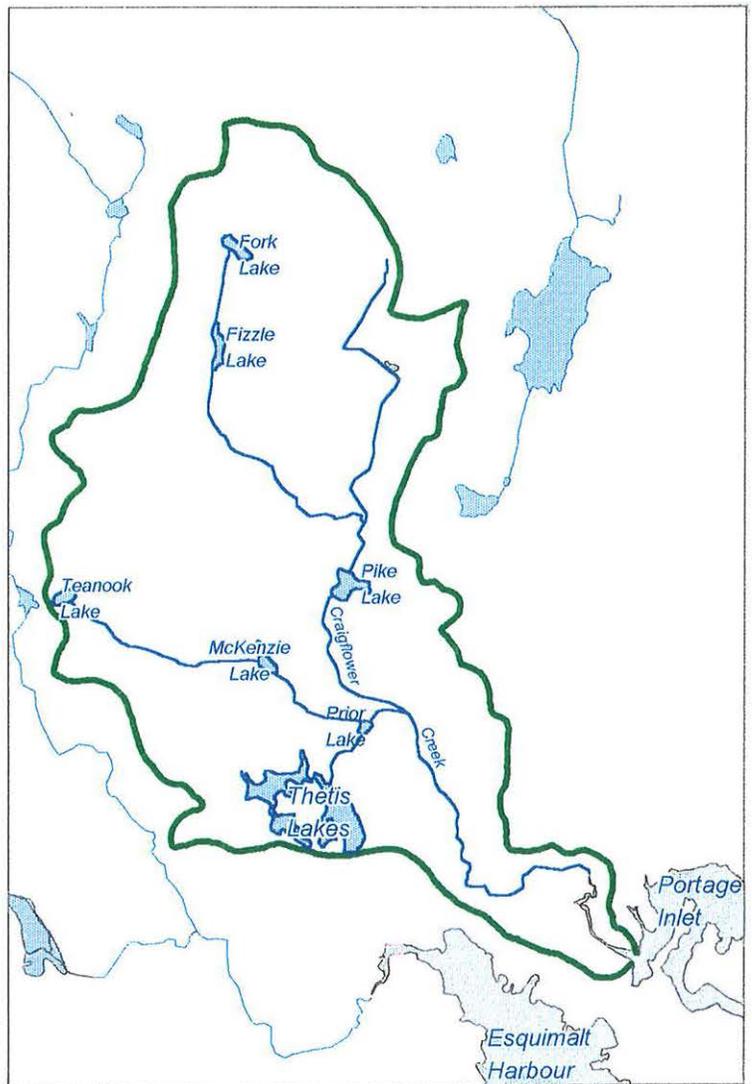


CRAIGFLOWER WATERSHED MANAGEMENT PLAN



August
1998

Developed by



Craigflower
Watershed
Management
Forum



CRAIGFLOWER WATERSHED MANAGEMENT PLAN SUMMARY

The Craigflower Watershed is located in the Capital Regional District (CRD), extending from Mount Work in the District of Highlands south to Portage Inlet in the Town of View Royal. As part of a Watershed Management Strategy endorsed by the CRD Environment Committee, the Craigflower Watershed Management Forum was created to develop the Craigflower Watershed Management Plan. The Forum consisted of 26 members, including landowners, representatives from nongovernmental organizations, and local and senior government staff.

The Forum identified hydrologically, ecologically, and socially important components of the watershed and prepared a Management Plan to protect them. The Management Plan takes a coordinated approach, seeking to ensure that activities in one jurisdiction do not negatively affect other jurisdictions, and that resources (e.g., fish habitat) do not suffer from other resource uses (e.g., urban development).

The Forum developed the following vision for the Craigflower Watershed:

“The Craigflower Watershed will be maintained and enhanced to provide a healthy environment for human and natural communities in perpetuity.”

The vision is supported by more detailed principles for implementing the vision (page 15). The Forum also developed the following six goals for watershed management:

- Goal 1:** Residents and the general public will understand and support stewardship of the watershed.
- Goal 2:** Municipalities, the CRD, and provincial and federal governments will develop and use regulatory and management tools to improve the health of the watershed.
- Goal 3:** Water flows will be managed to protect groundwater recharge, enhance low summer flows, and minimize flooding.
- Goal 4:** Water quality will be improved and maintained.
- Goal 5:** Riparian and aquatic ecosystems will support healthy populations of fish (anadromous and resident) and wildlife.
- Goal 6:** Native vegetation will be protected and restored throughout the watershed, providing habitat for birds, wildlife, and fish.

The Forum developed a Work Plan for meeting these goals (page 18 onwards), including 17 objectives and 53 specific actions. To facilitate implementation, the Plan identifies a lead agency and contact person, support agencies, resources needed to undertake each action, timing of when the action should occur, and potential sources of funding and other resources. The Plan

categorizes the actions into Existing Actions (8 actions), Program Amendments (12 actions), New Actions (21 actions), and Actions that Need a Lead Agency (12 actions). Actions that Need a Lead Agency are important for meeting the goals of the Plan, but lack an agency for implementing them. These actions could be implemented if a lead agency can be found. The Plan also includes a schedule and budget for Plan implementation (pages 42 to 49).

The Forum acknowledges that some actions are more crucial than others to attaining the Plan's vision. Through a priority-setting exercise, the Forum identified the following top ten priority actions:

1. Contact landowners directly to discuss stewardship of the watershed.¹
2. Amend existing bylaws to protect wetlands from clearing, draining, and development.
3. Change zoning bylaws and Official Community Plans to protect the variable riparian zone defined by mapping of the fisheries sensitive zone.²
4. Enhance and restore fish habitat.
5. Modify Stormwater Management Bylaws.
6. Produce a digital cadastral layer to overlay on the fisheries sensitive zone map.
7. Amend tree-cutting bylaws to prevent tree-cutting and other vegetation removal in the identified riparian zone.
8. Prepare a feasibility study of storing more water in the watershed.
9. Review Official Community Plans and other bylaws to ensure consistency with the Craigflower Watershed Management Plan.
10. Continue on-going stock assessment at the Craigflower fish fence.

The Plan identifies lead agencies for all actions except for Action 8 - prepare a feasibility study of storing more water in the watershed. A lead agency is needed if this action is to be implemented.

The Forum was established to develop the Plan. Having completed the Plan, the Forum is now dissolved. Implementation of Plan actions will be the responsibility of the lead agencies identified in the Plan. The Forum recommends that a Craigflower Watershed Management Steering Committee be struck to replace the Forum and coordinate Plan implementation. The Steering Committee will include representatives from two municipalities, CRD Parks, and three non-governmental organizations.

¹ This action must be preceded by another action, "Gather, adapt, and distribute pamphlets about management of the watershed."

² This action must be preceded by another action, "Map fisheries sensitive zone and provide maps of the fisheries sensitive zone to municipalities."

Craigflower Watershed Management Plan

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Barbara Avery	Town of View Royal, Planning	Joyce Lee	View Royal Natural Habitat Action Group
Richard Bickel	View Royal Environment Commission	Rick Lloyd	District of Saanich, Engineering Department
Bruno Blecic	MELP, Water Management, Victoria District Office	Peter McCully	Goldstream Volunteer Salmonid Enhancement Association
Ted Burns	Community Fisheries Development	Mike Meagher (Elizabeth MacMillan, alternate)	Thetis Park Nature Sanctuary Association
Kim Carpenter	District of Highlands, Stewardship Coordinator.	Rob Miller	CRD Environmental Services Group
Marlene Caskey	MELP, Fish and Wildlife, Vancouver Island Region	Dave Morris	Provincial Capital Commission
Craig Davidson	Community Fisheries Development	Tom Plasterer	No Affiliation, Private Landowner
Tony Embleton	Victoria Natural History Society	John Roe (Brian Killeen, alternate)	Veins of Life Watershed Society
Cindy Harlow	Department of Fisheries and Oceans	Tom Rutherford	Department of Fisheries and Oceans
Karen Hurley (Jana Kotaska alternate)	District of Saanich, Environmental Planning	Dan Saari	Ministry of Transportation and Highways
Ben Kangasniemi (Ted White, alternate)	MELP, Water Quality, Victoria	Jack Stidston	Portage Inlet Enhancement Society
Kevin Key	District of Highlands, Planning	Michael Todd	No Affiliation, Private Landowner
Peter Law	MELP, Fish and Wildlife, Vancouver Island Region	Joel Ussery	CRD Parks Department

The work of the Forum was based on an assessment of the Craigflower Watershed (SHIP, 1997) prepared by Julia Roberts and Ted Harding of SHIP Environmental Consultants Ltd.



ABBREVIATIONS

BMPs	Best Management Practices
CDC	Conservation Data Centre
CFDC - SIS	Community Fisheries Development Centre - South Island Streams
CRD ESG	Capital Regional District Environmental Services Group
CRD Parks	Capital Regional District Parks Department
CRD RPS	Capital Regional District Regional Planning Services
DFO	Department of Fisheries and Oceans
Env. Canada	Environment Canada
ESAs	Environmentally Sensitive Areas
ESRs	Environmental and Social Reviews
Fish Renewal BC	Fisheries Renewal BC
FFL	Friends of Fork Lake
GBI	Georgia Basin Initiative
GVSEA	Goldstream Volunteer Salmonid Enhancement Association
HCF	Habitat Conservation Fund
HREF	Habitat Restoration and Enhancement Fund, DFO
MAFF	Ministry of Agriculture, Fisheries and Food
MELP	Ministry of Environment, Lands and Parks
MELP-F&W	Ministry of Environment, Lands and Parks - Fish and Wildlife
MELP-Water Qlty	Ministry of Environment, Lands and Parks - Water Quality
MELP-Water Mgmt	Ministry of Environment, Lands and Parks - Water Management
MMA	Ministry of Municipal Affairs
MoF	Ministry of Fisheries
MoTH	Ministry of Transportation and Highways
NGOs	Non-governmental organizations (e.g. community groups)
OCP	Official Community Plan
PAHs	Polycyclic Aromatic Hydrocarbons (petroleum byproducts)
PCC	Provincial Capital Commission
PIES	Portage Inlet Enhancement Society
PSF	Pacific Salmon Foundation
PSFed	Pacific Streamkeepers Federation
RIC	Resource Inventory Committee
RNSP	Restoration of Natural Systems Program, University of Victoria
RRU	Royal Roads University
SEI	Sensitive Ecosystems Inventory
TPNSA	Thetis Park Nature Sanctuary Association
VIHP	Vancouver Island Highway Project
VNHS	Victoria Natural History Society
VOLWS	Veins of Life Watershed Society
VRNHAG	View Royal Natural Habitat Action Group

1.0 INTRODUCTION

The Craigflower Watershed serves many important functions in the Capital Region. Craigflower Creek and its tributary lakes and streams support a variety of fish species (including coho salmon and cutthroat trout) and other wildlife. The aesthetic values of greenspace in the watershed are enjoyed by residents and visitors alike. The watershed supports exceptional recreational opportunities at Thetis Lake Park (one of region's busiest parks), Mount Work Park, and on private land. Because the upper reaches of the watershed are still relatively undeveloped, the hydrologic function of much of the Craigflower system is largely intact, so that groundwater recharge, flood regimes, and other ecological functions mostly reflect natural patterns.

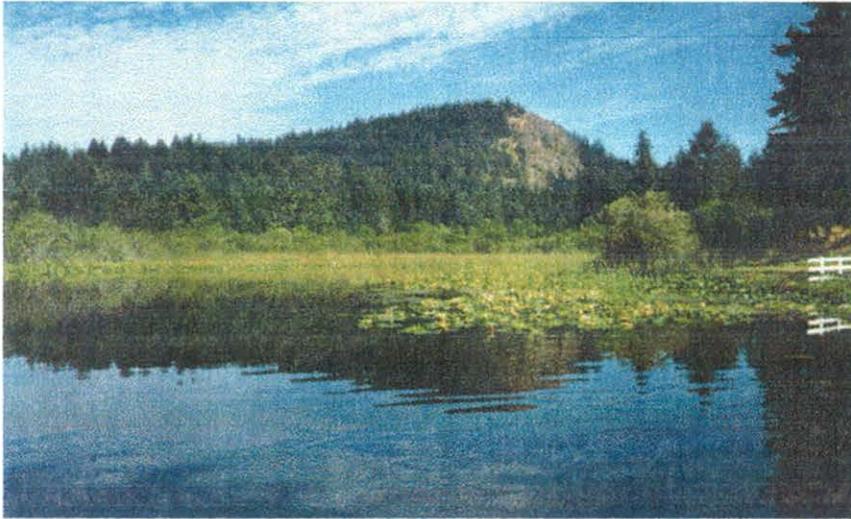
The Craigflower Watershed is facing strong urban growth pressures, and protecting its values will require concerted action by residents and governments. The lower reaches of Craigflower Creek have already been altered by residential, commercial, and highways development. Controlling land use and runoff in ways that prevent damage to the stream and its ecosystem are important goals of watershed management.

A group of residents, nongovernmental organizations, and local and senior governments have come together as the Craigflower Watershed Forum to identify ecologically and socially important components of the watershed and to prepare a management plan to protect them. The Forum was convened by the Capital Regional District, which also assembled and published this document presenting the Forum's work.

Now that the watershed management plan has been prepared, the real challenges begin -- obtaining the commitment, funding and dedication of effort needed to implement the plan, and to achieve the Forum's vision of a watershed that can accommodate human use while protecting its natural values.

1.1 Introduction to the Craigflower Watershed

The Craigflower Watershed is located in the heart of the Capital Regional District (CRD) on the southern tip of Vancouver Island. From its upper reaches in the District of Highlands (including Mount Work at 449 m), the watershed drains many scenic hills and valleys as it descends through the Town of View Royal to Portage Inlet. The watershed also includes slivers of land from the Districts of Saanich and Langford (Figure 1).



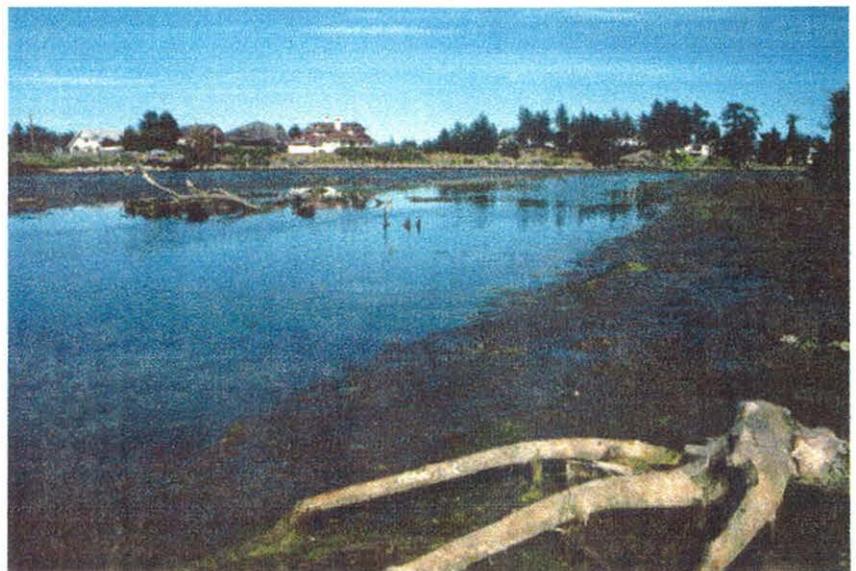
McKenzie Lake

The Craigflower Watershed contains a complex system of waterways, including streams, lakes, ponds, wetlands, and waterfalls. The best known lakes are Upper and Lower Thetis Lakes, Prior Lake, and McKenzie Lake. These lakes are popular recreation sites in or near Thetis Lake Regional Park. The ponds are mostly on private property and many were created by dredging wetlands or building dams around springs.

Nearly 30% of the watershed is protected in regional parks, including Thetis Lake Park, Francis King Park, and Mount Work Park.

Most of the urban development is concentrated in the lower watershed on both sides of the Trans Canada Highway in View Royal. Land uses include residential, commercial, and institutional development. This part of the region is facing urban growth pressures.

The upper parts of the watershed are primarily forested or used for agriculture or residential acreages.



Craigflower Creek flows into Portage Inlet

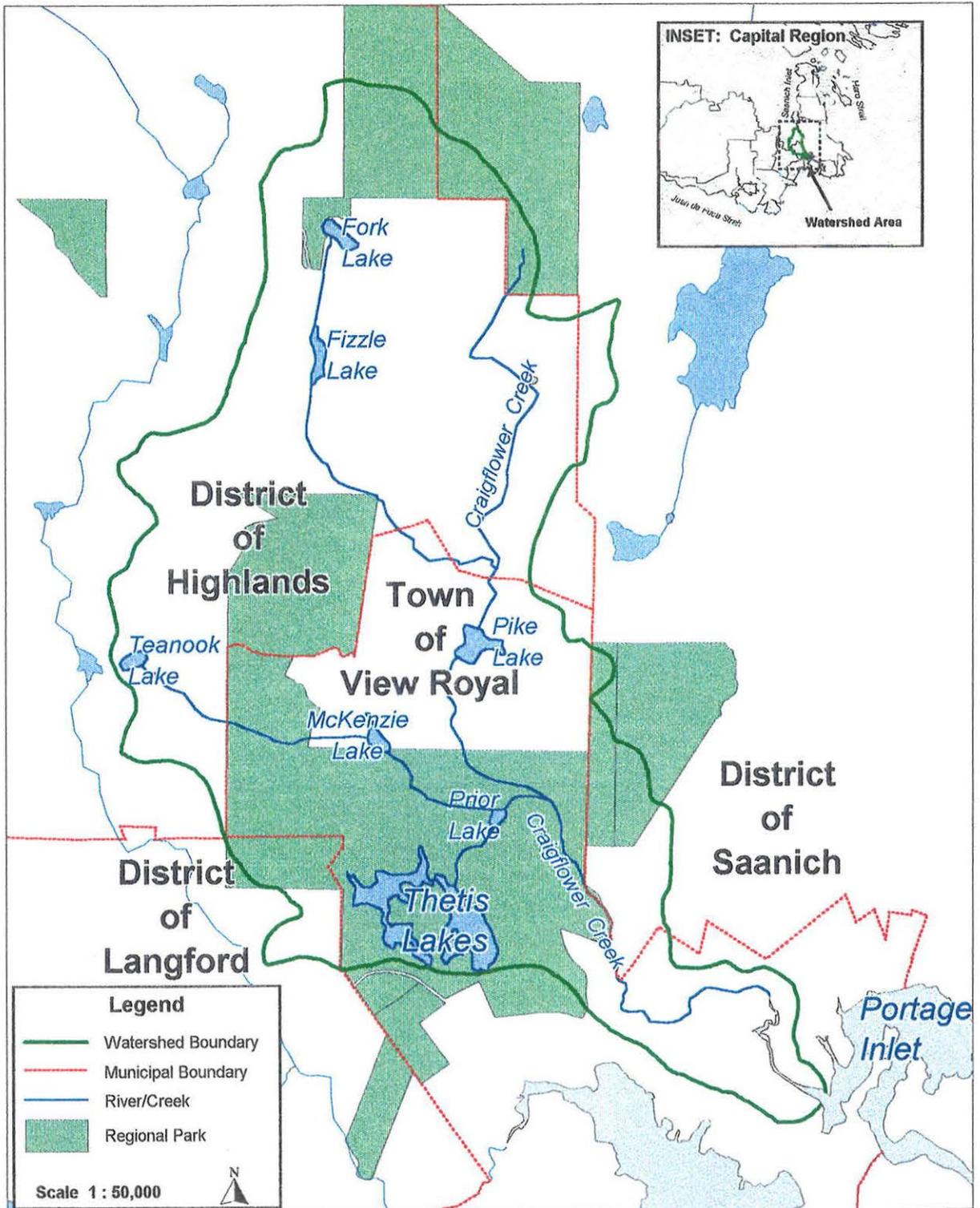


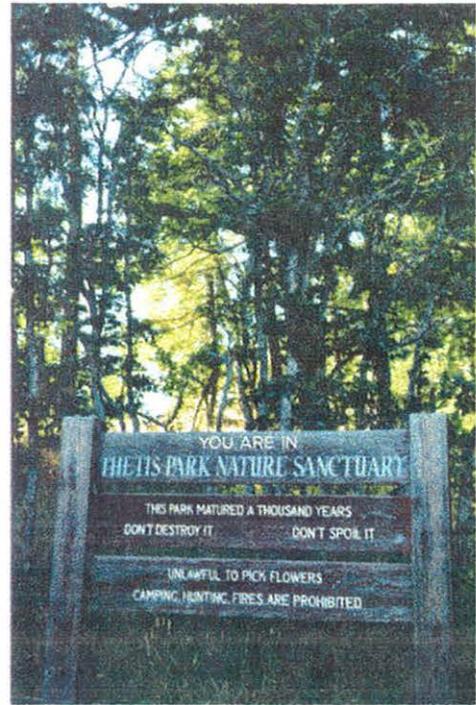
Figure 1: Jurisdictions in the Craigflower Watershed

The Craigflower Watershed supports habitats for birds, fish, other wildlife, and native vegetation. Species living in the watershed include great blue herons, salamanders, black-tail deer, and at least seven species of bats.

The watershed includes Garry Oak communities, one of the rarest and most endangered ecosystems in Canada.

Craigflower Creek provides spawning and rearing habitat for many fish, including coho salmon.

Volunteers have worked to restore fish stocks in the watershed, and monitor returning coho salmon at a fish counting fence. Low summer water flows, high water temperatures, and contaminated runoff however, threaten fish survival.



Thetis Park Nature Sanctuary, part of Thetis Lake Regional Park



One of the many stormwater drains emptying into Craigflower Creek

The health of the waterways in the Craigflower Watershed is strongly affected by activities on the land. For example, water quality in the lower reaches of Craigflower Creek can be compromised by urban and agricultural runoff and occasional sewage overflows.

Protecting the health of the Craigflower Watershed requires good land and water use practices by all jurisdictions, residents and landowners in the Watershed.

The following Craigflower Watershed Management Plan was created by a 26-member Forum of residents, government agencies, and non-governmental organizations working in the watershed. The Plan identifies a vision for the watershed and a work plan to protect and improve watershed health.

1.2 Watershed Management

A watershed is an area of land that drains precipitation into a river system. Land in a watershed may be used for many different purposes (or functions), including fish and wildlife habitat, human habitation, and human recreation. Activities in one part of a watershed often affect other parts of the watershed. For example, filling a wetland in the upper watershed may increase the rate of runoff in the lower watershed.

Two **key principles** of watershed management are:

- **Functional Integration** - managing one function of the watershed should not harm other functions of the watershed.
- **Spatial Integration** - management in one part of the watershed should not harm other parts of the watershed.

The benefits of good watershed management include:

- protection of property from flooding and erosion,
- protection of water quality for drinking or swimming,
- financial savings by preventing water quality degradation and flood damage that are expensive to mitigate,
- protection of natural areas, green space, and habitats for fish and wildlife,
- preservation of aesthetic values that enhance property values, and
- improved recreational opportunities.

A watershed management approach to planning is especially valuable where several municipalities are managing land in a watershed. The watershed planning process provides a venue for coordinating management and ensuring that activities in one jurisdiction do not have negative impacts in another jurisdiction.

1.3 CRD Watershed Management Strategy

The CRD Environment Committee endorsed a Watershed Management Strategy that includes the creation of Watershed Management Plans. Watershed management is part of the CRD's ongoing work in stormwater quality management.

The CRD has been involved in stormwater quality management since 1983 and was identified as having a coordinating role for stormwater quality management in the 1992 Core Stage 2

Liquid Waste Management Plan (LWMP). Other components of the CRD stormwater quality program include stormwater discharge surveys, public involvement, and promotion of Best Management Practices (BMPs) to protect stormwater and water courses.

In November 1997, the CRD Environment Committee endorsed a Watershed Management Strategy consisting of the six steps outlined below. (The Craigflower Watershed Management Plan is part of Step 3.)

Step 1. Prioritize watersheds in the CRD. Completed for the watersheds in the Core Liquid Waste Management Plan area (SHIP, 1997).

Step 2. Prepare watershed assessments. Completed for two watersheds, the Millstream Watershed (SHIP, 1996), and the Craigflower Watershed (SHIP, 1997). A draft assessment of part of the Goldstream Watershed was completed by SHIP in late 1997.

The Craigflower Watershed Assessment included mapping the aquatic features of the watershed, assessing the present condition of the watershed, identifying risks to the natural resources of the watershed, and presenting options for addressing those risks. The assessment recommended that the jurisdictions involved in the watershed jointly develop a watershed management plan. The options for watershed management suggested in the assessment are found in Appendix A.

Step 3. Compile options and develop watershed management plans. Municipal and CRD staff developed a preliminary Watershed Management Implementation Strategy for the Millstream Watershed (Westland, 1997) that was not distributed to the municipalities. The 26-member Craigflower Watershed Management Forum was created in 1998 to prepare a Watershed Management Plan for the Craigflower Watershed.

Step 4. Obtain political approval of the plan. To be completed.

Step 5. Implement the watershed management plan. Some plan actions are already being implemented by Forum members.

Step 6. Monitor and report on progress. To be completed.

1.4 On-going Work in the Watershed

Although formal watershed management planning is a new activity for all levels of government and NGOs working in the Craigflower Watershed, several agencies and groups are already adopting policies and completing projects that are beneficial to the watershed.

The Vancouver Island Highway Project (VIHP) has provided improvements to fish habitat and utilized state-of-the-art stormwater management techniques. Highway widening required the relocation of a portion of the Craigflower Creek channel.

The “relocation channel,” constructed in 1995, was designed to enhance fish habitat. The success of the channel will be monitored for 6 years. Water quality ponds adjacent to the highway collect road runoff and allow sediments to settle out before water drains into Craigflower Creek.



Water quality pond near Vancouver Island Highway with culvert leading to Craigflower Creek

The Highlands Official Community Plan (OCP) adopted in 1997 includes a variety of policies designed to protect aquatic systems. These policies include:

- building and septic tank setbacks of 30 m from the high water mark of lakes and streams,
- no draining, dredging, infilling or dumping of materials in water features,
- no increase in peak surface runoff from development.

In the summer of 1996, Saanich environmental staff worked with the owners of land on the east bank of lower Craigflower Creek who were making improvements to farm fields. The fields were contoured so that runoff collects in a series of settling pond before finally flowing to the creek. These measures were designed to prevent sediment from being carried into the creek.

In 1996, View Royal required the developers of Riverside Ridge and River Valley subdivisions, adjacent to Craigflower Creek, to install detention ponds that collect runoff from the subdivision. During construction, the ponds acted as settling ponds to reduce the amount of sediment entering the creek. The ponds continue to moderate peak flows from the development to Craigflower



Detention pond at Riverside Ridge. Craigflower Creek flows through the treed area in the background.

Creek. The Town also designated a 15 m wide park along the creek to protect riparian vegetation and the stream banks.

The Goldstream Volunteer Salmonid Enhancement Association (GVSEA) and the Portage Inlet Enhancement Society (PIES) in cooperation with DFO have been working to improve fish stocks in the watershed. GVSEA releases an average of 15,000 coho fry in each of Pike and Prior Lakes annually. At the fish counting fence near Talcott Road, PIES counts smolts going out to sea and adult salmon returning in the autumn.

These and other similar efforts all contribute to the health of the watershed. The purpose of watershed management planning is to coordinate and expand on these efforts to realize maximum benefit to the watershed.

Watershed management planning in the Craigflower Watershed benefits from other studies and planning processes. The Sensitive Ecosystems Inventory (Environment Canada & MELP, 1997) and the Regional Green/Blue Spaces Strategy (CRD Parks & PCC, 1996) have provided valuable information. The current review of the View Royal Official Community Plan and the preparation by CRD Parks of a management plan for Thetis Lake and Francis-King Regional Parks provide opportunities to harmonize those plans with the goals of improved watershed health detailed in this plan. Similarly, Highlands' and Saanich's OCPs contain policies that may be usefully applied in other jurisdictions.



Fish counting fence on lower Craigflower Creek

2.0 CRAIGFLOWER WATERSHED MANAGEMENT PLANNING PROCESS

2.1 Craigflower Watershed Management Forum

The CRD's Watershed Management Strategy calls for the creation of a Forum to develop a management plan for each watershed that has been assessed. The strategy states that Forum members should include "engineers and planners from the municipality(s) involved, selected staff from the CRD, MELP, landowners and land users near aquatic features, regulatory agencies, community groups, environmental organizations, and local residents and other agencies as required"(CRD Engineering Department, 1997). The members of the Craigflower Watershed Management Forum are listed in Table 1.

Table 1. Members of the Craigflower Watershed Management Forum and their affiliations

Name	Organization	Name	Organization
Barbara Avery	Town of View Royal, Planning,	Joyce Lee	View Royal Natural Habitat Action Group
Richard Bickel	View Royal Environment Commission	Rick Lloyd	District of Saanich, Engineering Department
Bruno Blecic	MELP, Water Management, Victoria District Office	Peter McCully	Goldstream Volunteer Salmonid Enhancement Association
Ted Burns	Community Fisheries Development	Mike Meagher (Elizabeth MacMillan, Alternate)	Thetis Park Nature Sanctuary Association
Kim Carpenter	District of Highlands, Stewardship Coordinator	Rob Miller	CRD Environmental Services Group
Marlene Caskey	MELP, Fish and Wildlife, Vancouver Island Region	Dave Morris	Provincial Capital Commission
Craig Davidson	Community Fisheries Development	Tom Plasterer	No Affiliation, Private Landowner

continued

Table 1. continued

Name	Organization	Name	Organization
Tony Embleton	Victoria Natural History Society	John Roe (Brian Killeen, alternate)	Veins of Life Watershed Society
Cindy Harlow	Department of Fisheries and Oceans	Tom Rutherford	Department of Fisheries and Oceans
Karen Hurley (Jana Kotaska, alternate)	District of Saanich, Environmental Planning	Dan Saari	Ministry of Transportation and Highways
Ben Kangasniemi (Ted White, alternate)	MELP, Water Quality, Victoria	Jack Stidston	Portage Inlet Enhancement Society
Kevin Key	District of Highlands, Planning,	Michael Todd	No Affiliation, Private Landowner
Peter Law	MELP, Fish and Wildlife, Vancouver Island Region	Joel Ussery	CRD Parks Department

The CRD Watershed Management Strategy recognizes the importance of including all stakeholders in the planning process. Participation in the Craigflower Watershed Forum by landowners, residents, and community groups as well as staff from all levels of government allowed for a full discussion of diverse interests. By combining the professional expertise, volunteer efforts and funding resources of the participating agencies and organizations, an effective and efficient plan has been developed to improve the health of the watershed.

2.2 Work of the Craigflower Watershed Management Forum

The Forum met for a full-day workshop and field trip on February 27, 1998. The activities of the day included:

- Discussion of watershed management objectives
- Overview of the Craigflower Watershed Assessment
- Field trip in the Craigflower Watershed focusing on the following issues identified in the Craigflower Watershed Assessment
 - Floodplain Management
 - Water Quality
 - Fish Habitat
 - Water Flows
 - Erosion
 - Riparian Vegetation
- Discussion of a vision for the watershed
- Development of a list of key actions for improving the watershed.

The Forum gathered for a second full-day workshop on April 3, 1998. The work undertaken that day consisted of:

- Approval of a short vision statement for the watershed
- Discussion of principles to guide implementation of the vision
- Development of action plans for the watershed by groups focusing on
 - Land use and riparian protection
 - Fish and fish habitat
 - Water quality and water storage.Each group worked from a list of options from the Craigflower Watershed Assessment and a list of suggested actions from Workshop 1.
- Integration of the small group plans to produce a first draft of an overall watershed management plan.

At a half-day workshop on May 8, 1998, the Forum reviewed the first draft of the Craigflower Watershed Management Plan. The following tasks were completed:

- Discussion of how the plan will be adopted and monitored
- Discussion of the overall format and structure of the plan
- Review of the Vision Principles
- Priority-setting exercise to determine which of the proposed actions are most important
- Review of action responsibilities, budgets, funding sources, and schedules
- Discussion of next steps for the plan and the Forum.

It was agreed at the end of the workshop that a second draft of the plan would be distributed to Forum members for review. Forum members were asked to rate the importance of each action for improving conditions in the watershed (See Appendix B). A third draft of the plan was prepared for discussion at the next workshop.

The final half-day workshop was held on June 26, 1998. The main topics of the workshop were:

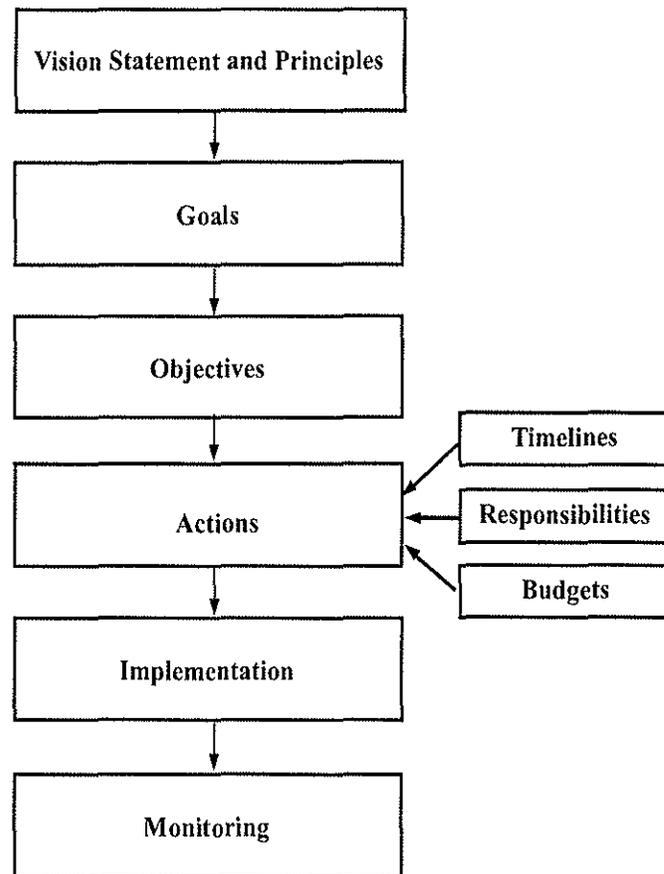
- Review of the third draft of the Plan
- Discussion of the Plan approval process
- Discussion of Plan Implementation.

Forum members provided comments on the draft Implementation Section. After revisions, the Implementation Section was incorporated in the Final Plan as Section 3.6. With the completion of the Plan, the Forum had fulfilled its mandate and was dissolved.

3.0 WATERSHED MANAGEMENT PLAN

The Craigflower Watershed Management Plan has six major elements as shown in Figure 2.

Figure 2. The Craigflower Watershed Management Plan



- **Vision Statement and Principles** provide overall direction for developing the other sections of the plan.
- **Goals** state desired outcomes for six major topics of concern identified by the Forum.
- **Objectives** expand on the Goals by providing a number of desired outcomes that will contribute to achieving each goal.

- **Actions** are the means by which the Objectives will be met. Each Action is accompanied by a timeline, responsible organization and contact person, and budget.
- **Implementation** of each action will occur through the many groups and agencies participating in the Forum. Each agency is responsible for obtaining political approval of the Plan, where necessary. Once political approval has been obtained, agencies will be able to assign staff to the Plan, and seek funding for the actions.
- **Monitoring** is necessary to ensure that (a) the Plan is implemented and (b) the Forum learns whether the actions are achieving the plan's goals. Is water quality improving? Is Craigflower supporting healthy fish stocks? Is native vegetation and wildlife habitat restored throughout the watershed? If we are not achieving plan goals, the Forum may need to adapt the plan, changing scheduling or altering or adding actions. Monitoring allows agencies to use "adaptive management", a process of learning from the results of management actions to modify programs to improve results. Monitoring strategies are therefore built into the implementation section of the Plan.

3.1 Vision for the Craigflower Watershed

The Craigflower Watershed Management Forum developed the following vision statement for the watershed:

Vision for the Craigflower Watershed

The Craigflower Watershed will be maintained and enhanced to provide a healthy environment for human and natural communities in perpetuity.

The Forum recommended that agencies, groups, and individuals use the following principles to guide implementation of the vision:

Principles for Implementing the Vision

- Involve and educate residents as stewards of the watershed;
- Work co-operatively with other agencies, groups, and individuals, enabling parties to share the financial burden and benefits of good management;
- Provide elected representatives with information about the principles and benefits of watershed management;
- Ensure that decisions and actions protect the complex ecological relationships in the watershed, and recognize that changes in one area may affect other parts of the watershed;
- Encourage development to be clustered to minimize impacts to terrestrial and aquatic ecosystems and to leave large areas of the watershed as greenspace;
- Manage runoff to ensure good water quality, desired levels of flow, groundwater recharge, and flood protection;
- Maintain and restore native ecosystems in the watershed, particularly sensitive ecosystems and species;
- Ensure that the Craigflower Watershed supports healthy populations of native fish (anadromous and resident species) and wildlife;
- Provide appropriate recreational access to the watershed, while protecting natural ecosystems.

3.2 Goals and Objectives

The Forum identified the following goals and objectives for watershed management.

Goal 1. Residents and the general public will understand and support stewardship of the watershed.

Objective 1A Provide public education about the Craigflower Watershed.

Objective 1B Involve residents in stewardship of the watershed.

Objective 1C Develop and publicize Best Management Practices for activities occurring in the watershed.

Goal 2. Municipalities, the CRD, and provincial and federal governments will develop and use regulatory and management tools to improve the health of the watershed.

Objective 2A Assess watershed implications of existing plans and bylaws.

Objective 2B Use growth management tools to ensure appropriate development of human communities in the watershed.

Objective 2C Adopt and enforce municipal bylaws that will protect the watershed and its functions.

Objective 2D Utilize tax incentives to encourage watershed stewardship by landowners.

Goal 3. Water flows will be managed to protect groundwater recharge, enhance low summer flows, and minimize flooding.

Objective 3A Collect water quantity data for flow management.

Objective 3B Protect and improve the water storage capability of the watershed.

Objective 3C Promote stormwater management that emphasizes infiltration and detention.

Goal 4. Water quality will be improved and maintained.

Objective 4A Integrate and expand water quality monitoring programs.

Objective 4B Improve the quality of stormwater released into watercourses.

Goal 5. Riparian and aquatic ecosystems will support healthy populations of fish (anadromous and resident) and wildlife.

Objective 5A Maintain, enhance, and restore fish and wildlife habitat, including riparian zones and wetlands.

Objective 5B Maintain, enhance, and restore fish stocks and wildlife.

Objective 5C Ensure adequate water flows to support fish populations.

Goal 6. Native vegetation will be protected and restored throughout the watershed, providing habitat for birds, wildlife, and fish.

Objective 6A Restore native vegetation in areas where it has been removed or degraded.

Objective 6B Protect significant terrestrial areas.

3.3 Work Plan

3.3.1 Top Ten Priority Actions

Initially, the Forum brainstormed a list of actions that would assess, maintain, or improve the health of the watershed. As these actions could not all be undertaken immediately, Forum members completed a priority-setting exercise. The exercise and resulting ranks are shown in Appendix B.

The ten most important items that emerged from the priority setting exercise are listed below.

1. Contact landowners directly to discuss stewardship of the watershed. ¹
2. Amend existing bylaws to protect wetlands from clearing, draining, and development.
3. Change zoning bylaws and Official Community Plans to protect the variable riparian zone defined by mapping of the fisheries sensitive zone. ²
4. Enhance and restore fish habitat.
5. Modify Stormwater Management Bylaws.
6. Produce a digital cadastral layer to overlay on the fisheries sensitive zone map. ²
7. Amend tree-cutting bylaws to prevent tree-cutting and other vegetation removal in the identified riparian zone.
8. Prepare a feasibility study of storing more water in the watershed.
9. Review Official Community Plans and other bylaws to ensure consistency with the Craigflower Watershed Management Plan.
10. Continue on-going stock assessment at the Craigflower fish fence.

3.3.2 Detailed Work Plan

Each of the actions proposed by the Forum was designed to meet a specific goal and related objective. Effective watershed management has multiple benefits, so some actions contribute to more than one goal. For example, installing pollutant traps should improve water quality. A benefit of improved water quality will be better fish habitat and healthier fish populations. Hence, this single action could contribute to meeting goals 4 and 5. In general, each action in the detailed work plan is listed under the goal and objective for which it was originally

¹ This action must be preceded by another action, "Gather, adapt, and distribute pamphlets about management of the watershed."

² This action must be preceded by another action, "Map fisheries sensitive zone and provide maps of the fisheries sensitive zone to municipalities."

proposed. When an action will contribute to meeting an additional goal and objective, it is also listed in the work plan as a “related action” under the additional goal and objective.

Each of the actions will be undertaken by a lead agency in cooperation with support agencies. A contact person has been designated for each lead agency. Once the Craigflower Watershed Management Plan has been approved by municipal councils and the CRD Environment Committee, the contact persons will initiate the actions in accordance with the timeline in Table 2. The support agencies will be approached to provide technical advice, access to relevant information, permission to enter private lands, or other assistance.

Resources needed were estimated for each of the actions. In some instances, staff or volunteer time are required rather than funds. Potential sources of staff time, volunteer time, or funding are suggested for each action. If funding is not available, some of the actions may be delayed.

In the list of actions that follows, the status of each action is indicated with one of the following labels:

Existing Action	An action that is already underway with coordination and funding arranged by a lead agency and contact person.
Program Amendment	An action that requires changes to an existing program. The lead agency already manages the program, and changes can occur during regular reviews of the program. Staff time rather than funding are usually required, but some program amendments will require funding for legal or consulting fees.
New Action	An action that requires new funding and has been assigned a lead agency and contact person.
Needs Lead	An action that requires new funding and lacks a lead agency and contact person.



Goal 1

Residents and the general public will understand and support stewardship of the watershed.

Objective 1A Provide public education about the Craigflower Watershed.

Action 1. Involve elementary school children who live in the watershed in the storm drain marking program.	Existing Action
Lead Agency: VOLWS	Support Agencies: DFO, MELP
Contact: John Roe	Timing: On-going
Resources: Volunteer time	Potential Sources: VOLWS
Action 2. Hold Craigflower Watershed Festival on Rivers Day (September 26, 1998).	New Action
Lead Agency: DFO	Support Agencies: CRD ESG, CRD Parks, DFO, Highlands, MELP, Saanich, NGOs, View Royal
Contact: Tom Rutherford	Timing: June - Sept. each year
Resources: <\$5K annually	Potential Sources: Community Sponsors
Action 3. Develop a Craigflower Watershed Web-site with links to Streamkeepers, CRD, and MELP web-sites.	New Action
Lead Agency: VOLWS	Support Agencies: DFO, Highlands, Saanich, View Royal
Contact: John Roe	Timing: Sept., 1998
Resources: \$1K annually	Potential Sources: E-Team funding



Goal 2 Municipalities, the CRD, and provincial and federal governments will develop and use regulatory and management tools to improve the health of the watershed.

Objective 2A Assess watershed implications of existing plans and bylaws.

Action 1. Compile and circulate an inventory of mapping products available for the watershed.

New Action

Lead Agency: CRD Parks	Support Agencies: DFO, MELP, Highlands, Saanich, View Royal
Contact: Joel Ussery	Timing: May - Jun., 1998
Resources: Staff time	Potential Sources: Lead and Support Agencies

Action 2. Assemble a digital cadastral layer to be overlaid on the fisheries sensitive zone map.

New Action

Lead Agency: CRD Parks ¹	Support Agencies: MELP, Highlands, Saanich, View Royal
Contact: Joel Ussery	Timing: July - Sept., 1998
Resources: \$1K and staff time	Potential Sources: CRD Parks

¹ As part of the parks planning process, CRD Parks will assemble a digital cadastral layer for the lands surrounding Thetis Lake, Francis-King, and Mill Hill Regional Parks. This layer will be created by combining and geo-referencing digital cadastral from Highlands, Langford, and View Royal and digitizing the required line work from Saanich. If the Forum wishes to use this mapping, permission must be obtained from the municipalities. If this mapping is used with the fisheries sensitive zone mapping, it will only provide a guide to possible development conflicts. Ground-truthing will be essential.

Action 2. Encourage development that maximizes greenspace and protects ESAs.

Program
Amendment

Lead Agency: Municipalities **Support Agencies:** MELP, CRD RPS
Contact: Kevin Key, Highlands **Timing:** Jan., 2000-Dec., 2002
Karen Hurley, Saanich
Barbara Avery, View Royal
Resources: Staff time **Potential Sources:** Municipalities

Objective 2C **Adopt and enforce municipal bylaws that will protect the watershed and its functions.**

Action 1. Enforce bylaws that prohibit building on floodplains.

Existing
Action

Lead Agency: Municipalities **Support Agencies:** MELP
Contact: Kevin Key, Highlands **Timing:** On-going
Mike Pedneault, Saanich
Barbara Avery, View Royal
Resources: Staff time **Potential Sources:** Municipalities

Action 2. Inform Boards of Variance that under the new fish protection legislation a board cannot issue a variance if the board is of the opinion that the variance would adversely impact the natural environment.

Program
Amendment

Lead Agency: Municipalities **Support Agencies:** MELP, MMA
Contact: Kevin Key, Highlands **Timing:** January, 1999
Chris Nation, Saanich
Barbara Avery, View Royal
Resources: Staff time **Potential Sources:** Municipalities

Action 3. Change zoning bylaws and Official Community Plans to protect a variable riparian zone defined by the mapping of the fisheries sensitive zone.

Program
Amendment

Lead Agency: Municipalities **Support Agencies:** DFO, MELP
Contact: Kevin Key, Highlands **Timing:** Jan. - Dec., 1999
Karen Hurley, Saanich
Barbara Avery, View Royal
Resources: Staff time **Potential Sources:** Municipalities

Action 4. Amend existing bylaws to protect wetlands from clearing, draining, and development.

Program
Amendment

Lead Agency: Municipalities **Support Agencies:** MELP
Contact: Kevin Key, Highlands **Timing:** Jun. - Dec., 1999
Karen Hurley, Saanich
Barbara Avery, View Royal
Resources: Staff time **Potential Sources:** Municipalities

Action 5. Include applicable portions of *Land Development Guidelines for the Protection of Aquatic Habitat* in a bylaw to set minimum development standards.

New
Action

Lead Agency: Municipalities **Support Agencies:** MELP
Contact: Kevin Key, Highlands **Timing:** Jun. - Dec., 1999
Karen Hurley, Saanich
Barbara Avery, View Royal
Resources: Staff time **Potential Sources:** Municipalities

Action 6. Amend tree-cutting bylaws to prevent tree-cutting and other vegetation removal in the riparian zone defined by the mapping of the fisheries sensitive zone.

Program
Amendment

Lead Agency: Municipalities **Support Agencies:** MMA, MELP
Contact: Kevin Key, Highlands **Timing:** Jun. - Dec., 1999
Dave Deshane, Saanich
Barbara Avery, View Royal
Resources: Staff time **Potential Sources:** Municipalities

Action 7. Require environmental reviews of potentially deleterious construction projects, pre-construction site visits to discuss BMPs, and follow-up site visits to monitor use of BMPs.

New
Action

Lead Agency: Municipalities **Support Agencies:** CRD ESG for BMPs
Contact: Kevin Key, Highlands **Timing:** Jan., 2000-Dec., 2002
Karen Hurley, Saanich
Barbara Avery, View Royal
Resources: Staff time, \$12K annually **Potential Sources:** Development Cost Charges

Action 8. Modify Stormwater Management Bylaws so that they are consistent with the CRD's model bylaw and incorporate appropriate sections of the new fish protection legislation to:

Program
Amendment

- set a maximum percentage of land that can be covered by impermeable materials,
- prohibit increases in runoff from new developments,
- prohibit pollution and obstruction of flow in watercourses and set penalties for offences.

Lead Agency: Municipalities **Support Agencies:** CRD ESG
Contact: Kevin Key, Highlands **Timing:** Jul. - Dec., 2000
Karen Hurley, Saanich
Barbara Avery, View Royal
Resources: Staff time **Potential Sources:** CRD ESG, Saanich, View
Legal fees of \$20K once Royal

Action 9. Ensure that potential stormwater retention areas are not developed.

New
Action

Lead Agency: Municipalities **Support Agencies:** MELP
Contact: Kevin Key, Highlands **Timing:** Jul. - Dec., 2000
Karen Hurley, Saanich
Barbara Avery, View Royal
Resources: Staff time **Potential Sources:** Municipalities

Action 10. Amend Official Community Plans to include the following requirements (permitted under the new fish protection legislation):

Program
Amendment

- policies to protect and enhance the environment,
- development approval areas where a developer is required to provide environmental impact information,
- security deposits with development permits for protection of the natural environment,
- landscaping requirements for the preservation or restoration of the natural environment.

Lead Agency: Municipalities **Support Agencies:** MELP, MMA
Contact: Kevin Key, Highlands **Timing:** Jan. - Dec., 2001
Karen Hurley, Saanich
Barbara Avery, View Royal
Resources: Staff time **Potential Sources:** Municipalities

Objective 2D Utilize tax incentives to encourage watershed stewardship by landowners.

Action 1. Distribute information to landowners and developers about federal tax benefits of donating lands, certified as ecologically sensitive, to municipalities or authorized conservation organizations.

New
Action

Lead Agency: Municipalities **Support Agencies:** MELP, Env. Canada
Contact: Kevin Key, Highlands **Timing:** Jan., 1999 - Dec., 2002
Karen Hurley, Saanich
Barbara Avery, View Royal
Resources: Staff time **Potential Sources:** Municipalities

Action 2. Municipalities will seek conservation covenants on riparian land and explore granting limited property tax exemptions to the landowners as permitted by the new fish protection legislation.

New
Action

Lead Agency: Municipalities **Support Agencies:** MELP, Env. Canada
Contact: Kevin Key, Highlands **Timing:** Jan., 1999-Dec., 2002
 Karen Hurley, Saanich
 Barbara Avery, View Royal
Resources: Staff time **Potential Sources:** Municipalities

Action 3. Reduce property tax assessment on land that is undevelopable because it includes riparian zones, wetlands, or floodplains.

Program
Amendments

Lead Agency: Municipalities **Support Agencies:** MELP
Contact: Kevin Key, Highlands **Timing:** Jan. 1-Jun. 30, 2000
 Karen Hurley, Saanich
 Barbara Avery, View Royal
Resources: Staff time **Potential Sources:** Municipalities



Goal 3

Water flows will be managed to protect groundwater recharge, enhance low summer flows, and minimize flooding.

Objective 3A Collect water quantity data for flow management.

Action 1. Collect all historical stream gauge data for the watershed.

Needs Lead

Lead Agency:	??	Support Agencies:	Water Survey Canada, MELP - Water
Contact:	??	Timing:	??
Resources:	\$2K once	Potential Sources:	Env. Canada-GBI, MoF

Action 2. Install and operate a stream gauge on Craigflower Creek, as close as practical to the site of gauge formerly operated by Water Survey Canada. Install a second gauge at an upstream site chosen in consultation with Water Survey of Canada and MELP Water Management.

Needs Lead

Lead Agency:	??	Support Agencies:	Water Survey Canada, MELP-Water, CRD Parks, Saanich, View Royal
Contact:	??	Timing:	??
Resources:	\$3K once \$9K annually	Potential Sources:	Saanich, View Royal

Action 3. Collect existing data about groundwater wells in the watershed, map the well locations, and determine whether groundwater recharge is a concern.

Needs Lead

Lead Agency:	??	Support Agencies:	MELP - Water
Contact:	??	Timing:	??
Resources:	\$5K once	Potential Sources:	Highlands, MAFF

Action 4. Using aerial photographs, estimate the amount of impermeable surface in the watershed.

Needs
Lead

Lead Agency:	??	Support Agencies:	CRD Parks, DFO, MELP
Contact:	??	Timing:	??
Resources:	\$7K once	Potential Sources:	Highlands, MMA, Saanich, View Royal

Objective 3B **Protect and improve the water storage capability of the watershed.**

Action 1. Prepare a feasibility study of storing more water in the watershed.¹

Needs
Lead

Lead Agency:	??	Support Agencies:	CRD Parks, DFO, Highlands, MELP - Water, View Royal
Contact:	??	Timing:	??
Resources:	\$25K once	Potential Sources:	CRD Parks, DFO, Highlands, View Royal

Action 2. Implement the recommendations of the feasibility study.

Needs
Lead

Lead Agency:	??	Support Agencies:	CRD Parks, DFO, Landowners, MELP - Water
Contact:	??	Timing:	??
Resources:	Unknown	Potential Sources:	Highlands, Landowners, View Royal

¹ Potential storage sites were identified by the Craigflower Watershed Assessment. The feasibility study should include a hydrological study, ecological effects, public meetings about storing water on public land, and discussions with landowners about the possibilities of storage on private lands.

Action 3. Update the Craigflower portion of MELP's *Saanich-Victoria Water Allocation Plan* to allocate water for fish. If there are changes in water availability in the watershed due to the eventual completion of Actions 3B3B.1 and 3B.2, the plan should be modified to reflect those changes.

Program Amendment

Lead Agency:	MELP - Water Mgmt	Support Agencies:	CRD Parks, DFO, Highlands, Saanich, View Royal
Contact:	Bruno Blecic	Timing:	Jul. - Dec., 2001
Resources:	Line item in MELP budget	Potential Sources:	MELP - Water Mgmt

Objective 3C Promote stormwater management that emphasizes infiltration and detention.

Action 1. Monitor and maintain the effectiveness of the water quality ponds on the Vancouver Island Highway in the Craigflower Watershed. Regularly clean highway catch basins that drain to Craigflower Creek.

Existing Action

Lead Agency:	MoTH	Support Agencies:	None
Contact:	Dan Saari	Timing:	On-going
Resources:	Line item in MoTH budget	Potential Sources:	MoTH

Action 2. Expand regular maintenance programs for municipal stormwater infrastructure, e.g., dredge stormwater detention and retention ponds to maintain their original volumes, clean out pollutant traps. Develop handling and disposal plans for solids.

Program Amendment

Lead Agency:	View Royal	Support Agencies:	CRD ESG
Contact:	Tony Queen	Timing:	Jan. 1999-Dec.2002
Resources:	\$1K in each of 1999 & 2000 \$2K in each of 2001 & 2002	Potential Sources:	View Royal

Action 3. Install state-of-the art stormwater management infrastructure (e.g., pollutant traps, sand filters, detention ponds) in new developments and retrofit existing developments to reduce peak runoff and improve water quality.

New Action

Lead Agency:	View Royal	Support Agencies:	None
Contact:	Tony Queen	Timing:	Jan., 1999-Dec., 2002
Resources:	\$15K - \$25K per installation	Potential Sources:	Development Cost Charges



Goal 4 Water quality will be improved and maintained.

Objective 4A Integrate and expand water quality monitoring programs.

Action 1. Continue water quality monitoring and reporting at the mouth of Craigflower Creek as part of the CRD's Annual Storm Water Quality Surveys.

Existing
Action

Lead Agency:	CRD ESG	Support Agencies:	None
Contact:	Rob Miller	Timing:	On-going
Resources:	\$2K annually	Potential Sources:	CRD ESG

Action 2. Monitor water quality "hot spots" to identify sources of contamination.

New
Action

Lead Agency:	CRD ESG	Support Agencies:	MELP, MoTH
Contact:	Rob Miller	Timing:	Mar., 1999-Dec., 2002
Resources:	\$5K annually	Potential Sources:	CRD ESG, MELP

Action 3. Develop water quality monitoring programs with NGOs, Camosun College, and Royal Roads University.

Needs
Lead

Lead Agency:	??	Support Agencies:	Camosun, CRD ESG, PIES, RRU, VRNHAG, MELP, DFO, Env. Canada
Contact:	??	Timing:	??
Resources:	\$5K annually	Potential Sources:	Action 21, DFO, MELP, GBI

Related Action.

Streamkeepers (Action 1B.3) could also assist with water quality monitoring.

Objective 4B Improve the quality of stormwater released into watercourses.

Related Actions.

Regular maintenance of stormwater infrastructure in Actions 3C.1 and 3C.2 and installation of state-of-the-art stormwater management infrastructure in Action 3C.3 will improve water quality in Craigflower Creek.

BMPs prepared and distributed in Actions 1C.1 and 1C.2 will educate the public about controlling sources of contamination from homes, businesses, and farms.



Goal 5
Riparian and aquatic ecosystems will support healthy populations of fish (anadromous and resident) and wildlife.

Objective 5A Maintain, enhance, and restore fish and wildlife habitat, including riparian zones and wetlands.

Action 1. Ensure a net gain of fish habitat occurs during the development approval process.

Existing
Action

Lead Agency:	DFO	Support Agencies:	Municipalities, Landowners, MELP
Contact:	Cindy Harlow	Timing:	On-going
Resources:	Staff time	Potential Sources:	DFO, Municipalities

Action 2. Map fisheries sensitive zones at a scale of 1:2,500, note intrusions into the zone, identify fish species and map their distribution, identify stock restoration opportunities, and assess fish habitat issues and enhancement opportunities.¹ Provide the fisheries maps to local governments for integration with digital cadastral maps to provide a basis for protecting riparian zones.

New
Action

Lead Agency:	CFDC-SIS	Support Agencies:	DFO, MELP
Contact:	Craig Davidson	Timing:	June - Oct., 1998
Resources:	Up to \$20K once	Potential Sources:	VOLWS from Mifflin Habitat Fund

¹ This work must be done to the most recent Urban Sensitive Salmon Habitat Resource Inventory Committee (RIC) Standards.

Action 3. Enhance and restore fish habitat.

New
Action

Lead Agency: GVSEA **Support Agencies:** DFO, Landowners,
MELP, PIES

Contact: Peter McCully **Timing:** Jul. 1,1999-Dec.31,2002

Resources: \$7K annually for 4 years **Potential Sources:** PSF, HREF

Action 4. Produce an Environmentally Significant Areas Atlas.

Needs
Lead

Lead Agency: ?? **Support Agencies:** CRD, DFO,
MELP, Municipalities,

Contact: ?? **Timing:** ??

Resources: ?? **Potential Sources:** DFO, Env. Canada

Action 5. Develop a management strategy for protection of wildlife habitat.

Needs
Lead

Lead Agency: ?? **Support Agencies:** CRD Parks,
Municipalities, Landowners,
DFO

Contact: ?? **Timing:** ??

Resources: ?? **Potential Sources:** Lead & Support Agencies

Related Actions.

Wetland Keepers groups created under Action 1B.3 will help to protect and possibly restore wetlands.

Actions 3B.1 and 3B.2 could lead to the restoration of wetlands for water storage. This restoration work would also contribute to the above objective of maintaining, enhancing and restoring fish and wildlife habitat.

Objective 5B Maintain, enhance and restore fish stocks and wildlife.

Action 1. Continue on-going stock assessment at the Craigflower fish fence.

Existing
Action

Lead Agency:	PIES	Support Agencies:	DFO
Contact:	Jack Stidston, Peter McCully	Timing:	Mar-Jun & Sep-Dec annually
Resources:	On-going maintenance of fish fence	Potential Sources:	PIES, Esquimalt Anglers

Action 2. Enhance and restore fish stocks.

Existing
Action

Lead Agency:	GVSEA	Support Agencies:	DFO, Landowners, MELP, PIES
Contact:	Peter McCully	Timing:	On-going
Resources:	Volunteer time	Potential Sources:	DFO

Action 3. Alert DFO to major incidents affecting fish stocks (e.g. increased sedimentation in stream.)

Existing
Action

Lead Agency:	GVSEA, PIES	Support Agencies:	All
Contact:	Peter McCully	Timing:	On-going
Resources:	Volunteer time	Potential Sources:	All

Related Actions.

The actions above refer specifically to fish. The strategy for protection of wildlife habitat (5A.5) and the strategy of management of rare and endangered species (6B.1) will contribute to maintaining and enhancing other wildlife.

Objective 5C Ensure adequate water flows to support fish populations.

Related Actions.

Actions 3B.1 and 3B.2 could lead to improved water storage which would allow water to be released for fish during periods of dry weather.

Action 3B.3, updating of MELP's *Saanich Victoria Water Allocation Plan*, can include allocating water to maintain flows for fish.



Goal 6

Native vegetation will be protected and restored throughout the watershed, providing habitat for birds, wildlife, and fish.

Objective 6A Restore native vegetation in areas where it has been removed or degraded.

Action 1. Identify areas where native vegetation has been removed or is in decline. Concentrate on the areas not examined during the mapping of the fisheries sensitive zone (Action 5A.2).

New
Action

Lead Agency: VNHS

Support Agencies: BC Hydro, FFL, MELP, PCC, RNSP, Saanich, TPNSA, VRNHAG

Contact: Tony Embleton

Timing: Apr. - Oct., 1999

Resources: \$8K once, Volunteer time

Potential Sources: BC Hydro, PCC

Action 2. Develop and implement a replanting and restoration program on private and public property using suitable native species.

Needs
Lead

Lead Agency: ??

Support Agencies: BC Hydro, CRD Parks, FFL, MELP, PCC, RNSP, TPNSA, VRNHAG, VOLWS

Contact: ??

Timing: ??

Resources: \$18K annually, Volunteer time

Potential Sources: BC Hydro, PCC, GBI

Objective 6B Protect significant terrestrial areas.

Action 1. Develop a management strategy for rare and endangered species (plants and wildlife).

Needs Lead

Lead Agency: ??	Support Agencies: CDC, CRD Parks, FFL, MELP-F&W, PIES, TPNSA, VRNHAG
Contact: ??	Timing: ??
Resources Volunteer time + \$5K for student contract	Potential Sources: HCF

Related Actions.

Action 2B.1 requires that municipalities protect environmentally sensitive areas from further development.

3.4 Timeline

The proposed timeline for program amendments and new actions is summarized in Table 2. Existing actions and actions that need a lead agency are not included in the timeline. The actions are grouped by goal.

The timelines extend from May, 1998 to December, 2002. Some actions, such as bylaw amendments, will protect the health of the watershed beyond December, 2002. For planning purposes, this timeline is limited to five years.

Table 2 continued

Action	Start Date	Finish Date	1998			1999				2000				2001				2002			
			2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Goal 2: Regulatory and Management Tools																					
2A.1 Compile and circulate an inventory of mapping products available for the watershed	5/1998	6/1998	■																		
2A.2 Assemble digital cadastral layer	7/1998	9/1998	■	■																	
2C.2 Inform Board of Variance of new powers	1/1999	1/1999																			
2D.1 Inform landowners and developers about federal tax benefits	1/1999	12/2002				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
2D.2 Inform property owners of the property tax advantages of conservation covenants	1/1999	12/2002				■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
2A.3 Review Official Community Plans and other bylaws to ensure consistency with the Craigflower Watershed Management Plan	1/1999	5/1999				■	■	■	■												
2C.3 Change bylaws to protect a variable riparian fisheries sensitive zone	1/1999	12/1999				■	■	■	■	■	■										
2C.4 Amend bylaws to protect wetlands from clearing, draining, and development	6/1999	12/1999						■	■	■	■										
2C.5 Include "Land Development Guidelines for the Protection of Aquatic Habitat" in a bylaw	6/1999	12/1999						■	■	■	■										
2C.6 Amend tree-cutting bylaws	6/1999	12/1999						■	■	■	■										
2A.4 Estimate full build out of current zoning bylaws	9/1999	12/1999							■	■	■										
2D.3 Reduce tax assessments on riparian zones, wetlands and floodplains	1/2000	6/2000								■	■	■									
2B.2 Encourage development that maximizes greenspace and protects ESAs	1/2000	12/2002								■	■	■	■	■	■	■	■	■	■	■	
2C.7 Require environmental reviews of appropriate projects	1/2000	12/2002								■	■	■	■	■	■	■	■	■	■	■	
2B.1 Regulate development in ESAs	1/2000	12/2002								■	■	■	■	■	■	■	■	■	■	■	

continued

3.5 Budget Summary

Table 3 provides an estimate of the new costs involved in implementing the Craigflower Watershed Management Plan over five years. Some annual costs will continue beyond the five year planning horizon used in this budget.

A total of 17 new actions and program amendments that require new funding are included in this budget. The other 16 new actions and program amendments require staff or volunteer time, rather than funding. Existing actions are not shown in the budget as they will continue to be funded as they are at present. Actions that lack a lead agency are not shown as the timing of those actions is unknown.

Most of the program amendments require additional staff time at the municipal level, rather than new funding. It is possible that demands on staff created by this plan will lead to expenditures for extra staff, if only temporarily. Rather than try to anticipate municipal staff work loads over the next five years and estimate funding for extra staff, it is left to the municipalities to manage the work load as they see fit.

The amounts suggested for each action are best estimates provided by those members of the Forum who have particular areas of expertise. In some instances, other government staff were consulted to refine the estimates.

The costs of installing state-of-the art stormwater management infrastructure (Action 3C.3) are particularly difficult to estimate as there are few detailed plans for this work. In addition, there are questions about how well pollutant traps, detention ponds and similar devices function and which alternatives are most cost effective.

Most of the required stormwater collection system infrastructure will be installed in View Royal. The Town of View Royal Master Drainage Plan (Ker, Priestman & Associates Ltd., 1990) recommended installation of pollutant traps on 16 outfalls to Craigflower Creek. The Town of View Royal has just adopted a five year drainage plan that includes installing pollutant traps on two discharges to Craigflower Creek, one in 1998 and one in 2000. Design of the first pollutant trap is in progress and is estimated to cost \$15,000. Pollutant traps can cost up to \$25,000 depending on the size of the catchment. In Table 3, the 1998 pollutant trap has been estimated at \$15,000, the second pollutant trap scheduled for 2000 has been estimated at \$25,000. Additional funds will be required beyond the year 2000 to complete improvements to View Royal's stormwater collection system.

Table 3. Budget summary for the Craigflower Watershed Management Plan

Projects	1998		1999		2000		2001		2002		5 Year
	One Time	Annual	One Time	Annual	One Time	Annual	One Time	Annual	One Time	Annual	Total
Goal 1											
1A.2 Festival		\$5,000		\$5,000		\$5,000		\$5,000		\$5,000	\$25,000
1A.3 Web-site		\$1,000		\$1,000		\$1,000		\$1,000		\$1,000	\$5,000
1A.5 Pamphlets			\$5,000								\$5,000
1B.1 Landowner Contact	\$8,000										\$8,000
1B.2 Community Newspapers				\$1,000		\$1,000		\$1,000		\$1,000	\$4,000
1C.1 Collect and adapt BMPs			\$5,000								\$5,000
1C.2 Distribute BMPs			\$5,000								\$5,000
Subtotal	\$8,000	\$6,000	\$15,000	\$7,000	\$0	\$7,000	\$0	\$7,000	\$0	\$7,000	\$57,000
Goal 2											
2A.2 Digital cadastral	\$1,000										\$1,000
2A.4 Estimate land use change			\$12,000								\$12,000
2C.7 Environmental Reviews & BMPs						\$12,000		\$12,000		\$12,000	\$36,000
2C.8 Stormwater Bylaws					\$20,000						\$20,000
Subtotal	\$1,000	\$0	\$12,000	\$0	\$20,000	\$12,000	\$0	\$12,000	\$0	\$12,000	\$69,000
Goal 3											
3C.2 Maintain municipal stormwater infrastructure				\$1,000		\$1,000		\$2,000		\$2,000	\$6,000
3C.3 Install state-of-the-art stormwater infrastructure	\$15,000				\$25,000						\$40,000
Subtotal	\$15,000	\$0	\$0	\$1,000	\$25,000	\$1,000	\$0	\$2,000	\$0	\$2,000	\$46,000

continued

Table 3. continued

Projects	1998		1999		2000		2001		2002		5 Year
	One Time	Annual	One Time	Annual	One Time	Annual	One Time	Annual	One Time	Annual	Total
Goal 4											
4A.2 Monitor "hot spots"				\$5,000		\$5,000		\$5,000		\$5,000	\$20,000
Subtotal	\$0	\$0	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$0	\$5,000	\$20,000
Goal 5											
5A.2 Map fisheries sensitive zone & provide maps to local government	\$20,000										\$20,000
5A.3 Restore fish habitat			\$7,000		\$7,000		\$7,000		\$7,000		\$28,000
Subtotal	\$20,000	\$0	\$7,000	\$0	\$7,000	\$0	\$7,000	\$0	\$7,000	\$0	\$48,000
Goal 6											
6A.1 Identify areas where native vegetation has been removed			\$8,000								\$8,000
Subtotal	\$0	\$0	\$8,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$8,000
Totals	\$44,000	\$6,000	\$42,000	\$13,000	\$52,000	\$25,000	\$7,000	\$26,000	\$7,000	\$26,000	\$248,000

3.6 Implementation

The Craigflower Watershed Forum was established to develop the Craigflower Watershed Management Plan. Having completed the Plan, the Forum is now dissolved, so implementation of the Plan will be the responsibility of the lead agencies identified for each action. Several organizations may be involved in the action, but the lead agency will be responsible for initiating and coordinating implementation.

Achieving the goals of the Plan requires actions and agencies to be coordinated and the results of the projects to be monitored. The Forum recommends that a Craigflower Watershed Management Steering Committee be struck to replace the Forum and coordinate Plan implementation. The roles of the Steering Committee will be to:

- a. Coordinate applications for funding to support actions identified in the Plan;
- b. Provide a venue for participants to collaborate on scheduling and work programs;
- c. Track whether actions are implemented and whether the timeline set out in the Plan is being met; and
- d. Monitor whether actions are meeting the Plan vision and goals and improving the health of the Craigflower Watershed.

The Steering Committee will meet at least twice a year. The Forum recommends that the Steering Committee consist of:

- 2 municipal representatives (View Royal and Highlands),
- 3 representatives from non-governmental organizations active in the watershed, and
- 1 representative from CRD Parks (as manager of 30% of the watershed).

Because their lands in the watershed are small, the Districts of Saanich and Langford chose not to be on the Committee, but request to be informed of Committee decisions. Senior levels of government are not represented on the Steering Committee, but will be available to provide technical advice at the request of the Committee.

The Steering Committee could incorporate as a non-profit society under the Societies Act. Non-profit status would be useful to the Committee in applying for and receiving funds. The Act does not preclude government employees sitting on the Board of a non-profit organization.

The Forum recommends that a paid coordinator be hired to assist the Steering Committee. The coordinator will undertake the following tasks:

- a. Convene Steering Committee meetings, and prepare agendas and minutes.
- b. Identify funding opportunities and coordinate funding applications.
- c. Distribute materials to the public and press.
- d. Provide assistance for actions that require inter-agency coordination.
- e. Be a contact person for questions on the Plan content and implementation.
- f. Track plan implementation and compile a brief Implementation Status Report before the twice-yearly steering committee meetings (see Appendix C for draft Status Report Sheet). Circulate the Report to all Forum members.
- g. Compile a Health of the Watershed Summary Report every 3-5 years, so that the Forum can learn if actions are meeting the goals of the Plan (see Appendix D for suggested indicators).

The annual cost for Steering Committee expenses and the coordinator's salary and expenses are estimated to be \$15,000 to \$25,000. Funding will be sought from government and nongovernmental sources.

Although the Forum is dissolved, all members who have participated in the creation of the Craigflower Watershed Management Plan will be kept up-to-date, by receiving reports from the coordinator summarizing the progress of Plan implementation.

4.0 REFERENCES

- Canadian Wildlife Service and Conservation Data Centre. 1997. *Sensitive Ecosystems Inventory*. Environment Canada and Ministry of Environment, Lands and Parks. Victoria, BC.
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- CRD Engineering Department. November, 1997. Staff Report #EES 97-124 re: *Watershed Management Strategy*. Capital Regional District. Victoria, BC.
- Ker, Priestman & Associates Ltd. 1990 *Town of View Royal Master Drainage Plan*. Victoria, BC.
- SHIP Environmental Consultants Ltd. 1996. *Millstream Watershed Prototype Study*. Prepared for the Capital Regional District. Victoria, BC.
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APPENDIX A

OPTIONS FOR WATERSHED MANAGEMENT FROM THE CRAIGFLOWER WATERSHED ASSESSMENT

The Craigflower Assessment (SHIP, 1997) proposed the following options for watershed management:

Land Use

To prevent property damage from flooding and to preserve and enhance the quality of existing aquatic environments:

- increase the protection of stream channels and floodplains. In particular, undisturbed and unfragmented areas in the upper reaches of the watershed should be preserved, if at all possible, as they function to moderate water flows and maintain water quality, thus benefiting downstream areas of the watershed.
- expand development permit zones to include all floodplains and wetlands.
- consider the feasibility of increasing the standard 15 metre leave strips along streams to 30 metres, thereby improving the protection of particularly sensitive or unstable sites.
- specify best management practices within leave strips to ensure the protection of both trees and understorey vegetation.
- utilize in all phases of the land development process, the tools described in *Stream Stewardship: A Guide for Planners and Developers* and *Land Development Guidelines for the Protection of Aquatic Habitat*.
- adopt the recommendations of the Regional Green/Blue Spaces strategy.

Flooding

To prevent increases in flooding:

- implement a policy of zero increase in stormwater runoff from new developments by the use of retention ponds, directing runoff into the ground on-site, or by other methods that may be appropriate.
- protect and enhance existing wetlands so they can function as stormwater retention sites.

Agriculture

To minimize the effects of agricultural land use in the watershed:

- create a new land stewardship classification for property taxes that would encourage the retention of natural aquatic features such as bogs, swamps, and small ponds.
- encourage and promote fencing of riparian areas to keep out cattle, pumping of water for stock from streams to drinking troughs and construction of specific stream crossings for cattle.

Water Quality

To improve and maintain water quality in the watershed:

- continue investigations of potential and known contaminated sites throughout the Craigflower drainage area.
- install pollutant traps on storm drains throughout the drainage basin.
- prevent further damage to stream channels from off-road vehicles in the northwest portion of Thetis Lake Regional Park, gate all potential access roads and undertake restoration activities to repair the damage to the stream channel caused by off-road vehicles.

Water Storage

To maintain and improve the natural water storage capabilities within the watershed:

- use development permit areas and new property tax incentives as a method of preventing the development of wetlands.
- provide incentives for restoring wetlands presently used for agriculture.
- investigate the feasibility of increasing the water storage capacity at the sites identified in this assessment.

Public Involvement

To encourage stewardship of the watershed by community and environmental groups:

- publish information about the importance and location of key aquatic environments such as wetlands, lakes and ponds in the watershed.
- encourage the creation of active Streamkeepers groups.
- restore the stream and riparian habitat along the urbanized portion of lower Craigflower Creek. (SHIP, 1997)

APPENDIX B

PRIORITY-SETTING EXERCISE

Forum members completed a priority-setting exercise in conjunction with their review of Draft 2 of the Plan. The purpose of the exercise was to identify which of the actions in the Plan were most important to meeting the vision for the Craigflower Watershed, as funding all the actions immediately would be unrealistic.

Forum members were provided with the information shown in Table B1 and asked to rate each action as:

- Crucial,
- Important,
- Not Useful, or
- Don't Know

in regard to meeting the Craigflower vision.

Responses were received from 17 of the 26 Forum members. The responses were evaluated by assigning points to each response as follows:

Rating	Points
Crucial	5
Important	3
Not Useful	1
Don't Know	0

The total points for each action was calculated and normalized using the formula:

$$\text{Total Points} = (C \times 5 + I \times 3 + NU) / (C + I + NU)$$

where: C was the number of members who considered the action crucial,
I was the number of members who considered the action important,
NU was the number of members who considered the action not useful.

The actions were then sorted from highest to lowest total points. The action with the highest total points was ranked 1 (most important) the action with the second highest total points was ranked 2, and so on. The action with the lowest total points was considered least important. The results of the priority-setting exercise are shown in Table B2.

As a result of this priority-setting exercise, some actions were dropped, some were combined, and some were split into two actions. The actions were then renumbered. The revised numbers are used throughout the plan. Column one of Table B2 shows the revised numbers and provides a cross-reference between the numbers used in the priority-setting exercise and the numbers used elsewhere in the plan.

Table B1. Information provided to Forum members with the priority-setting exercise

Action	Background Information	Discussion
1A.1 Pamphlets	There are no pamphlets specifically about the Craigflower Watershed, but generic watershed pamphlets are available from MELP & DFO.	Pamphlets could be used in the Landowner Contact Program (1B.1), at the Watershed Festival (1A.2) and in school programs (1A.3).
1A.2 Watershed Festival	A public education event to be held on Rivers Day, the last Sunday in September.	Could be used to educate residents, landowners, and visitors and to promote Streamkeepers and Wetland Keepers (1B.3).
1A.3 School Program	View Royal Elementary School is the only school in the watershed. Students participate in DFO's salmonids in the classroom program on the Colquitz River. Focus could be shifted to Craigflower with any additional costs absorbed by DFO. Another program called "Gently Down the Stream" could be customized for Craigflower, but the cost would be >\$5K. Annual funding is needed for an interpreter and transportation.	Shifting the focus of View Royal Elementary 's salmonid program to Craigflower Creek requires providing the teachers with easy-to-use programs. Could CRD Parks naturalists produce a watershed program for schools at Thetis Lake Park?
1A.4 Web site	MELP, CRD, Streamkeepers, and VOLWS have web sites. A Craigflower site could be linked to all the above sites.	A web-site is primarily a public education tool. It could complement all the actions under education and stewardship. A more complex interactive site could be designed for Streamkeepers and other observers to submit observations about conditions in the watershed.
1B.1 Landowner Contact	No landowner contact programs have been undertaken in the watershed. VOLWS has compiled a database of landowners in the Gorge Watershed, which includes the Craigflower Watershed. Municipal staff are concerned that the individuals conducting this program are very credible and know the rules versus the options available to landowners.	The intent of this action is to have employees such as E-Team members or volunteers visit landowners and businesses to discuss watershed stewardship. It was suggested at Workshop 3 that this program might best be undertaken by municipalities.
1B.2 Articles for community newspapers	Articles about the Craigflower Watershed have not appeared in local papers.	This action would complement other outreach actions under Objectives 1A and 1B by keeping the watershed in the public eye. For example, some articles could emphasize BMPs to reinforce the work of the landowner contact program.

continued

Table B1 continued

Action	Background Information	Discussion
1B.3 Streamkeepers and Wetland Keepers	Streamkeepers and Wetland Keepers provide manuals and training programs for volunteers on methods of protecting and restoring local aquatic habitat. DFO can provide support to local citizens who wish to form a Keepers group.	The formation of Streamkeepers and Wetland Keepers groups would increase the number of people in the watershed who are knowledgeable about aquatic systems. Keepers could observe conditions in the watershed and report problems to the appropriate agencies before serious harm is done. Keepers' efforts need to be consistent with the goals and actions of the Watershed Management Plan.
1C.1 Collect and adapt BMPs	BMPs are a tool for educating residents and businesses about ways to reduce their impact on the watershed. CRD ESG has already begun assembling BMPs for various activities. MELP Water Quality is currently assembling a BMPs compendium. It was suggested at Workshop 3 that municipalities adapt the BMPs to suit the Craigflower Watershed.	Adapting existing BMPs to the local situation is often more cost-effective than starting from scratch. In some cases performance standards are more appropriate than BMPs.
1C.2 Distribute BMPs	Highlands can distribute BMPs through existing systems, the development information process, and stewardship outreach. Saanich and View Royal do not have money available for distributing BMPs.	Making BMPs readily available to residents, business operators, and developers increases the likelihood that the watershed will be protected from unnecessary damage.
2A.1 Mapping Inventory	There is no comprehensive list of maps available for the watershed.	A list of available mapping products would assist all agencies working in the watershed.
2A.2 Estimate future land use changes	Highlands has already conducted this work. View Royal is presently reviewing its OCP, but no staff time is allocated to this action. No funding is available from CRD Parks or Saanich.	This exercise would allow the municipalities, residents, and the Forum to envision the total impact of future development in the watershed.
2A.3 Review OCPs & bylaws	This work has been completed in Highlands. Saanich could provide staff time only for this work. No staff time has been allocated in View Royal.	This project would include appropriate watershed planning actions in OCPs.
2A.4 Digital cadastral layer	Municipalities rely mainly on paper cadastral maps. The Sensitive Ecosystems Inventory mapping prepared by senior agencies is available digitally at 1:20,000. The cadastral layer could form part of the Environmentally Significant Areas Atlas (Action 5A.6)	The intent of this action is to provide municipal staff with maps that combine cadastral and environmental sensitivity data. These maps could be used to help protect environmentally sensitive areas from inappropriate development.
2B.1 Protect ESAs	The Highlands OCP contains policies to regulate development in "Environmental Protection Areas". The Saanich OCP does not include protection of ESAs. The View Royal OCP (1990) designates lands on Seymour Hill and along Craigflower Creek where it forms the Saanich-View Royal border as environmental protection areas because of their steep slopes.	Is protection of ESAs already covered by 1B.1 (landowner contact), 2A.3 (OCPs), 2B (various bylaws), 2E.1 (conservation covenants)? Does protection of ESAs need to be a separate item here?

continued

Table B1 continued

Action	Background Information	Discussion
2B.2 Clustered Development	The Highlands OCP calls for clustering development where suitable to avoid impacts on Environmental Protection Areas.	Carefully designed clustered development can provide high-quality housing, allow residents to enjoy the amenities of adjacent greenspace, and protect ESAs.
2C.1 Protect a variable riparian zone	At present riparian setbacks are: Highlands 30m Saanich 7.5m View Royal 15m	The concept of a variable riparian setback based on mapping of the fisheries sensitive zone allows for protection of sensitive areas and development in less sensitive areas.
2C.2 Tree-cutting bylaw	Existing tree-cutting bylaws: Highlands - discourages logging and land-clearing; will protect significant trees, wildlife trees, and treed areas with a Tree Protection Bylaw. Saanich - prohibits cutting of any tree within 15m of the natural boundary of a watercourse, unless the tree or its roots are obstructing drainage. Trees may not be removed from floodplains. View Royal - OCP(1990) encourages retention of trees > 20cm in diameter or 6 m in height & encourages restrictive covenants to protect trees.	Maintaining trees and understorey vegetation in the riparian zone is important for stabilizing banks, transferring nutrients to the stream, and moderating water temperature. In upland areas, maintaining trees reduces erosion, protects wildlife habitat, preserves aesthetics, and retains biodiversity.
2C.3 Prohibit building on floodplains	Highlands - OCP states that floodplains will be left in a natural state or used as parks or greenways. Saanich - Zoning bylaw prohibits building on a floodplain View Royal - OCP map (1992) designates most creek side lands as "parks and open space". An exception is the Marier subdivision where houses were built on the floodplain prior to town incorporation.	Prohibiting building on floodplains avoids property damage protects public safety as well as protecting riparian and aquatic systems. It appears that the three municipalities have dealt with this matter, so should this action be dropped or amended?
2C.4 Wetlands protection bylaw	Highlands - OCP includes wetlands in Environmental Protection Areas Saanich - Intends to add wetland protection to their Watercourse Bylaw that will be revised beginning in June, 1998. View Royal - 15m setback from natural boundaries of wetlands.	Wetlands are valuable to the health of the watershed because they store water during heavy rains, which maintains stream flows and provides groundwater recharge. Wetlands also filter water and provide important habitat for amphibians, fish and waterfowl.
2C.5 Include <i>Land Development Guidelines for the Protection of Aquatic Habitat</i> in a bylaw.		The Guidelines are extensive and would result in a large bylaw. Should municipalities adopt only relevant sections in a bylaw?

continued

Table B1 continued

Action	Background Information	Discussion
2C.6 Environmental reviews and construction site visits	Highlands calls for assessments of specific developments. Saanich has a detailed ESR process. View Royal has a more modest approach. All these reviews occur prior to project approval.	This action would provide site visits with the developer and contractor after approval of a project and before construction begins. Follow up visits would occur during construction. The intent of this action is to educate the construction industry about BMPs and to encourage BMPs as a means of protecting water quality and fish habitat.
2C.7 Stormwater Management Bylaws	The CRD developed a model stormwater management bylaw for modification and adoption by the municipalities. The model bylaw can be expanded to include new powers given to municipalities by the new fish protection legislation.	The new fish protection legislation will enable municipalities to reduce peak runoff and protect water quality.
2C.8 No development in stormwater retention areas	In Workshop 2, participants wanted areas for stormwater retention to be protected from alienation by development.	Does this require amending OCP's or zoning bylaws? Could this action be included with another action such as 2C.9? Municipalities may need to budget funds for purchasing such areas.
2C.9 Amend OCP's to use new fish protection legislation powers	The new fish protection legislation gives municipalities the power to develop policies to protect and enhance the environment. The Highlands OCP has as its first and most important goal, "Protect the integrity of the natural environment".	There are few precedents for the use of these powers.
2C.10 Powers to Boards of Variance	Traditionally, Boards of Variance rule on requests to deviate from the exact requirements of a bylaw. Under the new fish protection legislation, Boards of Variance may not issue a variance if the natural environment will be adversely affected.	Does this require any action from the municipalities or is this simply a rule change that needs to be conveyed to Boards of Variance?
2D.1 Primary contact in each municipality	Highlands has a part-time, temporary Stewardship Coordinator. Saanich has a full-time Environmental Planner.	Actions 2D.1, 2D.2, and 2D.3 are concerned with plan implementation. There may be other means of co-operating to implement the plan. Should the plan include such recommendations for municipal (or senior government) staffing? Ideas will be discussed at future meetings of the Forum.
2D.2 Maintain the Forum	The CRD Board established the Forum to prepare the Watershed Management Plan. No on-going role was recommended by the Board.	
2D.3 Participate in Gorge Watershed Council	John Roe of VOLWS is promoting a watershed council with a councillor from each of the 7 municipalities within the Gorge Watershed.	Potential exists for overlap between membership and mandate of the Forum and the Council.

continued

Table B1 continued

Action	Background Information	Discussion
2E.1 Conservation covenants and tax exemptions	The new fish protection legislation allows municipalities to accept conservation covenants on riparian land and to grant property tax exemption to the land owners. Highlands has 57 covenants with more to come, but Council has decided not to grant tax exemptions until criteria for granting exemptions are developed.	Property tax exemptions provide an incentive for landowners to protect riparian lands with conservation covenants. The cost of the tax exemptions is borne entirely by the municipalities. The cost to a municipality may be less where farm land that is already subject to reduced taxes is placed under a conservation covenant.
2E.2 Reduce taxes rates on riparian zones, wetlands, and floodplains.	A landowner can use the BC Assessment Authority's existing appeal process to request a reduction in assessment as the land is undevelopable. Tax rates need not be changed.	The intent of this action is to acknowledge that riparian zones, wetlands, and floodplains are less valuable to the owner because they are undevelopable. Is any action required in the Craigflower Plan or is this concern covered by Actions 2E.1, 2E.3, and BC Assessment appeals? Presumably, municipalities and the Forum would endorse appeals.
2E.3 Federal tax benefits of donating ecologically sensitive lands.	Certain income tax benefits can result from donating ecologically sensitive lands to a nature trust or local government. A professional biologist must verify the ecological value of the donated land.	Municipalities may not want to own or maintain all donated land.
2F.1 Annual Status Report		An Annual Status Report would track the implementation of the Craigflower Watershed Management Plan. If the report were published early in each year, it could assist in budgeting for watershed actions in the coming year.
2F.2 Health of the Watershed Summary Report	The CRD already publishes the Report on the Environment, covering the entire region.	A Health of the Watershed Summary Report monitors conditions in the watershed and indicates whether the actions from this plan are improving the watershed. The Report would publish in one place the results of other monitoring actions (e.g. 4A.1, 4A.2, 4A.3).
3A.1 Collect historical stream gauge data.	Water Survey Canada operated a gauge on Craigflower Creek downstream of Burnside Road from 1974 to 1981.	Historical stream flow data provide a baseline for comparing present flows and evaluating the impacts of development in the watershed. These data would be useful for the water storage feasibility study (3B.1).
3A.2 Map groundwater use.	Many residents in Highlands rely on groundwater for domestic water supply. Wells in some parts of the Highlands may run dry in summer. District of Highlands assigns low priority to a groundwater survey.	Understanding groundwater use and recharge provides more information about the movement of water in the watershed.
3A.3 Reactivate the Water Survey Canada gauge on Craigflower Creek	Water Survey Canada staff in Nanaimo were not aware of the Craigflower gauge. They are checking their files and will provide information on the type of gauge, whether it is still in place, and costs of reactivating it.	On-going water quantity data would allow comparisons with historical flows in the creek and would be valuable for the water storage feasibility study (3B.1).

continued

Table B1 continued

Action	Background Information	Discussion
3A.4 Additional stream gauge	Water Survey Canada will provide information on the types of gauges available and costs. Neither Saanich nor View Royal have money available for stream gauging at this time. Placing a gauge upstream of Riverside Ridge could provide a measure of the impacts of subdivisions and the highway on stream discharge.	This gauge could be monitored by the same staff person who monitors the gauge in 3A.3. The possibility of monitoring by community volunteers could be explored
3A.5 Estimate amount of impermeable surface in the watershed.	The new fish protection legislation authorizes local government to develop a bylaw to establish a maximum percentage of land that may be covered by impermeable material. An ideal percentage is not given in the Bill. Saanich could provide staff time for this action and significant research on "effective" impervious cover measurements. No money is available from Saanich or View Royal at this time.	One Forum member commented, "Not needed. So what if it's 15% or 8% or 21%? What is the current effect? Too many qualifiers." Can we drop this action?
3B.1 Feasibility study of increasing water storage	This study was recommended by the Craigflower Watershed Assessment. From a fisheries perspective this is a top priority. Funding for this study would not come from MELP or View Royal. CRD Parks and Saanich could provide staff time.	Increasing low summer flows would increase available fish habitat (5A.3 and 5C). This can be done by storing more water in wetlands and ponds during the wet season for release during the dry season. CRD Parks is concerned about changes caused by flooding of wetlands in parks The feasibility study is needed to identify water storage areas and evaluate changes to hydrology of the system, ecosystem effects, and concerns of all stakeholders.
3B.2 Implement recommendations of feasibility study.	No comment from Highlands at Workshop 3. Saanich commented that a council report and budget item would be required for the municipality to contribute to this action. View Royal commented that no money is available at this time.	Until the study is done it is impossible to estimate the costs of implementation. Costs might be borne by landowners who benefit from an additional pond on their lands, municipalities who might use the ponds as a backup for fire-fighting. Some costs might be borne by province and by the residents of the CRD who benefit from improved fish stocks.
3B.3 Update MELP's water allocation plan.	MELP Regional Water Management regularly prepares water allocation plans that compare water use to available water supply and make recommendations for future water use.	If water storage in the Craigflower Watershed were increased as a result of implementing the above feasibility study, the additional available water should be noted in the Water Allocation Plan. The water could be designated for use by fish (Objective 5C).
3C.1 Maintain stormwater infrastructure.	Maintenance of the stormwater infrastructure for the Island Highway is funded by the Highway Maintenance Contract. No money or staff time are allocated in View Royal.	

continued

Table B1 continued

Action	Background Information	Discussion
3C.2 Install state-of-the-art stormwater management infrastructure	The recent Vancouver Island Highway Project included installation of state-of-the-art stormwater infrastructure. The View Royal Master Drainage Plan (1990) recommended installation of pollutant traps on 16 discharges to Craigflower Creek. Highway construction has not altered any of those discharges. View Royal has just adopted a 5 year drainage plan that includes installing pollutant traps on 2 discharges to Craigflower Creek, one in 1998 and one in 2000 (T. Queen, pers. Comm.) This type of infrastructure is not needed in Highlands or Saanich.	A Forum member commented, "Many dots for such a small area impacted by degraded stormwater runoff" This action was meant to include stormwater management techniques such as on-site disposal of stormwater, swales, more impermeable surfaces, detention ponds, and retention ponds. These techniques are probably applicable to small developments in Highlands and Saanich and to new developments in View Royal. The 16 pollutant traps are needed to upgrade existing infrastructure in View Royal.
4A.1 On-going water quality monitoring	CRD Environmental Services Group samples water and sediment near the mouth of Craigflower Creek as part of the Annual Stormwater Quality Survey. Fecal coliforms are measured in water samples collected twice per year. Sediments, collected once per year, are tested for metals and PAHs. The 1997 sampling program showed moderate levels of concern for fecal coliforms and low/moderate concerns for sediment contamination.	This monitoring program is on-going and provides a "snapshot" of conditions in the creek at the time of sampling. More extensive sampling would be needed to truly judge conditions in the watershed.
4A.2 Monitor water quality "hot spots"	In addition to the above monitoring, DFO investigates water quality if there is a fish kill.	This action would allow for more detailed investigations of water quality problems when they occur.
4A.3 Monitoring by volunteers and students	Both Camosun College and RRU have environmental studies programs that require students to complete projects. Student and instructor time would be available at no cost, but funding would be required for testing of samples at an analytical lab. DFO could supply training and water quality monitoring equipment.	Qualitative monitoring (e.g. for water discoloration) by PIES volunteers or Streamkeepers can be done at no cost.
5A.1 Fisheries sensitive zone mapping and assessment	CFDC-SIS planned to do this work from May to August, 1998. As of May 19, 1998, funding has not been received for the project.	
5A.2 Fisheries zone maps to local government		The intent of this action is to provide local governments with the location of the fisheries sensitive zone so that they can protect it from development. This action will provide the information necessary for defining the variable riparian zone that is to be protected by Action 2C.1. Could this action be combined with 5A.1?

continued

Table B1 continued

Action	Background Information	Discussion
5A.3 Enhance and restore fish habitat	The amount of funding required for this action will depend on the assessment of fish habitat that is part of Action 5A.1. Funding may be available from Fisheries Renewal BC, who prefers to see community-based partnerships for projects. As of Workshop 3, VOLWS is taking the lead in applying for funding.	
5A.4 Net gain of fish habitat during development.	DFO has a policy of requiring a net gain in fish habitat during development. Urban development proposals are referred to DFO and MELP whose staff meet on-site with the developer to discuss his plans.	Since the Fisheries Act is reactive, DFO can only advise the developer in advance and lay charges later if fish habitat is damaged. Municipal bylaws could be proactive in requiring improvements to fish habitat.
5A.5 Management strategy for protection of wildlife habitat.	CRD Parks is working on a Management Plan for Thetis, Francis-King and Mill Hill Parks. Protection of wildlife habitat will be included in the plan. CRD Parks will share information with those planning for habitat protection outside the Park. The SEI and a soon-to-be-released conservation manual from MELP could be used in preparing the strategy.	
5A.6 Environmentally Significant Areas Atlas	The atlas would be enhanced by using an orthophoto with sufficient resolution to be enlarged to 1:5,000. CRD Parks is investigating the cost of such a photo for the management plan mentioned above. Additional coverage for the rest of the Craigflower watershed might not increase costs significantly.	This project could include the mapping actions listed in 2A.1, 2A.4, 5A.1, and 5A.2. All the agencies mentioned in those actions could be involved in the atlas project and costs could be integrated. How will the Atlas be used to improve watershed management?
5B.1 On-going stock assessment	This is a continuing project of PIES. Esquimalt Anglers provides funding for maintenance of the fish fence.	
5B.2 Enhance and restore fish stocks	GVSEA already operates a volunteer fish stocking program with full capabilities. Stock restoration decisions are made by MELP and DFO.	
5B.3 Alert DFO to major incidents affecting fish.	This work is already done by volunteers from GVSEA and PIES when they are working in the watershed.	Streamkeepers, Wetland Keepers and other volunteers could increase the total area under observation.
5C.1 Include water for fish in MELP's water allocation plan.	This item can be included in Action 3B.3 ,update of the water allocation plan.	If actions 3B.3 and 5C.1 are done after the water storage feasibility study and its implementation (3B.1 and 3B.2), more water should be available for maintaining flows for fish.

continued

Table B1 continued

Action	Background Information	Discussion
6A.1 Identify areas where native vegetation should be restored.	The mapping of the fisheries sensitive zone (Action 5A.1) will include noting where vegetation needs to be replaced. VNHS was originally suggested as the lead for this project. If 5A.1 goes ahead, VNHS may only have to cover the upland areas of the watershed.	
6A.2 Replanting program	VNHS was suggested as a lead agency for this project. They feel it is unlikely they could carry out this program without a hired professional person working full-time.	Planting native species on private land could be encouraged through pamphlets (1A.1) and landowner contact (1B.1).
6B.1 Management strategy for rare and endangered species	This strategy could begin with data about rare and endangered species available from the CDC and TPNSA. CRD Parks will be including rare and endangered species in its Management Plan for Thetis, Francis-King and Mill Hill Parks. CRD Parks would share information with those working to protect rare and endangered species outside the park.	The Craigflower drainage could be used as an example showing the use of SEI maps and the SEI Conservation Manual. Information about protecting rare and endangered species could be distributed through pamphlets (1A.1) and landowner contact (1B.1). Checking for rare and endangered species should form part of ESRs prior to development approval.

Table B2. Results of priority-setting exercise - June 10, 1998

Revised		Ratings and Points				Total Points	Ranking
		Crucial	Important	Not Useful	Don't Know		
No.	Actions	5	3	1	0		
1B.1	1B.1 Landowner Contact	12	4	0	1	4.50	1
2C.4	2C.4 Wetland protection bylaw	9	7	0	1	4.13	2
2C.3	2C.1 Protect variable riparian zone	8	8	0	1	4.00	3
5A.2	5A.2 Provide fisheries maps to local govt	7	7	0	4	4.00	4
5A.3	5A.3 Restore fish habitat	6	6	0	5	4.00	5
2C.8	2C.7 Stormwater Bylaws	7	8	0	2	3.93	6
2A.2	2A.4 Digital cadastral	6	7	0	4	3.92	7
2C.6	2C.2 Tree-cutting bylaw	6	7	0	4	3.92	8
3B.1	3B.1 Study water storage feasibility	6	4	1	5	3.91	9
5A.2	5A.1 Map fisheries sensitive zone	7	9	0	1	3.88	10
2A.3	2A.3 Review OCPs	6	9	0	2	3.80	11
5B.1	5B.1 On-going stock assessment	5	8	0	4	3.77	12
1B.3	1B.3 Stream & Wetland Keepers	6	10	0	1	3.75	13
2C.5	2C.5 Land Development Guidelines	4	7	0	6	3.73	14
1C.2	1C.3 Distribute BMPs	4	8	0	5	3.67	15
6B.1	6B.1 Protect rare and endangered species	4	8	0	5	3.67	16
3C.3	3C.2 Install state-of-the art stormwater infrastructure	4	9	0	4	3.62	17
3B.2	3B.2 Implement feasibility study	4	5	1	8	3.60	18
2D.3	2E. 2 Reduce taxes on undevelopable land	4	10	0	3	3.57	19
4A.1	4A.1 Continue water quality monitoring	4	10	0	3	3.57	20
1C.1	1C.1 & 1C.2 Collect & adapt BMPs	3	8	0	6	3.55	21

continued

Table B2 continued

Revised		Ratings and Points				Total Points	Ranking
		Crucial	Important	Not Useful	Don't Know		
No.	Actions	5	3	1	0		
2D.2	2E.1 Riparian Conservation Covenants	4	11	0	2	3.53	22
2A.1	2A.1 Mapping Inventory	4	7	1	5	3.50	23
2C.7	2C.6 Environmental Reviews & BMPs	3	9	0	5	3.50	24
5A.4	5A.6 Environmentally Significant Areas Atlas	4	7	1	5	3.50	25
1B.2	1B.2 Community Newspapers	3	12	0	2	3.40	26
2B.1	2B.1 Regulate development in ESAs	5	9	2	1	3.38	27
2C.9	2C.8 Protect stormwater retention areas	2	3	1	11	3.33	28
3A.1	3A.1 Historical stream gauge data	2	10	0	5	3.33	29
3C.1& 3C.2	3C.1 Maintain stormwater infrastructure	2	10	0	5	3.33	30
5B.2	5B.2 Restore fish stocks	2	10	0	5	3.33	31
5B.3	5B.3 Alert DFO to incidents affecting fish	3	8	1	5	3.33	32
5A.1	5A.4 Net gain of habitat during development	2	11	0	4	3.31	33
6A.1	6A.1 Identify areas where native vegetation has been removed	2	12	0	3	3.29	34
6A.2	6A.2 Replant with native species	2	13	0	2	3.27	35
1A.2	1A.2 Festival	2	14	0	1	3.25	36
3B.3	5C.1 Include water for fish in Allocation Plan	2	5	1	9	3.25	37
2C.10	2C.9 Apply the new fish protection legislation to OCPs	1	9	0	7	3.20	38
Dropped	2D.1 Primary contact person	1	9	0	7	3.20	39
2D.1	2E.3 Federal tax benefits	1	9	0	7	3.20	40
4A.2	4A.2 Monitor "hot spots"	2	8	1	6	3.18	41
2A.4	2A.2 Estimate land use change	2	9	1	5	3.17	42

continued

Table B2 continued

Revised		Ratings and Points				Total Points	Ranking
		Crucial	Important	Not Useful	Don't Know		
No.	Actions	5	3	1	0		
5A.5	5A.5 Strategy to protect wildlife habitat	1	13	0	3	3.14	43
2B.2	2B.2 Clustered development	1	15	0	1	3.13	44
2C.1	2C.3 No building on floodplains	6	5	5	1	3.13	45
2C.2	2C.10 New powers for Board of Variance	0	7	0	10	3.00	46
Dropped	2F.1 Annual Status Report	0	14	0	3	3.00	47
Dropped	2F.2 Health of Watershed Report	0	9	0	8	3.00	48
3A.2	3A. 4 Install additional gauge	0	6	0	11	3.00	49
3A.3	3A.2 Groundwater mapping	2	6	2	7	3.00	50
3A.2	3A.3 Reactivate stream gauge	1	11	1	4	3.00	51
3B.3	3B.3 Update Water Allocation Plan	1	7	1	8	3.00	52
4A.3	4A.3 Monitoring by volunteers	0	12	0	5	3.00	53
1A.4	1A.3 School Programs		12	1	4	2.85	54
1A.5	1A.1 Pamphlets	1	10	3	3	2.71	55
Dropped	2D.2 Maintain Forum	1	4	2	10	2.71	56
1A.3	1A.4 Web-site		7	2	8	2.56	57
Dropped	2D.3 Participate in Gorge Watershed Council	0	4	2	11	2.33	58
3A.4	3A.5 Map impermeable surfaces	0	5	3	9	2.25	59

APPENDIX C

STATUS REPORT SHEET

This Appendix contains a Status Report Sheet for tracking actions that have been implemented. Once the plan has been approved, the Steering Committee will circulate the sheet annually to Forum members to identify which actions have been implemented, and which actions are outstanding. The Steering Committee can then compile a Status Report on Plan Implementation for circulation to Forum members and to participating governments (CRD Board, municipal councils, provincial and federal ministers).

Status Report for the Craigflower Watershed Management Plan.

Action	Lead Agency Contact	Date Completed	If not completed, comment on status
1A.1 Storm drain marking program			
1A.2 Festival			
1A.3 Web-site			
1A.4 School Programs about fish			
1A.5 Pamphlets			
1B.1 Landowner Contact			
1B.2 Community Newspapers			
1B.3 Stream & Wetland Keepers			
1C.1 Collect and adapt BMPs			
1C.2 Distribute BMPs			
2A.1 Mapping Inventory			
2A.2 Digital cadastral			
2A.3 Review OCPs			
2A.4 Estimate land use change			
2B.1 Regulate development in ESAs			
2B.2 Clustered development			
2C.1 No building on floodplains			
2C.2 New powers for Board of Variance			
2C.3 Protect variable riparian zone			
2C.4 Wetland protection bylaw			
2C.5 Land Development Guidelines			
2C.6 Tree-cutting bylaw			
2C.7 Environmental Reviews & BMPs			
2C.8 Stormwater Bylaws			
2C.9 Protect stormwater retention areas			
2C.10 Apply the new fish protection legislation to OCPs			
2D.1 Federal tax benefits			

Action	Lead Agency Contact	Date Completed	If not completed, comment on status
2D.2 Riparian Conservation Covenants			
2D.3 Reduce taxes on undevelopable land			
3A.1 Historical stream gauge data			
3A.2 Install stream gauges			
3A.3 Groundwater mapping			
3A.4 Map impermeable surfaces			
3B.1 Study water storage feasibility			
3B.2 Implement feasibility study			
3B.3 Update Water Allocation Plan			
3C.1 Maintain highway stormwater infrastructure			
3C.2 Maintain municipal stormwater infrastructure			
3C.3 Install state-of-the-art stormwater infrastructure			
4A.1 Continue water quality monitoring			
4A.2 Monitor "hot spots"			
4A.3 Monitoring by volunteers			
5A.1 Net gain of habitat during development			
5A.2 Map fisheries sensitive zone and provide maps to local government			
5A.3 Restore fish habitat			
5A.4 Environmentally Significant Areas Atlas			
5A.5 Strategy to protect wildlife habitat			
5B.1 On-going stock assessment			
5B.2 Restore fish stocks			
5B.3 Alert DFO to incidents affecting fish			
6A.1 Identify areas where native vegetation has been removed			
6A.2 Replant with native species			
6B.1 Protect rare and endangered species			

APPENDIX D

SUGGESTED INDICATORS FOR USE IN PREPARING HEALTH OF THE WATERSHED SUMMARY REPORTS

The Craigflower Watershed Management Steering Committee should monitor the success of the Watershed Management Plan through compilation of a “Health of the Watershed Summary Report” every 3-5 years. This report should use measurable indicators to evaluate whether the health of the watershed is improving, remaining constant or degrading. Is Plan implementation resulting in a watershed that meets the vision and goals of the Craigflower Watershed Forum? The table below lists some potential indicators for each goal of the Craigflower Watershed Management Plan. The indicators should be directly relevant to each goal, with reliable data available on an ongoing basis.

Goal	Potential Indicators	Data Source
1. Residents and the general public will understand and support good stewardship of the watershed.	<ul style="list-style-type: none"> ▶ Percent of residents surveyed who understand key principles of watershed management ▶ Percent of residents surveyed who practice key principles of watershed management 	Would require new survey
2. Municipalities, the CRD, and provincial and federal governments will develop and use regulatory and management tools to improve the health of the watershed.	<ul style="list-style-type: none"> ▶ Number of actions proposed in the Craigflower Plan that have been implemented. 	Annual Craigflower Watershed Management Plan Status Report
3. Water flows will be managed to protect groundwater recharge, enhance low summer flows, and minimize flooding.	<ul style="list-style-type: none"> ▶ Groundwater recharge levels at selected wells ▶ Low summer flows at Craigflower stream gauge. ▶ Number of times that houses built outside of the 100 year floodplain have been flooded. ▶ Percent of watershed that is under impermeable surfaces. 	<p>Would require monitoring</p> <p>Would require installation of gauge (Action 3A.2)</p> <p>Municipal records</p> <p>Would require completion of Action 3A.4.</p>

Goal	Potential Indicators	Data Source
4. Water quality will be improved and maintained.	<ul style="list-style-type: none"> ▶ Fecal coliform levels in Craigflower Creek ▶ Substances of environmental concern in sediments at Craigflower Creek point of discharge (chemical contaminants) ▶ Other water quality parameters 	<p>CRD Engineering</p> <p>CRD Engineering</p> <p>Volunteer water sampling (Action 4A.3)</p>
5. Riparian and aquatic ecosystems will support healthy populations of fish (anadromous and resident) and wildlife.	<ul style="list-style-type: none"> ▶ Percent of stream length and waterbody perimeter with intact adjacent native vegetation (by habitat type). ▶ Index of biotic integrity (stream invertebrates; food for fish) ▶ Annual fish counts by species (e.g., Coho) at Craigflower fish fence, and selected lakes and streams in the watershed. 	<p>CRD Parks</p> <p>DFO, PIES</p> <p>PIES</p>
6. Native vegetation will be protected and restored throughout the watershed, providing habitat for birds, wildlife and fish.	<ul style="list-style-type: none"> ▶ Area of intact native vegetation in Craigflower Watershed. ▶ Percent of watershed in protected status (including parks, ecological reserves and conservation covenants). 	<p>CRD Parks, VRNHAG, VNHS</p> <p>CRD Parks and municipalities</p>