Associated Environmental

REPORT

Climate Change Adaptation Program

Supporting Riparian Health on Farmland for Flood Protection
Summary Report

MARCH 2023

ACKNOWLEDGEMENTS

We acknowledge the contributions of the following organizations and individuals in the successful completion of this project:

- Harmony Bjarnason of Climate Change Adaptation Program (CCAP) for acting as the project organizer for CCAP
- Our educators, Lee Hesketh and Gregoire Lamoreaux.
- Andrew Bennett for his contribution to the field days and resources.
- The members of the Project Oversight Committee; Andrea Shaw, Richard Tegart, Mike Malberg, Kristina Anderson, Kate Mizenka, Rachael Roussin and Jefferey Nimmo for their input throughout the project.
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1 INTRODUCTION

The implications of climate change have resulted in heightened flood risk in the Kootenay and Boundary regions. A healthy functioning riparian area can provide valuable flood resiliency and mitigate flood damage where these areas overlap with vital agricultural lands. Agricultural producers play an important role in riparian area management, but require enhanced support to fully understand how riparian areas relate to flood mitigation, along with options for management. Without knowledge and support, producers may find the topic of riparian health overwhelming, and it can be hard to understand the benefit of assessing riparian health, its management and rehabilitation.

Associated Environmental Consultants (Associated) was retained by the BC Climate Change Adaptation Program (CCAP) to communicate the value of riparian areas on farmland. This involved consolidating existing information, developing and/or expanding educational material, and engaging with stakeholders. The outcome was communication about riparian area function and health, the implications of climate change to these features, methods to evaluate them, and a link to local resources and expertise to help make key land use decisions. This report summarizes the activities completed during the project to achieve these goals.

To complete this project, collaboration was essential. All of these efforts were completed in collaboration with CCAP, Environmental Farm Planners (EFPs) from the three Kootenay regions (East, Central, and Boundary), members of the B.C. Ministry of Agriculture and food, and local government.

2 PROJECT SUMMARY

The purpose of the project is to understand gaps in knowledge and available information for producers with riparian areas on both large and small waterways in the Kootenays. Further, Associated worked to fill those gaps and to transfer relevant information and resources to land users.

2.1 Steps Taken

Associated hosted two webinars, facilitated three field sessions and provided easy to interpret resource material.

To engage producers and learn what they understood about riparian areas for flood protection, we began with a webinar presented by two experts, Lee Hesketh and Gregoire Lamoureux, on the topic of riparian health and restoration. It was provided on two evenings, with good attendance. The initial webinar was March 16, 2022, with 36 attendees, and the second was March 24, 2022 with 14 attendees.

The initial webinar was followed by field learning sessions at the following farms in September 2022, attended by local producers and EFPs:

- Fairfield Farms, Boundary, 48 attendees (in collaboration with Cows and Fish and EFP training).
- Elk Root Conservation Farm and Crooked Horn Farm, Central Kootenay, 16 attendees.
- BE Ranch, East Kootenay, 12 attendees.

During the webinar and field sessions, Associated and CCAP documented what the producers did not understand and/or information gaps. Based on this, we created resources focused on why, how and when to manage riparian areas for flood mitigation. Specific resources are listed in the following section.

2.2 Summary of Knowledge Transferred

Transfer of knowledge in the formats described allowed sharing of specific topics and resources. The primary topics shared with participants is summarized by activity in Table 2-1.

Table 2-1 Knowledge Transfer: Activity and Topics

Activity/Resource	Topics Covered
Webinars	• Consequences of poorly managed riparian areas • Bioengineering solutions for how to better manage specific riparian problems related to flooding (e.g. bank erosion, debris pile ups, head cuts) • Overview of project implementation and requirements • Ideas on how to fund riparian projects • Project examples – before and after photos with commentary on the solutions implemented
Field Sessions	• How to assess the health of your riparian area • Low-cost solutions for bank stabilization, preventing debris pile ups and other erosional issues • Hands on demonstration of how to install livestakes • Discussion with landowners about site specific issues and potential solutions
Handout Listing Available Resources to Landowners	• General steps of how to implement a riparian project • Financial and in-person planning support available in the Kootenay Region • Riparian management education resources • Summary of how the environmental farm plan process works
Handout: Livestaking	• Where to plant livestakes • What to plant • When and how to harvest • How to plant the livestakes • How to protect and maintain stakes • Other livestaking techniques for bank stabilizations
Handout: Streambank Debris Stakes	• What streambank debris stakes are • What streambank debris stake can do • How to install debris stakes • Permitting requirements for staking
Handout: Decision Matrix	• User can estimate flood risk/damage vulnerability • User can determine a project objective that is then linked with potential solutions

3 FREQUENTLY ASKED QUESTIONS

During the webinars and field sessions, Associated and the team documented the frequently asked questions by participants. All the questions listed were addressed by the educators in some level of detail.

Project Planning

- How does a private landowner go about getting a project implemented on their land?
- How do you determine the total area that would be appropriate for either riparian buffer and/or wetlands?
- What is the target size of your riparian area?
- How do you deal with upstream impacts that may be affecting your land that is downstream?
- How does livestock management change with riparian restoration?
- How to set realistic expectations, especially when working on a large river system?
- How to work collaboratively with non-profits, neighbors, etc. to implement your project?
- Where to find support in the planning phase?

Permitting Requirements

- What are the regulatory requirements for different riparian projects (e.g. in-stream work vs wetland building in the flood plain)?
- What work requires a professional (either biologist or engineer)?
- When does your project require First Nations involvement?

Cost, Funding and Support

- What is the cost to do a riparian restoration project and when does it become more economical to leave the land as is?

Project Implementation and Technique questions

- How do you stabilize banks using livestaking techniques?
- What species of plants to use for livestaking?
- Parameters for livestaking – what plants to use, how wide to plant, when to harvest, maintenance?
- How to deal with invasive species – specifically reed canary, blackberry
- What type of fencing to use for keeping livestock out of riparian areas?
- What impacts do beavers have and how can you work around them?
- How do you protect livestakes from browsing?
- What are some low cost alternatives to engineering that you can do yourself?
- How do you prevent debris from piling up on your field?
- How to utilize wetlands as a flooding defense feature?

Other

- What is engineering vs bioengineering?

4 KNOWLEDGE GAPS AND RECOMMENDATIONS FOR FUTURE TOPIC DELIVERY

Of the questions and discussion topics gleaned through this project (presented in Section 3), knowledge gaps were apparent around two topics: initial project planning and implementation and permitting requirements.

Many of the webinar and field session attendees expressed confusion relating to **initial planning and implementation**. A knowledge gap seems to exist around *when* a riparian area is considered non-functioning and requires restoration/work. Future modules should work directly with landowners to assess the health of the riparian area, determine the issues and potential solutions and where to go from there. While many producers knew their riparian

areas had issues, they had no idea of how to start the process of restoring the area. Having workshops on the land and inviting local producers to have a hands-on experience would be most effective. This could be followed by resource sharing including handouts and direction to relevant videos of how-to.

The need and process to meet **permitting requirements** was not addressed in detail in this project and several questions were raised by attendees of the field day around project permitting. The questions that require addressing in future modules include:

- What work requires a permit?
- What permits are required?
- What are the steps of acquiring required permits?
- When should a qualified professional be engaged in a project that requires permitting?

These could be addressed through answering these questions and providing a regulatory link and ideally a contact who can respond to landowners.