

**COWICHAN BASIN WATER MANAGEMENT PLAN**  
**(51/89 Actions include CVRD responsibility)**

| Recommended Actions  | Primary (P) 38 and<br>Secondary (S) 13<br>Responsibility              | Notes<br>Complete partial in process na  | Implemented |
|--|---|--|-------------|
| <b>GOAL 1. MAXIMIZE EFFICIENCY OF WATER USE.</b>   |   |  |             |
| <b>Objective 1a. Initiate improvements to water infrastructure.</b>  |   |  |             |
| 1a-1. Minimize leaks in major water distribution systems by developing and implementing a comprehensive leak detection and system maintenance program.                             | P. CVRD, municipalities, water utilities<br>S. Businesses, homeowners | Ongoing in all CVRD systems  | Ongoing     |
| 1a-2. Install water meters on new water connections and retrofit existing connections.   | P. CVRD, municipalities<br>S. Water utilities                         | Legislated and ongoing for new construction on community systems. City of Duncan has an ongoing retrofit program.  | Ongoing     |
| 1a-4. Work with the Ministry of Environment to require metering of water used under existing and future surface water licences and water extracted from existing and future wells. | P. MoE WSD<br>S. CVRD, municipalities                                 | Component of legislative review  | Complete    |
| 1a-5. Provide incentives (e.g., tax credits, rebates) for replacement of existing plumbing fixtures with water efficient technology.   | P. Municipalities, CVRD<br>S. Federal, provincial governments         | Incentives for replacement of older fixtures to water saving ones available to residents on community water systems. In some select areas additional incentives provided where budget available ( Shawnigan) | Complete    |
| 1a-6. Install water-saving plumbing fixtures (e.g., shower heads, toilets, faucets) in all new construction.   | P. CVRD, municipalities<br>S. Building contractors                    | Legislated   | Complete    |
| <b>Objective 1b. Improve management of water demand in all sectors.</b>  |   |  |             |
| 1b-1. Create a consistent volume-based pricing structure throughout the Basin, and request that the Ministry of Environment apply similar mechanisms.                              | P. CVRD, municipalities<br>S. MoE WSD                                 | Regulatory issues to be addressed for CVRD functions   | Ongoing     |
| 1b-2. Implement conservation based sewer charge (i.e., link sewage treatment costs to water consumption).  | P. Municipalities<br>S. CVRD  |  | pending     |

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|---|--|--|--------------------------------|
| 1b-3. Implement a comprehensive demand management program in the Cowichan Basin that includes the following measures:                   |  |  |                                |
| 1b-3a. Ensure that residents, businesses, and industry employ water conservation measures (e.g., xeriscaping, water audits).            | P. CVRD, municipalities, utilities<br>S. Businesses, homeowners                    | Official Community Plans have been updated to reference this in appropriate areas for new development. Completion of WBM for property owners is available as a tool. Need regulatory and social marketing support.   | Ongoing                        |
| 1b-3b. Promote the use of rainwater harvesting techniques (e.g., rain barrels, cisterns, dugouts, retention ponds) and greywater reuse. | P. CVRD, municipalities, utilities<br>S. Homeowners, farmers, building contractors | No funding mechanism to promote  | pending                        |
| 1b-3c. Educate residents, business, and industry about demand management.   | P. CVRD, municipalities<br>S. N/A  | Substantial support has been provided to the Agricultural sector by the CVRD   | Ongoing                        |
| 1b-3d. Promote efficient agricultural water use techniques, such as drip irrigation instead of spray irrigation.                        | P. CVRD, municipalities<br>S. MoAL   | Stage 1 completion – assessment of issues and mapping of use, stage 2 climate adaptation case study to determine best approach in process. Stage 3 workshops and one on one training with key agricultural sector members.<br><br>Watershed Board further continuation | complete                       |
|   |  |  |                                |
| 1b-5. Request that the Ministry of Environment Water Stewardship Division implement the following actions:                              |  |  |                                |
| 1b-5a. Adopt legislation requiring the licensing of wells and the reporting of volumes used.  | P. MoE WSD<br>S. CVRD, municipalities  | Part of legislative review, not local government jurisdiction  | Pending to take effect in 2016 |
| 1b-5b. For new or amended water licences, attach terms and conditions that require water conservation and reporting of volumes used.    | P. MoE WSD<br>S. CVRD, municipalities  | Part of legislative review, not local government jurisdiction  | Pending to take effect in 2016 |

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|---|---|---|--------------------|
| 1b-5c. Amend provincial legislation and guidelines governing water licences to allow licences to be issued for instream conservation without requiring diversion, works, or human use.                      | P. MoE WSD<br>S. CVRD, municipalities                             | Part of legislative review, not local government jurisdiction | Ongoing            |
| 1b-5d. Seek opportunities to cancel unused consumptive water licences and do not re-allocate these volumes to other licensees.  | P. MoE WSD<br>S. CVRD   | Part of legislative review, not local government jurisdiction | Ongoing            |
| 1b-5e. Reserve unrecorded water in streams for the use of the Crown, for the purpose of conservation and downstream supply.   | P. MoE WSD<br>S. CVRD, municipalities                             | Part of legislative review, not local government jurisdiction | Ongoing            |
| <b>Objective 1c. Ensure local governments and institutions are leaders in water conservation.</b>   |   |   |                    |
| 1c-1. Incorporate comprehensive water conservation strategies in Official Community Plans and other land use and development plans and policies.  | P. CVRD, municipalities<br>S. N/A                                 | Currently in ongoing OCP update areas                         | Ongoing            |
| 1c-2. Ensure that local governments lead by example by using water conservation measures, such as xeriscaping and low-flow fixtures, to decrease water use by municipal and institutional operations.       | P. CVRD, municipalities<br>S. Schools, community centres, arenas  | Guiding policy in development                                 | Pending            |
| 1c-3. Develop and implement 'green building' policies (e.g., using LEED standards) that include water conservation and water reuse in the construction and retrofitting of public buildings and facilities. | P. CVRD, municipalities<br>S. Developers, architects              | Guiding policies in development                               | Pending            |
| 1c-4. Adopt a program of regular water use efficiency audits for publicly-owned buildings and infrastructure.   | P. CVRD, municipalities<br>S. Schools, community centres, arenas  | As above  | Ongoing            |
| <b>Objective 1d. Promote land use that increases water use efficiency.</b>  |   |   |                    |

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|--|---|---|-------------|
| 1d-1. Prepare and amend land use and community plans to promote land uses and development patterns that maximize water efficiency and protect Cowichan Basin water resources.  | P. CVRD, municipalities<br>S. Developers, architects  | Updated political direction required.   | Pending     |
| 1d-2. Revise municipal and regional policies, regulations, and land use plans to include Low Impact Development and Smart Growth design principles.  | P. CVRD, municipalities<br>S. Developers, architects  | Updated political direction required.   | Ongoing     |
| 1d-3. Develop and implement 'green building' policies (e.g., using LEED standards) that include water conservation and water reuse. Begin with institutional and commercial buildings (Action 1c-3) and eventually include all building types. | P. CVRD, municipalities<br>S. Developers, architects  | Updated political direction required.   | Ongoing     |
| <b>GOAL 2. MANAGE WATER SUPPLY TO MEET HUMAN NEEDS AND MINIMIZE IMPACTS OF LOW WATER LEVELS.</b>   |   |   |             |
| <b><i>Objective 2a. Store sufficient spring runoff to support human use and sustain river flows during summer and fall.</i></b>  |   |   |             |
| 2a-2. Recommend that new licences for substantial withdrawals of surface water provide equivalent licensed storage.  | P. MoE WSD<br>S. CVRD   | Not the purvey of local government  | Complete    |
| <b><i>Objective 2b. Actively manage spring and summer water levels to minimize the potential for lakeside properties to be adversely affected.</i></b>   |   |   |             |
| <b><i>Objective 2c. Ensure that water storage decisions account for the potential effects of climate change.</i></b>   |   |   |             |
| <b><i>Objective 2d. Protect surface and ground water resources from contamination that could reduce supply.</i></b>  |   |   |             |
| 2d-1. Implement Best Management Practices (BMPs) for stormwater management and protection of ground water resources in the Cowichan Basin.   | P. CVRD, municipalities<br>S. Developers, forestry companies, farmers, business and home owners | Currently in process. Capacity development and training ongoing for regional staff. Ongoing BMP development and policy in process with additional resources required for fine resolution at site level. General public tool developed and web deployed to develop site based water balance modeling for storm water target to protect fisheries | Ongoing     |

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|--|---|---|-------------|
| 2d-2. Investigate and implement strategies to avoid or minimize the release of treated effluent directly to the Cowichan River (e.g., by applying it to forest or farm land), particularly during the summer.  | P. Joint Utilities Board, Town of Lake Cowichan<br>S. CVRD          | JUB amendment in process.<br>Pending grant funding for extension as well as regulatory approval           | Ongoing     |
| 2d-4. Using incentives and enforcement of regulations, relocate septic fields susceptible to flooding to avoid contamination of lakes, streams, and the Cowichan River.  | P. CVRD, municipalities<br>S. Homeowners                            | No funding mechanism available at this time to support<br>Pending political direction                     | Pending     |
| 2d-5. Install community sewage treatment facilities in Youbou, Honeymoon Bay, Mesachie Lake, Bear Lake, and other lakeside and riverside settlements.  | P. CVRD<br>S. N/A   | At various levels, is complicated by other land use issues and funding                                    | Pending     |
| 2d-6. Install sufficient boat sewage pumpouts on Cowichan Lake to serve current and future boating requirements.   | P. CVRD, Town of Lake Cowichan<br>S. Marina operators               | 2 pump out now available  | Ongoing     |
| 2d-7. Enact and enforce regulations to protect ground water resources (e.g., road runoff, commercial, and agriculture operations).   | P. MoE WSD, MoE EPD<br>S. CVRD, municipalities                      | Groundwater protection bylaws in development as part of approved workplans<br>Other regulatory boundaries | Pending     |
| 2d-8. Design and implement pesticide reduction programs, including education and incentives, for homeowners, farmers, and golf courses.  | P. MoE EPD, CVRD, municipalities<br>S. Homeowners, farmers          | Pending Board direction   | Pending     |
| <b>Objective 2e. Manage land and resources to avoid adverse effects on Basin hydrology (quantity and timing of runoff).</b>  |   |   |             |
| 2e-3. Engage forest companies, the Ministry of Agriculture and Lands, the Ministry of Forests and Range, and other interests in collaborative development of land and resource use practices that protect the hydrology and water quality of the Cowichan Basin. | P. CBWAC, MoFR, MoAL, forestry companies<br>S. CVRD, municipalities | Pending Board direction   | Pending     |
| <b>GOAL 3. ENSURE SUFFICIENT WATER IS AVAILABLE TO SUSTAIN AQUATIC AND RIPARIAN ECOSYSTEMS THROUGHOUT THE YEAR.</b>  |   |   |             |
| <b>Objective 3a. Meet the recommended fish conservation flows year round in the Cowichan River.</b>  |   |   |             |
| <b>Objective 3b. Maintain, enhance, and restore aquatic and riparian habitats.</b>   |   |   |             |

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|---|--|--|-------------|
| 3b-1. Identify, inventory, and map aquatic and riparian habitats and restoration opportunities.   | P. CVRD, municipalities, DFO, MoE ESD<br>S. Local stewardship groups                   | Where possible and resources allow CVRD updating information<br><br>RAR legislation requires CVRD to identify and manage impacts in the Riparian zone as a function of land use decisions.<br><br>Ongoing mapping programs by CVRD include acquisition of LiDAR mapping and subsequent analysis. State of Environment Reports etc. | Ongoing     |
| 3b-2. Develop land use policies and development patterns that protect, maintain, and enhance healthy aquatic and riparian ecosystems.   | P. CVRD, municipalities<br>S. Developers   | RAR, and new proposed subdivision servicing bylaw. OCP reviews ongoing.<br><br>CVRD Corporate strategic plan now includes these objectives as well as numerous specific actions to achieve.  | Ongoing     |
| 3b-4. Adopt or amend tree protection bylaws to strictly regulate tree cutting and vegetation clearing in riparian areas.  | P. CVRD, municipalities<br>S. Developers, landowners                                   | Included in RAR legislation but not effective, needs review.<br><br>Extremely challenging outside of RAR areas in Regional District legislation.   | Ongoing     |
| 3b-5. Protect riparian habitats from adverse effects of logging, industrial, commercial, and residential development through enforcement of local and provincial regulations. | P. CVRD, municipalities<br>S. Developers, forestry companies, business and home owners | Included in RAR legislation for residential, commercial and industrial development.<br><br>Enforcement and ticketing bylaw does not include environmental enforcement therefore a working relationship with MOE and DFO is necessary.<br><br>Current RAR legislation does not appear to be effective.                              | Ongoing     |

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| <ul style="list-style-type: none"> <li>3b-5a. Ensure consistent enforcement of Riparian Areas Regulation setbacks and associated controls on development adjacent to streams, wetlands, lakes, and rivers by all levels of government.</li> </ul> | P. CVRD, municipalities<br>S. Developers, landowners     | <p>Enforcement and ticketing bylaw does not include environmental enforcement therefore a working relationship with MOE and DFO is necessary.</p> <p>Education and capacity development needs to be provided for regional staff to ensure consistency of RAR application and requirements. Ongoing work with MOE and DFO ensures communication and support.</p> <p>Political and policy direction is not consistent in all situations</p> | Ongoing            |
| <b>GOAL 4. REDUCE THE IMPACTS OF HIGH WATER LEVELS, RESPECTING THE IMPORTANCE OF WINTER FLOODS TO NATURAL SYSTEMS.</b>  |  |   |                    |
| <b>Objective 4a. Establish adequate development setbacks from Cowichan Lake and River to reduce potential flooding risks.</b>   |  |   |                    |
| 4a-1. Extend coverage of 200-year floodplain mapping to include all areas of the Basin.   | P. MoE EPD<br>S. CBWAC                                   | No funding available at this time, The lower Cowichan/Koksilah completed. Lake and mid river flood zones still to be updated if an when funding is available.   | Pending            |
| 4a-2. Review current 200-year floodplain levels and update as required using state-of-the-art hydro-technical data and hydraulic analysis techniques.   | P. MoE EPD<br>S. CBWAC                                   | <p>No longer responsibility of province – devolved to local government</p> <p>Completed update for lower Cowichan</p> <p>Ongoing floodplain analysis of the Lower Cowichan River to determine flood levels and incorporate climate change variables, and support appropriate BMPS.</p> <p>Lake Cowichan LIDAR flight provides base information for future analysis and update of Lake Cowichan Flooding issues.</p>                       | Complete - pending |
| 4a-3. Continue to enforce bylaws that prohibit new development or deposit of fill below the 200-year flood level.   | P. CVRD, municipalities<br>S. Developers, landowners     | Bylaws currently being updated  | Ongoing            |

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| 4a-4. Flood proof at-risk structures where practical.  | P. CVRD, municipalities<br>S. MoE EPD                    | No analysis of CVRD structures has been completed and no regulatory or legislative control over private structures  | Pending     |
| <b>Objective 4b. Increase the flood buffering capacity of floodplain and constricted channel areas.</b>  |  |   |             |
| 4b-1. Involve all municipalities and electoral areas in the preparation and implementation of a Flood and Drainage Management Plan (FDMP) for the Cowichan Basin to provide a coordinated approach to stormwater and flood management.       | P. CVRD, municipalities<br>S. Cowichan Tribes            | MOU in place, IMFP in place protective works in final phase of construction<br>Establishment bylaw currently in AAP process.  | Complete    |
| 4b-2. Maintain the capacity of the Cowichan River channel to accommodate flood flows where it is obstructed by gravel, debris or structures.   | P. CVRD, municipalities<br>S. Cowichan Tribes            | Long term sediment management strategy complete and adopted by the CVRD Board, reviewed and meets DFO and FLNRO objectives. A number of extraction rounds have been completed to date. Requires a establishment bylaw and funding source to continue works.<br><br>A long term legal agreement needs to be developed with Cowichan Tribes regarding ownership of gravel resources extracted.                                | Complete    |
| <b>Objective 4c. Ensure drainage is adequate to allow tillage of farm fields in late spring.</b>   |  |   |             |
| <b>Objective 4d. Maintain winter water levels that are high enough to protect organic soils.</b>   |  |   |             |
| <b>Objective 4e. Promote stormwater management that emphasizes infiltration and detention and minimizes impervious surfaces to avoid increases in peak flows.</b>  |  |   |             |
| 4e-1. Install appropriate stormwater management infrastructure based on Low Impact Development (reduced runoff, on-site infiltration) in new developments and retrofit existing developments to reduce peak runoff consistent with the FDMP. | P. CVRD, municipalities<br>S. Developers, landowners     | Board direction required.<br><br>In development with new subdivision servicing bylaw for new construction. BMP's for infill and retrofits currently in review and analysis. Additional funding requested from province to assist with site level resolution and application of simple public information (water balance model). Simple WBM tool complete.<br><br>Relationship and enhanced coordination with MOTI required. | Ongoing     |



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|---|--|--|--------------------|
| 4e-2. Adopt subdivision or development services bylaws and Official Community Plan policies based on Low Impact Development principles.   | P. CVRD, municipalities<br>S. Developers                 | Ongoing and included in updated subdivision servicing bylaw. No other work is currently proposed or approved.  | Ongoing            |
| <b>GOAL 5. EDUCATE, ENGAGE, AND EMPOWER CITIZENS IN WATER MANAGEMENT</b>  |  |  |                    |
| <b>Objective 5a. Foster basin thinking among all water users in the Cowichan Basin and ensure they understand and support water management initiatives.</b>   |  |  |                    |
| <b>Objective 5b. Build trust among water users, managers, regulators, and residents through communication and involvement.</b>  |  |  |                    |
| <b>Objective 5c. Conduct regular monitoring of water related conditions in the Cowichan Basin and provide this information to the public.</b>   |  |  |                    |
| 5c-2. Require well monitoring and reporting as a condition of rural subdivision, rezoning, or building permit issuance.   | P. CVRD<br>S. Municipalities                             | In discussion relative to the new regulations  | Pending            |
| <b>Objective 5d. Conduct research to support knowledgeable decision-making and water management.</b>  |  |  |                    |
| 5d-1. Collect and maintain data on aquifer capacity, aquifer recharge rate, ground water extraction, and the relationship of ground water pumping to base flow in the Cowichan River and other nearby streams, and make this information available to the public. | P. MoE WSD<br>S. CVRD, municipalities, local media       | Multi year analysis now complete and Water Balance model for Basin developed, report now on CVRD website and referred to a variety of agencies for their strategic information<br><br>No further Board direction for action at this time | Complete - pending |
| 5d-2. Develop guidelines for use of ground water and management of aquifers.  | P. MoE WSD<br>S. CVRD, municipalities                    | Groundwater protection workbook and supportive mapping developed by CVRD and MOE but not currently implemented as pending the Water Act modernization<br><br>Board direction pending   | Ongoing            |

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|--|---|---|-------------|
| 5d-3. Study the use of water in Basin agriculture, to support measures that will increase the efficiency of irrigation and other water uses.   | P. CVRD<br>S. MoAL  | Completed agricultural water use analysis, site based mapping complete<br>integration of data into agricultural extension programs and climate adaption assistance now complete<br>Additional board direction pending   | Completed   |
| <b>GOAL 6. ESTABLISH CLEAR, ACCOUNTABLE, AND RESPONSIVE WATER MANAGEMENT DECISION PROCESSES AND GOVERNANCE STRUCTURES.</b>   |   |   |             |
| <b><i>Objective 6a. Establish and fund a water management advisory council that represents Basin-wide interests, maintains on-going dialogue among stakeholders, and builds trust and ownership among the participants and the public.</i></b> |   |   |             |
| 6a-1. Establish a Cowichan Basin Water Advisory Council (CBWAC) to guide the implementation of the <i>Water Management Plan</i> and improve the quality of water management decisions in the Basin.  | P. CVRD<br>S. Other <i>Water Management Plan</i> partners | Complete, CVRD sourced funds, hired contractor to develop model, seek appropriate representation and approval for various entities participation. Now acting autonomously under a Society. CVR D currently provides annual supportive funding. A review of the annual funding relative to grant funding will likely take place in the future. | Completed   |
| 6a-4. Designate a regional coordinator to oversee the development of the water management strategy and to help implement water reduction actions.  | P. CVRD<br>S. Municipalities                              | Devolved to CBWAC   | Completed   |

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|---|--|---|---|
| <b>Objective 6b. Ensure decisions on restoration and research projects and funding continue to be guided by the Cowichan Stewardship Round Table.</b> |  |   | CVRD facilitated the CSRT for many years and has now devolved the role to community based engo's<br>CVRD participation is at both the political and staff level |
| <b>Objective 6c. Ensure the costs of water management facilities and operations are shared fairly among responsible and benefiting parties.</b>       |  |   | ongoing   |

Areas in which the CVRD has not been identified as the lead but is taking some actions as a result of public pressure and the request of the CWB

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| <b>Objective 2a. Store sufficient spring runoff to support human use and sustain river flows during summer and fall.</b>   |                                 |   |  |
| 2a-1. Increase the weir height by 30 cm and install pumps below the zero storage elevation to pump water from the Cowichan Lake to Cowichan River when required. | P. Catalyst Paper<br>S. MoE WSD | CVRD has updated analysis and business case. Board directed staff to work on this and undertake specific actions and if necessary explore licencing.<br>CVRD updates and develops background document and EMA discussion process.<br><br>At Board direction CVRD develops and applies for grant funding for infrastructure, Exploration of legal policy issues<br><br>Develops draft AAP for public assent. |  |
| <b>Objective 2b. Actively manage spring and summer water levels to minimize the potential for lakeside properties to be adversely affected.</b>                  |                                 |   |  |

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| 2b-1. Revise the weir operation rule curve to include an upper and lower bound of managed water levels in the lake (a rule “band”), as described in Objective 3a.  | P. Catalyst Paper<br>S. MoE WSD,<br>CBWAC | CVRD has made their support for this clear to the province and catalyst by way of reversing their original decision in this item, assisting with the funding of the legal action and participation in the EAB review |  |
| 2b-2. Operate the weir to store spring and summer inflows to the lake, within rule band limits.  | P. Catalyst Paper<br>S. MoE WSD,<br>CBWAC | CVRD active participant on flow consultation and flow meetings<br><br>Responsibility resides with Catalyst and the Province  |  |
| 2b-4. During the process of applying for a new water licence for the weir, assess impacts of water storage levels on lakeshore properties and implement appropriate compensation procedures and processes, as in Figure 7. | P. Catalyst Paper<br>S. MoE WSD           | Implied as a component to infrastructure application. No discussion of compensation is proposed at this time.  |  |
| Objective 2c. Ensure that water storage decisions account for the potential effects of climate change.<br>Will be part of weir analysis  |   |  |  |
| 2c-1. Periodically assess the water management program in light of climate data and levels of demand.  |   | Will be part of weir analysis. And the CVRD Board governance review  |  |