

Source Water Protection Phase I: Risk Assessment Tools and Data

Project Team Terms of Reference

Approved by the Alberta Water Council on: February 2021

Proposed: June 2025

CONTEXT:

Albertans' quality of life depends on a healthy, secure, and sustainable water supply for communities, the environment, and the economy. Population growth, development, and climate variability continue to influence water resources and affect Alberta's residents, economy, and aquatic environments.

Source Water Protection (SWP) is a risk management process designed to maintain or improve the conditions of water through proactive and collaborative identification, validation, assessment, and management of risk. Source water is untreated, raw water from surface or groundwater sources used for drinking water or other uses.

In 2018, the Alberta Water Council (AWC) formed a project team to provide guidance on protecting sources of drinking water in Alberta. The project included surveying drinking water providers and assessing SWP practices, processes, risks, and initiatives in Alberta. Results of the project supported development of a "Guide to Source Water Protection Planning",¹ and the Alberta Water Council, Protecting Sources of Drinking Water in Alberta Companion Document (Companion Document).² The Guide lays out six steps to help drinking water providers develop SWP plans in collaboration with other key groups in their source water area. The companion report summarizes information to be considered when protecting public, private, and individual drinking water sources in Alberta.

Over 670 drinking water systems are regulated by Alberta Environment and Parks (AEP), most of which serve small municipalities of 1,500 residents, or less. AEP regulates all municipal systems and a portion of non-municipal systems, which combined serve about 85 percent of Alberta's population. The majority of remaining Albertans get their drinking water from systems regulated by regional health authorities, Alberta Health, or federal agencies. Although Drinking Water Safety Plans (DWSPs) are mandatory for water systems regulated by AEP, they may lack the attention and detail needed to effectively assess and mitigate risks to drinking water sources. For example, the DWSPs may lack information and validation of potential contamination of drinking water sources from adjacent land use activities and operations.

The previous project found that while several communities have voluntarily developed SWP plans and several tools exist in Alberta to support SWP, some communities may have a need

¹ https://www.awchome.ca/_projectdocs/?file=0a5a74e0ad3f5403

² https://www.awchome.ca/_projectdocs/?file=0166503d95357d39

for more efficient and timely access to data to support the risk assessment process. Furthermore, the ability for municipalities to implement SWP varies and is dependent on many factors such as population, geography, and access to expertise. The results of this project also indicate the need for education and collaboration, as well as tools and training to meet the diverse needs of the various types and sizes of drinking water systems in Alberta. A description of some of the successes, barriers and gaps related to SWP planning can be found in Section 2.0 and Section 5.0 of the Companion Document.²

This project intends to build on the steps to SWP planning outlined in the Guide, specifically Step 1, “Involve key groups and create a vision” and Step 2, “Characterize your Source Water Area”. This involves collaboration with stakeholders and information gathering to identify and assess risks. However, for small urban, rural, or other drinking water providers with limited capacity, the effort, time, and cost involved in this process can be prohibitive. Through development of an online centralized inventory of tools and data (a “web platform”), as well as a suite of associated educational resources, this project will support drinking water providers to enhance their source water risk assessments and collaboration efforts.

STRATEGIC INTENT (GOAL):

The purpose of this work is to develop increasing access to a web platform and educational tools and resources to assist drinking water providers and local decision makers in Alberta to understand and assess risks to their drinking water sources. This work will also support the integration of SWP approaches and to enable greater collaboration between drinking water providers and stakeholders to ensure alignment with local priorities, statutory and non-statutory watershed management initiatives, and regional plans. Finally, this project will include the development of recommendations for an implementation phase to support mitigation of risks and a future strategy for SWP in Alberta.

OBJECTIVES:

- 1) Users and other stakeholders understand the need for SWP risk assessments and the benefits of collaborative SWP approaches and are aware of the SWP web platform.
- 2) An inventory of SWP data sources, risk assessment tools, and procedures.
- 3) Capabilities and limitations of the web platform are understood and inform the next steps of the project.
- 4) A web platform that provides access to data to support the risk assessment process as well as educational resources to support collaboration efforts for SWP planning.
- 5) Feedback from end users and other stakeholders on the web platform, tools, and educational resources are incorporated to improve user experience.
- 6) A final report on the web platform, resources, lessons learned, and recommendations for an implementation phase and a future strategy for SWP in Alberta.
- 7) Effective communication around the project work and deliverables.

KEY TASKS:

- 1) Develop a work plan that includes key tasks, deliverables, and timelines.

- 2) Create a team of engagement experts to develop communication and engagement plans to improve user understanding and gain feedback in relation to i) the need for in-depth SWP risk assessments, ii) the benefits of collaborative SWP approaches, and iii) the web platform.
 - a. Communication plans related to improving the understanding of the need for risk assessments and collaborative efforts for SWP may include:
 - i. A review of outcomes from the previous SWP project related to users, needs, and barriers.
 - ii. Workshops on SWP risks including users and other stakeholders.
 - b. Stakeholder engagement related to the web platform which may include:
 - i. Use of focus groups and interviews/surveys where appropriate.
 - ii. Inclusion of a feedback mechanism in the web platform.
 - iii. Focused survey on the effectiveness of the web platform.
- 3) Develop an inventory of SWP data sources, risk assessment tools, and procedures for obtaining the information.
 - a. Generate a list of data sources and risk assessment tools.
 - b. Confirm tools with stakeholders.
- 4) Assess the capability of the web platform given technological and budget limitations. This task may include:
 - a. Documenting challenges and limitations related to construction and ongoing maintenance.
 - b. Assessing which data sources and tools from the inventory are possible to include, such as data extraction and mapping tools (i.e., delineation of source water areas using the Alberta Flow Estimation Tool for Ungauged Watersheds).
 - i. Consider whether any modifications are needed to the tools for the purposes of the web platform.
- 5) Service Alberta, working with a consultant, will develop the web platform, supported by AEP.
 - a. The web platform is expected to be hosted by Service Alberta on the Government of Alberta (GoA) open data portal; ongoing maintenance will be supported by the GoA.
- 6) Develop educational resources and tools to support SWP initiatives.
 - a. Form a Communication and Education Subgroup to determine educational resources that best support knowledge uptake regarding SWP initiatives and the web platform. Materials should include:
 - i. Key background information.
 - ii. Benefits of SWP planning (e.g., informs business case development or internal outreach and communication with stakeholders).
 - iii. How to use the platform (e.g., tutorials, instructions).
 - iv. Key messages for municipal representatives and other drinking water providers for internal and external communication needs
 - v. Contact information for technical and collaborative support, including explicit instructions relating to communication with contacts as appropriate.

- b. Integrate educational resources into the web platform as appropriate (e.g., “help” webpages, interactive or non-interactive tutorials).
 - c. Materials should be prepared such that they can be used for future technical support and training sessions.
- 7) Pilot the web platform and educational resources with stakeholders.
 - a. Host a workshop or series of workshops to pilot the web platform and educational resources with key municipal and drinking water providers.
 - b. Summarize feedback and lessons learned from the pilot sessions and revise the project deliverables as necessary.
- 8) Provide regular updates to the AWC board during the project.
- 9) Compile a final report on the web platform, resources, lessons learned, and recommendations for an implementation phase and a future strategy for SWP in Alberta.

TIMELINES and DELIVERABLES:

The Project Team will provide the following deliverables to the AWC:

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|-------------------------------------------------------------|----------|
| • Share the engagement plan | Oct 2021 |
| • Share results of feasibility assessment | Feb 2022 |
| • Share web platform beta and results from pilot session(s) | Feb 2025 |
| • Final report, web platform and supporting materials | Nov 2025 |

MEMBERSHIP:

Membership on the project team is open to AWC members and other relevant groups identified by the project team. The project team will operate in a manner that is consistent with the rules, policies, and procedures adopted by the AWC, including the use of consensus to make decisions in a multi-stakeholder process.

Key sectors identified for participation include:

- Alberta Agriculture and Forestry
- Alberta Energy Regulator (AER)
- Alberta Environment and Parks
- Alberta Federation of Rural Water Co-ops (AFRWC)
- Alberta Geological Survey (AGS)
- Alberta Health and Alberta Health Services
- Alberta Irrigation Districts Association (AIDA)
- Alberta Urban Municipalities Association (AUMA)
- Alberta Water and Wastewater Operators Association (AWWOA)
- Association of Summer Villages of Alberta (ASVA)
- Indigenous communities and the First Nations – Technical Services Advisory Group
- Industry (e.g., mining, oil and gas and petrochemical)
- Research agencies, such as Alberta Innovates and academia
- Rural Municipalities of Alberta (RMA)
- Urban and rural municipalities

- Watershed Planning and Advisory Councils (WPACs)

BUDGET:

The working group estimates a budget of \$424,000. Details are as follows:

Core Funding Costs (covered by the AWC)

| Type | Amount Provided by AWC | Amount Provided by Alberta Innovates |
|-------------------------------------------|------------------------|--------------------------------------|
| Stakeholder support | \$50,000 | |
| Hosting | \$5,000 | |
| Communications (final report preparation) | \$5,000 | |

Project Funding Cost (AWC has funds set aside to cover this, but support from stakeholders will be sought)

| Type | Amount Provided by AWC | Amount Provided by Alberta Innovates |
|-----------------------------------------------------|------------------------|--------------------------------------|
| Web tool development | \$5,000 ¹ | \$200,000 |
| Pilot sessions, educational resources, and feedback | \$115,000 | |
| Ongoing web tool maintenance | \$44,000 ² | |

¹ With 50% NGO reimbursement on GST

² 2 years of maintenance at \$22,000 per year; amount per year is subject to change and not incurred until after web tool development is complete