

**East Kootenay Ecosystem Enhancement Project
(COL-F24-W-3800-DCA)
2023-24 (F24) Activity Report
1 April 2023 to 31 March 2024**



Prepared for: Fish & Wildlife Compensation Program

Prepared by: Ministry of Water, Land, Resource Stewardship (FWCP – Section)

Prepared with financial support from the Fish & Wildlife Compensation Program

The Fish & Wildlife Compensation Program is a partnership between BC Hydro, the Province of B.C., Fisheries and Oceans Canada, First Nations, and Public Stakeholders to conserve and enhance fish and wildlife in watersheds impacted by BC Hydro dams.

Date: 06-March-2024

Executive Summary

The East Kootenay Enhancement (EKE) project includes the coordination, oversight and implementation of restoration activities. including: prescription development; invasive weed treatment; slash; pile and burn; mastication; burn plan development; prescribed burning; vegetation monitoring and reporting. The EKE occurs within ecosystems defined as Natural Disturbance Type 4 (NDT4) and Natural Disturbance Type 3 (NDT3), NDT4 are ecosystems that have been created and maintained by naturally occurring events (ie Fire). NDT3 habitats are created by stand replacing fires. This year's restoration efforts included financial partnerships with Crown Land Wildfire Risk Reduction (CLWRR) and Tobacco Plains Indian Band (Yaqit ʔa·knuqʔi't First Nation).

Projects included:

1. Lizard, Galton Range, Bull Mountain and Supply Creek Invasive Weed Treatment. Exact area treated is impossible to calculate due to spot treatment of individual or patches of invasive plants. However each treatment area completed will result in restoration projects (prescribed burns) ranging from 250-450 hectares.
2. Stand Management Prescription Development for McGuire Creek, front face, was developed in partnership with Yaqit ʔa·knuqʔi't First Nation. SMP recommends slashing of approximately 35 hectares to promote vegetative productivity and improved sightlines for ungulates to detect predators. The associated Management Plan points to the future completion of a prescribed and the invasive weed inventory identifies where weed treatments are required.
3. McGuire Creek, Supply Creek, Raymond Creek and Donald Creek Vegetation Monitoring in partnership with Habitat Section (WLRS). Results can be seen in corresponding final reports.
4. Continued preparation of 300 hectares McDonald's Prescribed Burn. Burn is scheduled for spring or fall of 2024 pending weather and crew availability.

This work aligns with the following priority actions in FWCP's Upland and Dryland Action Plan: COLUPD.ECO.HB.12.01 Restoration of upland habitats-P1 and COLUPD.ECO.ME.17.01 Pre and post restoration vegetation monitoring-P2.

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1. Introduction

In the Columbia Region, annual and ongoing fish and wildlife projects are delivered with support from the Ministry of Water, Lands, Resource Stewardship (WLRS) through a Letter of Agreement (LoA). The East Kootenay Ecosystem Enhancement Project is one such project delivered by WLRS- FWCP section staff, contractors and partnerships.

The East Kootenay Enhancement Project is responsible for the coordination, oversight and implementation of restoration efforts. Appendix 1 includes a table showing projects delivered and planned from 2018 to present. Activities have included prescription development; invasive weed treatment; slash, pile and burning; mastication; burn planning; prescribed burning; monitoring and reporting. Natural Disturbance Type 4 (NDT4) habitats are ecosystems that have been created and maintained by naturally occurring events. In the Upland and Dryland habitats, wildfires and flooding were the main natural disturbances that occurred historically. For the last 60-80 years, fires have been suppressed due to the value of the timber and the risks to communities and industries. The Ecosystem Restoration Program was developed to convert these forest types back to a tree density where prescribed burning in a controlled manner can be used to achieve similar results to the natural wildfires. In areas where stand densities and ground fuels are significant, treatments such as logging, slashing/piling/pile burning and mastication need to be implemented before the introduction of fire to reduce the fuel loads and potential burn severity. The ecosystem enhancement efforts also include burning of higher elevation stands (NDT3) which historically are stand replacing fires. These fires return the stand back to an early seral stage, providing more forage for several years until stands densities and canopies increase again.

Monitoring of various treatments and ecosystems are conducted to ensure that desired habitat conditions are achieved and maintained. A system of permanent treatment plots and control plots are used to monitor ecosystem restoration work. Results from the monitoring also feeds back to changes in the prescription development, if needed.

This year's restoration efforts included:

1. Lizard and Galton Range and Supply and Bull Mt Invasive Weed Treatment
2. Stand Management Prescription Development for McGuire, front face
3. McGuire Cr, Supply, Raymond and Donald Cr Vegetation Monitoring
4. McDonald's Prescribed Burn Preparation

The above-mentioned projects are delivered in partnership with First Nations, other government agencies and NGO's. Appendix 1 shows the stage at which each project is at currently.

2. Goals and Objectives and Linkage of FWCP Action Plans and specific action(s)

The goal is to restore degraded priority habitats in the Columbia Basin. Targets for restored habitats are identified through largescale Restoration Plans. The main goal of this project is to expedite the recovery of grassland habitat. This is facilitated by the participation by FWCP Biologists on the Trench Restoration Committees and through the funding of grassland restoration opportunities in the Rocky Mountain Forest District. These opportunities are operational in nature and include the development of Ecosystem Restoration Plans and Prescriptions, Burn Plans, Pre-Burn Slashing and Prescribed Burning. It is estimated that 4500 ha per year will need to be treated to restore grassland and open forest habitat and their dependent wildlife. Monitoring and invasive plant control are also conducted under this project. Fiscal 24 proposed activities included:

1. Lizard and Galton Range and Supply Creek pre-treatment invasive weed control in spring/summer 2023. Leading to 250 ha, 300 ha and 250 ha prepared for future prescribed burns, respectively. Post treatment of Raymond and Donald Creek (Galton) burns, originally completed in 2016 and post-treatment of Bull River, prescribed burned in 2022. Partnership funding was received from CLWRR.
2. Stand Management Prescription Development and Ecosystem Restoration Plan, include an invasive weed inventory for McGuire Creek, front face partnered with Yaqit ʔa·knuqʔi 'it First Nation (Tobacco Plains Indian Band). Yaqit ʔa·knuqʔi 'it administered the contract with Vast Resource Solutions. SMP recommends slashing, piling and pile burning followed by a prescribed burn..
3. Vegetation Monitoring was completed in the McGuire Cr, Supply Cr, Raymond Cr and Donald Cr areas. This monitoring was established to evaluate the effectiveness of the invasive weed treatment carried out at these sites.
4. McDonald's Prescribed Burn (300 ha.) planned for completion during spring or fall of 2023 was deferred. Preparation continued and the prescribed burn was re-scheduled for spring or fall 2024.

Below are the linkages of the FWCP Action Plans to our specific action(s):

The Columbia Action Plan that this proposed project most closely aligns with is:

Upland and Dryland

Ecosystem Chapter

Ecosystems

Action Type

Habitat-based Actions

Priority Action

COLUPD.ECO.HB.12.01 Restoration of upland habitats-P1

Numbers 1,2,3,4 above apply to this action.

The secondary Columbia Action Plan that this proposed project aligns most closely with is

Upland and Dryland

Ecosystem Chapter

Ecosystems

Action Type

Monitoring & Evaluation

Priority Action

COLUPD.ECO.ME.17.01 Pre and post restoration vegetation monitoring-P2

Number 3 above apply to this action.

3. Study Area

Figure 1 outlines the area that encompasses all the activities that are occurring as part of the East Kootenay Ecosystem Restoration Program.



Figure 1: EK Enhancement Study Area

Figure 2 identifies the locations of individual activities that are occurring as part of the East Kootenay Ecosystem Restoration Program.

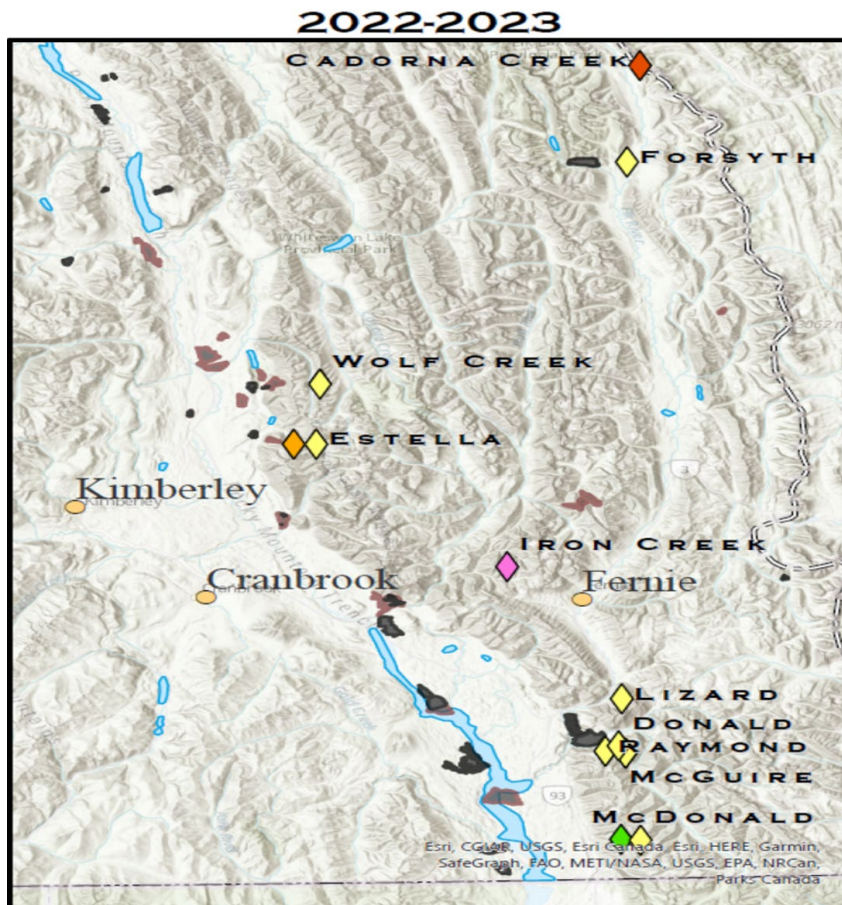


Figure 2: Locations of Specific EK Restoration Activity Area

4. Methods

Projects are identified through the development of landscape level restoration plans, such as The White Bull Elk, East Columbia Lake, Galton and Wildhorse to Premier. Some of these plans propose treatments of vegetation that benefit specific wildlife species and others identify opportunities for multiple ungulates and carnivores, considering all rare and endangered species and ecosystems that may be present. Potential projects identified from these plans are prioritized and SMP's are developed for these prioritized projects . SMP's can include treatment to reduce fuel loads (logging, slashing, piling and pile burning) or invasive weed treatment before completion of the end objective of prescribed burning. Methods, protocols and best practices have been developed for all aspects of Restoration Plans and SMP development, habitat treatments and monitoring. Once the Restoration Plan has been developed or SMP has been signed by the prescriber it is presented to a Map Meeting Committee (held 1 time per year) to be presented to participants with all other proposed activities for the East Kootenays,

including ecosystem restoration and community protection projects (Wildfire Risk Reduction). The WLRS projects are then packaged and presented to First Nations for review and comment. After First Nations concerns are addressed, the SMP is sent to the Ministry of Forests district office, where it is circulated for comments to other potentially impacted organizations, stake holders and agencies. All comments are consolidated by Stewardship Branch of MOF and recommendations to approve or decline are submitted to the Resource Manager. If approved, a Section 52 authorization is issued based on recommendations set out in the SMP and comments received. Once Section 52 authorization has been received the proponent can begin implementation of the proposed restoration as presented in the SMP. Invasive weed treatment conducted in 2023-24 were all remote with no road access so a helicopter was used to sling in barrels of water. The water is mixed with the herbicide on site within backpack sprayers and used to spot treat invasives weeds. Methodologies for SMP Development and Vegetation Monitoring are presented in the corresponding deliverables associated with this project (McGuire Cr SMP Development and Vegetation Monitoring).

5. Results and Outcomes

Lizard, Galtons, Bull Mt and Supply Cr Invasive Weed Treatment

A single contract was put together for a backpack spraying crew to treat invasive weeds for multiple sections within the Fish and Wildlife Branch. These included the Habitat and Wildlife sections within WLRS. Below is a list of FWCP partnership invasive weed projects, (see Figure 3):

- Contracted invasive weed sprayer to carry out the seventh year of treatment on these proposed wildlife enhancement prescribed burns (Lizard's, Supply Cr and Galtons (Red Canyon, McGuire Cr, and McDonald's).
- Area proposed for burning received spot treatment of individuals and patches missed or derived from seed bank during the first 6 years of treatment.
- Raymond and Donald Creeks, which were prescribed burned in 2016 and Bull Mt, prescribed burned in 2022 were also included in treatment, see Figure 4.
- Forsyth Cr was not treated due to restoration approval issues associated with Forest Company licensee wanting to harvest merchantable timber prior to restoration.

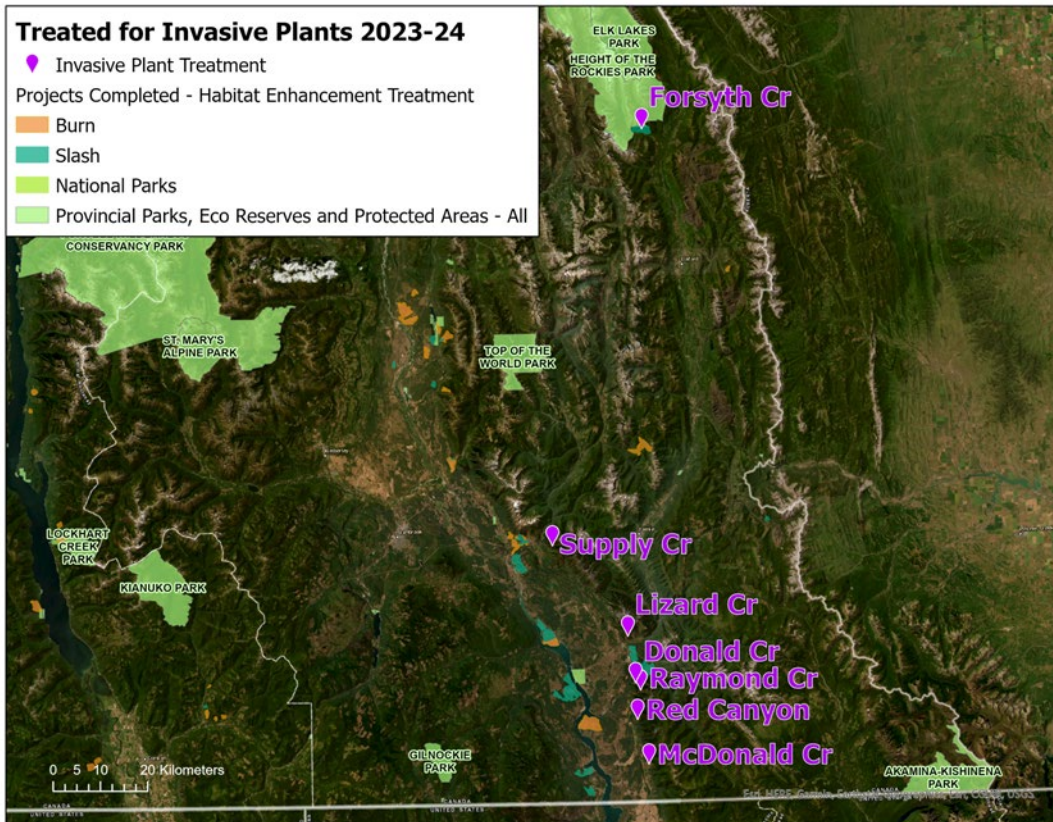


Figure 3. Locations of Invasive weed Treatments



Figure 4: Post Raymond Cr Prescribed Burn Invasive Weed Treatment, showing water barrel and backpack sprayer, which was heli-lifted into this isolated site.

Stand Management Prescription Development (McGuire/Red Canyon)

FWCP and Habitat Sections worked with Yaq̓it ʔa·knuq̓i 'it First Nation (Tobacco Plains Indian Band) to develop SMP at the front face of McGuire Cr. Yaq̓it ʔa·knuq̓i 'it First Nation (Tobacco Plains Indian Band) contracted Vast Resource Solutions to develop Habitat Management Plan, SMP, Invasive Weed Inventory and Treatment Plan. The SMP has identified 35 ha of slash, pile and pile burning, proposed to be completed next fall. Fall timing is prescribed so the downed material can be used to attract the Fir Bark Beetles, which will be destroyed during pile burning. Pruning to 2.5m of the larger conifer trees to improve sightline for ungulates and slashing shrubs to stimulate suckering and increased production of current annual growth is prescribed. Treatment of invasive weeds using herbicide spraying is also recommended throughout the area based on the inventory.

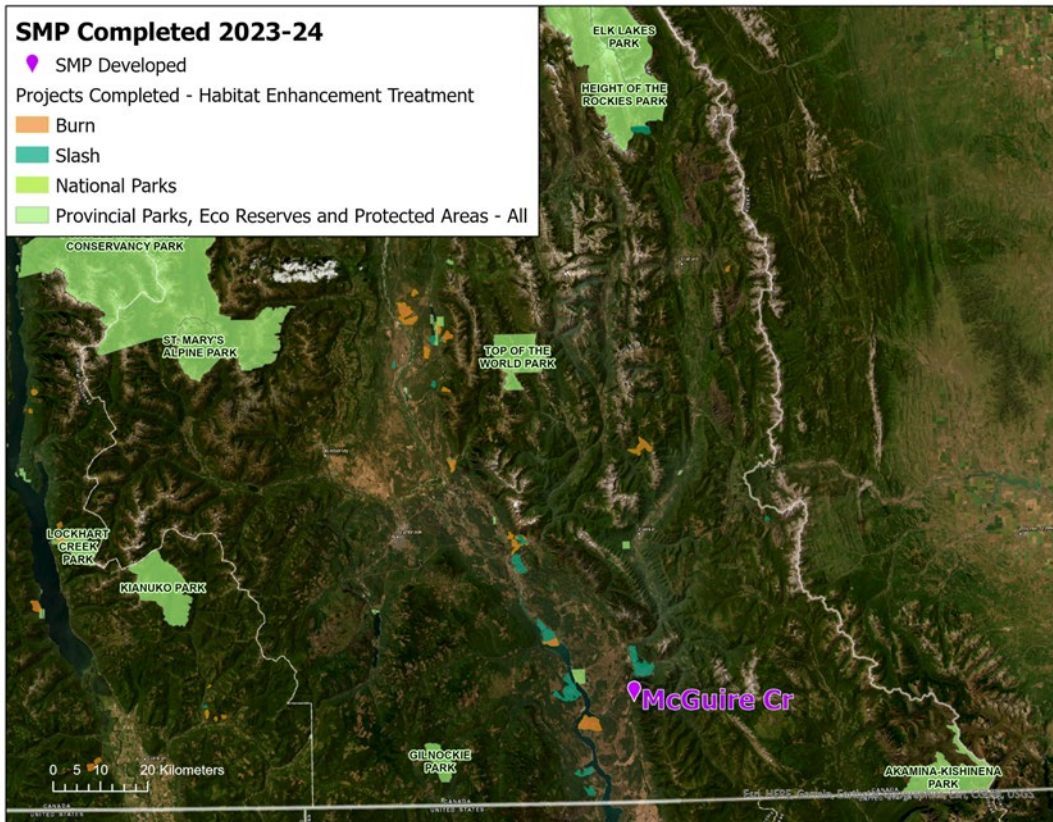


Figure 5. McGuire SMP Development Area

Deliverable Reference

Vast Resource Solutions. 2024. McGuire Cr, Ecosystem Management Plan and SMP. Report prepared for Yaqit ?a·knuqti 'it First Nation (Tobacco Plains Indian Band). Report still in prep.

Vegetation Monitoring

Full monitoring plots in proposed McGuire Cr Restoration site were established. Data was also used to aid in SMP development. Assisted in data collection of invasive weed monitoring plots in previously prescribed burned Raymond Creek and Donald Creek Restoration sites (reports being prepared for Habitat Section-WLRS), plus pre-burn invasive weed treatment of Supply Creek. Data has been collected and reports will be published to ecocat. Reports for McGuire Creek and Supply Creek are referenced below.



Figure 6. McGuire Cr. Vegetation Monitoring, 25m line transect used to monitor percent cover of vegetation present.

Deliverable Reference

Phillips, B. 2023. Ecosystem Restoration Monitoring: McGuire Creek. Report prepared for Ministry of Water, Land and Resource Stewardship- FWCP section.

Phillips B. 2023. 2023 Ecosystem Restoration Monitoring: Supply Creek. Report prepared for Ministry of Water, Land and Resource Stewardship- FWCP section.

McDonald's Prescribed Burn

The Burn Plan, Occupancy Agreement and Waiver Letter from the adjacent landowner were reviewed and signed off. The temporary water license for use of water for suppression in Miller and Scherf Creeks was re-confirmed. Two contracts were developed and approved, including the helicopters necessary to ignite and control prescribed burn and the Yaqit ʔa·knuqʔi 'it First Nation (Tobacco Plains Indian Band) forestry crew needed for prescribed burn suppression. Mailouts informing residents of Grasmere and adjacent areas were also sent out.

Unfortunately, due to early green up in the spring and the active and long wildfire season in the fall, the proposed prescribed burn had to be deferred until spring or fall 2024.

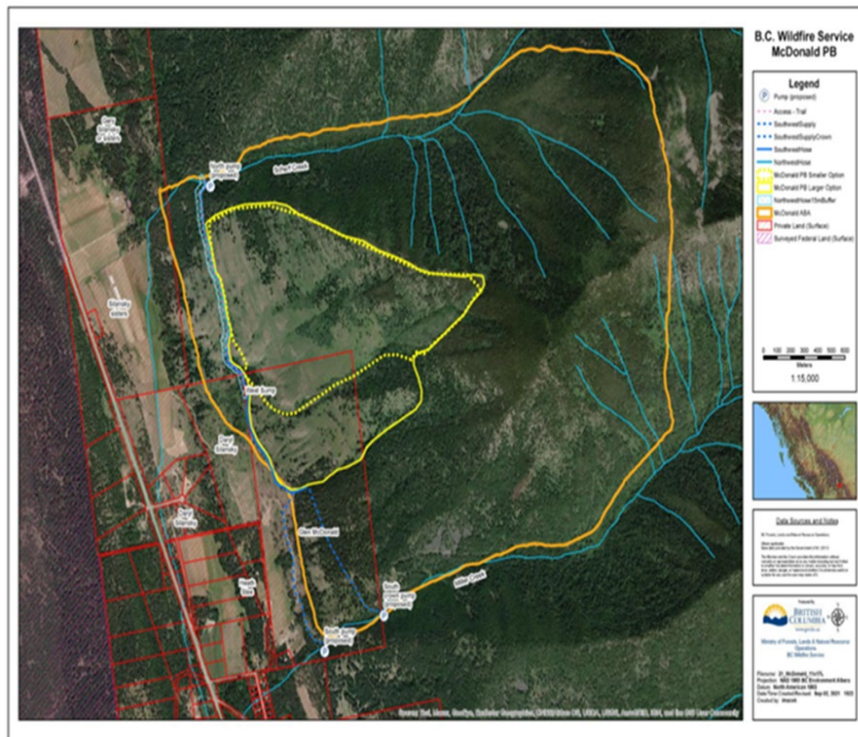


Figure 7: McDonald's Prescribed Burn Area

Deliverable Reference

A spatial layer showing EKE burning and slashing is available in the BC Government layer library

<https://catalogue.data.gov.bc.ca/dataset/habitat-enhancement-burning-and-slashing-activity-fish-and-wildlife-compensation-program-columbia-ba>

5. Discussion and Recommendations

The approximately 250-300 hectare McDonald's Prescribed Burn is rated number one in priority and was scheduled for completion in the spring or fall of 2023. The McDonald's Prescribed Burn did not occur as planned in either season because of issues associated with vegetation green up in the spring and a busy wildfire season and unsuitable weather in the fall. The plan is to use helicopters with buckets to contain the boundary adjacent to the private land. This will negate the need for a machine constructed guard into this relatively intact ecosystem. Other proposed prescribed burns including Lizard Range and East Columbia Lake are currently waiting for Section 52 authorization and/or burn plan completion by BCWS. Once approvals and plans are signed off, their delivery will be dependent on BCWS availability, weather indices and available funding.

Invasive weed spraying occurred at the Lizard, Galton, Bull Mt and Supply Cr sites. Invasive species targeted included Yellow Hawk weed, Sulphur Cinquefoil, Knapweed, St. John's Wort and Blue weed. The first four years of treatment included about 30 ha. at each site annually. The 2023 season included spot treatment in the Lizards, both sites are now ready for prescribed burn plan development. Burn plan development for the McDonald's site in the Galton's is now complete. Post prescribed burn (2016) invasive weed treatment also occurred in Raymond Cr and Donald Cr located in the Galton Range and Bull Mt (2022) east of Cranbrook. Total area treated with herbicides is difficult to calculate due to spot treatments, meaning the spraying of individual weed or weed patches. However, the monitoring of treatment has shown a consistent reduction of weeds present from year to year.

The McGuire Stand Management Prescription (SMP) development was proposed for an area utilized by multiple ungulates and carnivores. The area was identified through our landscape level Galton Ecosystem Restoration Plan. The SMP is being completed in fiscal 2023-24 by the Yaq̓it ᑭa·knuq̓i 'it First Nation (Tobacco Plains Indian Band), contracting Vast Resource Solutions to complete the work. The SMP has been finalized, but the larger scale Ecosystem Restoration Plan and Invasive Weed Inventory are still being completed.

Vegetation monitoring used to evaluate the success or failure of the treatments were established in the McGuire Creek, Supply Creek, Raymond Creek and Donald Creek areas. Besides McGuire Creek which include pre-treatment plots, this year's monitoring efforts were directed towards monitoring the effectiveness of the herbicides used to control invasive weeds. Monitoring sites are read pre-treatment, 1, 3, 5, 10 years after treatment. Sites selected for monitoring are based on different treatments and habitat types. Results from vegetation monitoring feed back into the development of SMP's. See Appendix 1 for 5 year planning for the East Kootenay Enhancement Project.

6. Acknowledgements

This project was prepared with financial support Fish & Wildlife Compensation Program on behalf of its partners, BC Hydro, the Province of B.C., Fisheries and Oceans Canada, First Nations, and Public Stakeholders to conserve and enhance fish and wildlife in watersheds impacted by BC Hydro dams. We would like to thank all identified above. Also, we would like to thank all branches of the MOF and MLRS that contributed to the delivery, including Wildfire, Habitat, Wildlife and funding from the Crown Land Wildfire Risk Reduction. Other organizations such as EKISC and RMTNRS also participated in aspects of this project and their help is greatly appreciated. Lastly, we would like to thank the local non- government groups, such as the Elkford Rod and Gun Club that have been working to raise funding to partner with this project.

References

References are listed under related Results and Outcomes achieved in 2023-2024.

Appendix 1

5 Year Plan

Activity	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
First Nations Partnership in Ecosystem Restoration project identification and development			Discussions and field visits with elders, community members and professional staff to work together to develop new projects which include traditional knowledge and community input in the planning and delivery.	Discussions and field visits with elders, community members and professional staff to work together to develop new projects which include traditional knowledge and community input in the planning and delivery.	Discussions and field visits with elders, community members and professional staff to work together to develop new projects which include traditional knowledge and community input in the planning and delivery.	Discussions and field visits with elders, community members and professional staff to work together to develop new projects which include traditional knowledge and community input in the planning and delivery.	Discussions and field visits with elders, community members and professional staff to work together to develop new projects which include traditional knowledge and community input in the planning and delivery.	Discussions and field visits with elders, community members and professional staff to work together to develop new projects which include traditional knowledge and community input in the planning and delivery.	Discussions and field visits with elders, community members and professional staff to work together to develop new projects which include traditional knowledge and community input in the planning and delivery.
Premier-Wildhorse restoration	Premier East Pile Burn Estella/Wolf Post Burn Invasive Plant Treatment	Premier East Prescribed Burn 150 ha Premier East Post Burn invasive plant treatment	Premier East Prescribed Burn 150 ha Premier East Post Burn invasive plant treatment	Post Burn invasive plant treatment-Wolf and Estella	Post Burn invasive plant treatment-Wolf and Estella	Possible Post Burn invasive plant treatment-Wolf and Estella	Possible Post Burn invasive plant treatment-Wolf and Estella	Possible Post Burn invasive plant treatment-Wolf and Estella	Possible Post Burn invasive plant treatment-Wolf and Estella
Lizard Range restoration	West Lizard Invasive Species/Plant Treatment (treatment options will be selected)	Lizard Prescribed burn Plan Development West Lizard Invasive	Spot Invasive Weed Treatment-spring Possible East and West	East and West Lizard Pre Burn Invasive Species Treatment (treatment	East and West Lizard Pre Burn Invasive Species Treatment (treatment	East and West Lizard Pre Burn Invasive Species Treatment (treatment	East and West Lizard Pre Burn Invasive Species Treatment	East and West Lizard proposed prescribed burn and/or Pre/Post Burn	East and West Lizard proposed prescribed burn and/or Pre/Post Burn

	based on species and best available practices) 30 ha	Species/Plant Treatment (treatment options will be selected based on species and best available practices) 30 ha	Lizard Prescribed burn. 200 ha	options will be selected based on species and best available practices)	options will be selected based on species and best available practices)	options will be selected based on species and best available practices)	(treatment options will be selected based on species and best available practices)	Invasive Species Treatment (treatment options will be selected based on species and best available practices)	Invasive Species Treatment (treatment options will be selected based on species and best available practices)
Galton Range restoration	Galton Invasive Plant Treatment (treatment options will be selected based on species and best available practices. 30 ha.	Galton Invasive Plant Treatment (treatment options will be selected based on species and best available practices 30 ha	Galton Burn Plan Development. 200 ha Spot Invasive Weed Treatment-spring Galton	Finish Galton Burn Plan Development. 200 ha Spot Invasive Weed Treatment-spring Galton Prescribed burn Galton SMP development 200 ha	Spot Invasive Weed Treatment-spring Galton Prescribed burn Galton SMP development	Galton Pre (McGuire) and Pre (McDonald's) Burn Invasive plant Treatment (treatment options will be selected based on species and best available practices	McDonald's Prescribed burn and/or Galton Pre (McGuire) and Pre/Post (McDonald's) Burn Invasive plant Treatment (treatment options will be selected based on species and best available practices Galton Prescribed burn Gallton's SMP development	Galton Pre (McGuire) and Pre/Post (McDonald's) Burn Invasive plant Treatment (treatment options will be selected based on species and best available practices Possible Galton Prescribed burn Galton SMP development	Galton Pre (McGuire) and Pre/Post (McDonald's) Burn Invasive plant Treatment (treatment options will be selected based on species and best available practices Galton Prescribed burn Galton SMP development
N. Stoddart Cr restoration			N. Stoddart Veg. Monitoring						
East Columbia restoration	East Columbia Habitat restoration-slash and Pile 21 ha	East Columbia Lake pile burn, 21 ha	East Columbia Lake Veg Monitoring	Possible prescribed burn 150 ha East Columbia Lake Veg Monitoring and invasive plant treatment Limber pine protection	Possible East Columbia Lake invasive plant treatment	Possible prescribed burn 150 ha East Columbia Lake invasive plant treatment Limber pine protection	Possible prescribed burn 150 ha East Columbia Lake invasive plant treatment Limber pine protection	Possible prescribed burn 150 ha East Columbia Lake invasive plant treatment Limber pine protection	Possible prescribed burn 150 ha East Columbia Lake invasive plant treatment Limber pine protection

White Bull Elk Restoration	Habitat Restoration SMP development Veg Monitoring-Forsythe Cr 150 ha	Habitat Restoration SMP development 200 ha (Supply Cr)	Habitat Restoration SMP development-Cadorna Cr	Habitat Restoration SMP development	Possible Habitat Restoration SMP development-Iron Cr	Possible Habitat Restoration SMP development Iron Cr	Possible Habitat Restoration SMP development-Iron Cr Possible Prescribed burn at Forsyth Cr	Possible Habitat Restoration SMP development- Possible Prescribed burn at Forsyth Cr. Pre/post Invasive weed treatment at Forsyth Cr	Possible Habitat Restoration SMP development- Possible Slashing at Cadorna Cr
Vegetation monitoring	Galton Range, Sand Cr, Sulphur Cr	Hoodoo Control East Lizard Galton 2	East Columbia, Galton, Wolf	TBD	Raymond, Donald and Supply Cr	TBD	TBD	TBD	TBD
Wildlife Tree creation	West Kootenay Con lands	Aspen treatment within Conservation Lands	West Kootenay areas	TBD	TBD	Hoffert Property	TBD	TBD	TBD