Appendix 4-RR

Fish and Fish Habitat Meeting - Project Impacts and Offsetting - November 2021

NWP Coal Canada Ltd

Crown Mountain Coking Coal Project

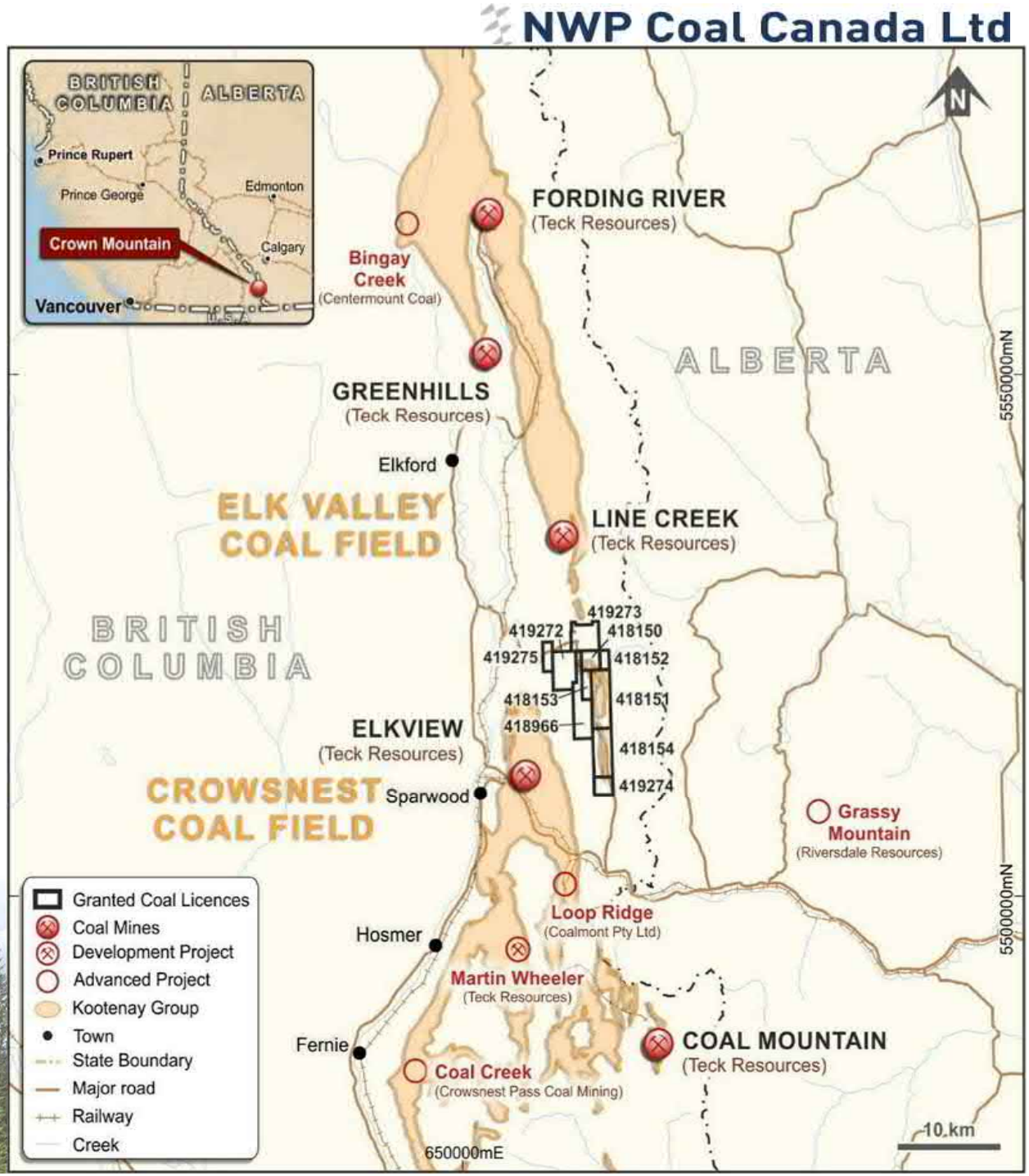
DFO – Project Impacts and Offsetting

November 30, 2021

Agenda

1. Project Overview
2. Key Findings of the Baseline Assessment
3. Fish and Fish Habitat Project Effects Assessment
4. Effects Assessment
5. Offsetting Requirement
6. Proposed Offsetting Measures
7. Questions / Discussion

Crown Mountain Project Location

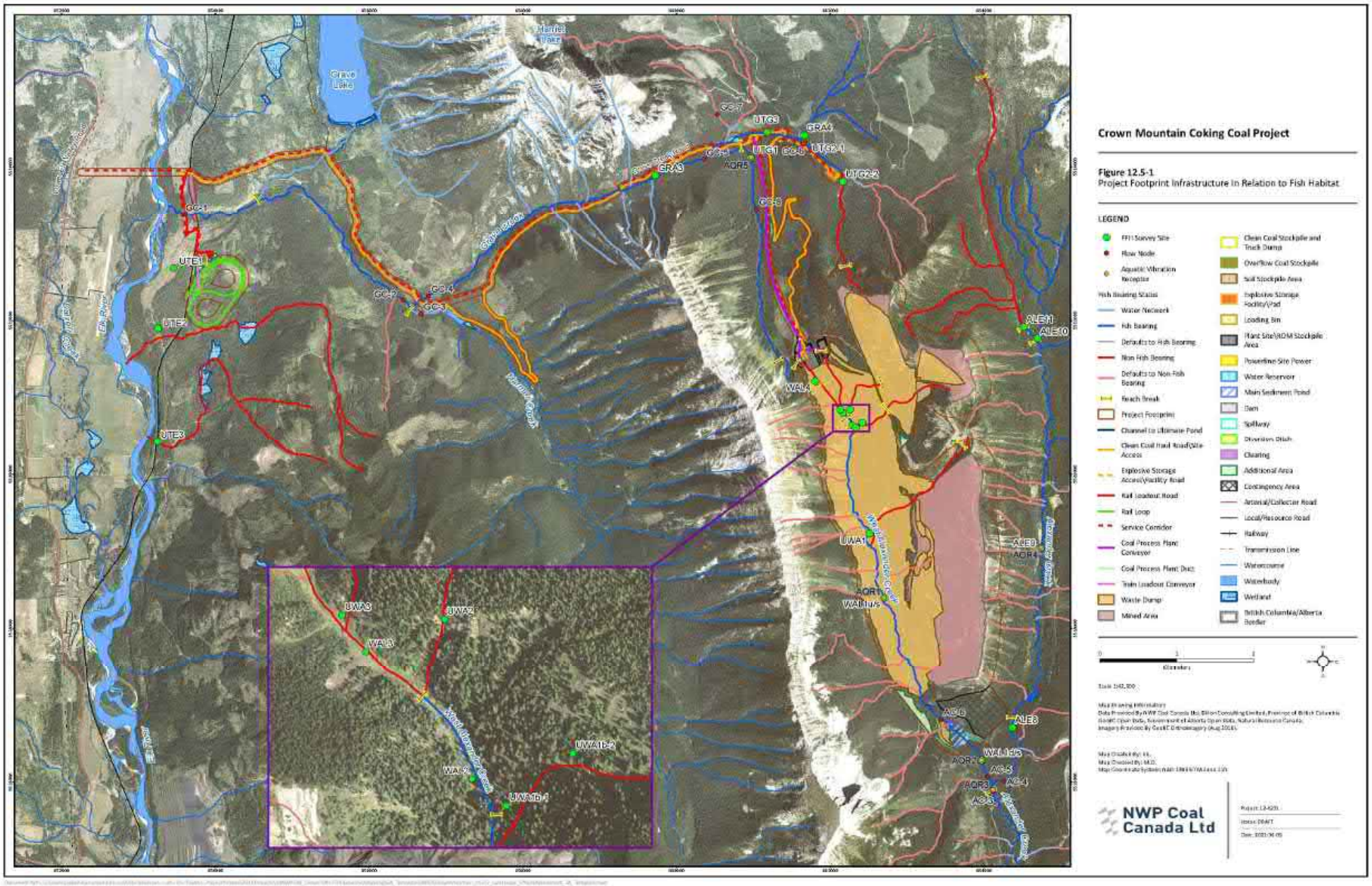


Project Overview

- Proposed open pit metallurgical coal mine in the Elk Valley
- 10 tenured coal exploration licenses (approx. 5,630 ha)
- Other nearby mines in Elk Valley include Teck's Elkview (8 km southwest) and Line Creek mines (12 km north)
- Anticipated production capacity up to 4.0 million run-of-mine tonnes (M ROMt) per annum for 15 years (not including site decommissioning)
- Construction estimated at 1.5 years

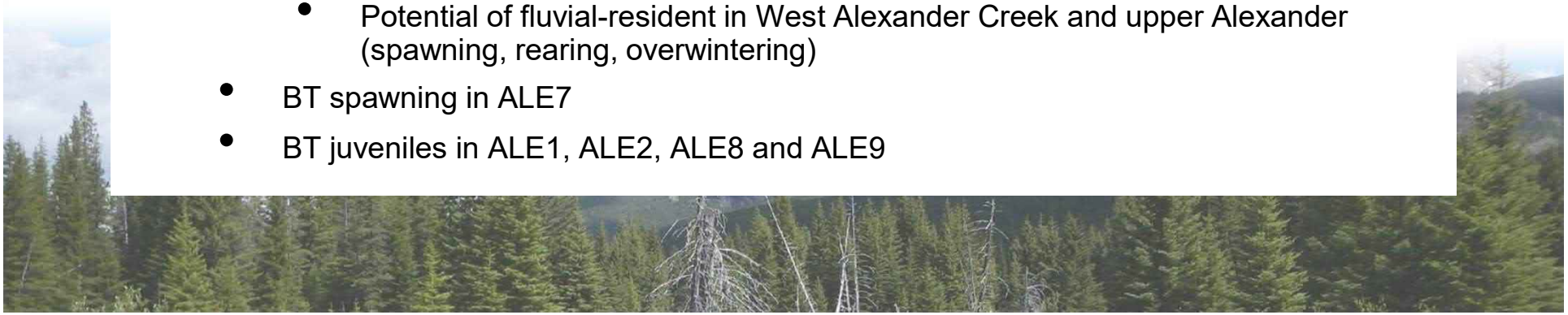
Project Overview

- Key project components include:
  - Surface extraction areas (three pits - north pit, east pit, and south pit)
  - Waste rock management areas
  - Plant area (includes raw coal stockpile, processing plant, site support facilities)
  - Clean coal transportation route (overland conveyor and haul road)
  - Rail load out facility and rail siding
  - Power and natural gas supply
  - Explosives and fuel storage
  - Sewage treatment
  - Water supply


Crown Mountain Coking Coal Project
Figure 12.5-1
Project Footprint Infrastructure In Relation to Fish Habitat
LEGEND
FFI Survey Site
Flow Node
Aquatic Vibration Receptor
Fish Bearing Status
Water Network
Fish Bearing
Default to Fish Bearing
Non Fish Bearing
Default to Non-Fish Bearing
Reach Break
Project Footprint
Channel to Ultimate Pond
Clean Coal Haul Road/Site Access
Explosive Storage Access/Facility Road
Rail Loadout Road
Rail Loop
Service Corridor
Coal Process Plant Conveyor
Coal Process Plant Duct
Train Loadout Conveyor
Waste Dump
Mined Area
Clean Coal Stockpile and Truck Dump
Overflow Coal Stockpile
Soil Stockpile Area
Explosive Storage Facility/Pad
Loading Bin
Plant Site/ROM Stockpile Area
Powerline Site Power
Water Reservoir
Main Sediment Pond
Dam
Spillway
Diversion Ditch
Clearing
Additional Area
Contingency Area
Arterial/Collector Road
Local/Resource Road
Railway
Transmission Line
Watercourse
Waterbody
Wetland
British Columbia/Alberta Border
NWP Coal Canada Ltd

Key Findings of the Baseline Assessment

- Two Species of Special Concern – Westslope Cutthroat Trout (Grave Creek and Alexander Creek) and Bull Trout (Alexander Creek)
- Grave Creek
  - Isolated, genetically pure WCT population in Grave Creek
  - Life stages distributed throughout
- Alexander Creek
  - WCT throughout
  - Two distinct life history strategies
    - Fluvial-migratory in lower reaches (1-6) (rearing, suspected spawning)
      - ~80% moved out of Alexander Creek to overwinter in Elk River
      - ~80% of the fish that left, returned to Alexander Creek by June
      - Remainder were last detected in Michel Creek and Elk River above Sparwood
    - Potential of fluvial-resident in West Alexander Creek and upper Alexander (spawning, rearing, overwintering)
  - BT spawning in ALE7
  - BT juveniles in ALE1, ALE2, ALE8 and ALE9



Fish and Fish Habitat Project Effects Assessment

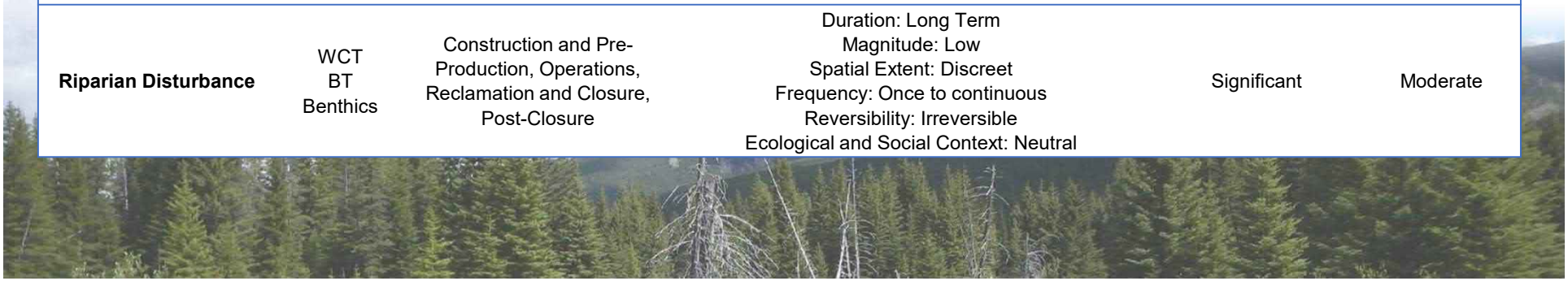
Potential Effect	Rationale for Selection of Environmental Effect
Fish Mortality	Any Project activity in or near streams than could alter or impact the aquatic environment that could lead to fish mortality.
Instream Habitat Loss due to Mine Design	The Project design will result in direct loss of fish habitat in West Alexander Creek.
Habitat Loss due to Changes in Water Quantity	A reduction in flows as a result of the Project could potentially impact access to, and amount of functional fish habitat available to fish during different life history stages in the LSA.
Changes in Surface Water and Groundwater Quality	Changes in water quality could pose significant threats to fish and fish habitat. Parameters of concern with the potential to impact fish and fish habitat were identified in the Water Quality Assessment; selenium, cobalt and cadmium.
Blasting	Mine pit blasts produce vibrations that could pose serious threats to fish and fish habitat. Blasting in or near water produces shock waves that can damage fish swim bladders and rupture internal organs, may kill or damage fish eggs or larvae and can have effects on fish and fish habitat through altering spawning habitat/gravel.
Changes to Streambed Structure	Physical changes to streambed structure have the potential to change the instream characteristics that fish need to spawn, and for food resources, such as benthic invertebrate communities, to survive in. Drivers of these physical changes are often TSS (Total Suspended Solids), sediment deposition and calcite concretion of the substrate due to increased calcite loads.
Riparian Disturbance	A loss in riparian habitat abundance and an alteration in the riparian composition has the potential to affect fish and fish habitat through removal of valuable nutrient inputs, shade, and cause increased erosion and sediment deposition. Riparian disturbance also has the potential to impact water temperature and consequently oxygen concentrations which is important for different life stages of fish.

Fish and Fish Habitat Effects - Results

Potential Effect	Assessment Results
Fish Mortality	Anticipated to be fully mitigated.
Instream Habitat Loss due to Mine Design	Cannot be fully avoided or mitigated. Requires offsetting plan considered acceptable by regulators and First Nations.
Habitat Loss due to Changes in Water Quantity	WAL1d/s reach below the spillway will need to be added to the offsetting requirement as flows exceeded the BC IFG for low flow periods. Rearing and overwintering potential may be lost in in West Alexander below the ultimate sediment pond.
Changes in Surface Water and Groundwater Quality	TSS is not anticipated to have a significant effect on FFH. Toxicological assessment of bioaccumulation was not possible – assessment incomplete.
Blasting	Anticipated to be fully mitigated.
Changes to Streambed Structure	Anticipated to be fully mitigated. High risk to changes in geomorphology just below the confluence of West Alexander and Alexander Creeks, will require ongoing monitoring and management.
Riparian Disturbance	A loss in Riparian habitat is anticipated to occur in West Alexander Creek. Fully lost to waste rock placement upstream of the ultimate sediment pond. Below the sediment pond it is anticipated that reduced flows will lead to a reduction in riparian habitat abundance and functioning.

Assessment of Significance

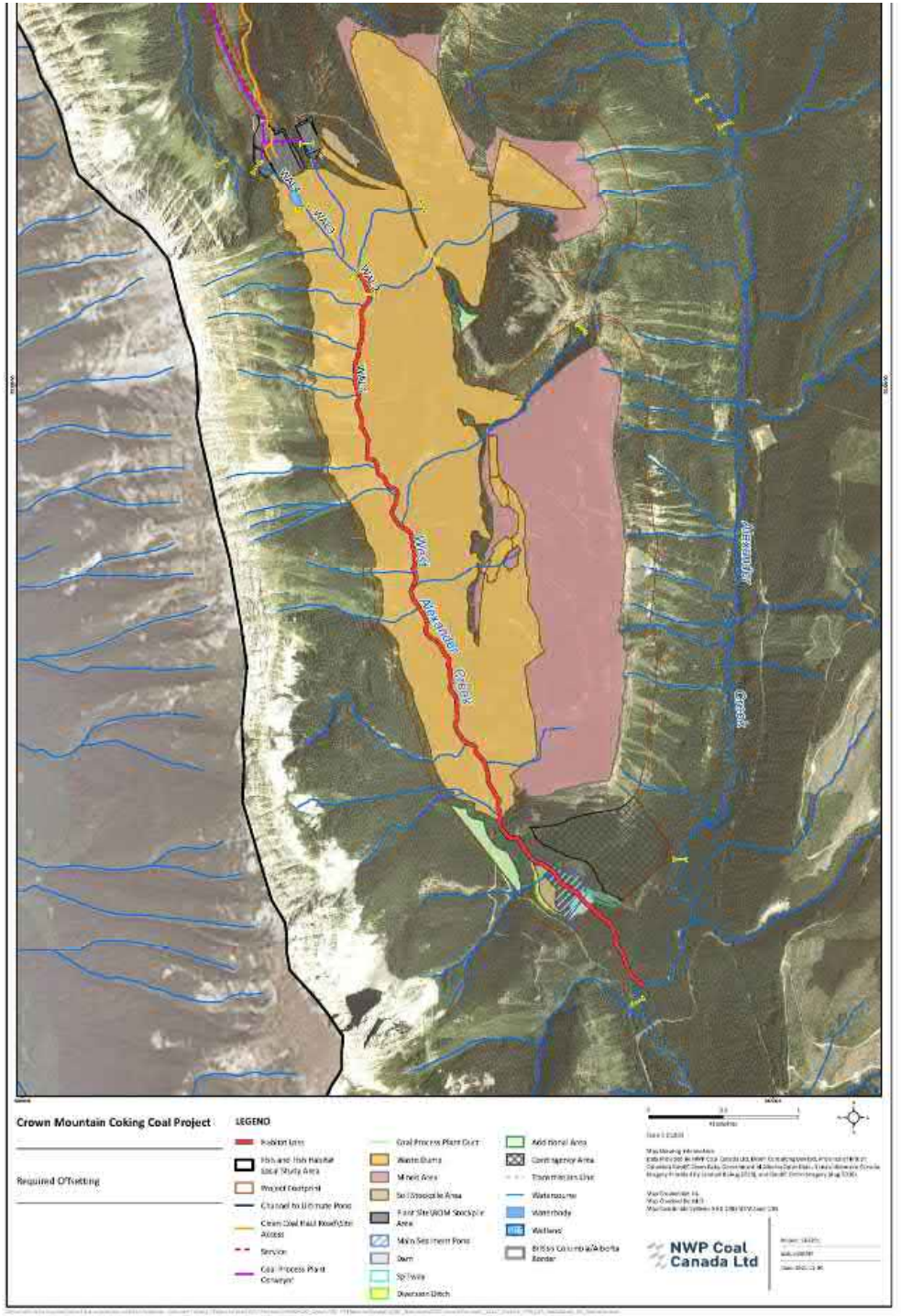
Residual Effect	Impacted FFH VC	Project Phase(s)	Summary of Residual Effects Characterization	Significance (Significant, Not Significant)	Confidence (High, Moderate, Low)
Instream Habitat Loss due to Mine Design	WCT Benthics	Construction and pre-production, Operations	Duration: Permanent Magnitude: High Spatial Extent: Discrete Frequency: Once Reversibility: Irreversible Ecological and Social Context: Low- Neutral	Significant	High
Habitat Loss due to Changes in Water Quantity	WCT Benthics	Construction and Pre-Production, Operations, Reclamation and Closure, Post-Closure	Duration: Permanent Magnitude: Moderate - High Spatial Extent: Local Frequency: Continuous Reversibility: Irreversible Ecological and Social Context: Moderate	Significant	Moderate
Changes in Water Quality	WCT BT Benthics	Construction and Pre-Production, Operations, Reclamation and Closure, Post-Closure	Duration: Long Term Magnitude: Low Spatial Extent: Local Frequency: Continuous Reversibility: Irreversible Ecological and Social Context: Neutral - High	Not Significant	Low
Changes in Streambed Structure	WCT BT Benthics	Construction and Pre-Production, Operations, Reclamation and Closure, Post-Closure	Duration: Long Term Magnitude: Moderate Spatial Extent: Local Frequency: Continuous Reversibility: Reversible -Irreversible Ecological and Social Context: Neutral	Not Significant	Moderate
Riparian Disturbance	WCT BT Benthics	Construction and Pre-Production, Operations, Reclamation and Closure, Post-Closure	Duration: Long Term Magnitude: Low Spatial Extent: Discreet Frequency: Once to continuous Reversibility: Irreversible Ecological and Social Context: Neutral	Significant	Moderate



Offsetting Requirement

Instream Habitat Loss anticipated after avoidance and mitigation in all fish bearing habitat of West Alexander Creek (reaches 1 and 2)

Riparian Habitat loss will occur upstream and downstream of the ultimate sediment pond in West Alexander Creek



Offsetting Requirement

Reach	Type	Reach Length (m)	Average Bankfull Width (m)	Area (m^2)	Riparian Habitat (ha)
W. Alexander Reach 2	Due to Mine Design	240	3.82	917	0.9
W. Alexander Reach 1 d/s to sedimentation pond	Due to Mine Design	4,284	6.25	26,775	27.53
W. Alexander Reach 1 from sedimentation pond d/s to Alexander Creek	Due to changes in Water Quantity	1,268	5.89	7,473	7.7
TOTAL				**35,166**	**36.13**

Potential Offsetting Measures in the LSA and RSA

Measure	Location	Type	Description	Uncertainties
Brule Creek	RSA	**Creating** habitat by providing fish passage	MOTI culvert barrier north of Sparwood. Suspected non-fish bearing upstream. Assume 15 km and a 5 m wide channel.	Ephemeral at MOTI crossing. Why have Busato Rd cross? Confirmation of fish presence through eDNA assessment needed.
Hartley Creek	RSA	**Creating** habitat by providing fish passage and enhancing habitat through channel rehabilitation	MOTI problem culvert. Fish bearing both upstream and downstream. Downstream gain would be improvement to ~1 km of spawning habitat. Upstream gains unknown as passage is possible.	High bedload. Upstream sediment sources.
Mine Creek	RSA	**Restoring** habitat through invasive species removal	EB removal.	Unknown EB density. Unknown DFO acceptance. Long-term commitment.
Alexander Creek	LSA	**Restoring** habitat through invasive species removal	EB removal. Reach 5 and 6 off-channel areas. Observed higher numbers in off-channel habitat during snorkel.	Unknown EB density. Unknown DFO acceptance. Ability to execute. Long-term commitment. Difficult to quantify.
Summitt Creek	LSA	**Restoring** habitat through invasive species removal	EB removal.	Unknown EB density. Unknown DFO acceptance. Long-term commitment.
Alexander Creek LWD Enhancement	LSA	**Enhancing** Habitat with large woody debris (LWD)	Add LWD to Alexander Reach 8/9.	Biological response. Geomorphic suitability.

Key Questions and Discussion

- What offsetting is possible for near full loss of a potential resident sub-population?
- How can this scale of loss be offset in this region?
- How is distance between loss and offset considered (LSA v RSA)?
- Is invasive species removal an accepted offsetting measure?
- Multipliers?
- Offsetting will only be required for fish bearing reaches?