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Protecting Drinking Water Sources in Alberta

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Water North Coalition

ALBERTA WATER COUNCIL

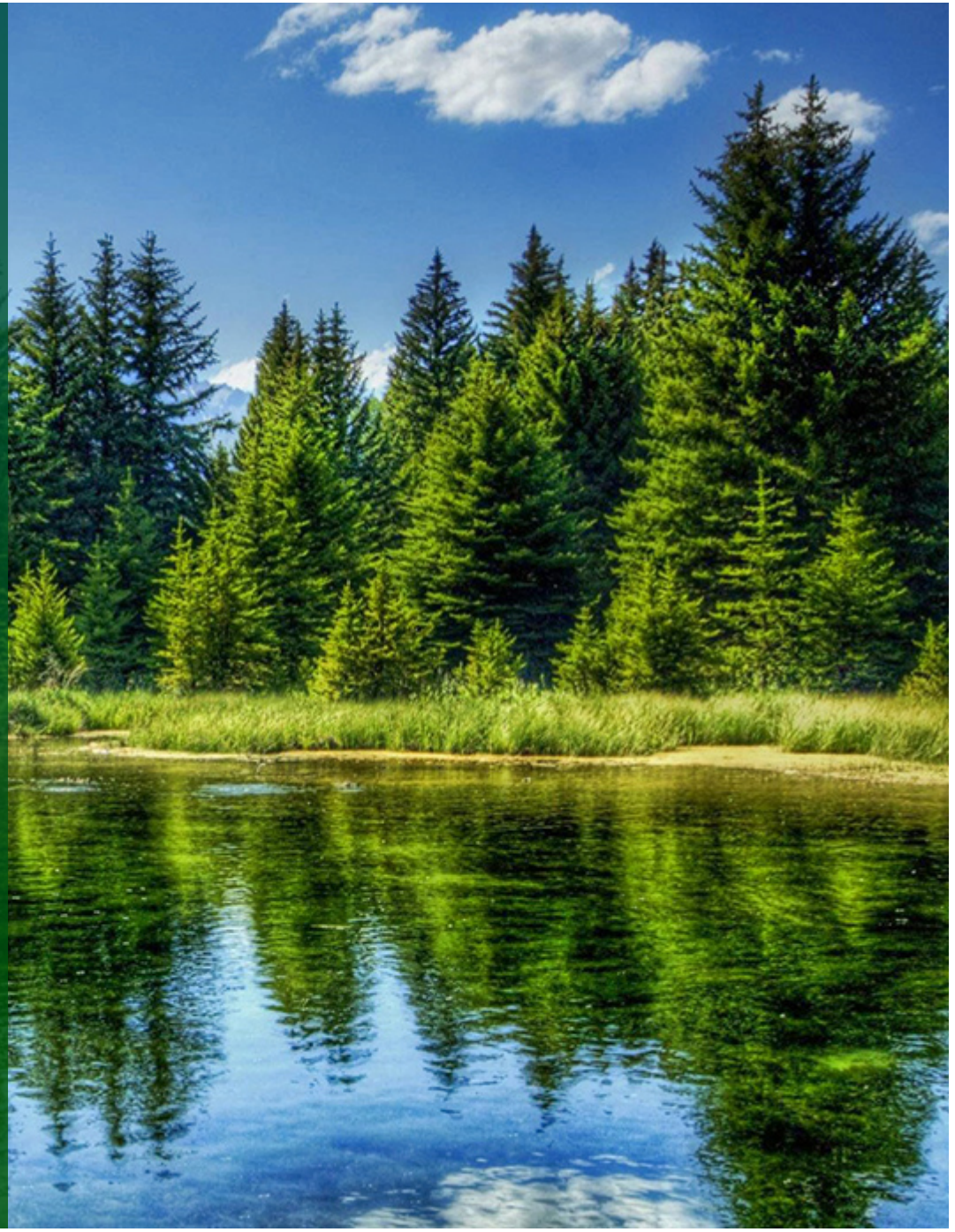
Overview

About the Alberta Water Council, Background, Project Progress and Findings, Next Steps, and Questions

About the Alberta Water Council

A multi-stakeholder partnership with 24 Members from governments, NGOs, and industry.

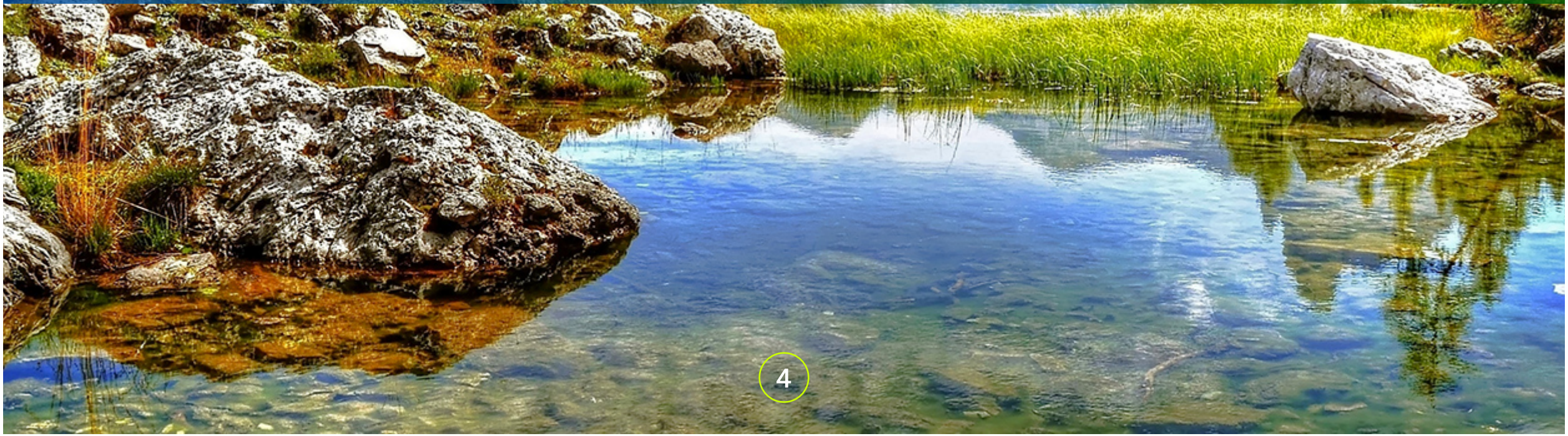
- *Water for Life* partnership
- consensus based decision making process
- advice on provincial water management challenges and opportunities



Background

In October 2017, a project idea was submitted by the Government of Alberta to the Alberta Water Council.

- Government of Alberta led water conversations stressed the importance of protecting drinking water sources.
- Under one of *Our Water, Our future; A Plan for Action's* four themes of "Drinking Water and Wastewater" a specific action calls to "Develop a common approach for establishing source water protection plans to be used in all watersheds.



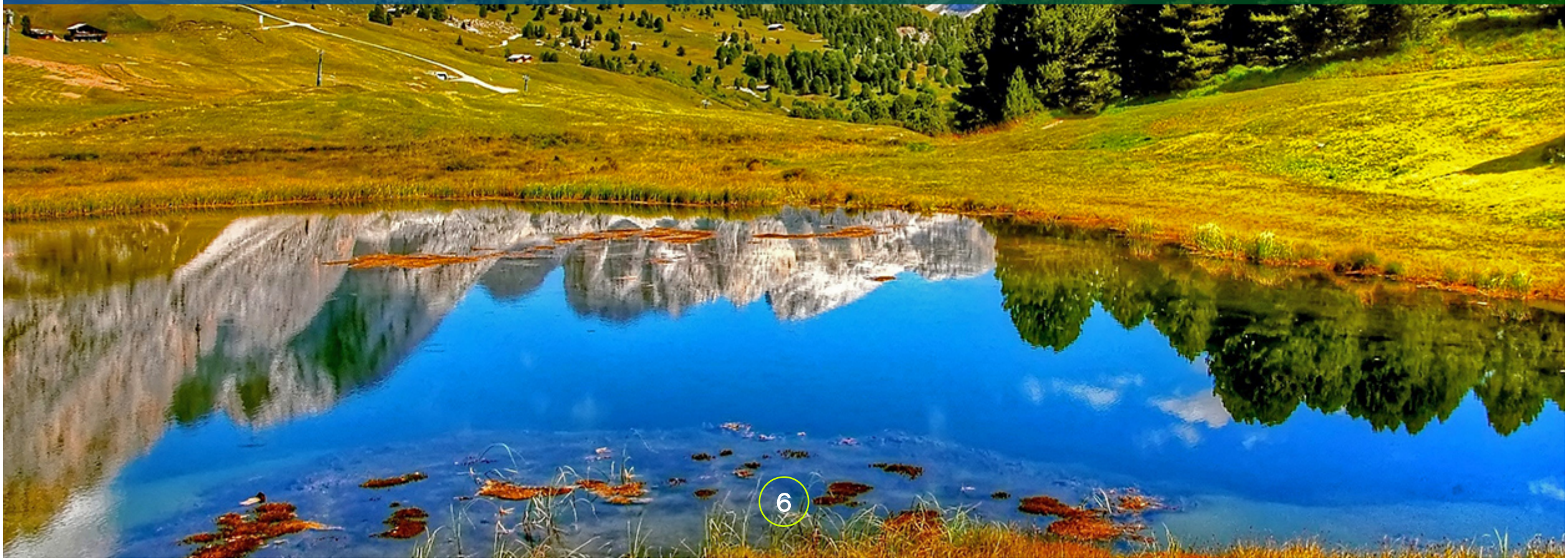
Project Objectives

Provide guidance for protecting public, private, and individual drinking water sources in Alberta.

- Synthesize source water protection (SWP) practices, processes, and risks to drinking water sources in Alberta.
- Document complementary source-water related initiatives (i.e., legislations, plans, policies, programs in Alberta and opportunities for integration and collaboration.
- Examine SWP approaches and risk management models in other jurisdictions.
- Identify successes, gaps, barriers, redundancies, and lessons learned.
- Develop a guidance document highlighting best practices.

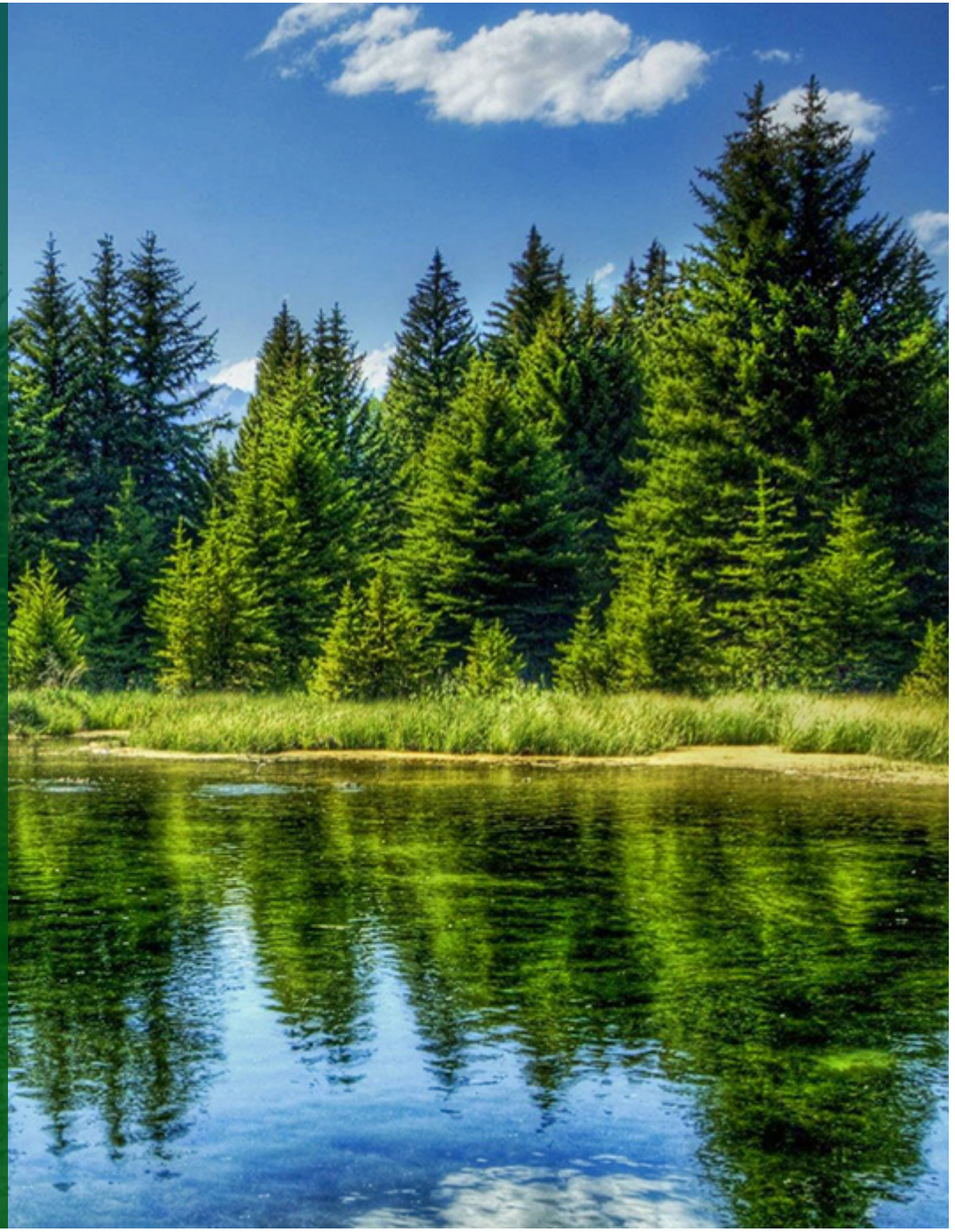
Source Water Protection

A risk management process designed to maintain or improve the conditions of water through proactive, collaborative identification, validation, assessment, and management of risk.



Project Progress and Findings

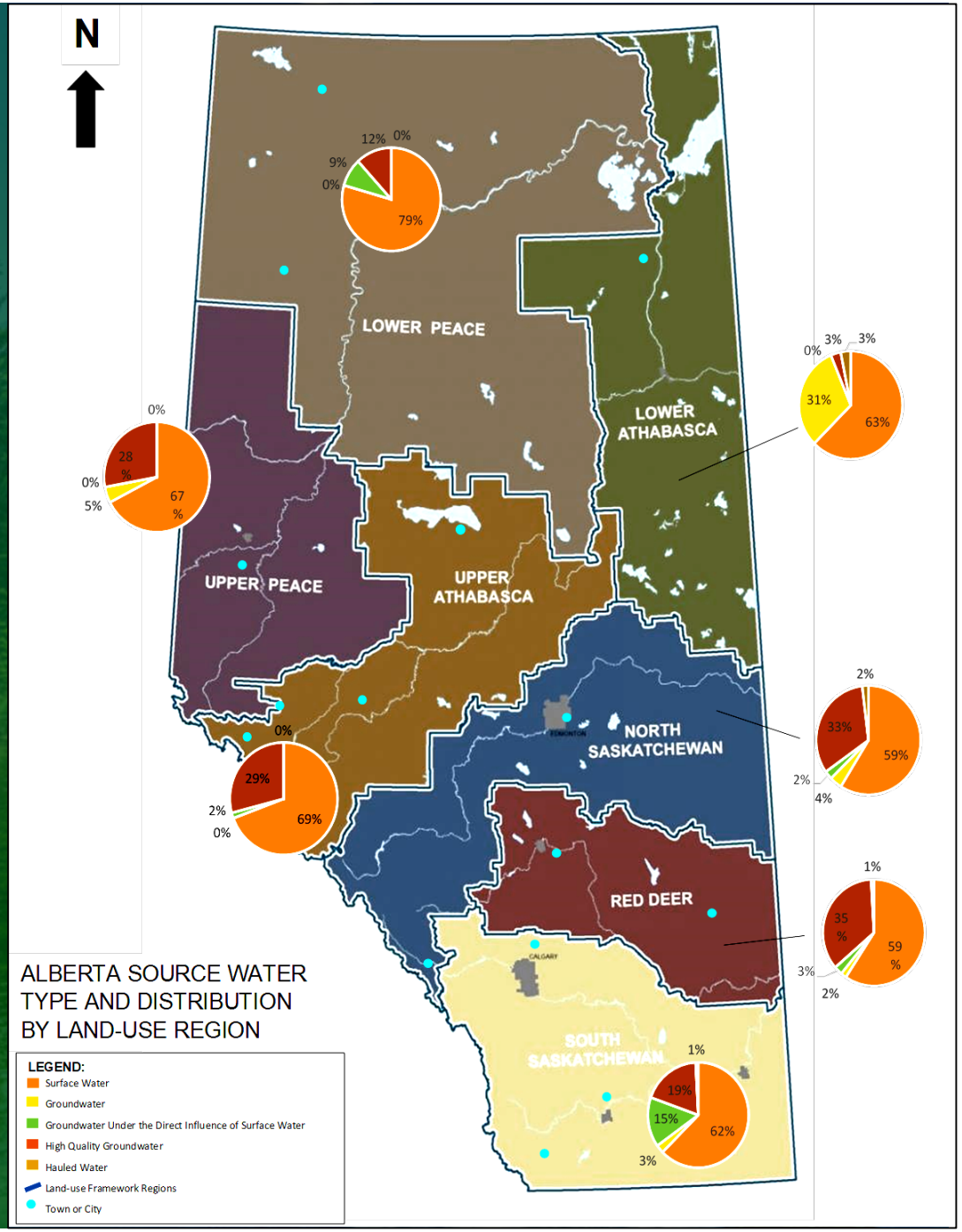
- inventory of water treatment systems and their sources
- survey and questionnaire results
- literature review findings
- update on jurisdictional scan
- drafting of the guidance document
- upcoming tasks



Inventory of Treatment Systems

Approximately 670 water treatment systems (regulated by AEP)

- working with the Government of Alberta to obtain data using a GIS layer
- data is being classified by land-use region and source type to give an idea of the types of drinking water sources and their distribution
- still confirming a few details to ensure that the information is accurate but almost done



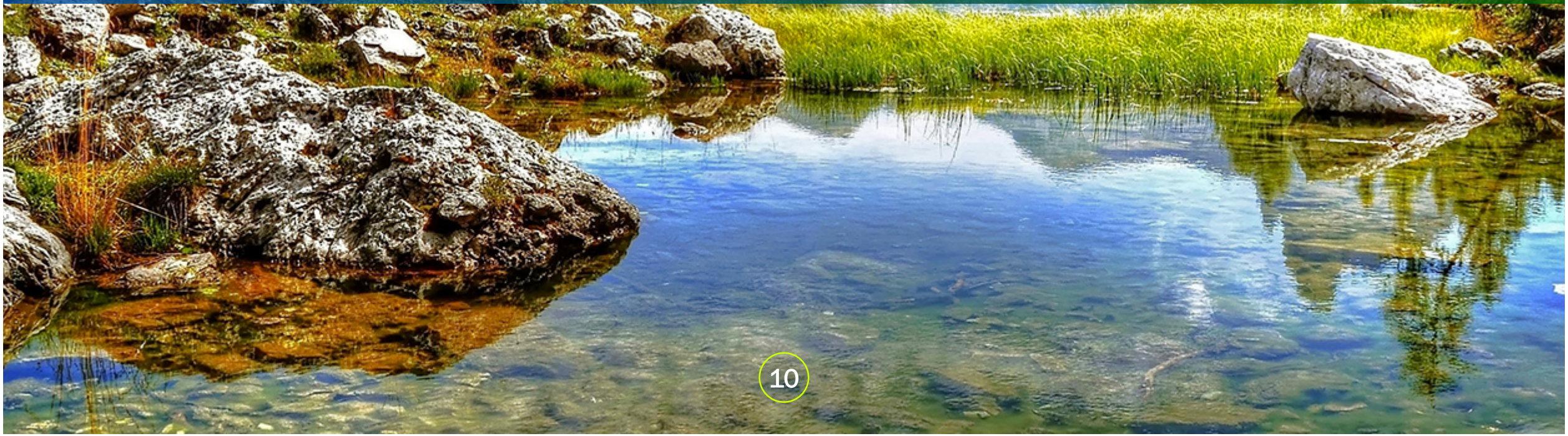
Survey and Questionnaire Findings

Results are a snapshot of a limited sample size and may not represent all the SWP work happening in Alberta.

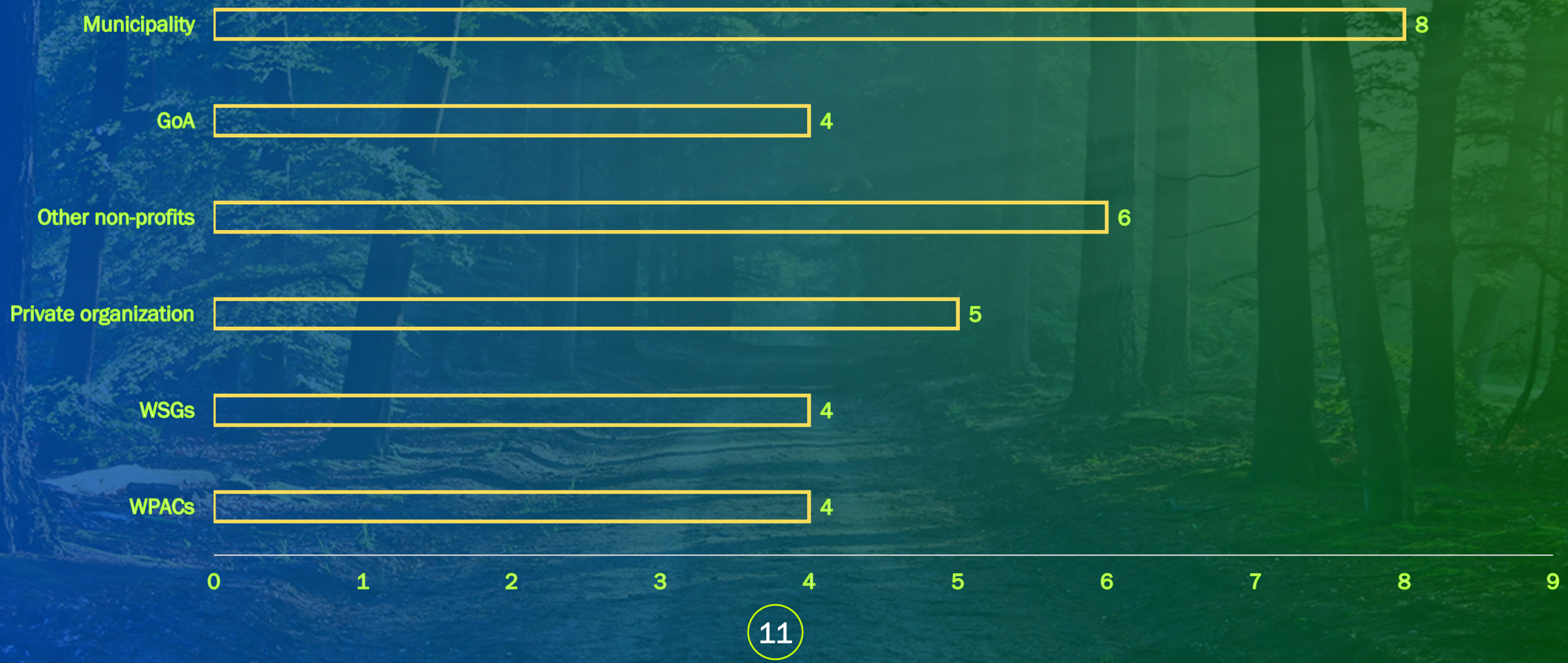
- public and private survey – 47 responses
- individual surveys – 98 responses
- targeted drinking water provider questionnaire – 13 responses
- information collected over a period of three months

Public and Private Survey Findings

Targeted organizations involved in or supporting SWP approaches in Alberta.

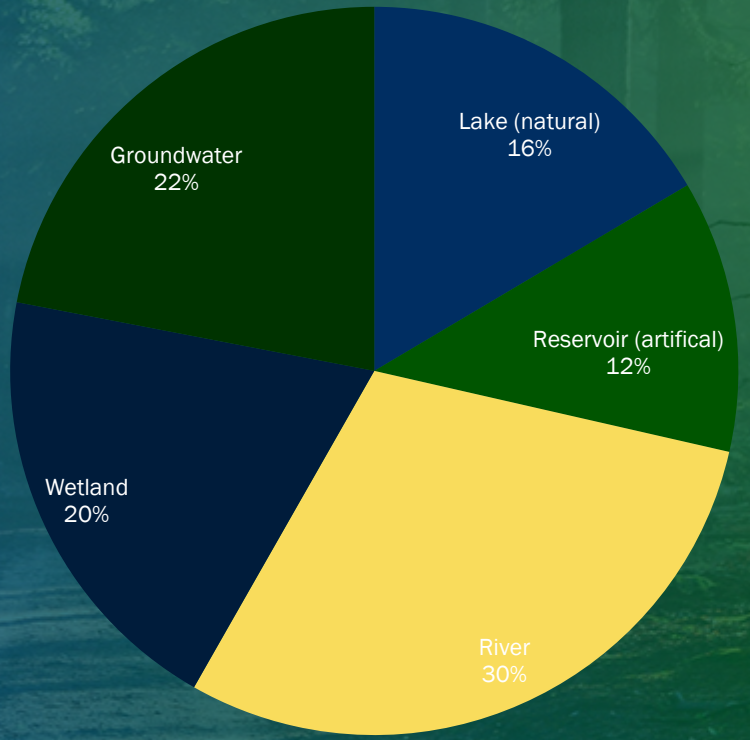


Type of Organizations

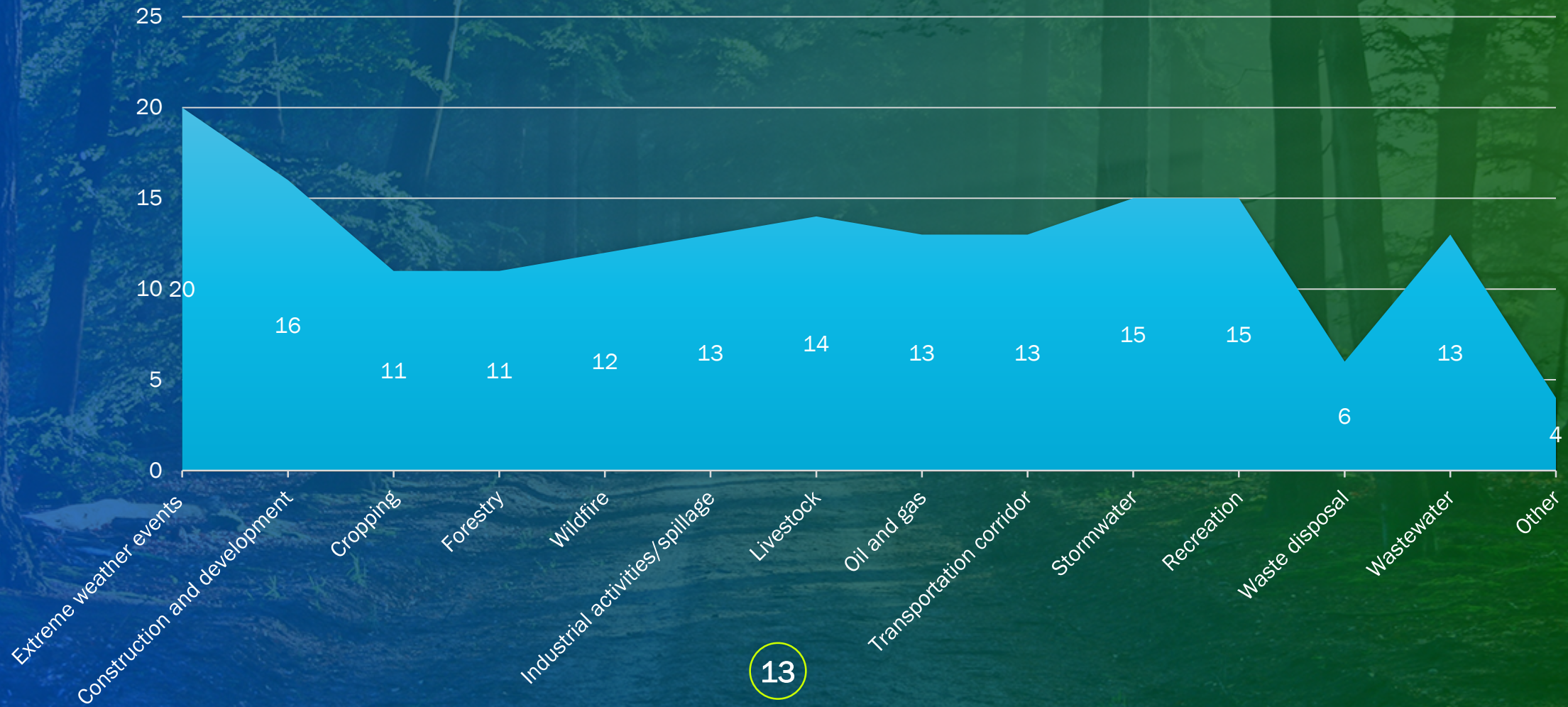


Sources

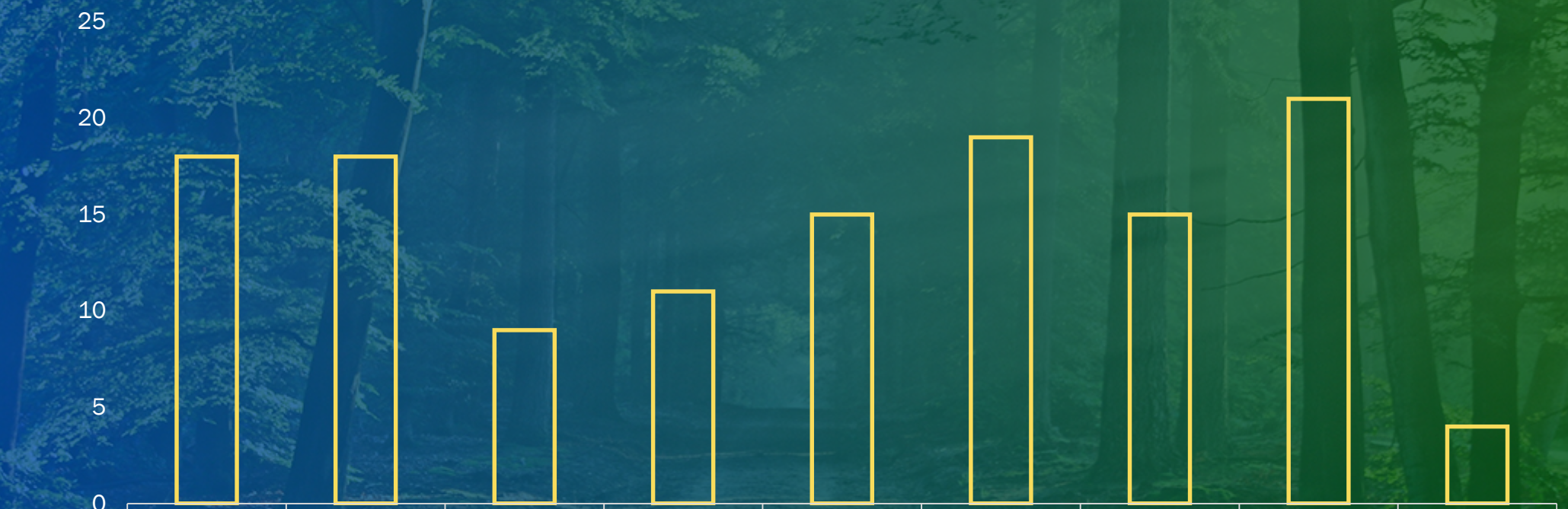
- 30% rely on rivers
- 22% on groundwater
- 20% on wetlands
- 12% on reservoirs



Risks


25
20
15
10
5
0
20
16
11
11
12
13
14
13
13
15
15
6
13
4
Extreme weather events
Construction and development
Cropping
Forestry
Wildfire
Industrial activities/spillage
Livestock
Oil and gas
Transportation corridor
Stormwater
Recreation
Waste disposal
Wastewater
Other

Barriers

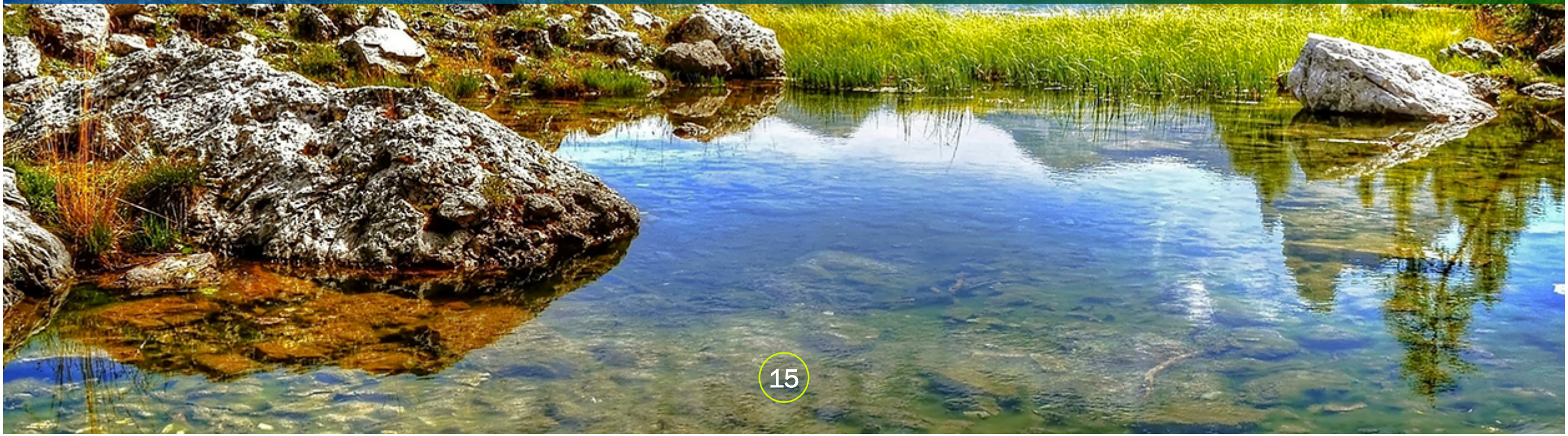


	Funding	Data availability	Infrastructure	Lack of collaboration	Jurisdictional boundaries/Governance	Challenges integrating land and water approaches	Communicating with key decision-makers	Insufficient resources	Other
Series 1	18	18	9	11	15	19	15	21	4

Collaboration

Most collaboration occurring at a regional/watershed and municipal scale.

- Efforts focused on broader watershed and lake watershed planning, stewardship, and education programs and less on SWP planning, research, and monitoring.
- Collaboration with Indigenous communities, drinking water operators, co-ops, regional water systems is minimal.

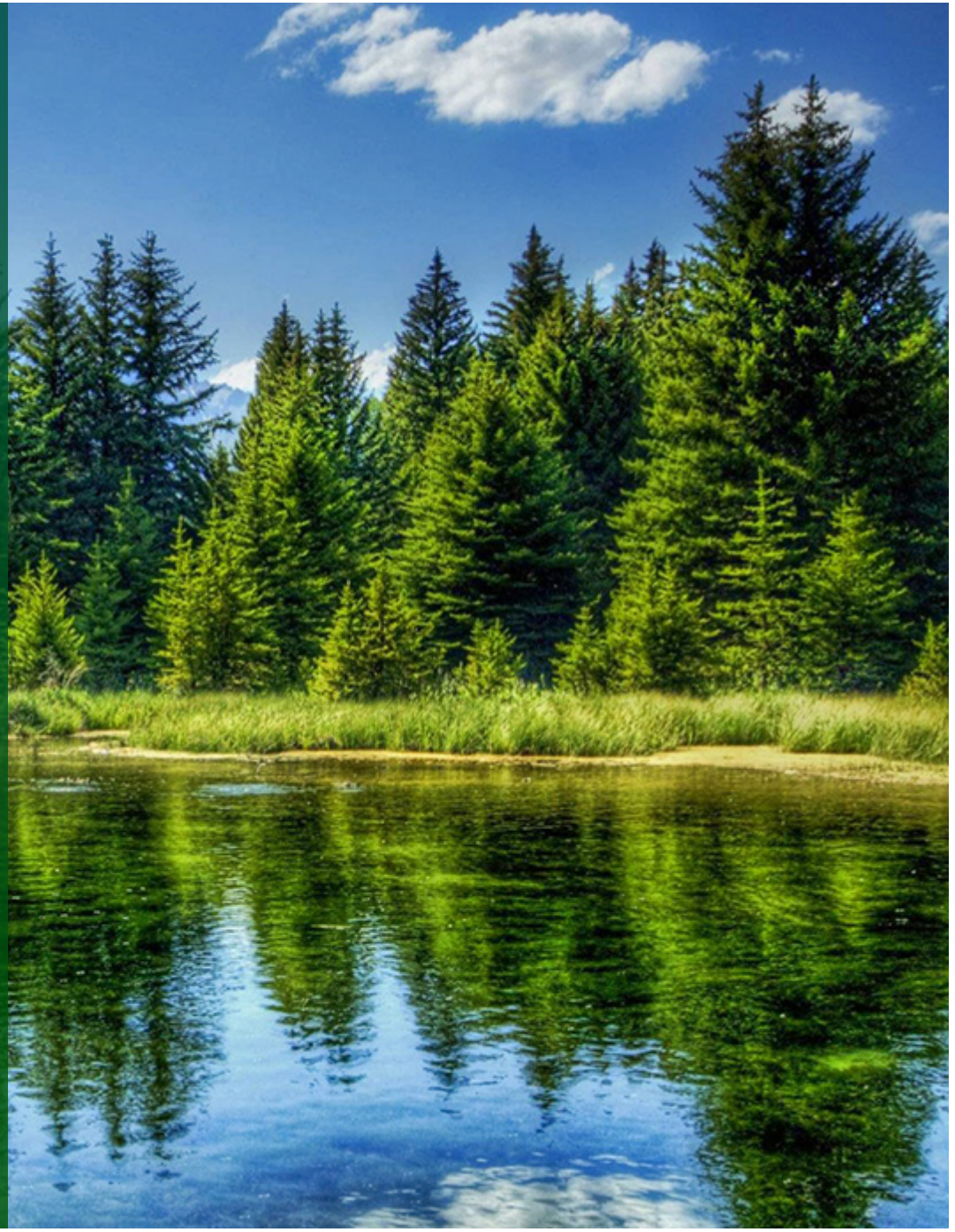


Conclusions

- Focus of SWP approaches appears to be more on providing information and training as well as legislation, policies, plans, processes, and guidance and less on research and monitoring of the drinking water sources.
- No clear SWP lead as there are multiple groups spearheading various initiatives across Alberta.
- More SWP planning approaches observed and less implementation and evaluation.

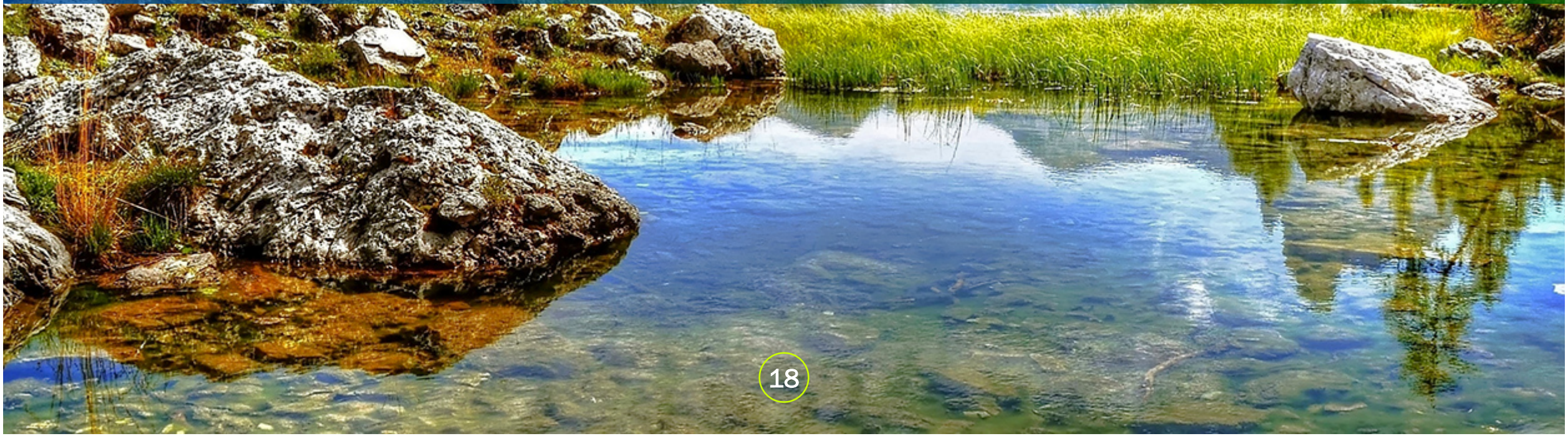
Best Practices

- Sponsoring workshops on the best practices for restoring damaged shoreline using natural process and native plant material.
- Community-based water monitoring and considering the concerns of those closest to the water and land represents best practices.
- Ensuring communication is effective and approaches with other agencies are clear and concise

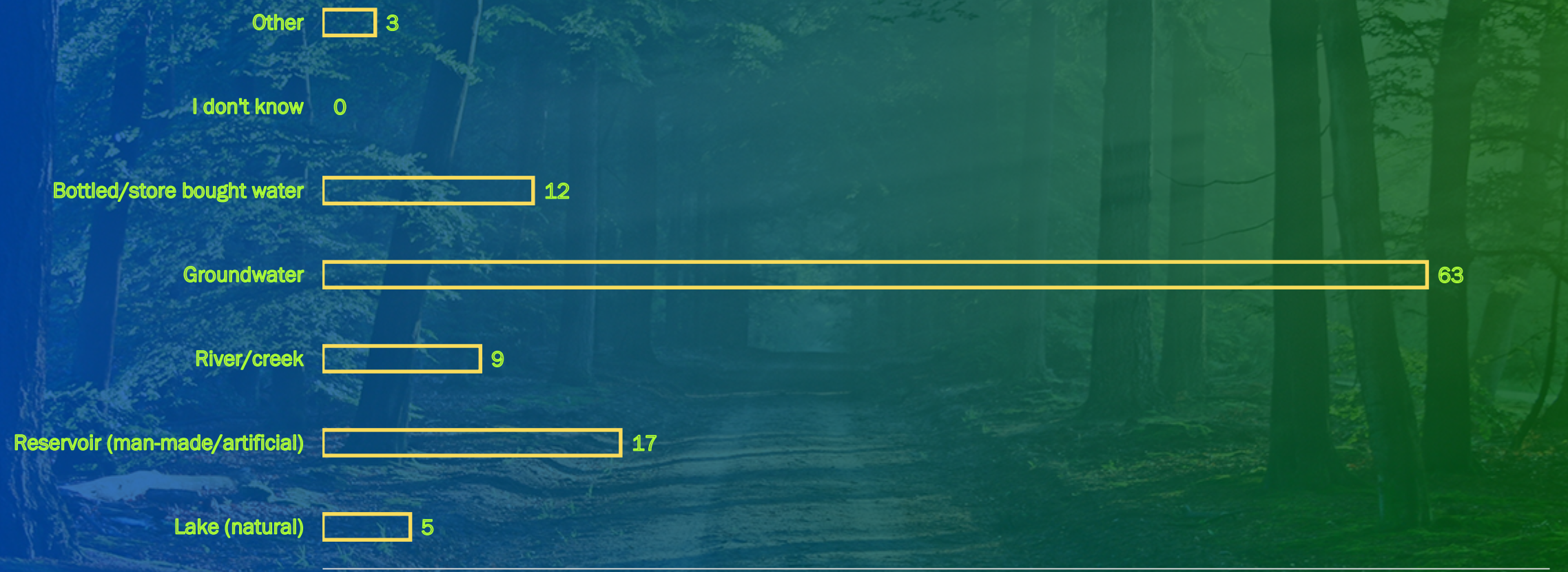


Individual Survey Findings

Targeted individuals who rely on a private source of water on their property (e.g., dug out or well).



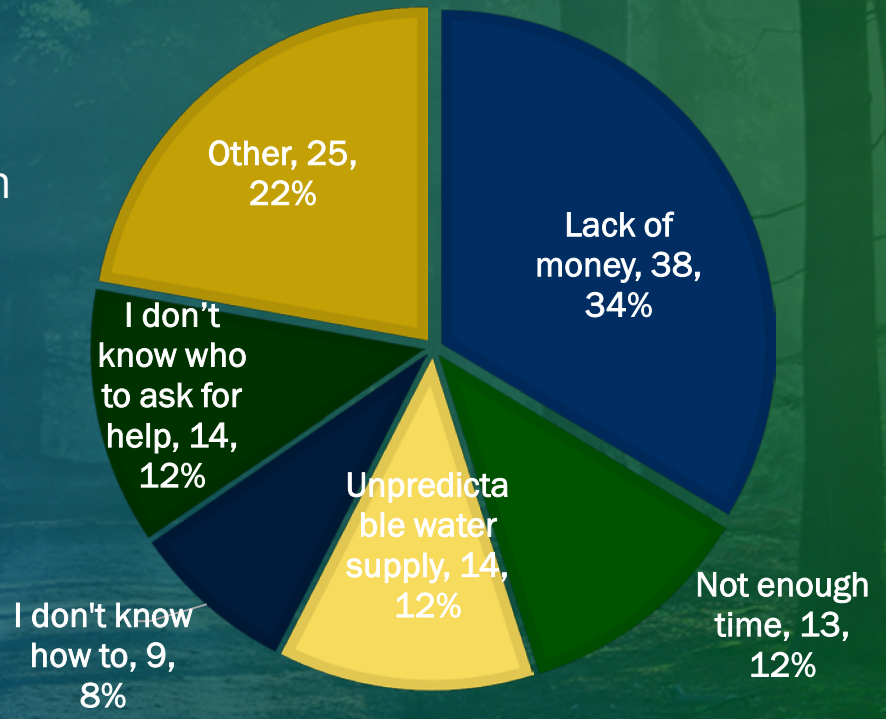
Sources


Other
3
I don't know
0
Bottled/store bought water
12
Groundwater
63
River/creek
9
Reservoir (man-made/artificial)
17
Lake (natural)
5
0
10
20
30
40
50
60
70

Contamination Sources

Barriers

- Lack of money is the main barrier preventing them from protecting their drinking water source.
- Others were unpredictable water supply and not knowing to ask for help.



Lacking Information and Resources

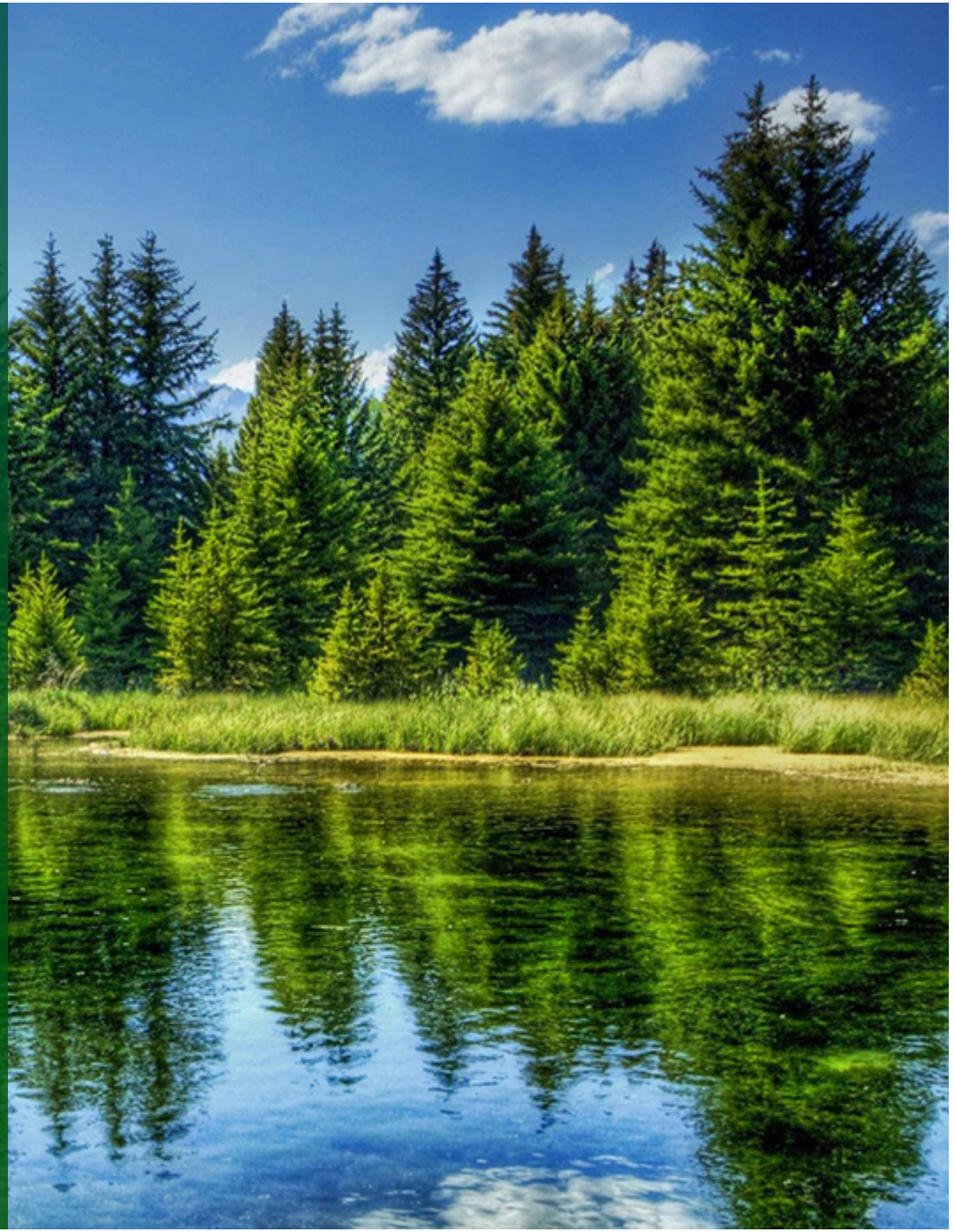
- access to information, data, equipment, and technology
- awareness about the importance of protecting drinking water sources among individuals
- resources and support (e.g., grants, funding, free testing)
- others: upstream water monitoring, regulating harmful development

Conclusions

- Lack of money and unpredictable water supply is viewed as the main barrier to its protection.
- Data collection, information, and monitoring of the source and exercising greater restrictions on harmful upstream activities is needed.
- Creating awareness about the importance of SWP, the watershed, and having water tested has to be better promoted.

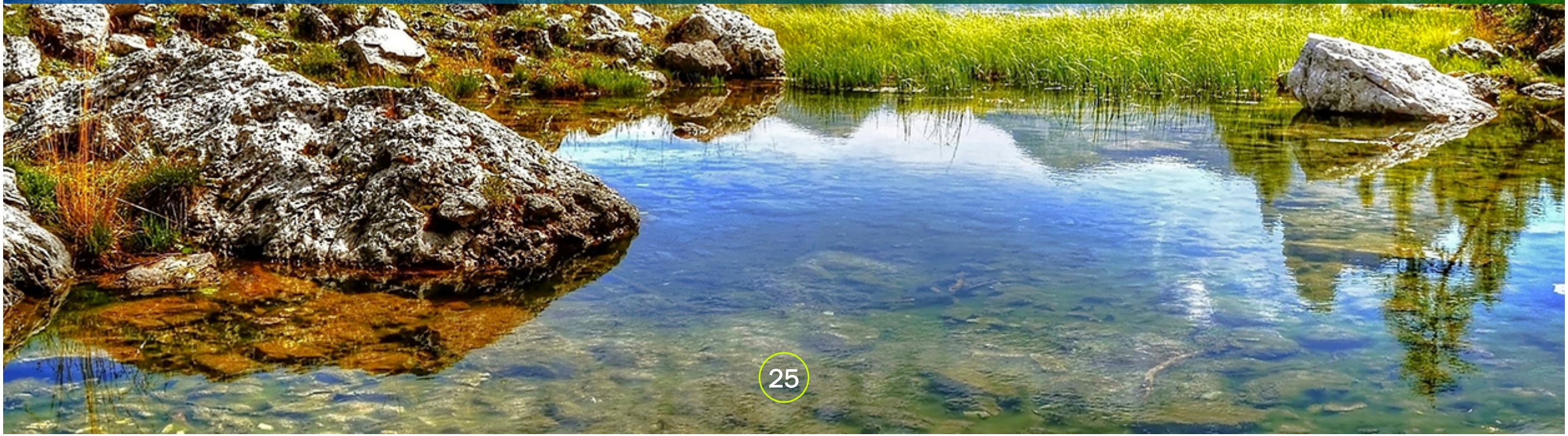
Best Practices

- ensuring coordinated data collection, information-sharing, and monitoring
- providing access to equipment and technology to undertake drinking water protection
- collaborating with important partners in the SWP area (e.g., municipalities, WPACs, academia)

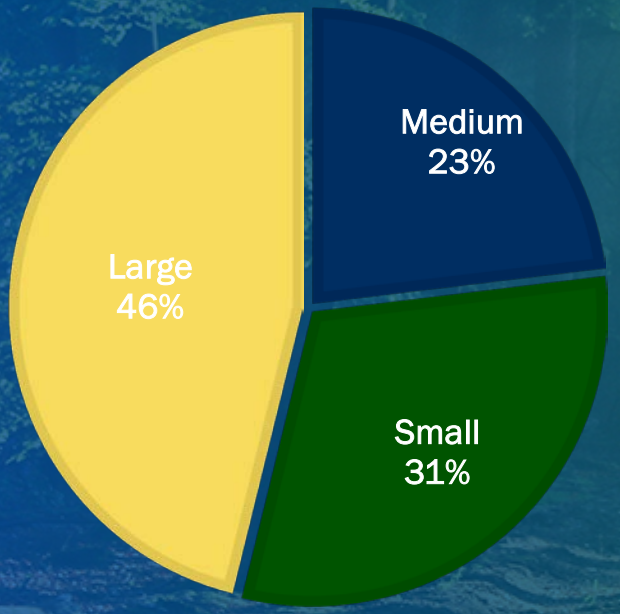


Drinking Water Provider Questionnaire

Targeted organizations that provide drinking water to various communities.



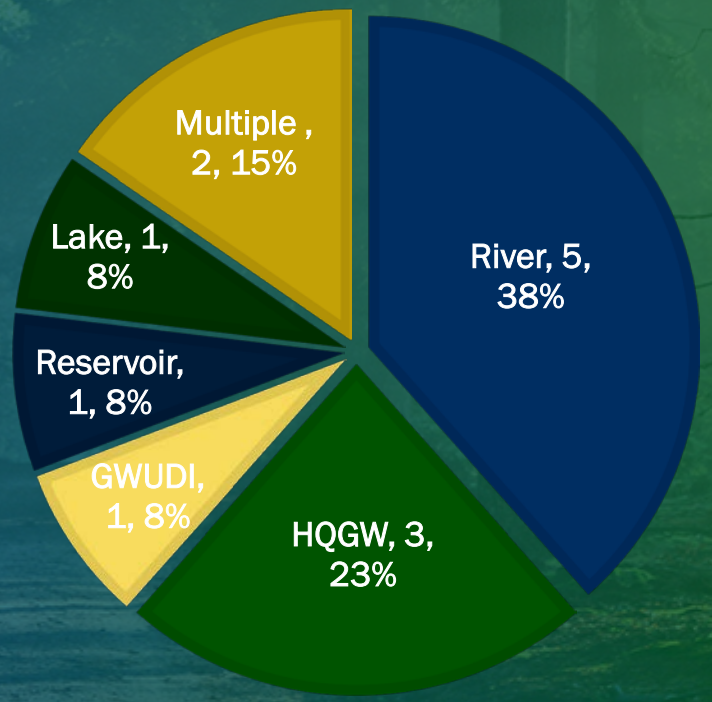
Treatment System and Population



Drinking Water Provider	Population
Town of Hardisty	554
Town of Sedgewick	850
Town of Milk River	1,070
Town of Grimshaw	2,600
Town of Sundre	3,000
Aspen Regional Water Services Commission	4,500
County of Lac La Biche	12,000
Town of Banff	25,000
Newell Regional Services Corporation	26,000
Regional Municipality of Wood Buffalo	84,000
City of Red Deer	130,620
City of Edmonton	800,000
City of Calgary	1,239,220

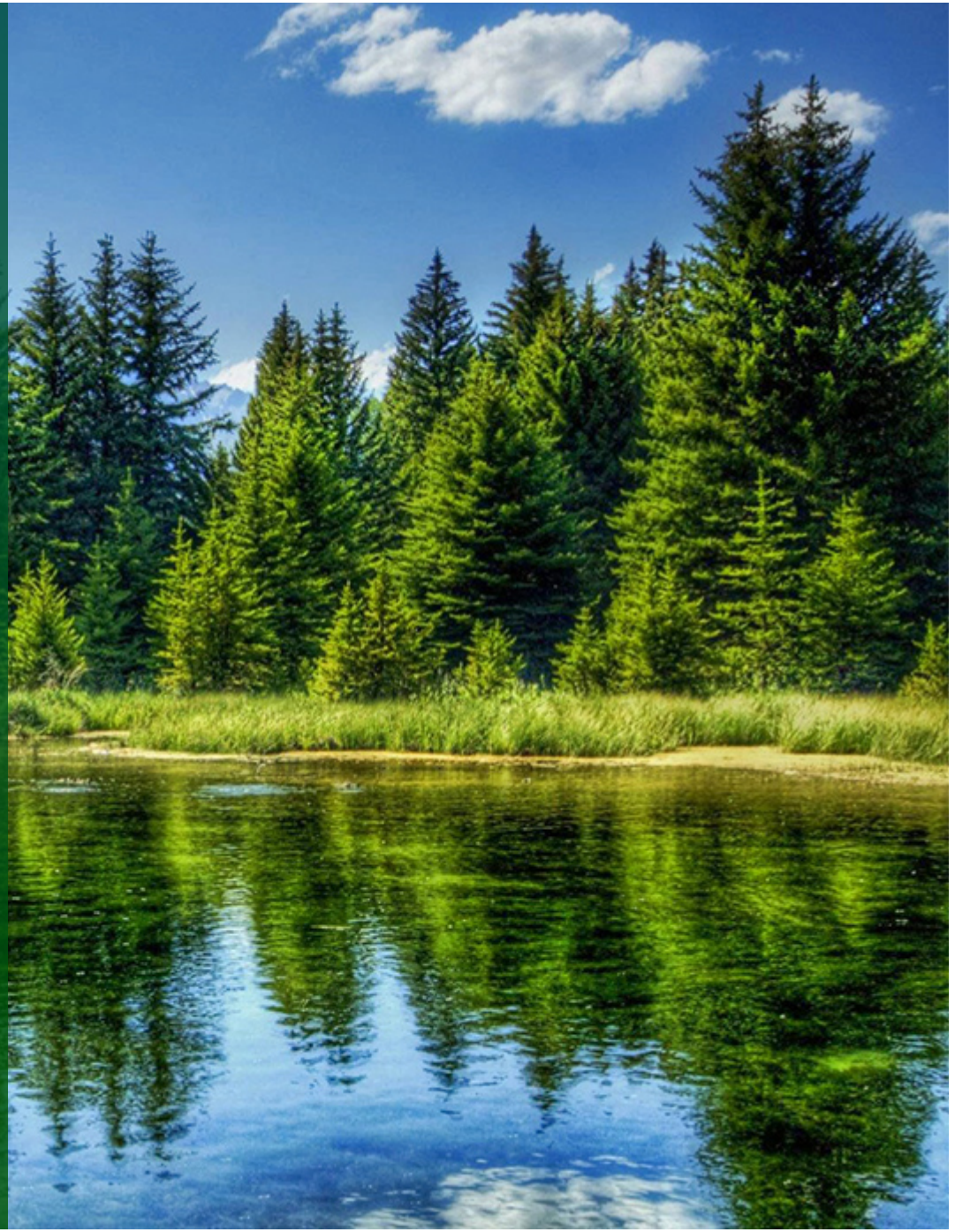
Sources

- Drinking water providers in urban areas rely predominantly on rivers
- Smaller, rural areas depend on HQGW
- Fewer drinking water providers rely on lakes and reservoirs



Risks

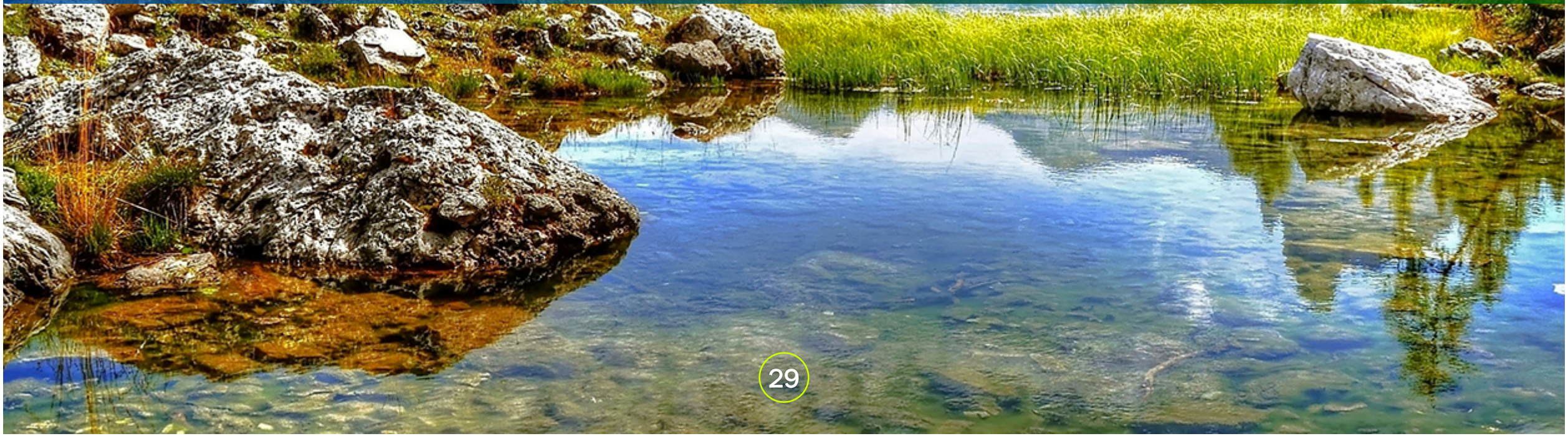
- lower water levels
- algal blooms
- aquatic Invasive Species
- drought and floods
- stormwater
- oil and gas activities
- well failure
- lack of funding for upgrades
- upstream activities
- uninformed public
- lack of monitoring
- insufficient data and information



Barriers

Several barriers were noted and varied from one community to the next.

- data collection, information, and monitoring
- development, regulatory, and enforcement
- collaboration and engagement
- resources and training
- governance
- environmental influences

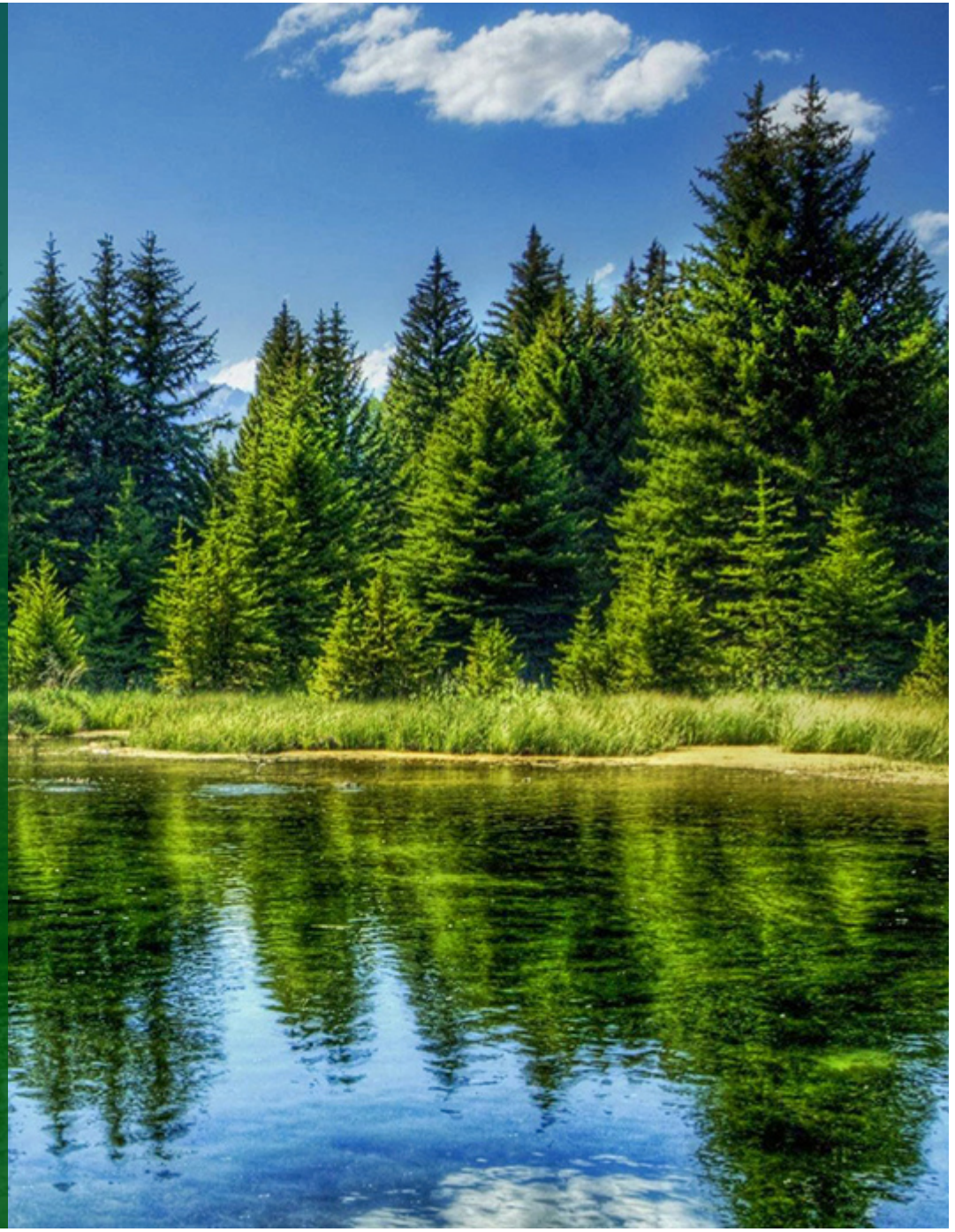


Conclusions

- disconnect between SWP plans and Drinking Water Safety Plan development, implementation, and monitoring
- restricted ability to influence upstream activities
- integration of watershed/sub-regional, SWP, and DWSP initiatives with other land and water plans and vice-versa remains unclear

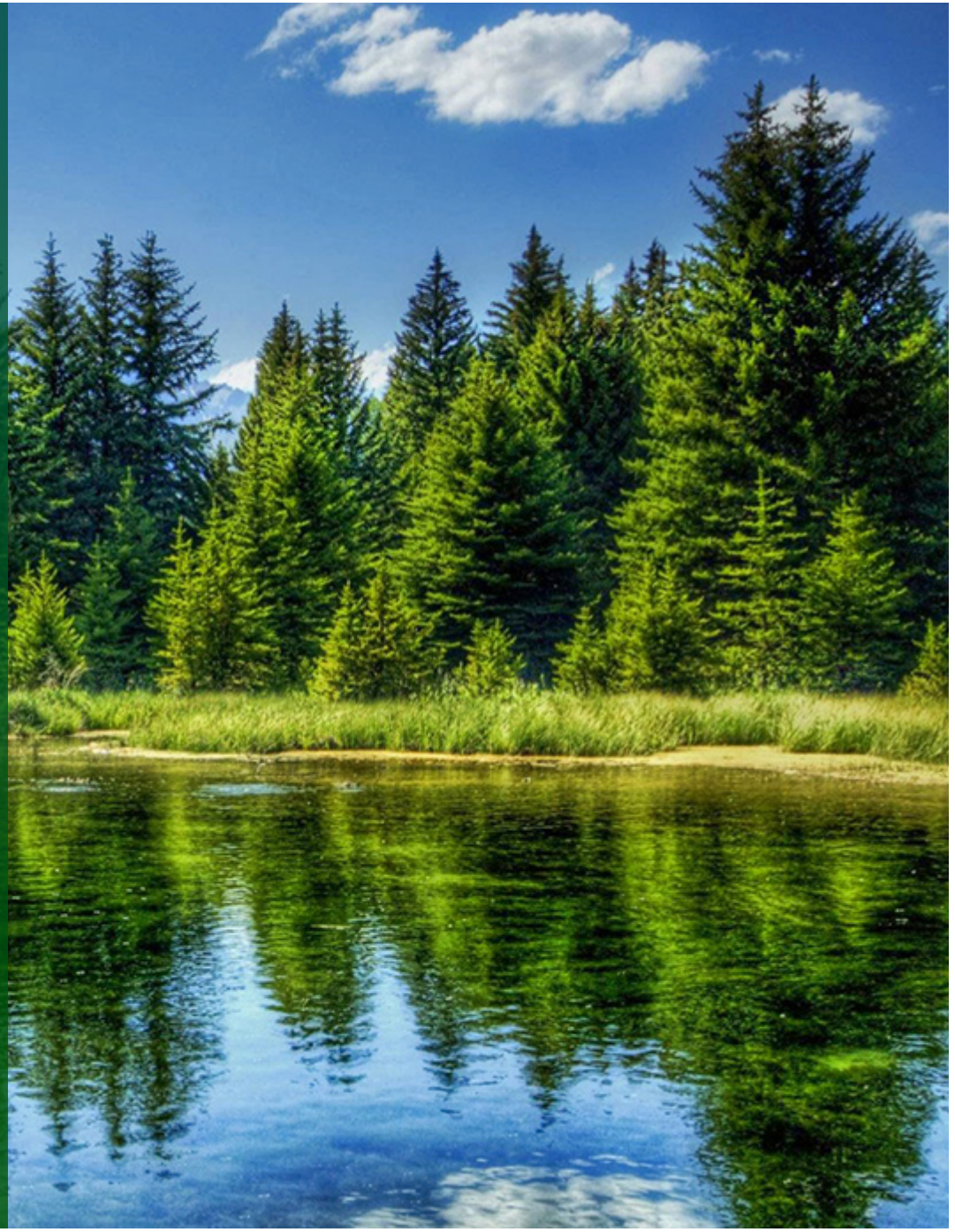
Best Practices

- Undertaking capital projects to ensure the source is proactively protected (e.g., switching from a diesel to a gas emergency generator).
- Implementing regulations that require setbacks from water bodies for various activities or structures that could adversely affect water quality.
- Collaborating with key organizations in the SWP area such as WPACs, WSGs, municipalities, non-profits, research institutions and academia.



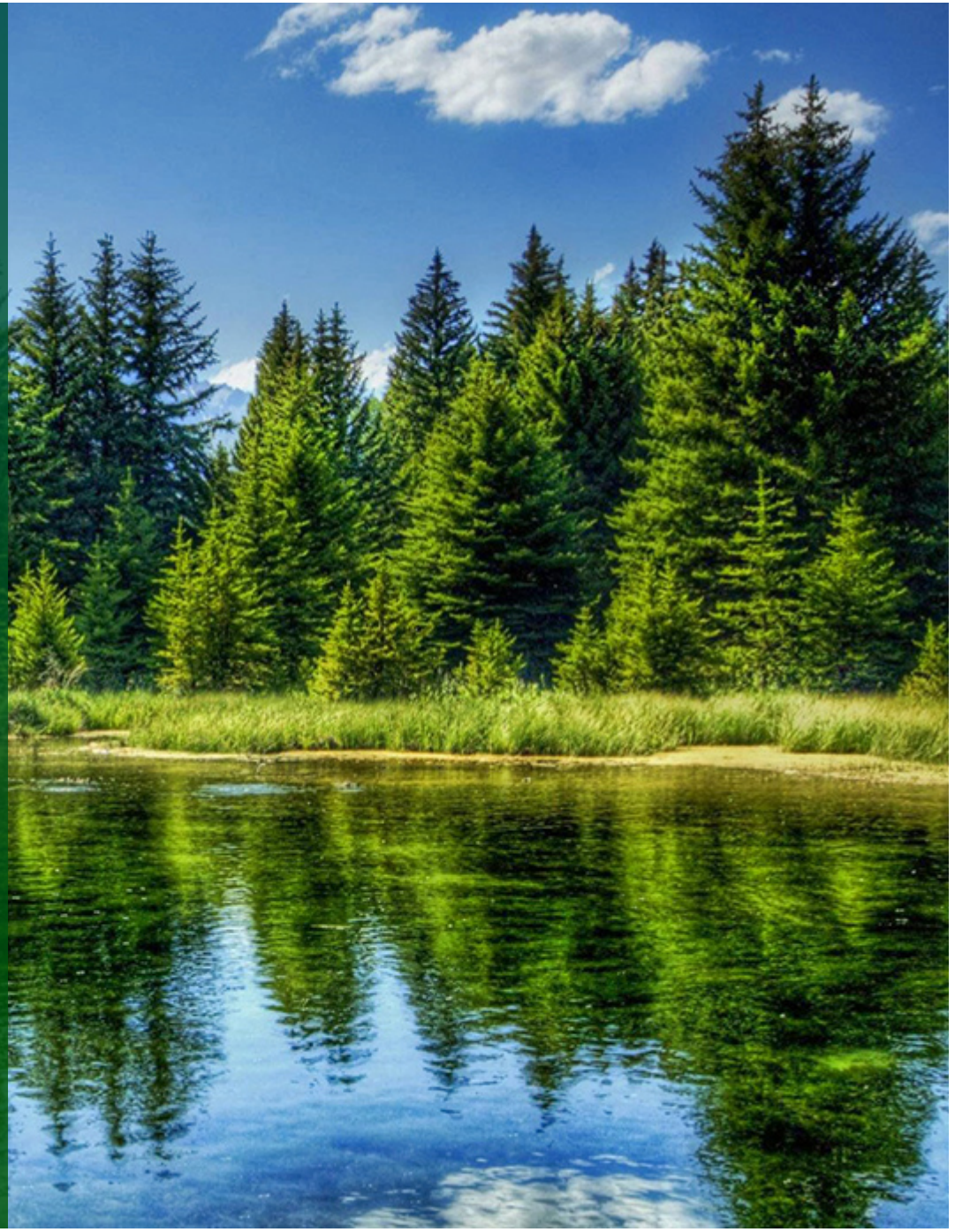
Literature Review

- few SWP plans in Alberta; mostly municipal and sub-regional/watershed level
- target audiences for SWP: waterworks operators, municipalities, and residents
- abundance of provincial SWP guidance documents, programs, and plans
- greater focus on water quality than quantity



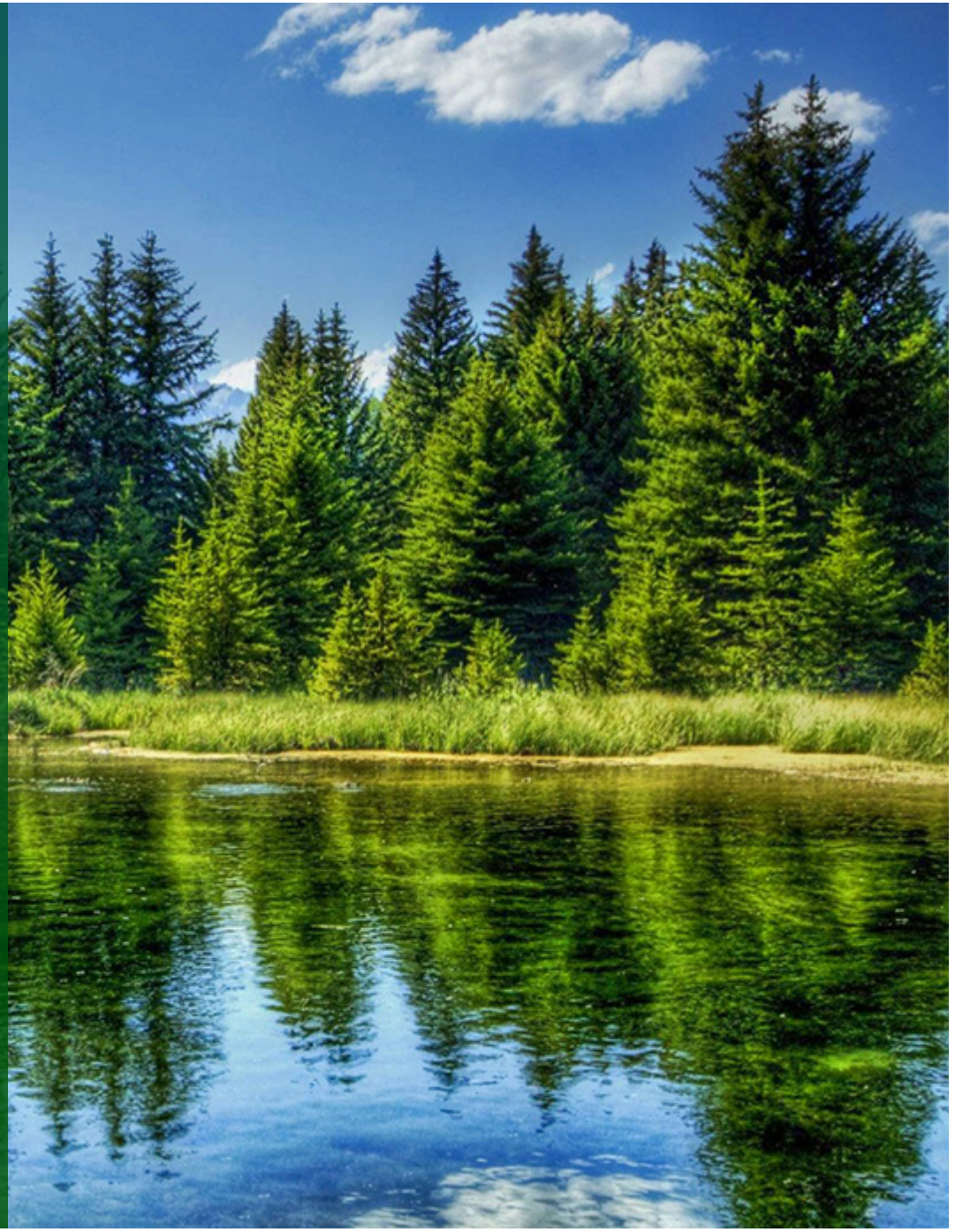
Continued

- more information available on protecting surface water sources than groundwater sources
- unclear how sub-regional/watershed level plans integrate with municipal, regional, and provincial initiatives
- insufficient data, monitoring, and tools available; existing tools focus on surface water sources
- most best management practices focus on crop and livestock producers



Jurisdictional Scan

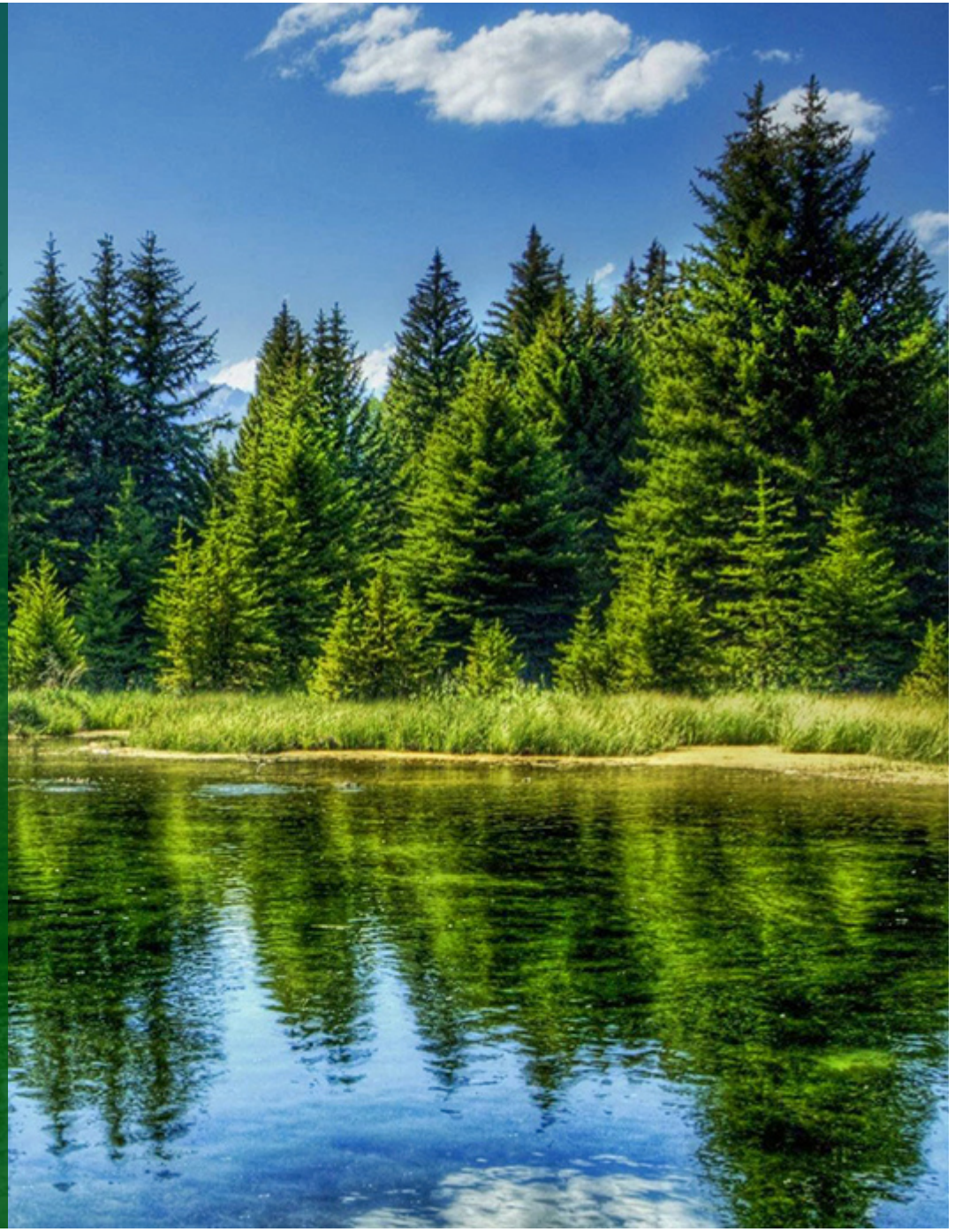
- Consultant contracted to help the team with a jurisdictional scan of SWP approaches and risk management models in other places.
- Places to be looked at in detail: British Columbia, Colorado, Australia, and California.
- Topics to be examined and compared with Alberta: drivers, SWP lead, tools and resources, BMPs, managing upstream and out of jurisdiction challenges, monitoring success, working with Indigenous communities, among others.



Guidance Document

- The team is drafting its guidance document. So far the main steps in the SWP process are as follows:
  - Step 1: Involve key groups and create a vision
  - Step 2: Characterize your watershed
  - Step 3: Set program goals
  - Step 4: Develop an action plan
  - Step 5: Implement the action plan
  - Step 6: Evaluate and revise periodically

- Relevant tools, resources, examples, best practices, and case studies will be included in the guidance document for public and private organizations and individuals.



Next Steps

Complete jurisdictional scan, continue to analyze data, and finalize guidance document with best practices

THANK YOU!

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Questions?