



Preserving Our Lifeline

To contact the Bow River Basin Council, call 403-268-4597
Visit: www.brbc.ab.ca

Bow Basin Watershed Management Plan Implementation Report 2010

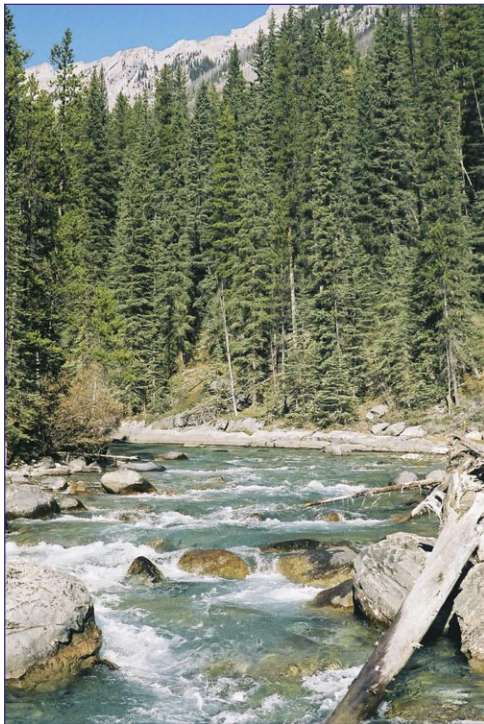
The Bow River is 623 kilometres in length. It begins at Bow Glacier high in the Rocky Mountains and

converges with the Oldman River at Grassy Lake on the prairie to form the South Saskatchewan River. The Bow, Oldman and Red Deer rivers are the three main tributaries of the South Saskatchewan River.

The most densely populated part of Alberta draws water from the Bow River for municipal, rangeland, irrigation and industrial uses. People from around the world appreciate and enjoy the spectacular Bow River,

its national parks and trout fishery. As residents of the basin, we hold the responsibility of watershed stewardship for this global treasure.

The Bow River through Calgary



Upper Bow River

Confluence with Oldman



"What makes a river so restful to people is that it doesn't have any doubt - it is sure to get where it is going and it doesn't want to go anywhere else." Hal Boyle



The Bow River Basin Council (BRBC) works because, like the river it pledged to protect, the organization is an ever-changing, adaptable entity that operates within a well-described framework.

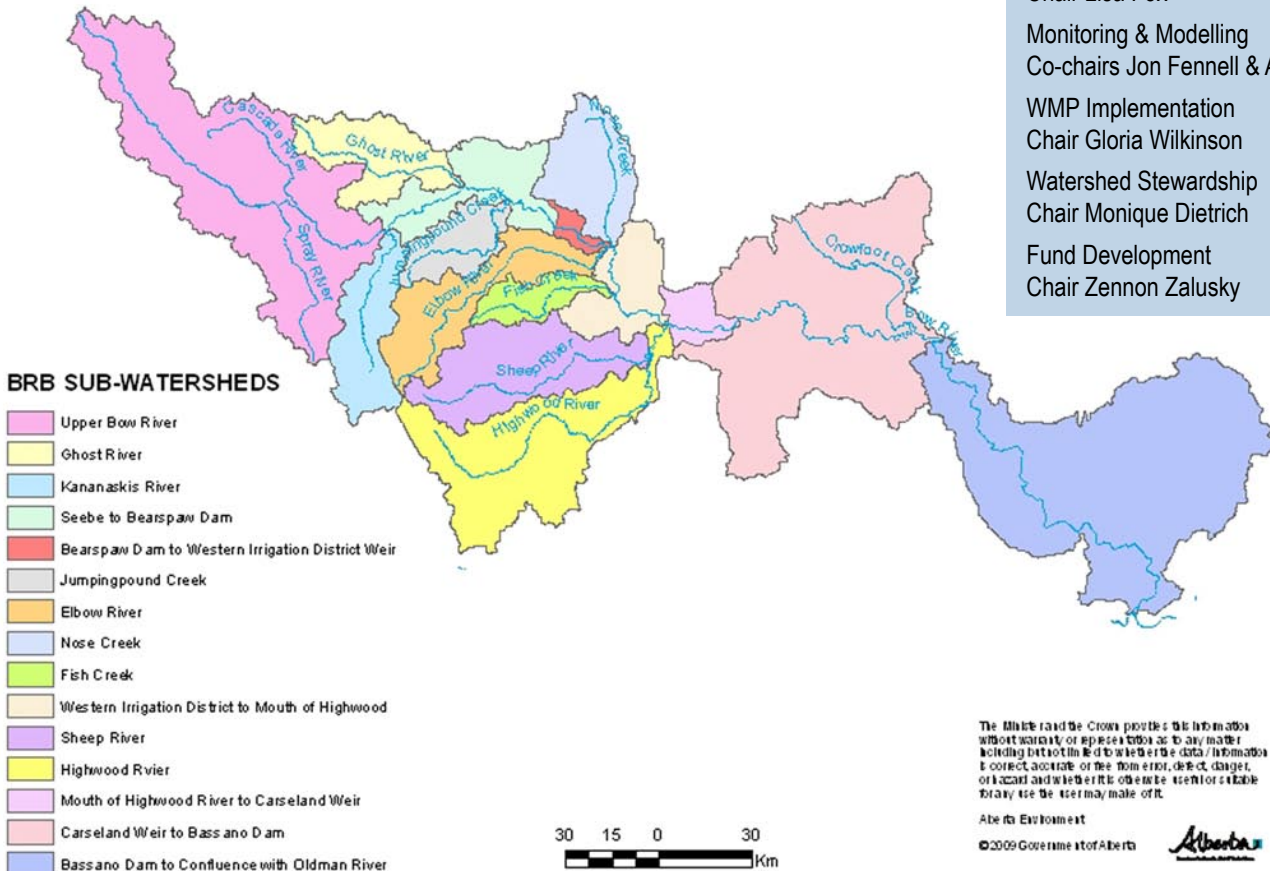
The vision of the BRBC is ‘To be one of the best managed watersheds in the world.’ It is critical for observers to understand that the BRBC is not a governing authority or regulatory body. It is a collaboration of stakeholders that rely upon and appreciate the Bow River and what it does for us and what it means to us.

Therefore, although the Bow Basin Watershed Management Plan (BBWMP) is a major initiative attributed to the BRBC, it is the product of the stakeholders and it is up to the stakeholders to make it a reality.

This report will give everyone an opportunity to see how well this process works one short year after the stakeholders signed and cemented their commitment to the BBWMP.

Non-profit - Academia - Regulatory - Commercial - Industrial - Municipal - Individual Public Members

Map of the Bow River watershed showing the sub basins



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What is the BBWMP?

The BBWMP is our society giving back to the Bow River. All the stakeholders brought their needs and desires to the table, examined them through the eye of science and created a plan to preserve the water quality of the river. Preserving and improving water quality in the river may seem a narrow focus, but it is Phase One. Each aspect of protecting the river - water quality, water quantity, alluvial aquifer preservation, headwaters protection and instream flow requirements - deserves at least the same amount of careful attention.

As it is, there are 61 recommendations in the BBWMP that aim to protect or improve Bow River water quality now and into the future.

The BRBC cannot stress enough that water management stakeholders in the Bow Basin will find the BBWMP a very useful guidebook, full of relevant science-based information, but they will not find a prescription of how or what they can implement within their organizations.

Here is how some organizations started down the road “to the best managed watershed in the world.”



BRBC Fosters Collaboration

The most important function of the BRBC is how it fosters working relationships between organizations and people around the topic of watershed protection. An evolution of sorts has taken place in Alberta over the past decade or more regarding water resource management.

During this evolution, the BRBC grew to its present day form and along the way it brought together like-minded people to accomplish many things.

The BBWMP is a culmination, a beginning and, for some stakeholders, it is what brought them together to accomplish greater things. One case in point is Nose Creek Watershed Partnership and the City of Airdrie. Airdrie now consults the “Nose Creek Watershed Plan as a guideline for all new developments.”

In 2009, a new residential development, Williamstown, was the first Airdrie development to follow the guidelines during construction.

High in the Bow watershed where the snows and glaciers that provide much of the river’s water accumulate and percolate through the Rocky Mountains, a collaborative approach spawned the Bow

Corridor Ecosystem Advisory Group (BCEAG). This group brings together federal, provincial, municipal and district governments for a common cause. Parks Canada, the towns of Banff and Canmore,



Calgary Weir Committee 2005 portaging the weir.

the Municipal District of Bighorn and Alberta Parks and Recreation – Kananaskis Country and Bow Valley Provincial Park – make up this team. In their jurisdiction are some of the most hydrologically important lands for the watershed. This is the headwaters, most water productive part of the watershed, and, of course, up stream from every other water user in the basin. The BRBC will never claim one part of the river is more important than another.

Indeed, the part of the river that you personally impact or can care for is the most important part of the river for you. If you can pick up garbage from the bank while out for a Sunday stroll or join a watershed stewardship group that cares for the tributary in your area, you are doing exactly what you need to do for the Bow River.

The BCEAG is a partnership worth mentioning here because it creates a valuable network of organizations working to protect the source waters of the Bow River.

Further south, the Town of Black Diamond reached out to the federal Department of Fisheries & Oceans and Alberta Environment and restored a section of the Sheep River bank by working together.

The research and monitoring taking place in the basin is generally a collaborative effort among stakeholders such as the City of Calgary, University of Calgary, the irrigation districts, Alberta Environment, Sustainable Resource Development and Fisheries and Oceans to mention a few.

If you think about it, it makes complete sense that efforts to preserve, protect and improve the State of the Bow River Basin must be a joint effort by all residents of the basin. That’s the role of the BRBC; to make this happen.

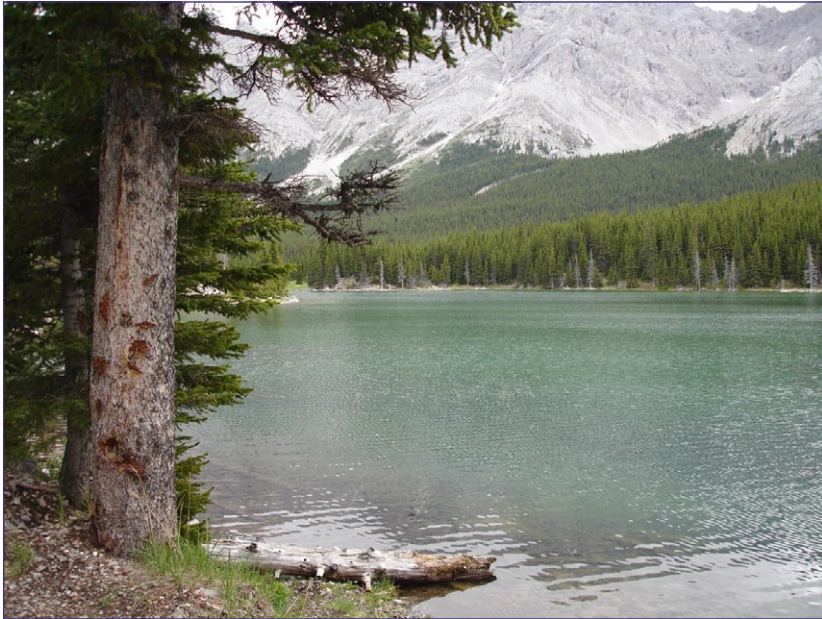
Beginning the change process

When it comes to who is best equipped to institute change on the landscape, the decision-making powers of local municipalities comes to the forefront. A lot of Alberta land falls under municipal jurisdiction. Whether the municipality is densely populated Calgary or sparsely populated M.D. of Bighorn, the culture of watershed protection must start where the decisions get made.

Decision-making can be very different in Calgary with one million people, Brooks with about 14,000 residents or the M.D. of Bighorn for Hamlets such as Lac Des Arcs. Alberta's open lands vary from mountainous forest in federal parks to rangeland on the open prairie. Conditions are different for riparian setbacks, stormwater management, livestock management and



Bow River



Crossfield adopted water conservation by-laws; the City of Calgary incorporated “Greening the City” policies in the 2009 Municipal Development Plan and adopted per cent impervious surface as a core indicator of watershed health; Rocky View County instituted stormwater guidelines that encourage water reuse and the Town of Canmore instituted an aggressive Water Demand Action Plan that includes reducing system losses by replacing old water mains.

The point is that before the change on the landscape can happen, become the norm and the accepted practice, someone needs to write a policy, formulate a bylaw or create a plan that steers decision making toward protecting the water sources.

The BBWMP offers those decision makers some ideas, some connection to others making the same decisions and some solid science to inform decisions.

Elbow River

West Nose Creek

development regulations. Before any level of government can institute changes, it needs to look at what is already in place, what may be missing and what is relevant to its jurisdiction.

For instance, the City of Brooks created an Environmental Advisory Committee for just that purpose. It will make researched recommendations to council on environmental issues, “the first being water.”

When the BBWMP Steering Committee released the BBWMP, Alberta Sustainable Resource Development checked all its existing provincial policies to ensure consistency with the plan. AENV is incorporating the BBWMP Water Quality Objectives as part of its planning and approval processes. The MD of Foothills began drafting an Industrial Area Structure Plan for Hwy 2A corridor between Okotoks and High River to guide eco-industrial development. The Town of



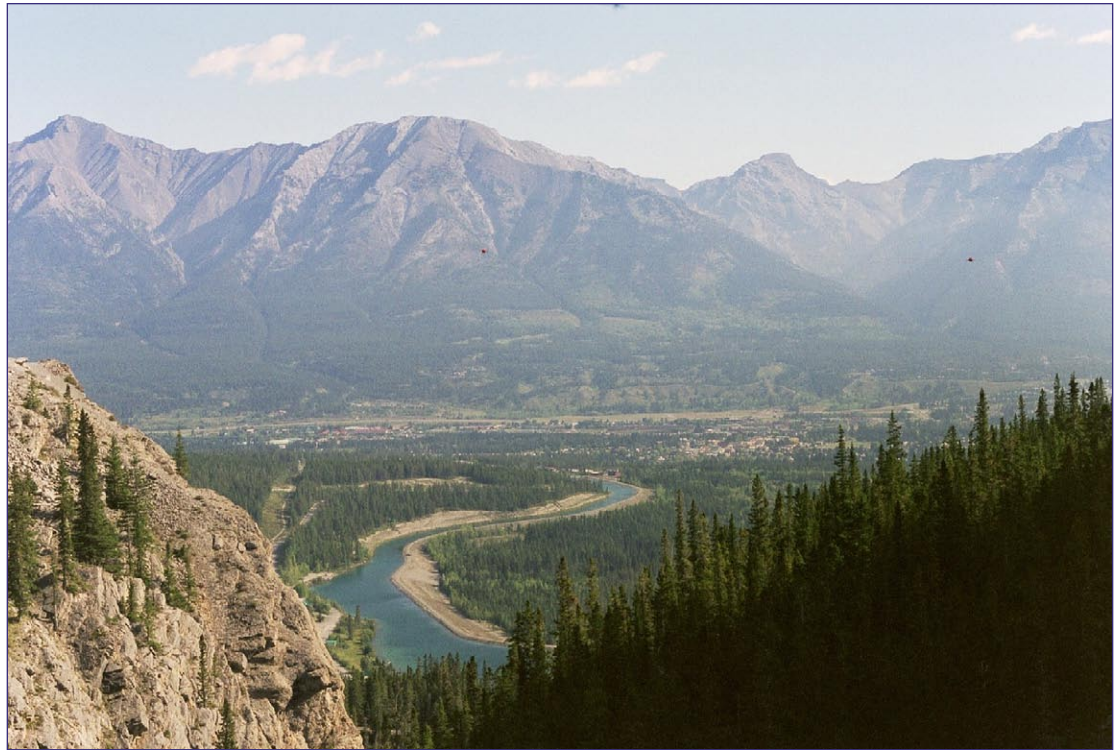
Conservation First

Water conservation in the Bow River basin is a fundamental necessity. Canadians in general use more water per capita compared to other parts of the world mostly because Canadians believe they live in a water rich country.

Water conservation is not just about using less from a household tap. It is reducing demand for water by implementing guidelines for xeriscaping and outdoor watering restrictions as the Town of Crossfield did.

Or it is fostering better choices in commercial water fixtures such as the Town of Banff introducing a community plan to conserve water that affects the water use of millions of people worldwide that visit Banff and eat in a restaurant that uses a high efficiency commercial dishwasher or stay in a hotel that has low water use toilets and showerheads. By the way, this initiative allowed Banff to put plans on hold to develop a new water well.

In some respects, this is the same type of goal the City of Calgary aims for with its Water Efficiency Plan. The public probably doesn't think about how expensive it is to treat water for drinking or wastewater before returning it to the natural environment, but those are very expensive activities for any municipality. Therefore, if the



Canmore - View from Reservoir 2

public can reduce its consumption at the tap and in the yard, municipalities can save tax dollars by postponing the need for new, upgraded or expanded water treatment facilities.

Water conservation also includes restoring old water infrastructure so that it doesn't leak or becomes a more efficient modern system. This is particularly prevalent in the Bow River's three irrigation districts – Western, Eastern and Bow River irrigation districts. The highly publicized 'sale of water' was actually a mutually beneficial infrastructure project that conserved water and allowed it to go to other purposes.

The Western Irrigation District replaced an old, inefficient open canal prone to leakage, evaporation and weed growth (aquatic weeds take their share of the water and greatly reduce efficiency) with a modern underground pipe system that doesn't allow leakage, evaporation and weed growth.

Finally, a healthy river system will store water in its banks and alluvial aquifers. This is nature's water conservation scheme. A healthy river has a lush riparian buffer full of native plants. This aspect of water conservation is illus-

trated by the efforts of the M.D. of Big Horn through its workshops with ranchers about streambank protection, range management, riparian grazing programs and best management practices for livestock in and around watercourses.

While it is important to turn off the tap while you brush your teeth, it is equally important to support the organizations that work in these other areas to conserve water on a grand scale.



Highly efficient drop tube irrigation pivot.

Starting With the Obvious

Urban sewage treatment plants are the easiest point source pollution targets. Canadians are very accustomed to pushing a lever and forgetting about what swirls away.

Anyone paying attention to these things may have heard about Victoria, BC or Montreal, Quebec where modern facilities sometimes are not part of the old city infrastructure.

Fortunately, Calgary had at its fingertips the most advanced and effective technology for wastewater treatment when

the city started to grow.

The new Pine Creek wastewater plant is a showcase of smart building and design. The facility also fosters cooperation with academic researchers to further improve urban wastewater technology. A research facility is part of the plant.

For smaller communities, regional systems share the financial and administrative burden of running high quality wastewater treatment systems.

The Town of Black Diamond and other regional water users are exploring how a re-



gional system can work for them.

Wastewater treatment is one of the key areas municipalities can continuously improve to reduce impact on Bow River water quality.

Point Source or Non-Point Source Pollution?

Point source pollution is... well, a source you can point at and say, "That's pollution." Typically a discharge point for a treatment plant or industrial facility.

Non-point source pollution comes from the landscape in the form of storm runoff where a large area may have many things that contribute to the content of the water entering a natural waterbody. It's very hard to point a finger and say, "It comes from there."

...Moving to the Less Obvious

In this first iteration of the BBWMP, stormwater management will play a large part in improving water quality in the Bow River and its tributaries. Alberta is fortunate to have some of the best wastewater treatment facilities in the world, but, until recent history, no one gave much thought to what stormwater might carry to the river.

However, outstanding urban growth around Calgary highlighted stormwater challenges particularly in the lower reaches of Nose Creek and the Western Headworks Canal. In 1999, AENV introduced stormwater quality treatment criteria for all new developments in the Calgary region.

After more than a decade of exploring stormwater sources, impacts and mitigation, it became clear to all involved that stormwater, both urban and rural, plays an important role in water quality in our surface water bodies. The Western Irrigation District (WID) established Stormwater Guidelines for all water entering its canal system in Jan. 2008.

There are several approaches to mitigating stormwater impact from the landscape.

In urban centers, slowing down the wa-

ter on its way to the river gives it time to drop out sediment and reduces erosion from peak storm flows. Calgary published a Stormwater Source Control Practice Handbook in 2008.

The handbook promotes on-site infiltration, reduction of impervious areas, detaining runoff and filtering road runoff. Rocky View County requires new developments to complete stormwater management plans.

A lot of the mechanisms for protecting water quality from urban impacts can be addressed through Low Impact Development plans and procedures. This is why Calgary, Airdrie and other municipalities implemented LID requirements in the development by-laws.

Williamstown in Airdrie was the first development in that community to build according to the new guidelines. On the rural landscape, different mechanisms apply such as manure management practices, crop spraying regulations and practices and livestock watering practices. The MD of Bighorn, a member of the BCEAG, holds workshops for land holders on livestock and range management and manure and spray setbacks from waterbodies.

One of the livestock management consid-



erations is off-stream watering systems to keep cattle away from the riparian area of surface waterbodies.

Healthy riparian areas greatly enhance the overall health of a waterbody. This relatively small area of land directly influenced by the presence of water can make or break the health of a waterbody. A lush, vegetated bank will filter runoff and slow it down on its way to the river or lake.

Therefore, much attention goes to protecting or restoring riparian areas. For instance, the M.D. of Foothills will soon have its own Riparian Setback Matrix Model that will guide any future development to protect the waterbodies within the municipal district.

With LID practices in place and healthy riparian areas along all the banks, water quality will benefit greatly.

Life Long Learning - What Does That Mean for a River?



Al Sosiak speaks at a BRBC Forum

Education is a primary focus for the BRBC. Through its quarterly forums, the BRBC offers educational opportunities to its members in the form of lectures, information sharing and topic exploration in a day-long session.

BRBC also produces a quarterly newsletter, periodic fact sheets and holds annual science forums for its members.

These initiatives function as a way to ensure Bow Basin stakeholders have the information they need to make good decisions or ask good questions for future educational opportunities.

Within the BBWMP, the most specific education initiative relates to pesticide application to keep these chemicals from entering surface waters during rain events. The municipalities within the Bow Basin have pesticide programs that ensure proper use of chemicals by staff as this is regulated by the provincial government.

For the public, the City of Calgary has a Healthy Yard program aimed at educating city residents about proper pesticide use to reduce contaminated runoff coming from city residential lots.

The MD of Foothills plans to create a guidebook for developers related to managing surface runoff. Education is not just a function of BRBC members educating various sectors of the public; it is also decision-makers in stakeholder organizations educating themselves or their staff so that protecting the river is all in a day's work.

An example of this is Alberta Sustainable Resource Development had a forest Hydrologist intern go over the plan and find where current department practices might need change. Now staff members responsible for operations and approvals make the plan recommendations “part of day-to-day practices.”

BRBC organized Headwaters conference



Gordon Foundation tour of Western Irrigation District



Continuous Improvement on a Watershed Scale

Today, we have a great deal of knowledge regarding natural water systems, human impacts on those systems and sustainable practices that we can adopt. However, knowledge is an elusive prey. The more we learn; the more we realize we need to learn.

Fortunately, Alberta seems to be full of curious people willing to explore, share and compare notes about what they are learning. This allows research in Alberta to be a collaborative effort particularly in areas where jurisdictions cross such as Alberta Sustainable Resources Development, Alberta Environment (AENV) and the City of Calgary taking on a project to monitor dissolved oxygen downstream of wastewater treatment plants. The BBWMP specifically mentions monitoring downstream of urban wastewater plants and adopting continuous improvement



Bow River near its mouth.

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as knowledge grows.

AENV also did a benthic invertebrate pilot study for the Bow River; which will publish soon and a pilot project on the Elbow that may extend to the entire basin.

Collaborative monitoring and research allows shared cost and man-hours to accumulate much data in all reaches of the river to detect possible cumulative impacts as well.

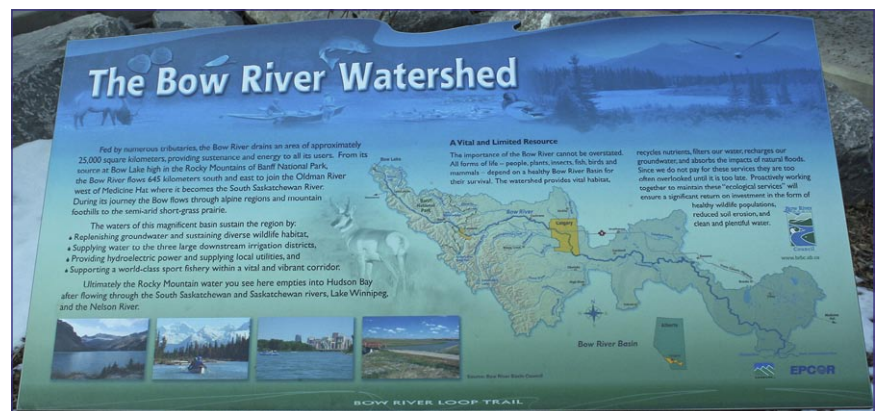
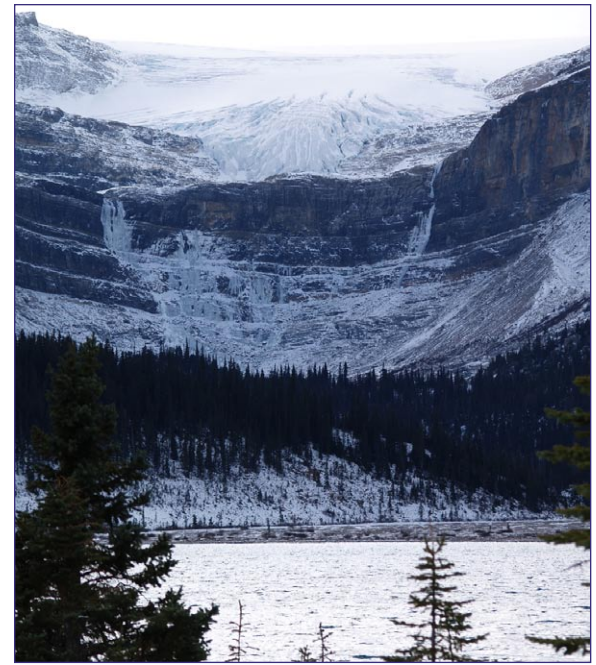
The research and monitoring recommendations within the BBWMP will change as the data points to new targets. Alberta Transportation made a commitment to basin wide monitoring and creation/adoption of new targets for wastewater systems when the data warrants.

Alberta Transportation also committed to facilitating public access to the data, which will increase basin-wide knowledge as operators from Lake Louise to Strathmore, can compare notes in real time.

While larger government entities certainly play a major role in providing funds, man-hours and administrative assistance to research and monitoring projects, any data gathered by stakeholders grows this knowledge base. A lot of monitoring takes place by municipalities, irrigation districts, non-profit organizations and watershed stewardship groups - most of it in conjunction with an educational institution.

The monitoring and research aspects of maintaining water quality are very important for the future.

Two places you can visit to watch the data grow are the BRBC website www.brbc.ab.ca and Alberta Water Portal <http://albertawater.com>



Interpretive sign beside Bow River in Canmore