



# SIMILKAMEEN WATERSHED PLAN TERMS OF REFERENCE

Prepared for:

Regional District of Okanagan-Similkameen and  
Similkameen Valley Planning Society (Steering Committee)  
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## Contents

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|  |    |
|--|----|
| INTRODUCTION . . . . .   | 2  |
| 1. BACKGROUND . . . . .  | 3  |
| 2. THE SIMILKAMEEN WATERSHED . . . . .   | 5  |
| 2.1 OVERVIEW OF THE WATERSHED . . . . .  | 6  |
| 2.2 LAND USE AND ACTIVITIES . . . . .  | 7  |
| 2.3 EXISTING WATERSHED GOVERNANCE . . . . .  | 7  |
| 3. WATERSHED DATA & DATA GAPS . . . . .  | 10 |
| 3.1 EXISTING DATA, STUDIES & REPORTS . . . . .                                       | 10 |
| 3.2 DATA & INFORMATION GAPS . . . . .  | 10 |
| 3.3 IDENTIFY LINKAGES TO PLANNING AND SUSTAINABLE DEVELOPMENT (SUMMIT 6.4) . . . . . | 14 |
| 4. THE PLANNING AREA . . . . .   | 14 |
| 5. APPROACH AND PLANNING PROCESS . . . . .   | 15 |
| 6. MISSION STATEMENT & PURPOSE . . . . .   | 17 |
| 7. INTENDED ROLE & USE OF THE PLAN . . . . .   | 17 |
| 8. WATERSHED COMPONENTS . . . . .  | 18 |
| 8.1 WATER SUPPLY & DEMAND . . . . .  | 18 |
| 8.2 WATER QUALITY . . . . .  | 21 |
| 8.3 ECOSYSTEM PROTECTION & RESTORATION . . . . .                                     | 25 |
| 8.4 IMPACTS OF CLIMATE & CLIMATE CHANGE AND LONG TERM SUSTAINABILITY . . . . .       | 27 |
| 9. INTERNATIONAL WATERS . . . . .  | 28 |
| 9.1 COLUMBIA RIVER TREATY (CRT) . . . . .  | 28 |
| 9.2 INTERNATIONAL JOINT COMMISSION (IJC) . . . . .                                   | 29 |
| 9.3 OTHER INTERNATIONAL OBLIGATIONS AND ISSUES . . . . .                             | 31 |
| 10. UPPER SIMILKAMEEN INDIAN BAND & LOWER SIMILKAMEEN INDIAN BAND . . . . .          | 33 |
| 11. COMMUNICATION PLAN & PUBLIC CONSULTATION PROCESS . . . . .                       | 35 |
| 11.1 COMMUNICATION PLAN . . . . .  | 35 |
| 11.2 PUBLIC CONSULTATION PROCESS . . . . .   | 37 |
| 11.3 KEY STAKEHOLDER . . . . .   | 37 |
| 12. CONTINGENCY PLANS . . . . .  | 38 |
| 12.1 EMERGENCY RESPONSE PLANNING . . . . .   | 39 |
| 12.2 DROUGHT PLANNING . . . . .  | 39 |
| 12.3 FLOODPLAIN MAPPING & FLOODPLAIN ISSUES . . . . .                                | 39 |
| 13. GOVERNANCE & AUTHORITY FOR IMPLEMENTATION & MONITORING . . . . .                 | 40 |
| 13.1 IMPLEMENTATION, MONITORING & FOLLOW-UP . . . . .                                | 41 |
| 14. TIMELINE . . . . .   | 42 |
| APPENDIX 1: Acronyms . . . . .   | 43 |
| APPENDIX 2: Glossary . . . . .   | 43 |
| APPENDIX 3: Legislation & Policies Governing Water and Riparian Ecosystems . . . . . | 47 |
| APPENDIX 4: Tool Kits . . . . .  | 49 |
| APPENDIX 5: References . . . . .   | 49 |
| APPENDIX 6: UBCM Draft Collaborative Watershed Governance Accord . . . . .           | 50 |

## INTRODUCTION

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The Similkameen Watershed Plan Terms of Reference outlines the objectives, process, participants, and structure to be used in developing the Similkameen Watershed Plan (SWP).

The Terms of Reference process has been led by the Similkameen Valley Planning Society (SVPS) and the Regional District of Okanagan-Similkameen (RDOS) and developed in consultation with Stakeholders via a Stakeholder Advisory Committee (SAC) and input from Technical Advisors (TAC). In September, 2010, the SVPS commissioned Summit Environmental Consultants to create the Similkameen River Management Plan Part 1 – Scoping Study (Summit). This study identified information gaps and made recommendations on how to proceed with the planning process for a full Watershed Management Plan. Additional data gaps have been identified by the SAC & TAC in preparing this Terms of Reference.

The SVPS is pursuing a NON-regulatory Watershed Plan which will be a guidance document for decision making authorities, resource managers, water users and residents to help make more informed and integrated decisions regarding the watershed. The SWP is intended to be integrated into other planning documents, bylaws, policies and Best Management Practices. It will not commit agencies to actions which conflict with statutory requirements.

The authority for decisions which affect the health of the watershed is distributed among various levels of local, regional, provincial and federal governments and First Nations through the referral process. Decisions are not always carried out in consultation with impacted parties or other decision makers. The SWP is intended to integrate all aspects which contribute to the health of the watershed and provide a framework for integrated decision making.

### The Similkameen Watershed Plan will:

- ◆ emphasize the importance of the entire watershed and the interdependence of its components (linking aspects of water quality, water quantity, wetlands, riparian habitat and biodiversity with the watershed's economic and social priorities)
- ◆ be collaborative – Stakeholders, Decision Makers, Technical Advisors and Resource Managers will work together to complete the plan, each partner sharing their organizations expertise in various aspects of the watershed and committing to working together in decision making once the plan is in place (Decision Makers include local, regional, provincial and federal governments and First Nations)
- ◆ be vetted through a public consultation process with the watershed community, Stakeholder Advisory Committee, Technical Advisors and Decision Makers
- ◆ be an ongoing and adaptive plan that follows the cycle of: watershed characterization, planning, implementation, monitoring and evaluation
- ◆ support the assessment of the feasibility of new economic development in the watershed, while at the same time protecting and rehabilitating the Valley's environmental and natural resource health
- ◆ working collaboratively with local First Nations over shared interests/concerns
- ◆ provide a framework for:
  - ◆ completing information and technical data gaps learning more about the watershed system and water issues;
  - ◆ protecting the ecological function of the system;
  - ◆ balancing water supply and use;
  - ◆ increasing the understanding of the watershed system and water issues;
  - ◆ building broad public understanding and support for the Plan;
  - ◆ promoting an ethic of water conservation throughout the watershed;
  - ◆ addressing climate change;
  - ◆ addressing international watershed issues and concerns.

The SWP will also explore funding & taxation models for the ongoing implementation of the SWP. Residents and stakeholders of the Similkameen Watershed have demonstrated a strong desire to be a direct part of all decision making that affects the watershed (Summit Report pg 6-1). A key element of the SWP is that it be prepared on a collaborative and inclusive basis and that its preparation and implementation be conducted in a transparent manner. Accordingly, an entire section of the Terms of Reference has been directed to the implementation of a communication plan and public consultation process.

At present there is no governance structure responsible for the implement the SWP upon completion. The SWP will explore various watershed governance models that provide local stakeholders and First Nations with a means to participate in decision making at all levels. This will occur on a non-regulatory basis. The SWP will also explore other governance models that provide more direct involvement in decision making, including shared governance and partnerships with the RDOS, SVPS and other levels of governments and with First Nations.

Decision making authorities and resource managers will be asked to endorse the SWP upon completion.

The timeline for completion of the SWP will be determined in consultation with the SVPS, the RDOS and the SAC.



## 1. BACKGROUND

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The Similkameen watershed is located in the Okanagan-Similkameen Regional District (RDOS) - Areas B, G & H and includes lands under jurisdiction of the Town of Princeton, the Village of Keremeos, the Upper Similkameen Indian Band and the Lower Similkameen Indian Band. There are also six irrigation and improvement districts that operate under the authority of the B.C. Local Government Act and there are community water systems.

In addition to the governing bodies, a society was formed to further the interests of communities in the valley – the Similkameen Valley Planning Society (SVPS). It consists of membership from the seven governing bodies: the Municipalities of Princeton and Keremeos, the Upper and Lower Similkameen Indian Bands and Areas B, G & H of the RDOS.

The SVPS initiated a multi-part Sustainable Similkameen Project. With funding from the BC Real Estate Foundation, the RDOS and the municipalities of Princeton and Keremeos, the SVPS sponsored the report STRATEGY for a Sustainable Similkameen Valley (2011-2020) (April 2010).

**The Strategy's mission statement is:**

*To establish a socio-cultural, economic and environmental sustainability strategy for the Similkameen Valley, that will maintain and enhance the quality of our rural and small town lifestyle.*

**Strategic Aim 2 of the Strategy is to;** *"Sustain and rehabilitate the Valley's environmental and natural resources health", which includes*

**Strategic Means 7 of the Strategy is to;** *Improve water management significantly and integrate management into Valley-specific climate change, and*

- 7.1 – Complete inventory of Valley water quality and quantity, and*
- 7.2 – Formulate a Water Management Action Plan (including assessment and action for water impoundment and strengthening of international coordination).*

The first step SVPS took toward achieving Strategic Means 7.1 was the commissioning of Summit Environmental Consultants to undertake an initial assessment of the information base needed to develop a watershed plan for the Similkameen Valley. The report, the Similkameen River Management Plan Part 1– Scoping Study was completed September, 2011. This study identified information gaps and made recommendations on how to proceed with the planning process for a Similkameen Watershed Management Plan.

To begin the process for achieving Strategic Means 7.2, the SVPS requested the RDOS to apply for funding from the Gas Tax Strategic Priorities Fund – Capacity Building Projects, for a Similkameen Watershed Water Quality / Quantity Sustainability Plan. This application was made by the RDOS and on January 5, 2012, the RDOS received approval for an award of \$500,000 toward this project.

Phase 1, as recommended in the Summit Scoping Study, initiate a consultation process via a Stakeholder Advisory Committee (SAC), seek input from Technical Advisors and First Nations and prepare a Draft Terms of Reference for a "Similkameen Watershed Water Quality / Quantity Sustainability Plan" which has been renamed the Similkameen Watershed Plan.

**PHASE 1 – Terms of Reference for the Similkameen Watershed Plan**

RDOS contracted Janice Johnson, with a Footstep Closer, as Facilitator/Coordinator to carry out the following:

- ◆ Formation of a Stakeholder Advisory Committee (SAC)
- ◆ Formation of a Technical Advisory Committee (TAC)
- ◆ Consult with Kettle River, Nicola Valley and Okanagan Basin water planning representatives
- ◆ Determine Objectives/Tasks of SAC & TAC
- ◆ Prepare a Draft Terms of Reference for the Similkameen Watershed Plan

**PHASE 2 – Drafting of the Similkameen Watershed Plan**

- ◆ RDOS to award the contract, after reviewing Expressions of Interest

*NOTE: The SVPS is pursuing a NON-regulatory Similkameen Watershed Plan and along with the RDOS, are leading the process. The ultimate purpose of the SWP is to provide guidance for decision making authorities, resource managers, water users and residents to help make more informed and integrated decisions that include considering the future, downstream and cumulative impacts.*

## 2. THE SIMILKAMEEN WATERSHED

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The Similkameen Watershed consists of 7,600 sq km of land centered on the Similkameen River Watershed. The area is noted for its rich biodiversity, natural beauty and extensive wildlife and is home to an estimated 10,000 full-time residents and another estimated 3,000 part-time residents. It is a growing area that is experiencing amenity in-migration — the movement of people to places primarily for their high quality natural environment and rural lifestyle. The Valley is a vast and diverse area brought together as a community by the life sustaining waters of the Similkameen River and its tributaries. The river runs west to east, from the Cascade Mountains in Manning Provincial Park to the Sonoran Desert on the border with the USA in the Okanagan. Two of the Similkameen River's major tributaries, the Pasayten River and the Ashnola River have headwaters in the USA. The Similkameen River crosses the Canada-USA border south of Cawston. It then joins the Okanogon River, downstream of Zozel Dam, 16 km south of the border below the outlet of Osoyoos Lake near Oroville in the USA. As an international river the Similkameen is under the authority of the IJC represented locally by the International Osoyoos Lake Board of Control. The Similkameen River is not part of the Columbia River Treaty. Because of its international status, there is a large information base for the water resources of the Similkameen watershed.

The Similkameen watershed is dominated by snowmelt process and there is a large variation between the annual peak flows which typically occur in June, and the low flows that typically occur in September. This also results in significant stream flow variability from year to year. The lower elevation portions of the watershed include the warmest and driest biogeoclimatic zones in B.C. and there is significant demand for water from mid July through to mid October, when the flows are naturally low. This low-flow period is also during peak fish spawning periods. The Similkameen River, has always experienced low fish productivity due to low nutrient levels, limited spawning habitat, low water flows, and anchor ice, which causes scouring of some creek and river beds in the winter. Riparian vegetation has been removed or lost along many streams, and fish habitat has been impacted by human land use, including urban and agricultural activities and forestry, railway and highway development (Summit 3.6). A study of the Similkameen River over a 37- year period (1959 -2006), suggests that climate effects are already present and has resulted in increased winter & spring flows and decreased summer flows.(Pike et al, 2011, Summit 3.4.3)

The Similkameen Valley is part of a very unique region of Canada, recognized provincially and nationally as a biodiversity hotspot for the richness and rarity of species and habitats. It is home to three of the four most rare and significant biogeoclimatic zones identified for conservation concern in the province, and has the greatest diversity of birds in the Interior of B.C. It holds 74% of all bird species known to occur and 70% of those species known to breed in the province. (Natural Environment and Biodiversity of the Similkameen Valley, March 2010) This area is recognized as containing sensitive ecosystems, ecologically susceptible to disturbance and an inventory of sensitive ecosystems has been completed for the Lower Similkameen and rural Princeton areas. (Summit 3.5)

The Similkameen watershed has a broad range of stakeholders. The former Similco copper mine southwest of Princeton has reopened as the Copper Mountain Mine, and in the vicinity of Princeton and Hedley, most crown land is under mining claim or license tenure. There are no dams on the Similkameen River, however FortisBC holds a power generation license and a storage license (Licence# Z103235) for 300,000 acre-feet of water, upstream from the Copper Mountain Mine site (formerly the Similco Mines processing facility). It is understood that FortisBC has begun feasibility studies on this project (Summit pg4-25). There are seasonal dam licences to hold surface water

runoff for late summer irrigation on several tributaries and lakes, (e.g. Nickel Plate Lake, Allison Lake). Virtually all cropland in the Similkameen Valley depends on irrigation and surface water sources were considered fully licensed by the mid 80's. This results in no further late-summer water being available for irrigation, unless additional water storage is provided (which is to cover the users water use during the low flow period between August 1st and October 30th) or unless you belong the Similkameen Irrigation District. Cattle ranching is the largest agricultural activity in the valley based on area of crop land, and Forestry has been operating in the watershed since shortly after European settlement and represents the highest economic activity in the watershed.

The Similkameen Valley has experienced significant change over the past decade. Between 2001 and 2006, its population increased 5.9%. This growth surpassed both that of the neighbouring South Okanagan (3.4%) and that of the province (5.3%). Most of this growth was from in-migration. From 2006 to 2011, the population decreased 2.3%. As a result, there has been a growing concern over change and uncertainty in the Similkameen area (Strategy pg 2,3).

As a result of this growing concern, the Similkameen Valley Planning Society commissioned the report [STRATEGY for a Sustainable Similkameen Valley \(2011-2020\)](#). There was general agreement that there is a need to improve water resource management in the watershed in order to achieve sustainability objectives, avoid conflicts over water, and adapt to climate change, which studies have shown will have implications for both water supply and water demand. During development of the Strategy, Stakeholders raised concerns and interest over water supply, water rights, water use and demand, water quality of both surface and groundwater, fisheries and fish habitat and aquatic and riparian ecosystems (Summit 6.1).

## 2.1 OVERVIEW OF THE WATERSHED

### 2.1 OBJECTIVE 1:

Provide an overview of the Similkameen Watershed including:

- ◆ Location
- ◆ Geology, Physiography and Soils (Summit 3.2)
- ◆ Hydrology (Summit 3.3)
- ◆ Water Quality
- ◆ Water Supply
- ◆ Rivers, Lakes, Creeks
- ◆ Climate (Summit 3.4)
- ◆ Wetlands, Riparian Areas
- ◆ Ecosystems
- ◆ Biodiversity: Fish & Wildlife Resources
- ◆ Parks & protected areas
- ◆ History of Data on the Similkameen Watershed
- ◆ Similkameen Watershed History

## 2.2 LAND USE AND ACTIVITIES

### 2.2 OBJECTIVE 1:

Provide an overview of the Similkameen Watershed including:

- ◆ Fisheries
- ◆ Forests
- ◆ Rangelands & Grasslands
- ◆ Mining
- ◆ Recreation & Tourism
- ◆ Agriculture
- ◆ Wildlife
- ◆ Rural Residential Land Use
- ◆ Industrial & Commercial Land Use
- ◆ Communities, Population & Growth Projections
- ◆ Transportation, Communications & Public services
- ◆ Economic Activity & Future Economic Development
- ◆ Environmental Conservation Activity & Protected Areas

## 2.3 EXISTING WATERSHED GOVERNANCE

The Similkameen watershed is under multiple jurisdictions; international (Canada/USA), federal, provincial, Okanagan-Similkameen Regional District (RDOS) – Rural Areas B, G & H and includes lands under jurisdiction of the Town of Princeton, the Village of Keremeos, the Upper Similkameen Indian Band and the Lower Similkameen Indian Band. There are also six irrigation and improvement districts that operate under the authority of the B.C. Local Government Act:

- ◆ Cawston Irrigation District (CID)
- ◆ Keremeos Irrigation District (KID)
- ◆ Hedley Improvement District (HID)
- ◆ Fairview Heights Irrigation District (FHID)
- ◆ Similkameen Improvement District (SID)
- ◆ Allison Lake Improvement District (ALID)

There are two additional Community Water Systems:

- ◆ Olalla Community Water system, operated by RDOS.
- ◆ Princeton Community Water system, operated by the Town of Princeton.

Other water systems in the Similkameen Watershed include:

The Tower System (Eastgate on the north side of Hwy 3), Missezula Lake Waterworks District, The Apex Circle Water System, Apex Mountain Water System, Lower & Upper Similkameen Band Water Systems [community wells], Rock Ridge Canyon Camp, Princeton and Portage the Crossing in Keremeos.

Waste Water Systems in the Similkameen watershed include: Village of Keremoes, Town of Princeton, Lasser Farms ten-plex apartments located outside of the Village of Keremeos on Boundary Rd. Portage, Rock Ridge by Wolf Creek, Trees to Me located outside the Village of Keremeos to the north, close to Keremeos Creek and Apex Mountain Waste Water System.

Within these jurisdictions there are many acts, regulations, bylaws, policies & procedures focused on specific issues and designed to achieve specific purposes.

Governance models for water are being modernized around the world and the Province of B.C. is currently in the later stages of a Water Act Modernization Project. *"B.C.'s current water governance framework has evolved over more than 100 years of water law but was largely developed to respond to a different set of water management concerns and societal expectations and values than those B.C. has today. Modernizing the Water Act provides an opportunity to make changes to water governance in B.C., to enable more appropriate levels of community participation"* ([Living Water Smart, Gov. BC](#)). The Government released a [Policy Proposal for a new Water Sustainability Act](#) in December 2010, and is currently in Phase 3 – Request for legislation and legislative drafting, and will be further engaging with British Columbians on draft legislation in 2012.

There is no overarching governance structure for water management in the Similkameen watershed. The Similkameen Valley Planning Society is pursuing a NON-regulatory watershed plan and therefore the plan is to provide guidance for decision making authorities, resource managers, water users and residents.

A listing of legislation governing the watershed is provided in Appendix 3.

### **2.3 OBJECTIVE 1:**

Expand Appendix 3 to add the Acts, Regulations, By-laws, Planning Documents & Policies related to the Similkameen watershed and will provide an overview summary of all items listed.

In addition, provide an overview summary of the various ministries, jurisdictions, agencies/non-profits, First Nations Bands and how they work with each other to address regulatory, conservation and ecological issues impacting the Similkameen watershed and the legal implications involved.

### **2.3 OBJECTIVE 2:**

Identify International Orders, Treaties and Agreements having jurisdiction in the Similkameen Watershed. Clarify the International obligations, (e.g. is there a minimum volume required to flow into the USA?) and identify what activities (dams, diversions, etc) on the Similkameen River or its tributaries in BC, require USA discussion and agreement. (9.2 Objective 2).



### **2.3 OBJECTIVE 3:**

Identify and compile a list and information on non-governmental agencies, such as environmental, agriculture and conservation agencies/non-profits, and user groups active in the watershed that affect conservation, water supply, water demand, water quality, aquatic life and biodiversity in the watershed. This will be added to Appendix 3.

Consult with these groups including the South Okanagan Similkameen Conservation Program to complete this list.

### **2.3 OBJECTIVE 4:**

In consultation with the Stakeholder Advisory Committee (SAC), and Technical Advisory Committee (TAC) and other communities, the SWP will compile a list referencing water conservation strategies, BMP's, bylaws, Tool Kits, in the Similkameen Valley and in other communities that promote the efficient use, protection and restoration of watersheds (e.g. City of Kelowna's Landscape and Irrigation Standard Bylaw, Green Bylaws Tool Kit, Wetland restoration...) and add to Appendix 4.

### **2.3 OBJECTIVE 5:**

Provide a complete list of Irrigation Districts, Community Water Systems and Waste Water Systems located in the Similkameen Watershed.

### **2.3 OBJECTIVE 6:**

Identify the benefits of working and partnering with local First Nations.

### **2.3 OBJECTIVE 7:**

The purpose of Objectives 1 thru 6 is to develop linkages and explore opportunities of partnering, funding opportunities and sharing of resources.

### 3. WATERSHED DATA & DATA GAPS

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In September, 2010, the SVPS commissioned the Similkameen River Management Plan Part 1– Scoping Study. This study identified information gaps and made recommendations on how to proceed with the planning process for a full Watershed Management Plan. Additional Data gaps have been identified by the SAC & TAC in preparing this Terms of Reference.

#### 3.1 EXISTING DATA, STUDIES & REPORTS

There is a large information base for the water resources of the Similkameen watershed (Summit 2.2). The Summit Scoping Study (September, 2011) provided an overview summary of existing information and data and listed over 150 references (Summit Appendix B), which will be added to upon completion of the data gaps and technical studies in progress identified below.

**DATABASE:** The Summit Scoping Study identified a need to prepare a searchable digital database compiling all available data, based on the model of the [Okanagan Basin Water Resource Information Database](#) (Summit 6.3.1).

#### 3.1 OBJECTIVE 1:

Prepare a searchable, digital database compiling all water resource information pertaining to the Similkameen watershed (the Similkameen Watershed Information Database). The Okanagan Basin Water Resource Information Database will be reviewed as a potential model for the SWP Information Database. The database will also include SWP's Appendix 3 and SWP's Appendix 4 after completing amendments as per 2.3 Objectives in the Terms of Reference. Consult with Technical Advisors to ensure the database is complete.

#### 3.2 DATA & INFORMATION GAPS

A number of technical data gaps, and information gaps were identified in the Summit Scoping Study, and reviewed by the Technical and Stakeholder Advisory Committees.

##### TECHNICAL DATA GAPS:

The Summit Report recommended Technical Studies be completed:

- a. Estimate Actual Water Use in the Watershed. (Summit 6.3.3 recommended "Determine Actual" SAC recommended "Estimate" as there is no monitoring in place)
- b. Assess Groundwater-Surface Water Interactions. (Summit 6.3.4)
- c. Assess Groundwater Quality. (Summit 6.3.5)
- d. Assess Minimum In-Stream Flow Needs for Fish Populations. (Summit 6.3.6) (See below Note)
- e. Assess Optimal/Desired In-Stream Flow Needs for Fish Populations. (Summit 6.3.6) (See below Note)
- f. Conduct an Overview-level Storage Assessment. (Summit 6.3.7) (See 8.1 Objective 5 Water Supply and Demand for list of water storage reports)

*Note: When assessing minimum and optimal/desired In-Stream Flow Needs for Fish Populations for the Similkameen River, do so in the context of historic water flows. The Similkameen River naturally may have never had sufficient in stream flows for abundant fish populations during low water flow periods and it may not be possible to achieve optimal flow requirements to support all fish species. When considering fish productivity in the Similkameen River, it is also important to consider other factors which contribute to the River's low productivity. These include low nutrient levels, limited spawning habitat, anchor ice and cool water temperature (Summit 3.6). The studies will include 1) an estimation of the natural capacity of the system (pre-disturbance), 2) a baseline assessment of the current state of the watershed, 3) potential improvements for fish populations in the future.*

The SAC identified the following data gap:

- g. Conduct an Overview-level assessment of Fish and the fishery in the Similkameen Watershed. This study will consider not only In-stream flow needs, but the other factors contributing to fish productivity in the Similkameen River, its tributaries and lakes. The study will provide recommendations on the best practices for enhancing fish populations in the watershed. The Similkameen River water flow will be considered in its historical context as certain areas may always have had low productivity and therefore resources to enhance fish populations may be best directed elsewhere. (See [The State of Fish and Fish Habitat in the Okanagan & Similkameen Basins, 2005](#))

The TAC identified the following data gaps:

- h. Determine how much water is available for use in the watershed
- i. Contact the Okanagan Nation Alliance (ONA) to identify the work they are conducting on water issues (including source water protection and governance)

### **3.2 OBJECTIVE 1:**

Establish a Research Advisory Group from TAC members and others for the purpose of reviewing Terms of Reference for studies to be commissioned. The group would consist of other scientists with local knowledge and expertise necessary to assist in addressing technical questions as they arise. They would also include local environmental professionals who are familiar with the landscape, hydrology of the study watersheds, water supply management, forestry agriculture and land use. The group or specific members of the group would also meet, when the research for the studies/reports is being conducted/compiled, to discuss project details/logistics/goals/progress/challenges and results. Informal peer review and input from Technical Advisors who will use the results during the project will help to avoid potential oversights while the work is in progress and 'surprise' criticisms at the end.

### **3.2 OBJECTIVE 2:**

Complete the technical studies as recommended by Summit and prioritize as recommended by the TAC.

### 3.2 OBJECTIVE 3:

Investigate existing testing/data/background information on the Similkameen, and assess whether it needs to be more extensive, and determine the coverage, relevance and completeness.

#### TECHNICAL STUDIES IN-PROGRESS:

The Summit Scoping Study identified the following Technical Studies as being in-progress:

- a. [BC Ministry of Agriculture: Agricultural Irrigation Demand Model](#)  
(See also: [waterbucket.ca](http://waterbucket.ca))
- b. Pacific Climate Impacts Consortium: Hydrology Model on Climate Change & Streamflow.
- c. Agriculture Canada & Environment Canada: 1,000 m grid Climate Model to estimate current and future climate conditions in the watershed.
- d. UBCO: "Effects of climate and land cover changes on water resource sustainability in the Similkameen River Watershed".

### 3.2 OBJECTIVE 4:

Obtain the Technical Studies identified in-progress upon their completion and apply them to the SWP.

The climate change data will be reviewed to determine the effect of climate change on the water table vs the impact of increased consumption on the water table. An attempt will be made to determine how much of the impact in the southern part of the valley is due to increased consumption and how much may be due to reduced precipitation and climate change. MoE has monitored observation wells at Keremeos and Cawston since 1967/69. This data will be statistically analyzed to identify any trend. [http://www.env.gov.bc.ca/wsd/data\\_searches/obswell/](http://www.env.gov.bc.ca/wsd/data_searches/obswell/)

#### SUMMARY REPORTS:

The Summit Scoping Study identified a need for "Summary Reports" or "Backgrounders" on water issues to summarize the most relevant information in a non-technical format for distribution to Stakeholders and recommended the following initial topics be completed (Summit 6.3.2).

### 3.2 OBJECTIVE 5:

Complete the Public Information "Backgrounders" listed below and work with the Technical Advisors to accomplish this. A strategy for preparing "Backgrounders" on an ongoing basis will be established.

1. Overview & Current State of the Similkameen Watershed (include 2.1 Overview of the Watershed, 2.2 Land use Activities, and 2.3 Existing Watershed Governance)

## 3.2 OBJECTIVE 5 (continued):

2. Summary Report on Technical Information Available
3. Water Supply in the Similkameen Valley
4. Water Quality in the Similkameen Valley
5. Similkameen Valley Water Use and Future Demand (including if all cultivated and uncultivated agriculture, ALR and FN agricultural land was supplied with adequate volume. Include livestock watering)
6. Fish and Fish Habitat in the Similkameen Watershed
7. Riparian Habitat in the Similkameen Watershed
8. Climate Change & Hydrological Implications in the Similkameen Valley

In addition the following Additional Backgrounders have been identified:

1. Hydrology 101 and Groundwater/Surface Water Interaction in the Similkameen Valley
2. Summary Report on Technical Data Gaps when completed
3. Similkameen Watershed jurisdictions and governance.
4. Water conservation
5. First Nations referral process

### AQUIFER MAPPING:

The MOE has mapped two aquifers in the Similkameen watershed: Aquifer 259 is the main Similkameen River valley bottom, extending from the US border to Princeton; and the much smaller Aquifer 258 - Richter Pass (Summit 4.3.1). Other aquifers exist in the watershed and aquifer 259 could be sub-divided into a number of smaller management units based on physical properties and demand (Summit 4.3.1).

## 3.2 OBJECTIVE 6:

Strategic Means 7.1 in the SVPS Strategy 2010 Report states: "Complete inventory of Valley water quality & quantity". To achieve this, complete the aquifer mapping of the Similkameen watershed and discuss with Technical Advisors Summit's suggestion of sub-dividing Aquifer 259 and provide direction.

### WILDLIFE & SENSITIVE ECOSYSTEM INVENTORIES:

## 3.2 OBJECTIVE 7:

Review with the TAC existing Wildlife Inventories and Sensitive Ecosystems Inventories and determine if additional studies are required.

## UPPER WATERSHEDS:

### 3.2 OBJECTIVE 8:

Research the knowledge of the upper watersheds and implementation of compatible uses/management plans/protections and/or designations (above 1100m) especially for drinking water/source water areas and provide a summary or suggestions.

## PROPOSED NATIONAL PARK RESERVE:

There is currently a proposal to establish a National Park in the RDOS which would include lands in the lower Similkameen watershed.

### 3.2 OBJECTIVE 9:

Research and comment on the potential impacts and benefits of a National Park Reserve on the Similkameen watershed.

## 3.3 IDENTIFY LINKAGES TO PLANNING AND SUSTAINABLE DEVELOPMENT (SUMMIT 6.4)

“The water project is an extension of the Sustainable Similkameen Project. There is reasonable existing information base that provides a good foundation, but the recommended technical studies will move the SVPS closer to being able to plan for sustainability by providing the water resource information needed to make land use and economic development decisions and set policy. Decisions that depend on good water supply, water demand, water quality, and aquatic life...” (Summit Report, 6.4)

### 3.3 OBJECTIVE 1:

In order to utilize the data effectively for decision making purposes, it needs to be summarized, categorized and grouped for relevancy to the watershed, its specific issues and affected Stakeholders and then linked to other planning documents, to decision making authorities, resource managers, water users and residents.

## 4. THE PLANNING AREA

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The planning area of the Similkameen Watershed Plan is all of the land area of the Similkameen River watershed, including its tributaries, lakes, creeks and source waters that are contained in Canada (See Summit Scoping Study Maps).

The area consists of 7,600 sq km of land located in the Okanagan-Similkameen Regional District (RDOS) and in the traditional territory of the Upper and Lower Similkameen Indian Bands.

## 5. APPROACH AND PLANNING PROCESS

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A Watershed Plan is a document developed co-operatively by government, non-government agencies and decision makers and other stakeholders. Its purpose is to provide guidance for the management of the water, land/water interactions, aquatic life and ecosystem resources within a particular watershed. It recommends how water and land resources are to be managed for the benefit of humans, while maintaining a healthy, functioning environment, as land uses change.

A watershed approach provides a flexible, ongoing framework for managing water/land resources using a series of collaborative steps to:

- ◆ Characterize existing conditions,
- ◆ Identify and prioritize issues (contaminants, land use conflicts, etc.)
- ◆ Define management objectives in the form of targets and thresholds to be achieved,
- ◆ Identify the adequacy of water supply to support new business (Summit 2.1)
- ◆ Develop land and water protection and remediation strategies (e.g. wetlands, riparian areas)
- ◆ Prioritize and implement those strategies and adaptive management actions as necessary.

The outcomes of this process are documented and referenced in a watershed plan.

### THE SWP UTILIZES ECOSYSTEM-BASED MANAGEMENT AND ADAPTIVE MANAGEMENT:

Ecosystem-based management adapts economic, political and social processes to fit within the ecosystem, instead of the reverse. Rather than managing a watershed to adapt to human needs, ecosystem integrity sets the context for management decisions. Plans and policies should be continually modified to respond to ecological, economic and social feedback through an ongoing process of informed decision making.

### 5.0 OBJECTIVE 1:

The Similkameen Watershed Plan will:

- ◆ emphasize the importance of the entire watershed and the interdependence of its components
- ◆ be collaborative – stakeholders, decision makers, technical advisors and resource managers will work together to complete the plan, each partner sharing their organizations expertise in various aspects of the watershed and committing to working together in decision making once the plan is in place (Decision Makers include local, regional, provincial and federal governments and First Nations)
- ◆ be vetted through a public consultation process with the watershed community, Stakeholder Advisory Committee, Technical Advisory Committee and Decision Makers
- ◆ be an ongoing and adaptive plan that follows the cycle: of watershed characterization, planning, implementation, monitoring and evaluation
- ◆ provide a framework for:
  - ◆ completing information and technical data gaps learning more about the watershed system and water issues;

## 5.0 OBJECTIVE 1 (continued):

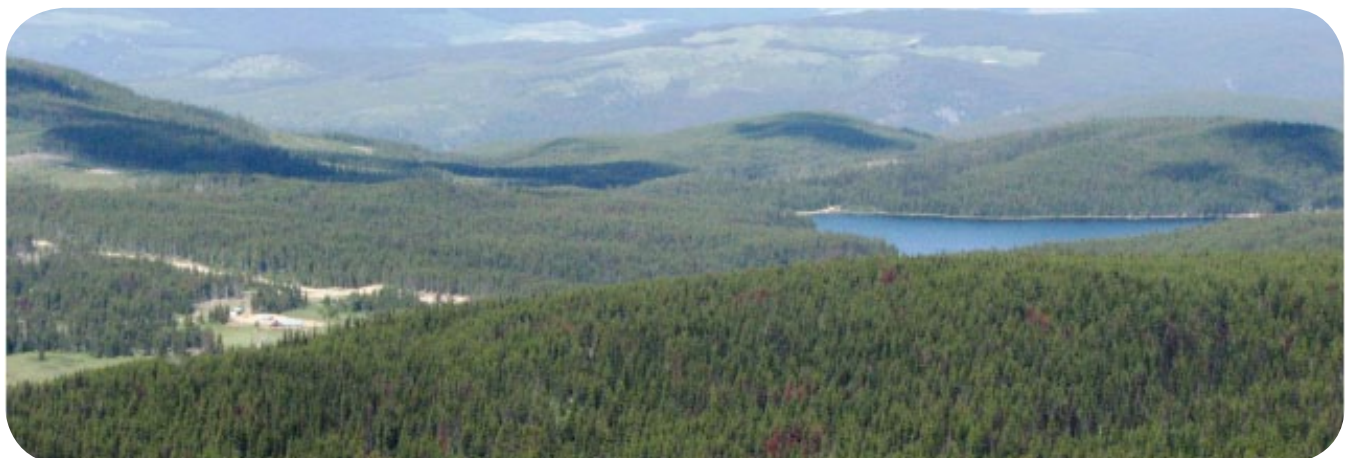
- ◆ protecting the ecological function of the system;
- ◆ balancing water supply and use
- ◆ increasing the understanding of the watershed system and water issues
- ◆ building broad public understanding and support for the Plan
- ◆ promoting an ethic of water conservation throughout the watershed
- ◆ addressing climate change
- ◆ addressing international watershed issues and concerns

## 5.0 OBJECTIVE 2:

The SWP is a non-regulatory document that will be presented as a guidance document to all watershed stakeholders, including municipal, provincial, federal and First Nations that have a mandate or management responsibilities in the watershed.

## 5.0 OBJECTIVE 3:

Identify how the SWP will be endorsed upon completion so that it provides direction to decision makers, resource managers and technical staff, when reviewing policies, proposals and applications that may impact land and water resource management in the Similkameen watershed.





## 6. MISSION STATEMENT & PURPOSE

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The Similkameen Watershed Plan is an integrated part of the 'Strategy for a Sustainable Similkameen Valley, 2011 - 2020', developed by the Similkameen Valley Planning Society in 2010.

The Strategy's mission statement is: *To establish a socio-cultural, economic and environmental sustainability strategy for the Similkameen Valley, that will maintain and enhance the quality of our rural and small town lifestyle.*

Strategic Aim 2 of the Strategy is to *"Sustain & rehabilitate the Valley's environmental and natural resources health"*.

### **SIMILKAMEEN WATERSHED PLAN MISSION STATEMENT:**

The SWP will provide the long-term direction and actions necessary to achieve its overall mission, to preserve and protect the quality and health of the Similkameen Watershed.

### **6.0 OBJECTIVE 1:**

Receive input from the community and agree on a SWP Mission Statement.

#### **PURPOSE:**

The purpose of the SWP is to provide guidance to all watershed stakeholders, decision-making authorities, natural resource managers, commercial water users, including agricultural, industrial, forestry, recreational/tourism and watershed residents, regarding land and water resources in the watershed. The SWP is a NON-regulatory document.

The SWP will link aspects of water quality, water quantity, wetlands, riparian habitat and biodiversity with the watershed's economic and social priorities and:

- ◆ Balance water supply and demand today and in the future
- ◆ Protect the ecological function of the watershed
- ◆ Increase the understanding of the Similkameen Watershed and issues associated with it
- ◆ Promote an ethic of water conservation throughout the watershed

## 7. INTENDED ROLE & USE OF THE PLAN

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The SWP is a non-regulatory, guidance document and a reference guide for decision making authorities, resource managers, water users and residents.

- ◆ It will provide decision makers, resource managers, stakeholders, and the public with a solid understanding of hydrology, water availability, the balance of supply and demand, and the ecological importance of water.
- ◆ It will improve the integration of water management policies and procedures into land use planning and conservation initiatives.
- ◆ It will support the assessment of the feasibility of new economic development in the

watershed, while at the same time protecting and rehabilitating the Valley's environmental and natural resource health.

- It will be the key resource for advocating and representing local interests to governments, decision making authorities and resource managers.
- The SWP will not commit agencies to any actions which conflict with any statutory requirements.
- The SWP is intended to be integrated into other planning documents, bylaws, BMP's, policies, etc.

## 8. WATERSHED COMPONENTS

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The SWP is intended to integrate all aspects which contribute to the health of the watershed.

It will emphasize the interdependence of its components, linking aspects of water quantity, water quality, wetlands, riparian habitat and biodiversity, with the watershed's economic and social priorities.

### 8.1 WATER SUPPLY & DEMAND

There is concern that present levels of water use by communities in the lower Similkameen Valley may not be sustainable, considering future growth and climate change. At the same time, the Strategy for a Sustainable Similkameen Valley's Strategic Aim 3, is to "Increase the Valley's sustainable economic activity". Accordingly, the supply of water in the Valley is critical for the future sustainability of both human and non-human activity in the Similkameen watershed. The SWP will provide a detailed technical summary of water supply and water demand in the watershed. It will also provide recommendations to protect and enhance the supply, as well as investigate water demand and recommend methods of reducing demand.

#### 8.1 OBJECTIVE 1:

Conduct an assessment of water supply and demand in the Similkameen watershed and determine the key factors affecting future water supply, including climate change, and actual/estimated usage by surface water licence holders, potential storage opportunities, groundwater surface water interactions, and groundwater extraction (see Section 3.2). A Water Balance model will be developed to characterize the watershed. The model will consider estimated population growth and projected water demand, including agricultural, ALR and FN reserve lands and climate change. For agricultural use, consider all lands that could be irrigated. (See models under 3.2 *Technical Studies in Progress*, pg 12 and also 8.4 Objective 1)

#### 8.1 OBJECTIVE 2:

Investigate the benefits/impacts of increased water allocation, including incorporating limits and or restrictions on usage, as well as the potential for reduction in water use through conservation measures.

Currently groundwater is not licensed or regulated. The concentration of wells along the Similkameen River in Aquifer 259 (US border to Princeton) has raised the question as to whether groundwater pumping reduces the flow of the Similkameen River, either by intercepting groundwater recharge that would normally reach the river, or by pulling water into the aquifer (Summit 6.3.4).

A need to assess Groundwater-Surface Water interaction has been identified in the data gaps section 3.2.

### **8.1 OBJECTIVE 3:**

Investigate the benefits/impacts of various options for future licensing of groundwater as well as methods of groundwater protection, planning & recharging.

### **8.1 OBJECTIVE 4:**

A dam has been suggested on the upper Similkameen River between Princeton and Manning Provincial Park, as a method of water storage and for production of hydro power. A water storage licence has been issued to FortisBC and it is understood they have begun feasibility studies on this project (Summit pg 4-25).

Assess the potential benefits, risks and impacts of the hydro dam proposal on the entire watershed and consult with FortisBC in keeping current with the progress and results of their studies.

### **8.1 OBJECTIVE 5:**

At various times there have been studies of water storage options in the Similkameen watershed (Summit 6.3.7). The Similkameen Irrigation District produced studies on water storage capacity at Nickel Plate Lake in the 1970s; the Hedley Improvement District produced "Water Storage and Supply Alternatives" in 1987; the Similkameen River International Steering Committee, produced the Similkameen Watershed Study (Hatch Energy 2009) that was generated by FortisBC and the Similkameen Valley Planning Society; and Environment Canada produced the report "The Similkameen River Basin - An Overview of Water and Related Resources" (Deborah E Sherwood, February 1983).

In 1903, a dam was constructed on Twenty Mile Creek near Hedley to supply water to a flume for generating power by water wheel for the Nickel Plate mine. In 1914, this was replaced by a dam on the Similkameen River, which supplied water to a power

## 8.1 OBJECTIVE 5 (continued):

turbine supplying the mine and town site at Hedley. The dam was removed when the mine shut down but several of the cement piers can still be seen. (Mines of the Eagle Country pg 13,57,58).

Review previous studies/reports and other water storage options for proposed water storage locations and assess the benefits and impacts of non-hydro producing water storage options in the Similkameen watershed. (Also, see Item 3.2, Technical Data Gaps, f. Conduct an Overview – level storage assessment)

Determine/assess the ability/capacity to retain and hold water through natural means (e.g. wetlands)

## 8.1 OBJECTIVE 6:

Identify and describe:

- ◆ Land use activities impacting water supply & water demand, including the following: Forestry (e.g. Pine Beetle impact); Industry (e.g. present and future Mining); Agriculture (e.g. irrigation volumes and methods; Agricultural Water Reserves)
- ◆ The effect of current water licence allocations and restrictions on future economic development
- ◆ Existing & potential risks to the water supply (point & non-point contamination)
- ◆ Known & potential conflicts between water users and ways to avoid further conflict
- ◆ If any existing or proposed economic activities are “at risk” because of changes in water supply or demand

## 8.1 OBJECTIVE 7:

Identify:

- ◆ Relevant legislation (act/regulations), policies, and bylaws
- ◆ “Efficient Use” conservation practices to protect/enhance water supply “Best Management Practices” & available “Tools” & Models and how these can be utilized (e.g. BC Ministry of Agriculture: Agricultural Irrigation Demand Model. Pacific Climate Consortium: Hydrology Model on Climate Change & Streamflow. Agriculture Canada & Environment Canada: 1,000 m grid Climate Model to estimate current and future climate conditions in the watershed)

## 8.1 OBJECTIVE 8:

The OBWB has developed an online tool – Streamlined Water Use Reporting Tool (SWURT) that enables large water users to report their water use on a monthly basis to the provincial government (Summit pg 6-5). The tool provides information on current water use and can be used in developing water management strategies. Identify this tool in the SWP and consider how to develop a similar tool and how to utilize this tool for the Similkameen watershed.

## 8.1 OBJECTIVE 9:

Considering regulatory & non-regulatory means:

- ◆ Establish the general Goals and specific Objectives (e.g. water conservation objectives) to be achieved by the SWP
- ◆ Prioritize the identified Issues & Objectives related to them
- ◆ Identify options and funding sources for Actions to address the issues (including roles & responsibilities)
- ◆ Evaluate the options identified and recommend specific Actions to address the Issues/Objectives identified.
- ◆ Provide a prioritization of the recommendations.

## 8.2 WATER QUALITY

Surface water quality at certain sites in the Similkameen watershed is monitored more frequently than in many areas of British Columbia. The monitoring and reporting is carried out because the Similkameen River is an international river and because there are a number of waste discharge sources potentially affecting the river, as well as it being used as a source of drinking water.

The last Environment Canada - Water Quality Index (based on 2004 data) reported that measurements rarely exceeded MoE established Water Quality Objectives for the Similkameen River. These standards measure standard physical parameters, suspended sediment, nutrients, fecal coliforms, E. coli, enterococci, and total and dissolved metals. Total metal concentrations in the river occasionally exceeded the water quality objectives (Summit 4.4.2). In 2011, a one year study of water supply/irrigation wells at Keremeos reported that “the west wells were hydraulically connected to the Similkameen River”, some total coliforms were detected and no E. coli were detected (Golder 2012 pg 7,9). American government agencies also test the Similkameen River water quality to meet obligations under the Clean Water Act, the Washington Department of Ecology, and the federal Environmental Protection Act. Arsenic has been identified as a potential concern as the concentrations in the river south of the border exceeded Environmental Protection Agency (EPA) water quality criteria and was understood to be entering the river from old mining operations near Hedley (Summit pg 4-15). However, It was determined that the Similkameen River

naturally exceeds the EPA arsenic criteria upstream of the areas disturbed by mining near Hedley (Summit pg 4-15). (These are the US Environmental Protection Agency concentration & Total Maximum Daily Load levels). Arsenic also occurs naturally.

Water extraction from streams and rivers occurs mainly in the upper Similkameen watershed, with groundwater use more common in the lower valley. The Lower Similkameen aquifer (#259) is highly vulnerable to contamination (Summit 4.3.1) and is the life blood of human and non-human activity in the Valley. Approximately 40% of the 1805 registered wells (May 2011) in the Valley are relatively shallow (less than 50m deep) and are potentially Groundwater Under the Direct Influence of Surface Water (Summit 4.3.3). Relative to surface water quality, there is little information on groundwater quality.

## **8.2 OBJECTIVE 1:**

Update the present state of water “health” in the watershed and specify actions to protect and enhance water quality throughout the watershed.

## **8.2 OBJECTIVE 2:**

Develop a tool or tools to guide decision makers in making informed land use decisions such that the future of the watershed’s water quantity and quality is not impacted negatively.

## **8.2 OBJECTIVE 3:**

Examine existing test data for both ground water and surface water quality in the watershed (*Note: Groundwater quality will be assessed under the Data Gaps Section 3.2*). The review will include data from federal, provincial (MOE, FLNRO and IHA) RDOS, Irrigation/Improvement Districts, LSIB, USIB, USA, Agriculture (FoodSafe Program and Certified Organic Growers), industry and private data, as available.

The review will also assess whether additional monitoring sites are required and potential funding sources.

In addition to this review, summarize and report on the test results as well as the adequacy of testing parameters, and identify what may be lacking in the various monitoring programs.

The Copper Mountain Mine restarted in June 2011 and has the water licence and Provincial waste discharge permits and authorizations that existed from previous operations. The mine requires flow and water quality monitoring and reporting to meet the requirements of the Federal Metal Mining Effluent Regulations (MMER). The first report is expected in 2012 and is to be included in the above review.

## 8.2 OBJECTIVE 3 (continued):

List other mines and reprocessing sites reporting water quality data and include in the above review; (e.g. coal mining, Huldra Silver Mine, Candorado reprocessing site, Hedley and Nickel Plate Mines). Although the Nickel Plate Mine is no longer actively mining, they are treating waste water and discharging to Cahill and Hedley Creeks.

Also list names of all mines in the Similkameen Watershed and identify them on a map with names of lakes and rivers they are close to.

## 8.2 OBJECTIVE 4:

Compile a contamination report, including mercury levels, on the following potential contamination sites:

- ◆ Mining operations – (seepage from tailing impoundments)
- ◆ Mining operations – reclamation status on old mines, and on abandoned mines
- ◆ Waste water treatment plants
- ◆ Industrial Landfill sites and community landfill sites
- ◆ Composting facilities

## 8.2 OBJECTIVE 5:

In accordance with Modules 1,2,7 & 8 of [The Comprehensive Drinking Water Source-to-Tap Assessment Guidelines](#), identify and describe other existing & potential risks to the water supply (point & non-point contamination), including:

- ◆ Numerous non-point sources including private septic systems & agricultural operations
- ◆ Nutrients, fertilizers & pesticides
- ◆ Waste disposal (garbage buried or burned, dumping in or close to water, unused chemical seepage, fertilizer seepage)
- ◆ Uncapped wells
- ◆ Recreation – off road vehicles, spillage
- ◆ Highways (e.g. salts, pesticides, oils) transport spills

## RISK ASSESSMENT:

### 8.2 OBJECTIVE 6:

Outline a process for the party overseeing the SWP to be involved in risk assessment and recommendations. (See Section 13 Objective 1) This will include:

- ◆ Receiving information on the monitoring of water quality
- ◆ Discussion on expanded monitoring of water quality to include trace minerals
- ◆ Creating an initial assessment of point source contamination, in order to establish baseline results for future comparisons of water quality (including trace minerals, heavy metals, sewage, chemicals, fertilizers, etc.)
- ◆ Receiving information on proposed land use activities in the watershed
- ◆ Develop a means for Stakeholders to address situations that may impact surface water and groundwater by working together with resource managers and decision makers.

### 8.2 OBJECTIVE 7:

Identify and describe Land Use activities impacting water quality, including Forestry (e.g. Pine Beetle impact); Industry (e.g. present and future Mining); Agriculture and Recreation. The SWP will recommend land use and development practices which are congruent with the objectives and resource management strategies for the Similkameen watershed, including linking the recommendations of the SWP into Official Community Plans and other land use, and planning documents.

### 8.2 OBJECTIVE 8:

Identify and describe:

- ◆ The contamination issues to be addressed in the SWP
- ◆ Relevant legislation, policies, bylaws and regulations
- ◆ "Efficient Use" conservation practices to protect/enhance water quality
- ◆ "Best Management Practices" & available "Tools"



## 8.2 OBJECTIVE 9:

Work with stakeholders, resource managers and decision makers to:

- ◆ Establish general water quality goals and specific objectives (e.g. Water Quality Objectives at testing sites; ensure setback requirements are followed for riparian areas) for the SWP
- ◆ Prioritize the identified Issues & objectives related to them
- ◆ Identify options and funding sources for recommending Actions to address the issues (including roles & responsibilities)
- ◆ Evaluate the options identified and recommend specific actions to address the Issues/Objectives identified
- ◆ Recommend a program for future monitoring & reporting and the parties responsible & funding sources

## 8.3 ECOSYSTEM PROTECTION & RESTORATION

Biodiversity has been identified as an important and essential component of the Similkameen Watershed. For this reason, research and recommendations are to be based on the entire watershed as an ecosystem, including wetlands, riparian areas, wildlife and fish, not just the Similkameen River itself and human water usage.

### 8.3 OBJECTIVE 1:

The SWP will protect the Valley's water, and "will sustain and rehabilitate the Valley's environmental and natural resources health" (SVPS Strategy Report, 2010, Strategic Aim 2).

The Valley is unique in BC and in Canada for its rarity of habitat and wildlife species. The watershed is home to a vast array of species including Grizzly and Black bear, California bighorn sheep and Mountain goat. The Valley currently has 52 species listed nationally as "at risk", and 1/3 of BC's red-listed species. It is home to three of the four, most rare and significant biogeoclimatic zones identified for conservation concern in the province (Bunchgrass, Ponderosa Pine & Interior Douglas Fir). (Natural Environment and Biodiversity of the Similkameen Valley, March 2010). The area also contains sensitive ecosystems, susceptible to disturbance, and in the Lower Similkameen, historical mapping analysis identifies sensitive ecosystems that have experienced significant losses (Natural Environment and Biodiversity of the Similkameen Valley, March 2010). As well, riparian vegetation has been removed along many streams for agricultural and urban development (Summit 3.6). An inventory of sensitive ecosystems has been completed for the Lower Similkameen and rural Princeton areas. (Summit 3.5)

### 8.3 OBJECTIVE 2:

The SWP data gaps, Section 3.2 (d) and (e) will determine objectives for minimum and optimal/desired flow levels that are considered adequate for the protection of fish, (In-stream Flow Needs for Fish). For the Similkameen River, this will be looked at in the context of historic water flows, as the Similkameen River may have never had sufficient in stream flows during low water flow periods to meet the requirements for abundant fish populations.

Determine the implications of implementing minimum in-stream flow objectives on water users.

### 8.3 OBJECTIVE 3:

Identify and describe existing and potential risks to ecosystems, including:

- ◆ Land Use activities that have in the past, or are currently degrading ecosystems (including Forestry (including Pine Beetle impact), Mining, Agriculture, Recreation and Urban and Suburban development and invasive species).
- ◆ Known & potential conflicts between land/water users and ecosystems
- ◆ Water Modifications (dikes, dams, channelization, creek diversion)
- ◆ Contamination from natural sources affecting ecosystems
- ◆ The Impact of ALR land designations
- ◆ The Impact of Rural Electoral Areas B & G not having protective legislation (no OCP's, zoning regulations)
- ◆ Existing OCP's that do not recognize densifications along rivers

### 8.3 OBJECTIVE 4:

Identify:

- ◆ The Ecosystem Protection and Restoration issues to be addressed in the SWP
- ◆ Relevant legislation, policies, bylaws and regulations
- ◆ "Efficient Use" conservation practices to protect/enhance ecosystems
- ◆ "Best Management Practices" & available "Tools"

## 8.3 OBJECTIVE 5:

Considering regulatory, non-regulatory, and NGO partnering opportunities:

1. Establish general Goals and specific Objectives to protect, restore and improve the following:
  - ◆ Riparian areas
  - ◆ Wetlands
  - ◆ Stream, Creek & River bank protection
  - ◆ Lake health
  - ◆ Fish habitat
  - ◆ Wildlife habitat
  - ◆ Additional Sensitive Ecosystems
  - ◆ Groundwater
  - ◆ Upland Watershed – source water / drinking water areas
2. Prioritize the list of Issues/Objectives
3. Identify options for both rehabilitation and conservation actions and funding sources for recommending Actions to address the issues identified (including roles & responsibilities)
4. Evaluate the options identified and recommend specific actions to address the Issues/Objectives identified.

## 8.4 IMPACTS OF CLIMATE & CLIMATE CHANGE AND LONG TERM SUSTAINABILITY

Existing long term studies indicate that the effects of climate change are already present in the watershed and that the Similkameen River is experiencing increased winter & spring flows and decreased summer flows (Summit 3.4.3). The effects of climate change are expected to continue. The Pacific Climate Impacts Consortium (University of Victoria) has modeled the Okanagan-Similkameen region for the 2020s 2050s and 2080s, under two of the most likely CO<sub>2</sub> emission scenarios. The models show mean annual temperature increasing about 1°C by the 2020s, 2°C by the 2050s and 3°C by the 2080s. Less rainfall is projected in summer, about 9% less in the 2020s and up to 16% less in the 2080s (Summit 3.4.1). This change will also provide for a longer agricultural growing season, increasing the demand for irrigation water. The result is a decreasing supply and an increasing demand for water during low flow summer months. The Similkameen River currently experiences low in-stream flows and high water temperatures in summer months which limits fish habitat and survival (Summit 3.6).

The data gaps Section 3.2 identified two climate studies that are currently in progress.

They are:

- ◆ Pacific Climate Consortium: Hydrology Model on Climate Change & Streamflow.
- ◆ Agriculture Canada & Environment Canada: 1,000 m grid Climate Model to estimate current and future climate conditions in the watershed.

## 8.4 OBJECTIVE 1:

A number of water models are presently being completed (See models under 3.2 *Technical Studies in Progress*, pg 12). The SWP will utilize the models and data to incorporate climate change impacts, population growth projections and water demand projections into a water model for the Similkameen Valley, similar to that of the OBWB's Okanogan Basin Water Supply and Demand Project (Summit 5.1). The model will include surface water allocation and existing flows, to assess the future sustainability of lower valley communities and fish habitat. Various trends in climate change, and growth scenarios, including the potential expansion of agricultural lands will be considered, using both existing land and water use patterns, as well as including post conservation activities as recommended in the SWP.

## 9. INTERNATIONAL WATERS

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Most of the Similkameen Watershed is located in Canada, two of the Similkameen River's major tributaries, the Pasayten River and the Ashnola River have headwaters in the USA and the lower end of the watershed is in the USA. The watershed area upstream of the US border covers 9,190 sq km, of which 7,600 sq km are in Canada. As an international river the Similkameen River is under the authority of the Boundary Water Treaty 1909 (BWT). The BWT established the International Joint Commission (IJC) to oversee cross-border water issues. The IJC conducted the studies which led to the Columbia River Treaty. The Similkameen River is under the authority of the IJC represented locally by the International Osoyoos Lake Board of Control, but is not part of the Columbia River Treaty.

### 9.1 COLUMBIA RIVER TREATY (CRT)

The Similkameen River crosses the Canada-USA border south of Cawston. It then joins the Okanogon River, downstream of Zozel Dam, 16 km south of the border below the outlet of Osoyoos Lake near Oroville, Washington. The Okanogon River then drains into the Columbia River.

The Columbia is one of the most managed rivers in North America and generates more power than any other river in North America (Columbia River Treaty, History and 2014/2024 Review pg 2). The management and controlled supply of water is extremely important to the United States for flood control, hydro electric power and economic activity. There is additional demand for water to be drawn from the Columbia River in the USA and the source of that water would likely flow from Canadian rivers including the Similkameen River. A recent US proposal to construct a dam on the Similkameen River at Shanker's Bend, 10km upstream from Oroville, Washington has been withdrawn by the Okanogan County's Public Utility District.

The Columbia River Treaty is currently being re-negotiated for 2014 to have revisions to the treaty apply in 2024. If no revisions are made (including cancelling the Treaty), it will renew under most of the same provisions, as the Treaty has no expiration date (Columbia River Treaty History and 2014/2024 Review pg. 7)

## 9.2 INTERNATIONAL JOINT COMMISSION (IJC)

The principal water management and sharing mechanism between Canada and the United States is the Boundary Waters Treaty. Ratified in 1909, it created the bilateral International Joint Commission (IJC) to address requirements of Articles of the Agreement as well as disputes. Osoyoos Lake is an international water body, lying partly in BC and partly in Washington State and is managed under the International Joint Commission (Summit 4.9.3). Outflows from Osoyoos Lake are regulated by Zozel Dam, 4 km downstream of the lake outlet, under "Orders of Approval" developed by the International Osoyoos Lake Board of Control. These Orders expire in 2013 and will require renewal at that time.

"The Similkameen River joins the Okanogan River downstream of Zozel Dam, yet it can influence outflows from the dam and water levels on Osoyoos Lake when its flow is high enough and it is therefore relevant to the management of the lake" (Summit 4.9.3).

The IOLBC completed eight studies to determine whether and to what extent the current orders should be changed before renewal occurs. Study 7 (Summit March 2010) examined "backwater conditions" on the Okanogan River and Summit stated "an investigation into potential storage opportunities on the Similkameen River should be undertaken if it is considered desirable to reduce peak levels in normal years (pg.43)."

McNeil, 1974, reported "Under the most severe conditions which involve the rate of rise of the Similkameen River as well as the flow in the river, the flow in the Okanogan River between Oroville and Osoyoos Lake can reverse, with the water flowing north into Canada. Such reverse flows have been recorded on six occasions since 1943 (to 1974) although some restrictions in outflow from Osoyoos Lake have occurred much more frequently" (Factors Affecting the Level of Osoyoos, McNeil, Senior Hydraulic Engineer, Dept. of LFWR, 1974, pg 6).

"The IJC orders do not specify any minimum transboundary or Okanogan River flows, although these orders are currently being re-examined for the next 25 year agreement." (US Dept of Ecology, Columbia River Long Term Water Supply & Demand Forecast, Tier 5 report, pg 135).

### POTENTIAL WATER STORAGE AND HYDRO DAM

The IJC has evaluated the possibility of several dams along the Similkameen River including three in Canada. In 2009, the Similkameen River International Steering Committee along with FortisBC and the Similkameen Valley Planning Society prepared the report, Similkameen Watershed Study (Hatch Energy, 2009) that further evaluated sites in Canada and recommended the site known as Similkameen #3 (Pumphouse location of the Copper Mountain Mining site) for the development of a hydroelectric facility. The proposed project, located upstream from Princeton, features a dam up to 600 feet in height (Hatch 2009, pg1) and is currently the site FortisBC holds water storage and power generation licenses for. It is understood FortisBC is currently undertaking feasibility studies for this proposed dam (Summit pg 4-25).

### 9.2 OBJECTIVE 1:

In the event of a dam on the Similkameen River, identify the approval process, the regulation of a dam, who controls water flows and the sharing of economic and other benefits (e.g. flood control). If this dam were to proceed, would it be regulated by the IJC through the IOLBC or would it be regulated by the BC Government Water Management Branch. What would be the implications for local stakeholders?

The following issue was raised at a community meeting, as part of the Summit Report: “Water needs and water management decisions in the United States may take precedence over Canadian needs” (Summit pg 2-1).

## 9.2 OBJECTIVE 2:

Identify International Orders, Treaties and Agreements having jurisdiction in the Similkameen Watershed. Clarify the International obligations, (e.g. is there a minimum volume required to flow into the USA?) and identify what activities (dams, diversions, etc) on the Similkameen River or it’s tributaries in BC, require USA discussion and agreement.

### WITH REGARDS TO SHARED WATER BETWEEN THE USA AND CANADA;

According to the Boundary Waters Treaty, The IJC must give its agreement to any project that could modify the level or the flow rate of the shared water (Articles 3 & 4) (Canadian Columbia River Forum Davidson & Paisley pg 38). However the definition of “boundary waters” under the BWT does not include tributary waters. (see definitions in Appendix 2)

## 9.2 OBJECTIVE 3:

Determine whether the building of non-hydro dams to hold back spring and seasonal runoff water on lakes and streams feeding into the Similkameen River would have to go to the IJC for review, and agreement and whether they could be eligible for downstream benefit sharing if they were built or if they would be exempted under provisions for water use for domestic purposes under the International Boundary Waters Treaty Act

## 9.2 OBJECTIVE 4:

To address the uncertainty regarding international water issues, the SWP will explore ways in which SWP stakeholders can be included or represented in the international negotiation process. In areas outside SWP jurisdiction, partnerships arrangements will be explored with the negotiating parties or those having stakeholder status.

The SWP will:

- ◆ Assess the impact (if any) of the re-negotiation of the Columbia River Treaty on the Similkameen watershed.

## 9.2 OBJECTIVE 4 (continued):

- ◆ Assess the impact of the re-negotiation of the “Orders of Approval” under the International Joint Commission on the Similkameen watershed and consult with OBWB. (See OBWB 2011 Summit report RECOMMENDATIONS TO THE OKANAGAN BASIN WATER BOARD REGARDING RENEWAL OF THE OPERATING ORDERS FOR OSOYOOS LAKE on Disc 2 – file: International Joint Commission)
- ◆ Identify USA stakeholder groups or organizations involved with the Similkameen River.
- ◆ Identify areas that fall outside the influence of the SWP and develop linkages with the parties that will be negotiating on behalf of Canada or those having stakeholder status. These include the Province of BC and First Nations and possibly environmental organizations.
- ◆ Discuss and identify a process for partnership with the Upper Similkameen Indian Band, the Lower Similkameen Indian Band and the Okanagan Nation Alliance that would include the Similkameen Watershed Stakeholders in the International Treaty process through representation by the First Nation representatives at the table. This partnership would involve the sharing of resources and information useful to both parties.

## 9.3 OTHER INTERNATIONAL OBLIGATIONS AND ISSUES

There is some evidence that through Water Licences, Agreements or other non-Treaty means, there may be some requirement, or voluntary agreement, for minimum water flows into the US at the border.

According to Rae (2005), river flow at the border must also accommodate the requirements to supply water license holders in Washington State (Summit 3.6). The [1986 MoE report Similkameen Strategic Environmental Plan](#) stated “2.4 Management Objectives: The water management objectives in the Similkameen are fairly limited and can only be stated generally, given the constraints of meeting a trans-boundary low flow during the late summer, and of allocating water use within the provisions of the Water Act.” The report listed as water management objective #4 “maintain flows in the Similkameen River at the Canada – U.S. border to meet established obligations for water supply in the state of Washington”. The report was approved by the Deputy Minister of Environment.

## 9.3 OBJECTIVE 1:

Determine what, if any, obligations exist to provide minimum water flows to the USA from the Similkameen River at the USA border and the potential implications of such requirements (if any).

## 9.3 OBJECTIVE 2:

Determine other current International obligations (if any) and if there are any potential changes to be anticipated?

### N.A.F.T.A.

The North American Free Trade Agreement imposes various obligations regarding the trading of commodities and generally requires parties to the agreement to be treated equally in trade. Other than for bottled water, it is generally considered that water is not covered by NAFTA . However the matter is uncertain: "With respect to bulk water export, the issue of commoditization has yet to be resolved as a matter of trade, despite a large volume of speculative literature. A commodity under NAFTA and the General Agreement on Tariffs and Trade (GATT) is a legally negotiated position and not necessarily dependent on the economic definition. To date there has not been a ruling by a court or trade panel on whether water is a commodity and thus the legal question of whether water is a commodity cannot yet be answered with certainty. It should be noted that Canada, the United States, and Mexico released a joint statement to the effect that water was not covered by NAFTA, but such a statement may have little legal force, even though a court might consider it to be indicative of the intent of the governments. Should water be ruled a commodity in the future, then Canada's ability to control its export may indeed be limited." (Government of Canada, Policy Research Initiative, Briefing Notes: Is water a Tradable Commodity?)

The Hatch report stated "Some revenue for sale of water for agricultural use should be possible, and this would need to be investigated further with both US and Canadian water users" (Hatch 2009, pg1)

## 9.3 OBJECTIVE 3:

Determine what impact, if any, the application of NAFTA to bulk water sales to the USA would have on the Similkameen watershed and whether there would be any potential benefits or consequences to Stakeholders and First Nations interests.





## 10. UPPER SIMILKAMEEN INDIAN BAND & LOWER SIMILKAMEEN INDIAN BAND

The Similkameen Valley watershed is within the traditional territory of the Smelqmix People. The Upper and Lower Similkameen (Smelqmix) Indian Bands occupy a significant portion of the Similkameen Valley and are its oldest residents. They claim an historical, spiritual, moral and legal connection to the Valley and its water. Their way of life has always been identified with respect and conservation of the environment. The SWP respects the knowledge of and encourages participation of the Upper Similkameen Indian Band & of the Lower Similkameen Indian Band and the Okanagan Nation Alliance to achieve a sustainable Similkameen watershed.

Deliberation as to rights to water, are beyond the scope of the SWP, however the SWP recognizes that rights to water in the Similkameen watershed are not resolved between the Provincial and Federal Governments and Aboriginal Nations.

The Similkameen watershed is entirely contained within the traditional territory of the Similkameen (Smelqmix) peoples who have occupied the Similkameen territory for 8,000 to 10,000 years.

European settlement commenced about 200 years ago following the explorations of David Thompson in 1811. Reserves were established in the early 1900s. The Skwnaginix (Okanagan) peoples opposed the establishment of reserves without first having negotiated a treaty. Today the Smelqmix and Skwnaginix (Similkameen and Okanagan) peoples affirm their relationship to the land and have never ceded or surrendered their aboriginal rights and title, as no treaty has been negotiated (<http://www.sylx.org/who-we-are/the-sylx-people/>). The reserves of the Upper Similkameen Indian Band and the Lower Similkameen Indian Band are entirely located within the Similkameen watershed. "Aboriginal title, aboriginal rights, and treaty rights to water are recognized, but not well defined under the Constitution Act of 1982. Where an Indian Reserve allotment does not explicitly include water, it is understood to include a sufficient supply of water for full and beneficial use of the land, including economic purposes." (Okanagan Sustainable Water Strategy, Action Plan 1.0, OBWB).

### UPPER AND LOWER SIMILKAMEEN INDIAN BAND WATER LICENCES

Both the Upper and Lower Similkameen Bands hold water licences under the Water Act for irrigation and consumption purposes. MoE has prepared an historical summary of the rights & licenses of both the Upper and Lower Similkameen Bands, as recognized by the Province of BC (MOE 1997a & MOE 1997b). These rights date back to 1875 and provide useful insight into the proceedings but do not resolve Aboriginal water right issues.

The following is an excerpt from *A Historical Summary of the Rights of the Lower Similkameen First Nation*, MoE 1997:

*"Following confederation, the Province and the Dominion established an Indian Reserve Commission to reserve lands for the Indians and to facilitate transfer of those lands to the Dominion. In setting apart lands for reserves, the Reserve Commissioners made it their practice to allot water with the lands. It is understood that this practice was unique among Indian Reserves in Canada and the authority of these Commissioners to allot water rights has always been disputed by the Province... In a number of cases the original rights issued to the Bands have been reduced, in some instances substantially".*

## OKANAGAN NATION ALLIANCE (ONA)

The Okanagan Nation Alliance (ONA) was formed in 1981 as the inaugural First Nation central organization to look after member Nations' interests. The ONA represents the eight member communities including; Okanagan Indian Band, Upper Nicola Band, Westbank First Nation, Penticton Indian Band, Osoyoos Indian Band, Lower Similkameen Indian Band, Upper Similkameen Indian Band and the Colville Confederated Tribes, on areas of common concern. Each community is represented through the Chiefs Executive Council (CEC) by their Chief or Chairman.

The ONA's mandate is to work collectively to advance and assert Okanagan Nation Title and Rights over the Okanagan Nation Territory.

Okanagan Nation Alliance plays a major role in the Okanagan Territory in the management of fisheries and aquatic resources. The Okanagan Nation Territory includes the following watersheds: Okanagan Basin, the Similkameen Basin, and the Kettle Basin, as well as parts of the Columbia Basin (Columbia River and Arrow Lakes) and Thompson Basin (Shuswap River and Salmon River). The ONA Fisheries Department works to provide technical fisheries assistance for the Nation and its eight member communities and acts as a liaison with federal and provincial fisheries agencies. (<http://www.syilx.org/>)

## FIRST NATIONS TREATY NEGOTIATIONS – BC TREATY COMMISSION

Land has spiritual, economic and political significance for First Nation's peoples. First Nation's traditional territory - land occupied and used historically – is integral to their identity and survival as a distinct nation (BC Treaty Commission, 2005).

In 1997, the Supreme Court of Canada ruled in the Delgamuukw case that aboriginal title is a right to the land itself - not just the right to hunt, fish and gather. Delgamuukw confirmed that aboriginal title still exists in BC and that when dealing with Crown lands, the government must consult with, and may have to compensate First Nations whose rights are affected (BC Treaty Commission, 2005).

The [Province of BC water licence application resource guide](#) states:

“If your proposed point of diversion is located up-stream on a water source, or is in a watershed which flows through an Indian Reserve it will be necessary to refer your water license application to the Band office. In addition, if your works will affect (e.g. flood or cross) an Indian Reserve, your application should also be referred to the Band.”

### 10.0 OBJECTIVE 1:

The Similkameen Valley Planning Society is pursuing a NON-regulatory watershed plan - A plan to be used as a guidance document for decision making authorities, resource managers, water users and residents. The SWP will state that the involvement of or the participation of the Upper Similkameen Indian Band, the Lower Similkameen Indian Band, and/or the Okanagan Nation Alliance, in the preparation or implementation of the SWP, does not constitute “consultation” for the purposes of Treaty Negotiations, Land Claims, Claims to Water Rights, Claims to Land Rights, or any other claims of Aboriginal peoples against the Province or BC or the Crown in right of Canada.

## 10.0 OBJECTIVE 2:

The SWP will recognize that the Upper Similkameen Indian Band (USIB) and the Lower Similkameen Indian Band (LSIB) and the Okanagan Nation Alliance (ONA), has a significant and unique historical, cultural and ecological knowledge and expertise related to the water resources and fisheries in the Similkameen watershed. The SWP will also recognize USIB, LSIB and ONA as land and water resource managers and not as stakeholders. The SWP will invite participation of the USIB, LSIB and the ONA and will enquire as to the protocols of participation in the watershed planning process.

## 11. COMMUNICATION PLAN & PUBLIC CONSULTATION PROCESS

The Communication Plan and the Public Consultation Process, is designed to convey timely and accurate information to stakeholders, decision makers, and the general public. It is to provide an understanding of the watershed, of conservation, BMPs, on ecosystems and biodiversity, to collect input into the development of recommendations detailed in the SWP, and to identify and address issues and concerns.

### 11.1 COMMUNICATION PLAN

#### 11.1 OBJECTIVE 1:

- a. Develop a Communication Plan for a public consultation process
- b. Establish a Communication Team
- c. Establish a Communications Budget
- d. Assist in the development of the SWP database by completing an inventory of conservation groups, clubs & environmental and recreational activities in the watershed. This data will be used to prepare a contact database for distribution of SWP materials.
- e. Prepare an Action Plan of communication initiatives which will include tools including a website, videos, fact sheets, displays, feature stories, newsletters, news releases, public meetings, school materials/projects/outings, workshops, mail outs and open houses.
- f. Prepare a Series of Public Information "Backgrounders" on Water Issues (Summit 6.3.2) (as identified in the data gaps Section 3.2) and obtain other materials and tools already available for distribution to stakeholders. The Backgrounders (see 3.2 Objective 5) will include:
  - ◆ Overview & Current State of the Similkameen Watershed
  - ◆ Summary Report on Technical Information Available
  - ◆ Water Supply in the Similkameen Valley

## 11.1 OBJECTIVE 1 (continued):

- ◆ Water Quality in the Similkameen Valley
- ◆ Similkameen Valley Water Use and Future Demand
- ◆ Fish and Fish Habitat
- ◆ Riparian Habitat
- ◆ Climate Change & Hydrological Implications in the Similkameen Valley
- ◆ History of the Similkameen Valley
- ◆ Hydrology 101 (Groundwater/Surface Water Interaction)
- ◆ Water Conservation and Efficient Use of Water
- ◆ Best Management Practices
- ◆ Watershed Jurisdiction and Governance
- ◆ First Nations Referral Process



## 11.1 OBJECTIVE 2:

In consultation with the SAC and the TAC, develop a strategy for utilizing the material in the Similkameen Watershed Information Database to strategically deliver a broad base of technical, educational and reference material.

## 11.1 OBJECTIVE 3:

A Website for the SWP & its implementation will be established and maintained in perpetuity. The website will commence with the initiation of the SWP and will provide a full record of the SWP process. It will include reference to the various databases of organizations & resources related to water sustainability and conservation within the watershed, as well as similar activities across Canada and internationally.

## 11.2 PUBLIC CONSULTATION PROCESS

### 11.2 OBJECTIVE 1:

The public consultation process will:

- ◆ Promote effective communication between agencies responsible for watershed management, stakeholders and residents, to identify the best strategies for developing a sustainable watershed.
- ◆ Obtain advice and input from stakeholders, decision makers, and the community at key stages of the SWP development process.
- ◆ Facilitate stakeholder and resident understanding of the watershed processes, current management regimes, existing and future land use and resource management issues, and the planning process.
- ◆ Incorporate community values into the planning process, together with technical and scientific analysis.
- ◆ Foster trust, credibility and integrity, through a process of open communication, respect and inclusion.
- ◆ Promote cooperation and the sharing of information, and provide partnering opportunities among stakeholders and the various agencies operating in the Valley.
- ◆ Act to establish the Similkameen watershed area as one community, defined by its connection to the watershed, not by political boundaries, and to promote a sense of community pride, ownership and connection to the land and water.
- ◆ Engage residents of all ages, including children and seniors.

### 11.2 OBJECTIVE 2:

During the development of the Similkameen Watershed Plan, ensure that stakeholders, decision makers, resource managers and the public are provided an opportunity to provide input to the development of the Similkameen Watershed Plan.

## 11.3 KEY STAKEHOLDER

The SWP process is led by the SVPS and the RDOS, supported by a Stakeholder Advisory Committee and a Technical Advisory Committee and is developed in collaboration with communities and stakeholders living and working in the watershed. Community representation is to include representatives from the various government authorities having jurisdiction in the watershed, resource managers, as well as representatives from agriculture, industry, recreation/tourism, environmental agencies and residents.

### **11.3 OBJECTIVE 1:**

A Stakeholders Advisory Committee will be established to oversee the development of the SWP.

### **11.3 OBJECTIVE 2:**

A Technical Advisory Committee will be established to provide science based direction and interpretation of data.

### **11.3 OBJECTIVE 3:**

Research and determine a process and protocols for the involvement of the Upper Similkameen Indian Band, the Lower Similkameen Indian Band and the Okanagan Nation Alliance in the SWP (see also 10.0 Objective 1 and 2).

### **11.3 OBJECTIVE 4:**

As part of the “buy-in” process, all local governing bodies, resource managers and stakeholders in the watershed, will be asked to submit a non-binding Memorandum of Understanding or Resolution, stating that they will act to adopt “to the extent possible and feasible” the recommendations of the SWP upon its completion. For First Nations “buy-in”, determine if this may require a referral process similar to that used under the BC Treaty Commission.

## **12. CONTINGENCY PLANS**

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The SWP will include emergency response planning and protocols. As with other areas of the SWP, the goal is have a collaborative and integrated approach covering the entire watershed.

## 12.1 EMERGENCY RESPONSE PLANNING

### 12.1 OBJECTIVE 1:

Assemble and coordinate the available emergency response protocols including drought, flood, fire and contamination planning and will integrate the emergency plans that already exist and provide for their inclusion in the Similkameen Information Database (i.e.: Copper Mine, Nicola Valley Roundtable, RDOS, etc). Review protocols to identify gaps.

## 12.2 DROUGHT PLANNING

Drought planning defines conservation and restricted use measures that are enacted prior to emergency planning. They are proactive measures implemented when water supply is restricted and reduced to pre-defined levels.

### 12.2 OBJECTIVE 1:

Define drought thresholds for the watershed and recommend objectives for water use restrictions for consideration by decision making authorities.

## 12.3 FLOODPLAIN MAPPING & FLOODPLAIN ISSUES

MoE has developed floodplain maps for the Similkameen Valley for the Keremeos-Cawston area and the Princeton area. Floodplain issues typically deal with protecting human property in the event of a flood. However, river floodplains perform many vital functions in maintaining the ecological integrity of regional environments. Floodplains provide storage and filtration of surface water, recharge underlying aquifers, provide diverse habitats for plants and animals, corridors for the movements of animals and dissemination of plants, and a supply of nutrients to aquatic environments. Floodplain functions and values have been described by many authors, and the need for protection is generally acknowledged by the scientific community. (Greeson and others, 1979; Brinson and others, 1981; Clark and Benforado, 1981; Wharton and others, 1982; Mitsch and Gosselink, 1986; Gosselink and others, 1990; Chescheir and others, 1991). The Similkameen Valley has lost much of its wetlands area. Protection of wetlands by regulatory agencies depends on simple and consistent identification of wetland boundaries.

### 12.3 OBJECTIVE 1:

Coordinate and consolidate existing floodplain mapping into the Similkameen Information Database and solicit input from residents regarding floodplain issues.

## 12.3 OBJECTIVE 2:

Communicate the importance of wetlands and floodplains to the ecosystems in the watershed and review the existing measures to protect wetlands.

Recommend a strategy to protect existing wetlands. Identify damaged or destroyed wetlands, prioritize and identify options for rehabilitation (See 8.3 Ecosystem Protection & Restoration, Objective 5) (Resource: [BC Wildlife Federation](#))

## 13. GOVERNANCE & AUTHORITY FOR IMPLEMENTATION & MONITORING

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The SWP is an initial guidance document, for decision making authorities, resource managers, water users and residents to help make more informed and integrated decisions regarding the watershed. No Order has been requested or issued under Part 4 of the BC Water Act; the Similkameen Valley Planning Society has stated they are pursuing a Non-regulatory watershed plan.

The Similkameen watershed affects stakeholders, First Nations, and residents in their day-to-day lives, both in their livelihood and in the water they drink. Residents have identified water quality as the most important future issue to be addressed (Strategy sd C pg28). They have demonstrated a strong desire to be a direct part of all decision making that affects the watershed (Summit Report pg 6-1).

At present there is no governance structure responsible for the implement the SWP upon completion. The authority for decisions which affect the health of the watershed is distributed among various levels of local, regional, provincial and federal governments. Decisions are not always carried out in consultation with impacted parties or other decision makers. The SWP is intended to integrate all aspects which contribute to the health of the watershed and provide a framework for integrated decision making.

## 13.0 OBJECTIVE 1:

Explore opportunities for a collaborative governance structure for the implementation of the SWP on a non-regulatory basis. This would consider structures such as existing water purveyors, the Similkameen Valley Planning Society, and various partnership models including with the Upper & Lower Similkameen Indian Bands.

## 13.0 OBJECTIVE 2:

Investigate a framework to have all eight water purveyors in the Similkameen watershed (Irrigation/Improvement Districts) connected throughout the Valley and explore an administrative model using the same water standards, while maintaining local autonomy.



### 13.0 OBJECTIVE 3:

Explore opportunities for stakeholder and First Nation representation in future decisions and direction of the Similkameen Watershed. In addition to influencing and providing guidance to various levels of government, resource managers and stakeholders, the SWP (non-regulatory) will explore models of governance that provide local stakeholders and First Nations with a means to participate in decision making at all levels of jurisdiction. (See 9.2 Objective 4)

Explore various watershed governance models including shared governance and partnerships with the RDOS, SVPS & other levels of governments and with First Nations. Consideration will be given to the state of development of the new BC Water Sustainability Act and new governance opportunities that may be provided therein.

Examples of governance models can be found in the Summit Report 5.1. These include a Board structure similar to the Okanagan Basin Water Board, others include the European Union Water Framework Directive, and structures used in Australia, Canterbury, New Zealand, France, and Oregon State. Another example not mentioned in the Summit Report is the Cowichan Watershed Board, where Local Government and the Cowichan Tribes Co-Chair the [Cowichan Watershed Board](#).

### 13.0 OBJECTIVE 4:

Review the SAC the UBCM Draft Collaborative Watershed Governance Accord and consider developing the SWP in accordance with it. (See Appendix 6).

### 13.1 IMPLEMENTATION, MONITORING & FOLLOW-UP

The SWP is a living document. It is to exist in perpetuity with updates prepared on a regular and ongoing basis. It is the foundation of sustainability in the Similkameen watershed and is intended to provide Valley residents with a sustainable water supply while maintaining a sustainable and harmonious relationship with the Valley's environment.

### 13.1 OBJECTIVE 1:

- ◆ Develop an Implementation Action Plan to implement SWP recommendations on a prioritized basis
- ◆ Develop a means of monitoring the progress of that implementation
- ◆ Develop a structure for annual performance reviews and follow-up revisions to the SWP to keep it current

### **13.1 OBJECTIVE 1 (continued):**

- ◆ Prepare an Annual Watershed Report Card
- ◆ Maintain the Communication Plan on a continuous basis
- ◆ Establish an ongoing administrative support basis with funding, to provide clerical, technical and administrative services and to maintain ongoing implementation of the SWP and maintenance of the SWP website and Database.
- ◆ Establish a process that is transparent and open to the public.

### **13.1 OBJECTIVE 2:**

Explore taxation/funding models for the ongoing implementation of the SWP.

## **14. TIMELINE**

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### **14.0 OBJECTIVE 1:**

to be determined in consultation with the SVPS, the RDOS and the SAC.

## APPENDIX 1: Acronyms

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BWT – Boundary Waters Treaty  
CRT – [Columbia River Treaty](#)  
EPA – [USA Environmental Protection Agency](#)  
IJC – [International Joint Commission](#)  
IOLBC – [International Osoyoos Lake Board of Control](#)  
LSIB - [Lower Similkameen Indian Band](#)  
OBWB – [Okanagan Basin Water Board](#)  
ONA – [Okanagan Nation Alliance](#)  
RDOS – [Regional District Okanagan Similkameen](#)  
SAC – Stakeholder Advisory Committee  
SVPS – Similkameen Valley Planning Society  
TAC – Technical Advisory Committee  
USIB – Upper Similkameen Indian Band

## APPENDIX 2: Glossary

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**Best management practices** – Practices followed in the development of resources that prevent or reduce harm to the environment.

**Boundary waters** – For the purposes of the **Boundary Waters Treaty** and the **International Boundary Waters Treaty Act** (an Act to implement the Boundary Waters Treaty) the term ‘boundary waters’ in the Act has the same meaning as in the Boundary Waters Treaty which defines boundary water in the preliminary article to mean - boundary waters are defined as the waters from main shore to main shore of the lakes and rivers and connecting waterways, or the portions thereof, along which the international boundary between the United States and the Dominion of Canada passes, including all bays, arms, and inlets thereof, but not including tributary waters which in their natural channels would flow into such lakes, rivers, and waterways, or waters flowing from such lakes, rivers, and waterways, or the waters of rivers flowing across the boundary.

**Biodiversity** – Biodiversity is short for biological diversity – the variety of life in all its forms. It includes genes, species and ecosystems and the processes that link them. Often people think of this as “nature”.

**Boil water advisory** – An advisory issued to protect the health of the public from drinking water of questionable quality.

**Chemical parameters** – Parameters such as nitrates, arsenic, iron, and lead.

**Contaminant** – A substance that makes another substance impure or unclean by contact or mixing.

**Decision Makers** – For the purpose of this document, decision makers include local, regional, provincial and federal governments and First Nations.

**Development plan** – With respect to Protected Public Water Supply Areas, a plan for carrying out an activity or operation on, over or under land or water for social or economic benefits, or the making of any change in the use or the intensity of use of any land, water building or premises.

**Ecological Reserve** - The Ecological Reserve Act (BC), which falls under the administration of the Minister of Environment, has as its purpose the reservation of Crown land for ecological purposes. The kinds of areas that are designated as ecological reserves include:

- ◆ areas suitable for scientific research and educational purposes associated with studies in productivity and other aspects of the natural environment;
- ◆ areas that are representative examples of natural ecosystems in British Columbia;
- ◆ areas that serve as examples of ecosystems that have been modified by human beings and offer an opportunity to study the recovery of the natural ecosystem from modification;
- ◆ areas where rare or endangered native plants and animals in their natural habitat may be preserved;
- ◆ areas that contain unique and rare examples of botanical, zoological or geological phenomena.

Once an area is established as an ecological reserve, it must be immediately withdrawn and reserved from Crown dispositions. This effectively precludes mining, resource extraction activities, range farming or energy production activities within ecological reserves – offering them significant protection.

**Ecosystem** – Ecosystems are a complex set of relationships among living organisms in an area and among its physical environment (non-living) functioning together as a unit. This includes plants, animals, people microorganisms, water rock, soil and the local atmosphere.

**Environmental Protection Guidelines** – Guidelines for resources utilization in Protected Public Water Supply Areas, for compliance by proponents or developers, which have been developed by departments and agencies responsible for resources management.

**Groundwater** – Water originating from dug or drilled wells. Because groundwater is not covered by the Water Act, the common law (judge-made) laws about groundwater quality continue to apply. Generally, a person with a well has no right to continued flow of groundwater (e.g. if an aquifer dries up the water user can do nothing). However, he or she does have a right not to have the flow of water contaminated.

**Habitat** – (Latin for “it inhabits”) is an ecological or environmental area that is inhabited by a particular species of animal, plant, or other type of organism. It is the natural environment in which an organism lives, or the physical environment that surrounds (influences and is utilized by) a species population.

**Haloacetic Acids (HAA)** – By-products of chlorination, they can occur in chlorinated water as a result of reaction between organic materials in the water and chlorine added as a disinfectant. At certain levels they pose a significant risk for the development of cancer and possibly reproductive and developmental effects.

**Hydrology** - The scientific study of the properties, distribution, and effects of water on the earth’s surface, in the soil and underlying rocks, and in the atmosphere.

**International River** - is defined under the Federal [International River Improvements Act](#) as “water flowing from any place in Canada to any place outside Canada.”

**Management zones** – Zones within the watershed, designating areas of permitted, restricted and prohibited activities. These zones are determined by slope, watershed buffers and distance from the intake.

**Microbiological Parameters** – Water samples are tested for microorganisms such as coliforms, Escherichia coli, as they cause or indicate the presence of bacteria that can cause disease and severe illness.

**Organic matter** – Matter that is derived from living organisms, such as plant material.

**Pathogens** – Agents that causes disease, especially a living microorganism such as a bacterium or fungus.

**Physical parameters** – Parameters such as alkalinity, color, pH, and turbidity.

**Pollutant** – Something that pollutes or contaminates air, soil, or water.

**Protected Public Water Supply Areas (PPWSA)** – An area surrounding a public water supply source (surfaces or groundwater) which is regulated by the Department of Environment and Conservation under the Water Resources Act.

**Qualitative** – relating to or involving comparisons based on qualities.

**Riparian** – inhabiting, or situated on the bank of a river, stream or body of water.

**Risk assessment** – The process of evaluating the adverse effects caused by a substance, activity, lifestyle or natural phenomenon.

**Stewardship** –Taking responsibility for an area to ensure its sustainability.

**Subjective** – perceived reality rather than actual; modified by individual bias.

**Surface water** – Water originating from lakes, ponds, reservoirs, rivers and streams.

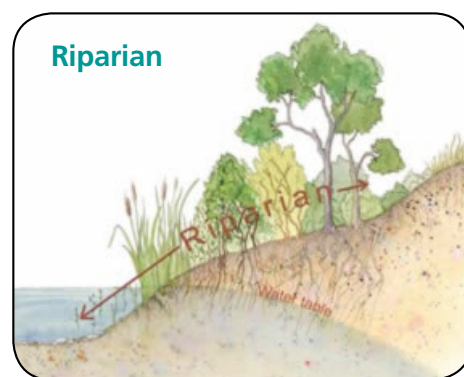
**Sustainable development** – Any development that can be maintained over time without damaging the environment.

**Trihalomethanes (THM)** – By-products of chlorination, they can occur in chlorinated water as a result of reaction between organic materials in the water and chlorine added as a disinfectant. At certain levels they pose a significant risk for the development of cancer and possibly reproductive and developmental effects.

**Turbidity** – The cloudiness of water.

**Water License** – The BC Water Act says that all water running in streams, rivers, lakes, swamps, etc. belongs to the provincial government. Anyone who wants to use that water will require a Water License from the provincial government, and “use” includes storing water for future use. A Water License grants the holder the right to divert or store a certain amount of water from a body of water.

**Watershed** – The area which drains into a stream, lake or body of water above a certain point; also called a drainage or catchment area.



**Watershed management plan** – For the purposes of this guide, a plan that manages the resources in a watershed, with the protection of drinking water quality of primary importance.

**Water supply intake** – The location where drinking water is extracted or withdrawn from the water supply source to the system which will deliver it to consumers.

## **WATER STORAGE: TYPOLOGY OF DIFFERENT WATER STORAGE OPTIONS**

### **Natural Wetlands**

Lakes, swamps and other wetland types have provided water for agriculture for millennia both directly as sources of surface water and shallow groundwater, and indirectly through soil moisture. Consequently, wetlands span the surface/subsurface interface and provide water in many different ways. As a result of their important role in the provision of water, wetlands are increasingly perceived as “natural infrastructure” (Emerton and Bos 2004).

### **Soil Moisture**

Globally, the total volumes of water stored within the soil are huge, but at any given locality they are relatively small and quickly depleted through evapotranspiration. Because of this, in recent decades there has been increased interest in various in situ rainwater management techniques that enhance infiltration and water retention in the soil profile. Widely referred to as soil and water conservation (SWC) measures, examples vary from place to place but the most promising include deep tillage, reduced tillage, zero tillage and various types of planting basin. The effectiveness of different measures depends a lot on soil characteristics and, particularly, on water holding capacity (Gregory et al. 2000).

### **Groundwater**

Groundwater is water stored beneath the surface of the Earth in aquifers. A major advantage of groundwater is that there is little or no evaporation and total volumes are often much greater than annual recharge. The amount of water that can be abstracted from a well in an aquifer is a function of the characteristics (particularly the permeability) of the rock. Some aquifers will yield only a few liters per day, whilst others can yield as much as several million liters. Methods for increasing groundwater recharge include pumping surface water directly into an aquifer and/or enhancing infiltration by spreading water in infiltration basins.

### **Ponds and Tanks**

Ponds and tanks are cisterns or cavities (covered or uncovered, lined or unlined) built by individuals or communities to store water. They are often linked with rainwater harvesting and store relatively small (but often vitally important) volumes of water. Ponds and tanks fill either by surface runoff or through groundwater and differ from reservoirs by the absence of a dam. A common limitation is that they are usually shallow, with a relatively large surface area, so that often a significant proportion of the water is “lost” through evaporation.

### **Reservoirs**

Reservoirs are water impounded behind small and large dams constructed across streams and rivers. Small dams (often built simply by mounding earth) store relatively small amounts of water (a few hundred to a few thousand cubic meters) and often empty every year. Many small dams do not have outlets and water is simply removed by livestock drinking, pumping and as consequence of spilling

and evaporation. They tend to be shallow with relatively large surface areas so that, in common with many ponds/tanks, a significant proportion (sometimes more than 90%) of the water may be lost through evaporation. Large dams (often rock-filled or concrete) store millions, sometimes billions of cubic meters of water. The water may be used for multiple purposes. Sometimes they are also used for flood control. Because they tend to be deeper with a relatively smaller surface area, in comparison to small reservoirs, they often have a higher yield relative to the inflow. Furthermore, some large reservoirs provide storage that is greater than the mean annual runoff and thus provide multi-year carryover of water.

### Riparian Areas

Riparian areas are the lands adjacent to streams, rivers, lakes and wetlands, where the vegetation and soils are strongly influenced by the presence of water. Although they make up only a small fraction of the land, they are among the most productive and valuable of all landscape types and have been the focus of conflicts between resource users.

<http://cowsandfish.org/riparian/riparian.html>

## APPENDIX 3: Legislation & Policies Governing Water and Riparian Ecosystems

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[http://www.bcwatersheds.org/wiki/index.php?title=Laws\\_and\\_Plans](http://www.bcwatersheds.org/wiki/index.php?title=Laws_and_Plans)

### FEDERAL

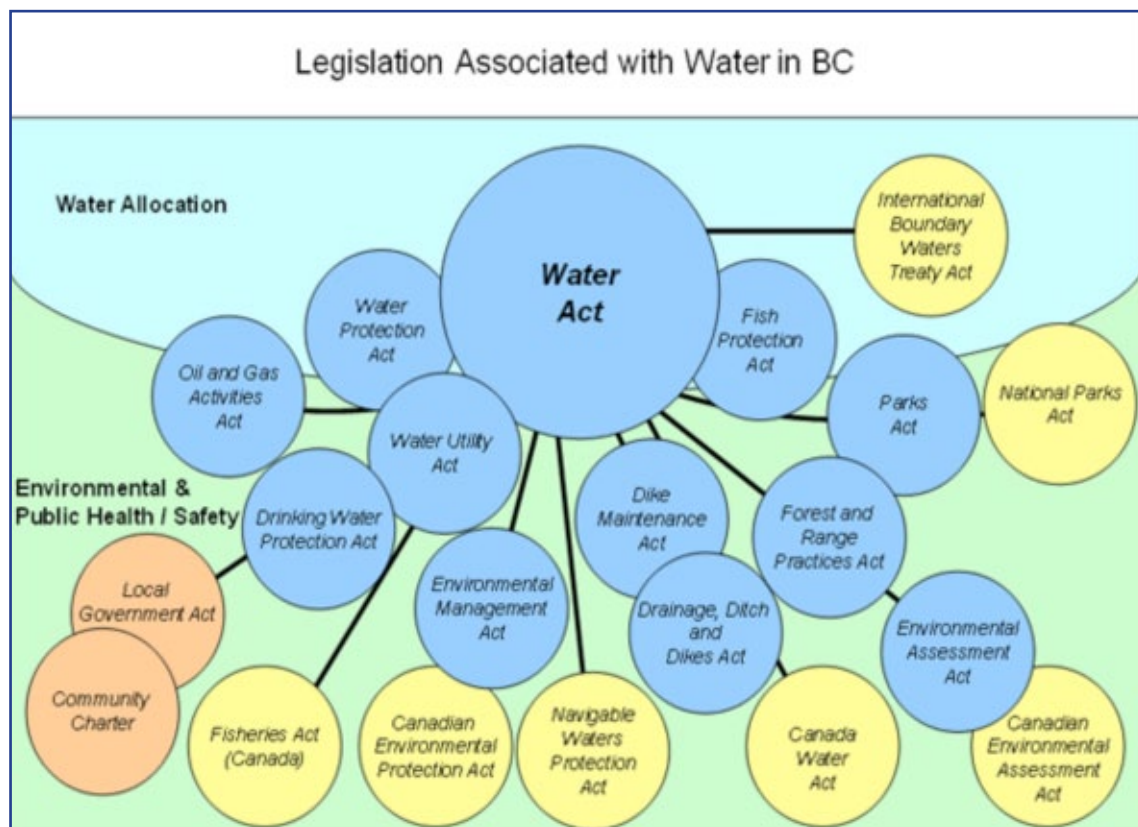
- ◆ Environmental Assessment Act
- ◆ Environmental Protection Act
- ◆ Department of Environment Act
- ◆ Federal Water Policy (1987)
- ◆ Fisheries Act
- ◆ Indian Act
- ◆ International River Improvements Act
- ◆ Navigable Waters Protection Act
- ◆ Species at Risk Act
- ◆ Water Act
- ◆ Wildlife Act

### PROVINCIAL

- ◆ Action Plan for Safe Drinking Water (2004)
- ◆ Agricultural Land Commission Act
- ◆ Dike Maintenance Act
- ◆ Drinking Water Protection Act
- ◆ Environmental Assessment Act
- ◆ Environmental Management Act
- ◆ Farm Practices Protection (Right to Farm) Act

- ◆ Fish Protection Act (Riparian Areas Regulation)
- ◆ Forest and Range Practices Act
- ◆ Health Act
- ◆ Land Act
- ◆ Living Water Smart: British Columbia's Water Plan (2008)
- ◆ Local Government Act
- ◆ Local Government (Green Communities) Statutes Amendment Act-Bill 27/2008
- ◆ Mines Act
- ◆ Okanagan-Shuswap Land and Resource Management Plan
- ◆ Private Managed Forest Land Act
- ◆ Range Act
- ◆ Utilities Commission Act
- ◆ Water Act (Groundwater Protection Regulation)
- ◆ Water Protection Act
- ◆ Weed Control Act
- ◆ Wildlife Act
- ◆ Water Utility Act

(Proposed Legislation: BC Water Sustainability Act (draft legislation to be released 2012))





## LOCAL

- ◆ Official Community Plans
- ◆ Zoning bylaws

## INTERNATIONAL

- ◆ International Boundary Waters Treaty Act
- ◆ Zosel Dam Order of Operation (Osoyoos Lake)
- ◆ Columbia River Treaty

For additional information see West Coast Environmental Law/ [BC Guide to Watershed Law](#) and Planning/Laws and Plans.

## Appendix 4: Tool Kits

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- ◆ Green Bylaws Toolkit for Conserving Sensitive Ecosystems and Green Infrastructure, 2007
- ◆ Groundwater Bylaws Toolkit, 2009
- ◆ Water Conservation Planning Guide: Issues and Challenges in the BC Context, 2009
- ◆ Delegating Water Governance, 2007

## Appendix 5: References

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- ◆ Similkameen Valley Planning Society – [Strategy for a Sustainable Similkameen Valley](#) (2011-2020)
- ◆ Summit – Similkameen River Water Management Plan – [Part 1 Scoping Study](#)
- ◆ Additional reference materials were distributed to the SAC committee on two discs.
- ◆ RDOS has been provided a copy.

### A Collaborative Watershed Governance<sup>1</sup> Accord for BC

#### **Purpose of the Accord**

*To encourage all orders of government (local, First Nations, provincial, and federal), organizations and commercial interests throughout BC, to work collaboratively to attain enduring healthy, resilient watersheds for the benefit of those ecosystems, communities, resource users and economies that depend on them.*

#### **The signatories of this Accord will:**

1. Encourage interests in watersheds throughout the province to adopt these principles;
2. Encourage participation of those active in watersheds to engage collaboratively in watershed planning processes;
3. Encourage implementation of measures in support of collaborative watershed planning and management; and
4. Apply lessons learned from other models of collaborative watershed governance.

#### **Guiding Principles of Collaborative Watershed Governance**

**The following inter-dependent principles will guide activities in watersheds:**

1. Ecological, social, cultural and economic considerations are integral parts of decision making.
  2. Best practices are to be employed to contribute to watershed sustainability<sup>2</sup> in new and existing obligations, jurisdictions and plans.
  3. Effective collaborative watershed governance is to be carried out in a transparent, accountable and inclusive manner.
  4. Effective working relationships are to be developed and maintained through open communication, trust and cooperation.
  5. Decisions are to be based on the best available scientific information and First Nations traditional ecological knowledge, and with the goal of achieving watershed sustainability.
  6. Authorizations to use water are to take into account the interests of present and future generations.
  7. Effective watershed management is to be integrated with land-based resource objectives and activities on a watershed scale.
  8. Watershed governance is to include shared responsibilities and enable those affected to have input to decision-making processes.
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<sup>1</sup> “Collaborative watershed governance” refers to a coordinated and collaborative decision making process that involves all interests within a watershed.

<sup>2</sup> “Watershed sustainability” refers to sustaining the natural attributes of watersheds for present and future generations.