

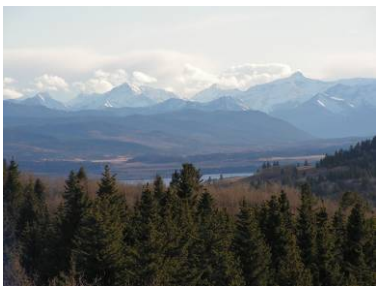

Guidance Document
for
Watershed Management Planning
in the
Bighill, Horse and Jumpingpound Creek Watersheds

Prepared for:
The Living in Watersheds Working Group

Prepared by:
Sandi Riemersma

April 2007

Palliser Environmental Services Ltd.

Acknowledgements

Palliser Environmental Services Ltd. would like to thank the members of the Living in Watersheds Working Group for their participation and direction in the Living in Watersheds Lecture Series and in the development of this guidance document.

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1.0 Background

The Jumpingpound, Bighill and Horse Creeks are all tributaries of the Bow River, entering the Bow near or at the Town of Cochrane. The watersheds are predominantly agricultural and acreage developments, with the lower reaches located in the Town of Cochrane and the upper reaches lying within the MD of Rocky View. Although the three creeks are mainly fed by rural watersheds, the Town of Cochrane is rapidly expanding and new country-residential developments, recreation and industrial activity are developing on the landscape.

In 2003, The Town of Cochrane formally entered in an annexation agreement with the Municipal District of Rocky View #44. One of the matters addressed in this agreement was Watershed Management Planning (section 14.4) that reads*: "Cochrane and Rocky View jointly may encourage existing or future residents/landowners organizations to promote watershed management planning for the Big Hill Creek watershed area and Jumping pound Creek".*

Within the Annexation Agreement, the municipalities included jointly managed initiatives that would consider watershed management in the Jumpingpound and Bighill Creek watersheds. Recognizing that the people living and working in the watersheds were key to addressing the main concerns, challenges and opportunities in the watershed, the Town of Cochrane and the MD of Rocky View initiated a program to build a common understanding of the watershed.

A small Working Group formed to identify initial steps that would bring people together to talk about the watersheds. The Working Group consisted of the Town of Cochrane, MD of Rocky View, Ranchers of Jumpingpound, landowners in the Bighill Creek and Horse Creek watersheds, Alberta Conservation Association and Cows and Fish. This group developed an approach to identify local concerns and increase awareness about watershed resources in the Bighill, Horse and Jumpingpound Creek watersheds.

A series of lectures were held addressing various topics such as riparian areas, groundwater, oil and gas activity and cumulative effects in the watershed from October 2006 through January 2007. A survey was conducted at each lecture to gain insight into what the public deemed most important about the watersheds and what the main concerns were regarding watershed management.

A watershed map was also generated that delineates the boundaries of the three watersheds. Background information regarding various watershed components such as fisheries, water quality, oil and gas activity and riparian health was compiled.

This document provides a set of guidelines that can be used to begin stewardship initiatives and watershed management planning in the Bighill, Horse and Jumpingpound Creek watersheds.

2.0 Approach

An integrated approach to watershed management planning in the Jumpingpound, Bighill and Horse Creek watersheds should be undertaken. Watershed issues should be prioritized by Bighill and Horse Creek watershed groups (proposed) and the Ranchers of the Jumpingpound and then brought to the public for confirmation and direction. A phased approach to the development of watershed management planning initiatives within each of the three watersheds should be taken according to priorities.

3.0 Watershed Management Planning Process

In 2003, the *Water for Life Strategy* was released by the Provincial government as a guidance document that outlines their commitment to safe secure drinking water supplies, healthy aquatic ecosystems and secure water supplies for a strong economy. Outlined in the *Strategy*, is a process of collaboration and partnerships to address future water management challenges.

Individuals, watershed groups and watershed planning and advisory councils (WPACs) are working to ensure the future quality of Alberta's watersheds. Watershed Management Planning is an essential tool that can bring together common goals and solutions to some of the challenges in watersheds. Watershed Management Plans can be developed by a group of individuals, organizations and agencies through consensus-based decision-making. Recommendations to address local issues are usually formed that can then lead to specific actions in the watershed.

In Alberta, the *Water Act* and the *Framework for Water Management Planning* (*Framework*) provide the legislative and policy context for the design and development of water (shed) management plans. Accordingly, the guiding principles outlined in the *Framework* should be applied throughout the planning process. The Watershed Management Plan should be:

- Comprehensive and integrated
- Proactive and predictable
- Responsive and flexible
- Consultative
- Fair
- Knowledge-based
- Timely and results oriented
- Accountable
- Clear and understandable

4.0 Watershed Management Plan Objectives

4.1 Overall Objectives

The overall objectives for Watershed Management Planning in the Jumpingpound, Bighill and Horse Creek watersheds is to have locally owned and driven Watershed Management Plans that have been developed by all interested stakeholders. A Watershed Management Plan can be used as a guidance document and decision support tool or as a regulatory document, depending on the stakeholders involved. The end product should be a living document that is amended and updated as new information becomes available and new challenges arise. It provides the framework for discussion and action.

4.2 Phase I (Proposed)

Invitations should be sent to stakeholders within each of the three watersheds inviting them to a meeting to discuss the potential for watershed management planning and the process involved. An invitation should be made to each of the stakeholder groups: acreage owners, ranchers, industry and government.

The process should include an explanation of the issues, what activities are occurring locally and the direction that should be taken to address the issues. Identifying leaders and determining interest in pursuing stewardship activities in the Bighill and Horse Creek watersheds should be priority.

4.3 Phase II (Proposed)

Phase II should focus on source water protection, including water supply, water quality and water licence transfers in the Jumpingpound, Bighill and Horse Creek watersheds. Phase II includes surface water and groundwater resources (e.g. aquifers and springs). This focus originates from the public's concern regarding headwater's management and water use.

Objective 1: To recommend source water protection measures in the Jumpingpound, Bighill and Horse Creek watersheds to ensure a quality resource for future generations.

Rationale: The Jumpingpound, Bighill and Horse Creek watersheds are the headwaters for many downstream rural and urban water users. Agricultural users rely on annual recharge of springs for crop and livestock production. Rural and urban users rely on continuous flow of creeks for household use.

Source water protection recommendations may be used by regulators, decision-makers and landowners when an action or proposed activity could impact the resource and/or the people relying on the resource.

4.3 Phase II (Proposed)

Phase II will be based on the outcomes of Phase I and will implement recommendations resulting from Phase I.

5.0 Geographic Description of the Area of Interest

Jumpingpound, Bighill and Horse Creeks are all tributaries of the Bow River. Jumpingpound Creek and Bighill Creek drain into the Bow at the Town of Cochrane, while Horse Creek joins just west of the Town of Cochrane. Jumpingpound Creek flows into the Bow from the south, while Bighill and Horse Creeks flow in from the north (Figure 1).

The Jumpingpound Creek is the largest tributary to the Bow River between the Ghost Dam and Bearspaw Dam, draining an area in the foothills approximately 606 km^2 (Table 1). It has many trout-bearing tributaries including Bateman, Coxhill, Pine and Sibbald creeks.

Bighill Creek flows southwest for 30 km before it joins the Bow River. The upper 14 km are ephemeral, flowing in the spring time or during periods of high rainfall only. Bighill Creek's main tributary, Bighill Springs, empties into Bighill Creek about 14 km upstream from the mouth, at Bighill Springs Provincial Park. Only 55% of the gross watershed area (176 km^2) drains to Bighill Creek (Table 1).

Horse Creek is an ephemeral creek that also flows into the Bow River from the northwest. It is the smallest of the three watersheds in the planning area, having a gross area of 86 km^2. Nearly one-third of the watershed area is considered non-effective or internally drained. This creek generally flows in springtime and maintains low or zero flows throughout the summer.

Table 1. Gross and effective watershed areas.[1]

Watershed	Gross Area km^2	Non-Effective Drainage Area km^2	Effective Drainage Area km^2
Jumpingpound Creek	605.79	-	605.79
Bighill Creek	175.57	79.03	96.54
Horse Creek	86.13	28.74	57.39

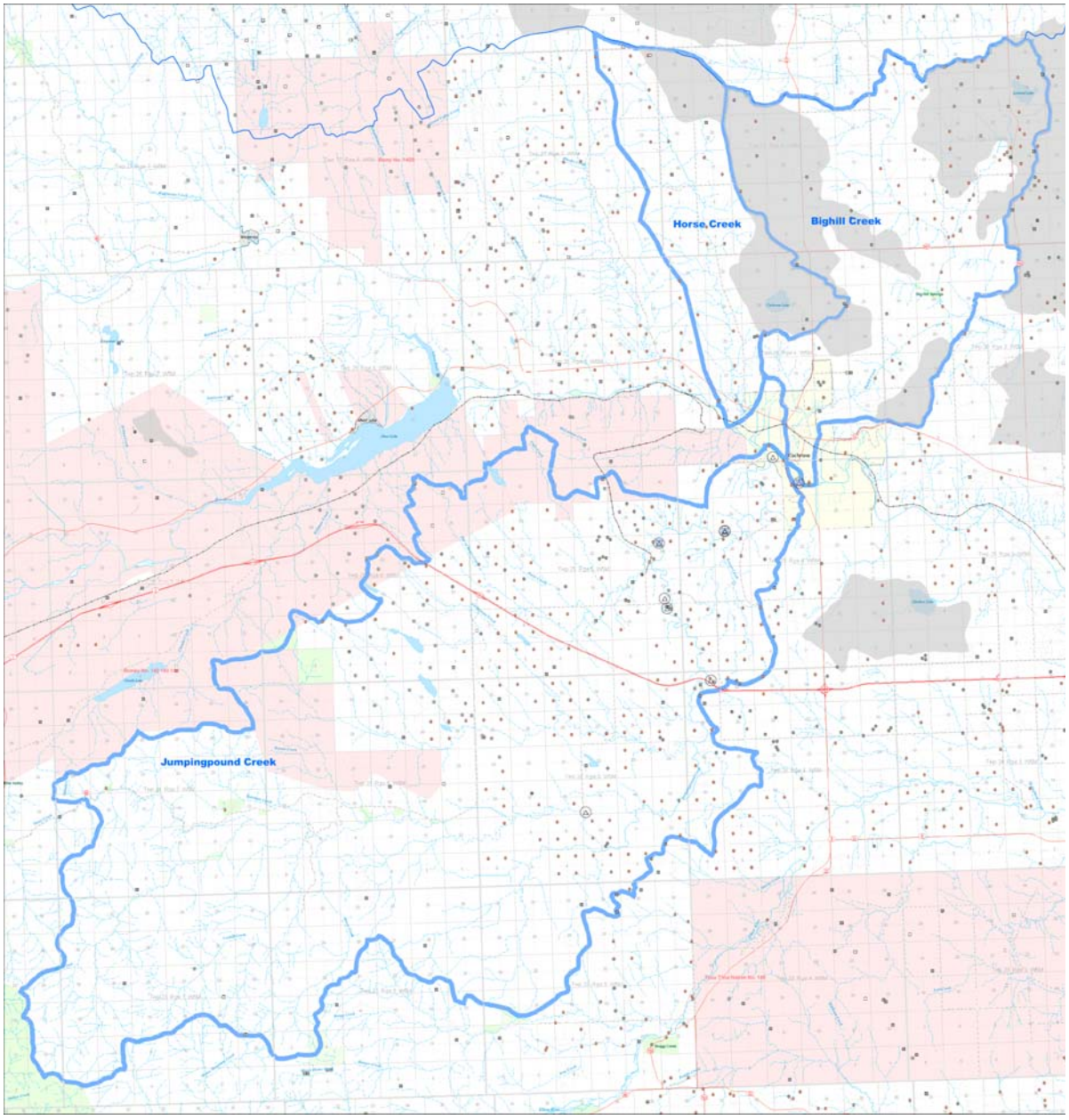

Figure 1. Jumpingpound, Bighill and Horse Creek watersheds.

[1] Based on current draft watershed map (SRD 2006).

6.0 Current Conditions

A detailed description of current conditions in the Jumpingpound, Bighill and Horse Creek Watersheds requires a thorough assessment of the status of water allocations, water supply, and the health of the aquatic environment. A preliminary investigation into these indicators was completed but it is not considered exhaustive.

Compilation of baseline information should be the first step in the planning process and should precede the development of any recommendations. A broad overview of current conditions in the watershed has been documented in the following paragraphs.

Water Supply and Allocation

Environment Canada maintains a discharge station on Jumpingpound Creek. Other flow monitoring programs have been limited in scale. Instantaneous discharge (m^3/s) was monitored on Jumpingpound Creek and Bighill Creek on one occasion for each of August 1995, 1996, and February 1996 and 1997 as part of a water quality monitoring program. Flows ranged from 0.25 to 3.07 m^3/s in Jumpingpound Creek and from 0.024 to 0.084 m^3/s in Bighill Creek at the mouth.

Water Quality

Water quality monitoring in Jumpingpound Creek was conducted occasionally from 1973 to 1998 at various locations in the watershed by Alberta Environment. During this period, sampling was conducted at the mouth of Jumpingpound from 1993-1997. A comparison of water quality data for selected parameters is given for Jumpingpound Creek and Bighill Creek at the mouth in Table 2. Note that this is not an exhaustive analysis but serves to provide some insight into water quality in the planning area. Generally, nutrients and sediment were higher in Bighill Creek compared to Jumpingpound Creek (Table 2). In 1996, a water-sampling study reported similar results and attributed the difference between the two creeks to either agricultural impacts and/or urban runoff (Sosiak 1996).

Table 2. Results of water quality sampling from July 1993 to February 1997 at the mouth of Jumpingpound Creek and Bighill Creek (mg L^{-1}). Guidelines are for the protection of aquatic life.

Parameter	Guidelines	N	Jumpingpound Creek			Bighill Creek	
			Mean	Range		Mean	Range
Dissolved Oxygen	5.0 (min.)	9	10.89	9.45-13.37		11.26	9.08-12.8
Total Phosphorus	0.05	9	0.012	0.038-0.2		0.042	0.015-0.094
Total Nitrogen	1.0	9	0.737	0.214-2.962		1.38	0.747-1.857
Total Suspended Solids	-	3	313	230-365		414	340-495

Historically, water quality in Bighill Creek has been a concern. A water treatment plant located near the mouth of Bighill Creek reportedly washes aluminum sulphate and sediment into the stream during spring resulting in at least one fish kill in 1969 (McDonald 1969). Alberta Forestry, Lands and Wildlife (1990) also reported the presence of creosote-related compounds in the Creek from a wood treatment plant; however, contaminant levels in fish and water samples were very low.

There is no water quality data presently available for the Horse Creek watershed.

Fisheries Resources

Monitoring of fisheries resources has been sporadic in the Jumpingpound Creek and Bighill Creek and no formal monitoring program was conducted in the Horse Creek watershed. Table 3

provides a summary of the different sport and forage fish that have been found in the Jumpingpound and Bighill Creeks. A summary of sampling events and results is provided in Appendix 6. Very limited information is available for the Horse Creek watershed. Horse Creek was thought historically to be a small, trout-bearing stream; however, recently only sucker and minnow species have been documented (Fernet 1990).

Table 3. Summary of fish species found in Jumpingpound Creek and Bighill Creek

COMMON NAME	Jumpingpound Creek	Bighill Creek
BROOK TROUT	x	x
BULL TROUT	x	
BROWN TROUT	x	x
BROOK STICKLEBACK	x	x
BURBOT	x	
CUTTHROAT TROUT X RAINBOW TROUT	x	
CUTTHROAT TROUT	x	
LAKE CHUB	x	x
LAKE TROUT	x	
LONGNOSE DACE	x	x
LONGNOSE SUCKER	x	x
MOUNTAIN SUCKER	x	x
MOUNTAIN WHITEFISH	x	x
PEARL DACE		
RAINBOW TROUT	x	x
TROUT-PERCH	x	
WHITE SUCKER	x	x

Riparian Areas

Little information is available on riparian areas in the three watersheds. There have been few formal and public riparian health inventories or assessments conducted. Those that have been completed are limited to the Jumpingpound Creek watershed. Information related to riparian health is associated with fish inventories and can be found in some of these fisheries reports[2]. Cows and Fish recently flew over the watersheds and captured aerial images that may be used to do a cursory riparian area assessment (Fall 2006). Alberta Environment also conducted an aerial videography project that included Jumpingpound, Bighill and Horse Creeks.

Oil and Gas Activity

Petro-Canada, Shell, Mystique Energy and Transcanada Pipelines are the four major oil and gas companies operating in the Jumpingpound, Bighill and Horse Creek watersheds. Currently, there are 54 wells in operation in the Jumpingpound Creek watershed, 11 in the Bighill Creek watershed and 4 in the Horse Creek watershed. There are about 34, 8 and 2 abandoned wells in the Jumpingpound, Bighill and Horse Creek watersheds, respectively. Although the number of proposed wells for the watersheds is unknown at this time, the increased activity witnessed in Alberta's oil and gas industry will likely be reflected in these watersheds as well.

[2] Norris (2003) provides a literature review of fisheries resources in the Jumpingpound Creek watershed. This is a very thorough review.

7.0 Description of Current Watershed Issues

- As tributaries of the Bow River, the watersheds are closed to new license applications under the *Water Act* as of 2006. Water transfers are being negotiated and in some cases this results in water transferred from one designated use to another (e.g. an agricultural designation on Livingstone Creek was transferred to a recreational use (golf course)).

- Water use and allocation in the three watersheds are a concern. In particular, Jumpingpound Creek historically has been considered an "underfit" stream, meaning that it is smaller now than in the past (Nowicki 1973). Water diversions from the creek are generally for the Shell Gas Plant, Springbank Irrigation District and agricultural users. In 2000, Trout Unlimited Canada asked for a moratorium on the issuance of any additional water licenses on the creek (Norris 2003).

- There is no local-level water management plan for the watersheds in use by Alberta Environment for deciding whether to approve a transfer of an allocation of water or issue an approval, preliminary certificate or licence.

- The rate of increase and aerial extent of residential housing developments in the three watersheds has local landowners concerned about the lack of information available regarding headwaters (e.g., groundwater, aquifers, springs and wetlands) and the watershed in general (e.g., water quality, riparian health and fisheries).

- There are numerous competing land uses (e.g., recreation, forestry, agriculture, oil and gas, and industrial/residential development) in the watersheds that are resulting in cumulative impacts in the watersheds, but there is no process available to address these impacts.

- Cumulative impacts in the watershed may lead to degradation or loss of riparian function and to poor management decisions that permanently impact the health of the Creeks (e.g., channelization).

8.0 Current Data Gaps and Information Requirements

- **Current Water Supply Inventory**
  - Surface water flows
  - Groundwater inventory (e.g., aquifers and springs)
  - Existing and drained wetlands inventory

- **Current and Projected Demands on the Water Resource**
  - Instream flow needs assessment (IFN)
  - Existing surface and groundwater licence commitments (# of Water Allocation licences, # of Registrations)
  - Population projections
  - Current and proposed land uses

- **Headwaters Access**
  - Recreation
  - Private vs. Public land

- **Riparian Health Inventory and Assessments**
  - Bighill Creek, Horse Creek and Jumpingpound Creek

- **Recent and Comprehensive Water Quality Information**

9.0 Public Consultation Process

9.1 Objectives of Public Consultation

The *Water Act* and *Framework for Water Management Planning* describe the role of Public Consultation as an essential part of the water (shed) management planning process. The objectives for public consultation in the Jumpingpound, Bighill and Horse Creek watersheds are to:

1) Provide people living and working in the watersheds an opportunity to understand the current state of natural resources (e.g., water quantity, water quality) and the challenges involved in managing these resources, and

2) Present people living and working in a watershed with the opportunity to provide valuable input into the watershed management planning process in the form of recommendations and their visions for future watershed management.

9.2 Recent Watershed Consultations

The MD of Rocky View and the Town of Cochrane hosted a Watershed Workshop in April 2006 to bring rural and urban residents together to identify common issues and concerns regarding watershed management. A survey was conducted to ask residents what they believed to be the most pressing issues in the watershed (Appendix A). As a result of this Workshop, a Working Group was struck to increase awareness of watershed issues in the Jumpingpound, Bighill and Horse Creek watersheds and further identify watershed issues.

A series of three Lectures were held in October 2006, December 2006 and January 2007. Topics included headwaters, riparian areas, fisheries, water quality, oil and gas activity and cumulative effects. At each Lecture, a short survey was distributed to obtain feedback on each topic and gather more input and insight on watershed issues. The results of these surveys are presented in Appendix B.

The Living in Watersheds Lecture Series also helped identify key stakeholders who would likely be actively engaged in the watershed management planning process.

9.3 Key Stakeholders

- Alberta Agriculture, Food and Rural Development
- Alberta Environment
- Alberta Conservation Association
- Alberta Infrastructure and Transportation
- Bow River Basin Council
- Branches to Banks
- Cochrane Environmental Action Coalition
- Cows and Fish
- Development Industry
- Ducks Unlimited Canada
- Landowners and Residents
- MD of Rocky View
- MD of Bighorn
- Mystique Energy
- Petro-Canada
- Ranchers of Jumpingpound
- Shell

- Sustainable Resource Development
- Town of Cochrane
- Trout Unlimited Canada
- Stoney Nation
- Western Sky Land Trust
- Other groups as identified.

9.4 Communication Strategy

A communication strategy will become part of the watershed management planning process. Communication will be achieved through media, newsletters, and integrated networks of people within organizations ensuring information is exchanged among all stakeholders and internally, within all agencies. First Nations will be invited to participate in the Watershed Management Planning process in a manner acceptable to them.

10.0 Partner Roles and Responsibilities - Proposed Structure

Watershed Partnership

The Watershed Partnership represents people living and working in the Jumpingpound, Bighill and Horse Creek watersheds who are concerned with land and water management. The Partnership should include people from Bighill, Horse and Jumpingpound Creek watersheds and other non-government agencies, industry and government representatives.

Mission: A meaningful partnership of interested stakeholders who will initiate watershed management planning to address priority issues impacting land and water resources in the Bighill, Horse and Jumpingpound Creek watersheds.

Vision: A collaborative watershed partnership that provides support to local watershed initiatives through information exchange, knowledge building and research programs that will facilitate a consistent approach to watershed management throughout the region.

Role: The Watershed Partnership will provide direction and assist with consistent messages within various watershed management planning initiatives that may be developed. Members of the Partnership may volunteer time and resources to the development of watershed management plans and to public consultation and outreach initiatives.

Membership: In addition to residents of Bighill, Horse and Jumpingpound Creeks, representation from appropriate departments in the Town of Cochrane, MD of Rocky View, MD of Bighorn, Federal Government (e.g., Fisheries and Oceans Canada), Provincial Government Departments (e.g., AENV, AAF, SRD) and Non-Government Organizations (e.g. Trout Unlimited Canada, Cows and Fish, Alberta Conservation Association, Bow River Basin Council, Ducks Unlimited Canada, Western Sky Land Trust and Alberta Municipalities Association) should be invited to join this process as key stakeholders, technical resources and advisors. These organizations may choose to donate meeting space, funding and other resources to the Partnership as required.

Meetings: Meetings should be held a minimum of four times per year, and more frequently as required.

Watershed Partners

There are three distinct watersheds in the Partnership, each with varying degrees of local participation and available supporting information and somewhat different watershed challenges.

Bighill and Horse Creek Watersheds

Bighill Creek and Horse Creek watersheds are characterized by a few large ranch operations and numerous acreage developments. Currently, there are no informal or formal watershed stewardship groups in either watershed, but there are a few people actively engaged in increasing watershed awareness among residents. Limited research is available on watershed health indicators (e.g., water quality, fisheries and riparian areas).

Ranchers of Jumpingpound

The Ranchers of Jumpingpound are a group of 7 ranches who have been operating in a non-structured fashion since 2003. Their original goals were focused mainly on riparian management. To date, the Ranchers of Jumpingpound have completed numerous best management practices (BMP) projects on individual ranches to achieve their goals.

Recently, the Ranchers of Jumpingpound have formally registered as a Society under the *Societies Act*. This group intends to complete 20 riparian health assessments with the Alberta Riparian Habitat Management Society (Cows and Fish) in 2007. They will also explore watershed management planning.

11.0 Links with Regional Strategies and other Plans

The planning process should reflect current legislation, policies, plans and objectives as outlined by:

- Legal and policy requirements of the *Water Act* and *Framework for Watershed Management Planning*
- Provincial *Water for Life: Alberta's Strategy for Sustainability*
- South Saskatchewan River Basin Water Management Plan
- Bow River Basin Council Water Management Plan – Setting Water Quality Objectives
- Existing water licenses and registrations for Traditional Agricultural Use will be respected.
- Town of Cochrane and MD of Rocky View Intermunicipal Development Plan
- Town of Cochrane and MD of Rocky View policy documents
- MD of Rocky View Growth Management Plan
- MD of Rocky View Municipal Development Plan
- Town of Cochrane Stormwater Management Study, March 2004, and as amended from time to time;
- Town of Cochrane Municipal Development Plan;
- Various Town of Cochrane Area Structure Plans and Area Redevelopment Plans;
- Town of Cochrane Land Use Bylaw No. 01/2004, as amended.

12.0 Next Steps

Lead Groups	Activity	Action	Timeline
Living in Watersheds Working Group	**Project Initiation**	Identify key stakeholders.	**May 2006- Apr 2007 (Complete)**
		Develop watershed maps for planning purposes.	
		Identify Watershed Concerns and establish common ground (Host Lecture Series).	
		Compile existing data summary and identify knowledge gaps.	
		Prioritize watershed issues and develop a Watershed Management Planning Guidance Document for Working Group review.	
		Define Partnership, Mission/Vision and Goals, Membership and Organizational Structure.	
Watershed Partnership	**Formation of a Watershed Stewardship Group(s) in Bighill and Horse Creek Watersheds**	Meet with individual landowner groups within each watershed (acreage owners/ranches).	**May 2007 – June 2007**
		Host meeting with all stakeholders in Bighill Creek watershed and with Horse Creek watershed separately.	**July 2007- Aug 2007**
		Encourage the formation of an informal watershed stewardship group with interested people in each watershed to address local issues and initiate stewardship activities. This may include projects (water quality monitoring, riparian health assessments, best management practices projects). Each watershed may choose to form a watershed stewardship group or the watersheds may combine effort in one group.	
		Determine interest in watershed management planning.	
Bighill/Horse Creek Watershed Group(s) (Proposed)	**Develop Program**	Develop a Terms of Reference within each watershed.	**Sep 2007 – Dec 2007**
		Access watershed stewardship group funding for each watershed.	**2007-2008**
		Initiate Stewardship Activities/Watershed Management Planning Initiatives.	**2008**
Ranchers of Jumpingpound	**Watershed Management Planning**	Ranchers of Jumpingpound to develop a Terms of Reference for a watershed management planning initiative.	**May 2007- Jun 2007**
		Initiate Watershed Management Plan.	**Jun 2007 – Apr 2008**

13.0 Literature Cited

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Appendix 2.
Living in Watershed's Lecture Series Objectives and Agendas

Living in Watersheds Workshop – Initiation Meeting

Camp Jubilee, Cochrane, AB, April 27, 2006 (7 pm to 9 pm)

Objective: To inform people living and working in watersheds about what we know about our watersheds and to identify areas where we can work together to achieve common goals.

Agenda

6:30 Doors Open – View Displays
7:00 Welcome and Introduction – Sandi Riemersma, Facilitator
7:10 Living in Watersheds – Sandi Riemersma
7:30 Understanding Agricultural Watersheds – Ken Lewis, Alberta Agriculture
8:00 Understanding Urban Watersheds – Paul Fesko, City of Calgary
8:30 Break – View Displays
8:45 Your Vision for the Future of Your Watershed – Open Discussion
9:15 Watershed Surveys – Hand in your survey to enter the Door Prize Draw!
9:30 Door Prize Draw and Evening Closed

Living in Watersheds Lecture Series I: "The Headwaters"

Jumpingpound Hall, October 30, 2006 (7 pm to 9 pm)

Objective: To share what we know and what we don't know about the headwaters of the Jumpingpound, Bighill and Horse Creek watersheds and to discuss the issues surrounding headwaters management.

Agenda

7:00 Welcome and Overview of Survey Results from April's Living in Watersheds Workshop - Sandi Riemersma (Facilitator)
7:15 Watershed Perspectives from the Town of Cochrane and MD of Rocky View - Lisa Fox - Town of Cochrane; Sheikh Ahmed – MD of Rocky View
7:30 Riparian – The Queen of the Headwaters - Lorne Fitch, Cows and Fish
8:15 Understanding Groundwater in the Headwaters of Rural Prairie Watersheds - Masaki Hayashi, University of Calgary
8:45 Discussion/ Questions - Wrap Up - Sandi Riemersma
9:00 Coffee-Displays

Living in Watersheds Lecture Series II: "Oil and Gas Activity in the Watershed"

Cochrane RancheHouse, December 19, 2006 (7 pm to 9 pm)

Objective: To share what we know about oil and gas activity in the Jumpingpound, Bighill and Horse Creek watersheds and to discuss how landowners can work effectively with industry.

Agenda

7:00 Welcome and Overview of Survey Results from Living in Watersheds Workshop I, Sandi Riemersma (Facilitator)
7:15 Oil and Gas Activity Introduction
7:30 Working in Watersheds with the Oil and Gas Industry – A Rancher's Perspective, John Cross (A7 Ranche)
8:30 Questions/Discussion – Wrap Up
8:45 Coffee

Living in Watersheds Lecture Series III: "Riparian Areas, Fisheries Resources and Cumulative Impacts on Watershed Resources"

Cochrane RancheHouse, January 24, 2007 (7 pm to 9:15 pm)

Objectives: To discuss resources in the watershed and cumulative impacts on those resources.

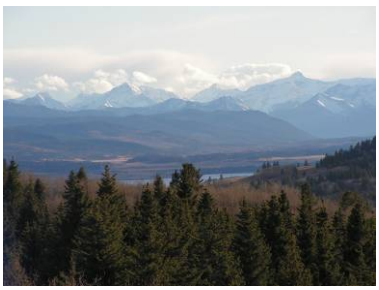
To identify the next step for the Living in Watershed's Working Team

Agenda

7:00 Welcome - Sandi Riemersma (Facilitator)
7:05 Riparian Health in the Jumpingpound, Bighill and Horse Creek watersheds – Amanda Bogen-Halawell, Cows and Fish
7:30 Fisheries Resources in the Jumpingpound, Bighill and Horse Creek watersheds – Alberta Conservation Association
7:50 Cumulative Impacts in the Jumpingpound, Bighill and Horse Creek watersheds – Brad Stelfox,
8:50 Discussion on Next Step for the Living in Watershed's Working Team – Sandi Riemersma

Appendix 3.
Summary of Input from Watershed Stakeholders, in Response to Surveys





Overview and Survey Results from the

Living in Watersheds Workshop, April 27, 2006

Camp Jubilee, Cochrane, Alberta

Sponsored by:

Town of Cochrane and the MD of Rocky View

Facilitated by:

Sandi Riemersma
Palliser Environmental Services Ltd.

Background

On April 27, 2006 a meeting was held in Cochrane, AB with local landowners and other stakeholders living and working in the Bighill Creek, Jumpingpound Creek and Horse Creek watersheds. The evening was sponsored by the Town of Cochrane and the MD of Rocky View with the intent to inform people about watersheds, build a common understanding of urban and agricultural watersheds and identify concerns and possible opportunities for future collaboration in watershed management. The evening was attended by 40 people. Sandi Riemersma, with Palliser Environmental Services Ltd., was contracted to facilitate this first meeting.

Methods

The agenda for the evening included a welcome and introduction, as well as three presentations: Living in Watersheds, Understanding Agricultural Watersheds, and Understanding Urban Watersheds presented by Sandi Riemersma, Ken Lewis (Alberta Agriculture, and Rural Development), and Paul Fesko (City of Calgary), respectively. During the break, those attending could view watershed maps, the Branches to Banks display, speak to Kelsey Spicer-Rawe (Cows and Fish) and Brian Meagher (Trout Unlimited), and view information from the Town of Cochrane and the MD of Rocky View. Following a brief break, a discussion entitled Your Vision for the Future of Your Watersheds was held. An open discussion progressed as people voiced their opinions on concerns and the steps needed to begin moving forward with watershed management. The discussion was captured on power point slides throughout the conversation. A survey followed to allow those who did not want to openly voice their thoughts an opportunity to be heard. Door prizes were used as incentive for returning the surveys. The meeting began at 7:00 pm and adjourned by 9:30, although many lingered afterwards to continue discussing watersheds.

Results

Attendance was very good considering the timing of the meeting. Some concurring events that were identified that may have prevented people from attending were the weather (a very beautiful spring day), the Flames hockey game and, in the agricultural community, calving and field preparation for seeding.

The results of the open discussion period are summarized in point form in Appendix A and the results of the 13 surveys that were returned are summarized in Appendix B.

Although there is varying opinion on how to work together, the common theme of the impact of development on the urban and rural landscape was clear. There is a desire to gather and pool existing information and to share that with urban and rural residents. There was a need for a consistent approach to water quality monitoring, riparian health and present and future land use management. The preservation of some landscapes was identified by both sides. There was a sense of frustration with understanding roles and responsibilities and a lack of control.

APPENDIX A

Summary of conversation held on April 27, 2006 at Camp Jubilee in Cochrane.

Culverts that prevent fish migration – Alberta Transportation – bridges vs culverts – approval process, cost influence this decision

Development on Jumping Pound – pool resources to make applications to talk about the impact of the development on rural landowners and the Town of Cochrane – impact on both communities (common goal)

Annexation agreements moving south, west and north – would be good to see how we can help one another

Draining of the wetlands – as natural filters, W of Airdrie, E of Calgary – inventories of what we have are being done in the Town of Cochrane and the MD of Rocky View – find out future plans

Are the WPAC and Watershed Groups working together? Only if WPAC receives request from individual groups

- Why wasn't more information presented in the State of the Watershed Report on watershed stewardship activities and monitoring results
- Better communication needed
- Time required to get information together and out to the public is quite slow
- Bow River Basin Council – not inclusive?
- Watershed Groups always welcome to attend Bow River Basin Council information Forums and to get involved

What is the one thing that people can do, without spending a lot of time, to help the watershed? Begin by looking in your own backyard, need to look beyond too and to be aware of the activity in your watershed

Baseline information is needed … it is okay to work individually in our own backyards and join up with others in time as we see fit

Time is of the essence – loss of ravines etc., we can't separate the land from the water people are largely made up of water!

There is opportunity to collaborate, share talents to work toward common goals

Frustration because people don't see the problem in Town, i.e. water meters…most people don't see a problem with water supply

Structure – do watershed groups need to be registered and formal with a Chair, Secretary, Treasurer etc?

Not necessarily, watershed groups across the province are choosing their own direction – may be very informal or very structured

Structuring may not be a bad thing…for developing partnerships, growing – getting respect from funding organizations and recognition from other partners

Judy Stewart has not been without success! More opportunity for the Town and MD to work more closely together – watershed planning … would mean more encompassing thought process in the entire watershed

People working together lead to good things

We can look to the Farm Policy for land management and preserving areas

Need to convince more people then those in this room about the need for watershed management

Property rights need to be preserved

APPENDIX B

LIVING IN WATERSHEDS WORKSHOP SURVEY

Camp Jubilee, Cochrane, AB
APRIL 27, 2006

Thirteen surveys were returned.

1. What Watershed do you live in?

Bighill Creek (Town of Cochrane) **2**
Bighill Creek (MD of Rocky View) **2**
Jumpingpound Creek (Town of Cochrane) **3**
Jumpingpound Creek (MD of Rocky View) **5**
Horse Creek **3**
Grand Valley Creek **1**
Don't Know **0**
Other? Bow River **1**, Ghost River **1**

JUMPINGPOUND AND BIGHILL CREEK, HORSE CREEK – MD OF ROCKY VIEW

2. What are your top three concerns regarding your watershed?

Destruction of beaver dams, rare species habitat (i.e. Great Blue Heron); Development of subdivisions – too close to major waterway; riparian rehabilitation

Controlling development to limit impact on watershed; Horse Creek is fed by springs – will springs dry up?

Small holders abusing the livestock manure units guidelines; MDs lack of enforcement of above; subdivisions and fencing too close to creeks

Urban sprawl; maintain good clean water supply

The feedlot right on the creek; the proposed golf course adjacent to Tower River Estates which proposes to use Jumpingpound creek as its source of water; regular testing of water quality at various "input" areas along the Jumpingpound Creek, specifically all major ranches with feedlots and the Jumpingpound Gas Plant

Development – decreased water quantity and water quality; uninformed people – pointing fingers; not working together

Becoming a liability rather than an asset; public access and control; cost of alternatives

Public perception of agricultural usage (negative); over usage of recreational opportunity on watershed; over regulation by governments (property rights)

Developing better understanding of water quality, fish habitat and riparian sustainability

3. What are some of the positive things you see happening in your watershed?

No Comment 1

Preservation of agricultural land

Public awareness, MD plan for area that limits development

Awareness in some people that riparian protection is necessary

This open house to combine knowledge and goals; Rancher's BMPs in watershed; local watershed groups

Low water levels from year to year and the flood of 2005 which cleansed the creek
Water quality remaining fairly constant

Volunteer work in Town of Cochrane (Branches to Banks), Zoning – keeping development back from riparian

4. Are you interested in finding out more about your watershed in terms of water quality, riparian health, land use, watershed stewardship initiatives or other?

Yes 9 **No** 0 **No comment** 1

If yes, is there specific information you would like to see or hear more about?

No Comment 5

Masses of money for fencing on private land

How can the water quality not suffer with a feedlot right on the creek?

I am already very informed by my own initiative

Anything going on

Management practices

5. What activities would you like to see in your watershed to help you stay informed about local issues?

No Comment 4

Let it be bottom up

Information in the local papers; community awareness – change behaviors etc.

Better access to studies that are being done and have been done by all groups

Newsletters, seminars etc.

6. Do you think it is a good idea for the urban and rural residents to form a Working Group to discuss watershed management? Why or Why Not?

Yes 5 **No Comment** 1

I truly don't know considering all of the sensitivities around current (or existing) practices
We all share the watershed

Yes and no, depending on each viewpoint of the resident's watershed management

No, there is not time for people like me to meet with all the urban people who would like to do projects like this

Yes, it is all connected

7. Would you like to be a part of a Working Group to help identify common watershed goals?

Yes 2 **No** 3 **No comment** 3 **Maybe** 1

Unfortunately, I am already involved with other volunteer groups and cannot ensure sufficient time to contribute.

Possibly in conjunction with Ranchers of the Jumpingpound watershed

I am already a member of a working group

JUMPINGPOUND AND BIGHILL CREEK – TOWN OF COCHRANE

2. What are your top three concerns regarding your watershed?

Development of residential subdivision; agricultural activities; recreation activities (re: golf courses)

Diversity of opinion and interests stops us from finding common goals

Preservation; development; free range cattle

Motorized recreation; logging; resource extraction} land use management

3. What are some of the positive things you see happening in your watershed?

Interest and awareness

Rancher's awareness

Stewardship group active; more awareness; more government attention

4. Are you interested in finding out more about your watershed in terms of water quality, riparian health, land use, watershed stewardship initiatives or other?

Yes 3 **No** **No comment** 1

If yes, is there specific information you would like to see or hear more about?

No Comment 3

Urban-rural interface; what can this area learn from Nose Creek?

4H and schools should be a target for educating youth on the importance of this watershed

5. What activities would you like to see in your watershed to help you stay informed about local issues?

No Comment 1

We need to start with an inventory of the watershed, its current status and projected status of the future if no action is taken

Form a working group

Occasional education forum and workshop; activities in watersheds such as restoration work

6. Do you think it is a good idea for the urban and rural residents to form a Working Group to discuss watershed management? Why or Why Not?

Yes 2 **No Comment** 1

It is imperative for rural and urban to work together

Yes – it is essential

Yes – there is a need and an opportunity

7. Would you like to be a part of a Working Group to help identify common watershed goals?

Yes 3 **No** **No comment** 1 **Maybe**

It is essential.

HEADWATERS SURVEY

Living in Watersheds Lecture Series I
October 30, 2006

1. What are your top three concerns regarding the Headwaters in your watershed?

- Cattle damage to springs, privately owned, hard to monitor, cattle damage to riparian areas, threat of subdivision
- Urban sprawl and recreation use moving faster than research, too many groups not working together prolongs the discussion to protect the water source, educating Cochrane staff and MD staff to stop development until more people understand the problem
- No inventory on our total water supply, when will we start managing the total inventory, education of public on our limited not endless water supply
- I live in the west Jumpingpound – when will the maximum density of wells in the area be assessed and taken into account in planning?
- Depletion of groundwater, maintenance of riparian areas, sharing of information
- Development upstream affecting springs by drilling wells into aquifer and septic systems affecting water quality
- Maintaining quantity and quality, protecting riparian areas, retaining/improving fish

2. Do you think we currently have enough information for good Headwaters management? What information do you think we are missing?

- We have enough to take action – needed now!
- You have enough information to start making some sound decisions now while more information is received.
- Further information is required in the form of education of landowners and general public.
- No.
- No, lacking proper inventories.
- No way of knowing how MD policies may change with regard to subdivision of agricultural land.
- Plant inventory, water table/ quality monitoring, aquatic/fish inventory

3. How would you change the way the Headwaters (and groundwater) are managed?

- Work with 2 main ranchers owners and Town of Cochrane
- Better control of the impact of development and drawing of water from the Jumpingpound and Bow River sheds.
- Further information is required in the form of education of landowners and general public
- I would like to see the potential accurately assessed and taken into account in Municipal planning (e.g. MD of Bighorn) limitation of development
- Through inventory management
- Integrated management plan that excludes pre-development interests (as they are conflicted).

4. Other Comments?

- Lets take action – we have enough to go on now.
- Interesting and much needed to educate the population all over.
- When do we educate the politicians who make the decisions on water? At this point in time there is no growth management.

OIL AND GAS ACTIVITY SURVEY

Living in Watersheds Lecture Series I
December 19, 2006

1. What are your top three concerns regarding oil and gas activity in your watershed?

- Number of roads required to service wells, past and trespass from roads and fire hazards, 1 mile of road has two miles of ditches that drain the watershed
- Cumulative impacts, stream crossings, damage to surface cover – native grass
- Water quality, quality of life, future use
- Soil disturbance, water contamination, noise, effect on wildlife
- Contamination of aquifer, air quality, disturbing the natural ecosystem
- Damage to wells/aquifer, fragmentation, invasive weeds

2. Have you worked with the oil and gas industry before? If yes, did you have any advice for other who will work with the industry?

- Minimize roads and pipelines, find out the reputation of the company you are considering doing business with
- Get educated, talk to your neighbours, get professional advice
- Yes, do you homework, understand the process, seek neighbour position, remain "calm" – knowledge is power
- Briefly, I need advice rather than offering it!
- No
- Ask lots of questions – keep a diary (notes) of what and when landman said…, state for why your concerns/requirements

3. If you could, what would you change about how the industry is operating in your watersheds now?

- Minimize number of wells, roads and pipelines, do an inventory of water both surface and aquifers
- Consider cumulative impacts of all land uses, get paid to monitor your own land when the subcontractor shows up, insist on improved practices
- Zero tolerance on poor environmental stewardship, required – regular public consultation process
- I would like companies to be more forthcoming with information about what they intend to do
- More public consultation, reduction of , have them "clean up" after use
- Halt everything

4. Any additional comments?

- Lack of cooperation or communication between different departments of government
- We need government to take a more active role in managing cumulative impacts
- Thanks – Merry Christmas!!!
- Municipalities need to have a plan other than that put forward by developers
- All subdivision should cease until a complete picture of the hydrology is known

Appendix 4. Guiding Legislation for Watershed Management

Appendix 5. Summary of Available Water Quality Data (AENV 2006)

Creek	Site Description	YEARS MONITORED
Jumpingpound	Above gas plant	1973 (10), 1974 (6), 1975 (3), 1976 (1)
Jumpingpound	D/S Pile of Bones	1974 (2),1975 (5), 1976 (1)
Jumpingpound	Near mouth	1993 (3), 1994 (2), 1995 (1), 1996 (2), 1997 (25-ISCO)
Jumpingpound	At Hermitage Road	1997 (33-ISCO-April)
Jumpingpound	At HWY 1	1997 (8 -March-May)
Jumpingpound	At Clemons Hill	1997 (8-March-May)
Jumpingpound	U/S of Wineglass Ranch	1997 (8-March-May), 1998 (9 Summer), 1999 (3)
Jumpingpound	At Sarcee Butte Ranch	1998 (9 Summer)
Bighill	Near the mouth	1993 (3), 1994 (2), 1995 (1), 1996 (2), 1997 (1)

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Appendix 6. Summary of Available Fisheries Data for the Jumpingpound and Bighill Creeks (FMIS Database Summary).

Jumpingpound Creek

Sample Date	Fish present	Habitat Characteristics					
		Wetted Width	Depth	Dissolved Oxygen	Conductivity	Temperature	pH
20-Sep-78	brook trout, bull trout, cutthroat trout, cutthroat trout x rainbow trout, rainbow trout	--	--	--	--	--	--
03-Oct-78	brook trout, cutthroat trout x rainbow trout, cutthroat trout, rainbow trout, white sucker	--	--	--	--	--	--
06-Sep-79	cutthroat trout	--	--	--	--	--	--
22-Jul-81	cutthroat trout	--	--	--	--	--	--
25-Aug-81	brook trout, bull trout, longnose sucker, mountain sucker, rainbow trout, white sucker	--	--	--	--	--	--
06-Sep-83	cutthroat trout	--	--	--	--	--	--
08-Sep-83	brook trout, cutthroat trout	--	--	--	--	--	--
28-Aug-86	brown trout, mountain whitefish, rainbow trout	11.7-13.6*	--	7.6-8*	363-378*	13-17.8*	7.8-8.1*
04-Sep-86	rainbow trout	11.5-16.5*	--	7.6	391-392*	10.5-12.1*	7.5-7.7*
11-Sep-86	brook trout, rainbow trout	17.7	--	9.9	384	12.7	8
18-Jun-87	rainbow trout	--	--	--	--	--	--
17-Jun-94	brook trout, cutthroat trout, mountain whitefish, rainbow trout	--	--	--	--	--	--
22-Jun-94	brook trout, bull trout, cutthroat trout, mountain whitefish, rainbow trout	--	--	--	--	--	--
17-Aug-94	brook trout, bull trout, rainbow trout	--	--	--	--	--	--
18-Aug-94	brook trout, rainbow trout, cutthroat trout	--	--	--	--	--	--
12-Oct-94	brook trout, cutthroat trout, mountain whitefish, rainbow	--	--	--	--	--	--

Sample Date	Fish present	Habitat Characteristics					
		Wetted Width	Depth	Dissolved Oxygen	Conductivity	Temperature	pH
	trout						
14-Oct-94	brook trout, cutthroat trout	--	--	--	--	--	--
13-May-97	brook trout, rainbow trout	--	--	--	--	--	--
23-Apr-98	brook trout, mountain whitefish, rainbow trout	--	--	--	--	--	--
28-Sep-98	brook trout, rainbow trout	--	--	--	--	--	--
03-Jul-03	brook trout, rainbow trout	10.6-18.8*	0.18-0.82*	9.93	298	6.6	--
09-Jul-03	cutthroat trout	3.18-4.67*	0.15-0.31*	--	131.9	6.3	--
13-Aug-03	brook trout, cutthroat trout, rainbow trout	4.16-10.45*	0.13-0.41*	--	135.6-165.1*	10.5-14.5*	--
15-Aug-03	brook trout, lake trout, longnose dace, rainbow trout, trout-perch,white sucker	5.56-25.59*	0.06-1.18*	--	90.8-255.7*	13.5-21.9*	
24-Apr-05	longnose dace, rainbow trout	--	--	--	--	--	--
20-Jul-05	cutthroat trout, rainbow trout	--	--	--	--	--	--
09-Aug-05	brook trout, longnose dace, rainbow trout, trout-perch	--	--	--	--	--	--
17-Oct-05	longnose dace	--	--	--	--	--	--

Bighill Creek

Sample Date	Fish present	Habitat Characteristics					
		Wetted Width	Depth	Dissolved Oxygen	Conductivity	Temperature	pH
2-Sep-86	brook trout	1.24-4.33*	0.06-1.13*	8.3-9.3*	529-536*	7.1-9.2*	7.7-7.9*
3-Sep-86	brown trout, mountain whitefish	2.27-2.58*	0.11-0.21*	7.3-8.2*	421-553*	11.3-13.1*	7.3-7.7*
18-Jul-01	white sucker, brown trout, longnose dace	--	--	--	--	--	--
15-Oct-02	brook stickleback, longnose sucker, white sucker, lake chub, mountain whitefish, rainbow trout	--	--	--	--	--	--

8. What are the "Valued Ecosystem Components" you would like to see preserved?

Native Vegetation
Forests
Coulees
Groundwater (springs)
Wetlands
Riparian Areas
Wildlife corridors – continuous as opposed to fragmented landscape

Other?