

# Appendix 4-FF

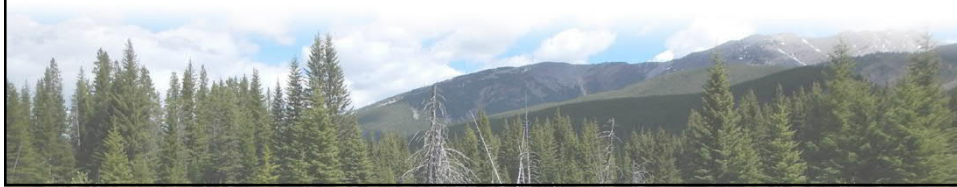
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Terrestrial Wildlife Meeting -  
May 2019

# Crown Mountain Coking Coal Project

Terrestrial Wildlife Meeting

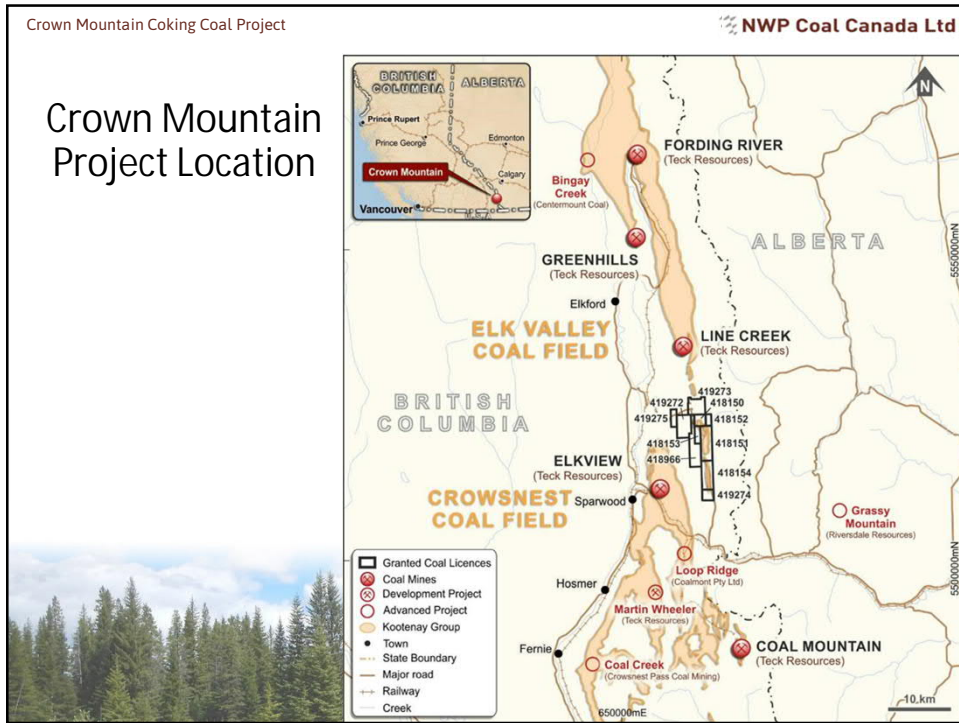
May 1, 2019



## Presentation Format

1. Project Overview
2. 2018 Terrestrial Meeting Summary
3. Wildlife Valued Components
4. Overview of Baseline Program
5. Outstanding Wildlife Baseline
6. Questions / Discussion





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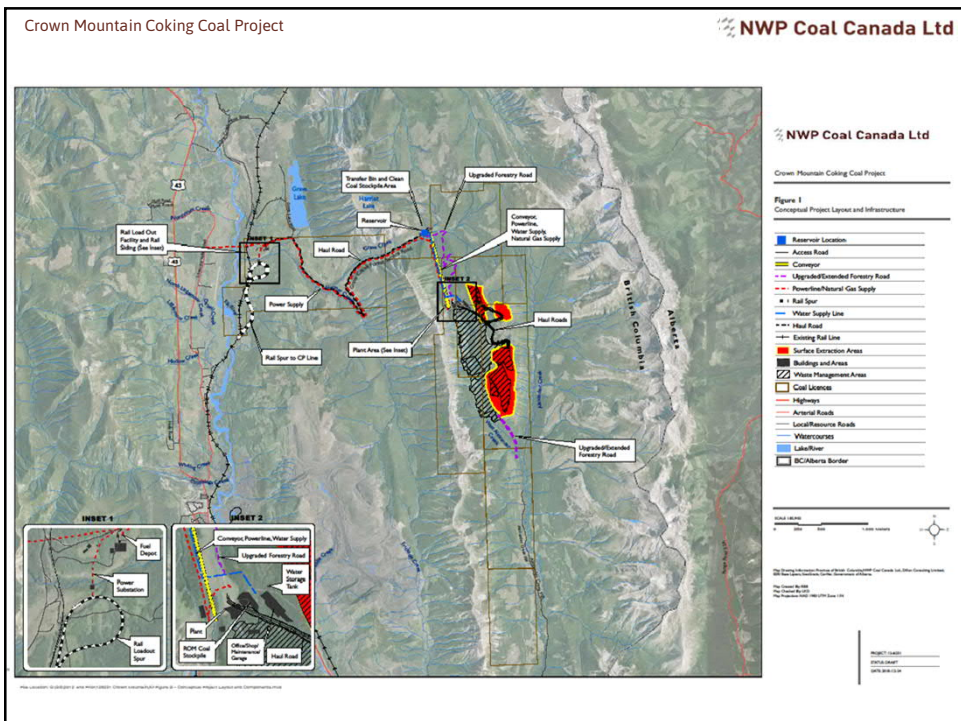
## Project Overview

- 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 mine (12 km north)
- Anticipated production capacity of 3.7 million run-of-mine tonnes (M ROMt) per annum for 16 years (not including site decommissioning)
- Construction estimated at 1 to 1.5 years

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# 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

## Project Overview

- Currently in Pre-Application phase:
  - Project Description, approved November 2014
  - Federal EIS Guidelines, issued February 2015
  - Provincial Valued Components for Environmental Assessment, completed April 2016
  - Provincial Application Information Requirements, approved April 2018
- Consultation and engagement is on-going:
  - Ktunaxa Nation Council
  - Local municipalities
  - Participation in the Elk Valley Cumulative Effects Management Framework (CEMF) group
    - Crown Mountain is a case study for CEMF

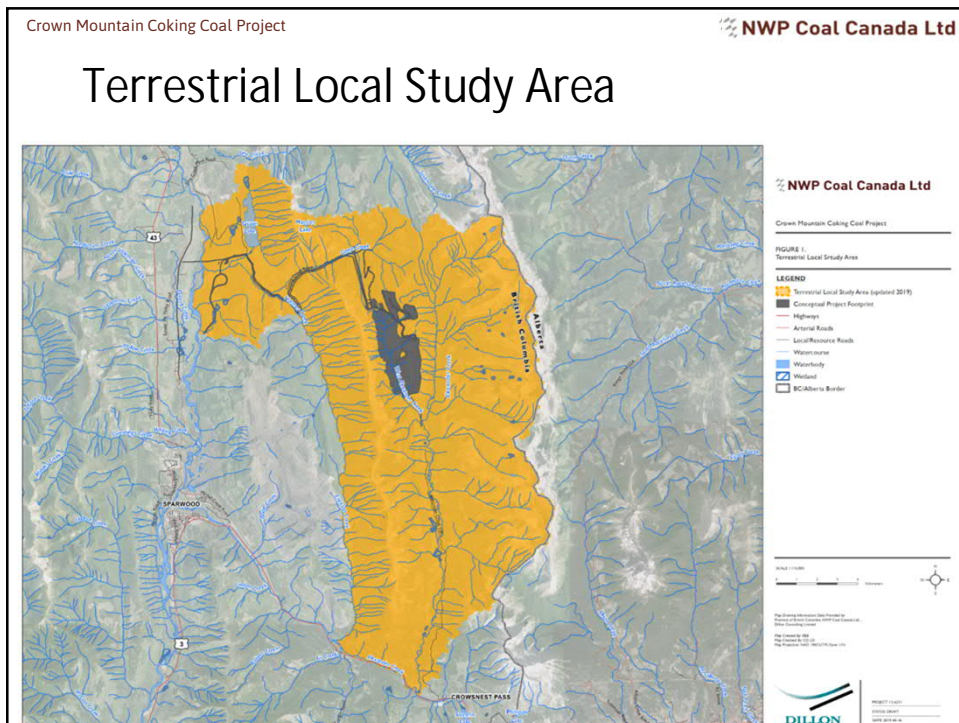
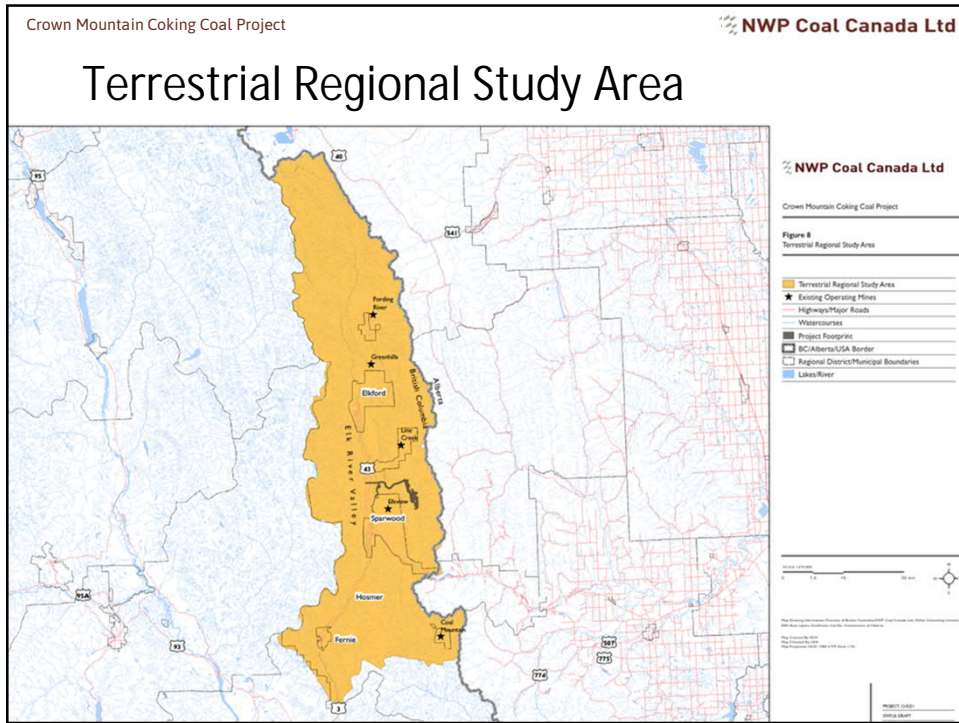


## 2018 Terrestrial Meeting

- ECCC/CWS wildlife meeting February 22, 2018
- Topics covered:
  - CEAA's significance determinations and federal interests (fish and fish habitat, migratory birds, transboundary issues, Indigenous)
  - Critical habitat for American badger
  - Wetland and amphibians - existing research on Columbia spotted frog, consideration of wetlands in proximity to Project
  - Egg/tissues collection - water quality in tandem with tissue collection, discussion on Spotted Sandpiper egg collection
  - Migratory birds - timing of surveys
  - Bat hibernacula
  - Common Nighthawk - surveys completed to date
  - Whitebark pine
  - Potential future meetings on wildlife baseline programs



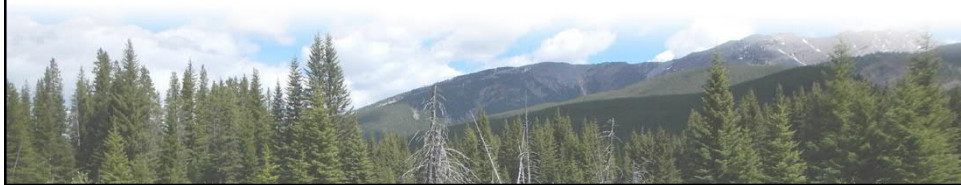




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## Terrestrial Wildlife Valued Components



Category	Valued Components
Furbearers	Wolverine, Canada lynx, American marten, Grizzly bear, American badger
Ungulates	Bighorn sheep, Elk, Moose
Bats	Little Brown Myotis, Northern Myotis, Eastern red bat
Birds	Migratory birds, Northern Goshawk, Waterbirds / American dipper
Invertebrates	Gillette's checkerspot
Amphibians	Western toad, Amphibians of the RSA (represented by Columbia spotted frog)



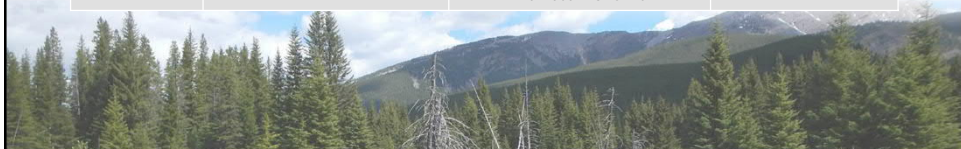
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## Furbearers

- Wolverine (Schedule 1-Special Concern), Canada lynx, American marten
- Determine presence, distribution, and relative abundance of key carnivore and primary prey species

Survey Dates	Survey Details	Results	Outstanding Baseline
2014 & 2015	17 snow tracking transects, bait/scent hair-snag stations with remote cameras	<ul style="list-style-type: none"> <li>• Lynx and marten: throughout LSA                             <ul style="list-style-type: none"> <li>◦ Increased abundances at higher elevations</li> </ul> </li> <li>• Wolverine: Harmer Creek, Grave Creek Corridor, Crown Mountain, and Alexander Creek                             <ul style="list-style-type: none"> <li>◦ DNA sample detected one individual wolverine</li> </ul> </li> </ul>	Baseline complete
2016	Hair samples collected for MFLNRO for DNA work		
2017 to 2019	Camera study in LSA		



# Grizzly Bear

- Schedule 1 – Special Concern
- Supplemental baseline information illustrates grizzly bear abundance, distribution and movement within Harmer Creek, Grave Creek, West Alexander Creek and Alexander Creek drainages, at passes within the Continental Divide range and along the Crown Mountain ridge
- On-going baseline program to assess grizzly bear habitat use in the LSA and RSA



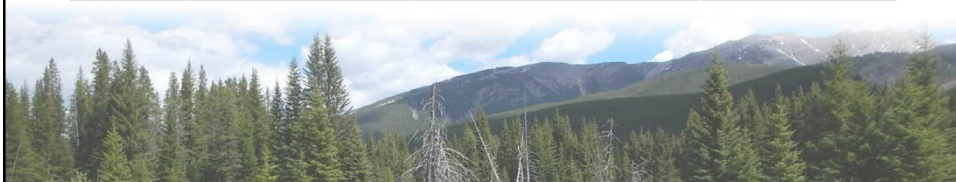
Survey Dates	Survey Details	Results	Outstanding Baseline
2016	Hair samples collected for MFLNRO for DNA work (from furbearer baseline)	3 individuals (2 females, 1 male) detected throughout the LSA since 2009	Baseline complete
2017 to 2019	Camera study in LSA	Grizzly bears in Harmer Creek drainage, Grave Creek Corridor, Crown Mountain and along Continental Divide at Deadman's pass	Baseline complete
2019	Analysis of grizzly bear location data to develop empirical models	TBD	Baseline on-going

# American Badger

- Schedule 1 – Endangered
- Surveys completed to determine badger occurrence and habitat suitability in the LSA
- Baseline complete - highest densities of badger observed south and west of Grave Lake



Survey Dates	Survey Details	Results	Outstanding Baseline
2014 & 2018	<ul style="list-style-type: none"> <li>• Burrow surveys</li> <li>• Habitat stratification</li> </ul>	<ul style="list-style-type: none"> <li>• Low densities: Crown Mountain, Alexander and West Alexander Creek drainages</li> <li>• Higher densities: south and west of Grave Lake</li> </ul>	Baseline complete






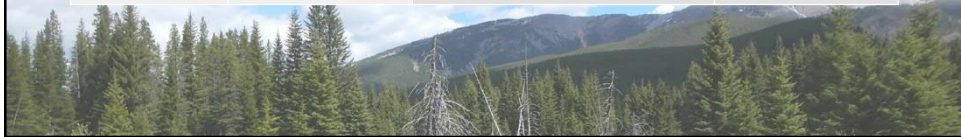
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## Bighorn Sheep, Elk, and Moose

- Assessment of broad-scale distribution patterns, local migration, and habitat use of ungulates within the LSA
- Baseline complete - highest diversity and distribution of species in spring




Survey Dates	Survey Details	Results	Outstanding Baseline
Fall and winter 2014, spring 2015	Aerial transects covering LSA	<ul style="list-style-type: none"> <li>• Highest diversity and distribution in spring</li> <li>• Elk and Moose found throughout LSA at all elevations</li> <li>• Bighorn sheep: using low-elevation corridor in Grave Creek canyon between high-elevation habitats on Erickson Ridge and Sheep Mountain</li> </ul>	Baseline complete
2017-2019	Camera study in LSA		




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## At-Risk Bats

- Little Brown Myotis (Schedule 1-Endangered), Northern Myotis (Schedule 1-Endangered), Eastern Red Bat
- Determine at-risk bat species presence, distribution, and habitat use in the LSA
- All 3 at-risk bat species detected in LSA



Survey Dates	Survey Details	Results	Outstanding Baseline
Summer 2017	<ul style="list-style-type: none"> <li>• Acoustic surveys</li> <li>• Live capture &amp; genetic testing</li> </ul>	<ul style="list-style-type: none"> <li>• Highest species diversity near proposed rail loadout</li> <li>• All three at-risk bat species acoustically detected throughout LSA</li> <li>• Little Brown Myotis genetically detected throughout LSA</li> <li>• Little Brown Myotis maternal roosts likely present in LSA</li> </ul>	Baseline complete
2019	<ul style="list-style-type: none"> <li>• Critical habitat (hibernacula) desktop assessment</li> </ul>		



## Migratory Birds

- Includes Woodpeckers and Schedule 1-Threatened species: Olive-sided Flycatcher, Barn Swallow, Bank Swallow, and Common Nighthawk
- Surveys completed to assess habitat availability and distribution, as well as known occurrence and abundance
- Migration studies observed stop over and staging areas in LSA and hot spots

Survey Dates	Survey Details	Results	Outstanding Baseline
Spring/Fall 2018 Spring/Fall 2019	<ul style="list-style-type: none"> <li>• Migration surveys                             <ul style="list-style-type: none"> <li>• Point count surveys</li> <li>• Transect survey</li> <li>• Stand watch surveys</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Stop-over and staging areas in Grave Prairie area and wetlands throughout the LSA</li> <li>• High migratory bird diversity in wetland west of Grave Lake</li> </ul>	Year 2 spring and fall 2019
Summer 2014, 2017, 2018	<ul style="list-style-type: none"> <li>• Breeding bird surveys included:                             <ul style="list-style-type: none"> <li>• Point count surveys</li> <li>• Raptor surveys</li> <li>• Owl transect surveys</li> <li>• Common Nighthawk surveys</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• &gt; 85 bird species observed</li> <li>• Hotspots in wetlands along Alexander Creek and in Grave Prairie</li> <li>• Federally listed species observed:                             <ul style="list-style-type: none"> <li>• Olive-sided Flycatcher (x 38)</li> <li>• Common Nighthawk (x 3)</li> <li>• Bank Swallow (1 colony)</li> <li>• Barn Swallow (x 1)</li> </ul> </li> </ul>	Summer 2019

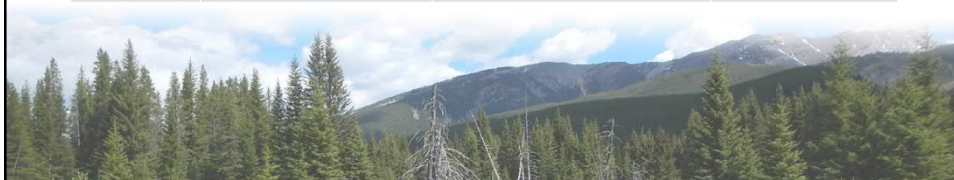


## Northern Goshawk

- Surveys completed to assess habitat availability and distribution, as well as known occurrence and abundance
- Baseline studies complete - 3 NOGOs recorded over 3 years



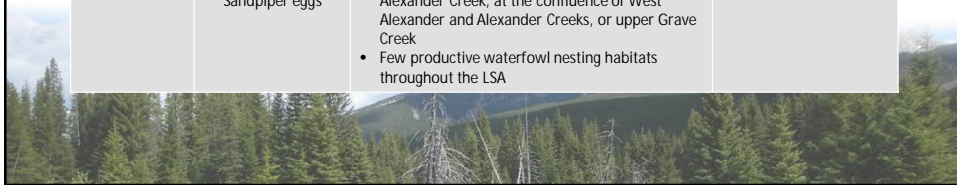
Survey Dates	Survey Details	Results	Outstanding Baseline
Summer 2014, 2017, and 2018	Habitat presence/not-detected surveys	<ul style="list-style-type: none"> <li>• 3 occurrences of Northern Goshawk were recorded over three years of surveys</li> <li>• Observed along the valley of Alexander Creek and recorded in response to call-playback surveys</li> <li>• Surveys suggest the LSA provides poor to moderate foraging and nesting habitat</li> </ul>	<p>No further studies anticipated.</p> <p>Incidental observations will be recorded.</p>



## Waterbirds and American Dipper

- Waterbirds represented by Harlequin Duck, Red-winged Blackbird, Spotted Sandpiper, Mallard, and American Dipper
- American Dipper as VC under wildlife discipline; waterbirds under the aquatic health discipline
- Baseline studies focused on characterizing habitat availability and species occurrence, distribution, and abundance within the LSA
- Tissue sampling of bird eggs (Spotted Sandpiper) to assess baseline contaminant levels

Survey Dates	Survey Details	Results	Outstanding Baseline
Summer 2017 and 2018	<ul style="list-style-type: none"> <li>• Riverine bird shoreline surveys</li> <li>• Waterfowl wetland point count surveys</li> <li>• Collection of Spotted Sandpiper eggs</li> </ul>	<ul style="list-style-type: none"> <li>• Riverine birds present along lower Alexander Creek and Harmer Creek, and the lower reaches of Grave Creek</li> <li>• Species observed include American Dipper, Harlequin Duck, Spotted Sandpiper, Common Merganser, Osprey, and Belted Kingfisher</li> <li>• No riverine birds observed on upper West Alexander Creek, at the confluence of West Alexander and Alexander Creeks, or upper Grave Creek</li> <li>• Few productive waterfowl nesting habitats throughout the LSA</li> </ul>	<p>Baseline complete.</p> <p>Incidental observations to be recorded. Wetland surveys planned for summer 2019.</p>



## Gillette's Checkerspot

- Provincially red-listed species
- Field surveys in areas of potential suitable habitat
- Unsuitable habitat across most of LSA




Survey Dates	Survey Details	Results	Outstanding Baseline
2015	<ul style="list-style-type: none"> <li>• Field surveys in potentially suitable habitat</li> <li>• Potentially unsuitable habitat also surveyed</li> </ul>	<ul style="list-style-type: none"> <li>• Checkerspot present near Crowsnest Pass and in a valley of Alexander Creek</li> <li>• No checkerspot found south of Grave Creek</li> <li>• Unsuitable checkerspot habitat in most of LSA</li> </ul>	<p>Baseline complete</p>




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## Western Toad

- Schedule 1: Special Concern
- Baseline on-going to determine presence and distribution of Western toad in the LSA
- Found within wetlands near Grave Lake and along Alexander Creek




Survey Dates	Survey Details	Results	Outstanding Baseline
Summer 2014, 2017, and 2019	<ul style="list-style-type: none"> <li>• Evening call surveys</li> <li>• Egg string surveys</li> <li>• Wetland searches</li> <li>• Incidental observations</li> </ul>	10 western toads found in 4 wetlands: <ul style="list-style-type: none"> <li>• 1 wetland near Grave Lake</li> <li>• 3 wetlands along Alexander Creek</li> </ul>	2019 summer eDNA surveys




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## Amphibians of the RSA

- Represented by Columbia spotted frog
- Baseline to determine presence and distribution of amphibians species
- Tissue collection (egg masses and tadpoles) to determine baseline contaminant levels



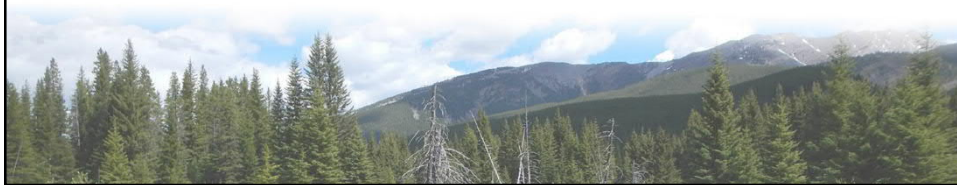
Survey Dates	Survey Details	Results	Outstanding Baseline
Summer 2014, 2017, and 2018	<ul style="list-style-type: none"> <li>• Egg mass searches</li> <li>• Presence/not detected searches</li> </ul>	<ul style="list-style-type: none"> <li>• Observed across 12 wetlands:                             <ul style="list-style-type: none"> <li>○ Columbia spotted frog</li> <li>○ Wood frog</li> <li>○ Western toad</li> <li>○ Long-toed salamander</li> </ul> </li> </ul>	2019 spring egg mass tissue sampling
Tissue collection 2017 and 2018	<ul style="list-style-type: none"> <li>• Tissue collection from egg masses and tadpoles</li> </ul>	<ul style="list-style-type: none"> <li>• Ecological Risk Assessment will assess tissue contaminant levels</li> </ul>	2019 summer inventory surveys, tadpole tissue sampling, eDNA for western toad
Spring/Summer 2019			





## Other Baseline Programs

- Terrestrial Ecosystem Mapping and wetland baseline:
  - Landscape and Ecosystem VCs include: avalanche chutes, grasslands, wetlands, riparian habitat, old growth and mature forests
- Vegetation baseline:
  - Rare plants and sensitive ecosystems, invasive plants, whitebark pine, limber pine
- Fish and fish habitat
  - Community, inventory, instream flow, spawning, benthics and periphyton
- Aquatic health:
  - Sediment, fish and waterbird tissues, benthics and periphyton
- Surface water quality and quantity
  - Ongoing since 2012



## Other Baseline Programs

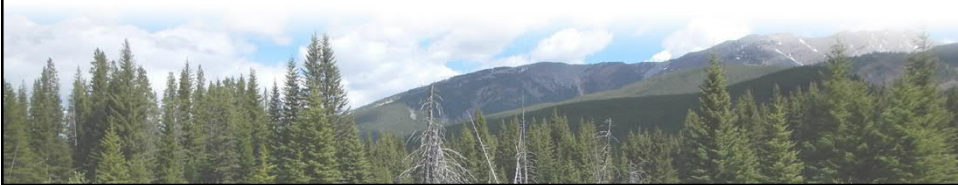
- Groundwater / hydrogeology
  - 16 single monitoring wells, 3 nested wells, and 12 locations with 1 pumping well; seepage survey; additional wells to be developed
- Geochemistry
  - Geochemical analysis of core collected during fall of 2018 is underway; to be completed within 2-3 months
- Soil and Terrain Mapping
  - Soil classification, assessment of quality and quantity
  - Geohazard identification
- Noise
- Air quality
- Traditional Land Use and Ecological Knowledge
- Ecological Risk Assessment
- Social and economic assessment



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## Outstanding Wildlife Baseline

Anticipated Timing	Baseline Surveys
May 2019	<ul style="list-style-type: none"> <li>- Spring migratory bird surveys</li> <li>- Amphibian tissue collection and water quality</li> </ul>
Summer 2019	<ul style="list-style-type: none"> <li>- Grizzly bear baseline assessment (on-going)</li> <li>- Potential bat hibernacula ground-truthing</li> </ul>
July 2019	<ul style="list-style-type: none"> <li>- Wetland classification surveys</li> <li>- Breeding bird surveys (top of Crown Mountain and west of Grave Lake)</li> <li>- Amphibian surveys, including western toad eDNA collection</li> </ul>
September 2019	<ul style="list-style-type: none"> <li>- Fall migratory bird surveys</li> </ul>



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## Questions and Discussion

