and the water quality model may have also	29-Apr-24
CWD-02	Open	5(1)(a)(i) Fish and Fish Habitat		Piikani-08	3. Project Description 3.7.5.1	Clarify how water management will be done in the area of the western diversion.	In EIS Section 3.7.5.1 NWP notes that it will be difficult to construct the west diversion channel diverting clean runoff around the Mine Rock Stockpiles due to geotechnical stability issues, high exposure to	29-Apr-24
CWD-03	Open	5(1)(a)(i) Fish and Fish Habitat		SB-43	Chapter 11 - Surface Water Quality 11.5.3.5.Mitigation Measures for Change	Indicate where it won’t be possible to divert clean, non-contact water away from the sediment ponds and other Project infrastructure.		29-Apr-24
CWD-04	Open	5(1)(a)(i) Fish and Fish Habitat		SB-45	Chapter 11 - Surface Water Quality	Confirm whether the ditches that divert water around the mine site will be designed so that they support fish habitat or if will there be fish barriers built into the design.		29-Apr-24
CWD-05	Open	5(1)(a)(i) Fish and Fish Habitat		SB-46	Chapter 11 - Surface Water Quality	Confirm if the captured clean surface water that cannot be diverted would be mixed with waste rock in the sediment ponds before it is released.		29-Apr-24

CLARIFICATION-01	Open	5(1)(a)(i) Fish and Fish Habitat	US EPA	11.5.2.2.4 Change in Surface Water	Provide a clarification regarding the use of the term “elevated”.	The text mentions that the following elements are elevated: antimony, barium, molybdenum, copper, nickel, zinc, nickel, cobalt, arsenic, mercury	29-Apr-24
CLARIFICATION-02	Open	5(1)(a)(i) Fish and Fish Habitat	US EPA	11.5.3.4 Mitigation Measures for Change in Surface	Provide a clarification whether the term ML/ARD includes selenium leaching.	Given that selenium isn’t a metal and does not require acidic conditions to be mobile , does the term ML/ARD include selenium leaching?	29-Apr-24
CLARIFICATION-03	Open	5(1)(a)(i) Fish and Fish Habitat	US EPA	11.5.4.2.1 Results - Grave Creek, Selenium Paragraph 2	Provide a definition of the term "slight exceedance".	The text states "Downstream of the confluence with Harmer Creek at the prediction nodes GC-2 and GC-1, selenium concentrations for both the 50th and 95th percentile scenarios slightly exceed the long-term chronic B.C. WQG." Based on Figures 11.5-6 and 11.5-7, it appears as though these	29-Apr-24
CLARIFICATION-04	Open	5(1)(a)(i) Fish and Fish Habitat	SB-36	Chapter 11 - Surface Water Quality 11.4.2.2 Results Table 11.4-4	a) Explain the discrepancy between the statement "Generally speaking, analytical results are below laboratory reportable detection limits” and the exceedances in Table 11.4-4. b) Clarify the term “variable” in the fourth column of Table 11.4-4 where there is no exceedance amount (n) given.	This section states that "Generally speaking, analytical results are below laboratory reportable detection limits." According to Tables 11.4-4 this is definitely not the case as it indicates that there were over 150 exceedance. Also, explain what 'variable' means in the fourth column of Table 11.4-4 where there is no exceedance amount	29-Apr-24
WATER-01	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-225	20. EFFECTS OF THE ENVIRONMENT ON THE PROJECT	Were any additional predictors of drought considered such as deficits in precipitation, winds, low humidity periods?	"Drought conditions were considered throughout the Project, and discussed qualitatively based on its interactions with other climate hazards in question, such as forest fire risk. As such, it is a climate parameter that is difficult to	29-Apr-24
WATER-02	Open	5(1)(a)(i) Fish and Fish Habitat	US EPA	11.5.2.2.4 Change in Surface Water Quality from Disposal of Mine Rock and Coal Rejects Paragraph 4	Provide the following additional information so that this statement can be properly evaluated. a) What tests were used to identify temporal trends in release rates? Over what time period is this temporal trend being described? b) What leaching rates were available “elsewhere in Elk Valley” is this referring to background leaching rates or leaching rates from other mine sites?	The test states “However, laboratory test results did not indicate any significant upward trends in release rates for these parameters, and trace element concentrations were comparable to those observed elsewhere in the Elk Valley.”	29-Apr-24

WATER-03	Open	5(1)(a)(i) Fish and Fish Habitat 5(1)(b)(iii) Another country		US EPA	11.6.2.1 Spatial Boundaries Paragraph 3	a) Quantify both the magnitude of these transboundary effects and the "natural variation" that is being mentioned here. b) Detail which dataset was used to determine the range of natural variation and whether this estimate includes the effects of upstream mining operations. Are current selenium inputs to Koocanusa Reservoir considered natural in this context?	This paragraph suggests that transboundary effects to Koocanusa Reservoir that could result from the project are negligible because they are predicted to be within the range of "natural variation".	29-Apr-24
WATER-04	Open	5(1)(a)(i) Fish and Fish Habitat	6.1.4 Groundwater and Surface Water	ECCC-IR-53	9.4.3 Groundwater Assessment – Baseline Program and Groundwate	Characterize groundwater-surface water interactions in the Grave Creek watershed.	Insufficient groundwater and groundwater-surface water interaction data are provided for the Grave Creek drainage to understand Project effects. For example: a) The flow accretion study only	29-Apr-24
WATER-05	Open	5(1)(a)(i) Fish and Fish Habitat	6.1.4 Groundwater and Surface Water 6.2.2 Changes to Groundwater and Surface Water	ECCC-IR-54	9.5.4 Groundwater Assessment – Characterization of Residual Effects, Significance, Likelihood, and Confidence	Include rationale to support the assumption of natural attenuation in the receiving environment.	The capacity for natural attenuation in the receiving environment is unclear. The EIS/A refers to “natural attenuation” in support of the residual effects characterization for “Changes to Groundwater Quality Due to Infiltration of Contact Water to Groundwater” and when describing project effects due to the sediment ponds (p. 9-94). However, the EIS/A does not provide supporting data or rationale to justify the assumption of natural attenuation. In fact, studies in the Elk Valley have found that selenium and nitrate may act	29-Apr-24
WATER-06	Open	5(1)(a)(i) Fish and Fish Habitat	6.2.2 Changes to Groundwater and Surface Water	ECCC-IR-63	11.5.2.2 Surface Water Quality Assessment – Discussion of Potential Effects	Clearly describe in the Erosion and Sediment Control Plan, Site Water Management Plan, and the Air Quality and Greenhouse Gas Management Plan how effects to water quality and aquatic receptors from TSS and dust deposition will be prevented. The plans should also include monitoring approaches designed to demonstrate the effectiveness of the plans in all Project phases.	Page 11-43 of the EIS/A states “erosion and sedimentation may occur during all phases of the Project, resulting in elevated levels of TSS and turbidity in waterbodies within, adjacent to, and downstream of the Project footprint”; however, the predicted concentrations of total	29-Apr-24

WATER-07	Open	5(1)(a)(i) Fish and Fish Habitat	8.2 Monitoring	ECCC-IR-84	33.4.1.8 Management and Monitoring Plans – Site Water Management Plan	Include the following information on the water quality follow-up monitoring program: a) Locations of surface and groundwater quality monitoring. b) Revise or provide a rationale for the tolerance levels identified for initiating follow-up investigation for selenium. The EIS/A proposes selenium tolerance levels of “>0.01 mg/L (average) and 0.02 mg/L (grab)” (p. 33-104), but these are much higher than the concentrations predicted in the EIS/A for the Project (Appendix 11F). It is unclear how	It is unclear whether the proposed water quality monitoring program will be able to verify the accuracy of the environmental assessment, determine the effectiveness of mitigation measures, and ensure that effects remain within the range predicted by the assessment.	29-Apr-24
WATER-08	Open	5(1)(a)(i) Fish and Fish Habitat		US EPA	11.5.2.2.4 Change in Surface Water Quality from Disposal of Mine Rock and Coal Rejects Paragraph 3	Add a description (or reference to another document) that describes the full suite of tests that were performed to assess ML/ARD and if these results are consistent with the findings from the ABA.	Acid-base accounting (ABA) is mentioned in the context of water quality predictions, however, the context of this information isn’t placed within the larger context of static and dynamics tests utilized to predict water quality impacts. While ABA can be used as a guide to identify which material could potentially release contaminants of concern, they are often less definitive than dynamic tests such as humidity cell tests—especially since many contaminants of concern such as selenium can be mobile under neutral pH conditions. As such, there can a disconnect between selenium mobilization and ABA test results since these two parameters are not always directly linked.	29-Apr-24
WATER-09	Open	5(1)(a)(i) Fish and Fish Habitat		YQT-56	CHAPTER 33 – MANAGEMENT AND MONITORING PLANS	In relation to groundwater/surface water quality and quantity, address the following: a) Explain how central and feeder drains would work within the layer cake design proposed for the MRSF. b) Clarify how “if needed” will be identified during MRSF construction regarding a graded rock filter. c) Explain how the MRSF layers will be maintained on sloping or uneven terrain. d) Explain why modeling indicates a 40% reduction in flow in West Alexander Creek post closure. e) Provide details on what classifies as high selenium rock regarding the SWMP.	Describes 13 environmental plans, 4 health and safety, and 4 communication and reporting plans. The following plans relevant to reclamation and closure were reviewed: ● Ecological restoration ● Fish and Fish Habitat Management Plan ● Landform and Design ● Site Water Management Plan Yes - more information on this subject is required. Information requested: ● The ecological restoration plan indicates 148 ha of Whitebark pine forest. Are there existing examples of successful whitebark pine	29-Apr-24

WATER-10	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-106	Executive Summary	In relation to groundwater/surface water quality and quantity, address the following: a) Clarify whether groundwater was considered to a lesser degree than surface water based on the amount of content provided. b) Clarify why hydrogeology is not listed as a baseline study discipline in the Executive Summary. c) Explain whether the mined pits are expected to be flooded as pit lakes at post-closure and whether any pits will become saturated rock fills. d) Provide a scientific rationale for why soil quality is not expected to have a significant residual effect in regard to increased concentrations of metals.	• Executive Summary - Table of Contents, E.7.4 (Groundwater Assessment): It appears much less in contents than E.7.5 and E.7.6 (Surface Water Quantity Assessment, and Surface Water Quality Assessment). Indeed, the description (on Pages E-32 to E-33) for the groundwater assessment is a lot less, in comparison with that for the surface water (on Pages E-34 to E-39). Does this indicate that the Proponent considered groundwater is less important than surface water? In our opinion, groundwater is as important as surface water with respect to quantity and quality, and the two waters interact and are connected. • Section E.2.3 (Project History), on Page E-6: It is a surprise to see no hydrogeology listed among the	29-Apr-24
WATER-11	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-113	Chapter 3 (Project Description)	In relation to groundwater/surface water quality and quantity, address the following: a) Confirm if the source term methodology information is in the EIS/A. If so, identify where it is located. b) Assess whether there would be enough soils available to cover the entire MRSF facility and along the West Alexander Creek valley. c) Assess if another (as the 2nd) seepage collection pond has been or will be considered, at a location farther downgradient of the sedimentation pond, before the confluence into the main Alexander Creek. d) Confirm whether 100% of the seepage is to be collected in the sediment ponds. i) Confirm whether the sediment ponds can collect seepage through deep groundwater pathways.	• Section 3.5 (Geochemical Characterization), sub-section 3.5.2.3 (Short Term Leaching) on Page 3-30: It was stated that "The processes for leaching of oxidizing mine rock and flushing of explosives residuals are inherently accounted for by the Water Quality Prediction Model source term methodology (Appendix 11-E).". It appears that Appendix 11-E does not contain the source term methodology info; confirm whether it does or not and provide clearer language. • Section 3.5 (Geochemical Characterization), sub-section 3.5.2.4 (Study Conclusion) on Page 3-30: The study concludes that selenium will be the key issue as the other coal mines in the Elk Valley. KNC has a big concern about the likelihood that the proposed project could generate	29-Apr-24

WATER-12	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-114	Chapter 3 (Project Description)	In relation to groundwater/surface water quality and quantity, address the following: a) Assess whether the sediment ponds should be sized based on site-wide water balance modeling results to ensure they would be sufficiently large to capture the mine contact water through the mine life. b) Provide details on why the sediment pond was not sized according to the 24-hr storm event precipitation estimate of 92.3 mm. c) Provide details on how much groundwater will be pumped from how many wells, at what volume or rate, and how long? i) Provide details on whether any pumping wells have been installed and tested for the target aquifer properties, well yield estimation and feasibility. d) Provide the thickness of soil cover on top of the waste rock dumps. i) Assess whether the topsoil (e.g., clay) available in the project area would suffice for the reclamation needs. ii) Confirm whether a geophysical survey has been done to map the soils. e) Address whether a pit lake would form in the south pit and if so, whether the pit floors need to be covered with soil and revegetated.	• Section 3.7.5.5 (Sediment Ponds), on Pages 3-69 to 3-75: It appears that the sediment ponds were sized primarily based on the catchment area and precipitation data. Confirm whether they be sized based on a site-wide water balance modeling results to ensure they would be sufficiently large to capture the mine contact water through the mine life. Also it was stated on Page 3-74 below Table 3.7-11 that "A precipitation amount of 55.3 mm, corresponding to the 10-year, 24-hour event, was estimated based on intensity-duration-frequency (IDF) curves derived by Environment and Climate Change Canada (ECCC) for Sparwood, B.C., and adjusted for elevation and orographic effects". The precipitation is 55 mm per day (for 24 hours)? A reference for the source of this data should be provided. Also, it sounds questionable for the statement on Page 3-75: "A diversion of flows from the undisturbed area was estimated not to significantly reduce the required pond size. Additionally, as mentioned earlier,	29-Apr-24
WATER-13	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-115	Chapter 4 (Consultation and Engagement)	In relation to groundwater/surface water quality and quantity, address the following: a) Explain why the conceptual drawing doesn't show groundwater discharge from the valley slopes into the waste rock dump. b) Confirm whether the GoldSim water balance diagrams did not consider groundwater discharge from the valley slopes and base into the waste rock dump. If not considered, provide an explanation and what implications would be for the reliability of the GoldSim model predictions of the contaminants of concern. c) What is the saturated K of the WRD? i) Were sensitivities done for the uncertainties associated with the K values? If not, why?	• Appendix 4-CC (Waste Rock Management Meeting - February 2018), on pdf Page 72: The conceptual design drawing shows the diversion ditches to convey clean water around the waste rock management area. However, the Project Description stated no ditches to be implemented at the site. KNC would highly recommend such ditches to reduce the contact water volume to be managed or treated for both environmental and economical benefits. The conceptual drawing doesn't show groundwater discharge from the valley slopes into the waste rock dump. Provide rationale why it does not, or add it to the assessment. • Appendix 4-EE (Waste Rock Management Update - December 2018) on Page 4: The conceptual	29-Apr-24

WATER-14	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-116	Chapter 4 (Consultation and Engagement)	Confirm whether the recharge would be higher at higher elevations, and lower at lower elevations considering the orographic effects.	• Appendix 4-OO (Groundwater Working Group Meeting - December 2020): (1) pdf Pages 7 and 8: the drawings show that the project will have interactions with the neighboring Teck's Line Creek and Elkview Operations from the air quality and surface/groundwater perspectives. Therefore, cumulative effects should be assessed. See the comment in Section E.7.4 about the statement "Cumulative effects assessment for groundwater quantity and quality is not required / warranted.". (2) pdf Pages 8 and 9: the project layout shows a diversion ditch around the waste rock dump. As commented earlier, no diversion ditch was planned in the project design, as stated in the Section 3.7.5 (Water Management	29-Apr-24
WATER-15	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-121	Chapter 9 (Groundwater Assessment)	In relation to groundwater/surface water quality and quantity, address the following: a) Compare how the threshold values (e.g., >10% change in flows and >1m change in groundwater level, relative to baseline conditions) align with Canadian federal guidelines for residual effects assessment. b) Explain how pit dewatering/refill would affect groundwater quantity and quality. c) Clarify if the prediction for groundwater change in bedrock was based on speculation or quantified with the groundwater modeling. Provide detail on how the method was conducted. d) Provide scientific rationale for the statement that concentrations of CoCs in groundwater would reduce over time ("Project activities associated with pit development during the Operations stage are anticipated to affect local groundwater quality within the Project footprint during the course of Operations into Post-Closure, with reducing concentrations of constituents of concern in groundwater over time").	• Section 9.5.1 (Thresholds for Determining Significance of Residual Effects), on Page 9-76: How do the threshold values (e.g., >10% change in flows and >1m change in groundwater level, relative to baseline conditions) align with the BC's and Canadian federal guidelines for residual effect assessment? • Section 9.5.2 (Project Effects) on Page 9-77: Again the limited data is insufficient to support the statement that "Discharge of deeper groundwater does not appear to be important close to the Project.". Groundwater especially in conductive fault zones and karstic bedrock could be significant. Collection of more data would be required to support such a conclusion. Deeper groundwater from the mine site (the waste rock dump)	29-Apr-24

WATER-16	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-125	Chapter 10 (Surface Water Quantity Assessment)	In relation to groundwater/surface water quality and quantity, address the following: a) Explain the discrepancy and the implications due to the different precipitation numbers used for the results of the effect assessments. The map used for the groundwater modeling and the site-wide water balance and load modeling should be the same for consistency. b) Confirm whether there would be no hydrometric station upgradient of the mine pits to collect background surface water quantity and quality. If yes, confirm whether there would be data available for background surface water for the assessment of future mine impacts. i) Explain why there is no hydrometric station in the Harmer Creek watershed. c) Explain why pit dewatering and backfill were not listed as activities of the mining during the Operations and Closure/Post-closure as these activities would impact the surface water quantity and quality (e.g., reducing runoff and stream flow, increase of pit wall contact water). d) Clarify if Grave Creek (hydrometric station G2) could dry up during low flow seasons or dry years and explain if the assessed "No" residual effect during the operations was made by assuming the mitigation to implement withdrawal restrictions and how this measure will impact the	• Section 10.2.3 (Assessment Boundaries), on Page 10-4: The LSA for surface water quantity and quality assessment includes Harmer Creek watershed (Figure 10.2-1). To assess the potential effect on surface water in Harmer Creek watershed, inputs from the groundwater baseline conditions and predictions of potential impacts from the mine on this watershed would be required. As commented previously, the mine contact water seepage could migrate towards this creek via longer pathways through deeper bedrock (particularly preferential pathways through karstic limestone and dolomite, and faults), hence it is recommended that groundwater LSA / model domain be extended to include this creek as well. • Section 10.4.1 (Existing Regional and Local Information), 10.4.1.1 (Hydrology), on Page 10-10: The mean annual precipitation (MAP) was	29-Apr-24

WATER-17	Open	5(1)(a)(i) Fish and Fish Habitat	KNC-130	Chapter 11 (Surface Water Quality Assessment)	In relation to groundwater/surface water quality and quantity, address the following: a) Provide an explanation why basal drains under the WRD was not considered as a mitigation measure to collect and convey the seepage more effectively to the sediment ponds (and hence to reduce seepage into the groundwater system beneath the WRD). b) Describe how seepage from the pits would impact surface water quality in East Alexander Creek. c) Confirm if there would be diversion ditches around the WRD and the sediment ponds. d) Confirm if the solute mass and concentrations downgradient of the pond and in Alexander Creek could be higher than predicted (from the groundwater model and the site-wide water balance and quality model) due to seepage from the WRD bypassing the ponds through groundwater pathways.	• Section 11.5.2.2.5 (Change in Surface Water Quality from Surface Water - Groundwater Interactions) on pages 11-48 to 11-49: The surface water quality effect was based on the groundwater model results of predictions of gaining and losing along West Alexander and Alexander creeks and seepage from the waste rock dump. As commented in the gw modeling, the boundary in the west is recommended to extend to Harmer Creek and assess if seepage would migrate to this creek. Developing the outcome of the model results with the boundary extended, the surface water effect conclusions may not true or may need to be updated accordingly. • Section 11.5.2.2.6 (Change in Surface Water Quality from Sediment Pond Discharge) on page 11-50: It was stated that "During Operations, all mine site drainage is collected in the sediment ponds, either the Interim Sediment Pond during the first four years of Operations or the Main Sediment Pond beyond Year 4." (Operations through Reclamation and	29-Apr-24

WATER-18	Open	5(1)(a)(i) Fish and Fish Habitat s. 19 Factors to be Considered	KNC-131	Chapter 11, Appendices B (Surface Water Quality Baseline Report), C (Geochemical Baseline), D (Calcification Assessment)	a) Explain why sampling was not done for the low-flow periods in winter season (e.g., December to February). i) Assess how the water quality model predictions would be affected without the data from the low flow winter season. b) Provide a scientific rationale for the number and depth of samples collected to characterize the geochemistry of the coal seams and bedrock formations and their ARD potential. i) Confirm whether field barrel tests were conducted. If so, provide a scientific rationale for whether the static and kinetic tests are considered representative of the field scales of the waste rock and coal reject dumps. c) Provide a scientific rationale for why only two samples were tested for plant rejects for the ARD assessment. d) Describe what mitigation or contingency measures would be and has been developed to minimize the effect of calcite precipitation.	• Appendix 11-B (Surface Water Quality Baseline Report, Section 3.2 (Timing of Sampling), on Page 10: It was stated that "Two intensive low-flow sampling periods were conducted in August/September 2014 and August/September 2015.". Explain why sampling was not done for the low-flow periods in winter season (e.g., December to February), which should be considered to be more representative of water quality of the low flow season from both surface water and groundwater perspectives? Without the data from the real low flow winter season, how would the water quality model predictions would be affected? • Appendix 11-C (Geochemical Baseline): (1) Executive Summary (on Pages ii), Section 2.4 (Geochemical Characteristics) on Page 8: It was stated that the potential for acid rock drainage is low due to low sulphide content and presence of excess neutralization potential of carbonate minerals (e.g., dolomite, limestone)	29-Apr-24