Comox Valley REGIONAL DISTRICT

Staff report

DATE: April 7, 2011

FILE: 5640-01

TO: Chair and Directors
Committee of the Whole

FROM: Debra Oakman, CMA
Chief Administrative Officer

RE: Comox Valley Regional Water Supply Strategy

Purpose
To present the final draft of the Comox Valley regional water supply strategy and supporting documentation.

Policy analysis
In February of 2008, the Province of British Columbia delivered letters patent to the newly formed Comox Valley Regional District (CVRD), which included a requirement for:

- the development of a recommended regional water supply service plan; and
- a recommended structure for operating the regional district's water supply services in the area.

Based on the requirements as outlined in the letters patent, a water supply commission, an advisory committee and a steering committee were formed. Furthermore, a detailed work plan was developed with the end goal being a complete and comprehensive regional water supply strategy.

The 2011 tasks relating to regional water supply strategy have been budgeted for under general government – regional feasibility studies. At some point the board will need to determine whether to establish a specific service (function) and what the parameters of a regional water supply service would be. While the strategy makes recommendations relating to the establishment of a service, the board would need to provide specific direction before staff would take steps to implement this aspect of the strategy.

Executive summary
The regional water supply strategy (attached as Appendix B) is a 50 year planning document that addresses regional water supply issues. The strategy has been revised based on comments and feedback received since the draft was submitted in May of 2010. All three municipal councils received presentations to review the strategy and endorsement was requested.

Comox endorsed the strategy whereas Courtenay and Cumberland chose not to and have requested further information. The electoral area services committee also received a presentation. The recommendations of the strategy mainly call for the adoption of the regional water supply strategy strategic framework as follows and attached in diagram form as Appendix A.

The strategic framework presented in this report was arrived at through a comprehensive process involving a wide array of stakeholders and public participation at open houses. An initial working group session with the commission and local stakeholder groups was held to brainstorm the general concepts, and this was followed by a session with just the commission and senior staff to distil the concepts. The level of acceptance of the strategic framework by all involved, including all three municipalities and the electoral areas cannot be overemphasized. This represents a significant achievement for the Comox Valley and provides a clear vision going forward for developing regional level water supply plans.

50 Year Strategic Framework

Vision - We provide a long term, high quality, reliable water supply to the entire Comox Valley while protecting ecosystems and the environment.

Goals and objectives

GOAL 1: Deliver safe high quality drinking water
Objectives: The CVRD will protect the water sources and watershed within the region
The CVRD will continue to treat water to meet or exceed all regulatory standards
The CVRD will ensure supply infrastructure meets current standards

GOAL 2: Provide cost effective and reliable water supply and delivery into the future.
Objectives: The CVRD will plan infrastructure investments that minimize life cycle costs over the long term.
The CVRD will reduce drinking water demand.
The CVRD will maintain fire flows and water pressures in all regional water systems.

GOAL 3: Ensure clear, accountable and equitable water management and governance
Objectives: The CVRD will develop a governance model – enhance/maintain current system.
The CVRD will maintain ongoing dialogue with stakeholders and build trust among participants and the public.
The CVRD will ensure the public is informed of major decisions surrounding water supply/management in a timely manner.
The CVRD will ensure the costs of water management facility and distribution and maintenance are shared fairly and equitable among benefitting parties.

GOAL 4: Educate and engage citizens to value water
Objectives: The CVRD will ensure the public has a comprehensive understanding of water system costs, and the benefits.
The CVRD will encourage people to take personal responsibility/ownership of water infrastructure and water use.
The CVRD will reduce infrastructure costs through education and engagement of the public.

An option for regional water supply, referred to as R-5 has emerged that may benefit from further study. Kerr Wood Leidal have provided a change order proposal to further explore this option and provide cost and planning details to the CVRD. (Attached as Appendix C)

Implementation details of governance, infrastructure, education and planning are not included in the April 2011 regional water supply strategy document however when developed would be based on the vision, goals and objectives of the regional water supply strategy framework.

Recommendations from the chief administrative officer to the committee of the whole:

1. THAT the Comox Valley regional water supply strategy and the technical memorandums included as appendices be received.

2. THAT the Comox Valley regional water supply strategy strategic framework, attached as Appendix A, be adopted.

3. THAT the board authorize a change order to modify the scope of work assigned to Kerr Wood Leidal to analyze Option R-5 for the Comox Valley regional water supply strategy within the existing contract amount.

4. THAT correspondence be sent to the member municipalities, members of the steering and advisory committees, the Ministry of Community, Sport and Cultural Development and consultants who worked on the Comox Valley regional water supply strategy to thank them for their assistance and support in this project.

Respectfully:

D. Oakman

Debra Oakman, CMA
Chief Administrative Officer

History/background factors

In February of 2008, the Province of British Columbia delivered letters patent to the newly formed Comox Valley Regional District (CVRD), which included a requirement for "the development of a recommended regional water supply service plan and recommended structure for operating the regional district's water supply services in the area." The Comox Valley regional water supply commission was established on April 30, 2008 to initiate and manage this process. The completion date for the regional water supply strategy (RWSS) process was determined as December 31, 2009 with the implementation phase set for 2010. The completion date was extended to May 31st, 2010 in order to allow sufficient time to complete the strategy.

Kerr Wood Leidal (KWL), the selected technical consultant, has completed the bulk of the analysis required to support infrastructure decisions, and has finalized all draft technical memorandums (due to their size all tech memos are located on the following site: ftp://ftp.comoxvalleyrd.ca/RegionalWater) All technical work to date is now summarized in the final regional water supply strategy.

Two strategic planning sessions and two governance discussion sessions have been held to date, with the results of all sessions now incorporated into a draft "Regional Water Supply Strategy". Three public open house sessions were held May 12 and May 13, 2010. The draft strategy has been posted on the website for public review since May 5, 2010. The draft strategy was received by the board on May 25 of 2010, following referral to the three member municipalities and the electoral areas on May 13, 2010. The draft strategy was also sent to the Province on May 28, 2010. The City of Courtenay responded formally to the board on June 28, 2010 and indicated that formal feedback and further review would be provided by September 29, 2010.

The Province responded to the draft strategy with a letter dated November 25, 2010 indicating that the requirement of the letters patent had been met. As of the end of March, 2011 comments had been received from some members of the public as well as several advisory committee members. All valid comments and suggestions have been incorporated into the final draft strategy.

Due to the ongoing process of developing the regional growth strategy, progress on the RWSS was delayed until the spring of 2011. In the past few months, presentations where the strategic framework and basic parameters of proposed governance and infrastructure plans were reviewed were made at each municipal council and the electoral area services committee as follows:

- 26 January 2011 – Comox Committee of the Whole
- 31 January 2011 – Courtenay Strategic Planning Committee
- 7 February 2011 – Cumberland Committee of the Whole
- 14 February 2011 – Electoral Area Services Committee

The Town of Comox formally endorsed the strategy at the Town's council meeting of February 2nd, 2011. The Village of Cumberland debated the strategy at both the February 14th and 28th council meetings with no endorsement granted (letter attached as Appendix E). The City of Courtenay received the strategy at the February 28th 2011 meeting and has responded requesting additional information (letter attached as Appendix F).

An additional option, referred to as R-5, was introduced in early 2011 by the Village of Cumberland's engineer; this regional option would include the following basic components:

- Deep water intake on the Cumberland side of Comox Lake.
- Treatment plant in the vicinity of Cumberland's existing chlorination station at 220 m elevation.
- Transmission mains to the following development nodes/existing systems:
  - Sage hills
  - Union bay/Kensington island properties
  - Village of Cumberland
  - Comox Lake regional water supply system (Courtenay, Comox, Electoral Areas).
  - Royston

Some of the benefits of this proposal include the removal of pump stations for Cumberland and areas in the south parts of the CVRD as it would be possible to gravity feed the entire service area proposed. Furthermore, the fact that the Village's water licenses have seniority of BC Hydro and are technically up stream of BC Hydro's license on Comox Lake would be advantageous for the entire region in re-negotiating water use in the Comox Lake watershed. This could negate some of the possible impacts of rising energy costs to the existing Comox Lake system in that the current method of taking water off of the BC Hydro Penstock may become cost prohibitive. This is because the current arrangement the existing Comox Valley sub-regional system pays BC Hydro for the lost generating potential on water diverted from the penstock. Furthermore, the penstock does have a finite service life, and if the existing Comox Valley sub-regional system were to continue to draw from it, the share of cost to replace it could be cost prohibitive compared to having a dedicated feed from a single intake. Finally, the fact that the bulk of the population would be able to share the costs of a single intake, treatment facility and major transmission system would be more cost effective for all.

It is recommended that further detailed analysis of this option is a part of implementing the strategy. Per the recommendations of this document, a decision on the best option for infrastructure in the Comox Valley is to be one of the first tasks of the implementation of the water strategy. Initial cost estimates have demonstrated that there is value in doing further detailed analysis.

Options

There are two main options presented.

1. The first is to adopt the regional water supply strategic framework ;
2. The second option is to not adopt the regional water supply strategic framework.

The province's position on providing infrastructure grants to only regional level water supply systems, funding for independent systems by any of the municipalities appears challenging.

Financial factors

2011 funding is under regional feasibility study funds and furthermore remaining 2010 funds have been carried over to 2011 to complete the technical work.

To date, a budget in excess of $500,000 has been expended developing the RWSS. The infrastructure options presented range from $145 million over 50 years for capital works, operations and maintenance to $217 million to provide water to the entire regional district. The more cost effective options all involve regionalizing and interconnecting water systems that are currently separate and sharing infrastructure amongst areas that are currently independent. If the RWSS is not

adopted, these most cost effective options may not be achievable, thus making water supply more expensive for all of the residents of the Comox Valley.

Previous funding sources:

- Provincial grants: $500,000
- Community Works Fund $500000
- Public Health Agency of Canada $172,000

The following amounts have been allocated on the most recent contracts executed to compete the strategy:

- Wedler Engineering LLP – Project Management $107,785 excluding GST/HST
- Kerr Wood Leidal - Phase 2 Technical Contract - $164,144.00 excluding GST/HST
- Kerr Wood Leidal – Phase 4 and 5 Contract $223,822.00 excluding GST/HST
- Wedler Engineering LLP $ 40,800 excluding HST
  Public Health Agency of Canada:
  Pilot Infectious Disease Impact & Response Systems
- Wedler Engineering LLP $ 53,751 excluding HST
  Public Health Agency of Canada
  Watershed Protection Planning

A further financial implication to consider is the fact that the Province has indicated that grant funding for water supply projects will be contingent on the projects being part of a larger, regional level plan.

Within the contract awarded to Kerr Wood Leidel (KWL) was a provision for optional detailed modelling of the existing water systems. This task has not been implemented to date, and the budget amount for this still remains available for use. The total amount of funds remaining from the original contract is $28,079.77 excluding HST. This amount is recommended to be used to analyze Option R-5.

A proposal from KWL identifies that the work to complete this analysis is $27,924 excluding HST (proposal attached as Appendix C).

Legal factors
As a water purveyor, the CVRD is bound by law to provide water that is safe to drink.

Sustainability implications
Throughout the RWSS, linkages to the sustainability strategy have been clearly defined.

Intergovernmental factors
The Comox Valley currently has ten major water systems that were reviewed as a part of this study. In addition, there remains the possibility of a drinking water protection order being issued and the a water management plan could be mandated.

Finally, a recent letter from VIHA has been attached to this report as Appendix D. The letter provides information with respect to gaps between the RWSS and a drinking water protection plan. One of the gaps identified is a lack of watershed protection planning, for which a project using funding from the Public Health Agency of Canada (PHAC) is currently underway.

Interdepartmental involvement
The regional water strategy is primarily being managed by the property services branch. Public affairs and information systems branch are impacted when dealing with public feedback and media relations tasks.

Citizen/public relations
The capital costs involved with maintaining and expanding the region's water supply systems are relatively large. Furthermore, the possibility of integrating various systems may meet some local resistance.

Prepared by:

A. Gower

Andrew Gower, P.Eng., PE
Project Manager

Concurrence:

K. Lorette

Kevin Lorette, P.Eng., MBA
General Manager
Property Services Branch

Attachments: Appendix A – Regional Water Supply Strategy "50 Year Strategic Framework"
Appendix B – Regional Water Supply Strategy
Appendix C – Change Order Proposal from Kerr Wood Leidal
Appendix D – Letter from Ministry of Health – Gaps between the Regional Water Supply Strategy and a Drinking Water Protection Plan.
Appendix E – Letter from Village of Cumberland regarding water supply strategy
Appendix F – Letter from City of Courtenay regarding water supply strategy

Comox Valley REGIONAL DISTRICT

CV Regional Water Supply Strategy
50 Year Strategic Framework
April 2011

APPENDIX A

VISION
We provide a long term, high quality, reliable water supply to the entire Comox Valley while protecting ecosystems and the environment

GOAL #1
Deliver safe high quality drinking water

OBJECTIVES #1
- The CVRD will protect the water sources and watershed within the region
- The CVRD will continue to treat water to meet or exceed all regulatory standards
- The CVRD will ensure supply infrastructure meets current standards

GOAL #2
Provide cost effective and reliable water supply and delivery into the future

OBJECTIVES #2
- The CVRD will plan infrastructure investments that minimize life cycle costs over the long term
- The CVRD will reduce drinking water demand
- The CVRD will maintain fire flows and water pressures in all regional water systems

GOAL #3
Ensure clear, accountable and equitable water management and governance

OBJECTIVES #3
- The CVRD will develop a governance model – enhance/ maintain current system
- The CVRD will maintain ongoing dialogue with stakeholders and build trust among participants and the public
- The CVRD will ensure the public is informed of major decisions surrounding water supply/management in a timely manner
- The CVRD will ensure the costs of water management facility and distribution and maintenance are shared fairly and equitable among benefitting parties

GOAL #4
Educate and engage citizens to value water

OBJECTIVES #4
- The CVRD will ensure the public has a comprehensive understanding of water system costs, and the benefits
- The CVRD will encourage people to take personal responsibility/ownership of water infrastructure and water use
- The CVRD will reduce infrastructure costs through education and engagement of the public

APPENDIX B

COMOX VALLEY REGIONAL WATER SUPPLY STRATEGY

April 2011

PREPARED FOR:
Comox Valley Regional District

PREPARED BY:
WEDLER ENGINEERING LLP
Courtenay BC

WEDLER ENGINEERING

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April 1st, 2011 Our Ref: V09-0058/A

Comox Valley Regional District
600 Comox Road
Courtenay, BC V9N 3P6

Attention: Debra Oakman
Chief Administrative Officer

Dear Madame:

Reference: Comox Valley Regional Water Supply Strategy - Final

We are pleased to submit the final version of the Regional Water Supply Strategy (RWSS). This report will cover the process and progress to date, the strategic planning discussions and their results. Included in this document are recommendations for a transitional governance model and various options for water supply infrastructure. This report is also intended to be the cover document for the various technical reports prepared by both CH2MHill and Kerr Wood Leidal.

This report is intended to act as a stand alone document with appropriate references, and provide a clear, concise and comprehensive description of the CVRD's Regional Water Supply Strategy. Implementation on a year by year basis, while guided by this strategy, is not included. The details of implementation of governance, infrastructure, education and planning should be separate from the overall strategy, but based on the goals and objectives herein.

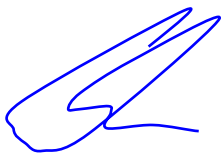
The appendices have been included with this final version. However, minor revisions to some of the technical memorandums are still outstanding, and updated electronic copies of them will be promulgated as soon as they are available.

We would be pleased to discuss our findings with yourself at your convenience. Please do not hesitate to call should you have any questions.

Yours truly,

Wedler Engineering LLP

Prepared by:



Andrew Gower, P.Eng, PE

Executive Summary

In February of 2008, the Province of British Columbia delivered Letters Patent to the newly formed Comox Valley Regional District (CVRD), which included a requirement for "the development of a recommended regional water supply service plan and recommended structure for operating the regional district's water supply services in the area." Based on the requirements as outlined in the Letters Patent, the CVRD board established the Comox Valley water supply commission, the Comox Valley water supply advisory body and the Comox Valley water supply steering committee. Furthermore, a detailed work plan was developed with the end goal being a complete and comprehensive Regional Water Supply Strategy. The following key recommendations were listed as requirements in the original work plan:

- Recommendations on which water sources will be utilized in the regional water system;
- Recommendations as to which water distribution systems are to be inter-connected;
- Recommendations as to what capital improvements are needed to inter-connect the water distribution systems;
- Recommendations conceptually on how the regional water supply system is to be governed and funded;
- Recommendations for incremental implementation including legislative framework and timing.

In order to meet the above requirements, and provide strategic direction for water supply for the entire region, with the exception of Hornby and Denman Islands, the following has been established as the vision for the CVRD for water supply:

We provide a long term, high quality, reliable water supply to the entire Comox Valley while protecting ecosystems and the environment.

To support the execution of this vision, the following goals were developed:

Goal 1 – Deliver safe high quality drinking water.
Goal 2 – Provide cost effective and reliable water supply and delivery into the future.
Goal 3 – Ensure clear, accountable, and equitable water management and governance.
Goal 4 – Educate and engage citizens to value water.

Implementation recommendations for 2011:

- That the Committee of the Whole continue to review and recommend action with respect to this strategy and regional water planning
- That the new regional option R-5 be explored and further detailed by Kerr Wood Leidal.
- That staff reports be prepared to define membership and terms of reference for the recommended sub-committees:
    - watershed and water source protection
    - Technical and infrastructure management

Implementation recommendations for 2012:

- Establishment of a "Comox Valley Regional Water Supply Governance Committee" to be a standing committee of the CVRD board.
- Establish a Comox Valley Regional Water Supply Service to implement this strategy, provide watershed protection planning, land-use planning review and water conservation education.
- Recommend transfer of the following tasks to the new standing committee from the member public entities, along with sufficient funding to accomplish the tasks:
    - Region wide land-use planning review with respect to Water Supply;
    - Water Conservation Education;
    - Watershed Protection Planning.
- Amongst the Standing Committee's first tasks would be the following:
    - To develop detailed five year construction and maintenance plan.
    - Develop an implementation plan for asset, license, liability and task transfer for water supply from the various public water license holders over time including triggers and policies, subject to negotiation.
- Finally, this strategy be reviewed and updated in 2015.

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1.0 INTRODUCTION

1.1 AUTHORIZATION

This report has been prepared based on our proposal of services to the Comox Valley Regional District. It is intended that this report, with the attached appendices and referenced materials, be a stand-alone document that presents the entire Regional Water Supply Strategy.

1.2 BACKGROUND

In February of 2008, the Province of British Columbia delivered Letters Patent to the newly formed Comox Valley Regional District (CVRD), which included a requirement for "the development of a recommended regional water supply service plan and recommended structure for operating the regional district's water supply services in the area."

Based on the requirements as outlined in the Letters Patent, the CVRD board established the Comox Valley water supply commission, the Comox Valley water supply advisory body and the Comox Valley water supply steering committee. Furthermore, a detailed work plan was developed with the end goal being a complete and comprehensive Regional Water Supply Strategy (RWSS). The most up to date version of the work plan is included in Appendix A. The initial completion date for RWSS process was determined as December 31, 2009 with the implementation phase set to begin in 2010. Key components of this strategy include:

- Comox Lake Risk Validation Study
- Comox Lake Water Quality Monitoring Program
- Water Source and Distribution System Inventory
- Comox Valley Hydrology Study Phase I and II
- Alternate Water Supply Sources
- Water Treatment Option Analysis
- Distribution System Evaluation
- Verify Regional Water Components
- Finalize Regional Water Strategy

Per the work plan, the regional water strategy will include the following conclusions and recommendations:

- Recommendations on which water sources will be utilized in the regional water system;
- Recommendations as to which water distribution systems are to be inter-connected;
- Recommendations as to what capital improvements are needed to inter-connect the water distribution systems;
- Recommendations conceptually on how the regional water supply system is to be governed and funded;
- Recommendations for incremental implementation including legislative framework and timing.

Initially, CH2MHill were retained to undertake studies in line with the original work plan. These included the following reports:

- Comox Lake Watershed Assessment – Characterization of Water Source – February 2006 (this study was done in advance of the strategy; it is included as the information is valid)
- Comox Lake Watershed Assessment – Phase 3, Risk Validation – February 2008
- Comox Lake Water Supply Study Phase 1 – Hydrology Analysis – October 2008
- Comox Lake Intake – Conceptual Design – December 2008

In order to progress the technical portion of the Strategy, a Request for Qualifications package was issued in April 2009. From the submissions received, two shortlists were developed and two Request for Proposals packages were issued; the first in May of 2009 and the second one in June of 2009. Both contracts were awarded to Kerr Wood Leidal (KWL) who has prepared the bulk of the technical analysis in support of the strategy. This culminated with the presentation of several technical options to the Water Commission in November 2009.

Communication from the Province in December 2009 extended the mandate and deadline for preparing the RWSS to May 31, 2010, and further specified the requirements for the strategy portion of the water supply plan.

This report will present the following:

- A review of the existing water supply systems and an overview of relevant reports;
- The strategic framework proposed and the development process;
- An overview of the technical reports and memo's prepared to support the strategy process;
- Recommendations and research with respect to governance required for a regional water supply strategy.

1.2.1 Terminology

Terminology used in this strategy document:

Demand-side Management – policies or measures that reduce the use of water by consumers. It can include such measures as education, pricing and regulatory measures. Table 1 below highlights common policies employed in demand side management:

Policy Instrument		Policies and Programs
Educational Measures		Water conservation information given on municipal web-site Media campaigns (newspaper, TV, radio) Outdoor advertising (billboards, etc.) Information letters included with water bill School curriculum programs
Economic measures	Price	Water metering
	Non-price	Rebate programs for efficient fixtures Retrofit programs Efficiency kits
Regulatory Measures		Voluntary restrictions Plumbing code Lawn sprinkling bylaws Customer water audits

Table 1 – Policies commonly employed in demand side management

Distribution – all piping and equipment in a water supply system down stream of major reservoirs, which hold treated water.
Harmonized – this refers to the concept of multiple jurisdictions independently adopting and enforcing matching and/or similar strategies and legislation/by-laws.
Integration –one governance structure for supply and/or distribution of water. This is not the same as "interconnection". For example – an integrated supply system could have several water sources that run to distinct treatment plants that then feed separate distribution systems – however some or all aspects of operations, funding and governance of any integrated portions of the water supply and transmission system may be combined.
Transmission – all piping, equipment and facilities between a water source and major reservoirs, including major reservoirs. Figure 1 illustrates this concept.

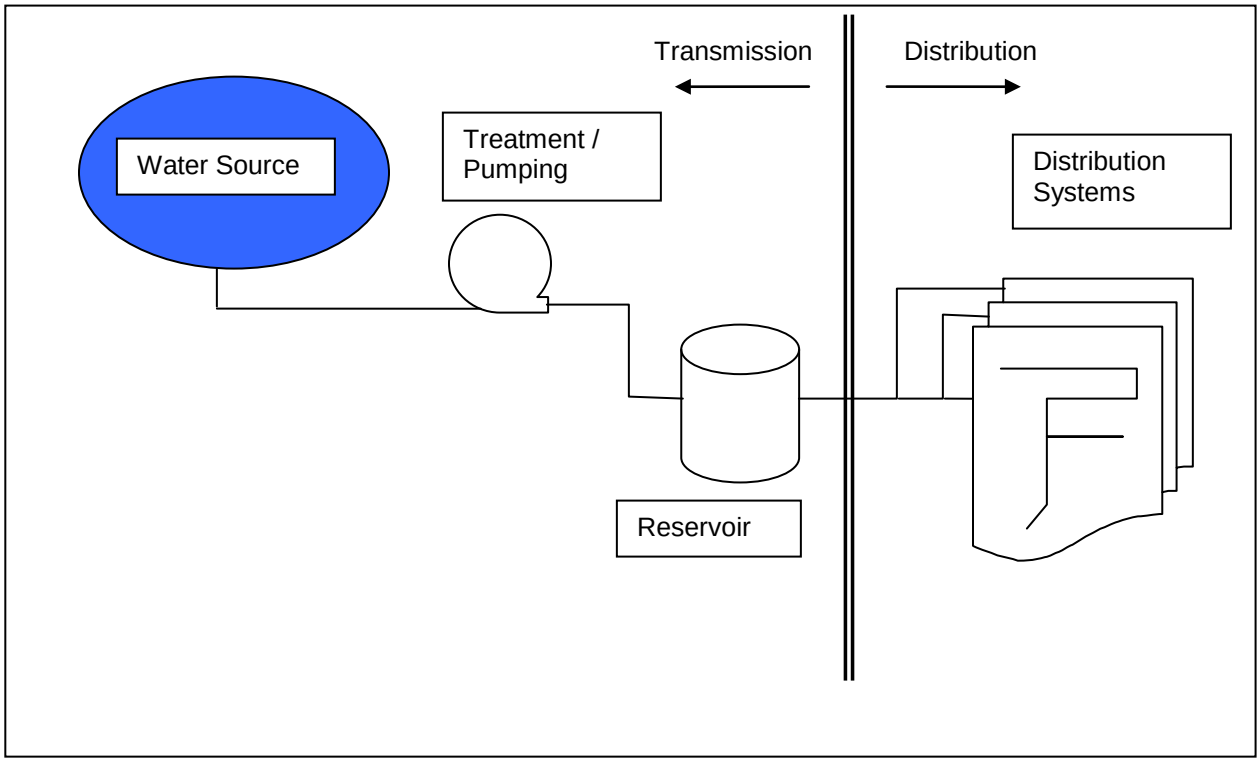


Figure 1 - Municipal Water System Infrastructure

1.2.2 Regional Strategies

Concurrent with this Regional Water Supply Strategy, three other key strategies that will help shape decisions for the future of the Comox Valley have been undertaken:

- Regional Growth Strategy
- Sanitary Sewerage Master Plan Update
- Sustainability Strategy

The Regional Growth Strategy (RGS) was mandated by the Province at the same time as the Regional Water Supply Strategy. The RGS is intended to be a harmonized strategy in that all member municipalities and the electoral areas will create bylaws that adhere to the growth strategies overall concept. It is slated for completion by the end of 2010.

The Sanitary Sewerage Master Plan Update (SSMPU), originally addressing only the “core” area serviced by the existing Water Pollution Control Centre at Brent Road, was later expanded to include the entire region except Denman and Hornby Islands. It will eventually address sewer servicing for the entire Regional District (less Denman and Hornby Islands), and it is important that it be coordinated with this water strategy. The SSMPU is proposed to be completed when there is enough clarity and agreement on the RGS to revise the master plan and ensure the growth model used is aligned with the RGS.

Finally, the recently completed Sustainability Strategy sets targets in all areas to ensure a sustainable future for the Comox Valley. While not dealing with specific projects, land development or cultural events, the strategy does set important goals and performance objectives which need to be considered for all strategies, projects and planning for the CVRD.

Figure 2 on the next page graphically depicts how the four regional strategies are integrated and support one another in guiding the future of the Comox Valley.

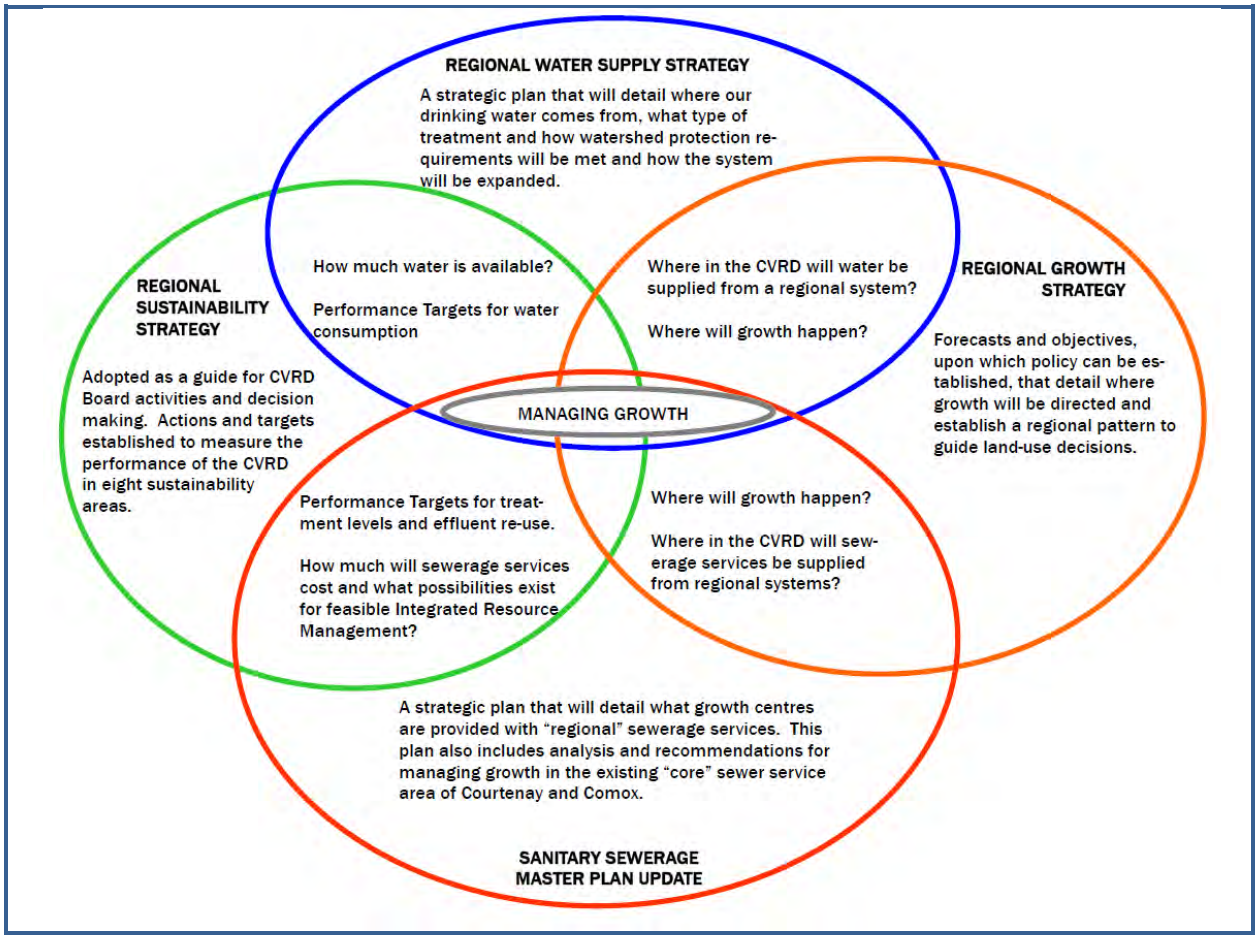


Figure 2 - Integration of the Four Regional Strategies

1.2.3 Population Projections/Growth Modeling

The technical analysis developed to support the decisions needed to create this strategy had to be started in advance of the RGS being completed. As such, the growth model developed for the SSMPU was used in order to advance the RWSS.

While the aggregate growth rate of 3.11% used in the RWSS is larger than that detailed in the RGS, it is common to use larger growth rates in infrastructure planning to ensure that all contingencies for required servicing are covered. However, the construction of infrastructure would be planned based on actual growth with population thresholds for projects, improvements and upgrades based not on time (when projected growth says something is needed) but on actual population in proposed service areas.

The RGS does not alter existing growth nodes (i.e. existing municipalities remain). The effects of the pattern of growth within municipal boundaries has more of an effect on distribution infrastructure as opposed to supply and transmission, the latter being the subject of this study. Thus, all other factors remaining equal, adjusting the growth predictions would affect all technical options and prices more or less equally. Therefore the decisions being supported by the technical work of this strategy remain valid regardless of the difference in growth models between the RGS and the RWSS.

One of the first tasks to be implemented after the adoption of this strategy will be the selection and detailed analysis of an infrastructure option. At that time, further analysis of the potential impacts of RGS policies on water supply planning into the future can be prepared. It should be noted that the provision of municipal potable water is an important consideration in managing growth as depending on where and how dense growth is, the supply of water could become cost prohibitive.

1.2.4 Health Regulation Issues

An important back drop to the creation of this strategy are the ongoing issues of the potential for a drinking water protection order on the Comox Valley and the Vancouver Island Health Authority's direction to implement the 4-3-2-1-0 drinking water treatment standard on surface water sources. The main implementation aspect with respect to the 4-3-2-1-0 specification is that filtration plants, which appear to be quite costly, would be required for all surface water sources. This has been taken into account in the cost estimates presented in this strategy. There are other options to achieve the standard, including source protection and watershed protection which need to be explored further outside the scope of this strategy.

In October of 2008, the Provincial Health Officer (PHO) acting on the advice of the Vancouver Island Health Authority's Medical Health Officer (MHO), recommended to the Ministry of Healthy Living and Sport that the provincial government order a Drinking Water Protection Plan (DWPP). The purpose of the DWPP would be to examine and address concerns raised by the MHO regarding water quality for domestic purposes and with specific reference to the Comox Lake watershed source. A ministerial order has not been received as of March 2011. The PHO has recommended that the order cover the entire Comox Valley Regional District. *It is important to note that the order would legislate that a Drinking Water Protection plan be prepared.*

In summary, a Drinking Water Protection Plan would consist of the following key elements:

Excerpt from the Drinking Water Protection Act	Description/ Comments Alignment with Current Strategic Process
…establish who is to be responsible for preparing the proposed plan…	The order lists the entire region as being included. The Commission has representation from the entire CVRD.
…establish terms of reference – subject to ministerial approval…	These are to include: *- the purpose of the plan* *- the issues to be addressed by the plan* *- a process for public and stakeholder consultation* *- a time limit for completing the plan* Stakeholder engagement has already occurred through the strategic planning process which involved a wide array of government representatives and non-governmental organizations.
…require establishment of a technical advisory committee in relation to development of the plan…	A technical advisory body was established at the start of the strategic planning process.
…whether changes are required to a water supply system, including measures respecting its water source, intake, treatment, storage, transmission and distribution…	Could include enhanced treatment, a change of source or other measures that would reduce the risk to the water supply system. The technical analysis being prepared in support of this strategy achieves much of this. Costs, monitoring standards and sampling requirements have all been captured in the technical tasks.
…whether the operating permit for a water supply system should include additional provisions respecting monitoring, standards or other requirements…	
…consideration of economic and social costs and benefits of addressing risks through treatment, source protection or other means…	
In preparing a proposed drinking water protection plan, consideration must be given to the overall results or progress of Provincial government or local government strategic, operational and land use or water use planning processes within the designated area…	

1.2.5 Ministry of Environment

If a community water system is deemed at risk, an alternative to the preparation of a DWPP through the Ministry of Healthy Living and Sport is a Water Management Plan (WMP) administered by the provincial Ministry of Environment. The two processes are similar in many respects. A water management plan has more emphasis on quantity of water, and possible conflicting users, while a drinking water protection plan focuses more on quality issues. In any case, a water management plan is meant to be complementary to both a drinking water protection plan and our regional water supply strategy program.

As of March 2011 the Ministry of Environment has not taken any initiative with regard to requiring a water management plan, however they are aware of the potential drinking water protection plan order and the ongoing work within the RWSS.

1.3 ACKNOWLEDGEMENTS

The following organizations and representatives were instrumental in the creation of this strategy:

Ministry of Rural and Community Development - provincial team:
- Doug Allan, Facilitator
- Glen Brown, Executive Director, Local Government Infrastructure and Finance
- Brent Mueller, Manager, Growth Strategies, Vancouver Island
- Gary Paget, Executive Director, Governance and Structure Division
- Laura Tate, Manager (former), Growth Strategies, Vancouver Island
- Derek Trimmer, Director, Regional Initiatives, Governance and Structure Division

Comox Valley Regional District – water supply strategy steering committee:
- Sandy Gray, City of Courtenay CAO
- Richard Kanigan, Town of Comox CAO
- Anja Nurvo, Village of Cumberland CAO
- Debra Oakman, CVRD CAO

Comox Valley Regional Water Supply Strategy Technical Advisory Committee (see Appendix A)

Comox Valley Regional District Water Supply Commission (see Appendix A)

2.0 STRATEGIC FRAMEWORK

The key of any successful strategy is having overall direction that is expressed in language that balances simplicity while still being comprehensive. As such, the existing strategies for the Regional District of Nanaimo, the Cowichan Valley Regional District, the City of Nanaimo, the Greater Vancouver Regional District and the Capital Regional District were reviewed. With advice and support from the Province, the following strategic framework was adopted:

- Vision Statement – determine a "Vision Statement" for the RWSS that will guide the remainder of planning and decisions.
- Goals – develop three to four "goal" statements upon which specific "objectives" and detailed, discrete "actions" can be built.
- Objectives – these will be further refinements that will expand each goal into defined streams.
- Actions – specific, discrete and measurable – actions will be created that collectively achieve each goal.

Figure 3 below shows the strategic framework selected:

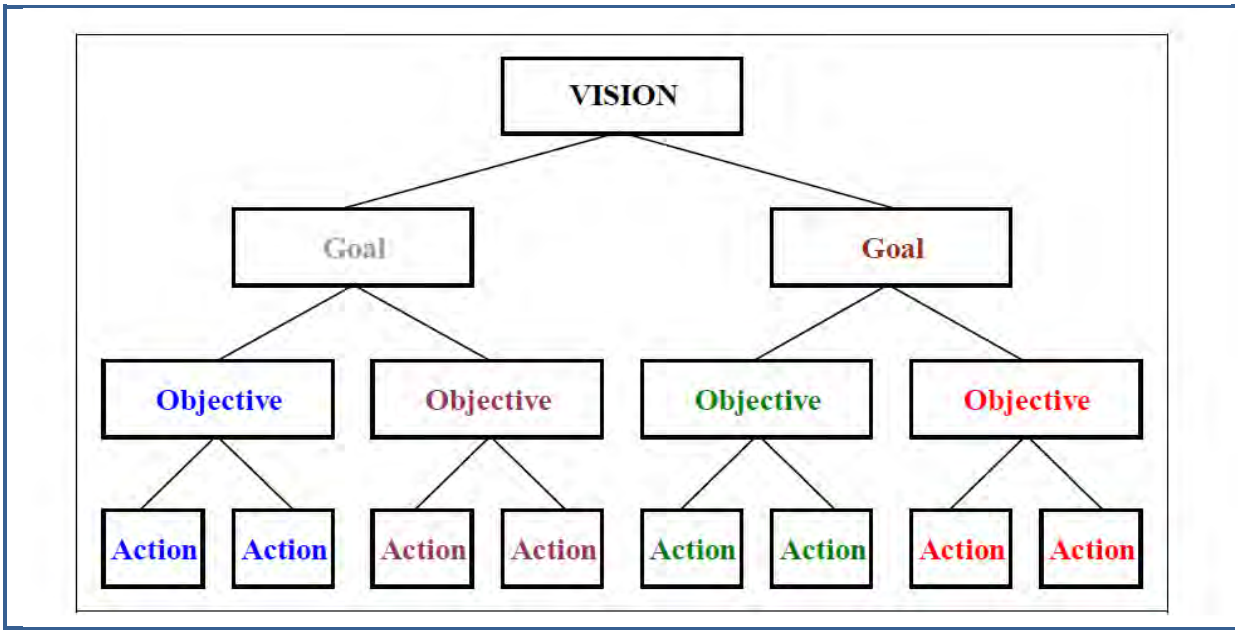


Figure 3 - Strategic Framework (Source: Cowichan Valley Regional District Water Management Plan)

The strategic framework developed is intended to provide the structure for collaborative efforts to ensure water supply for the region.

2.1 VISION AND GOALS

Vision: ***We provide a long term, high quality, reliable water supply to the entire Comox Valley while protecting ecosystems and the environment.***

To support the execution of this vision, the following goals were developed:

Goal 1 – Deliver safe high quality drinking water.

Goal 2 – Provide cost effective and reliable water supply and delivery into the future.

Goal 3 – Ensure clear, accountable, and equitable water management and governance.

Goal 4 – Educate and engage citizens to value water.

2.2 OBJECTIVES AND ACTIONS

To complete the strategic framework, and ensure the vision of the RWSS is achieved, the goals introduced above are expanded on with objectives supported by actions. Furthermore, connections with "Living Water Smart – British Columbia's Water Plan" and the "Comox Valley Sustainability Strategy" are highlighted. This will ensure that the Comox Valley Water Supply Strategy is in line with Provincial direction and integrated with the Sustainability Strategy.

Living Water Smart – British Columbia's Water Plan lays out 45 specific actions grouped in three areas:

- *Doing Business Differently*
- *Preparing Communities for Change*
- *Choosing to be Water Smart*

The Comox Valley Sustainability Strategy has several targets that are applicable to any activities, and should be incorporated into all decision made by local government with respect to water supply. These include the following:

The Comox Valley will reduce overall greenhouse gas emissions by 80% from 2007 levels with the following milestone targets: • 2020 – 33% (bc legislated) • 2030 – 50% • 2040 – 65% • 2050 – 80%	Rationale: This target corresponds to the Intergovernmental Panel on Climate Change (IPCC) recommendation for 2050 for stabilizing atmospheric CO2 levels & avoiding extreme climate change impacts, as well as to the legislated reductions in BC for 2020. This target calls for action on reducing use of fossil fuels and increasing the use of alternative energy sources.
The Comox Valley will reduce energy use per capita by 50% and/ or will not increase overall energy use from current levels.	Rationale: This target is focused on decreasing the amount of energy we use and on ensuring that the way we use energy is more efficient. The production and consumption of energy requires significant infrastructure which consumes resources and produces waste and emissions. If the population of the Valley doubled by the year 2050, a 50% reduction of per capita energy use would enable no increase in total energy use. A combination of reducing demand and switching to new efficient technology will assist in meeting this goal.

The RWSS will need to have these two targets applied to all objectives and actions where applicable. Furthermore, in each goal sections, the Sustainability Targets that require consideration are listed as cross references.

Goal 1 – Deliver safe high quality drinking water.

This goal has two aspects to it that require some expansion. “Safe” means that all applicable regulations governing the safety of potable water be met. The term “high quality” refers to a water systems ability to provide water that exceeds minimum standards and is indeed a pleasure to drink.

Objective	Action	Connections to the BC Living Water Smart Policy
The CVRD will protect the water sources and watersheds within the Region.	Identify water sources including current raw water quality, risks affecting those sources and potential to supply water to the system.	*Doing Business Differently 5*: Government will limit all new licences to 40-year terms in areas where there is high demand and pressure on water. *Doing Business Differently 8:* Government will support communities to do watershed management planning in priority areas. *Preparing Communities for Change 27*: Government will improve the quality and protection of drinking water sources.
	Continue to work with MOE on ground water and aquifer risk assessment project.	
	Develop specific plans and policies to protect ground water aquifers throughout the region	*Doing Business Differently 6*: The *Ground* Water Protection Regulation will protect the quality and quantity of our groundwater. *Doing Business Differently 7*: By 2012, government will regulate groundwater use in priority areas and large groundwater withdrawals.
	Best management practices within watershed – ensure biodiversity is protected to provide the natural function for treating water. Watershed protection program.	*Doing Business Differently 1*: By 2012, all land and water managers will know what makes a stream healthy, and therefore be able to help land and water users factor in new approaches to securing stream health and the full range of stream benefits. *Doing Business Differently 3*: Legislation will *recognize* water flow requirements for ecosystems and species. *Doing Business Differently 4*: Government will require all users to cut back their water use in times of drought or where stream health is threatened. *Preparing Communities for Change 23*: Wetland and waterway function will be protected and rehabilitated. *Preparing Communities for Change 24*: Government will provide incentives for restoration of streams or wetlands.

Objective	Action	Connections to the BC Living Water Smart Policy
The CVRD will protect the water sources and watersheds within the Region.	Meet with landowners/ stakeholders (BC Hydro, DFO, MOE, timber companies) to understand activities in the watershed (annually).	*Doing Business Differently 2*: By 2012, water laws will improve the protection of ecological values, provide for more community involvement, and provide incentives to be water efficient. *Preparing Communities for Change 19*: Community development strategies will be developed to recognize the importance of riparian zones in adapting to climate change.
	Implement sampling/ monitoring strategy and develop a set of indicators for water quality on all surface sources	
	Partner with University of Victoria for ongoing climate change impact assessment and sampling program on Comox Lake.	
	Effective stormwater and flood management to ensure natural systems and water quality are protected.	*Preparing Communities for Change 21*: Where new development on flood plains is unavoidable, it will be flood-proofed to high provincial standards. *Preparing Communities for Change 22*: The government will provide $100M for flood protection over 10 years to help communities manage flood losses.
The CVRD will continue to treat water to meet or exceed all regulatory standards.	Recommend that purveyors continue to sample and monitor water throughout the system(s)	
	Maximize the use of ground-water in all supply systems as it generally provides a more protected source when compared to surface water.	
	Review all surface water supplies and explore the filtration exclusion criteria as part of the review of the 4-3-2-1-0 treatment specification	
	Design and build upgraded treatment facilities to meet the VIHA 4-3-2-1-0 water quality specification	

Objective	Action	Connections to the BC Living Water Smart Policy
The CVRD will ensure supply infrastructure meets current standards.	Set up committee of infrastructure stakeholders to ensure infrastructure meets standards.	
	The CVRD will continue to retain and train staff to be experts in water treatment and transmission and provide this staff resource to regional water supply purveyors who need assistance.	
	Implement five year capital planning process for required upgrades, repairs and expansion to existing water infrastructure.	*Preparing Communities for Change 20*: Adapting to climate change and reducing our impact on the environment will be a condition for receiving provincial infrastructure funding. *Preparing Communities for Change 25*: Green developments waiting for provincial environmental approvals will be fast-tracked and given priority.
	Develop harmonized development, subdivision and infrastructure standards with input and agreement from all stakeholders.	

Connections to the Comox Valley Sustainability Strategy

- This portion of the Water Strategy is closely aligned to several goals and targets in the Sustainability Strategy.

ALL NEW DEVELOPMENT AND 50% OF EXISTING DEVELOPMENT IN THE COMOX VALLEY WILL CAPTURE RAINWATER RUNOFF THROUGH SOURCE CONTROL METHODS.

- Rainwater source control methods techniques for managing runoff close to where it falls as rain thereby protecting water resources from the impacts of excess water flow and associated pollutants. Methods include infiltration swales, rain gardens, green roofs and improved landscape design.

100% SENSITIVE ECOSYSTEMS AND RIPARIAN AREAS ARE PROTECTED AND MANAGED TO MAINTAIN STABLE HEALTH AND PRODUCTIVITY.

- The Courtenay Estuary and the Region's rivers are ecologically significant. This target reflects the importance of protecting green space for habitat and ecosystem services.

70% OF DEGRADED ECOSYSTEMS THAT ARE CRITICAL FOR THE HEALTH OF WATERSHEDS, RIPARIAN AREAS AND ENDANGERED SPECIES HABITATS ARE RESTORED.

- Humans will have an impact on the habitats of other species through our presence; however, we can also restore and carefully manage degraded ecosystems to an improved level of health and biodiversity.

Goal 2 – Provide cost effective and reliable water supply and delivery into the future.

The intent of this goal is to ensure a business case that considers up front capital investment and long term operations and maintenance costs are considered when making decisions about water infrastructure. Reliability simply refers to the fact that when a customer turns the tap clean potable water always flows.

Objective	Action	Connections to the BC Living Water Smart Policy
The CVRD will plan infrastructure investments that minimize life cycle costs over the long term.	Minimize life cycle costs, long-term, through cost benefit analysis of all infrastructure projects using at a minimum a 50 year life span.	*Preparing Communities for Change 20*: Adapting to climate change and reducing our impact on the environment will be a condition for receiving provincial infrastructure funding.
	Meet regularly with water suppliers to ensure infrastructure planning is coordinated.	
	Work toward integration and utilization of existing systems where long term costs are minimized.	*Preparing Communities for Change 26*: Government will develop new protocols for capital planning that will look at the lifecycle costs and benefits of buildings, goods and services.
	Work to meet Objective 3.8.2 of the Sustainability Strategy: Advance the integrated management of infrastructure systems and resources. TARGET: % of new infrastructure systems (water, wastewater, solid waste, etc) that incorporate integrated resource management/ recovery principles: • 2020 ~ 75% • 2030 ~ 100%	
	Establish and maintain a detailed water model of the transmission and supply system.	

Objective	Action	Connections to the BC Living Water Smart Policy
The CVRD will reduce Drinking Water Demand.	User pay tiered system with penalties and incentives to be legislated with bylaws including sprinkling restrictions	*Choosing to be Water Smart 30*: Government will look at new ways to help promising water conservation technology succeed.
	Develop demand-side management policies. The current Water Efficiency Plan and Bylaw are an example of this.	*Doing Business Differently 11*: Government will require more efficient water use in the agriculture sector. *Doing Business Differently 12*: Government will secure access to water for agricultural lands. *Choosing to be Water Smart 29*: Fifty percent of new municipal water needs will be acquired through conservation by 2020. *Choosing to be Water Smart 32*: The Green Building Code will require water conservation plumbing fixtures such as low flush toilets.
	Align with the Sustainability Strategy to meet the following target: Average "household" reduction of per capita water consumption over 2008 levels: • 2020 ~ 30% • 2030 ~ 40% • 2040 ~ 45% • 2050 ~ 50%	
	Advocate to senior government to facilitate regulatory changes regarding water re-use (storm water and grey water)	*Choosing to be Water Smart 34*: In partnership with industry, government will develop a water efficiency labelling system for water consuming products.
	Establish pilot projects using water re-use regarding treated effluent, grey water and storm water	*Choosing to be Water Smart 33*: By 2010, government will mandate purple pipes in new construction for water collection and re-use.
The CVRD will maintain fire flows and water pressures in all regional water systems	Maintain back-up systems for emergency supply requirements	
	Plan and build reservoirs and containment for peak demands	
	Establish harmonized infrastructure standards for subdivision, developments and upgrades region wide.	

Connections to the Comox Valley Sustainability Strategy	• This portion of the Water Strategy is closely aligned to several goals and targets in the Sustainability Strategy
THE COMOX VALLEY WILL REDUCE NONAGRICULTURAL WATER USE BY 50% PER CAPITA.	• This target is focused on greatly increasing conscious and efficient water use. As in many jurisdictions in BC, Comox Valley residents use much more water than leading water-efficient communities and many western European countries. To achieve sustainability, we need to significantly change our water use habits, and reduce our demand for fresh water.
ALL NEW DEVELOPMENT AND 50% OF EXISTING DEVELOPMENT IN THE COMOX VALLEY WILL CAPTURE RAINWATER RUNOFF THROUGH SOURCE CONTROL METHODS.	• Humans will have an impact on the habitats of other species through our presence; however, we can also restore and carefully manage degraded ecosystems to an improved level of health and biodiversity.

Goal 3 – Ensure clear, accountable, and equitable water management and governance.

A key aspect of the regional water supply strategy, effectively governing the supply system including investment decisions, the setting of rates and establishment of development cost charges and service areas is coved by this goal.

Objective	Action	Connections to the BC Living Water Smart Policy
The CVRD will develop a governance model – enhance/ maintain current system.	Establish and fund a water management advisory commission/ committee that represents regional interests.	*Choosing to be Water Smart 38*: Government and First Nations' treaty water negotiations and other related agreements support providing a clean and safe domestic, agricultural and industrial water supply for First Nation communities. *Choosing to be Water Smart 39*: Government will continue to work toward preserving First Nations' social and cultural practices associated with water. *Choosing to be Water Smart 40*: Tools to incorporate traditional ecological knowledge into information and decision making will be developed by 2015.
	Establish an implementation plan to recommend the transfer of assets, roles, responsibilities and liabilities over time to achieve a centralized water supply governance model over time.	
	Ensure interaction between water strategy and OCP's, RGS.	
	Detailed five year capital and operations/maintenance plan.	
The CVRD will maintain ongoing dialogue with stakeholders, and build trust among participants and the public	Ongoing public engagement/information programs.	
	Establish stakeholder committees that meet regularly and report out publically.	
The CVRD will ensure the public is informed of major decisions surrounding water supply/ management in a timely manner	Minutes provided to the board on a monthly basis.	
	In-camera meetings reported out within two months where possible.	
	Establish and follow comprehensive one year implementation cycle, five year implementation plans and a five year strategic planning process (see Figure 4 below).	

Objective	Action	Connections to the BC Living Water Smart Policy
The CVRD will ensure the costs of water management facility and distribution and maintenance are shared fairly and equitable among responsible and benefitting parties.	Valuation of current assets and liabilities. Analysis of how this value is captured in terms of real property and municipal assets.	
	Establish transparent and fair processes to add New users or service areas to existing systems.	

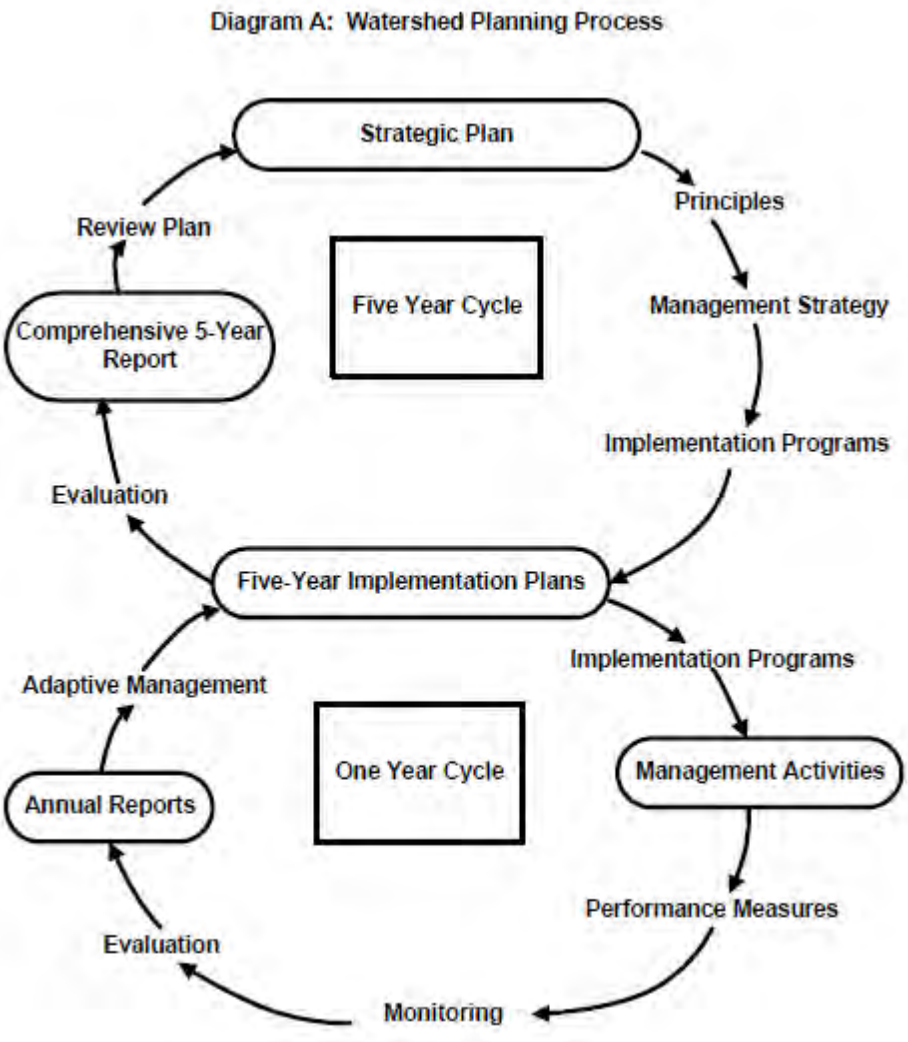


Figure 4 - Planning Process per the GVRD Watershed Management Plan

Goal 4 – Educate and engage citizens to value water.

Hand in hand with ensuring that the system is governed well, having an engaged and educated public, who are all customers of the water supply system is critical in getting popular support for difficult investment decisions. Considering the potential funding needed to support water supply at the levels currently enjoyed in the Comox Valley into the future, public support will be critical in making decisions. Furthermore, the greatest single leverage point to reduce costs and in turn reduce demand, with trickle down effects on preserving eco-systems and the environment, is to have each individual user make the decision to reduce potable water consumption.

Objective	Action	Connections to the BC Living Water Smart Policy
The CVRD will ensure the public has a comprehensive understanding of water system costs, and the benefits.	Ensure current knowledge (description) of watersheds and water systems is provided to the public. This will include the use of websites, signage, brochures and ads in local media.	
	Ensure knowledge of biological/ecosystem functions and how they benefit the water supply is provided to the public.	*Choosing to be Water Smart 35*: By 2012, all students in B.C. will have completed at least one stream-health assessment.
	Ensure information with respect to infrastructure, fixed costs, operating costs) (high quality, long-term) is provided to the public through annual reports and updated plans.	
	Provide Brochures: conservation, water supply and cost benefits.	
	Provide School tours; public tours: of watersheds and water systems	
	Art used as educational media for infrastructure	
The CVRD will encourage people to take personal responsibility/ ownership of water infrastructure and water use.	Set an example as civic leaders through applying water efficiency measures to public projects and initiatives.	
	Accounting for use, i.e.: demand side management and proper accounting of water use reported regularly.	
	Review other jurisdictions for effective measures that have reduced water demand.	
	Use social media, website, newspapers, watershed activists/ groups/ stewards to maintain a dialogue with respect to water supply	

Objective	Action	Connections to the BC Living Water Smart Policy
The CVRD will reduce future infrastructure costs through education and engagement of the public.	Competitions on water conservation approaches in the public schools	*Choosing to be Water Smart 36*: Government will award a youth water-science prize or scholarship for excellence in water stewardship.
	Waterwise Landscape awards	*Choosing to be Water Smart 37*: Government will provide summer jobs for youth between the ages of 16 to 22, to undertake twenty stream restoration projects across the province.
	Competitions/awards for new projects	*Choosing to be Water Smart 44*: Government will celebrate examples of successful water stewardship by awarding annual water awards to individuals or groups.
	Establish an infrastructure advisory group	

2.3 PUBLIC ENGAGEMENT PROCESS

Initial public engagement happened at the "Water Open House" held June 11, 2009. At this event, the Regional Water Supply Strategy was introduced to the public with basic information on the process and goals presented.

Further and ongoing engagement has been supported through the maintenance of the Regional Water Supply Strategy webpage at the CVRD's website. This page includes links to meetings, published reports, presentations and the schedule of the strategic planning process.

At present, two public open houses are proposed for 2010. These will consist of a presentation of materials with the first presenting the draft strategy concepts and technical options, and the second the final strategy language and selected infrastructure plan. Each open house will actually in three different locations and times to ensure the public from across the region have the opportunity to become informed.

Appendix B includes a summary of the information and input received from the public at these open houses.

2.4 STRATEGIC PLANNING PROCESS

Several technical reports developed by Kerr Wood Leidal were distributed for review through the commission and the technical advisory committee prior to December of 2009. However, at that time the development of a strategic plan to guide decisions and governance of a regional water supply system had not been pursued. Thus in January of 2010 a plan for developing the required strategy elements of the regional water supply strategy was developed.

The plan outlined included two strategic planning sessions with the first including a wide array of stakeholder groups to improve public engagement and generate ideas and the second being primarily the water supply commission.

The aim of the first strategic planning session, held February 20, 2010, was to develop some possible vision statements and goals for the CVRD Regional Water Supply Strategy.

During session #2, a single vision statement was adopted for water supply in the Comox Valley with goals, objectives and actions developed.

Included in Appendix C are the lists of attendees at each session and photographic records of the sessions. Also in this appendix are the initial reports outlining the process, pre-reading package and invite letter examples, and the agendas from both of the sessions.

3.0 CURRENT WATER SUPPLY SITUATION

Within the boundaries of the CVRD there exist 14 separate water supply systems. This section will provide a brief overview of the existing systems and supply appropriate references to recent reports that can be reviewed for further details as required.

3.1 COMOX LAKE SUPPLY SYSTEM

3.1.1 Watershed

Comox Lake is located at the head of the lower Puntledge River about 16 km upstream from the City of Courtenay. The watershed surrounding the lake drains the eastern slopes of the Vancouver Island Ranges, including the mountains and alpine plateau areas within Strathcona Park. The watershed covers an area of about 462 sq. km and rises to a maximum elevation of 2,134 m. Glaciers in the watershed cover about 4% of the area and are located at elevations above 1,300 m. A map of the watershed is shown in Figure 5. Several bio-climatic regions including the Mountain Hemlock zone, Coastal Western Hemlock and the Alpine Tundra zone are represented within the watershed. Detailed information on the watershed can be found in Appendix D.

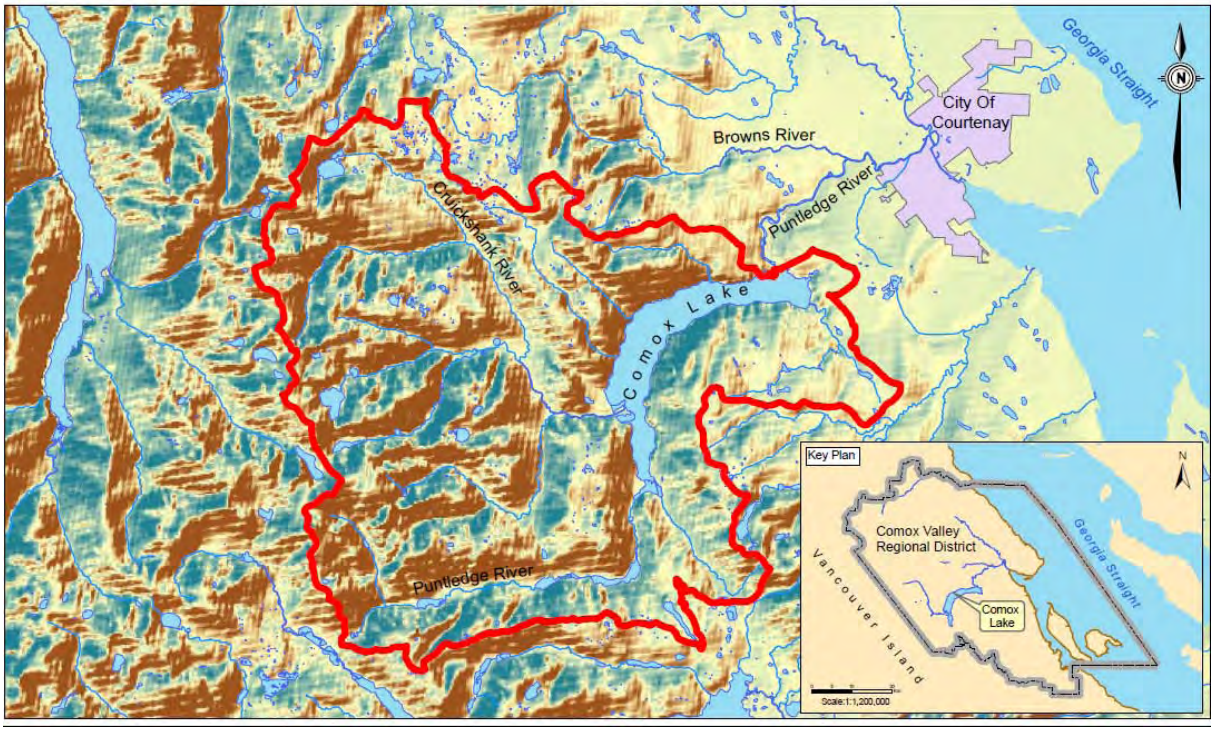


Figure 5 - Comox Lake – areas serviced and watershed (Image courtesy Kerr Wood Leidal)

3.1.2 Comox Lake

Comox Lake itself covers between 1,900 and 2,200 ha depending on the amount of water being retained. The depth of the lake averages approximately 60m with the deepest portion being 130m. The operating level of the lake varies between 130.8 and 135.33 m which provides approximately 94.2 million m^3 of storage. Development of the lake as a water source dates from 1912 when the Puntledge Hydroelectric project was built.

3.1.3 Intake and Transmission

Water for the Comox system is normally drawn from the Puntledge River, just downstream of its outlet from Comox Lake, through joint use of the BC Hydro penstock which feeds the generation station 11 km downstream. A 750 mm diameter steel main from the penstock supplies water by gravity to the chlorination building which is located a short distance from the generation station. A standby pump station alongside the generating station provides water to the system from the lower river when the penstock supply is unavailable for maintenance or other reasons.

3.1.4 Water Licensing and Issues/ Opportunities

The issuance of water licenses is typically based on water yield of the watershed during critical drought periods (1 in 50 or 1 in 100 year) and the reservoir storage capacity available to store water from wet periods to supply needs during dry periods. The following table highlights the current water licenses that are in place for Comox Lake and the Puntledge River as of March 2011:

Licensee	Purpose/Use	Flow rate (m^3/s)	% of Total
BC Hydro	Power generation	28.3	82.54
Fisheries/ BC Hydro	Conservation flow/fish habitat	5.7	16.62
CVRD	Municipal water supply	0.29	0.84

Table 2 - Current water licenses for Comox Lake and the Puntledge River

There are other smaller licenses along the Puntledge River, however combined they account for less than a half percent of the total flow.

Flow from the lake reservoir system into the river is governed by the “Puntledge River Project Water Use Plan” developed between 2001 and 2004 by BC Hydro in consultation with all license holders and the Ministry of the Environment. This plan dictates minimum flows, pulse flows for conservation and recreation purposes and maximum flows allowed as well as maximum flow rate changes.

The current arrangement by which the existing Comox Lake Sub-Regional water supply system takes water from the BC Hydro penstock is not ideal. The current arrangement has the CVRD paying BC Hydro the equivalent of the lost generating potential from the water diverted for potable uses. This cost, much like power rates, is set to go up considerably in the near future, and could prove cost prohibitive over time. Furthermore, the option of withdrawing water from the pump house at the licensed location on the Puntledge River will also only become more expensive as the cost of power to run the pumps also increases.

Information developed by KWL indicates that the conservation flow levels currently in place on the Puntledge River are higher, as a percent of dry weather flow, when compared to similar catchments. This may indicate some room for re-negotiation of the water use plan and the license amounts currently available. However, the Province has indicated quite strongly, as further evidenced by recent water license increases in other BC jurisdictions, that any increase to the licensed amount for the CVRD would require significant demand measures be put in place, such as water meters. Most recently, the Village of Cumberland had their water license increased, however it was contingent on the installation of universal water meters. Funding for the water meters in Cumberland was partially by Provincial Grant monies and partially by the Villages Development Cost Charge fund. The Province’s current review of the Water Management Act will also require consideration when implementation of this strategy is contemplated.

3.1.5 Distribution Systems

The three major bulk water customers from the Comox Lake system are Courtenay, Comox and the CVRD through several Water Service Areas. The following table highlights the number of connections in each system connected to the Comox Lake water supply and transmission system:

Distribution System	No. of Connections
Town of Comox	4,313
City of Courtenay	8,880
CVRD Comox Valley Water Local Service Area (WLSA)	1,288
CVRD Arden Water Local Service Area (WLSA)	220
CVRD Marsden/Camco Water Local Service Area (WLSA)	71
CVRD Greaves Crescent Water Local Service Area (WLSA)	21
England Road Water Local Service Area (WLSA)	19
Komox First Nations	117

Table 3 - Comox Lake water supply system user table

3.1.6 Infrastructure Funding/Cost Recovery Issues

The construction of infrastructure to service new developments, be it water distribution or sewage collection, is primarily funded and executed by private developers building subdivisions. The cost of the new services, and the Development Cost Charges that are charged to a developer, are passed onto the purchaser of the newly developed property, be it single family homes, multi family, industrial, institutional or commercial developments. Thus, the value of the infrastructure is reflected, and funded, through the sale and value of the developed property. Thus, for the most part, municipal infrastructure is not funded by the collective property tax base or the local government.

Major infrastructure projects related to supply, quality and quantity of water are typically funded with a combination of higher government level grants, local funds (developed from taxes and development cost charges) and borrowed funds. Again, the investment is not all coming from simply the local, municipal tax base, and is in fact funded by the general population of either the Province in the case of Provincial grants or the entire nation in the case of Federal grants. Indeed, the portion that would be solely paid by the existing tax base of a municipality would be that part needed to fund any borrowing.

Indications from the Province with respect to funding future water infrastructure projects are that having a combined regional vision which includes a unified approach to the most cost effective projects will increase the likelihood of obtaining higher level funding.

3.2 OTHER SUPPLY SYSTEMS IN THE CVRD

3.2.1 Municipal and Regional Systems

Water is collected from rivers, lakes and aquifers throughout the region, and flows through a network of reservoirs, pumping stations and transmission mains or pipes.

• Village of Cumberland - The Cumberland water supply system, which also serves the CVRD Royston Water Service Area beyond the municipal boundaries, consists of four main reservoirs, a diversion dam and two 300 millimeter supply mains. Water transmission is by gravity from the Allen and Henderson Lake sources, with more than adequate hydraulic head to serve the higher elevations of the Village. The water is chlorinated before reaching the Village system. Eight principal watersheds include First Supply Creek, Morrison Creek, Piercy Creek, Millard Creek, Roy Creek, Maple Lake Creek, Perseverance Creek and Comox Lake. The Village of Cumberland has recently had their water license increased contingent on the installation of universal water meters.

• Royston Water Local Service Area – Drawing water from the Cumberland supply system, Royston's water distribution-only system serves 875 connections.

• Black Creek/Oyster Bay – drawing water from the Oyster River and ground water wells, this system supplies water to 913 connections in Area's C and D (note – Area D is in the Strathcona Regional District).

3.2.2 Improvement Districts

There are several "Improvement Districts" that provide potable water and other services within the Regional District.

• Union Bay Improvement District obtains water from Langley Lake and provides service to an estimated 640 homes, or an estimated 1,337 people.
• Fanny Bay Improvement District serves an estimated 552 people from Cowie Creek aquifer and ground water wells.
• Ships Point Improvement District provides water to 247 connections from three ground water wells.
• Sandwick Improvement District obtains water from the Courtenay River and three ground water wells, and provides water to 1,755 people.

3.2.3 Private Systems

• Mount Washington Resort - The resort's water supply, treatment and distribution are completely self-contained. Mt. Washington's water utility operates three raw water reservoirs and one treated water reservoir. The three in use are springs that emerge at about el.1250 m across the southwest face of the mountain – Washington East Spring, Washington Middle Spring, and West Springs. Water from each of the springs is diverted into its own reservoir. From there the different sources are blended before reaching the water treatment facility.

A new, large capacity reservoir has been constructed on the east side of the resort to store raw water collected from the East Spring. This facility is expected to come online by the winter of 2010. This water will then be pumped to the same treatment facility mentioned above. As this is a relatively small distribution system, there is only one water treatment facility with no need for additional chlorination or booster pumps elsewhere in the system.

• Watutco Enterprises serves an estimated 423 people from Oyster River intakes and ground water wells.
• Mosley Road Water Supply Society uses aquifer/ well source and has 10 connections.
• 0698013 B.C. / Strata 1343 uses an aquifer/ well source and has 33 connections.
• Bates Beach Boat House uses a well source and has approximately 34 connections.

3.3 RECENT TECHNICAL REPORTS

The following reports were referenced in the creation of this strategy

- Comox Lake Water Quality Monitoring Program – October 2008
- Comox Lake Watershed Assessment – Characterization of Water Source – February 2006
- Comox Lake Watershed Assessment – Phase 3, Risk Validation
- Universal Water Metering Study Update – Final Report – November 28th, 2007
- Project Watershed Website: projectwatershed.bc.ca/index.htm
- Arrowsmith Watershed Society Website: arrowsmithwatersheds.org/
- BC Water Resource Atlas: env.gov.bc.ca/wsd/data_searches/wrbc/index.html
- BC Ground Water association: bcgwa.org/aquifers_wells.htm
- Kensington Island Properties Water Options Report
- Pacific Climate Impacts Consortium Web-site: pacificclimate.org/resources/publications/

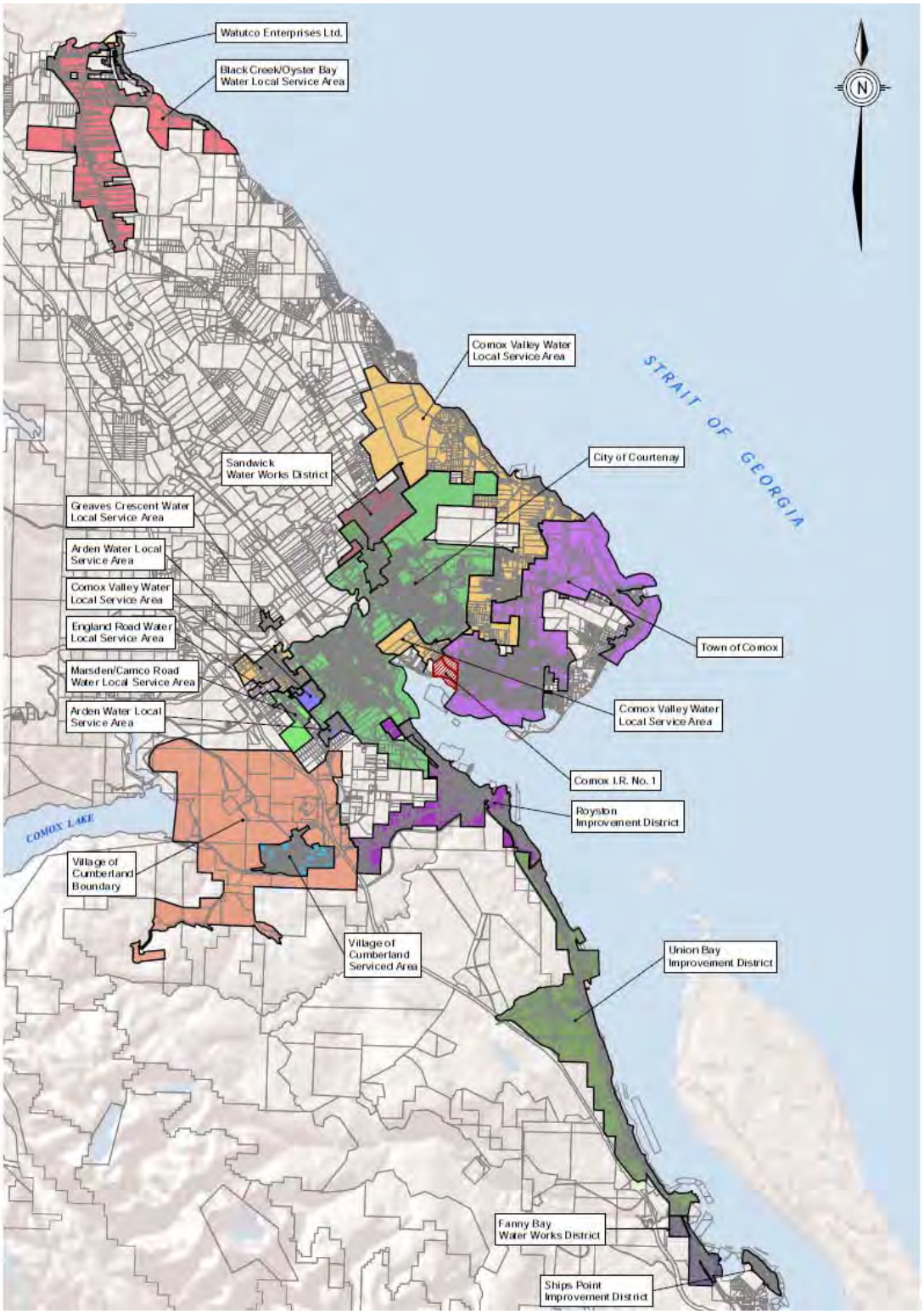


Figure 6 - Significant Water Systems in the CVRD (Image courtesy Kerr Wood Leidal)

4.0 GOVERNANCE

4.1 CURRENT GOVERNANCE STRUCTURES

There are several existing governance structures in the CVRD that manage the supply, treatment and delivery of potable water. These include municipalities, improvement districts, private systems (private water utilities) and the regional district which would include the "sub-regional" system and "local service areas". In total, there are 14 water systems, or water purveyors that provide water to systems greater than 15 residences.

All water in British Columbia is owned by the Crown on behalf of the residents of the province. Authority to divert and use surface water is obtained by a licence or approval in accordance with the statutory requirements of the Ministry of Environment's Water Stewardship Division *Water Act* and the *Water Protection Act*.

British Columbia's Ministry of Healthy Living and Sport creates and is responsible for the *Drinking Water Protection Act* and Regulation. The *Drinking Water Protection Act* and regulations are administered and enforced by the Drinking Water Officer (DWO) within the Vancouver Island Health Authority (VIHA). The DWO is a part of a larger health protection team that has the power to determine the most appropriate way to address potential concerns in a particular water system. The Drinking Water Program is administered locally by DWO, Public Health Engineers and Medical Health Officers, who are responsible for direct service delivery in BC's Health Authorities. Drinking Water Officers provide surveillance and monitoring of drinking water systems which may affect the public's health.

The *Drinking Water Protection Act* focuses on four main areas:

- Drinking Water Supply
- Water System Assessments and Plans
- Drinking Water Protection
- Drinking Water Protection Plans

Water system owners are responsible for the provision of safe drinking water and notification of water quality problems.

Comox Valley Regional District

The Comox Valley Regional District Board has the responsibility and authority over water supply within its geographic boundary for water supply that is owned by the CVRD (i.e. CVRD is the license holder and it is within the CVRD's service areas). There are two governance organizations working as a part of the CVRD that have been delegated certain decision making power by the board as follows:

- Comox Valley Sub-Regional System

  The existing Comox Valley water committee governs the supply of water from Comox Lake to the City of Courtenay, Town of Comox, the Vancouver Island portion of Baynes Sound-Denman/ Hornby Islands (Area 'A), Lazo North (Area 'B') and Puntledge-Black Creek (Area 'C'). The Comox Valley water committee determines all policy related to the administration and operation of the Comox Valley water system and has the exclusive authority to approve or refuse the connection of any municipality or local service area under the *Local Government Act*, to the water system. However, this committee is strictly operating at the "supply" level, with governance over distribution aspects provided by either Courtenay or Comox for their respective distribution systems and the CVRD for the various water local service areas that are connected to the Comox Lake source.
- Black Creek/Oyster Bay

  This system, serving 913 connections, is run under the purview of the CVRD board. The "Black Creek/ Oyster Bay Services Committee" provides governance within certain delegated parameters with two regional directors, one delegate from the Strathcona Regional District and one from the CVRD.

Water for Royston is also governed by the regional district with the supply of water provided under contract from the Village of Cumberland. Distribution is a CVRD service and governance is provided by the CVRD board through the Royston water advisory commission recommendations to the electoral area services committee.

Village of Cumberland Municipal System

The Village of Cumberland has water licenses and operating permits for its own water system providing water to all residents and businesses. Decision on water supply, treatment and distribution are made directly by the Village Council. Some decisions are discussed at the committee of the whole where appropriate. No separate "water committee" exists.

Improvement Districts

There are four improvement districts that provide water within the boundaries of the CVRD. These are:

Name	No. of Connections	Water Source
Union Bay Improvement District	640	Langley Lake
Fanny Bay Improvement District	82	Cowie Creek
Sandwick Improvement District	706	Wells and Courtenay River
Ships Point Improvement District	247	Well source

Each Improvement District has a board of trustees who are elected by the rate payers. All decisions rest with the board. Operating licenses for the systems are granted under the *Drinking Water Protection Act and Regulation* and governed by VIHA. Extraction (quantity) is governed by MOE under the *Water Act*.

Private Systems

The following significant private systems, or private water utilities have been reviewed in preparation of the RWSS. It is important to note that other private systems exist, and there are also many areas where homeowners have private wells, however these were not examined in detail in preparation of the strategy.

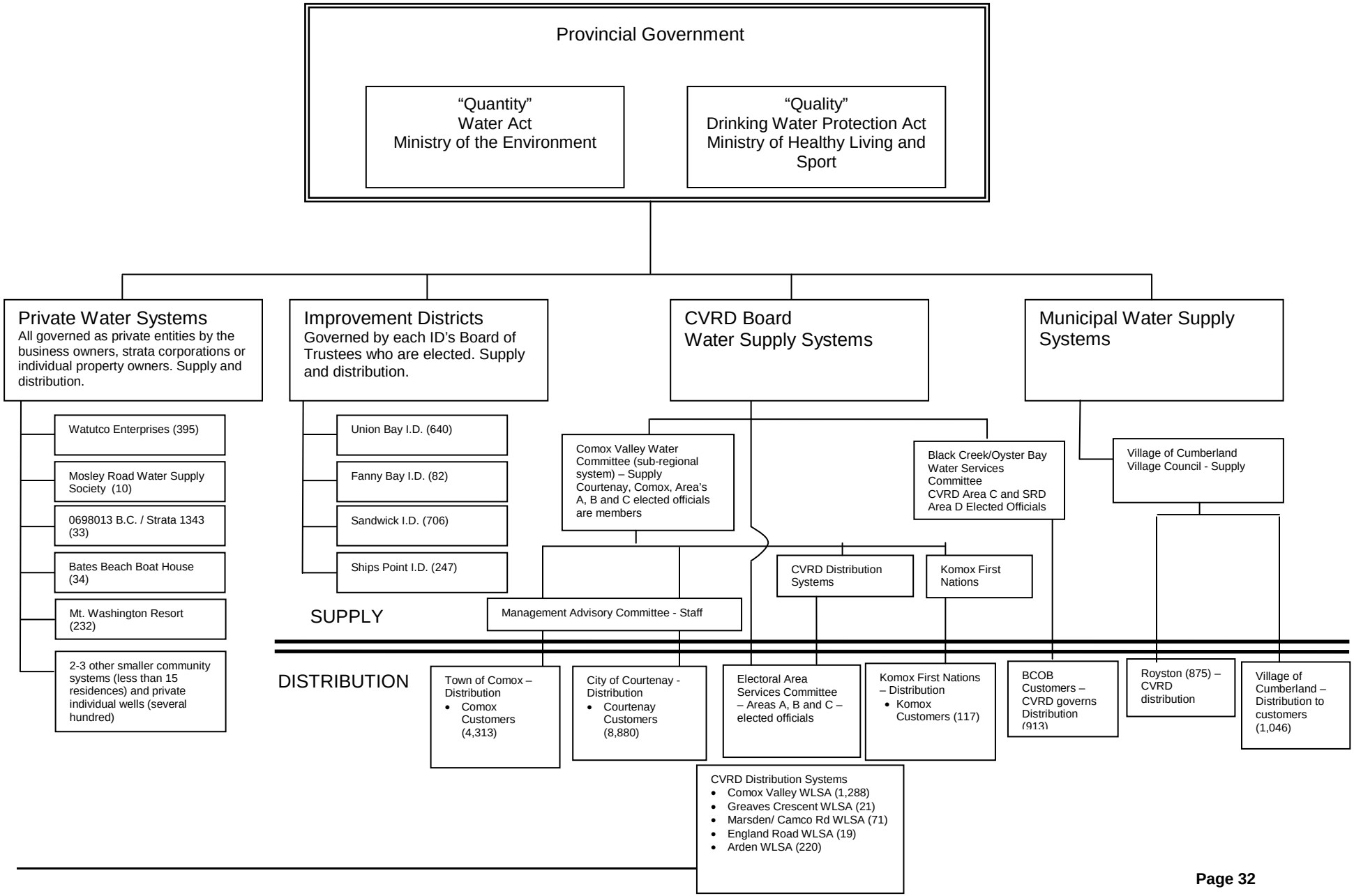
- Watutco Enterprises
- Mosley Road Water Supply Society
- 0698013 B.C. / Strata 1343
- Bates Beach Boat House
- Mount Washington Resort

These private systems operate under the *Utilities Act*.

Current Governance Structure for Water in the Comox Valley Regional District:

Figure 7, located on the next page, illustrates the current model of governance within the CVRD.

Figure 7 - Current Water Governance Structure



4.2 FUTURE GOVERNANCE MODEL

Initial discussions around governance of water supply in the regional district were based around a discussion paper (as Appendix E). Three possible options were presented to open discussion, with consensus being reached around having governance of water supply, treatment and transition become a centralized task.

4.2.1 Tasks and Decision Making Levels

Based on input from the province, who prepared a table detailing various "functions" and "services" and what level decision are made at (see Appendix E), the following tables were prepared to cover the various tasks a governing body or bodies responsible to water supply, treatment, transmission, distribution and planning would have to carry out.

4.2.1 (a) Integrated – Region Wide Water Supply Tasks Decisions made at the Board level by the full board membership based on the recommendations of a standing committee. Function/ service funded by all members of the board (i.e. all municipalities and electoral areas)		
Task	What the Task could consist of	Goal from the proposed Strategy
Water Efficiency	Gathering water demand information across the region. Identifying systems (distribution or transmission) that require repairs/have leaks. Planning of improvements to infrastructure across the region to improve efficiency. Funding improvements and leveraging higher level funds as region to improve the efficiency of all infrastructure systems.	2. Provide cost effective and reliable water supply and delivery into the future.
Water Conservation/ enforcement	Researching water conservation measures. Analyzing usage and conservation measures region wide. Writing region wide bylaws and enforcing watering restrictions with harmonized regulations.	2. Provide cost effective and reliable water supply and delivery into the future.
Watershed Protection	Reviewing risks to watersheds for surface water sources region wide. Preparing region wide watershed protection planning. Working with watershed stakeholders on a regional basis to improve watershed protection and communications. Leveraging funding for watershed protection as a region.	1. Deliver safe high quality drinking water.
Education and Consultation	Preparing comprehensive region wide education and public consultation plan and program to educate the public around water supply issues	3. Ensure clear, accountable and equitable water management and governance. 4. Educate and engage citizens to value water.
Growth Management/ Planning	Regional level growth planning conceptual infrastructure planning (similar to the current RWSS and Sewerage master plan update process).	2. Provide cost effective and reliable water supply and delivery into the future.
Access to supply transmission.	Linked to higher level conceptual planning, providing a region wide service to assist with partnerships for water supply of bulk water between municipalities and potential service areas. Would also include brokering negotiations with other stakeholders.	1. Deliver safe high quality drinking water. 2. Provide cost effective and reliable water supply and delivery into the future.

4.2.1 (b) - Water Supply Functions and Services based on Individual Supply Sources

Decisions made by municipalities and areas/ services areas that partner in a single water supply source (i.e. Comox Lake Water Supply system). Function/ service funded by municipalities/ areas that receive the water supply from the shared source/ system (decisions could still happen at a Board or "Water Committee" meeting, however only members of the system in question could vote – or – decisions made by the CVRD Board based on the recommendation of a standing committee).

Task	What the Task could consist of	Goal from the proposed Strategy
Capital Planning/ development cost charges	Across the supply/ transmission system planning improvements to supply and transmission infrastructure based on growth planning. Development cost charge bylaws would be required and would be "harmonized".	1. Deliver safe, high quality drinking water. 2. Provide cost effective and reliable water supply and delivery into the future.
Capital Financing/ Debt	Linked to capital planning, managing debt for infrastructure improvements to the shared supply/ transmission system.	2. Provide cost effective and reliable water supply and delivery into the future.
Land-use Planning/ Land Management	Would be a "harmonized" service based on the results of the higher level function, but detailed based on the individual water supply area.	2. Provide cost effective and reliable water supply and delivery into the future.
Water Rates – bulk/wholesale	Setting bulk/wholesale water rates for all distribution systems/ municipalities	2. Provide cost effective and reliable water supply and delivery into the future
Bulk Supply/ Access to Supply for Distribution	The actual function of physically supplying water and deciding if new distribution systems can be added.	2. Provide cost effective and reliable water supply and delivery into the future
Day to Day Operations	For the shared supply/ transmission system.	1. Deliver safe, high quality drinking water. 2. Provide cost effective and reliable water supply and delivery into the future.
Quality/ Water Treatment	As part of the capital planning for individual water supply systems, provide day to day assurance of quality and planning for future projects to ensure adequate water quality.	1. Deliver safe, high quality drinking water.

4.2.1 (c) - Water Supply Functions and Services based on Individual Distribution Systems Decisions made by individual municipalities and areas/ services areas deliver water through distribution networks to individual customers (i.e. Black Creek/ Oyster Bay). Function/ service funded by the users in the municipalities/ areas that receive the water supply from the distribution system. Decisions would be made at the individual municipality council or the electoral services area.		
Task	What the Task could consist of	Goal from the proposed Strategy
Capital Planning/ development cost charges	Across the distribution system planning improvements to that infrastructure based on growth planning. Development cost charge bylaws would be required but not necessarily "harmonized" as each system would have to deal with unique needs.	1. Deliver safe, high quality drinking water. 2. Provide cost effective and reliable water supply and delivery into the future.
Capital Financing/ Debt	Linked to capital planning, managing debt for infrastructure improvements to the individual distribution system.	2. Provide cost effective and reliable water supply and delivery into the future.
Land-use Planning/ Land Management	Would be a "harmonized" service based on the results of the higher level functions, but detailed based on the individual municipality.	2. Provide cost effective and reliable water supply and delivery into the future.
Water Rates – individual customer rates	Setting individual water rates for all each customer.	2. Provide cost effective and reliable water supply and delivery into the future
Day to Day Operations	For the shared municipalities distribution system.	1. Deliver safe, high quality drinking water. 2. Provide cost effective and reliable water supply and delivery into the future.

4.2.2 Proposed Eventual Governance Structure

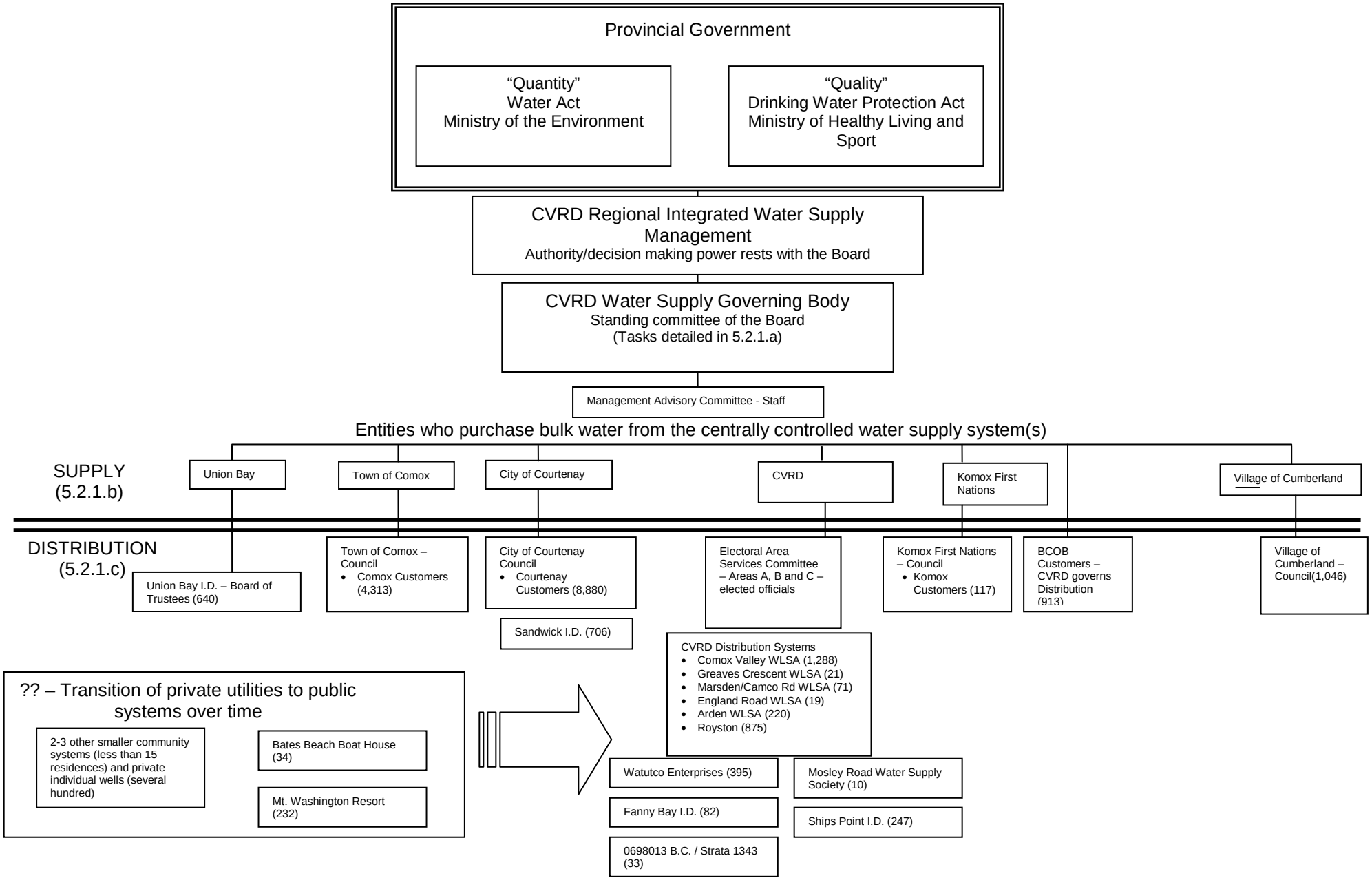
Based on discussions with the Commission and staff, and considering the above tasks, the governance model represented graphically on the next page was arrived at as the ideal, future state for governance of the Comox Valley regional water supply.

It should be noted, the model presented is not contingent on a specific time frame, nor would it be possible to transition to the suggested structure immediately. The following issues would require careful consideration and resolution prior to this structure being achieved at some future date:

- Improvement Districts: Transition of any improvement district's water supply and treatment system, including licenses, assets and liability transfers.

- Private Systems: Similar issues to improvement districts, however another layer of complexity is added in that private assets would be transferred to the public sector. Existing policies will require review in this regard. The condition of assets and infrastructure would be a consideration in these cases as the standards required would change with this type of governance change.

- Municipalities: With Cumberland being the only current example, this would again be a negotiated transition from one public entity to the next. This could include the transfer of "transmission" level assets including licenses, reservoirs, treatment and transmission mains to a Regional level water governance entity. The current vision for governance would see the distribution infrastructure remaining under the purview and control of the Village.


Provincial Government
"Quantity"
Water Act
Ministry of the Environment
"Quality"
Drinking Water Protection Act
Ministry of Healthy Living and Sport
CVRD Regional Integrated Water Supply Management
Authority/decision making power rests with the Board
CVRD Water Supply Governing Body
Standing committee of the Board
(Tasks detailed in 5.2.1.a)
Management Advisory Committee - Staff
Entities who purchase bulk water from the centrally controlled water supply system(s)
SUPPLY (5.2.1.b)
Union Bay
Town of Comox
City of Courtenay
CVRD
Komox First Nations
Village of Cumberland
DISTRIBUTION (5.2.1.c)
Union Bay I.D. – Board of Trustees (640)
Town of Comox – Council
• Comox Customers (4,313)
City of Courtenay Council
• Courtenay Customers (8,880)
Sandwick I.D. (706)
Electoral Area Services Committee – Areas A, B and C – elected officials
Komox First Nations – Council
• Komox Customers (117)
BCOB Customers – CVRD governs Distribution (913)
Village of Cumberland – Council(1,046)
CVRD Distribution Systems
• Comox Valley WLSA (1,288)
• Greaves Crescent WLSA (21)
• Marsden/Camco Rd WLSA (71)
• England Road WLSA (19)
• Arden WLSA (220)
• Royston (875)
?? – Transition of private utilities to public systems over time
2-3 other smaller community systems (less than 15 residences) and private individual wells (several hundred)
Bates Beach Boat House (34)
Mt. Washington Resort (232)
Watutco Enterprises (395)
Fanny Bay I.D. (82)
0698013 B.C. / Strata 1343 (33)
Mosley Road Water Supply Society (10)
Ships Point I.D. (247)

4.3 INITIAL GOVERNANCE STRUCTURE AND TRANSITION AND IMPLEMENTATION ISSUES

As described in the previous section, the proposed governance structure is an ideal and eventual goal for making decisions with respect to water supply in the Comox Valley. However, to move forward with implementation of this strategy, an initial shift in governance is required. What is proposed is the establishment of a new governing body, within the purview of the Regional District board that provides broad representation and can begin to take on certain tasks immediately.

Figure 8 below outlines in simplified terms how the initial governing body for water supply, proposed as the "Comox Valley Regional Water Supply Governance Committee" would function in the current governance framework:

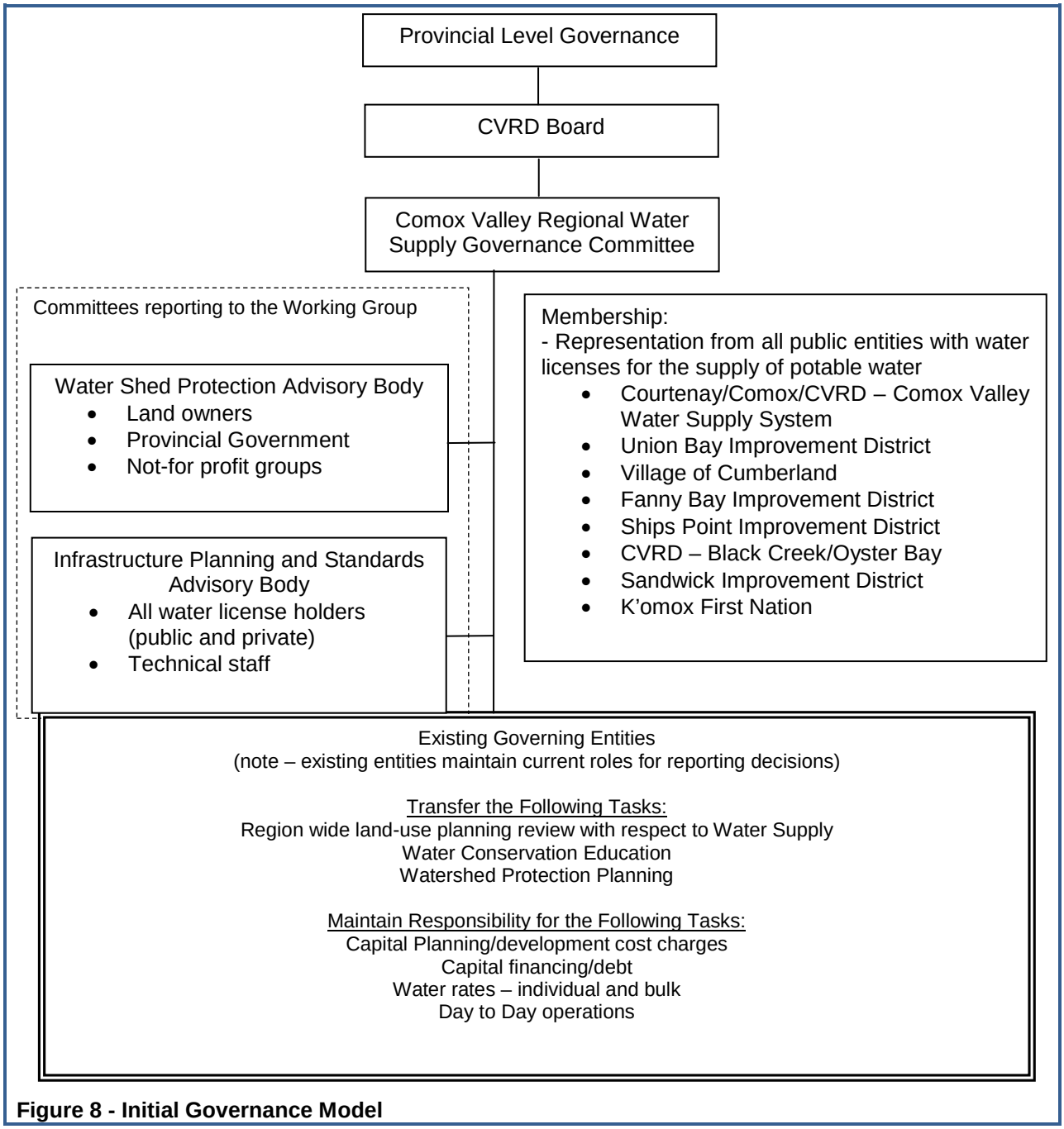


Figure 8 - Initial Governance Model

Given the above proposed structure, one significant role of this new governing body would be to advise on the timing and triggers for the transfer of assets, licenses, liabilities and tasks from existing license holder to the CVRD. The establishment of policies for this would be one of the first jobs of the Standing Committee.

To achieve the proposed governance model, it is noted that several transitional steps will be required. Figure 9 below illustrates how the transition between the initial governance structure and the final structure could unfold:

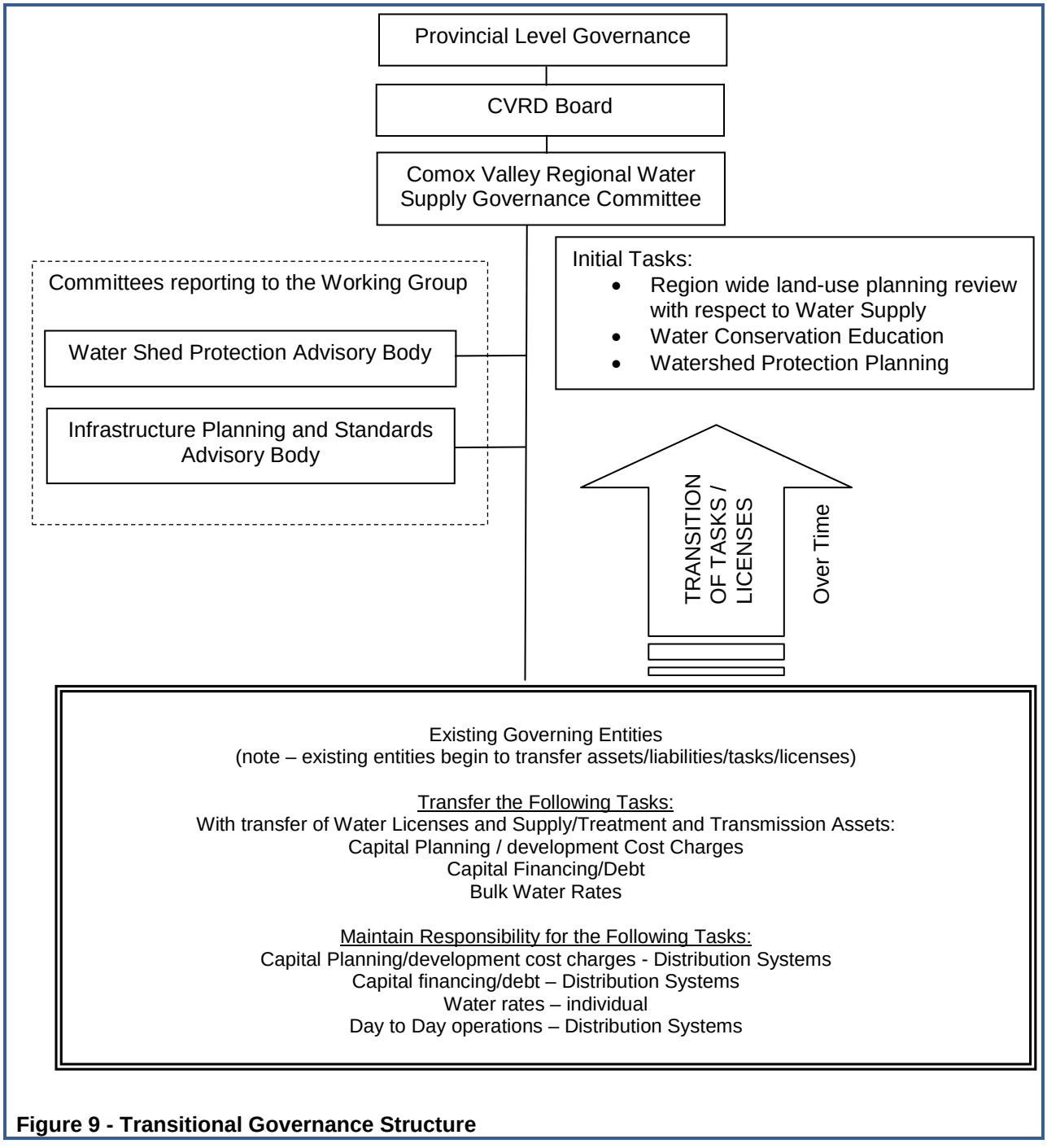


Figure 9 - Transitional Governance Structure

Table 4 describes some possible events or instances that could trigger the transfer of water supply responsibilities, be they service provision, assets, liabilities and / or licenses.

Trigger	Comments
Required upgrades to a system beyond the means of the current governance structure	A change of standards, such as the 4-3-2-1-0 requirement, could push the cost for needed upgrades beyond the capacity of an existing entity, at which point joining a regional system may be the best option.
Expansion to a system through adjacent major development	When a current system and source will have its range increased by a large factor due to major development, the existing purveyor may not have the ability for to continue to manage the system after expansion.
Economies of scale available through centralization of assets/ services	For example, if a smaller purveyor is having difficulty retaining the required operations staff, which is generally a requirement of the permit on a water system, joining a regional service where specialized staff are centralized and costs spread out over a greater number of users may be the best option.

Table 4 - Possible triggers for transferring water supply assets/ liabilities and licenses

It is important to note that any negotiations to transfer assets, liabilities, services and functions would happen between the existing governance bodies, including Improvement District boards, Town/ City or Village councils, the Electoral Area Services committee etc. While the proposed “Comox Valley Regional Water Supply Governance Committee” would play a role in this, it would not be the primary forum for these negotiations.

5.0 TECHNICAL REPORTS

Several key reports were developed to support the strategic planning process. Kerr Wood Leidal, retained under a Request for Proposal process prepared key technical memorandums describing and analyzing key factors around water supply in the CVRD. This section will provide an overview of the memos, which are all included in Appendix D.

5.1 WATER SOURCES

Technical Memorandum - Comox Lake Water Supply Study Phase 1 – Hydrology Analysis – October 2008 – CH2MHILL

The purpose of this technical memorandum is to report on the Hydrology Analysis for the Comox Lake Water Supply Study – Phase 1.

Based on the information presented in this technical memorandum, it is concluded that:

• The water yield of Comox Lake Watershed is defined in the following table:

Condition	Yield (m3/s)
Average	30.31
100-year return period drought year (single year)	16.88
Critical drought period (7 years), which includes a 100-year return frequency	25.82

Table 5 - Comox Lake watershed yield

- Comox Lake has a storage capacity of approximately 94.2 million m3 between its normal maximum and minimum operating elevations of 130.8 m and 135.33 m.
- For a critical drought period between wet years, only 89 percent of the water yield is available for water supply due to the limited storage capacity of the reservoir.
- Define the reservoir storage capacity required to maximize the water supply capacity of the watershed for current hydrology, as well as for hydrology impacted by climate change.
- Identify other potential water sources, and determine their supply capacity.

Based on the conclusions of the hydrology study, the CVRD should now proceed with Phase 2 of this study. The following tasks are required in Phase 2:

- Identify potential, future climate change scenarios, and select two extremes (high and low impact) for use in the analysis and that cover the range of potential impacts.
- Estimate the potential impacts of climate change on the water yield.

Task 2.1.5 – Comox Lake Hydrology – Phase 2 – Climate Change Assessment
Issued October 2, 2009

This report, the first produced by the consulting team, is a follow up to an earlier report prepared by CH2MHill which determined the basic hydrological characteristics of Comox Lake. In this report, that work was built on and the impacts of climate change assessed with respect to the long term use of Comox Lake as a water supply. Specifically, the following is included:

- Review of further relevant reports
- Review of climate change
- Recommendation with respect to the remaining tasks in the RWSS and the impact that climate change will have on overall water supply planning

The following recommendations were provided in this report:

1. Climate change impacts on Comox Lake hydrology and storage be considered as part of future updates to the Water Use Plan, such that balanced needs of all water users are met under future climate change conditions for average conditions and moderate droughts;

2. Negotiations should be conducted with BC Hydro, DFO and other stakeholders to develop a "shared pain" agreement to establish minimum conservation flows, water supply demands and compensation terms for BC Hydro during extreme drought conditions;

3. Land use and development around Comox Lake should be managed with consideration to allow the potential for future raising of the Comox Lake dam to support water supply, power generation and conservation without negatively impacting lakeshore residents; and

4. Further in depth research on climate change impacts on Comox glacier and summer baseflows will be completed as part of future updates to refine summer reservoir storage.

Task 2.1.6 – Regional Alternative Water Supplies
Issued November 9, 2009
This memo reviews the most promising water sources in the district, both those already developed and undeveloped surface and groundwater sources. Detailed analysis of climate, hydrology and hydrogeology are provided. A detailed assessment of Comox Lake is not included in this report as it was already completed in earlier tasks. Climate change impacts on all water sources are also assessed.

Key conclusions from this report include that other than Comox Lake, only Langley Lake and its catchment have sufficient capacity to meet supply requirements for both the 1:20 and 1:100 year drought conditions. The report also recommends the following:

1. Upgrades and expansion of existing water sources (Cumberland Creek Dams, Allan Lake and Langley Lake) identified in this study be considered as possible options to supply Cumberland, Royston, and Union Bay as part of the RWS;

2. Additional assessment of water distribution and treatment should be completed to evaluate the feasibility of using Wolf Lake to supply the Comox Lake Service Area and Tsable Lake to supply Union Bay, Fanny Bay and Ships Point.

3. More detailed assessment of ground water sources, including exploratory drilling and well testing, be considered for the RWSS for Black Creek/Oyster Bay, Union Bay, Fanny Bay and Ship's Point water supplies as preliminary assessments have shown good potential;

4. McNaughton Creek, Rosewall Creek, Wilfred Creek, Cowie Creek, Hindoo Creek, Trent River, Morrison Creek, Little River, Kitty Coleman Creek and Black Creek should not be considered further as they are not suitable for regional water supply.

5. Related water distribution and treatment needs should be assessed in more detail for the regional water sources identified in this study as part of Regional Water Supply Options Technical Memorandum #6 and should be considered in identification of the preferred water supply option for the Regional Water Supply Study.

5.2 WATER DEMAND

Task 2.1.9 – Water User Profiles
Originally Issued October 16, 2009 – Revised November 12, 2009
This memo reviewed the water demand in the CVRD, for current, 2020 and 2058 with different scenarios based on the level of conservation applied. Discussion of the effectiveness of water conservation, with and without metering is included and quantified based on lot-level GIS analysis. Furthermore, the ability for using non-potable water for such uses as irrigation, industrial processing and toilet flushing and a discussion of sources form a part of the report, with a recommendation for developing a more detailed non-potable water use plan.

In summary, the application of water conservation measures without including universal water metering would result in a reduction in demand of 7% by 2020 and 18% by 2058 as compared to continued demand for water at today's rate of use. Furthermore, if universal metering were combined with water conservation, the reduction in use over time as compared to continuing to consume water at today's rates would be 21% by 2020 and 30% by 2058.

Table 6 below summarizes the water demand based on the scenarios described above and the growth model selected in the preparation of this strategy.

	Current	2020	2058
Status Quo			
BD-res Rate - CVRD average (L/ca/day)	278.9	278.9	278.9
BD-ICI (L/PE/day)	372.3	372.3	372.3
BD (MLD)	20.4	32.5	77.0
SD24 Rate (mm/day)	3.0	3.0	3.0
SD24 (MLD)	54.3	61.4	77.8
ADD(MLD)	28.5	41.6	95.1
MDD (MLD)	74.7	93.9	174.3
Water Conservation (w/o Universal Metering)			
BD-res Rate - CVRD average (L/ca/day)		234.8	185.6
BD-ICI (L/PE/day)		372.3	372.3
BD (MLD)		26.2	49.9
SD24 Rate (mm/day)		3.0	2.9
SD24 (MLD)		60.8	76.1
ADD (MLD)		35.3	66.2
% ADD Reduction		**15%**	**30%**
MDD (MLD)		87.0	143.6
% MDD Reduction		**7%**	**18%**
Water Conservation (with Universal Metering)			
BD-res Rate - CVRD average (L/ca/day)		191.0	138.2
BD-ICI *(L/PE/day)*		372.3	372.3
BD (MLD)		21.0	40.4
SD24 Rate (mm/day)		2.8	2.7
SD24 (MLD)		60.8	66.9
ADD (MLD)		28.9	54.2
% ADD Reduction		**30%**	**43%**
MDD (MLD)		74.5	122.2
% MDD Reduction		**21%**	**30%**
Potential Non-Potable Water Use			
MDD Reductions (MLD)		2.82	2.82

BD - Winter base demand
SD24 - Seasonal demand in addition to base demand on maximum demand day
ADD - Annual average day demand
MDD- Maximum day demand
MLD - 1,000,000 litres/ day

Table 6 – Water demand

Note: This table supplied courtesy of Kerr Wood Leidal

5.3 WATER TREATMENT AND WATER QUALITY

Task 2.1.5.A – Climate Change Impacts on Waterborne Diseases in Comox Lake
Originally Issued January 29, 2010 – Revised March 15, 2010 – Finalized
This memo provides an overview of the relationship between climate change impact and public health risk related to the Comox Lake watershed In general, the memo revised climate change, described specific impacts to the Comox Lake watershed and reviewed waterborne disease outbreak risks as the impact the water supply. The following recommendations were made:

1. Work with stakeholders and other partners in the watershed to coordinate, share and analyze climate, environmental and water quality data about the Comox Lake watershed. This work should be to supplement the existing "*Water Quality Assessment and Objectives for Comox Lake*", 2009.
2. Develop a communications framework (minimum one annual stakeholder meeting) with key stakeholders, including BC Hydro, Ministry of Environment, Department of Fisheries and Oceans and others.
3. Expand the existing climate and hydrometric monitoring network to assess on-going water quality and quantity in Comox Lake and its major tributaries.
4. Base the extent of data monitoring and selection of key monitoring parameters upon discussion and review with the stakeholders of the Comox Lake Watershed.
5. Integrate predicted impacts of climate change to the hydrology and water quality of Comox Lake with land use planning.

Task 2.1.8 – Water Quality and Treatment – Comox Lake
Originally Issued March 17, 2010
This memo reviewed the findings related to water quality and treatment of the Comox Lake water source. In general, the following is included:

- discussion of regulations and health authority policy;
- discussion of potential filtration exemption;
- overview of source water (watershed) protection; and
- comments on water treatment (including deep water intake issues).

Key issues raised include

- Water currently supplied from Comox Lake requires additional water treatment to meet the provincial drinking water regulations and the VIHA 4-3-2-1 treatment criteria.
- A filtration exemption may be secured if Comox Lake and new treatment facilities can meet the conditions in the *Guidelines for Canadian Drinking Water Quality.*
- However, at this stage, planning should include the assumption of the need for a water treatment plant including filtration.
- A deep water intake on Comox Lake will provide water that meets the *Guidelines for Canadian Drinking Water Quality* and will significantly reduce the potential contamination risks from human activities including recreational use on Comox Lake.
- Intake options from Puntledge River will not provide water that meets the *Guidelines for Canadian Drinking Water Quality,* specifically water temperature, and will not address concerns related to the potential contamination risks from human activities upstream of the intake.
- Based on available water quality data and current VIHA requirements, planning for a water treatment plant with direct filtration (without pre-treatment), followed by ultraviolet disinfection and chlorination will provide a suitable premise for evaluating the long term water supply from Comox Lake.

5.4 TRANSMISSION AND DISTRIBUTION

Technical Memorandum #1 - Water System Inventory — February 19, 2009 – CH2MHill
The purpose of this memorandum is to report on the preparation of a water system inventory for the Comox Valley Regional District (CVRD).

As part of the preparation of the Regional Water Plan, CVRD contracted CH2M HILL in November 2008 to undertake an inventory of the existing public and private water systems located within the CVRD boundaries. This water systems inventory will be used to evaluate different options for the source, treatment, and distribution of drinking water for the current and future CVRD population.

Based on the above, it was concluded that:
- The GIS database gathers key information related to source, treatment, and distribution for the major water systems within CVRD.
- Available information includes all water systems serving more than 300 people and most of the water systems serving more than 15 people. Information is missing for a few systems serving more than 15 people and for systems serving less than 15 people.
- Information received was inconsistent in quality. It has been cleaned, scaled and geo-referenced for its incorporation into the database.
- The database contains enough information for the CVRD to go forward in the preparation of the Regional Water Plan.
- Among the 14 water system owners contacted, only 2 of them have an alternate water source.

Comox Lake Intake – Conceptual Design – January 2009 – CH2MHill
CH2MHill and Hatch Mott MacDonald worked together to develop concepts for a new water intake system on Comox Lake. Work began in August 2007 and was completed in February 2008. It included a site visit, review of design conditions and requirements, and the identification and evaluation of alternatives for the intake and transmission main. Two main options emerged:
• Option 1 consists of a riser intake, a tunnel from the intake to the future water treatment plant (WTP) and a 4-km pipeline from the WTP to the existing chlorination building. Two possible tunnel alignments were identified: a 4-km tunnel through the old coal mines, and a 6-km long around the mine, north of the Puntledge River.
• Option 2 consists of a submerged pipeline intake with a 8-km surface pipeline from the intake to the existing chlorination building. Two possible locations of the WTP were identified: on the lakeshore and about 3 km from the lakeshore.
For each of these options, preliminary Class D capital and present value (PV), or lifecycle, costs were prepared. It was found that a submerged pipeline intake with surface pipeline would be more economical than a riser intake and tunnel, both in terms of capital and PV costs. For planning purposes, it was recommended that the CVRD budget $53M for the new intake, transmission line, and pump station, and allow five years to complete the work.

Water System Inventory – Overview of Services Provided – Wedler Engineering LLP
Issued February 22, 2010
This report will summarizes the work completed by Wedler Engineering to supplement the GIS Water System Inventory database prepared by CH2MHILL for the CVRD Regional Water Supply Strategy.

All data collected has been entered into the CVRD's GIS by CVRD staff. Kerr Wood Leidal Associates retained for the technical portion of the RWSS collected further data and has been tasked in a detailed model of the water systems. Thus, all available data on all systems will be collected and collated upon completion of the RWSS.

Tech Memo #5 – Task No. 2.2.2 – Distribution System Evaluation – KWL
Issued February 11, 2010

This memorandum provides the findings of RWSS Task 2.2.2 "Distribution System Evaluation", which includes the following sub-tasks:

- Establishment of water system design criteria;
- Development of a model of the existing regional transmission system;
- Providing transmission system model results for existing and future demands; and
- Identifying deficiencies in the regional transmission system.

It should be noted that detailed water system modeling and assessment of the distribution system (as opposed to the transmission system) is not included in this task, but will be included in a follow-up memorandum. Further, no evaluation of water source capacity is included in this memorandum; an analysis of water source capacity is the subject of a separate memorandum.

Summary and recommendations:

- An assessment of the water transmission systems in the CVRD has been conducted. The assessment has been conducted for existing and two future demands scenarios. The two future demands scenarios are 2058 demands assuming that existing water use rates continue, and 2058 demands assuming that water conservation measures are put in place.
- Not surprisingly, the water systems in the CVRD require less extensive upgrades if water conservation measures are put in place as illustrated by the following comparisons:
    - Two systems require source hydraulic capacity upgrades without water conservation (Black Creek/Oyster Bay and Ships Point); this drops to one (Ships Point) with water conservation;
    - All the reservoirs in the CVRD require upsizing without water conservation; with water conservation three of the reservoirs are expected to the adequately sized (East Courtenay #1 and #2), Crown Isle and Comox.

The data used in this assessment was assembled from uncalibrated water models, some of which may be as much as 10 years old, and an incomplete GIS database. Ideally, critical parameters would be checked against record drawings, but only a small number of record drawings are available. It is therefore recommended that the findings of this assessment be verified as data becomes available.

5.5 SUPPLY SYSTEM OPTIONS

Phase 4 – Regional Water Supply Options
Issued November 12, 2009
This memorandum presents the findings of Phase 4 of the RWSS which consists of evaluation of regional water supply options. The following sub-tasks are included in this phase of work:

- review of source capacities and existing future demands;
- development of local and regional water supply options for each service area in the CVRD;
- development of Class D cost estimates for each option;
- recommendation of preferred options for further study and elimination of unfeasible options

The report defines "local" options where each existing supply and service area would remain independent. The following "local" options are presented:

- For the existing Comox Lake supply area – all options included costs for a deep water intake and water treatment plant:
    - CLRWS1-Construct a water treatment plant and booster pump at the existing supply point on the BC Hydro penstock.
    - CLRWS2-Construct a deepwater intake and transmission main to approximately the existing location of the tie-in point to the BC Hydro pen stock coupled with a raw water pump station and treatment plant at Comox Lake.
    - CLRWS3-Construct a deep water intake, transmission main from the lake to the existing tie in at the BC Hydro penstock and a water treatment plant between the lake and the existing penstock tie in at approximately 130 m elevation.
- It is recommended that the Sandwick system be incorporated into the existing City of Courtenay system and Comox Lake supply area.
- For Cumberland and Royston, four options are presented. All options include either rehabilitating the current storage system or expanding it and a water treatment plant:
    - CUMB1-Increase storage in the existing water supply system.
    - CUMB2-Supplement the existing supply system by pumping raw water from Comox Lake.
    - CUMB3-Eliminate the existing supply system and provide treated water from the Comox Lake supply system (also included in 'Regional' options).
    - CUMB4-Augment the existing system by developing groundwater with some upgrades to the existing surface supplies.
- For Black Creek and Oyster Bay, three basic local options were reviewed:
    - BCOB1-add storage to the Oyster River.
    - BCOB2-Develop additional groundwater supply – costs for this include significant funding for ground water and minimal treatment facilities.
    - R2-Supply water from an alternate surface source (Black Creek, Wolf Lake or Comox Lake).
- For the Union Bay area, three basic options, similar in scope to Black Creek/Oyster Bay were developed:
    - UB1 - add storage to Langley Lake – costs include a water treatment plant.
    - UB2 - develop groundwater supply – Langley lake no longer used.
    - R1, R1A, R4, R4A - supply water from other surface sources (Tsable River, Cumberland sources, Comox Lake).
- The Ships Point/Fanny Bay area, currently using groundwater sources, has two possible options for continued local supply:
    - FBSP1-develop additional groundwater – this would require minimal treatment infrastructure..
    - R1, R1A, R4, R4A - supply water from a different source (Tsable River, Wilfred Creek, Langley Lake, Comox Lake or the Cumberland supply system).

Several Regional or integrated servicing options are also presented. In this case, scenarios for integration and sharing of resources are developed. The following options are proposed:

- Option R1 – Integrate Cumberland, Royston, Union Bay, Fanny Bay and Ships Point into the Comox Lake water supply system. In general, a major transmission main would be extended to the south along the Inland Island highway in order to supply water to the service areas south of the major urban centre. Included in the cost estimate are a deep water intake, a water treatment plant, a raw water pump station and various transmission mains and pump stations.
- Option R1A – This would integrate Sage Hills into option R1. Additional costs required for transmission mains to the proposed Sage Hills development area and a pump station for the proposed development.
- Option R2 – Integrate Black Creek and Oyster Bay into the Comox Lake water system. In general, a major supply main would extend north of the Courtenay/Comox area to supply water from Comox Lake to Black Creek and Oyster Bay. Included in the cost estimate are a deep water intake, a water treatment plant, a raw water pump station and various transmission mains and pump stations to move water from Comox Lake to the Black Creek/Oyster Bay system.
- Option R3 and R3A – Integrate Union Bay, Fanny Bay and Ships Point into the Village of Cumberland water system. This option envisions using Van West Lakes in addition to the existing sources for Cumberland. R3A would have Sage Hills supplied also. The consultant has determined that neither of these options are feasible as there is not adequate water in the proposed supply sources.
- Option R4 – Service Fanny Bay and Ships Point from Langley Lake. This would see Union Bay continuing to be supplied by Langley Lake, with storage and treatment capacity expanded and a transmission main running south to Fanny Bay and Ships Point. Costs included increasing storage at Langley Lake, a water treatment plant and transmission mains.
- Option R4A – This is similar to R4 with the addition of a booster pump and main running north to service Sage Hills.

These options and the background information were presented to both the water supply commission and the technical advisory committee in December of 2009. At that time, it was determined that the development of a governance model with stakeholder engagement would and finalization of the technical analysis would require an extension to the schedule for the water strategy.

The cost estimates prepared are classified as Class “D” indicative cost estimates. These estimates were assembled with little to no site information and do not include items common to all options. Therefore, these estimates are not intended to be used for budgeting purposes but simply to compare the various options.

Allocation of the costs between the various municipalities/entities is based on the share of total water demand for each entity. This represents an initial proposal for cost sharing and would be subject to negotiation.

The table below presents a summary of the various options and both capital and operations and maintenance costs (millions of dollars) for a 50 year lifecycle. The costs have been allocated amongst the service areas that receive benefit:

Option	CLRWS	Sandwick	Cumberland	Royston	BCOB	Watutco	Union Bay	Fanny Bay	Ships Point	Proposed Development South of Courtenay	Total
CLRWS1	$86.4	$3.6									
CLRWS2	$94.1	$3.9									
CLRWS3	$92.6	$3.8									
CUMB1			$62.5	$24.7							
CUMB2			$36.4	$14.4							
CUMB4			$47.2	$18.7							
BCOB2					$5.0	$0.8					
FBSP1								$0.8	$2.3		
UB1							$19.2				
UB2							$4.8				
R1	$99.7	$4.1	$27.4	$9.1			$13.0	$3.5	$10.5		$167.3
R1A	$99.6	$4.1	$27.6	$9.2			$10.8	$3.2	$9.7	$30.5	$194.7
R2	$96.6	$4.0			$21.3	$3.2					$125.1
R4							$18.9	$4.2	$12.6		$35.7
R4A							$9.5	$3.1	$9.3	$36.6	$58.5

CLRWS=Comox Lake Regional Water System; BCOB=Black Creek/Oyster Bay; FBSP=Fanny Bay/Ships Point

Notes:
1. Where no cost is shown for a certain service area for a certain option, it is because the option in question does not affect that service area.
2. Totals are shown for "regional" level options only. "Local" options do not necessarily include the servicing requirements of the entire region, thus they cannot be compared on a cost basis. To compare the various combinations of "local" options to "regional" options, several combinations of local options could be grouped together to show the servicing costs for the entire region.

Table 7 - Summary of water supply options costs

Note: This table supplied courtesy of Kerr Wood Leidal

5.5.1 Regional Option R-5

Introduced in early 2011 by the Village of Cumberland's engineer, this regional option would include the following basic components:

- Deep water intake on the Cumberland side of Comox lake.
- Treatment plant in the vicinity of Cumberland's existing chlorination station at 220 m elevation.
- Transmission mains to the following development nodes/ existing systems:
  - Sage Hills
  - Union Bay/Kensington Island Properties
  - Village of Cumberland
  - Royston
  - Comox Lake regional water supply system (Courtenay, Comox, Electoral Areas).

Figure 10 on the following page depicts the details and proposed infrastructure plan and proposed service area.

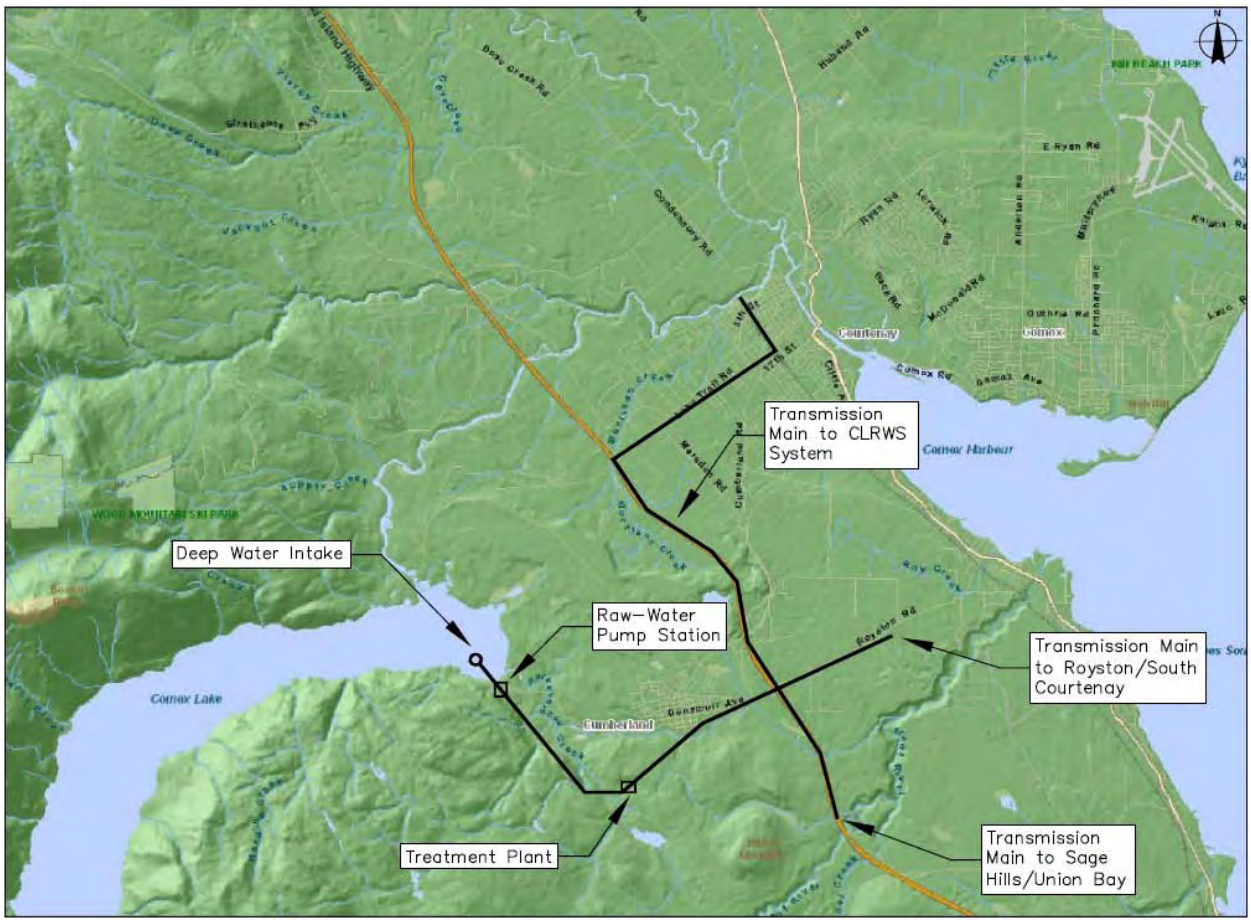


Figure 10 – Option R-5 - Proposed infrastructure plan

Some of the benefits of this proposal include the removal of pump stations for Cumberland and areas in the south parts of the CVRD as it would be possible to gravity feed the entire service area proposed. Furthermore, the fact that the Village's water licenses have seniority of BC Hydro and are technically up stream of BC Hydro's license on Comox Lake would be advantageous for the entire region in re-negotiating water use in the Comox Lake watershed. This could negate some of the possible impacts of rising energy costs to the existing Comox Lake system in that the current method of taking water off of the BC Hydro Penstock may become cost prohibitive. This is because the current arrangement the CLRWS system pays BC Hydro for the lost generating potential on water diverted from the penstock. Furthermore, the penstock does have a finite service life, and if the CLRWS system were to continue to draw from it, the share of cost to replace it could be cost prohibitive compared to having a dedicated feed from a single intake. Finally, the fact that the bulk of the population would be able to share the costs of a single intake, treatment facility and major transmission system would be more cost effective for all.

As of March 2011, further detailed analysis of this option is being undertaken, but it is not available to the final draft of this strategy. Per the recommendations of this document, a decision on the best option for infrastructure in the Comox Valley is to be one of the first tasks of the implementation of the water strategy. *Initial cost estimates show that this option has the potential of being the most cost effective option for all of the proposed service areas.*

5.6 PRELIMINARY CONSOLIDATED OPTIONS

The following holistic infrastructure options, based solely on the information developed by Kerr Wood Leidal as presented above, with simply the various individual options combined. Four overall options are considered:

1. Least Cost
2. Comox and Langley Lakes become major sources
3. Comox Lake as the primary source excluding Black Creek/ Oyster Bay
4. Comox Lake centralized system

These options will require some further development as the effects of removing portions of the proposed work from some of the regional options require further consideration.

5.6.1 Least Cost

This alternative is arrived at by selecting the least cost alternative for each service area from the various options presented. This combines a portion of R1 with Cumberland and Royston, being supplied by Comox Lake water supply system. However, Fanny Bay, Ships Point and Union Bay would be excluded from Comox Lake, and instead have alternate sources such as ground water developed. Black Creek develops additional ground water and integrates the Watutco system. Total cost for this option is $146.6 million over 50 years. The proposed Sage Hills development is not included in this option, and a variation will be added for the final version of this strategy.

5.6.2 Comox and Langley Lake

This is essentially combining elements of R1 with R4. Fanny bay, Ships Point and Union Bay would all be supplied by Langley Lake. Sandwick, Cumberland, Royston, Courtenay, Comox and current water local service areas fed by Comox Lake would all be supplied by Comox Lake. The least cost alternative for Black Creek and Watutco, consisting of further development of ground water, is included. Total cost for this option would be $174.4 million over 50 years. Adding the proposed Sage Hills development, pending its approval, would increase the overall cost of this option to $197.2 million.

5.6.3 Comox Lake Excluding Black Creek/ Oyster Bay

This option combines Option R1 with the development of additional ground water for the BCOB system. Total cost for this option would be $167.2 million over 50 years. Adding the proposed Sage Hills development, pending its approval, would increase the overall cost of this option to $192.5 million.

5.6.4 Comox Lake

This is essentially option R1 with the addition of the Black Creek area to the Comox Lake supply. This would entail transmission of Comox lake water north and south in the CVRD. Total cost for this option would be $185.9 million over 50 years. Adding the proposed Sage Hills development, pending its approval, would increase the overall cost of this option to $211.2 million.

5.7 INFRASTRUCTURE PLANNING CONCLUSIONS AND RECOMMENDATIONS

The following are quoted from the KWL technical memorandum, and represent interim recommendations only. These recommendations do not currently include consideration of the Regional Option 5:

Options for the supply of water to service areas within the CVRD have been examined and Class 'D' indicative cost estimates have been prepared for the purpose of comparing options.

The options examined consist of "Local" servicing options in which the existing service areas maintain or develop separate water sources and "Regional" options in which several service areas are supplied by a single source. The "Regional" water sources examined include Comox Lake, the Cumberland Creek/Allan Lake/ Vanwest Lake System and Langley Lake.

The following conclusions were reached during the study:

- Life cycle costs for options CLRWS 2 and 3 (Comox Lake deep water intake and Comox Lake transmission main) are similar to CLRWS 1 (withdraw water from the BC Hydro penstock). However, there are compelling water quality reasons to prefer CLRWS 2 or 3 and therefore CLRWS 1 is not recommended to be studied further. Additional design of the Comox Lake transmission main, deep water intake and raw water/vacuum pump stations will be performed in the next phase of the study. This will include review of transmission main profiles and construction methodologies;

- Due to the large costs associated with upgrading dams and increasing storage in the Allan Lake/Cumberland system, supply from Comox Lake as part of a regional system (either R1 and R1A) is identified as the least cost option for Cumberland and Royston.

- It is more economic for the Sandwick system to integrate with the CLRWS system than remain separate;

- Local servicing by groundwater is preferred for the Fanny Bay and Ships Point (FBSP1) and Union Bay (UB2) systems;

- Local servicing by groundwater is preferred for Black Creek and Oyster Bay (BCOB2) systems,;

- It is more economic for the Watutco Enterprises system to integrate with the Black Creek/Oyster Bay systems than remain separate;

It is recommended that the options identified above proceed to the next stage of development and analysis and costing be performed for different demand and climate change scenarios. For the groundwater supply options, additional data collection on aquifer yields and water quality will be required to confirm the study findings.

6.0 CONCLUSIONS AND RECOMMENDATIONS

This strategy outlines the general strategic direction for water supply in the Comox Valley Regional District. It is intended to provide a framework for collaborative efforts in ensuring the vision and goals of the strategy are met. The following implementation measures are recommended:

- Recommendation by the Water Commission to the Board that this Strategy be adopted including the Vision and Goals:

We provide a long term, high quality, reliable water supply to the entire Comox Valley while protecting ecosystems and the environment.

Goal 1 – Deliver safe high quality drinking water.

Goal 2 – Provide cost effective and reliable water supply and delivery into the future.

Goal 3 – Ensure clear, accountable, and equitable water management and governance.

Goal 4 – Educate and engage citizens to value water.

Implementation recommendations for 2011:

- That the Committee of the Whole continue to review and recommend action with respect to this strategy and regional water planning
- That the new regional option R-5 be explored and further detailed by Kerr Wood Leidal.
- That staff reports be prepared to define membership and terms of reference for the recommended sub-committees:
    - watershed and water source protection
    - Technical and infrastructure management

Implementation recommendations for 2012:

- Establishment of a “Comox Valley Regional Water Supply Governance Committee” to be a standing committee of the CVRD board.

- Establish a Comox Valley Regional Water Supply Service to implement this strategy, provide watershed protection planning, land-use planning review and water conservation education.

- Recommend transfer of the following tasks to the new standing committee from the member public entities, along with sufficient funding to accomplish the tasks:
    - Region wide land-use planning review with respect to Water Supply;
    - Water Conservation Education;
    - Watershed Protection Planning.

- Amongst the Standing Committee’s first tasks would be the following:
    - To develop detailed five year construction and maintenance plan.
    - Develop an implementation plan for asset, license, liability and task transfer for water supply from the various public water license holders over time including triggers and policies, subject to negotiation.

Finally, this strategy be reviewed and updated in 2015.

APPENDIX A: Letters Patent Excerpts, Terms of Reference for the Commission, Advisory Body and Steering Committee, Workplan

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DEC 17 2007

His Worship Mayor Craig Anderson, Chair
and Members of the Board
Comox Strathcona Regional District
600 Comox Road
Courtenay, BC V9N 3P6

Dear Chair Anderson and Board Members:

I am writing further to our December 3, 2007 meeting (Meeting). I would like to thank each member of the Comox Strathcona Regional District (CSRD) Board for their participation at the meeting. I appreciate that it was held at a very challenging time for many of you, and those who travelled to Victoria did so under very difficult conditions. I also wish to thank those of you who have written to me since the Meeting to provide me with additional comments. I have considered each of these submissions in preparation of this letter.

At the Meeting, I promised to provide you with my responses to key outstanding issues related to the restructuring of the CSRD. The key issues that you and your Directors have brought to my attention at our Meeting, by subsequent correspondence, through the provincially appointed facilitator, Mr. Doug Allan, and through Ministry of Community Services' (Ministry) staff, are the following:

- timing of the implementation of the restructure, and the need to plan for transition;
- details of the mandate on a new regional water supply service;
- the mandate to create a Regional Growth Strategy (RGS);
- policy on municipalities providing critical water and sewer services to areas outside municipal boundaries;
- harmonized development cost charges;
- community planning for the rural areas of the regional district;
- managing the transition and mitigating any potential cost increases;
- the boundaries of the new regional district;
- governance structure of the new Boards; and
- status of infrastructure projects.

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Ministry of Community Services and Minister Responsible for Seniors' and Women's Issues

Office of the Minister

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I have listened carefully to the concerns of the CSRD Board and individual Directors, and to the proposals presented both at the December 3, 2007 meeting and in subsequent correspondence. Following consideration of these comments, I can provide you with the decisions I have made on each of the key issues.

1. Incorporation Date

I will be proceeding to Cabinet in January 2008 with Letters Patent creating the Comox Valley Regional District and the Strathcona Regional District, with the effective date of February 15, 2008. The inaugural meetings of the two new Boards will be scheduled for that date. I know that many Directors have asked for a further delay in implementation. However, I believe this timing, combined with the transitional and financial mitigation measures outlined in section 7 below, will answer your concerns and provide you with the time and resources that you and your staff need, to prepare for the transition to two new regional districts.

2. Regional Water Supply

Ministry, regional district and municipal staff will continue to discuss the details of a regional water supply service for the Comox Valley. However, I can confirm that the Comox Valley Regional District will be mandated through Letters Patent to:

- create a Regional Water Supply Commission (Commission), reporting to the Board, with political representation to mirror representation on the regional Board with the exception of Electoral Area K. The municipal representatives would be Council members, but not necessarily Board members. In addition, the Board would be able to use an objective and transparent appointment process to appoint up to five additional members, who are not elected officials, who could bring an independent perspective to the Commission's deliberations.
- create a water advisory committee, providing representation for First Nations, improvement districts, water users and other interests. The committee would report to and provide advice to, the Commission.

The purpose of the Commission will be to:

- complete a review of existing Comox Valley water supply services by December 31, 2008; and
- develop a regional water supply service plan focussed on co-ordinated management of the water supply service including demand management and watershed protection in the Comox Valley by December 31, 2009.

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In addition, the Board may wish to consider creating a technical committee to provide support for the water governance structure with staff representation from key public water purveyors and provincial agencies in the Comox Valley.

3. Regional Growth Strategy (RGS)

I can confirm that at the same time that I present Letters Patent to Cabinet for the two new regional districts, I will present a regulation which will mandate that the board of the new Comox Valley Regional District initiate a RGS by March 2008, and adopt a RGS by December 31, 2010. The Strathcona Regional District will be able to initiate a RGS at any time, if that is desired, or to pursue other strategic initiatives such as an economic development strategy.

4. Providing Water and Sewer Services in Rural Areas

The member municipalities of the two new regional districts are expected to relax their policies on provision of water and sewer services to properties outside their boundaries in order that citizens in rural areas experiencing water supply and/or on-site sewerage problems get access to those services; and that public health and environmental problems get resolved. I am pleased that the City of Campbell River already has such a policy and that the City of Courtenay has indicated a willingness to embrace this new approach. I will provide further direction early in 2008.

5. Harmonized Development Cost Charges

I can confirm that I will be seeking legislation at the Spring 2008 session of the Legislature, which will enable us to further the objective of harmonizing development cost charges between local government jurisdictions. This will require the development of a common capital plan and would reflect existing Official Community Plans and ultimately the RGS. This does not mean that there would be a common charge across the region. Each jurisdiction would continue to levy its own charges, but it would be doing so using a common information base, and the charges would reflect all of the costs of development. Ultimately, this will achieve growth and development patterns that reduce sprawl, lower public costs leading to more intensive urban development which will produce social, economic and environmental benefits.

6. Community Planning in Unincorporated Areas of the Regional District

Letters Patent for the two new regional districts will provide that the Comox Valley Regional District must provide planning services to the Strathcona Regional District for 2008 and 2009. As a result, Electoral Area Directors should be confident that there will not be major changes to the planning budget or staffing for 2008 and 2009, in return for the same level of financial

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contribution as it would have received without the restructure. Arrangements for 2010 and beyond would be subject to the results of the process outlined in section 7 below.

I encourage municipalities and electoral areas to pursue the RGS as the planning project priority. The RGS will provide the framework for community planning in both municipal and electoral areas. I expect that, with the new regional governance framework in place, there will be more collaboration between municipal council and Electoral Area Directors on planning matters.

7. Managing the Transition and Mitigating Potential Cost Increases

I appreciate the concern of some Directors of the CSRD with having sufficient time to work through service and administrative issues, and to deal with the potential costs of the transition to two regional districts. Our objectives from day one have been to maintain services to citizens, achieve a phased transition, and minimize the costs of transition to two new organizations. Let me summarize our plan for moving forward.

Transitional years: The administrative responsibility for services and service delivery will not change in 2008 and 2009 unless there is agreement by both Boards. Letters Patent will provide that the Comox Valley Regional District must administer services of the Strathcona Regional District, and that the Strathcona Regional District will be mandated to pay for those services. This means that there should be no change in costs of services for 2008 and 2009 due to the restructure.

The one exception to this is the Strathcona Gardens service of the Strathcona Regional District. The Letters Patent will provide that the Comox Valley Regional District will only provide administrative support to the Strathcona Regional District for 2008, unless the parties otherwise agree.

The Ministry will pay the costs of an Administrator for the Strathcona Regional District for 2008. This will ensure an early beginning of discussions between the two regional districts on service delivery approaches. Other administrative costs will be covered by the Ministry's ongoing unconditional grants.

Beyond the transitional years: I appreciate that some of the CSRD Directors believe that the regions will need more time and external assistance to work through the many service delivery issues. The Ministry will pay the costs of a service facilitator, who will assist the two regional districts in designing service delivery arrangements beyond the 2008 and 2009 transitional years. I believe this proposal provides an approach which responds to the concerns of Electoral Area

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Directors expressed at the December 3, 2007 meeting. Specifically, the facilitator would be mandated to assist the Directors in examining three issues:

- the creation of an electoral area services committee in each regional district to oversee the delivery of local services in electoral areas;
- municipal participation in electoral area planning, including the possibility of partial participation agreements; and
- the potential for the Comox Valley Regional District to continue delivering services to the Strathcona Regional District beyond the transitional years, including planning, on the basis of an ongoing contractual arrangement or other models of service delivery.

The full list of issues to be examined by the facilitator would be developed by the two Boards.

I expect the Ministry to monitor these discussions, and to provide additional financial assistance, if appropriate, or other assistance to help with the implementation of new service delivery arrangements.

On-Going Assistance: The Ministry commits to providing the Comox Valley Regional District with a Regional District Basic Grant of $776,000 over five years, and the Strathcona Regional District with a Regional District Basic Grant of $922,000 over five years, for a total of $1.7 million. This is an entitlement, and represents almost $1.1 million more than the Comox Strathcona Regional District would have received had it not been restructured.

Restructure Implementation Grant: The Ministry will provide Restructure Implementation Grants in 2008 of $200,000 to both the Comox Valley Regional District and the Strathcona Regional District to assist with the costs of facilitation and related costs in establishing the new structure.

8. Boundaries

I have specifically considered Director Brenda Leigh's proposal for an amended boundary between the two regional districts, and have concluded that the current boundary between Area C and Area D is the appropriate boundary between the two regions.

9. Governance Structure

I can confirm that the Letters Patent for the Comox Valley Regional District and the Strathcona Regional District will provide that the voting unit for both regional districts will be 1,500. This will mean that each of the City of Courtenay and the Town of Comox will be entitled to an additional Director, and the City of Campbell River will be entitled to two new Directors, effective February 15, 2008, consistent with their populations, as determined by the 2006 Canada Census.

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I can confirm that in order to achieve more equitable representation between electoral areas and between municipalities and electoral areas, Electoral Areas A and K in the Comox Valley Regional District will be combined, and Electoral Areas G and H in the Strathcona Regional District will be combined. These mergers will be made effective for the next general local election in November 2008. The existing Directors for all electoral areas will continue to serve in office for 2008.

I have listened carefully to the arguments presented by the Directors for Electoral Areas A and K on the unique challenges of Hornby and Denman Islands (Islands). I am compelled by their concern that the people of Denman Island and Hornby Island should have a definitive say in the establishment of any service to the Islands. As a consequence, I commit to using my authority, under section 802 (5) of the *Local Government Act,* to issue a Minister's Order to require the Regional District to order a referendum on the Islands if the Comox Valley Regional District proposes to bring the Islands into an existing service.

In addition, if the Comox Valley Regional District Board submits a bylaw for Ministry approval to establish a new service which includes the Islands, the Ministry will expect to see clear evidence that this bylaw has the support of electors on the Islands.

10. Infrastructure Projects

Mr. Dale Wall, Assistant Deputy Minister, Local Government Department, will be writing to you under separate cover to advise you of the status of the two major infrastructure projects that are of interest to Director Brenda Leigh and Director Suzanne Murray.

Conclusion

In conclusion, I have carefully considered all representations made to me on these issues, and I have provided direction on the key issues. I trust this provides a basis for moving forward and for creating a new structure for regional governance. I look forward to working with you to bring this to a successful conclusion.

Sincerely,

ORIGINAL SIGNED BY

Ida Chong, FCGA
Minister

pc: Honourable Stan Hagen, MLA
Comox Valley

His Worship Mayor Jim Brass
Town of Comox

Members of the Board
Comox Strathcona Regional District
See distribution list

Distribution List: Members of the Board, Comox Strathcona Regional District

pc: Director Jim Abram

Director Fred Bates

Director Roy Grant

Director Jenny Hiebert

Director Paul Ives

Director Brenda Leigh

Director Roger McDonell

Director Dave McIntosh

Director Don McRae

✓ Director Barry Minaker

Director Suzanne Murray

Director Morgan Ostler

Director Tom Pater

Director Clifford Pederson

Director Barbara Price

Director Carol Quin

Director Peter Rambo

Director Heather Sprout

Director Starr Winchester

From CVRD Letters Patent

Regional water supply commission

14 (1) On or before April 30, 2008, the board of the regional district must appoint a select committee, to be known as the Comox Valley Water Supply Commission, to inquire into the following matters for the area of the regional district other than that part within the area of the Islands Trust:

(a) the status of existing water supply services in the area;

(b) the development of a recommended regional water supply service plan and recommended structure for operating the regional district's water supply services in the area;

(c) the development of recommended plans, policies and actions related to water demand management and protection of watersheds for major water supplies.\

(2) The select committee must report its findings and opinion to the board on or before December 31, 2009.

(3) The board may not dissolve the select committee before it has reported its findings and opinion to the board.

(4) In appointing members to the select committee, the board

(a) must appoint

(i) for each municipality in the regional district, the councillors designated by the council from among its members, with each municipality having the same number of members on the committee as the municipality has directors on the board, and

(ii) the directors for electoral areas A, B and C, and

(b) may appoint not more than *5* members who are not elected officials of a local government,

(5) On or before April 30, 2008, the board must appoint an advisory body to provide advice to the Comox Valley Water Supply Commission.

(6) In appointing members to the advisory body, the board may appoint members representing improvement districts, First Nations, community groups, environmental organizations, government agencies or any other organization or interest the board considers appropriate.

Terms of Reference
COMOX VALLEY WATER SUPPLY COMMISSION

Mission: This select commission's terms of reference are pursuant to section 14 of the Comox Valley Regional District letters patent.

Authority: The Comox Valley water supply commission serves as an advisory body to the regional board.

Mandate: The Comox Valley water supply commission will have the authority to provide advice to the board on matters pertaining to its mandate.

Membership: As a standing commission of the CVRD board, the chair of the board has appointed the following to comprise the Comox Valley water supply commission:

- Director Jolliffe (Baynes Sound – Denman/Hornby Islands – electoral Area 'A')
- Director Gillis (Lazo North – Electoral Area 'B')
- Director Grieve (Puntlege – Black Creek – Electoral Area 'C')
- Director Jangula (City of Courtenay)
- Director McRae (City of Courtenay)
- Director Phelps (City of Courtenay)
- Director K. Grant (Town of Comox)
- Director T. Grant (Town of Comox)
- Councillor B. Moncrief (Village of Cumberland)

Commission chair: The commission shall elect a chair and vice-chair from amongst its members at the first meeting of each year.

Resources: The CAO will determine and assign a staff member as an advisor to the Commission. If necessary, a recording secretary may also be appointed.

Tenure: This commission is a standing commission and as such will be deemed to be continuous subject to the renewal of the board subsequent to the municipal election every three years.

Reporting: The Comox Valley water supply commission will provide its minutes to the manager of legislative services within 48 hours of any commission meeting. Where the board feels it is necessary, the commission may be asked to meet with the board and brief the board on any issue(s) within its purview. This invitation shall be extended to the chair of the commission as a representative of the commission.

Contact with the Media: Any contact with the media shall be handled by the commission chair or shall be referred by the chair of the commission to the CVRD chair of the board. If the matter under questioning by the media deals with CVRD board policy, the matter shall be referred to the chair of the board. The chief administrative officer and general manager of public affairs and

information systems will provide assistance and / or guidance to the chair of the board and commission chair in responding to the media.

Public Meetings: Unless otherwise provided for in the Procedural Bylaw of the CVRD, the meetings of the commission shall be deemed to be open to the public. Where the matter deals with an issue that is deemed to be confidential, the commission may move to go "in camera" to discuss that matter. The only motions permitted as a consequence at that time, shall be the motion to go in camera and the motion to revert back to a public meeting. Any motion dealing with the matter dealt with "in camera" will be made in public meeting.

Schedule 'C'
Comox Valley Water Supply Commission
Advisory Body
Terms of Reference

Background
Letters patent for the Comox Valley Regional District require the board to appoint an advisory body to provide advice to the Comox Valley water supply commission. This advisory body may be comprised of representatives from improvement districts, First Nations, community groups, environmental organizations, government agencies or any other organization or interest the board considers appropriate.

Objective
The primary purpose of the advisory body is to bring to the Comox Valley water supply commission other governmental interests, programs and policies that may have a direct bearing on the local plans. At the very least, these other interests must be recognized for the influence they can and will have on the project and ways and means they can support its implementation.

Advisory body membership
The advisory body will include appointments from the agencies and government bodies listed below. The representatives from the following groups would bring to the advisory body expertise from an operational and engineering staff level. The various groups are expected to inform the regional district of the contact information for all representatives and if that representative changes, then to advise the regional district of such. The advisory body is comprised as follows:

- K'omoks First Nations;
- Comox Valley Regional District;
- City of Courtenay;
- Town of Comox;
- Village of Cumberland;
- Union Bay Improvement District;
- Royston Improvement District;
- Sandwick Improvement District;
- Fanny Bay Improvement Districts;
- Vancouver Island Health Authority;
- BC Hydro;
- Ministry of Environment;
- Integrated Land Management Bureau;
- Ministry of Forests;
- Ministry of Transportation;
- Ministry of Aboriginal Relations and Reconciliation;
- Department of Fisheries and Oceans; and
- Environment Canada.

Term of service
The advisory body will operate in its role for the duration of the Comox Valley water supply commission and shall terminate at the same time as the termination of the commission.

Advisory body mandate
Letters patent for the Comox Valley Regional District require the advisory body to provide advice to the Comox Valley water supply commission. The prime goal of the advisory body will be to share relevant information with the commission in meeting the commission's goals of inquiring into:

1. the status of existing water supply services in the area;
2. the development of a recommended regional water supply service plan and recommended structure for operating the regional district's water supply services in the area;
3. the development of recommended plans, policies and actions related to water demand management and protection of watersheds for major water supplies.

Frequency of meetings
At the outset, the advisory body may be expected to meet several times to gain a common understanding of their role and expectations and to take the time necessary to share information concerning their general interests in the area. As the project progresses, the frequency of meetings will likely be reduced and may likely be held in response to draft policy elements that may be developed.

Process Management
The CVRD will host all meetings and provide administrative support such as record taking. The project facilitator will administer all meetings, with the responsibility of supporting the establishment and operation of the Comox Valley water supply commission. Meetings will generally take place in the CVRD boardroom on Comox Road in Courtenay. Advisory body recommendations to the steering body will be made by consensus and will deliver the recommendations to the steering body by way of meeting notes. Any media enquiries made to the advisory body will be forwarded to the steering body and commission for comment.

Outcomes
By its name, the advisory body will be providing technical analysis and advice to the steering body. The advisory body will not be charged with any decision-making authority.

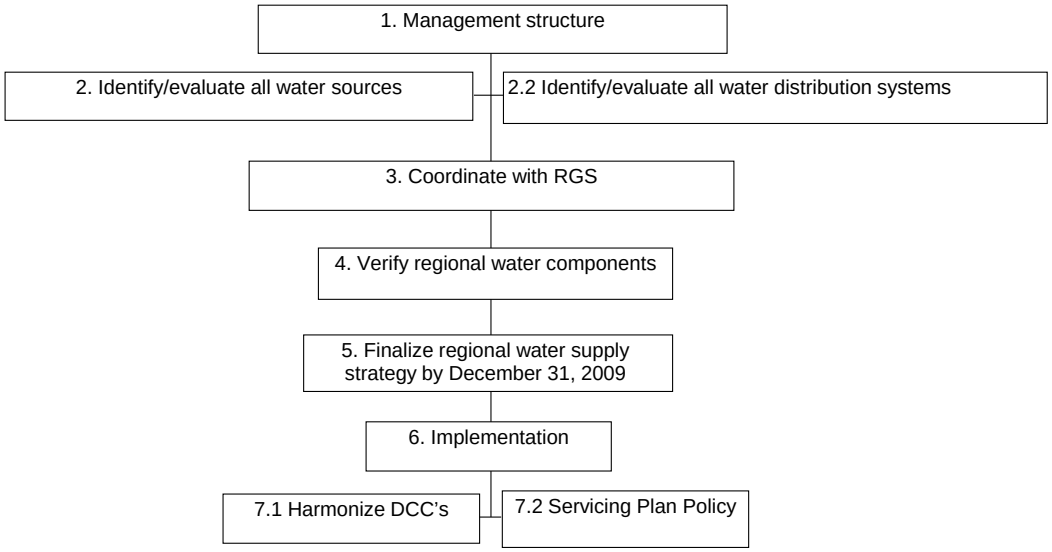
COMOX VALLEY REGIONAL WATER SUPPLY

Provincial Conditional Deliverables/ Outcomes (as per Ministry letter dated November 19, 2008)	**Comox Valley Regional District Status/Outcomes**
- Commission and advisory committee established - Water suply system inventory completed (December 31, 2008) - Terms of reference for regional water supply plan competed - Funding sources identified for plan development in 2009	- Contract awarded to complete water supply inventory - Submission of work plans and funding request - Project manager apppinted Jan 1/09 - Mar 31/10 - Developed web pages on the CVRD website
2009 - 2009 funding sources to be determined - Completed by December 31, 2009	**Phase 2 - Identify/evaluate all water sources and Distribution Systems** - Risks: Comox Lake study complete - Hydrology analysis: Phase 1 Comox Lake complete - Phase 2 - Climate Change Impacts - draft received October 2, 2009 - Inventory of water supplies and systems - complete - Identification of Alternate Water Supply Sources final received August 27, 2010 - Comox Lake Deep Water Intake Concept Design completed - Water Quality/Treatment Study - final received Augsut 27, 2010 - Comox Lake Water Quality - various studies completed - Water User Profile study - final received August 27, 2010 - Distribution System Evaluation final report received August 27, 2010 **Phase 3 - Co-ordinate with Regional Growth Strategy (RGS)** - Work including meetings and sharing of documentation and policy direction is ongoing. Further "integration" of strategies will be forthcoming.
2010 - 2010 funding sources to be determined - Completed by May 31, 2010 - provincial extension	**Phase 4 - Verify Regional Water Components** - Final report received August 27, 2010 **Phase 5 - Finalize Regional Water Supply Strategy** - The work for this phase has been awarded and started.

Comox Valley Water Supply Study - Workplan

Revision 8. September 3, 2009

The CVRD and MCD will work with the Water Commission on refinements to this work program as it proceeds through the tasks and identifies more about the existing systems within the Comox Valley and the potential for a recommended regional water supply strategy



COMOX VALLEY REGIONAL DISTRICT WATER SUPPLY STUDY WORKPLAN

1.0.	MANAGEMENT STRUCTURE: PHASE 1	STATUS	PROJECTED BUDGET	PROVINCIAL COMMITMENT	PROVINCIAL FUNDS REQUESTED	CVRD COMMITMENT	FEDERAL FUNDS	COMMENTS
1.1	Creation of water supply commission	Completed						
1.2	Creation of terms of reference (for water supply commission	Completed						
1.3	Appointments to advisory body	Completed						
1.4	Creation of steering committee	Completed						
1.5	Submission of work plans and funding request	Completed						
1.6	Project manager appointed Jan 1/09 - Mar 31/10	Completed	76,000	76,000				
1.7	Project manager expense allowance		8,000	8,000				
1.7a	- project manager change order #1		1,500	1,500				
1.7b	- project manager change order #2		6,585	6,585				
1.7c	Project manager PHAC		10,800				10,800	PHAC
1.8	Local government resource commitment (in kind)							
	• CAO steering committee		2,400			2,400		
	• Administrative support		15,000			15,000		
1.9	Provincial staff resource commitment (in-kind)							
1.10	Advertising/meeting expenses/public relations		16,000	16,000				
	1.0 TOTALS		**136,285**	**108,085**		**17,400**	**10,800**	Provincial commitment in place December 2008

2.0.	IDENTIFY/EVALUATE WATER SOURCES AND DISTRIBUTION SYSTEMS: PHASE 2	STATUS	PROJECTED BUDGET	PROVINCIAL COMMITMENT	PROVINCIAL FUNDS REQUESTED	CVRD COMMITMENT	FEDERAL FUNDS	COMMENTS
2.1	**Identify/Evaluate All Water Sources**							
2.1.1	Comox Lake Risk Validation Study (CH2M Hill)	Completed	50,000			50,000		Completed February 2008
	• quantify major risks to Comox Lake source							
	• research data for similar north american lakes							
	• analyze data from similar lake sources with respect to presence of watershed protection facilities, human activity in watershed, advanced water treatments, and waterborne disease outbreaks							
	•prepare summary report							
2.1.2	Comox Lake Water Quality Monitoring Program	Completed	15,000			15,000		Completed February 2008
	• research current Federal. Provincial, and local regulations on drinking water quality							
	• identify microbiological, inorganic, metals, pesticide and herbicide parameters to monitor							
	• analyze current monitoring							
	• establish proposed water quality monitoring program including sampling locations, collection and handling of sampling, onsite testing, offsite laboratory testing , and recording/reporting							
	• prepare summary report							
2.1.3	Water Source Inventory	Underway	25,000	25,000				Provincial commitment in place December 2008
	• identify and evaluate existing technical reports and studies completed, underway, or proposed							
	• document existing surface and subsurface sources							
	• document existing treatment systems and type of treatment process							
	• identify capacities and population served							
	• document water quality data							
	• prepare GIS maps							

2.0.	IDENTIFY/EVALUATE WATER SOURCES AND DISTRIBUTION SYSTEMS: PHASE 2	STATUS	PROJECTED BUDGET	PROVINCIAL COMMITMENT	PROVINCIAL FUNDS REQUESTED	CVRD COMMITMENT	FEDERAL FUNDS	COMMENTS
2.1.4	Comox Lake Hydrology Study Phase 1: CH2M Hill	Completed	100,000			100,000		Completed Oct 2008
	• watershed hydrology assessment							
	• storage analysis							
	• determine water yield							
	• compare yield to known or anticipated demands							
	• calibrate watershed model							
	• prepare related GIS maps							
2.1.5	Comox Lake Hydrology Study: Phase 2	Awarded - KWL	**35,000**	80,000				*•Funds may be re-allocated to other tasks as workplan evolves* • Review with BC Hydro and UVIC any relevant work done on climate change
	• identify climate change high and low impact scenarios							
	• identify and estimate potential of climate change on water yield and quality							
	• define reservoir storage capacity to maximize supply of watershed for current hydrology as well as hydrology impacted by climate change							
	• prepare report summarizing work including GIS maps							
2.1.5.A	Climate Change Impacts on Waterborne Diseases	Underway	**0**				**108,200**	FUNDED through PHAC (119,000 - 10,800)
	• Literature review of climate change impacts on the spread of waterborne diseases							
	• Review of risks to Comox Lake water shed							
	• Prepare recommendations for sampling/surveillance approaches to anticipate and understand the health implications of infectious disease trends and outbreaks associated with climate change for Comox Lake							
	• prepare audit report of the RWSS including reviewing the RWSS with respect to treatment options chosen and added protection from waterborne diseases that are exacerbated by climate change							
	• audit report also to include review of Governance Structure with respect to factoring of risks from climate change and waterborne disease propagation into the decision making process							
	• audit report also to include reviewing the RWSS and planned public outreach with respect to waterborne disease health risks							
2.1.6	Alternate Water Supply Sources	Awarded	**120,000**	120,000				*Funds may be re-allocated to other tasks as workplan evolves*
	• identify and delineate other water sheds within study area							
	• hydrological analysis and preliminary evaluation of alternate watersheds							
	• explore groundwater supply sources							
	• consider water reclamation as a source							
	• prepare summary report and GIS maps summarize findings							
2.1.7	Comox Lake Intake Concept Design: Deep water	Completed	100,000			100,000		Completed December 2008
	• work to follow risk validation study: 2.1.1							
	• consider population increase and future water demand							
	• analyze existing licensing of Comox Lake water							
	• examine alternate raw water source options							
	• cost estimates							
	• prepare summary report							
2.1.8	Water Quality/Treatment Study	Awarded	**17,000**	99,000		50,000		• Interim report completed October 2008. *•Funds may be re-allocated to other tasks as workplan evolves* •Influenced by outcome of 2. 1..6
	• research sampling data from other agencies							
	• sampling station and monitoring of existing supply and distribution systems as well as proposed new deep water intake location in Comox Lake . Three year study							
	• review existing raw and finished water quality and compare with regulatory standards and guidelines							
	• evaluate adequacy of current monitoring and reporting program							
	• assess effectiveness of current treatment processes							
	• assess current treatment processes on a seasonal basis							
	• prepare summary report and plans							
2.1.9	Water User Profiles	Awarded	**51000**	51000				
	• assess sector users consumption and confirm if treatment required (yes or no)							
	2.1 TOTALS		**513,000**	**375,000**		**315,000**	**108,200**	

2.0.	IDENTIFY/EVALUATE WATER SOURCES AND DISTRIBUTION SYSTEMS: PHASE 2	STATUS	PROJECTED BUDGET	PROVINCIAL COMMITMENT	PROVINCIAL FUNDS REQUESTED	CVRD COMMITMENT	FEDERAL FUNDS	COMMENTS
2.2	**Identify/Evaluate All Distribution Systems**							
2.2.1	Distribution System Inventory	Underway	25,000	25,000				
	• document existing systems							
	• identify major piping							
	• identify reservoirs							
	• identify pump stations							
	• produce GIS maps							
2.2.2	Distribution System Evaluation	Awarded	**31,000**				***150,000***	***Community Works Fund***
	• establish key design criteria							
	• prepare hydraulic models of existing systems							
	• prepare plans and reports identifying distribution systems' capabilities and limitations relating to domestic use and fire protection							
	• evaluate and report on all pumping facilities and reservoirs							
	• identify and define existing service areas, governance, operating structures:							
	• prepare plans and reports							
	2.2 TOTALS		**56,000**	**25,000**		**0**	**150,000**	
	2.0 TOTALS		**569,000**	**400,000**	**0**	**315,000**	**258,200**	

3.0.	CO-ORDINATE WITH REGIONAL GROWTH STRATEGY (RGS): PHASE 3	In progress						
	• identify projected growth areas as determined by RGS program							
	• co-ordination of long range land use objectives							
	• identify and integrate social, environmental, economic, and sustainability goals							
	3.0 TOTALS							

4.0.	VERIFY REGIONAL WATER COMPONENTS: PHASE 4	STATUS	PROJECTED BUDGET	PROVINCIAL COMMITMENT	PROVINCIAL FUNDS REQUESTED	CVRD COMMITMENT	FEDERAL FUNDS	COMMENTS
		Awarded	**42,000**				***150,000***	***Community Works Fund***
	• estimate future water demand, including water conservation targets, to be consistent with Regional Growth Strategy Plan, identified population projections including current B.C. statistics, and changing land uses							
	• consider conservation strategies/demand management/water use efficiency plan							
	• combine and update hydraulic models prepared in 2.2.2 to identify renewal and rehabilitation needs driven by future water demands and development allocations outlined in the RGS							
	• develop/evaluate options and study optimization of system							
	• develop system flexibility							
	• identify and optimize long term operational and maintenance costs							
	4.0 TOTALS		**42,000**			**0**	**150,000**	

5.0.	FINALIZE REGIONAL WATER SUPPLY STRATEGY: PHASE 5	STATUS	PROJECTED BUDGET	PROVINCIAL COMMITMENT	PROVINCIAL FUNDS REQUESTED	CVRD COMMITMENT	FEDERAL FUNDS	COMMENTS
5.1	Finalize water supply strategy	Awarded	**25,000**	25000			***200,000***	***Community Works Fund***
	• provide recommendations for implementation							
	• identify high level costing							
	• identify priority projects and timelines							
5.2	Implementation							
	•development of governance strategy and funding models							
	•ensure conceptual framework in place for future phases							
	5.0 TOTALS		**25,000**	**25,000**		**0**	**200,000**	

The Phase 1 through 5 work plan items listed above are to be completed by December 31, 2009.

Upon completion of Phase 5, the Comox Valley Water Supply Commission would report back to the CVRD Board with their recommendations for a finalized regional water supply strategy, which in turn will fulfill the provincial mandate.

The finalized regional water supply strategy will include the following conclusions and recommendations:
- *Recommendations on which water sources will be utilized in the regional water supply system*
- *Recommendations as to which water distribution systems are to be inter-connected*
- *Recommendations as to what capital improvements are needed to inter-connect the water distribution systems*
- *Recommendations conceptually on how the regional water supply system is to be governed and funded.*
- *Recommendations for incremental implementation including legislative framework and timing.*

Once reviewed and approved by the CVRD board, the finalized regional water strategy will trigger the additional Phase 6 and Phase 7 initiatives listed below in 2010 and beyond in order to fully implement the Comox Valley regional water strategy.

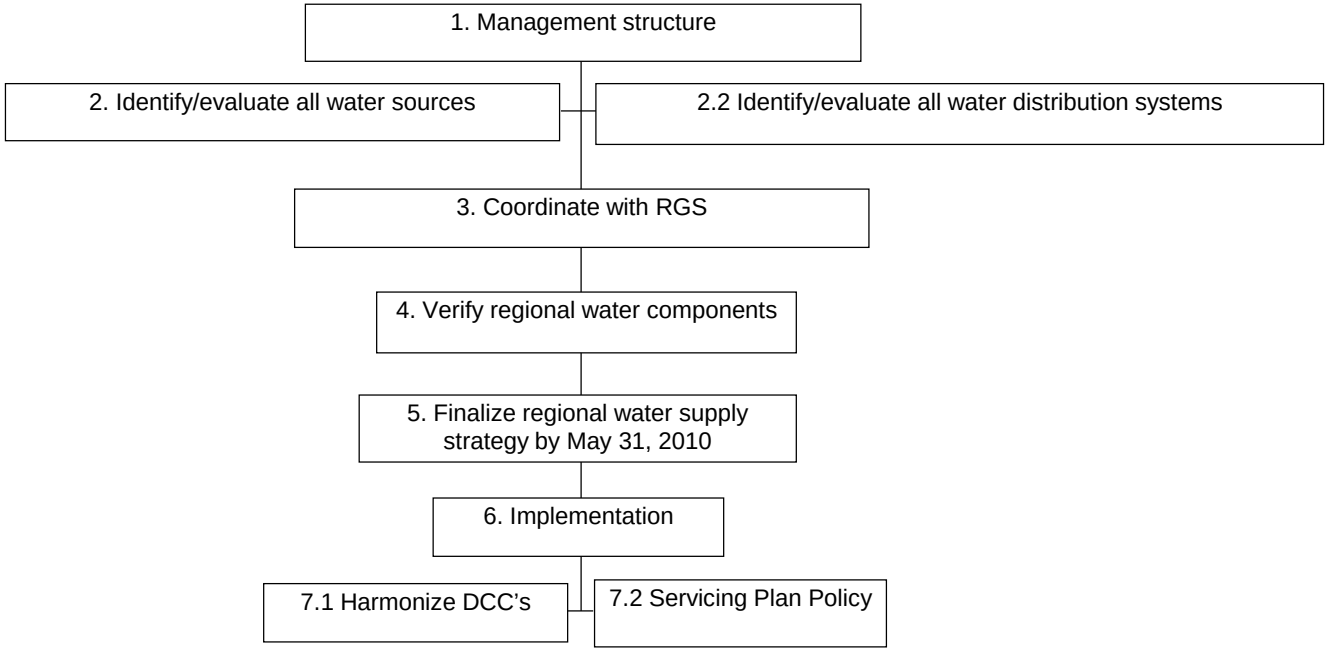
6.0.	IMPLEMENTATION: PHASE 6 (2010)	STATUS	PROJECTED BUDGET	PROVINCIAL COMMITMENT	PROVINCIAL FUNDS REQUESTED	CVRD COMMITMENT	FEDERAL FUNDS	COMMENTS
6.1	Drinking Water protection plan**	Potential for ministerial order						
6.2	Water management plan**	Potential for ministerial order						
6.3	Water demand management conservation strategy/water use efficiency plan	In progress						
6.4	Water source protection strategy	In progress						
6.5	Capital work plan ,cost estimates,schedules,prioritization	Pending						
6.6	Capital asset management plan	In progress						
6.7	Funding and financing strategy	Pending						
6.9	Operating strategy	Pending						
6.10	Detailed system modelling		**58,000**					Optional task given to Proponents to price.
	6.0 TOTALS		**200,000**					Further Implementation work now possible.

7.0.	HARMONIZE DEVELOPMENT COST CHARGES/SERVICING POLICIES : PHASE 7	STATUS	PROJECTED BUDGET	PROVINCIAL COMMITMENT	PROVINCIAL FUNDS REQUESTED	CVRD COMMITMENT	FEDERAL FUNDS	COMMENTS
7.1	**Development Cost Charges**		50,000					
	• harmonization of DCC's							
	• development of regional water supply DCC schedule							
	7.1 TOTALS		**50,000**					
7.2	**Servicing Plan Policy**							
	7.2 TOTALS							
	All Stages Totals		**1,022,285**	**533,085**	**0**	**332,400**	**619,000**	

Comox Valley Water Supply Study - Workplan

Rev. 15. September 28, 2010

The CVRD and MCD will work with the Water Commission on refinements to this work program as it proceeds through the tasks and identifies more about the existing systems within the Comox Valley and the potential for a recommended regional water supply strategy



COMOX VALLEY REGIONAL DISTRICT WATER SUPPLY STUDY WORKPLAN

1.0.	MANAGEMENT STRUCTURE: PHASE 1	STATUS	PROJECTED BUDGET	PROVINCIAL COMMITMENT	PROVINCIAL FUNDS REQUESTED	CVRD COMMITMENT	FEDERAL FUNDS	COMMENTS
1.1	Creation of water supply commission	Completed						
1.2	Creation of terms of reference (for water supply commission	Completed						
1.3	Appointments to advisory body	Completed						
1.4	Creation of steering committee	Completed						
1.5	Submission of work plans and funding request	Completed						
1.6	Project manager appointed Jan 1/09 - Mar 31/10	Completed	76,000	76,000				
1.7	Project manager expense allowance		8,000	8,000				
1.7a	- project manager change order #1		1,500	1,500				
1.7b	- project manager change order #2		6,585	6,585				
1.7c	Project manager PHAC		31,800				31,800	PHAC
1.8	Local government resource commitment (in kind)							
	• CAO steering committee		2,400			2,400		
	• Administrative support		15,000			15,000		
1.9	Provincial staff resource commitment (in-kind)							
1.10	Advertising/meeting expenses/public relations		16,000	16,000				
	1.0 TOTALS		**157,285**	**108,085**		**17,400**	**31,800**	Provincial commitment in place December 2008

2.0.	IDENTIFY/EVALUATE WATER SOURCES AND DISTRIBUTION SYSTEMS: PHASE 2	STATUS	PROJECTED BUDGET	PROVINCIAL COMMITMENT	PROVINCIAL FUNDS REQUESTED	CVRD COMMITMENT	FEDERAL FUNDS	COMMENTS
2.1	**Identify/Evaluate All Water Sources**							
2.1.1	Comox Lake Risk Validation Study (CH2M Hill)	Completed	50,000			50,000		Completed February 2008
	• quantify major risks to Comox Lake source							
	• research data for similar north american lakes							
	• analyze data from similar lake sources with respect to presence of watershed protection facilities, human activity in watershed, advanced water treatments, and waterborne disease outbreaks							
	•prepare summary report							
2.1.2	Comox Lake Water Quality Monitoring Program	Completed	15,000			15,000		Completed February 2008
	• research current Federal. Provincial, and local regulations on drinking water quality							
	• identify microbiological, inorganic, metals, pesticide and herbicide parameters to monitor							
	• analyze current monitoring							
	• establish proposed water quality monitoring program including sampling locations, collection and handling of sampling, onsite testing, offsite laboratory testing , and recording/reporting							
	• prepare summary report							
2.1.3	Water Source Inventory	Completed	25,000	25,000				Provincial commitment in place December 2008
	• identify and evaluate existing technical reports and studies completed, underway, or proposed							
	• document existing surface and subsurface sources							
	• document existing treatment systems and type of treatment process							
	• identify capacities and population served							
	• document water quality data							
	• prepare GIS maps							

2.0.	IDENTIFY/EVALUATE WATER SOURCES AND DISTRIBUTION SYSTEMS: PHASE 2	STATUS	PROJECTED BUDGET	PROVINCIAL COMMITMENT	PROVINCIAL FUNDS REQUESTED	CVRD COMMITMENT	FEDERAL FUNDS	COMMENTS
2.1.4	Comox Lake Hydrology Study Phase 1: CH2M Hill	Completed	100,000			100,000		Completed Oct 2008
	• watershed hydrology assessment							
	• storage analysis							
	• determine water yield							
	• compare yield to known or anticipated demands							
	• calibrate watershed model							
	• prepare related GIS maps							
2.1.5	Comox Lake Hydrology Study: Phase 2	Completed	**30,000**	7,000			23,000	Final report received August 27, 2010
	• identify climate change high and low impact scenarios							
	• identify and estimate potential of climate change on water yield and quality							
	• define reservoir storage capacity to maximize supply of watershed for current hydrology as well as hydrology impacted by climate change							
	• prepare report summarizing work including GIS maps							
2.1.5.A	Climate Change Impacts on Waterborne Diseases	Completed	**5,000**				**5,000**	Draft of final report submitted to PHAC September 15, 2010
	• Literature review of climate change impacts on the spread of waterborne diseases							
	• Review of risks to Comox Lake water shed							
	• Prepare recommendations for sampling/surveillance approaches to anticipate and understand the health implications of infectious disease trends and outbreaks associated with climate change for Comox Lake							
	• prepare audit report of the RWSS including reviewing the RWSS with respect to treatment options chosen and added protection from waterborne diseases that are exacerbated by climate change							
	• audit report also to include review of Governance Structure with respect to factoring of risks from climate change and waterborne disease propagation into the decision making process							
	• audit report also to include reviewing the RWSS and planned public outreach with respect to waterborne disease health risks							
2.1.6	Alternate Water Supply Sources	Completed	**120,000**	117,800			2200	Final report completed 27 August 2010
	• identify and delineate other water sheds within study area							
	• hydrological analysis and preliminary evaluation of alternate watersheds							
	• explore groundwater supply sources							
	• consider water reclamation as a source							
	• prepare summary report and GIS maps summarize findings							
2.1.7	Comox Lake Intake Concept Design: Deep water	Completed	100,000			100,000		Completed December 2008
	• work to follow risk validation study: 2.1.1							
	• consider population increase and future water demand							
	• analyze existing licensing of Comox Lake water							
	• examine alternate raw water source options							
	• cost estimates							
	• prepare summary report							

2.0.	IDENTIFY/EVALUATE WATER SOURCES AND DISTRIBUTION SYSTEMS: PHASE 2	STATUS	PROJECTED BUDGET	PROVINCIAL COMMITMENT	PROVINCIAL FUNDS REQUESTED	CVRD COMMITMENT	FEDERAL FUNDS	COMMENTS
2.1.8	Water Quality/Treatment Study	Completed	**17,000**	3,000			14,000	Final report completed 27 August 2010
	• research sampling data from other agencies							
	• sampling station and monitoring of existing supply and distribution systems as well as proposed new deep water intake location in Comox Lake . Three year study							
	• review existing raw and finished water quality and compare with regulatory standards and guidelines							
	• evaluate adequacy of current monitoring and reporting program							
	• assess effectiveness of current treatment processes							
	• assess current treatment processes on a seasonal basis							
	• prepare summary report and plans							
2.1.9	Water User Profiles	Completed	**51,000**	41,000			10000	Final report completed 27 August 2010
	• assess sector users consumption and confirm if treatment required (yes or no)							
	2.1 TOTALS		**513,000**	**193,800**		**265,000**	**54,200**	
2.2	**Identify/Evaluate All Distribution Systems**							
2.2.1	Distribution System Inventory	Complete	25,000	25,000				Data used in remainder of RWSS. Final report prepared by Wedler Engineering - Feb 22, 2010
	• document existing systems							
	• identify major piping							
	• identify reservoirs							
	• identify pump stations							
	• produce GIS maps							
2.2.2	Distribution System Evaluation	Completed	**31,000**	31,000				Final memo issued August 27, 2010
	• establish key design criteria							
	• prepare hydraulic models of existing systems							
	• prepare plans and reports identifying distribution systems' capabilities and limitations relating to domestic use and fire protection							
	• evaluate and report on all pumping facilities and reservoirs							
	• identify and define existing service areas, governance, operating structures:							
	• prepare plans and reports							
	2.2 TOTALS		**56,000**	**56,000**		**0**	**0**	
	2.0 TOTALS		**569,000**	**249,800**		**265,000**	**54,200**	

3.0.	CO-ORDINATE WITH REGIONAL GROWTH STRATEGY (RGS): PHASE 3	In progress						
	• identify projected growth areas as determined by RGS program							
	• co-ordination of long range land use objectives							
	• identify and integrate social, environmental, economic, and sustainability goals							
	3.0 TOTALS							

4.0.	VERIFY REGIONAL WATER COMPONENTS: PHASE 4	STATUS	PROJECTED BUDGET	PROVINCIAL COMMITMENT	PROVINCIAL FUNDS REQUESTED	CVRD COMMITMENT	FEDERAL FUNDS	COMMENTS
		Completed	**42,000**	23,000			**19,000**	Final memo completed August 27, 2010
	• estimate future water demand, including water conservation targets, to be consistent with Regional Growth Strategy Plan, identified population projections including current B.C. statistics, and changing land uses							
	• consider conservation strategies/demand management/water use efficiency plan							
	• combine and update hydraulic models prepared in 2.2.2 to identify renewal and rehabilitation needs driven by future water demands and development allocations outlined in the RGS							
	• develop/evaluate options and study optimization of system							
	• develop system flexibility							
	• identify and optimize long term operational and maintenance costs							
	4.0 TOTALS		**42,000**	23,000		**0**	**19,000**	

5.0.	FINALIZE REGIONAL WATER SUPPLY STRATEGY: PHASE 5	STATUS	PROJECTED BUDGET	PROVINCIAL COMMITMENT	PROVINCIAL FUNDS REQUESTED	CVRD COMMITMENT	FEDERAL FUNDS	COMMENTS
5.1	Finalize water supply strategy	Underway	**25,000**	11,000			14,000	PHAC Funding a portion of this work
	• provide recommendations for implementation							
	• identify high level costing							
	• identify priority projects and timelines							
5.2	Implementation							
	•development of governance strategy and funding models							
	•ensure conceptual framework in place for future phases							
6.10	Detailed system modelling	Pending	**58,000**	58,000				Optional task given to Proponents to price.
	5.0 TOTALS		**83,000**	**69,000**		**0**	**14,000**	

The Phase 1 through 5 work plan items listed above are to be completed by May 31, 2010.

Upon completion of Phase 5, the Comox Valley Water Supply Commission would report back to the CVRD Board with their recommendations for a finalized regional water supply strategy, which in turn will fulfill the provincial mandate.

The finalized regional water supply strategy will include the following conclusions and recommendations:
- *Recommendations on which water sources will be utilized in the regional water supply system*
- *Recommendations as to which water distribution systems are to be inter-connected*
- *Recommendations as to what capital improvements are needed to inter-connect the water distribution systems*
- *Recommendations conceptually on how the regional water supply system is to be governed and funded.*
- *Recommendations for incremental implementation including legislative framework and timing.*

Once reviewed and approved by the CVRD board, the finalized regional water strategy will trigger the additional Phase 6 and Phase 7 initiatives listed below in 2010 and beyond in order to fully implement the Comox Valley regional water strategy.

6.0.	IMPLEMENTATION: PHASE 6 (2010)	STATUS	PROJECTED BUDGET	PROVINCIAL COMMITMENT	PROVINCIAL FUNDS REQUESTED	CVRD COMMITMENT	FEDERAL FUNDS	COMMENTS
			200,000	**50,115**				
6.1	Drinking Water protection plan**	Potential for ministerial order						
6.2	Water management plan**	Potential for ministerial order						
6.3	Water demand management conservation strategy/water use efficiency plan	In progress						
6.4	Water source protection strategy	In progress						
6.5	Capital work plan ,cost estimates,schedules,prioritization	Pending						
6.6	Capital asset management plan	In progress						
6.7	Funding and financing strategy	Pending						
6.9	Operating strategy	Pending						
	6.0 TOTALS		**200,000**	**50,115**				Further Implementation work now possible.

7.0.	HARMONIZE DEVELOPMENT COST CHARGES/SERVICING POLICIES : PHASE 7	STATUS	PROJECTED BUDGET	PROVINCIAL COMMITMENT	PROVINCIAL FUNDS REQUESTED	CVRD COMMITMENT	FEDERAL FUNDS	COMMENTS
7.1	**Development Cost Charges**	**Pending**	50,000					
	• harmonization of DCC's							
	• development of regional water supply DCC schedule							
	7.1 TOTALS		**50,000**					
7.2	**Servicing Plan Policy**							
	7.2 TOTALS							
	All Stages Totals		**1,101,285**	**500,000**	**0**	**282,400**	**119,000**	

APPENDIX B: Public Engagement Records

REGIONAL WATER SUPPLY STRATEGY

BASIC FACTS

- **Why is the CVRD preparing a Regional Water Supply Strategy?**
  - **Per the letters patent issued to the newly formed CVRD in February of 2008, the development of a recommended regional water supply service plan was mandated.**
- **When will the Strategy be completed?**
  - **Also included in the CVRD's Letters Patent were timelines for completion. The first requirement was the creation of the Comox Valley Water Supply Commission, which had to be established prior to April 20, 2008. The second requirement was the creation of an advisory body, which was also created prior to April 30, 2008. The final deadline for reporting the water supply strategy to the Regional District Board was also established in the Letters Patent as December 31, 2009, and extended to May 31, 2010.**
- **How is the CVRD going to develop the regional water supply strategy?**
  - **In consultation with the Province, member municipalities and stakeholders who are a part of the Advisory Committee, the CVRD has developed a work plan which will be managed by Wedler Engineering in their role as Project Manager. A major component of the work plan is the hiring of consultants to perform hydrological and infrastructure planning analysis to arrive at the most feasible option for ensuring drinking water supply to all residents of the Comox Valley.**
- **What will be in the regional water supply strategy?**
  - **Recommendations on which water sources will be utilized in the Regional Water Supply System.**
  - **Recommendations as to which water distribution systems are to be inter-connected.**
  - **Recommendations as to what capital improvements are needed to inter-connect water distribution systems.**
  - **Recommendations conceptually on how the regional water supply system is to be governed and funded.**
  - **Recommendations for incremental implementation including legislative framework and timing.**

Comox Valley
REGIONAL DISTRICT

REGIONAL WATER SUPPLY STRATEGY

WORK PLAN AND PROGRESS

PHASE 1—ESTABLISH MANAGEMENT STRUCTURE FOR THE REGIONAL WATER SUPPLY STRATEGY
- Included the establishment of the Water Commission, Steering Committee and Advisory Committee.
- Included hiring Wedler Engineering as Project Manager.

FEBRUARY 2008

PHASE 2—Identify and Evaluate all water sources and distribution systems

- Comox Lake Analysis including:
  - Risk Validation (complete)
  - Water Quality Monitoring (complete)
  - Hydrology Study (complete)
  - Deep Water Intake Concept (complete)
  - Climate Change Impacts (pending)
  - Treatment Options (future)
- Distribution System Inventory (complete)
- Alternate Water Supply Sources (pending)
- Water User Profiles (future)
- Distribution System Evaluation (future)

JUNE 2008

PHASE 3—Coordinate with Regional Growth Strategy

SEPTEMBER 2008

PHASE 4—Verify Regional Water Components (Option Analysis)

DECEMBER 2008

PHASE 5—Finalize Regional Water Supply Strategy

MARCH 2009

TODAY

JUNE 2009

SEPTEMBER 2009

DECEMBER 2009

March 2010

May 2010

PHASES 6 and 7—Implementation
- Governance
- Detailed Planning/DCC's
- Policies

June 2010 AND BEYOND

Comox Valley
REGIONAL DISTRICT

REGIONAL WATER SUPPLY STRATEGY

INTEGRATION WITH REGIONAL STRATEGIES

REGIONAL WATER SUPPLY STRATEGY

A strategic plan that will detail where our drinking water comes from, what type of treatment and how watershed protection requirements will be met and how the system will be expanded.

How much water is available?

Performance Targets for water consumption

Where in the CVRD will water be supplied from a regional system?

Where will growth happen?

REGIONAL SUSTAINABILITY STRATEGY

Adopted as a guide for CVRD Board activities and decision making. Actions and targets established to measure the performance of the CVRD in eight sustainability areas.

REGIONAL GROWTH STRATEGY

Forecasts and objectives, upon which policy can be established, that detail where growth will be directed and establish a regional pattern to guide land-use decisions.

MANAGING GROWTH

Performance Targets for treatment levels and effluent re-use.

How much will sewerage services cost and what possibilities exist for feasible Integrated Resource Management?

Where will growth happen?

Where in the CVRD will sewerage services be supplied from regional systems?

A strategic plan that will detail what growth centres are provided with “regional” sewerage services. This plan also includes analysis and recommendations for managing growth in the existing “core” sewer service area of Courtenay and Comox.

SANITARY SEWERAGE MASTER PLAN UPDATE

Comox Valley
REGIONAL DISTRICT

REGIONAL WATER SUPPLY STRATEGY

VISION AND GOALS

Vision Statement

We provide a long term, high quality, reliable water supply to the entire Comox Valley while protecting ecosystems and the environment.

Goals

Goal 1 – Deliver safe high quality drinking water.

Goal 2 – Provide cost effective and reliable water supply and delivery into the future.

Goal 3 – Ensure clear, accountable, and equitable water management and governance.

Goal 4 – Educate and engage citizens to value water.

Comox Valley
REGIONAL DISTRICT

REGIONAL WATER SUPPLY STRATEGY

Goal 1 – Deliver safe high quality drinking water.

This goal has two aspects to it that require some expansion. “Safe” means that all applicable regulations governing the safety of potable water be met. The term “high quality” refers to a water systems ability to provide water that exceeds minimum standards and is indeed a pleasure to drink.

Objective	Action
The CVRD will protect the water sources and watersheds within the Region.	Identify water sources including current raw water quality, risks affecting those sources and potential to supply water to the system.
	Continue to work with MOE on ground water and aquifer risk assessment project.
	Develop specific plans and policies to protect ground water aquifers throughout the region
	Best management practices within watershed – ensure biodiversity is protected to provide the natural function for treating water. Watershed protection program.
	Meet with landowners/ stakeholders (BC Hydro, DFO, MOE, timber companies) to understand activities in the watershed (annually).
	Implement sampling/ monitoring strategy and develop a set of indicators for water quality on all surface sources
	Partner with University of Victoria for ongoing climate change impact assessment and sampling program on Comox Lake.
	Effective stormwater and flood management to ensure natural systems and water quality are protected.
The CVRD will continue to treat water to meet or exceed all regulatory standards.	Recommend that purveyors continue to sample and monitor water throughout the system(s)
	Maximize the use of ground-water in all supply systems as it generally provides a more protected source when compared to surface water.
	Review all surface water supplies and explore the filtration exclusion criteria as part of the review of the 4-3-2-1-0 treatment specification
	Design and build upgraded treatment facilities to meet the VIHA 4-3-2-1-0 water quality specification
The CVRD will ensure supply infrastructure meets current standards.	Set up committee of infrastructure stakeholders to ensure infrastructure meets standards.
	The CVRD will continue to retain and train staff to be experts in water treatment and transmission and provide this staff resource to regional water supply purveyors who need assistance.
	Implement five year capital planning process for required upgrades, repairs and expansion to existing water infrastructure.
	Develop harmonized development, subdivision and infrastructure standards.

Comox Valley
REGIONAL DISTRICT

REGIONAL WATER SUPPLY STRATEGY

Goal 2 – Provide Cost Effective and Reliable water supply and delivery in to the future.

The intent of this goal is to ensure a business case that considers up front capital investment and long term operations and maintenance costs are considered when making decisions about water infrastructure. Reliability simply refers to the fact that when a customer turns the tap, water, clean potable water, always flows.

Objective	Action
The CVRD will plan infrastructure investments that minimize life cycle costs over the long term.	Minimize life cycle costs, long-term, through cost benefit analysis of all infrastructure projects using at a minimum a 50 year life span.
	Meet regularly with water suppliers to ensure infrastructure planning is coordinated.
	Work toward integration and utilization of existing systems where long term costs are minimized.
	Work to meet Objective 3.8.2 of the Sustainability Strategy: Advance the integrated management of infrastructure systems and resources. TARGET: % of new infrastructure systems (water, wastewater, solid waste, etc) that incorporate integrated resource management/recovery principles: • 2020 ~ 75% • 2030 ~ 100%
	Establish and maintain a detailed water model of the transmission and supply system.
The CVRD will reduce Drinking Water Demand.	User pay tiered system with penalties and incentives to be legislated with bylaws including sprinkling restrictions
	Develop demand-side management policies.
	Align with the Sustainability Strategy to meet the following target: Average “household” reduction of per capita water consumption over 2008 levels: • 2020 ~ 30% • 2030 ~ 40% • 2040 ~ 45% • 2050 ~ 50%
	Advocate to senior government to facilitate regulatory changes regarding water re-use (storm water and grey water)
	Establish pilot projects using water re-use regarding treated effluent, grey water and storm water
The CVRD will maintain fire flows and water pressures in all regional water systems	Maintain back-up systems for emergency supply requirements
	Plan and build reservoirs and containment for peak demands
	Establish harmonized infrastructure standards for subdivision, developments and upgrades region wide.

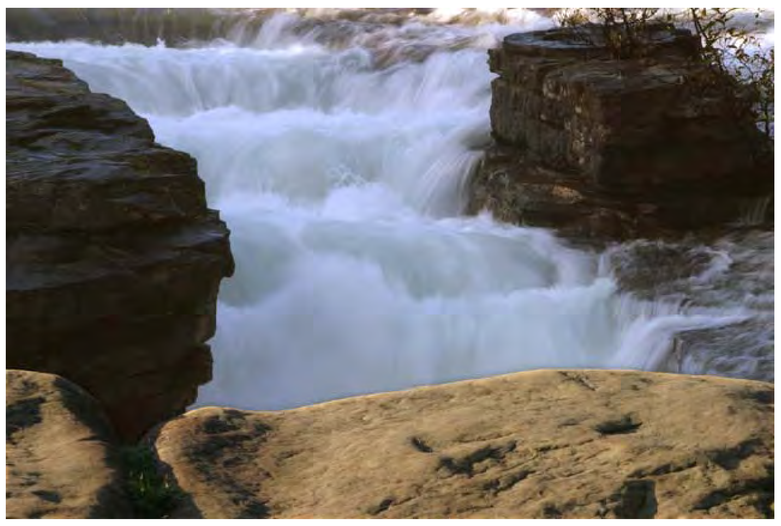
Comox Valley
REGIONAL DISTRICT

REGIONAL WATER SUPPLY STRATEGY

Goal 3 – Ensure clear, accountable, and equitable water management and governance.

A key aspect of the regional water supply strategy, effectively governing the supply system including investment decisions, the setting of rates and establishment of development cost charges and service areas is coved by this goal.

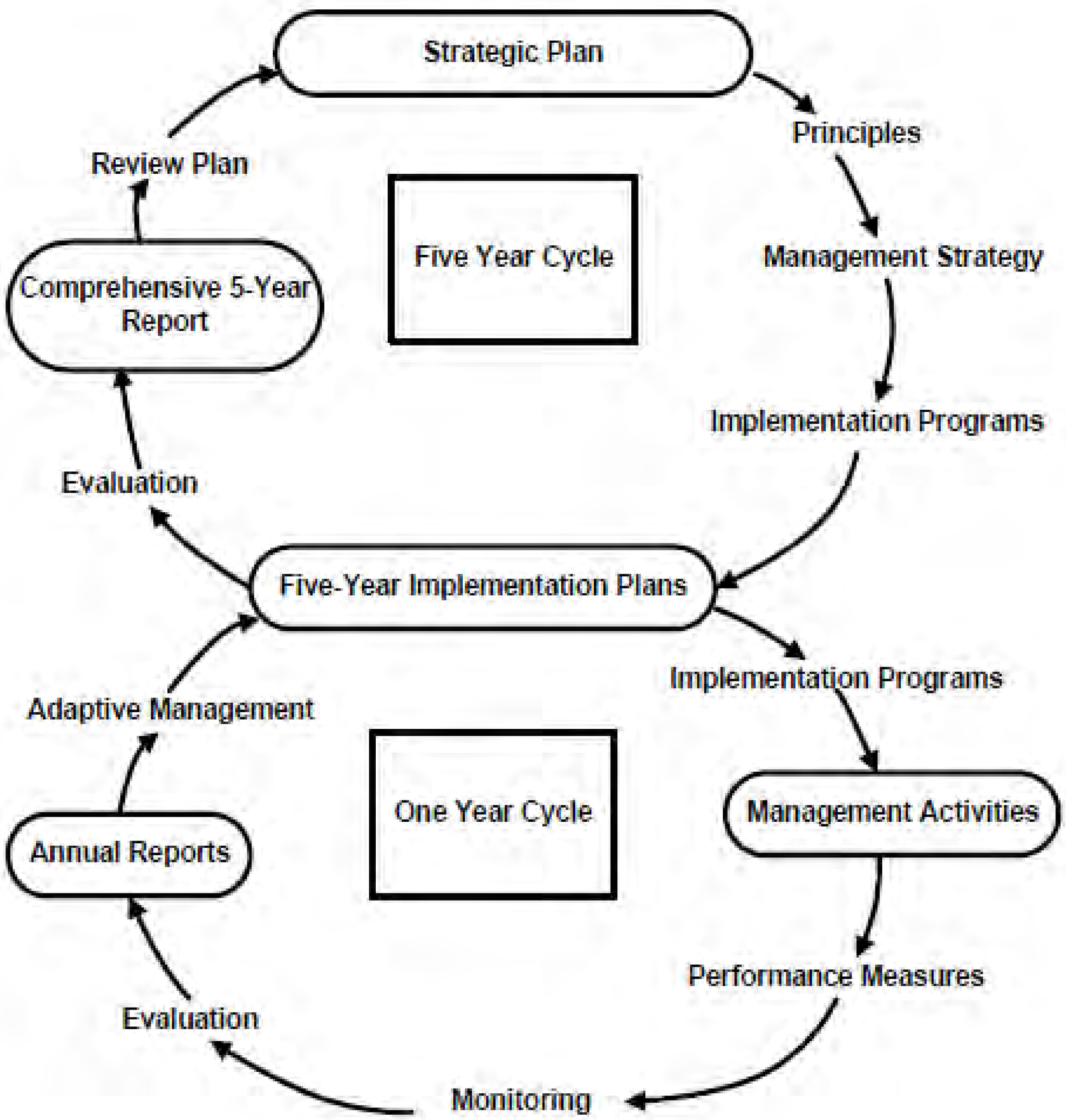
Objective	Action
The CVRD will develop a governance model – enhance/ maintain current system.	Establish and fund a water management advisory commission/ committee that represents regional interests.
	Establish an implementation plan to recommend the transfer of assets, roles, responsibilities and liabilities over time to achieve a centralized water supply governance model over time.
	Ensure interaction between water strategy and OCP's, RGS.
	Detailed five year capital and operations/maintenance plan.
The CVRD will maintain ongoing dialogue with stakeholders, and build trust among participants and the public	Ongoing public engagement/information programs.
	Establish stakeholder committees that meet regularly and report out publically.
The CVRD will ensure the public is informed of major decisions surrounding water supply/ management in a timely manner	Minutes provided to the board on a monthly basis.
	In-camera meetings reported out within two months where possible.
	Establish and follow comprehensive one year implementation cycle, five year implementation plans and a five year strategic planning process (see Figure 4 below).
The CVRD will ensure the costs of water management facility and distribution and maintenance are shared fairly and equitable among responsible and benefitting parties.	Valuation of current assets and liabilities. Analysis of how this value is captured in terms of real property and municipal assets.
	Establish transparent and fair processes to add New users or service areas to existing systems.



REGIONAL WATER SUPPLY STRATEGY

Goal 3 – Ensure clear, accountable, and equitable water management and governance.

Diagram A: Watershed Planning Process



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REGIONAL WATER SUPPLY STRATEGY

Goal 4 – Educate and engage citizens to value water.

Hand in hand with ensuring that the system is governed well, having an engaged and educated public, who are all customers of the water supply system is critical in getting popular support for difficult investment decisions. Considering the potential funding needed to support water supply at the levels currently enjoyed in the Comox Valley into the future, public support will be critical in making decisions. Furthermore, the greatest single leverage point to reduce costs and in turn reduce demand, with trickle down effects on preserving eco-systems and the environment, is to have each individual user make the decision to reduce potable water consumption.

Objective	Action
The CVRD will ensure the public has a comprehensive understanding of water system costs, and the benefits.	Ensure current knowledge (description) of watersheds and water systems is provided to the public. This will include the use of websites, signage, brochures and ads in local media.
	Ensure knowledge of biological/ecosystem functions and how they benefit the water supply is provided to the public.
	Ensure information with respect to infrastructure, fixed costs, operating costs) (high quality, long-term) is provided to the public through annual reports and updated plans.
	Provide Brochures: conservation, water supply and cost benefits.
	Provide School tours; public tours: of watersheds and water systems
	Art used as educational media for infrastructure
The CVRD will encourage people to take personal responsibility/ ownership of water infrastructure and water use.	Set an example as civic leaders through applying water efficiency measures to public projects and initiatives.
	Accounting for use, i.e.: demand side management and proper accounting of water use reported regularly.
	Review other jurisdictions for effective measures that have reduced water demand.
	Use social media, website, newspapers, watershed activists/ groups/ stewards to maintain a dialogue with respect to water supply
The CVRD will reduce future infrastructure costs through education and engagement of the public.	Competitions on water conservation approaches in the public schools
	Waterwise Landscape awards
	Establish an infrastructure advisory group
	Competitions/awards for new projects

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COMOX VALLEY
REGIONAL WATER SUPPLY STRATEGY
OPEN HOUSE QUESTIONNAIRE
May 2010

Q. *What do you think will be the biggest challenge associated with getting drinking water to your tap in the Comox Valley in the next 50 years?*

a. Adequate supply of raw water
b. Infrastructure costs to deliver treated water to your home
c. Protection of watersheds and natural systems

Note: The Draft Strategy is available at the CVRD website and presents current information with respect to these issues.

Q. *Given that reducing water use is directly related to reduced future costs for water system expansions, upgrades and maintenance, what is acceptable as a minimum payback on the cost of water use reduction measures in terms of saving money on water system infrastructure over 50 years? For example, if you were to invest $100 in water use reduction measures, how much savings in water infrastructure costs is acceptable as a return on this?*

a. 1 times (i.e. there is a reduction in infrastructure costs equal to the cost of the water reduction measures; so if you spent $100, you would reduce infrastructure costs by $100).
b. 3 times (i.e. the reduction in infrastructure costs is equal to three the cost of water reduction measures)
c. 5 times (i.e. the reduction is equal to five times the cost of water reduction measures)

General comments:

(back of page can be used for further comments)

General comments (con't):

APPENDIX C: Strategic Planning Documentation

Comox Valley Regional District – Regional Water Supply Strategy

Road-map to Establishing a Strategic Plan

February 20th, 2009 – Strategic Planning Session #1

- **Water Commission to attend and participate (officially a meeting of the water Commission).**
- **Technical Advisory Committee Invited**
- **Steering Committee Invited**
- **Stakeholder Groups to Consider:**
  - **Project Watershed**
  - **Waterwatch Coalition**
  - **Estuary Groups**

February 27th, 2009 – Strategic Planning Session #2

- **Water Commission and Steering Committee joint Session**
- **Take materials developed by stakeholder session**
- **Boil down information into major strategic direction**
- **Deliverable – direction for development of draft strategy document**

March – Draft Strategy Document Distributed for Feedback
Proposed Public Open House #1
Proposed Elected Official Forum on the Water Strategy

April – Draft Strategy finalized
Proposed Public Open House #2

May – Strategy finalized – Water Commission and RD Board Adoption

Detailed Schedule – Strategy Aspects

Month	Strategy/Governance Aspects		
	Expectation	Details	
December 2009	Development of framework for creating strategy and service plan by the steering committee – 18 Dec.	Present "road map" to CAO's	
January 2010	Development of plan for creating the strategy and obtain direction from the Water Commission to move ahead	Steering Committee Meeting	Review minutes/agenda. Attend meeting. Update reports as required.
		Water Commission Meeting	Present plan for development of strategic framework – including two Saturday sessions.
		Prepare Staff Reports	Two anticipated – update RWSS to the board and outline strategic development plan.
February 2010	Develop vision statement, goals, and principals. This process will require two sessions with the water supply commission.	Steering Committee Meeting	Review draft technical solution. Update on plan for pursuing the strategy
		Water Commission Meetings – expanded to include other stakeholders	Two sessions – first to be expanded including other stakeholders, second to be commission and steering committee – prepare draft strategy.
		Draft Regional Water Strategy from KWL	Review and distribute to all affected.
March 2010	Complete the strategic plan for water supply and distribution for the Comox Valley. Develop decision matrix/governance process for adopting a strategy and servicing plan. Develop decision matrix/governance plan for executing the strategy.	Steering Committee Meeting	Review draft technical solution. Review results of strategy
		Water Commission Meeting	Review draft strategy document and draft technical solution
		Proposed Public Open House #1	Present draft strategy and technical work to date
		Proposed Elected Official Forum	Present draft strategy and technical work to date
	Integrate the preferred technical option with the strategic planning framework.	Prepare Staff Reports	Strategic overview and status report for the board.
April 2010	Review and feedback loop for final strategy	Steering Committee Meeting	Review project status – confirm completion dates
		Proposed Public Open House #2	Present draft strategy and technical solution to obtain public feedback
		Water Commission Meeting	Review feedback – forward final strategy to board.
		Final 'Service Plan/Strategy Report'	Incorporate strategy documentation/results with technical option.
May 2010	Present the completed RWSS to the CVRD Board for Adoption.	Steering Committee Meeting	Present final strategy documents
		Water Commission Meeting	Present final strategy documents
		CVRD Board	Adoption of Strategy

Detailed Schedule – Technical Aspects

Month	Technical Aspects		
	Expectation	Details	
December 2009	collection and collation of all feedback by project manager – 15 Dec.	Some push-back for an extension. Hard-copies still available for distribution.	
January 2010	Review minutes/agenda. Attend meeting. Update reports as required.	Technical Advisory Committee Meeting	Review minutes/agenda. Attend meeting. Update reports as required.
		Review KWL Technical Reports	Task 2.1.8 – Water Quality and Treatment Task 2.2.2 – Distribution System Evaluation
February 2010	Collection of Regional Growth Strategy (RGS) information. Forward all comments and RGS information to Kerr Wood Leidal. Review of the preferred option by the technical advisory committee and the water commission.	Collate Review Comments	From tech advisory committee etc. on deliverables received in January.
		Draft Regional Water Strategy from KWL	Review and distribute to all affected.
March 2010	Complete the technical analysis of the preferred option.	Technical Advisory Committee Meeting Final Water Strategy from KWL	Feedback on all KWL reports to date. Review strategy document Review and final changes.
		Technical Advisory Committee Meeting	Feedback on all KWL reports to date. Review strategy document
April 2010	Finalization of all Technical documents	Staff Report	For the Water Commission and Board – recommend adoption of the RWSS
May 2010	Collate reports	Technical Advisory Committee Meeting	Present final strategy documents

February 20th Strategic Planning Session #1

Briefing package to all participants:

Technical memorandums issued publicly to date (after review cycle)
Strategic session outline
Excerpts from CRD, Nanaimo, RDN and Cowichan Valley RD Strategy documents

Time	Session	Lead	Details
0900-0930	Introduction/Expectations/ Day Outline	Facilitator	Intro of all participants to the commission Review goals for the day. Review of work to date, review the proposed strategic planning process
0930-1000	Issues	Facilitator	All participants given the opportunity to describe their issues with respect to water supply
0100-1015	Break		Break
1015-1200	Vision	Facilitator	Based on issues raised, review sample vision statements and refine.
1200-1230	Lunch		Eat lunch!
1230-1430	Goals	Facilitator	Review the sample goals and develop 3-5 key goals for water supply for the CVRD
1430-1445	Break		Break
1445-1545	Prioritization of Goals	Facilitator	Identify the priority for the goals developed.
1545-1600	Next Steps		Outline the next steps in the process

Deliverables from the session:

Vision Statement – a concise statement – maximum two sentences, devised to guide further detail of the planning and strategy for water supply for the CVRD.

Goals – 3-5 supporting statements that flow from the Vision that further define the various areas of importance for CVRD water supply and define the priorities for the goals.

February 27th Strategic Planning Session #2

Briefing package to all participants:

Notes from first strategic planning session
Draft strategy statements

Time	Session	Lead	Details
0900-0930	Introduction/Expectations/ Day Outline	Facilitator	Intro of all participants to the commission Review goals for the day
0930-1000	Vision	Facilitator	Review and revise vision statement.
1000-1015	Break		Break
1015-1100	Goals / Priorities	Facilitator	Review goal statements and priorities
1100-1200	Actions	Facilitator	Develop actions - 1-3 for each goal
1200-1230	Lunch		Eat lunch!
1230-1430	Actions	Facilitator	Develop actions - continued
1430-1445	Break		Break
1445-1545	Actions	Facilitator	Develop actions - continued
1545-1600	Next Steps	Facilitator	Outline the next steps in the process

Deliverable from the session – Recommend Strategic Plan:

Vision Statement – a concise statement – maximum two sentences, devised to guide further detail of the planning and strategy for water supply for the CVRD.

Goals – 3-5 supporting statements that flow from the Vision that further define the various areas of importance for CVRD water supply and define the priorities for the goals.

Actions – 1-3 definite actions to achieve each of the goals that are developed to support the vision

Note – the action plan for this session may evolve based on the results/feedback of the first session.

Stakeholder List:

Group Name	Contact	Phone	Details
Comox Valley Environmental Council	Roy Fussell		
Comox Valley Land Trust	Jack Minard		
Comox Valley Naturalists	Dave Lacelle		
Comox Valley Water Watch Coalition	Delores Broten		
Courtenay and District Fish and Game Protection Association	Ron Watanabe		
Ducks Unlimited	Len Everette		
Project Watershed Society	Caila Holbrook/ Don Castleden/ Don Chamberain		Watershed planning and mapping
Hart (Washer) Creek Watershed Stewards	Mike Nicell		
Island Timberlands			
Hancock Timber Resource Group			
Weyerhaeuser			
Mount Washington Ski Resort			
Natures Trust of BC	Tim Clermont		
TimberWest Forest Corp.			
Watutco Enterprises Ltd. (Pacific Playgrounds)			

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Comox Valley
REGIONAL DISTRICT

File: 5640-01

January 25, 2010

Sent via email only

Stakeholders
Comox Valley Water Supply Commission

Dear Stakeholders:

Re: Comox Valley Water Supply Strategy – Strategic Planning Session

At the January 21, 2010 meeting of the Comox Valley water supply commission, the commission members endorsed a resolution to host a strategic planning session on February 20, 2010 that includes stakeholders and advisory commission members.

I would like to take this opportunity to extend an invitation for participation in this session. This session will provide an opportunity for the participants to discuss and develop initial strategy concepts and to assist in developing the strategic plan for regional water supply. This information will be the basis for a subsequent strategic planning session for the water supply commission.

The advisory committee has been involved in the water strategy to date. This planning session will now provide an opportunity for other community groups to actively participate in the process.

In order to ensure broad representation from each group, we would encourage your attendance at this session and request that you delegate only one representative to attend to represent your organization at this strategic planning session. Upon confirmation of attendance, your representative will be sent a "pre-reading" package to assist with preparation for the session.

If you have any questions or if you require additional information, please contact Andrew Gower at Wedler Engineering LLP at 250-334-3263. Attached to this letter is the staff report to provide some context and background information.

Sincerely,

James Warren
Corporate Legislative Officer

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Comox Valley REGIONAL DISTRICT

File: 5640-01

February 9, 2010

Sent via email only

Members, Advisory Members and Stakeholders
Comox Valley Water Supply Commission and Advisory Committee

Dear Strategic Planning Session Participants:

Re: Comox Valley Water Supply Strategy – Strategic Planning Session

I would like to take this opportunity to thank you for your commitment to participate in the strategic planning process for the Comox Valley Water Supply Strategy. As mentioned in your invitation, you will find a "pre-reading" package attached to this letter to assist in preparation for the session. I encourage you to take the time to review this letter and the attached materials prior to the planning session as it will greatly enhance the efforts of all involved.

Included in your invitation was a staff report prepared by the project manager for the Water Supply Strategy, and review of this report will form an excellent basis for the session and the additional materials included with this letter. Furthermore, this letter will review the aim and goals of the first session, an outline of what the water supply strategy will include, the final schedule with full details, and some examples of strategic planning language to consider in organizing your thoughts.

The aim of the first day of strategic planning workshops is to gather input from all invitees centred around the following:

- Vision Statement – determine one to three possibilities for a "Vision Statement" for the regional water supply strategy that will guide the remainder of planning and decisions.
- Goals – the next step in the strategic hierarchy, the aim is to develop 3-4 "goal" statements upon which specific "objectives" and detailed, discrete "actions" can be built.

Several communities on the north island have already developed water strategies of one form or another. We have provided these existing planning documents for review on our website at http://www.rdcs.bc.ca/section_rgs/content.asp?id=3846&parent=71&sub_collection=76. Please take some time to review these documents as they provide relevant examples of the strategic planning language we are hoping to create for the Comox Valley.

The schedule for the day has been revised and finalized and is included in Appendix A to this letter. Some specific details on each of the sessions:

- Introduction Session – each participant will get a chance to introduce themselves. This session will include a short presentation by the project manager on the work to date and the way ahead. The facilitator will guide the group in developing the "rules of engagement" for the rest of the day.
- "Issues" Session – this will give each participant a chance to raise one issue that is of key importance to them and the group they represent. To assist in this, I ask that you consider three issues to present, as it is highly likely that another stakeholder could have similar issues, and may echo your sentiments. This way, each participant will ensure their issue is heard without repetition by other participants.
- Vision Session – based on models from other regions, a unique and concise vision statement will be developed for the Comox Valley's water supply strategy. Based on input, more than one possible statement may be developed.
- Goals Session – to support the vision statement, goals will be developed for the Comox Valley water supply strategy.
- Prioritization of Goals – while this may prove difficult, participants will be asked for input on prioritizing the goals developed.

Possible Visions:

The Comox Valley Regional District will supply residents with a safe, secure and cost effective source of drinking water while protecting ecosystems and the environment.

Working together, water purveyors in the Comox Valley will strive to provide safe drinking water cost effectively with a minimum impact on the environment.

The work will not end when this session does. We would ask that those who have the desire and the time take the goals developed during the session, and suggest some objectives and actions that could be incorporated into the strategy. These would have to be submitted to the project manager no later than Thursday of the week following the February 20th meeting so that they can be supplied to the water supply commission for use at the second session scheduled for February 27th.

- Objectives – these will be further refinements that will expand each goal into defined streams.
- Actions – specific, discrete and measurable – actions will be created that collectively achieve each goal.

Please be sure to visit the CVRD website and explore the "Regional Water Strategy" link under the "Regional Strategies" section. There you will find several staff reports and previously developed draft technical memos. Furthermore, meeting minutes and other useful background information can be accessed through the website.

Finally, attached at Appendix B for your information is a list of confirmed participants.

If you have any questions, or if you require additional information, please contact Andrew Gower, project manager, at 250-334-3263 or via email at agower@wedler.com.

Sincerely,

Chair Ken Grant
Comox Valley Water Supply Commission

Attachments:

Appendix A: Strategic Planning Session Agenda

Appendix B: List of Confirmed Participants

Comox Valley
REGIONAL DISTRICT

Agenda

Notice of meeting of the
COMOX VALLEY WATER SUPPLY COMMISSION

STRATEGIC PLANNING SESSION #1
Saturday, February 20, 2010

Comox Valley Regional District boardroom
Commencing at 10:00 am

TIME		
1000-1030	A.	Introductions/ Expectations/ Day outline
		1. Chair of the water commission welcomes participants
		2. Project manager reviews process to date
		3. Facilitator reviews goals for the day and "rules of engagement"
1030-1100	B.	Issues
		1. Facilitator ensures all participants are given the opportunity to describe their issues with respect to water supply
1115-1230	C.	Vision
		1. Facilitator leads a review of sample vision statements and refines based on issues raised
1300-1500	D.	Goals
		1. Facilitator leads a review of the sample goals and develops 3-5 key goals for water supply for the CVRD
1515-1600	E.	Prioritization of Goals
		1. Facilitator leads the identification of the priority for the goals developed.
1600-1615	F.	Next Steps
		1. Outline the next steps in the process
1615	G.	Termination

Comox Valley REGIONAL DISTRICT

Attendees

COMOX VALLEY WATER SUPPLY COMMISSION

STRATEGIC PLANNING SESSION #1
Saturday, February 20, 2010

Comox Valley Regional District boardroom
Commencing at 10:00 am

STAKEHOLDERS

Comox Valley Environmental Council	Jim Palmer
Comox Valley Farmers Institute	Unavailable
Comox Valley Land Trust	Jack Minard
Comox Valley Naturalists	Dave Lacelle
Comox Valley Water Watch Coalition	Linda Safford
Courtenay and District Fish and Game Protection Association	Wayne White
Ducks Unlimited - Estuary Working Group	Unavailable
Comox Valley Project Watershed Society	Caila Holbrook
Hart (Washer) Creek Watershed Stewards	Darcy Rainey
Island Timberlands Limited Partnership	Unavailable
Hancock Timber Resource Group	Ian Delisle
Mount Washington Alpine Resort	Jamie Erickson
Natures Trust of BC	Unconfirmed
TimberWest Forest Corp	Al Chatterton
Watutco Enterprises Ltd (Pacific Playground)	Unavailable

ADVISORY GROUP

BC Hydro	Attending
City of Courtenay	Ronna-Rae Leonard; Kevin Lagan
Comox Valley Regional District	Kevin Lorette; Gaya Laflamme
Fanny Bay Waterworks District	Alan Robb
Fisheries and Oceans Canada	Darcy Miller
Integrated Land Management Bureau	Attending
K'omoks First Nation	Ron Frank
Ministry of Aboriginal Relations and Reconciliation	Anya Thomas
Ministry of Environment	Unavailable
Ministry of Forests and Range	Romona Backwell
Ministry of Transportation and Infrastructure	Unavailable
Royston Improvement District	Jim Argue
Sandwick Waterworks District	Mike Butler
Ship's Point Improvement District	George Stringer
Town of Comox	Richard Kanigan; Glenn Westendorp
Union Bay Improvement District	Brenda Fisher
Vancouver Island Health Authority	Charmaine Enns; Dwayne Stroh
Village of Cumberland	Bronco Moncrief; Bob Hoffstrom

Photographic Summary

Comox Valley Regional District

Comox Valley Water Supply Commission
Strategic Planning Session #1

February 20, 2010

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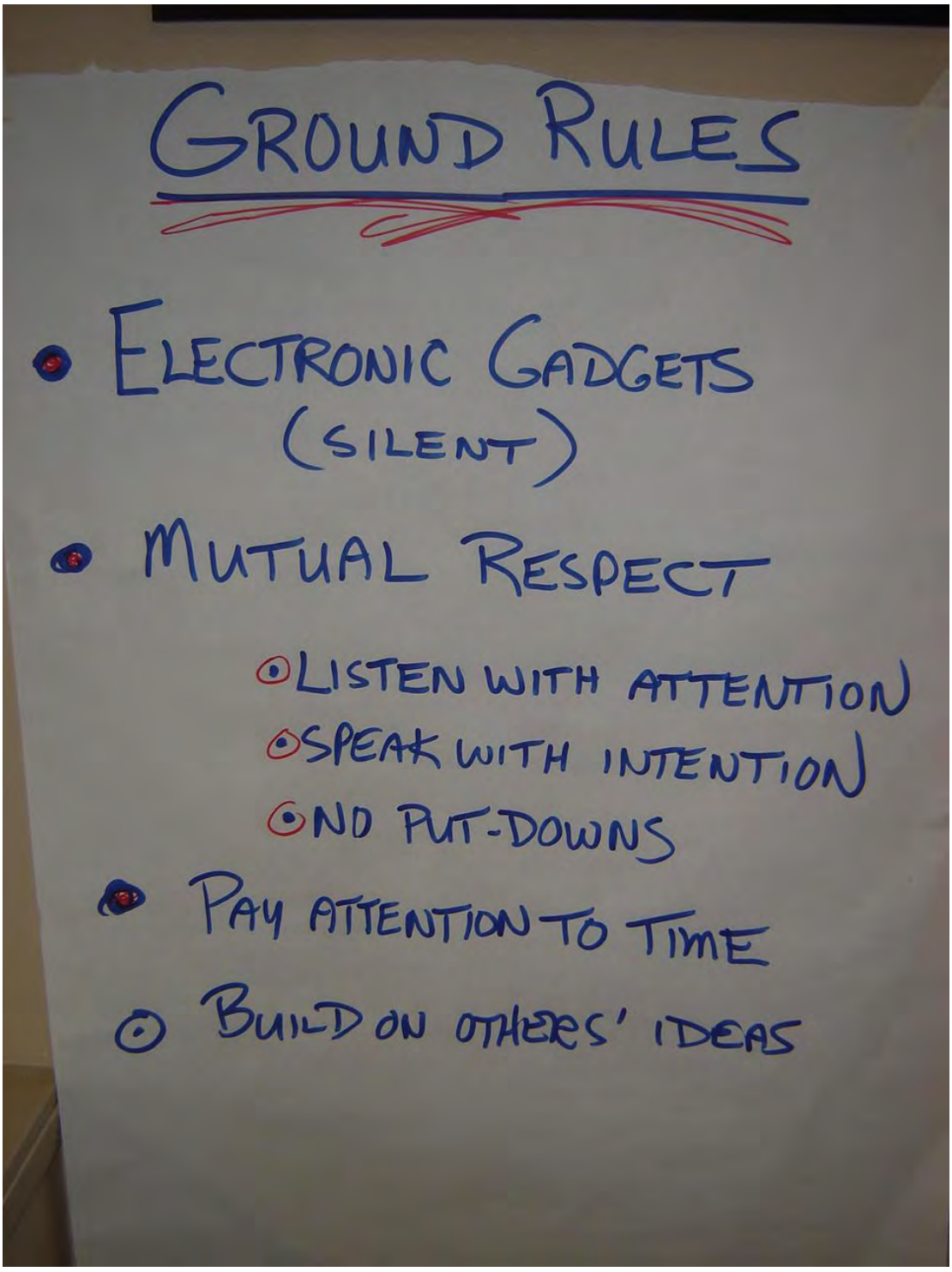
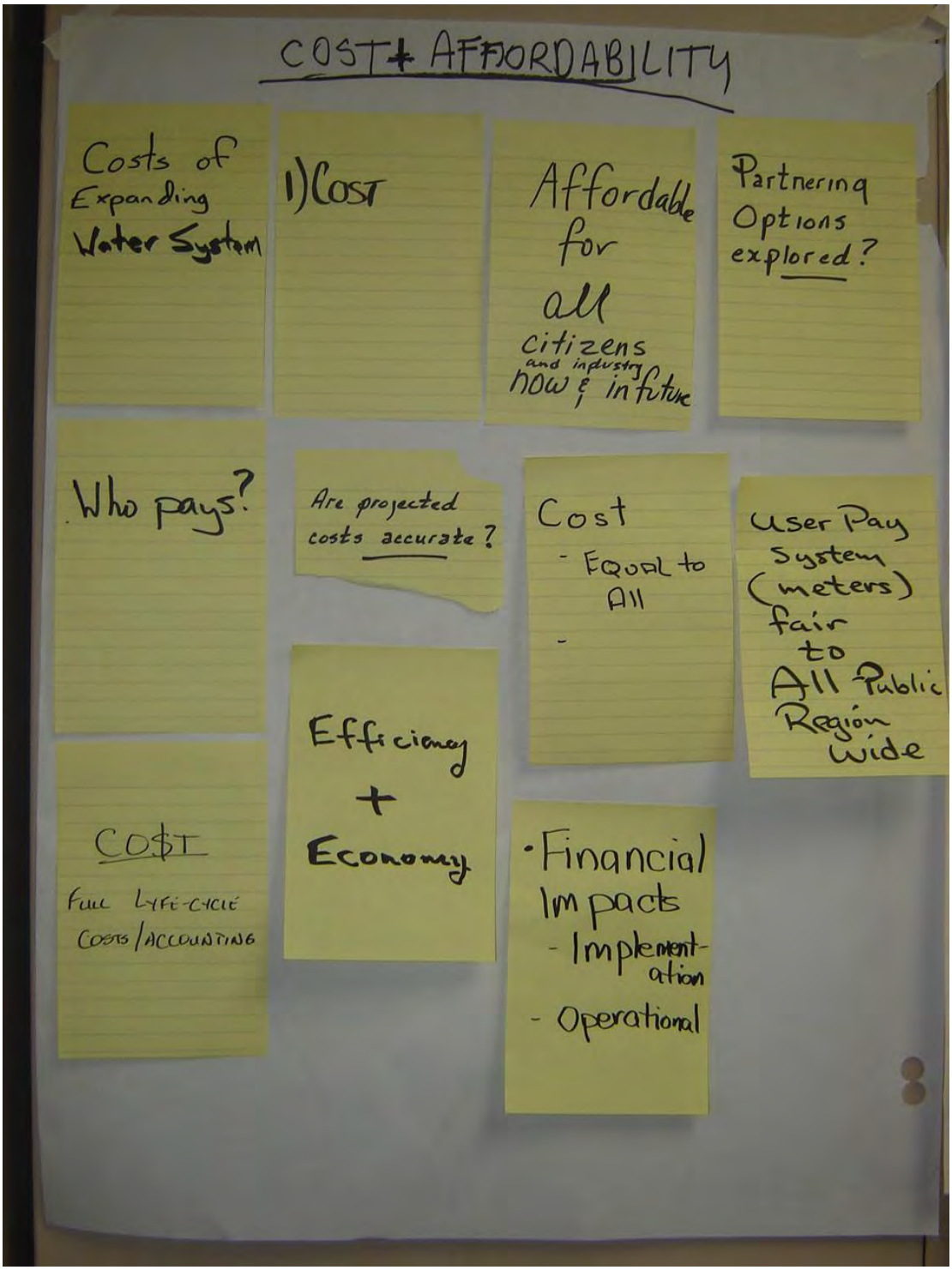
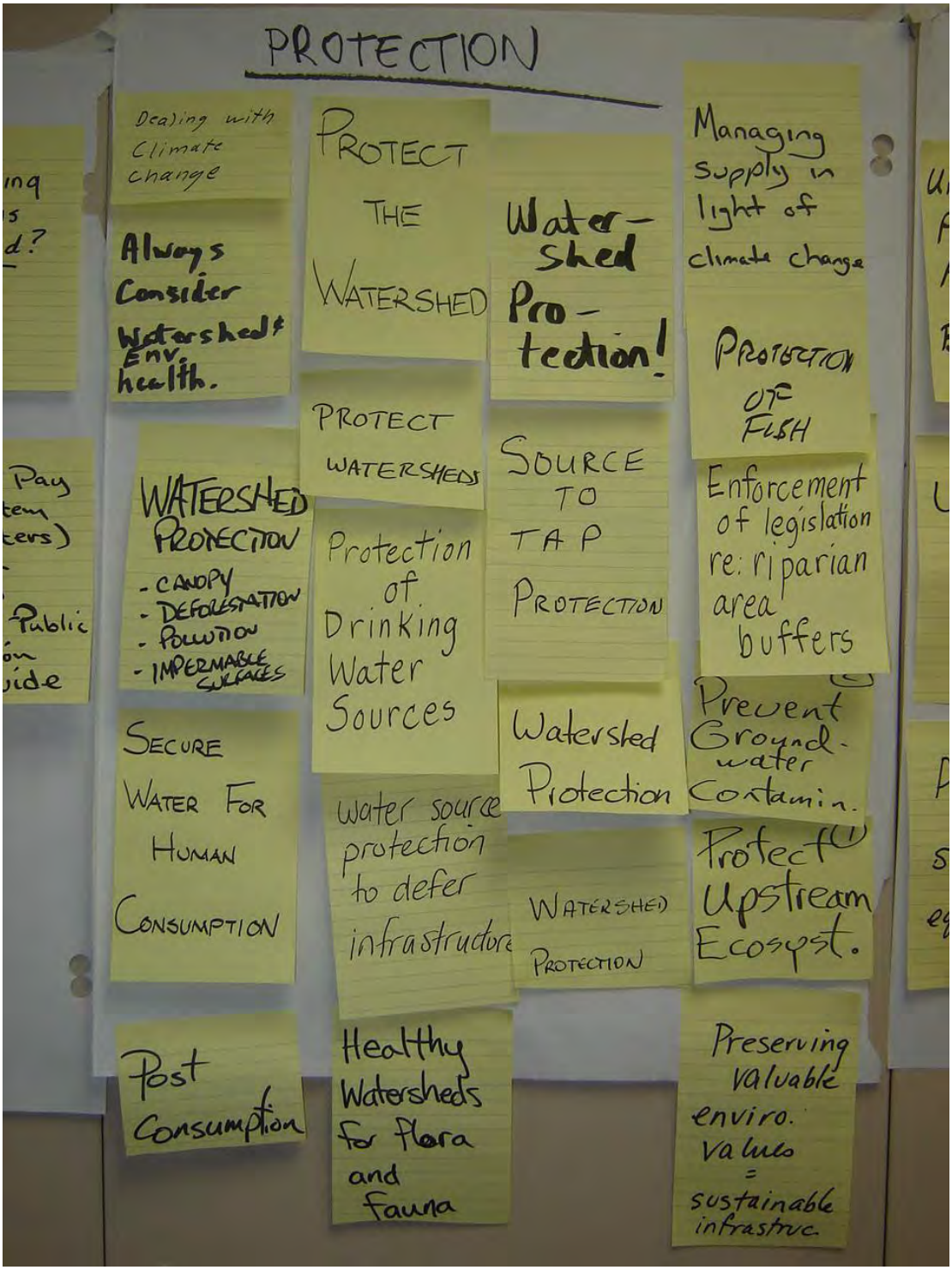
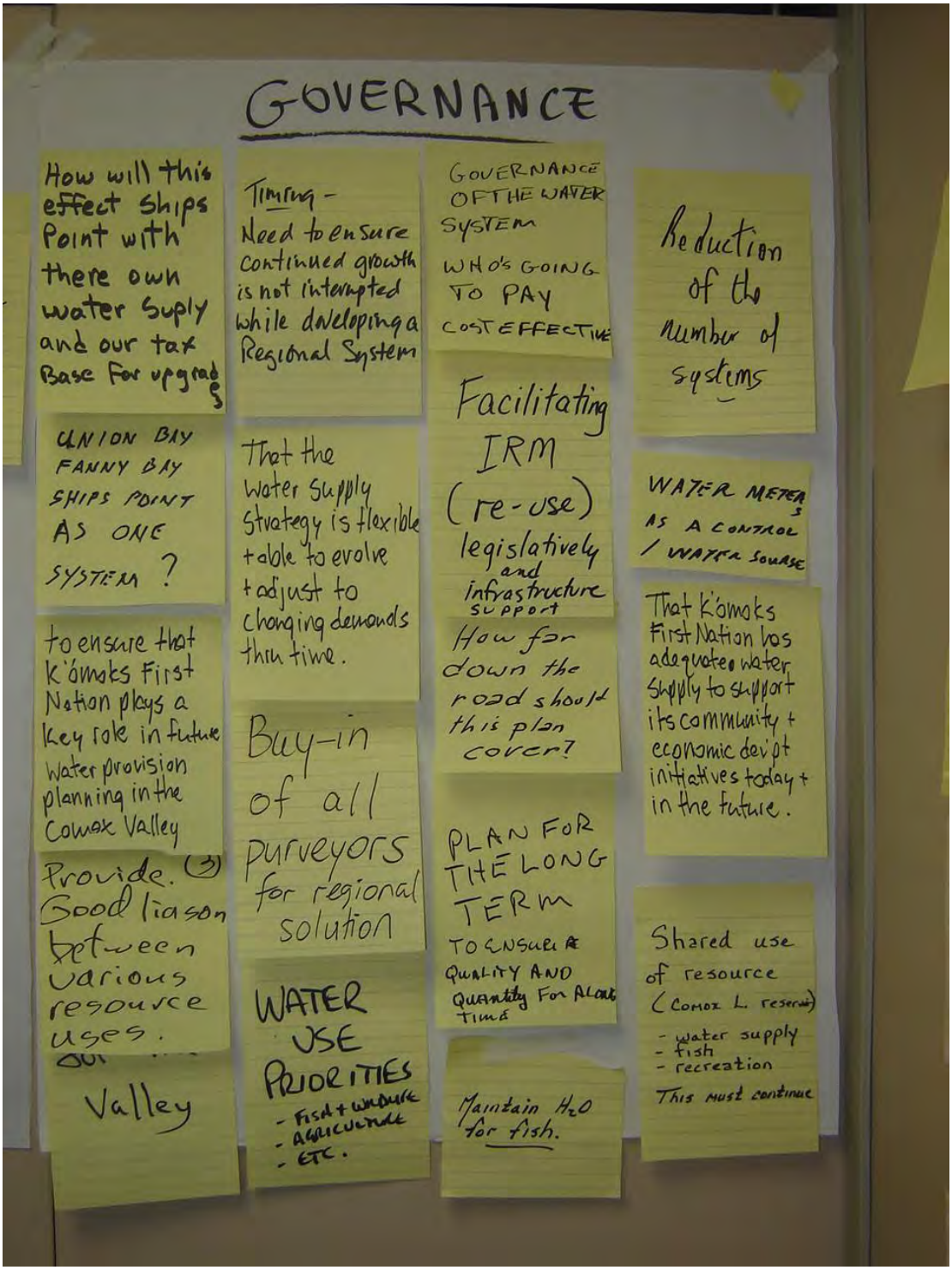

GROUND RULES
ELECTRONIC GADGETS (SILENT)
MUTUAL RESPECT
LISTEN WITH ATTENTION
SPEAK WITH INTENTION
NO PUT-DOWNS
PAY ATTENTION TO TIME
BUILD ON OTHERS' IDEAS

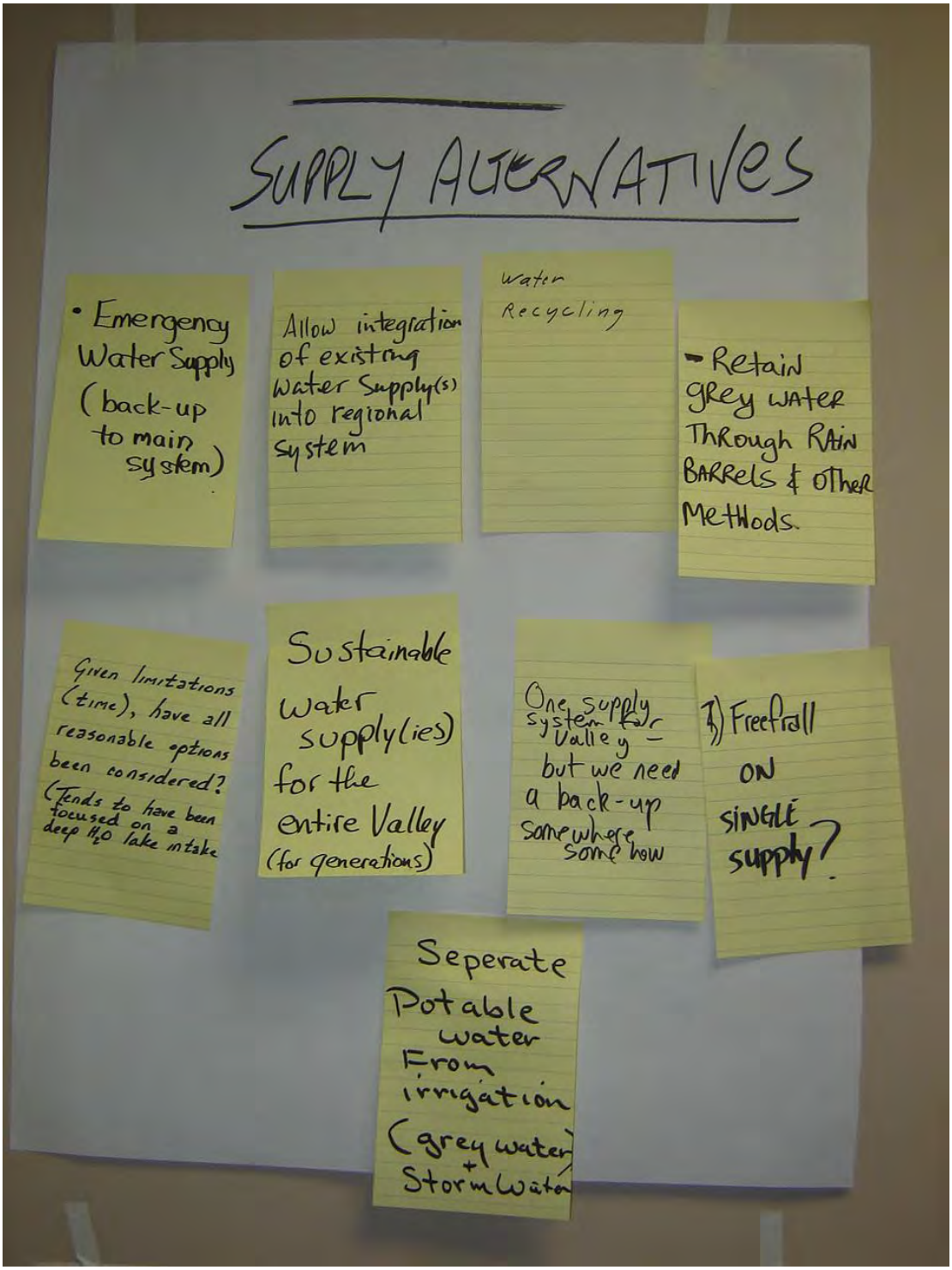
ISSUES

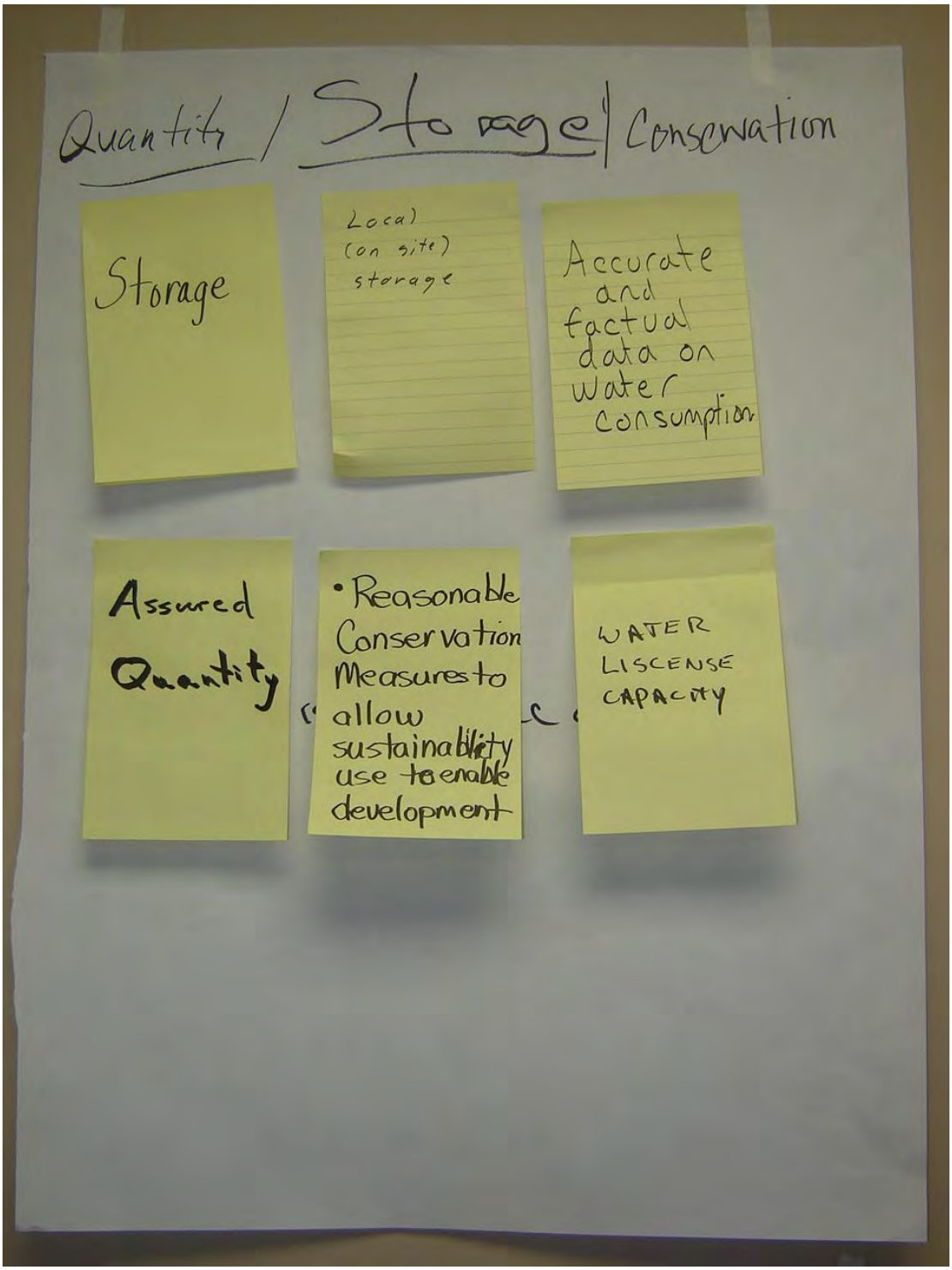

COST + AFFORDABILITY
Costs of Expanding Water System
1) Cost
Affordable for all citizens and industry now & in future
Partnering Options explored?
Who pays?
Are projected costs accurate?
Cost
- Equal to All
-
User Pay System (meters) fair to All Public Region wide
Efficiency + Economy
COST
Full Life-Cycle Costs/Accounting
· Financial Impacts
- Implementation
- Operational

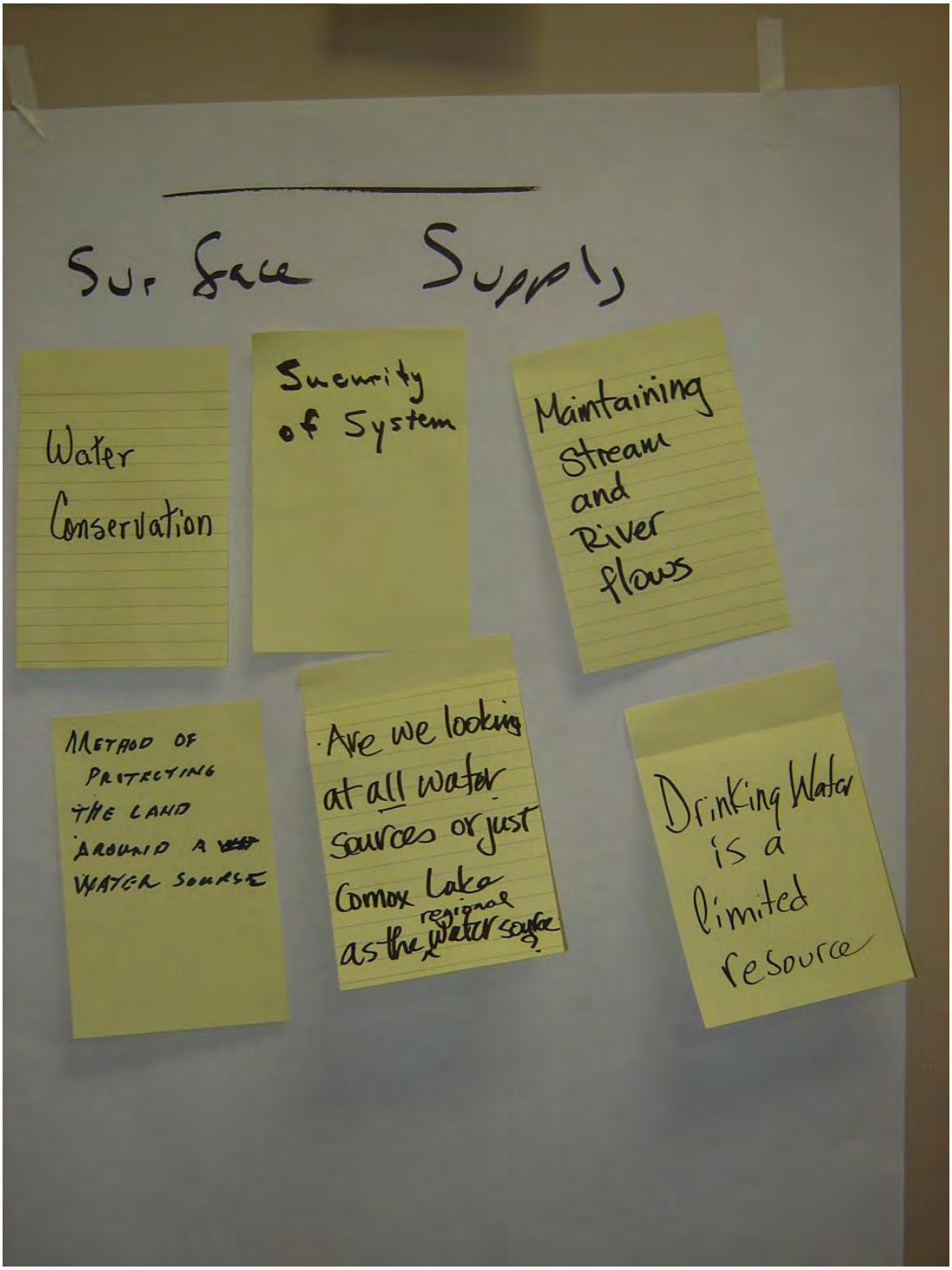

PROTECTION
Dealing with Climate change
PROTECT THE WATERSHED
Water-Shed Pro-tection!
Managing supply in light of climate change
Always Consider Watershed & Env. health.
PROTECT WATERSHEDS
PROTECTION OF FISH
WATERSHED PROTECTION
- CANOPY
- DEFORESTATION
- POLLUTION
- IMPERMABLE SURFACES
SOURCE TO TAP PROTECTION
Enforcement of legislation re: riparian area buffers
Protection of Drinking Water Sources
Watershed Protection
Prevent Ground-water Contamin.
SECURE WATER FOR HUMAN CONSUMPTION
water source protection to defer infrastructure
WATERSHED PROTECTION
Protect Upstream Ecosyst.
Post Consumption
Healthy Watersheds for flora and fauna
Preserving valuable enviro. values = sustainable infrastruc.

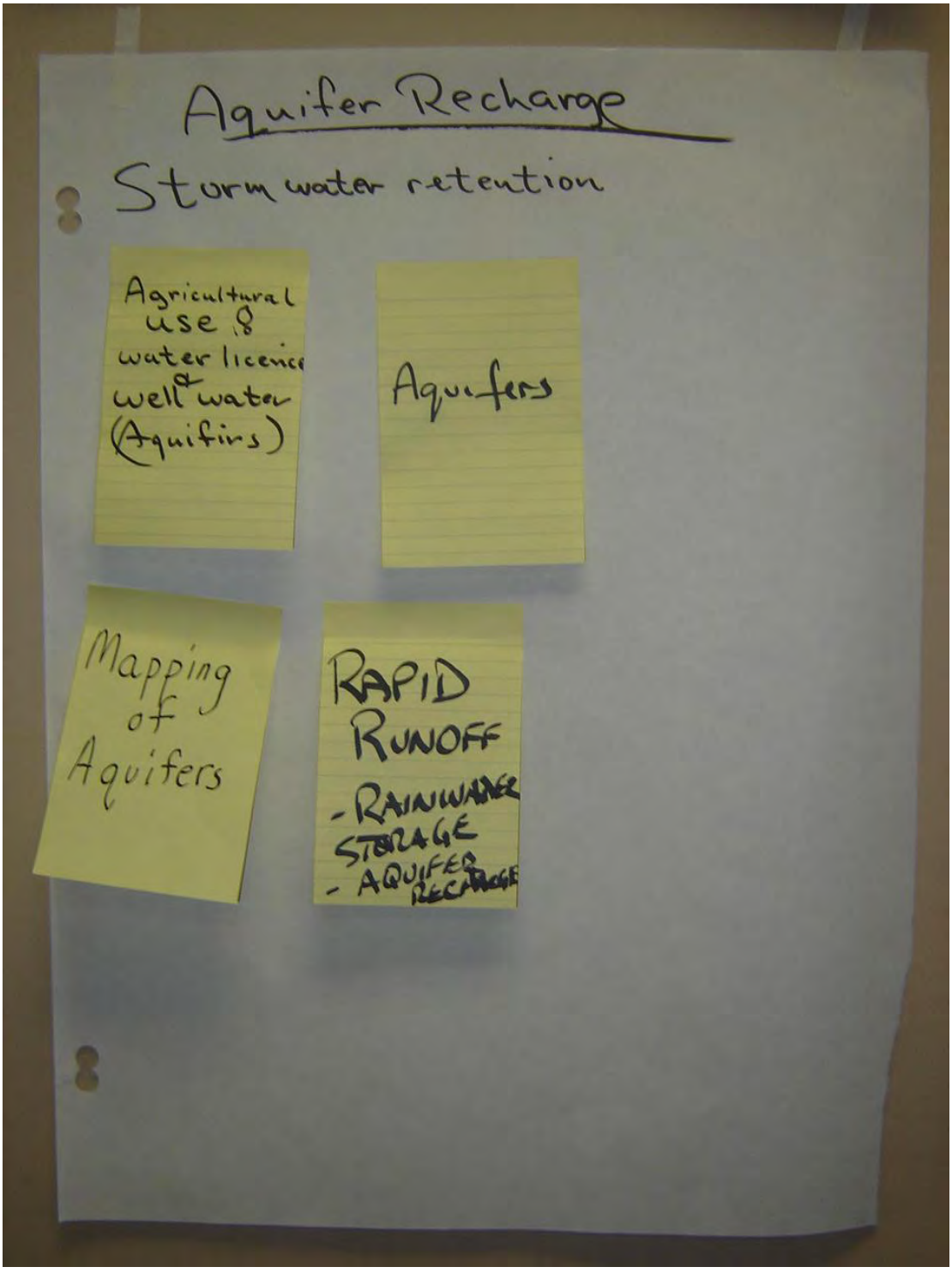

QUALITY
Quality
Water Quality
Quality Standards for surface & groundwater
Safe drinking water compromised by competing interests
Water Quality
Quality + Quantity
What water standard and quality can be expected to achieve? (eg. VIHA's multi barrier 4, 3, 2, 1
Multi Barrier Approach
-WATER QUALITY
2) Quality Across District
Safe Drinking Water for all
WATER QUANTITY/ CONSUMPTION
High water quality -
① Turbidity
② Temperature
③ Bacteriological
POTABLE WATER QUALITY
-WATER QUALITY
Minimum
• Treatment Chemicals.


GOVERNANCE
How will this effect Ships Point with there own water Suply and our tax Base For upgrades
Timing - Need to ensure continued growth is not interrupted while developing a Regional System
GOVERNANCE OF THE WATER SYSTEM
WHO's GOING TO PAY
COST EFFECTIVE
Reduction of the number of systems
UNION BAY FANNY BAY SHIPS POINT AS ONE SYSTEM ?
That the water supply strategy is flexible + able to evolve + adjust to changing demands thru time.
Facilitating IRM (re-use) legislatively and infrastructure support
WATER METERS AS A CONTROL / WATER SOURCE
to ensure that K'ómoks First Nation plays a key role in future water provision planning in the Comox Valley
Buy-in of all purveyors for regional solution
How far down the road should this plan cover?
That K'ómoks First Nation has adequate water supply to support its community + economic dev't initiatives today + in the future.
Provide. (3) Good liason between various resource uses.
WATER USE PRIORITIES
- Fish + Wildlife
- AGRICULTURE
- ETC.
PLAN FOR THE LONG TERM
TO ENSURE A QUALITY AND QUANTITY FOR ALL TIME
Shared use of resource (Comox L. reserve)
- water supply
- fish
- recreation
This must continue
Valley
Maintain H2O for fish.

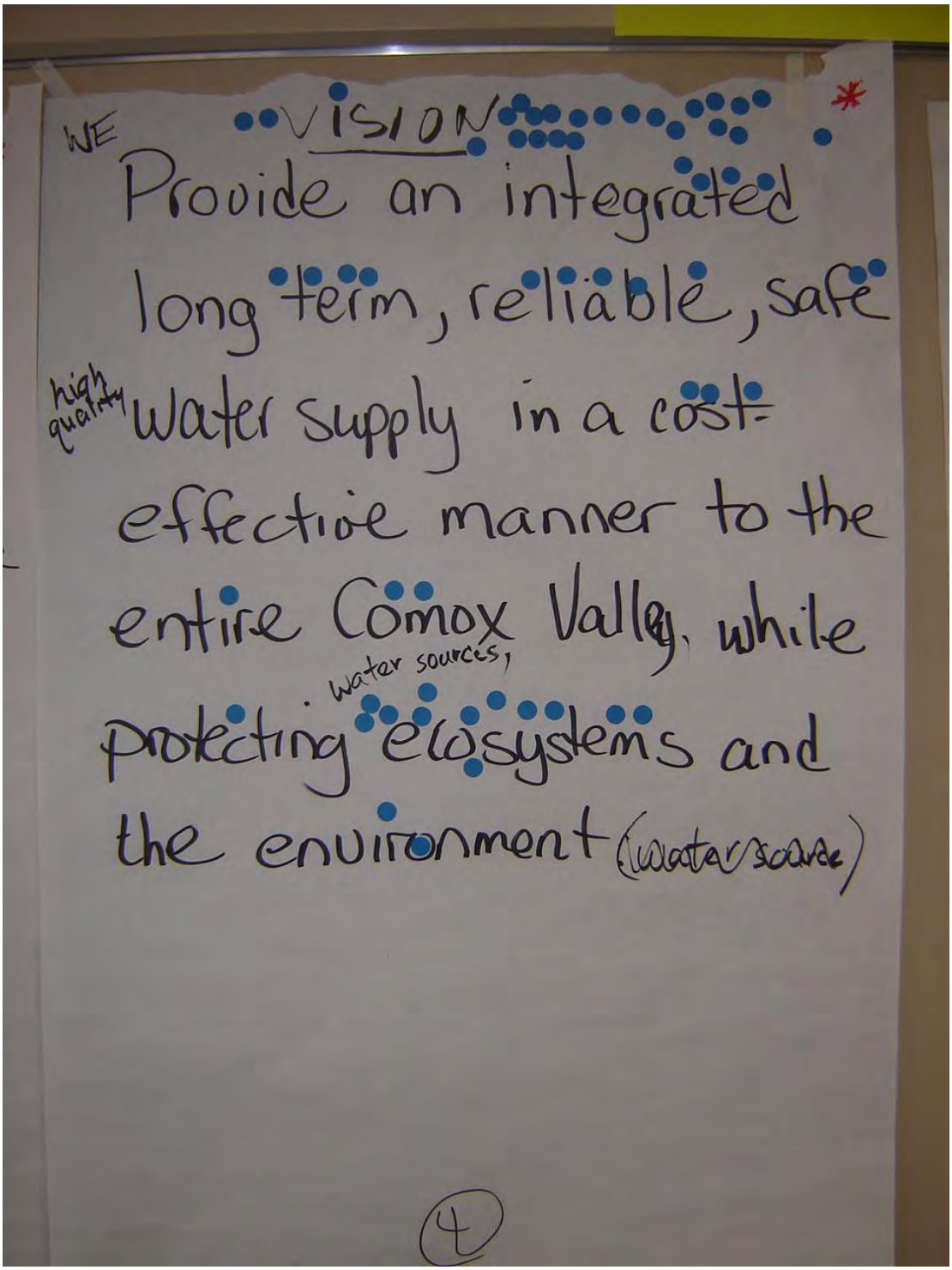

SUPPLY ALTERNATIVES
• Emergency Water Supply (back-up to main system)
Allow integration of existing water Supply(s) into regional system
Water Recycling
- Retain grey water through rain barrels & other methods.
Given limitations (time), have all reasonable options been considered? (Tends to have been focused on a deep H_2O lake intake
Sustainable water supply(ies) for the entire Valley (for generations)
One supply system for Valley - but we need a back-up somewhere some how
1) Freefall on single supply?
Seperate Potable water From irrigation (grey water + Storm Water

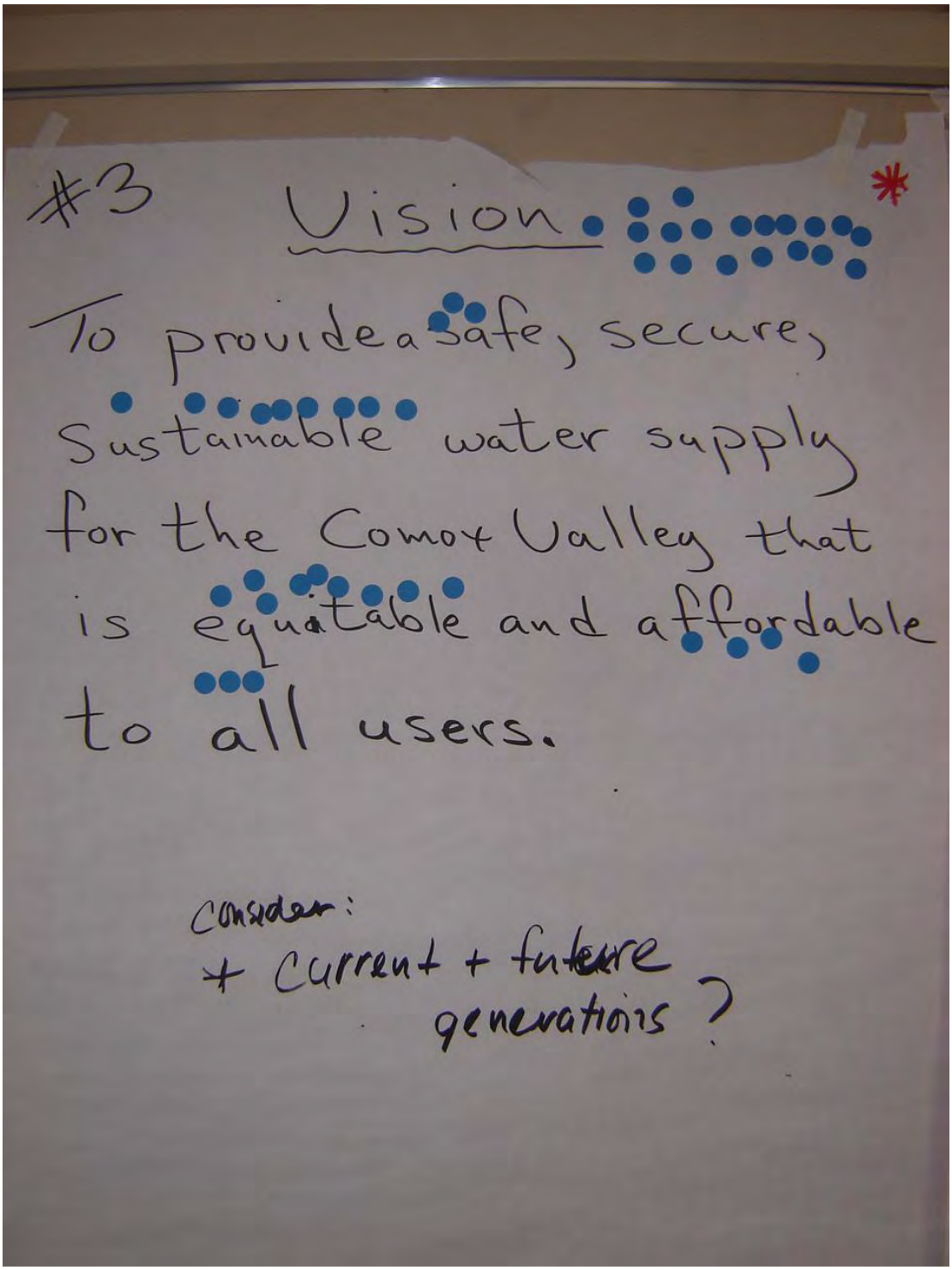

Quantity / Storage / Conservation
Storage
Local (on site) storage
Accurate and factual data on water consumption
Assured Quantity
• Reasonable Conservation Measures to allow sustainability use to enable development
WATER LISCENSE CAPACITY

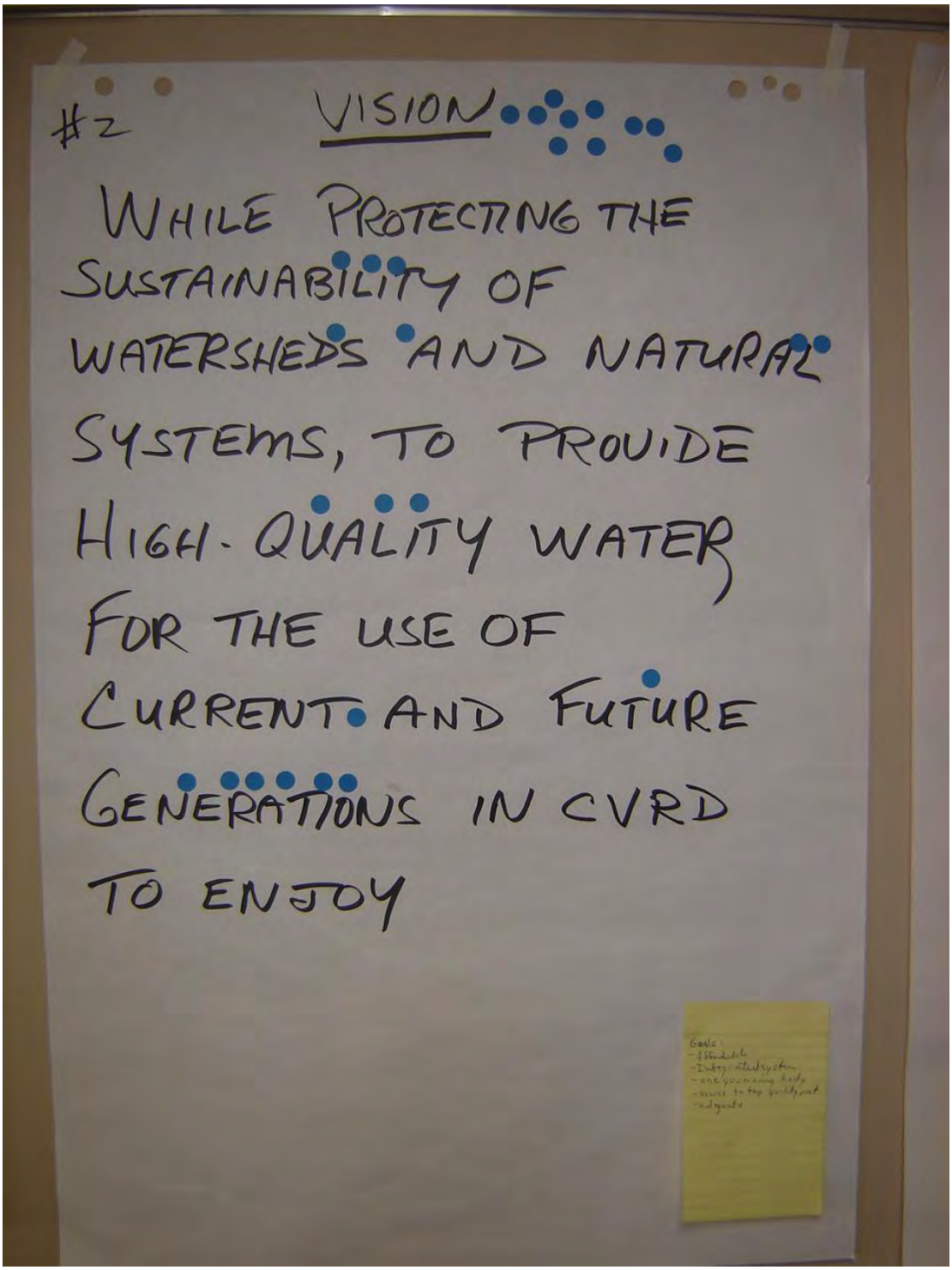

Surface Supply
Water Conservation
Security of System
Maintaining Stream and River flows
Method of protecting the land around a water source
Are we looking at all water sources or just Comox Lake as the regional water source?
Drinking Water is a limited resource

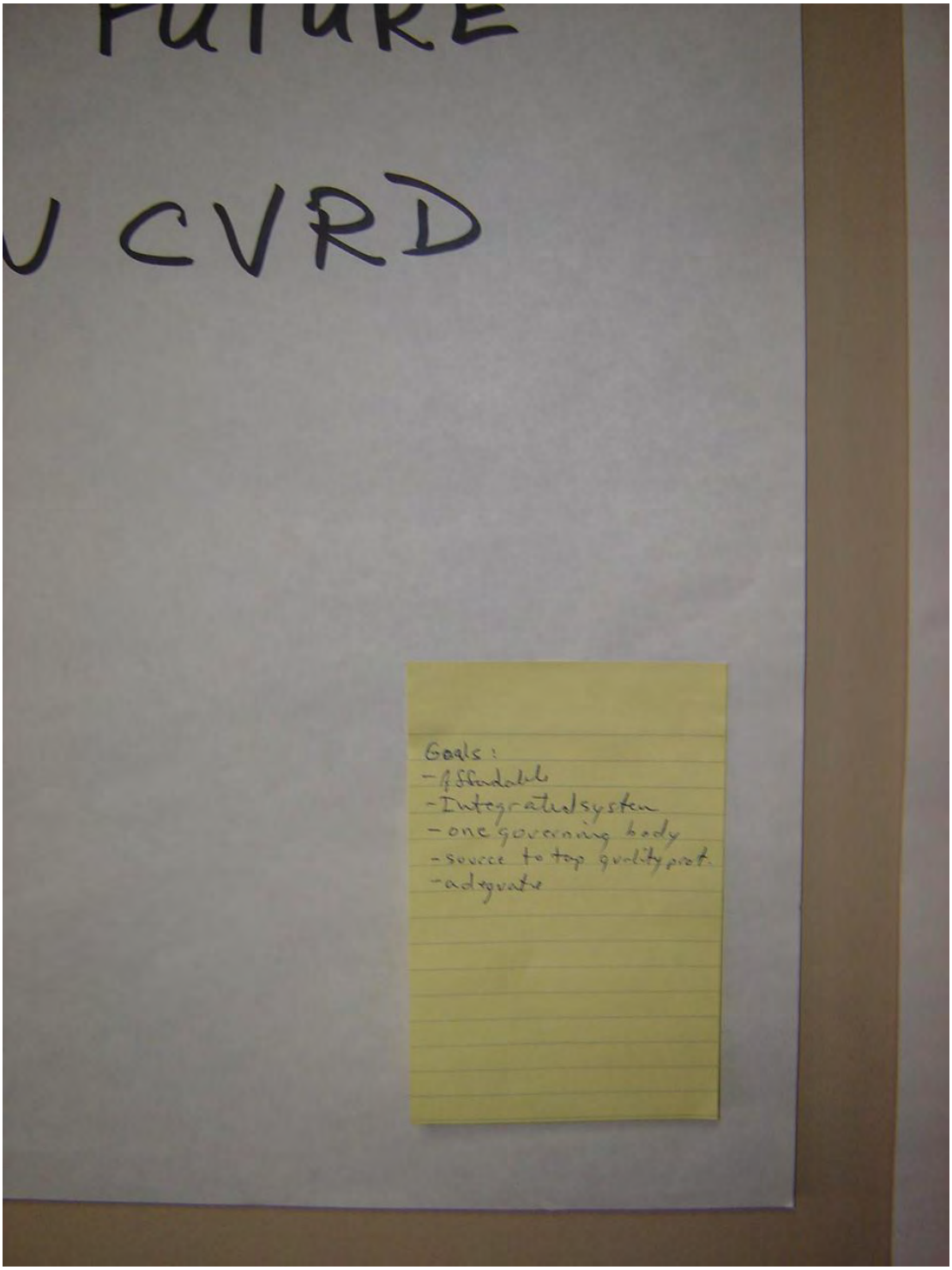

Aquifer Recharge
Storm water retention
Agricultural use & water licence & well water (Aquifirs)
Aquifers
Mapping of Aquifers
RAPID RUNOFF
- RAINWATER STORAGE
- AQUIFER

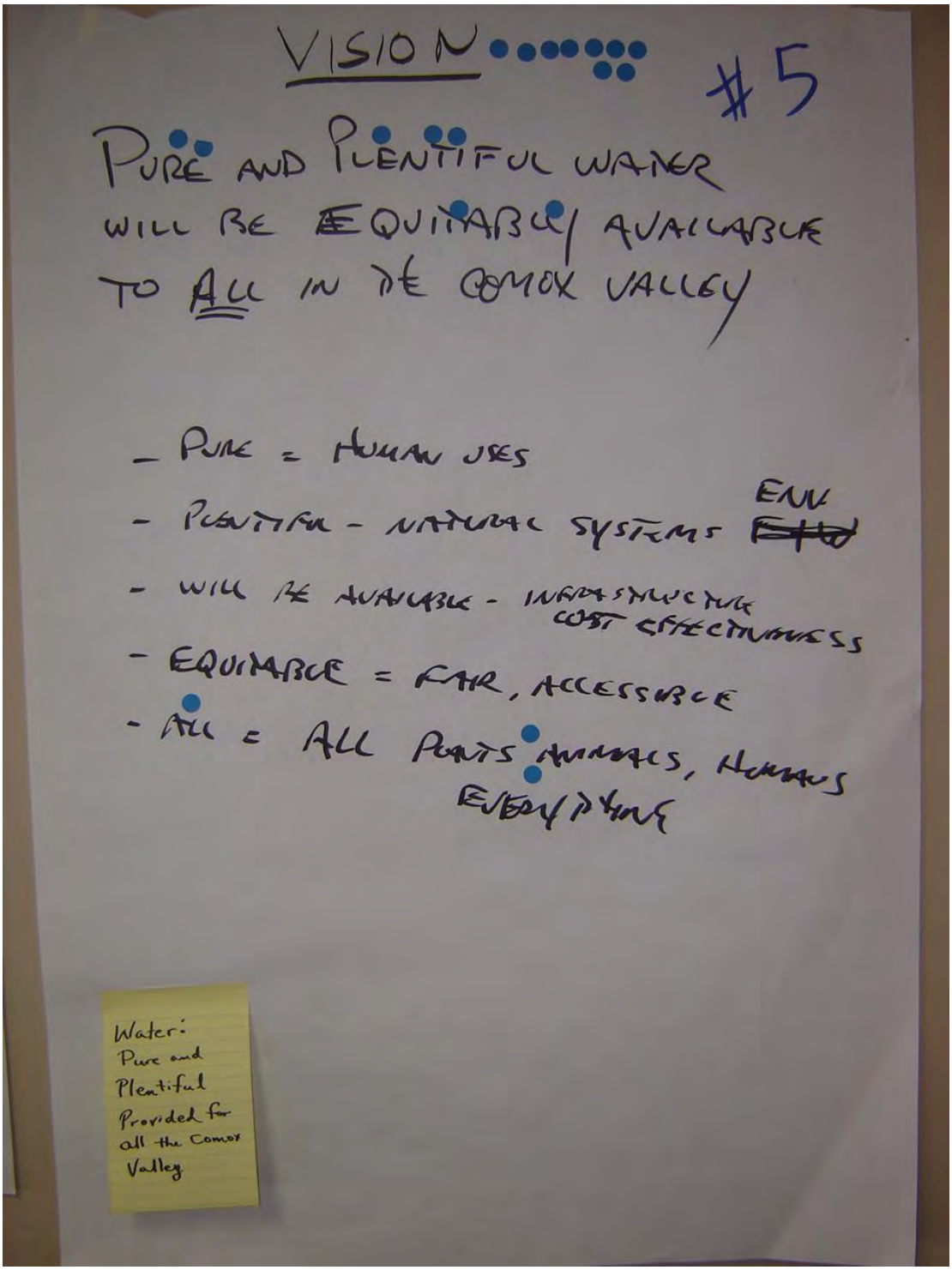
DRAFT VISION STATEMENTS

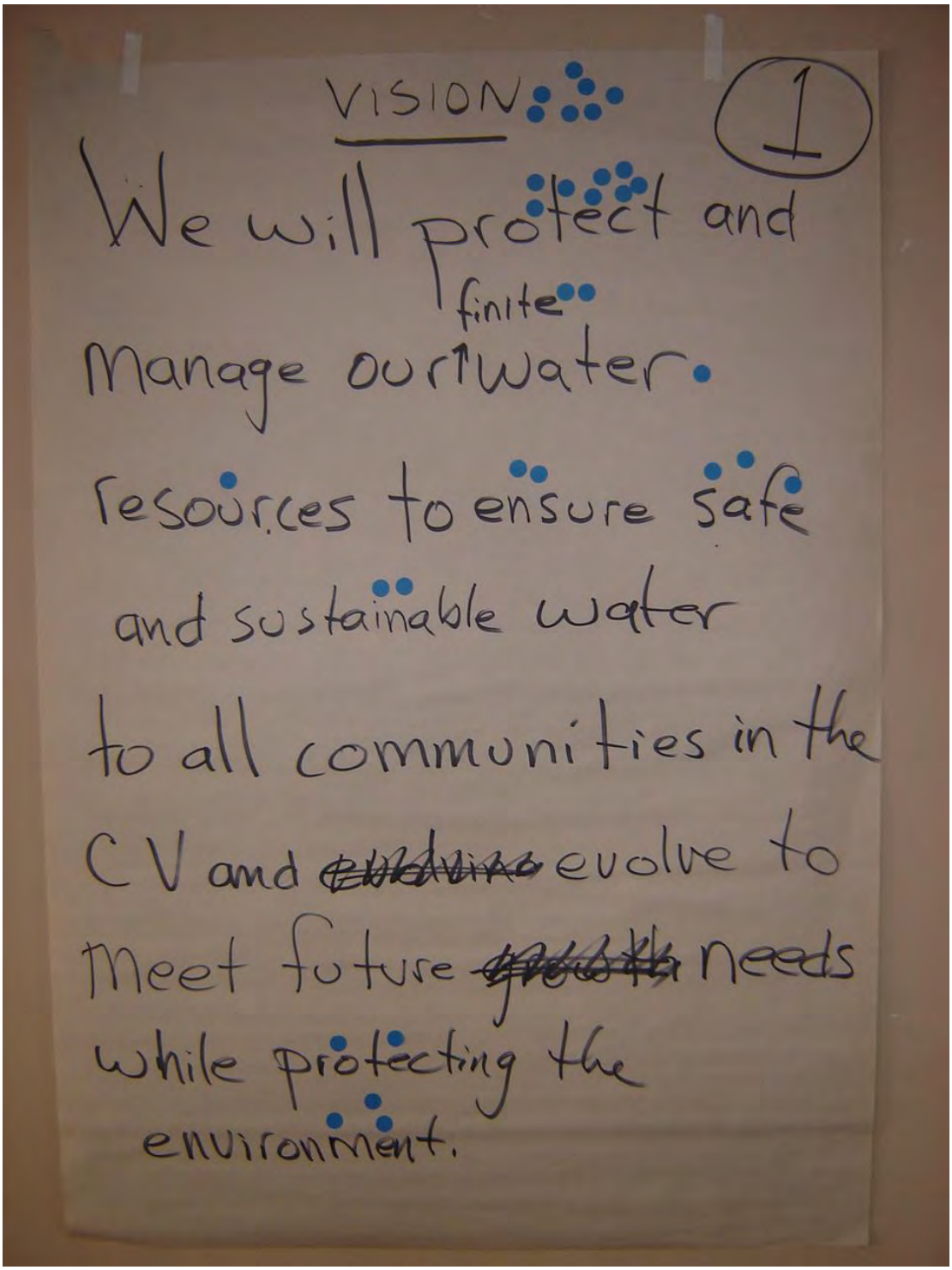


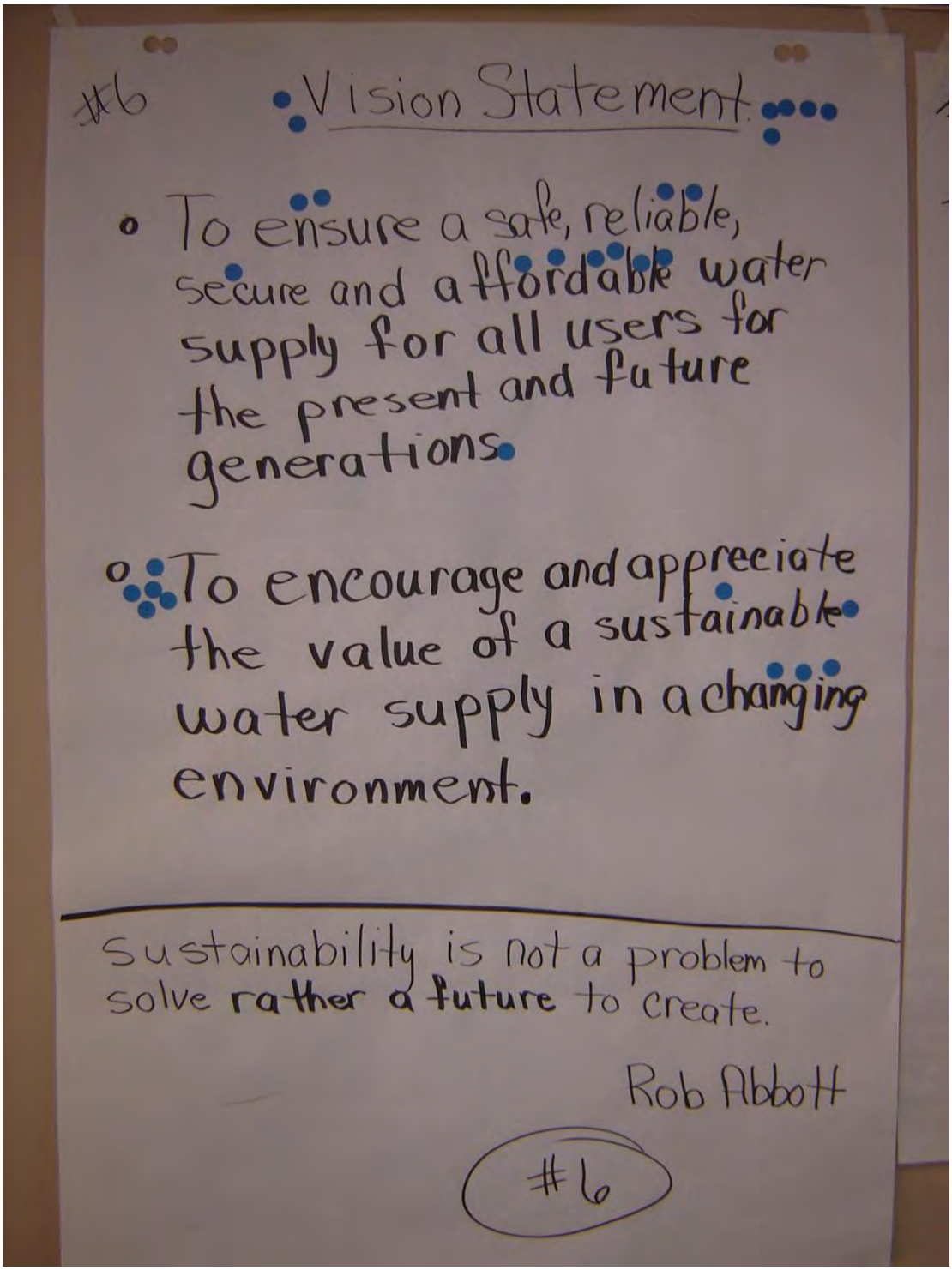

#3 Vision
To provide a safe, secure, sustainable water supply for the Comox Valley that is equitable and affordable to all users.
consider:
+ current + future generations ?


#2
VISION
WHILE PROTECTING THE SUSTAINABILITY OF WATERSHEDS AND NATURAL SYSTEMS, TO PROVIDE HIGH-QUALITY WATER FOR THE USE OF CURRENT AND FUTURE GENERATIONS IN CVRD TO ENJOY


FUTURE
CVRD
Goals:
- Affordable
- Integrated system
- one governing body
- source to tap quality prot.
- adequate

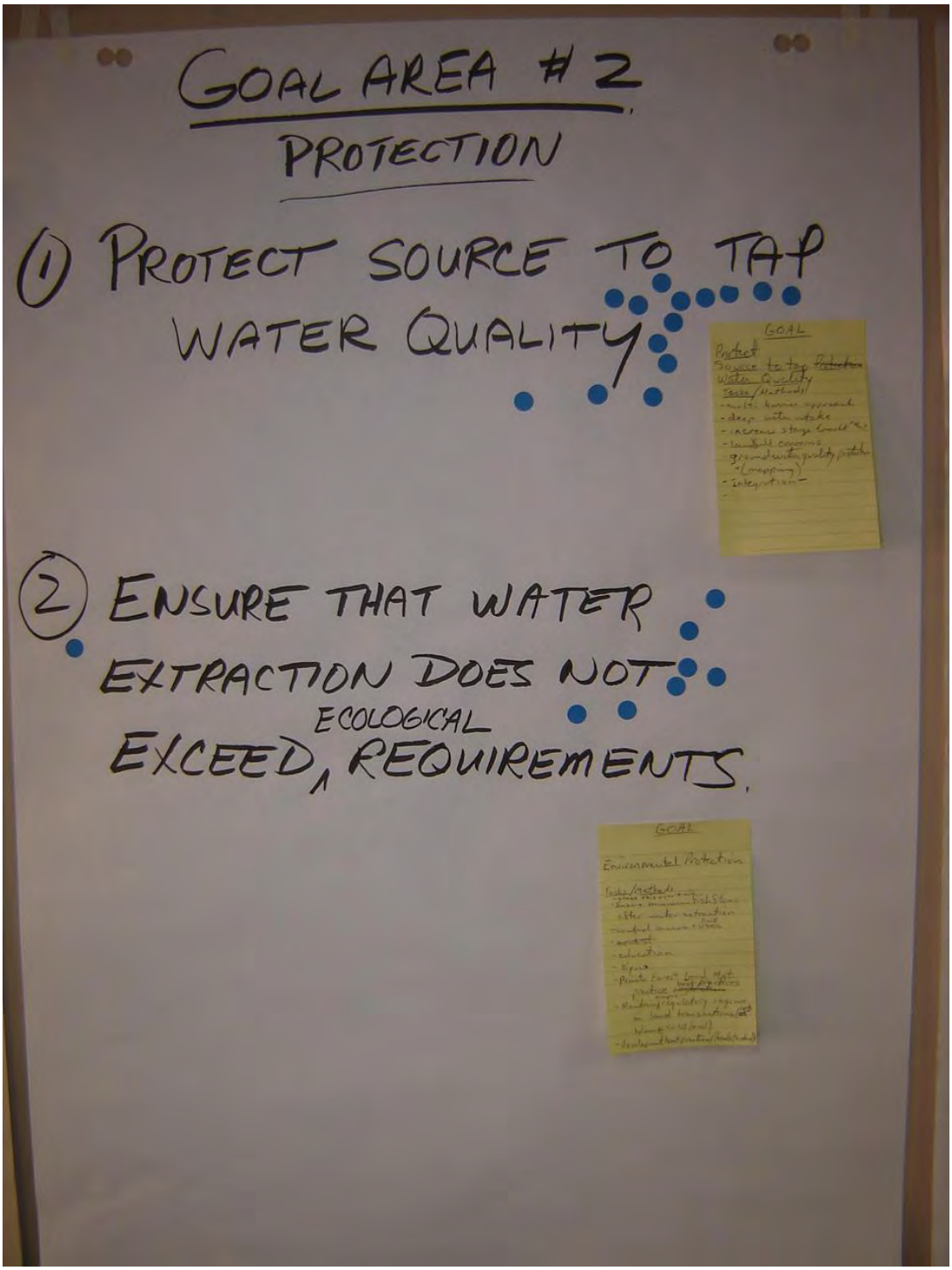

VISION #5
PURE AND PLENTIFUL WATER WILL BE EQUITABLE/ AVAILABLE TO ALL IN THE COMOX VALLEY
- PURE = HUMAN USES
- PLENTIFUL - NATURAL SYSTEMS ENV
- WILL BE AVAILABLE - INFRASTRUCTURE COST EFFECTIVENESS
- EQUITABLE = FAIR, ACCESSIBLE
- ALL = ALL PLANTS ANIMALS, HUMANS EVERYTHING
Water: Pure and Plentiful Provided for all the Comox Valley

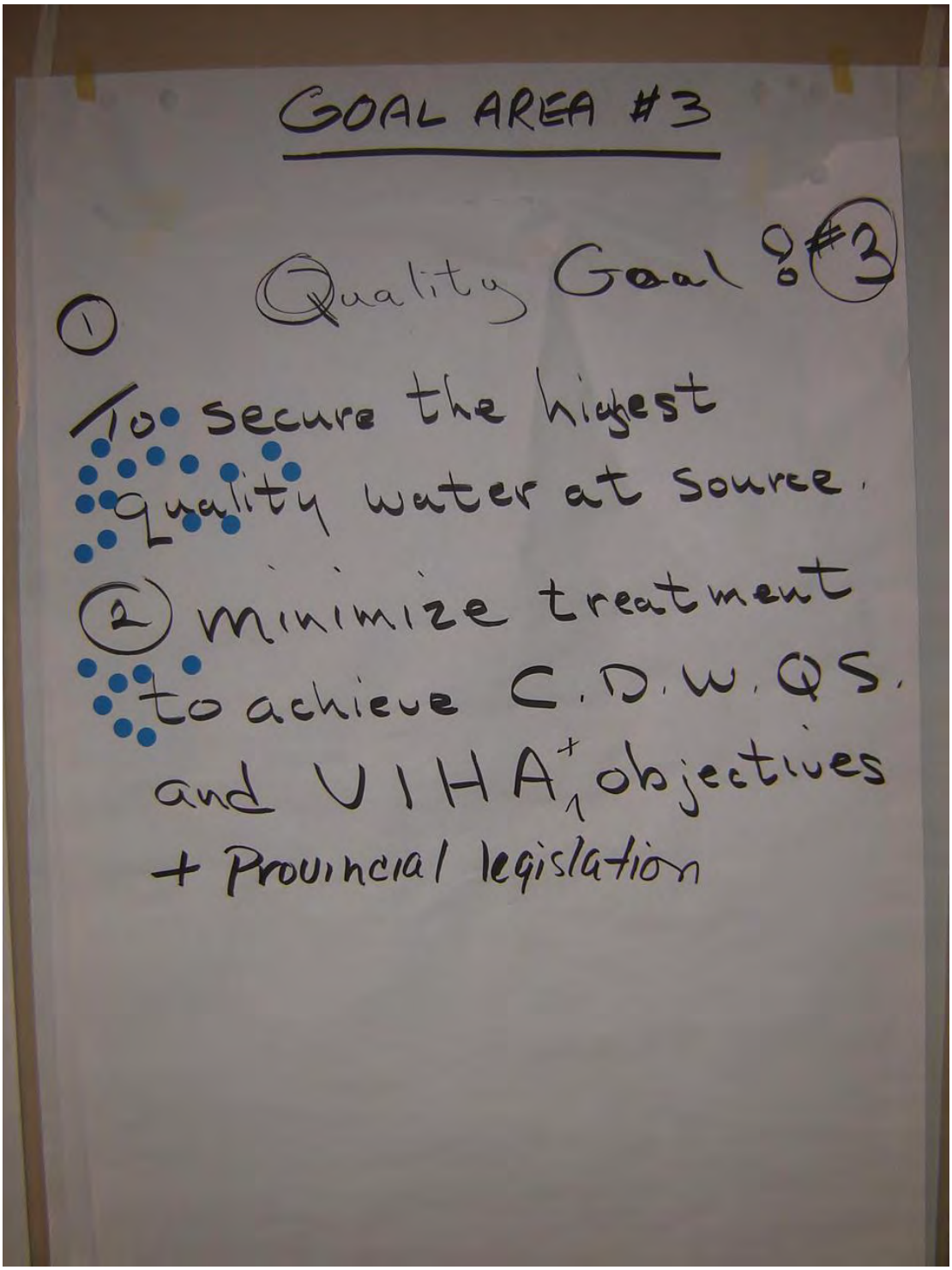

VISION
1
We will protect and
finite
manage our water
resources to ensure safe
and sustainable water
to all communities in the
CV and ~~evolving~~ evolve to
meet future ~~growth~~ needs
while protecting the
environment.

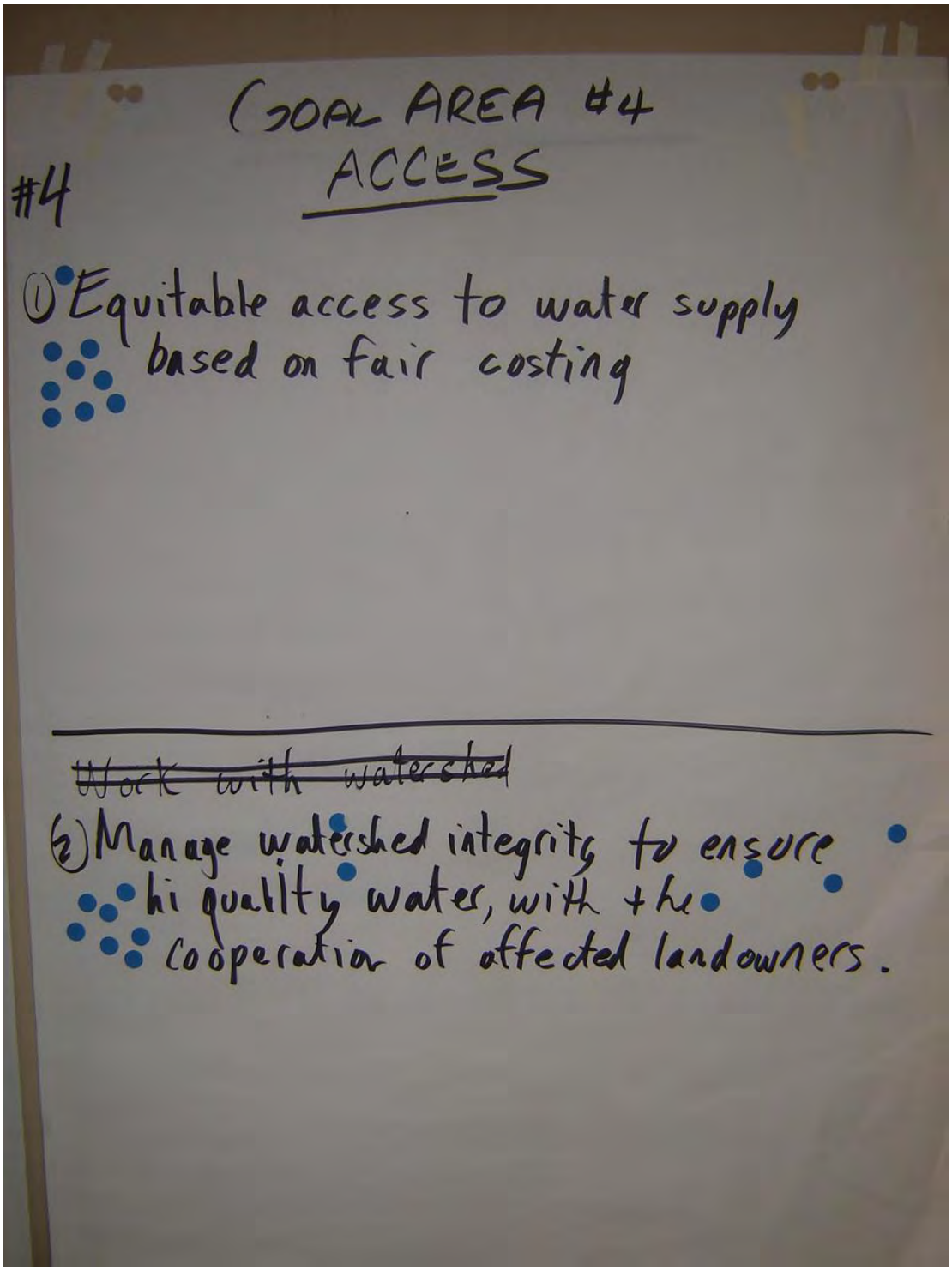

#6
Vision Statement
To ensure a safe, reliable, secure and affordable water supply for all users for the present and future generations.
To encourage and appreciate the value of a sustainable water supply in a changing environment.
Sustainability is not a problem to solve rather a future to create.
Rob Abbott
#6

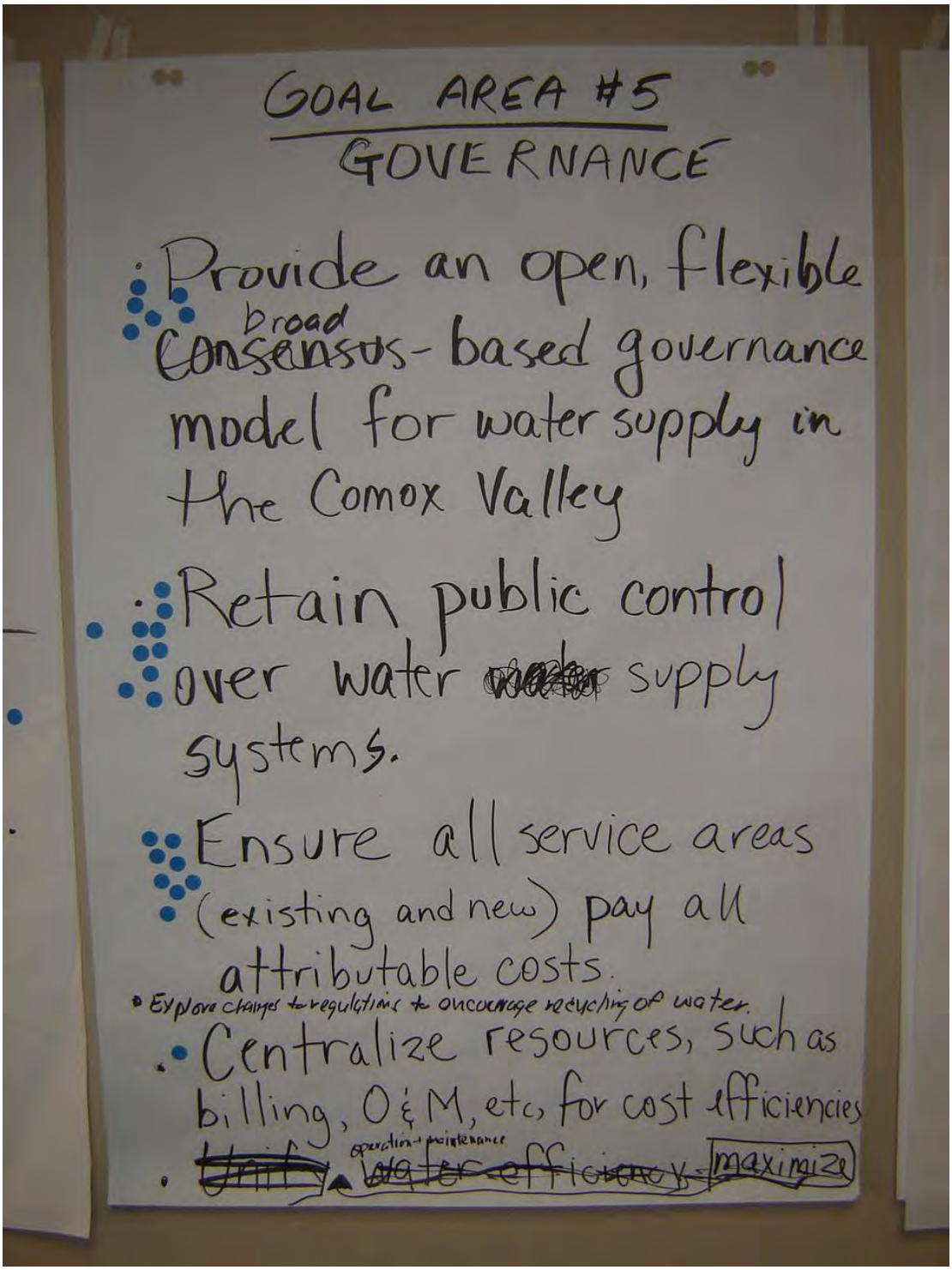
DRAFT GOALS

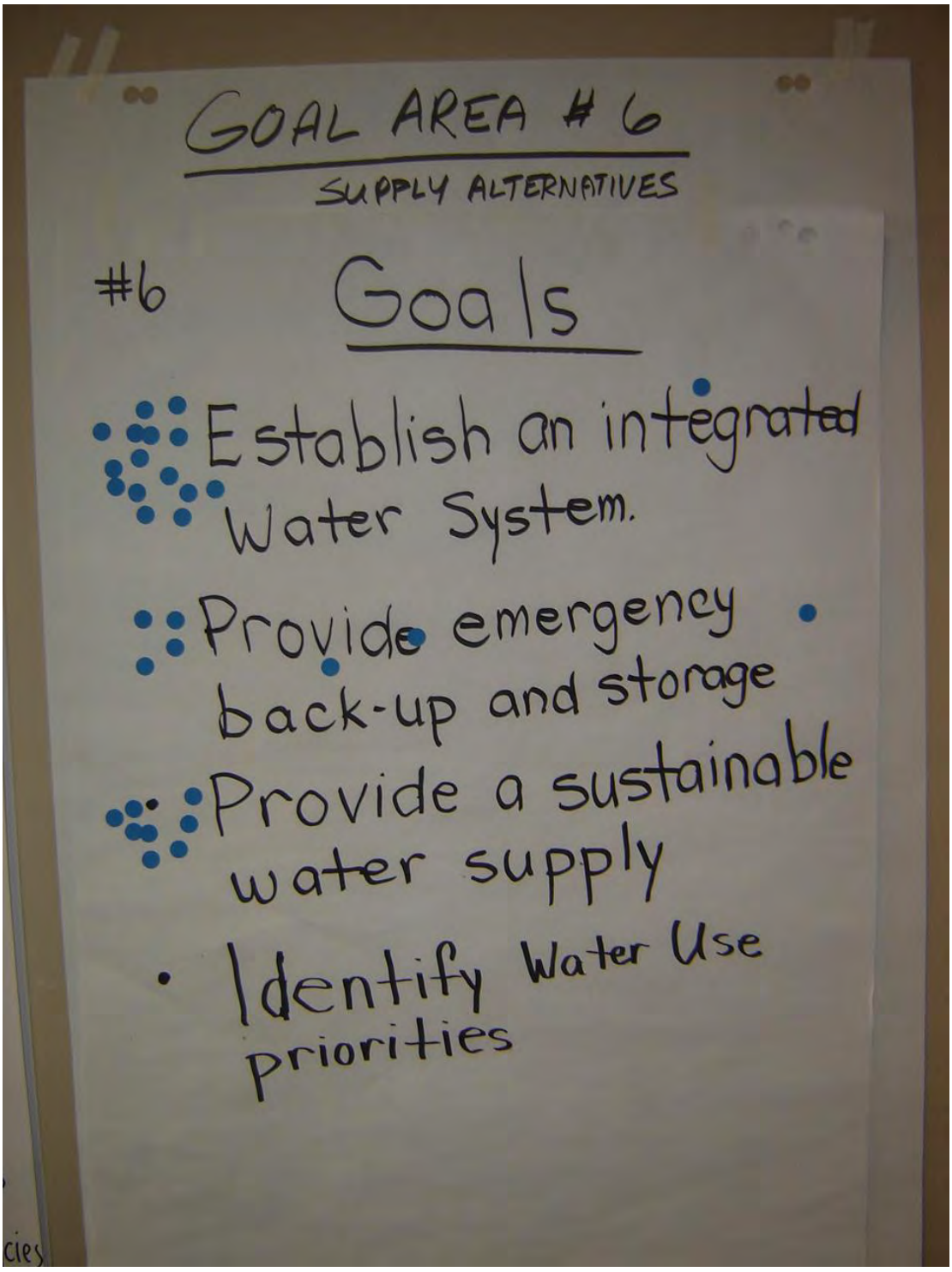

GOAL AREA #1
1
GOAL - Cost/Affordability
1. Meeting water quality expectations + requirements
2. Integrated Infrastx
3. Maximize H2O efficiencies

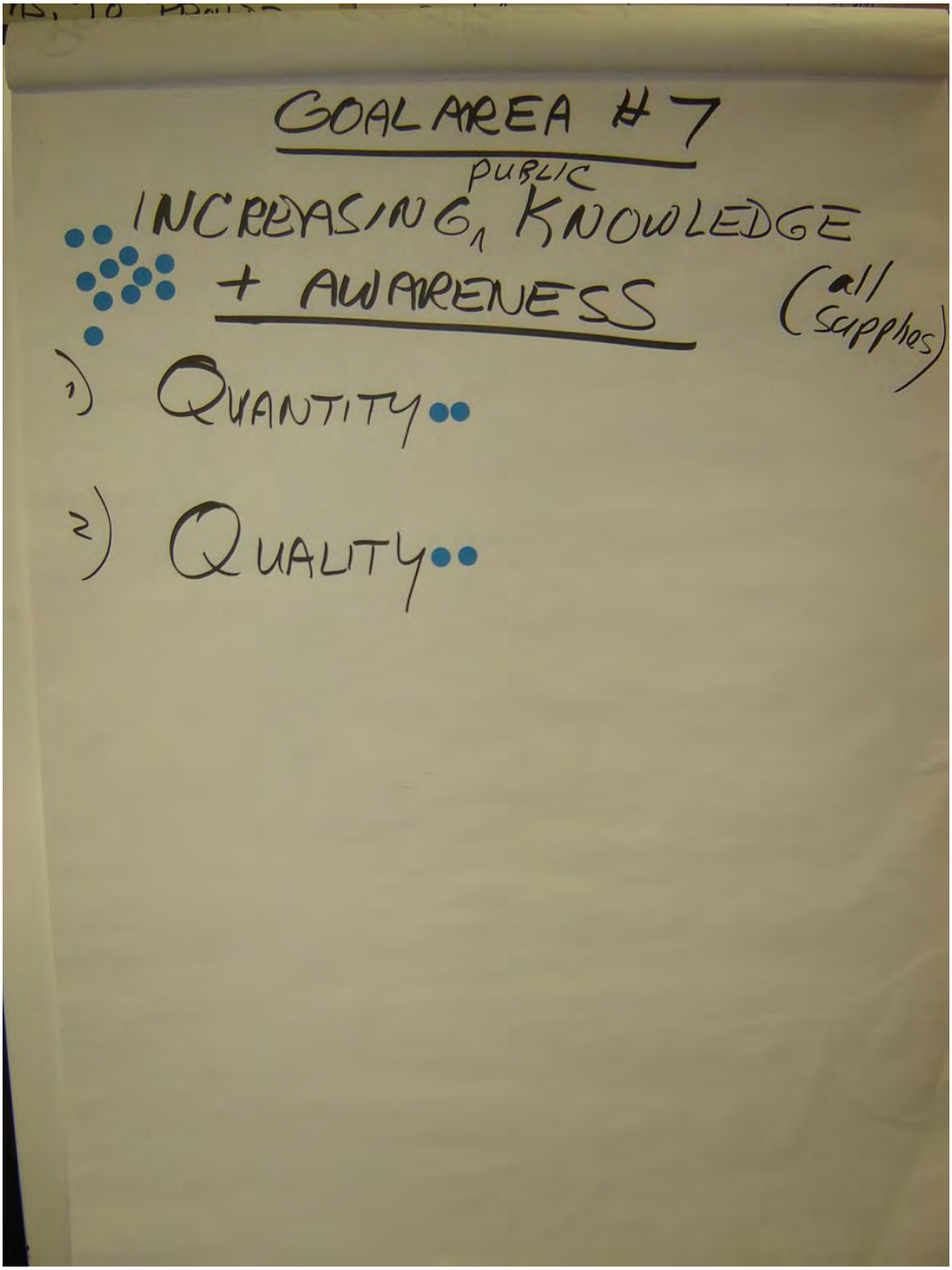

GOAL AREA #2
PROTECTION
(1) PROTECT SOURCE TO TAP WATER QUALITY
GOAL
(2) ENSURE THAT WATER EXTRACTION DOES NOT EXCEED ECOLOGICAL REQUIREMENTS.
GOAL
Environmental Protection

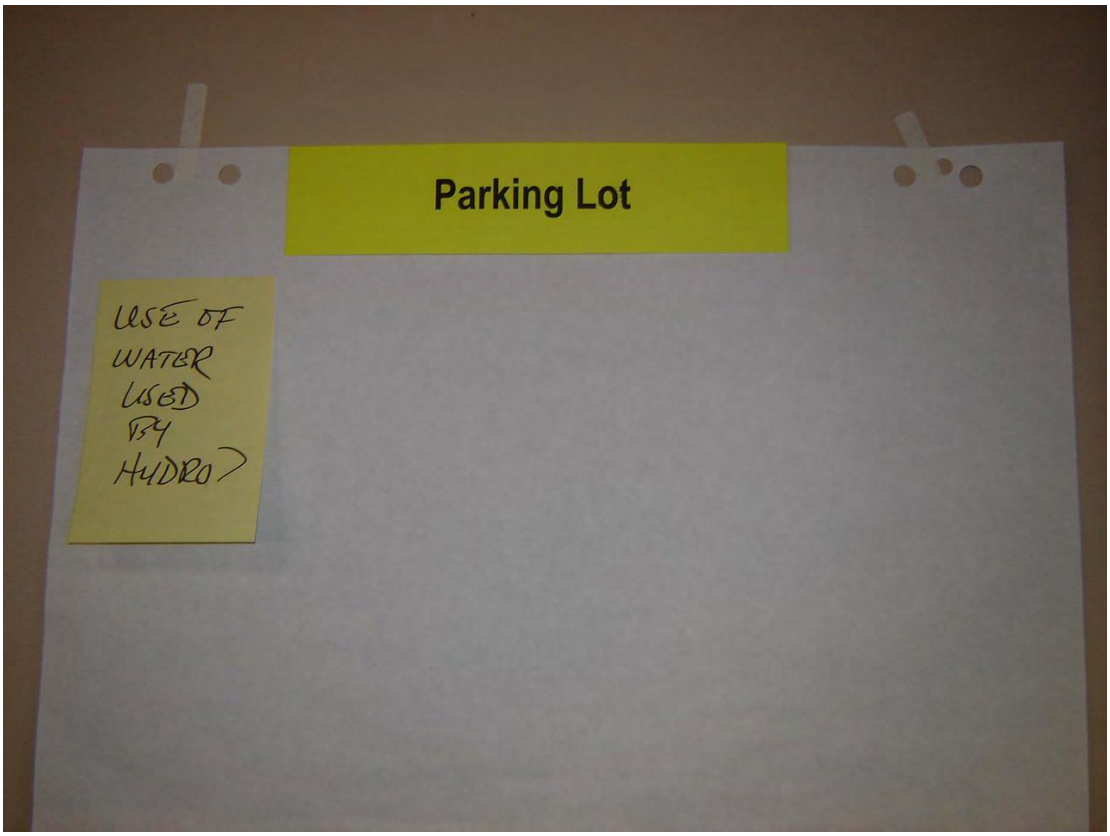

GOAL AREA #3
Quality Goal #3
1
To secure the highest quality water at source.
2
Minimize treatment to achieve C.D.W.Q.S. and VIHA objectives + Provincial legislation


GOAL AREA #4
ACCESS
#4
① Equitable access to water supply based on fair costing
~~Work with watershed~~
② Manage watershed integrity to ensure hi quality water, with the cooperation of affected landowners.


GOAL AREA #5
GOVERNANCE
Provide an open, flexible broad Consensus-based governance model for water supply in the Comox Valley
Retain public control over water supply systems.
Ensure all service areas (existing and new) pay all attributable costs.
Explore changes to regulations to encourage recycling of water.
Centralize resources, such as billing, O & M, etc, for cost efficiencies
operation + maintenance
maximize


GOAL AREA # 6
SUPPLY ALTERNATIVES
#6 Goals
Establish an integrated Water System.
Provide emergency back-up and storage
Provide a sustainable water supply
Identify Water Use priorities


GOAL AREA #7
INCREASING PUBLIC KNOWLEDGE + AWARENESS
(all SCUPPHOS)
1) QUANTITY
2) QUALITY


Parking Lot
USE OF WATER USED BY HYDRO?

Comox Valley REGIONAL DISTRICT

Agenda

Notice of meeting of the
COMOX VALLEY WATER SUPPLY COMMISSION

STRATEGIC PLANNING SESSION #2
Saturday, February 27, 2010

Comox Valley Regional District boardroom
Commencing at 10:00 am

TIME		
1000-1100	A.	Introductions/ Expectations/ Day outline
		1. Chair of the water commission opens meeting
		2. Project manager reviews process to date – provides technical briefing on key items/issues
		3. Facilitator reviews goals for the day and "rules of engagement"
1100-1200	B.	Vision
		1. Facilitator leads a review of vision statements developed at the first session and refines to a concise, succinct vision for the CVRD Water Supply
1230-1330	C.	Goals
		1. Project Manager provides an overview of the strategic plan structure
		2. Facilitator leads a review of goals developed at the first session and a concise list is developed
1400-1530	D.	Objectives
		1. Facilitator leads a review of the sample objectives and develops 3-5 objectives for each goal for water supply for the CVRD
1530-1600	E.	Next Steps
		1. Project Manager provides summary of next steps in preparing the draft strategy document
1600	F.	Termination

Comox Valley REGIONAL DISTRICT

Attendees

COMOX VALLEY WATER SUPPLY COMMISSION

STRATEGIC PLANNING SESSION #2
Saturday, February 27, 2010

Comox Valley Regional District boardroom
Commencing at 10:00 am

ORGANIZATION	NAME	CONFIRMED/ALTERNATE
WATER COMMISSION		
Chair – Town of Comox	Ken Grant	
Vice Chair – Area C	Edwin Grieve	
Village of Cumberland	Bronco Moncrief	
Area A	Bruce Joliffe	
Area B	Jim Gillis	
City of Courtenay	Greg Phelps	
City of Courtenay	Ronna-Rae Leonard	
City of Courtenay	Manno Theos	
Town of Comox	Tom Grant	
K'omoks First Nation	Ron Frank	
PROVINCE OF BC		
Ministry of Community Development	Glen Brown	
STEERING COMMITTEE		
Comox Valley Regional District	Debra Oakman	
City of Courtenay	Sandy Gray	
Town of Comox	Richard Kanigan	
Village of Cumberland	Anja Nurvo	
STAFF		
CVRD	Kevin Lorette	
CVRD	Carol Morfitt	
CVRD/Wedler Engineer	Andrew Gower	
Facilitator	Ed McKenzie	

CVRD RWSS

Vision Statements Suggested

- Provide an integrated long term, reliable water supply in a cost effective manner to the entire Comox Valley while protecting ecosystems and the environment

- To provide safe, secure and sustainable water supply for the Comox Valley that is equitable and affordable to all users.

- In the Comox Valley, we supply the highest quality water; for everyone, forever, while protecting our sources and our natural environment.

Photographic Summary

Strategic Planning Session #2

Comox Valley Regional District

Regional Water Supply Strategy

WEDLER ENGINEERING

Comox Valley REGIONAL DISTRICT

February 27, 2010

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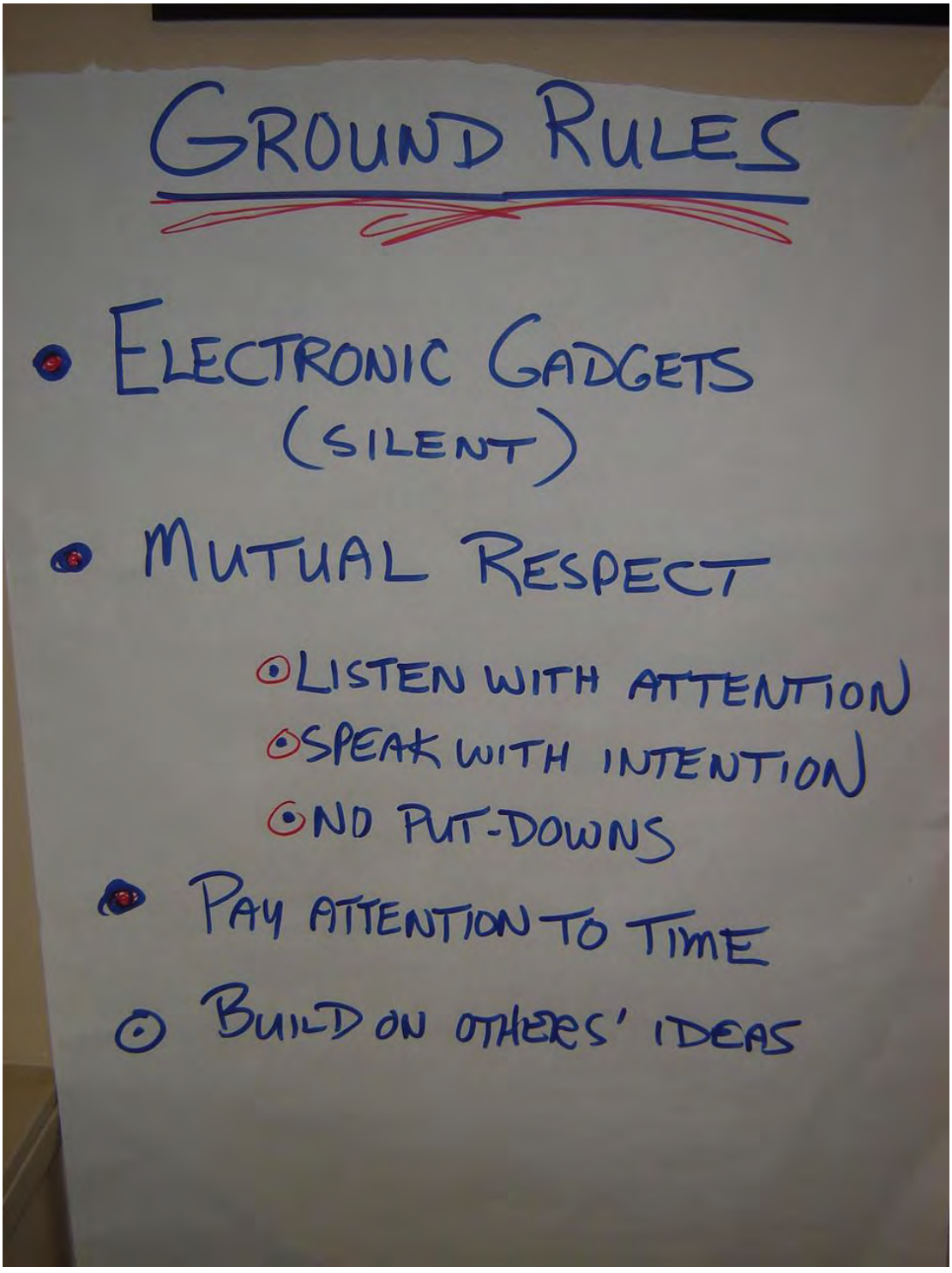
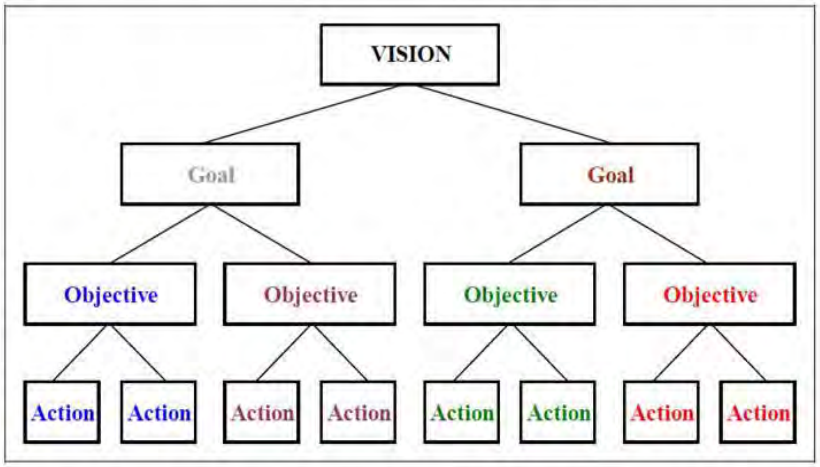

GROUND RULES
• ELECTRONIC GADGETS (SILENT)
• MUTUAL RESPECT
⊙LISTEN WITH ATTENTION
⊙SPEAK WITH INTENTION
⊙ND PUT-DOWNS
• PAY ATTENTION TO TIME
⊙ BUILD ON OTHERS' IDEAS

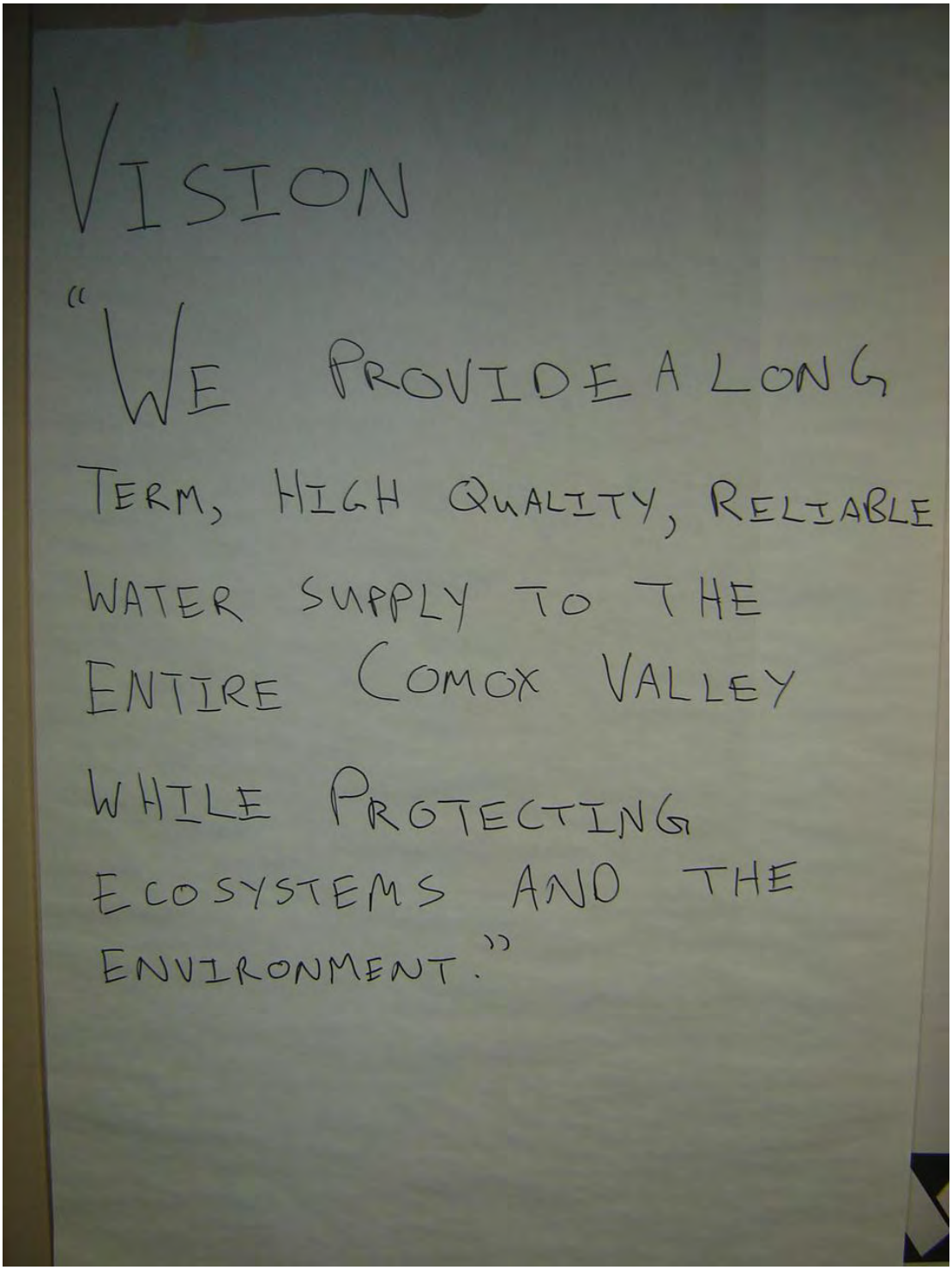
CVRD RWSS

Figure 4
Specific and measurable actions for water management are crucial to achieving the vision

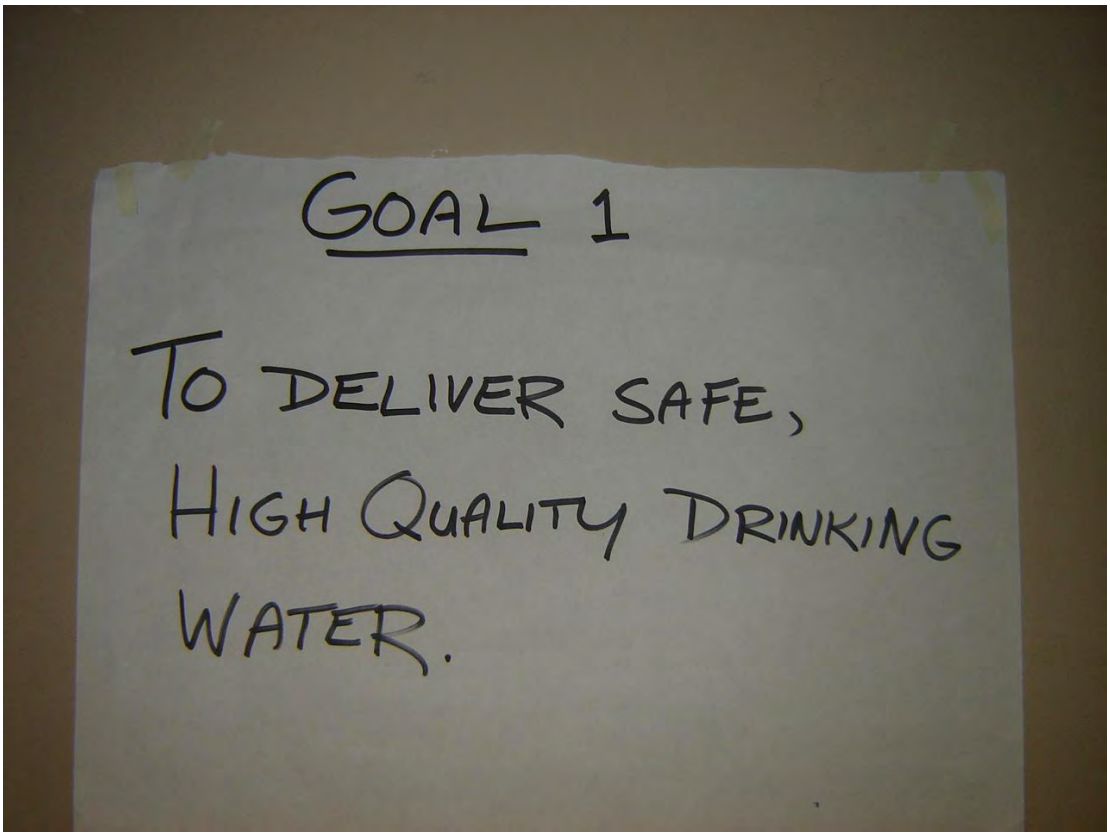


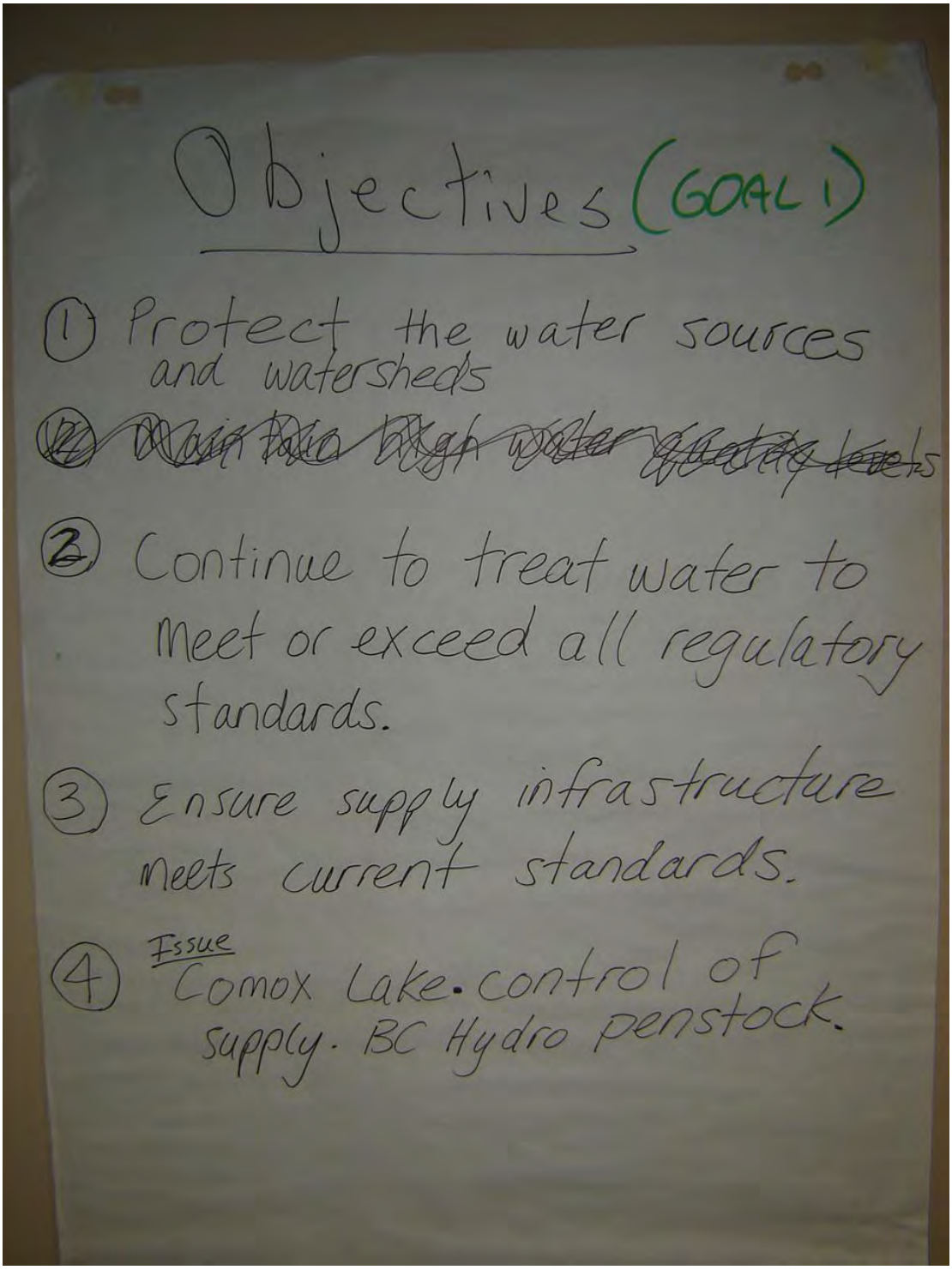
Source – Cowichan Valley RD Water Management Plan

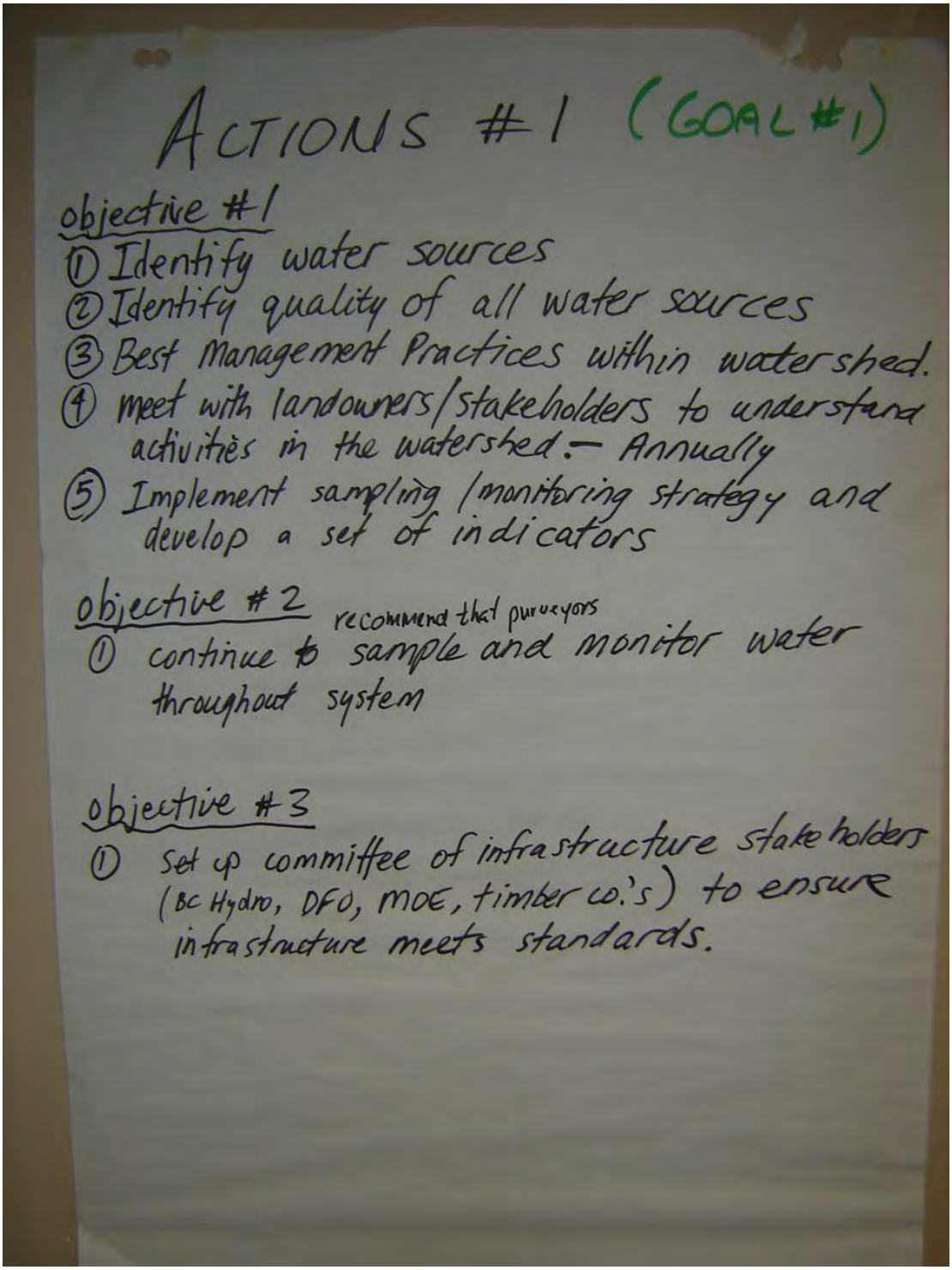
REVISED VISION STATEMENT



GOALS, OBJECTIVES AND ACTIONS




Objectives (GOAL 1)
1) Protect the water sources and watersheds
2) Continue to treat water to meet or exceed all regulatory standards.
3) Ensure supply infrastructure meets current standards.
4) Issue
Comox Lake. control of supply. BC Hydro penstock.



ACTIONS #1 (GOAL #1)

objective #1

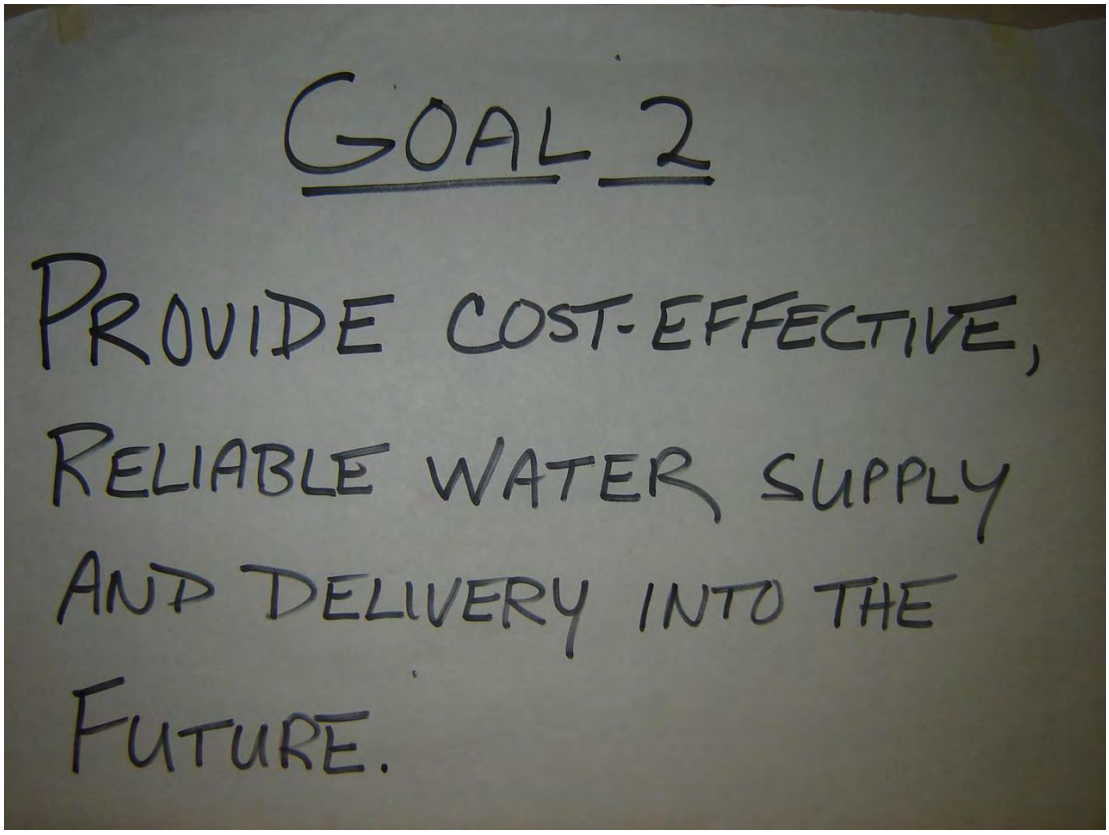
① Identify water sources
② Identify quality of all water sources
③ Best Management Practices within watershed.
④ meet with landowners/stakeholders to understand activities in the watershed - Annually
⑤ Implement sampling/monitoring strategy and develop a set of indicators

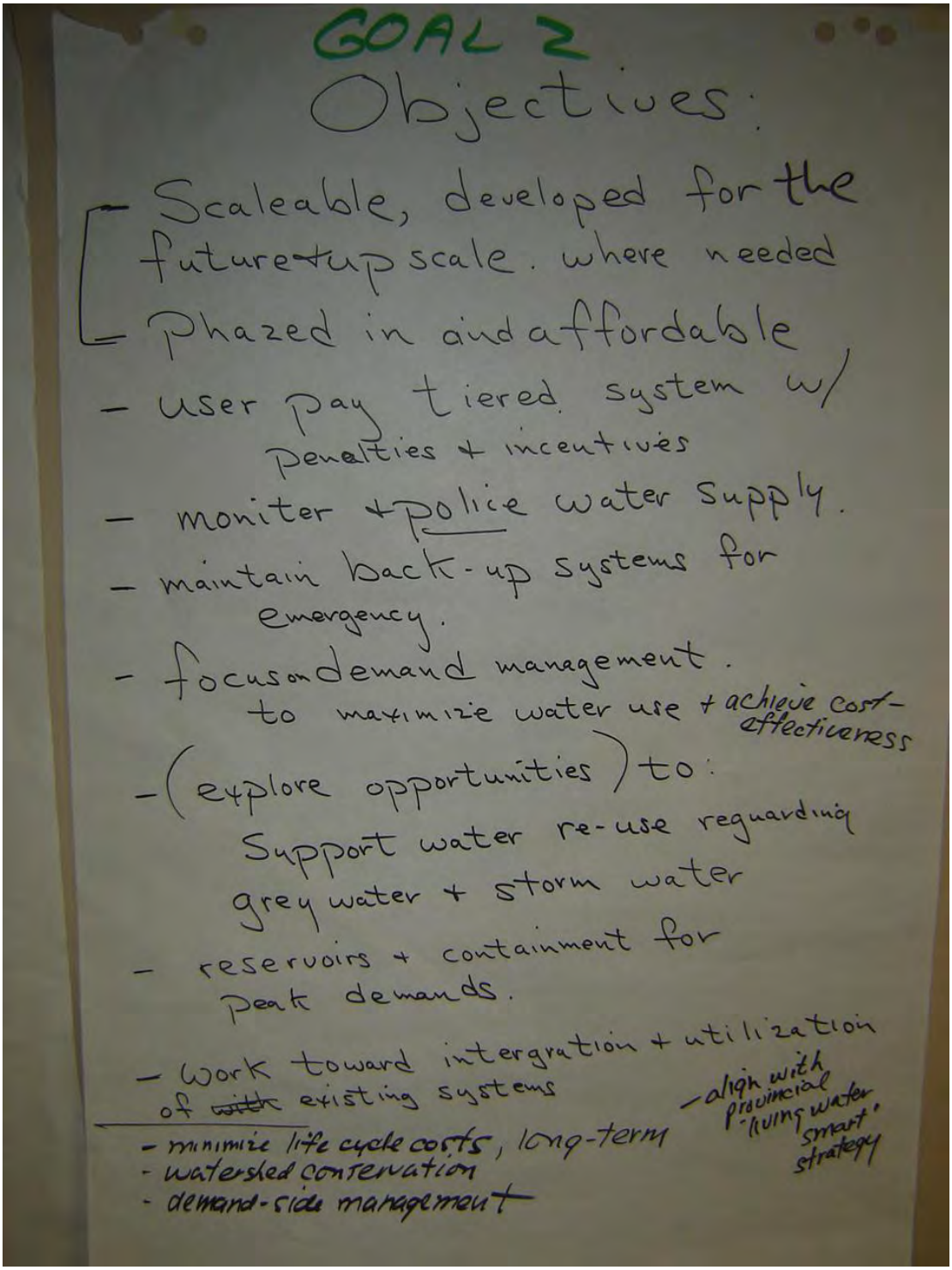
objective #2

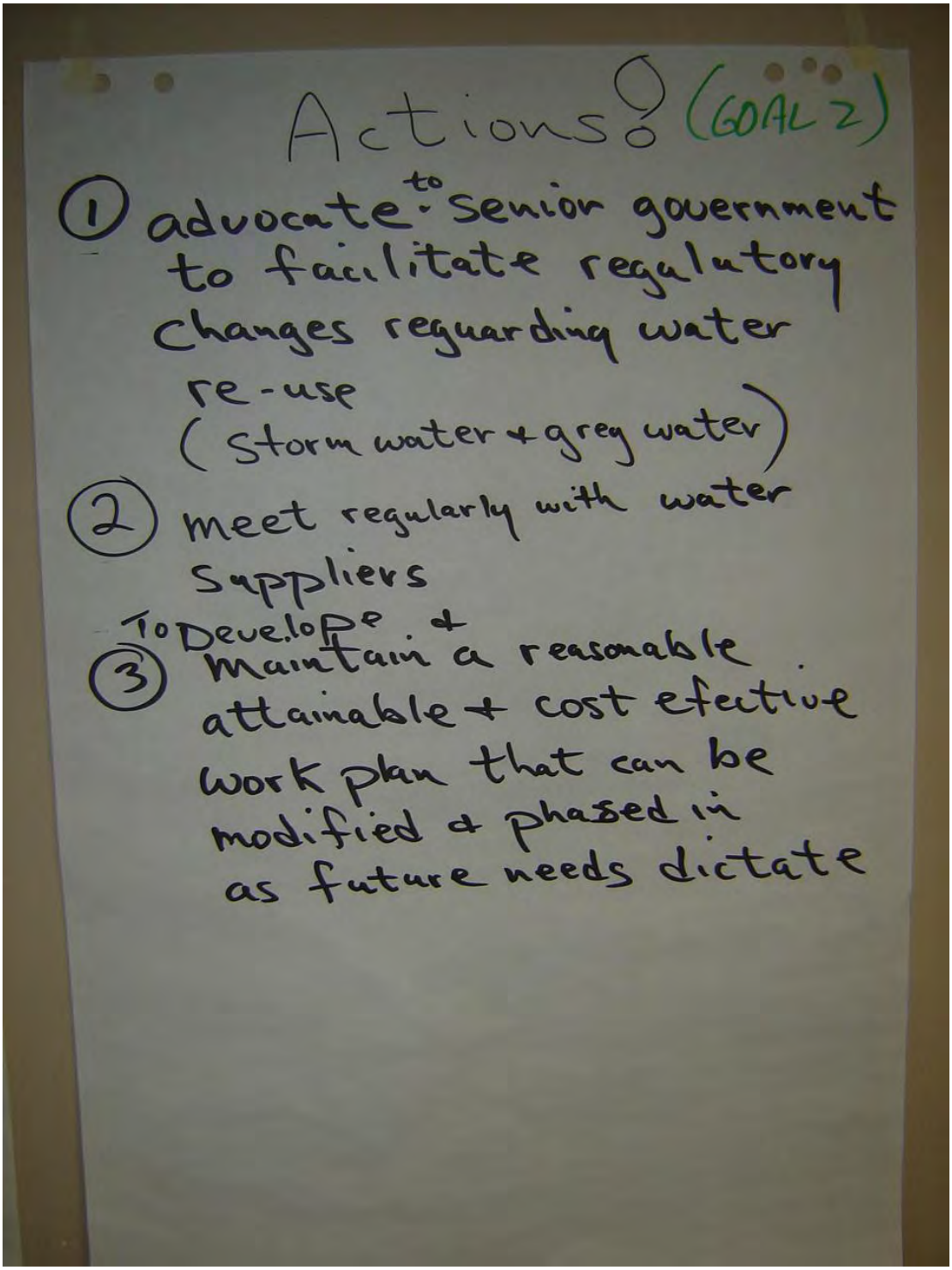
① recommend that purveyors continue to sample and monitor water throughout system

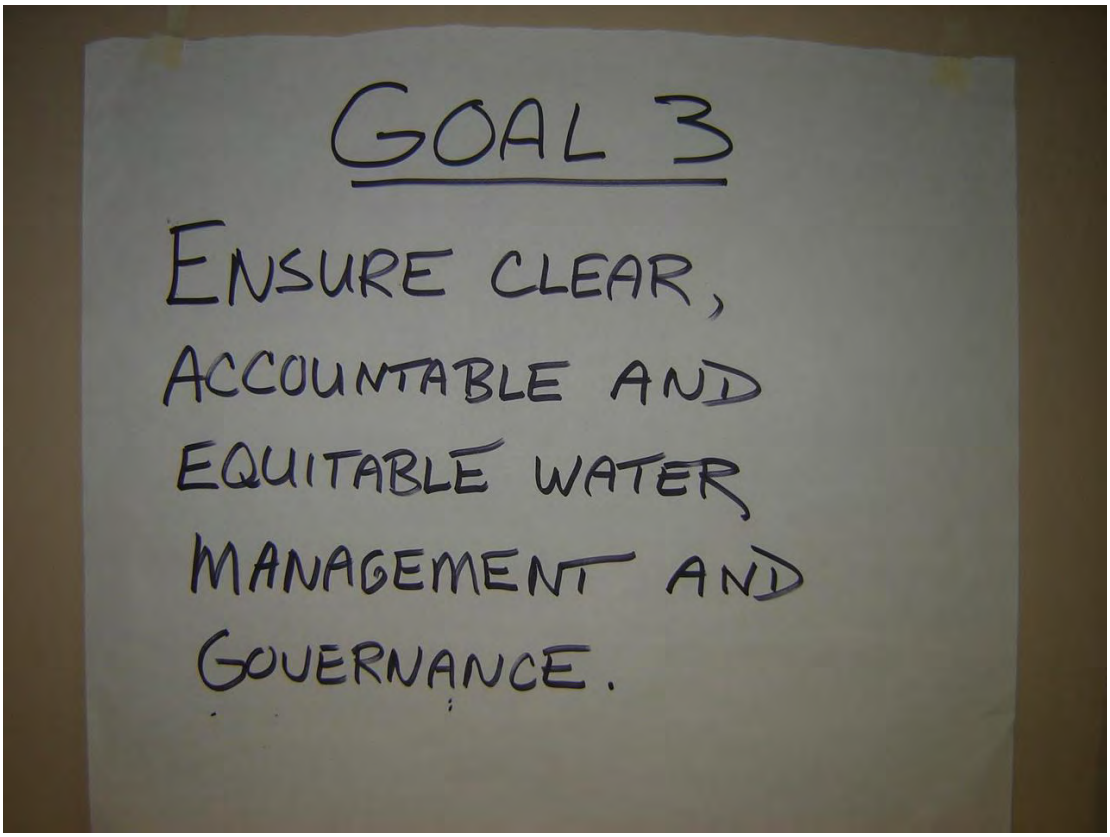
objective #3

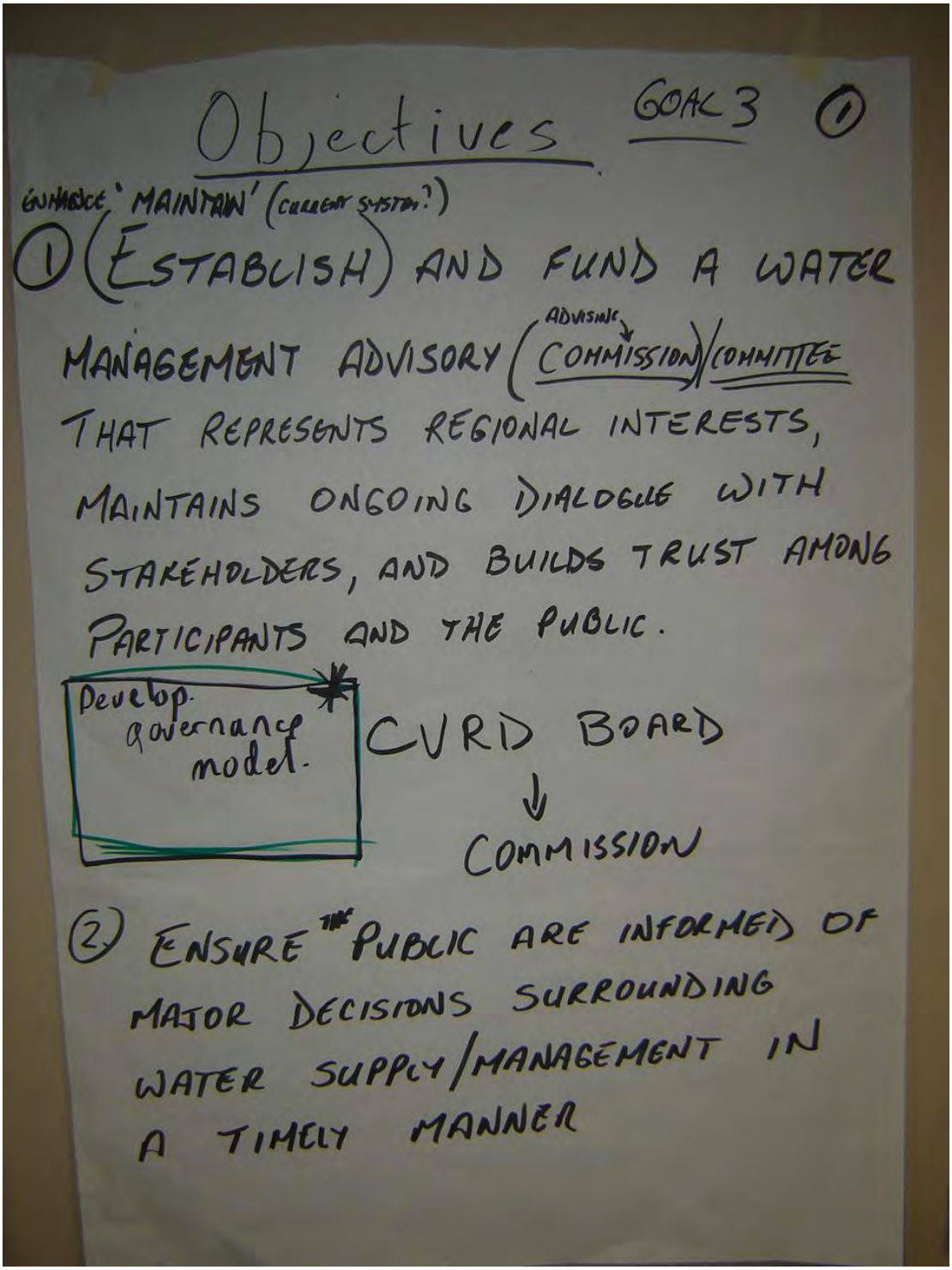
① Set up committee of infrastructure stakeholders (BC Hydro, DFO, MOE, timber co.'s) to ensure infrastructure meets standards.

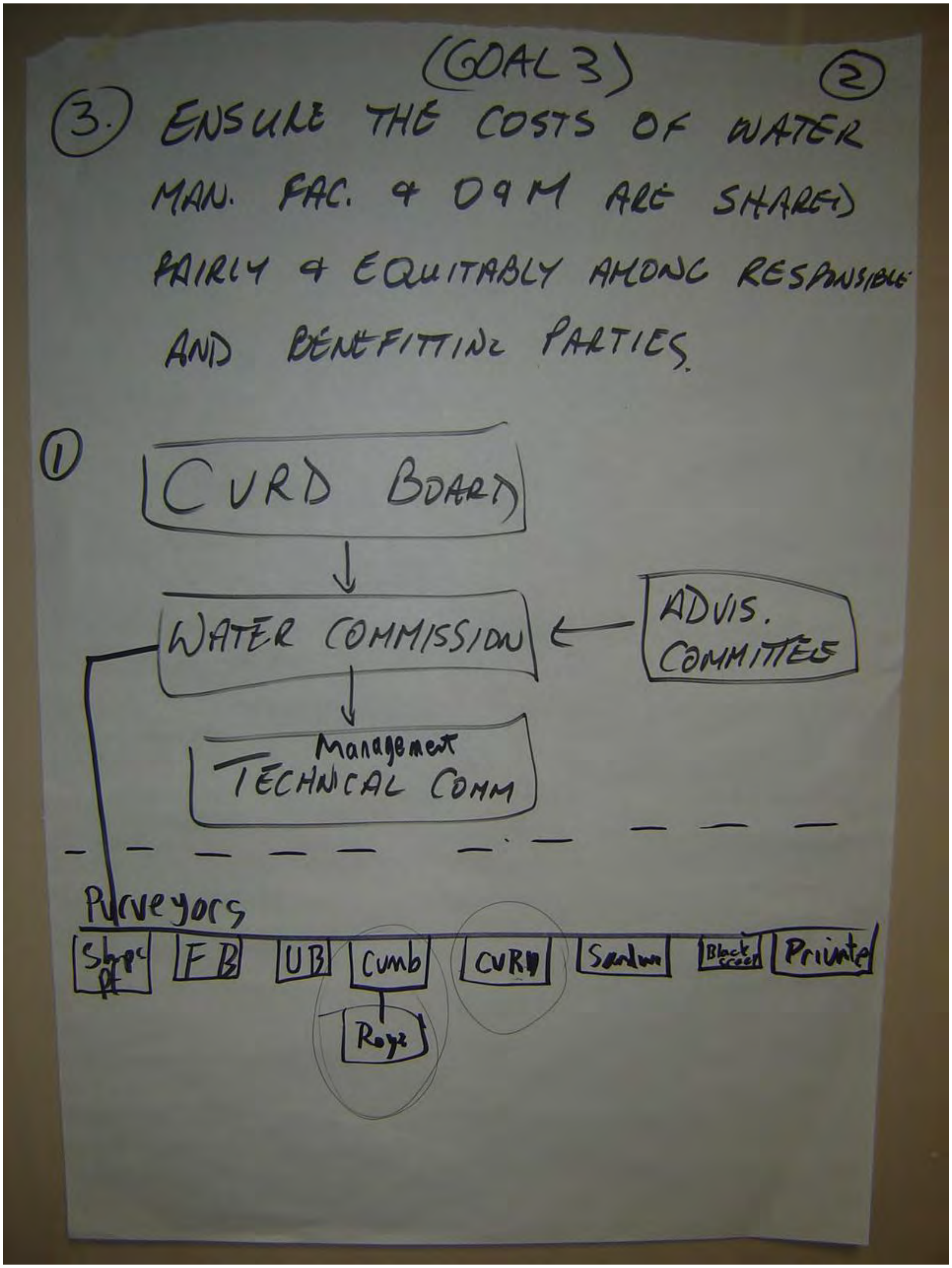

GOAL 2
PROVIDE COST-EFFECTIVE,
RELIABLE WATER SUPPLY
AND DELIVERY INTO THE
FUTURE.

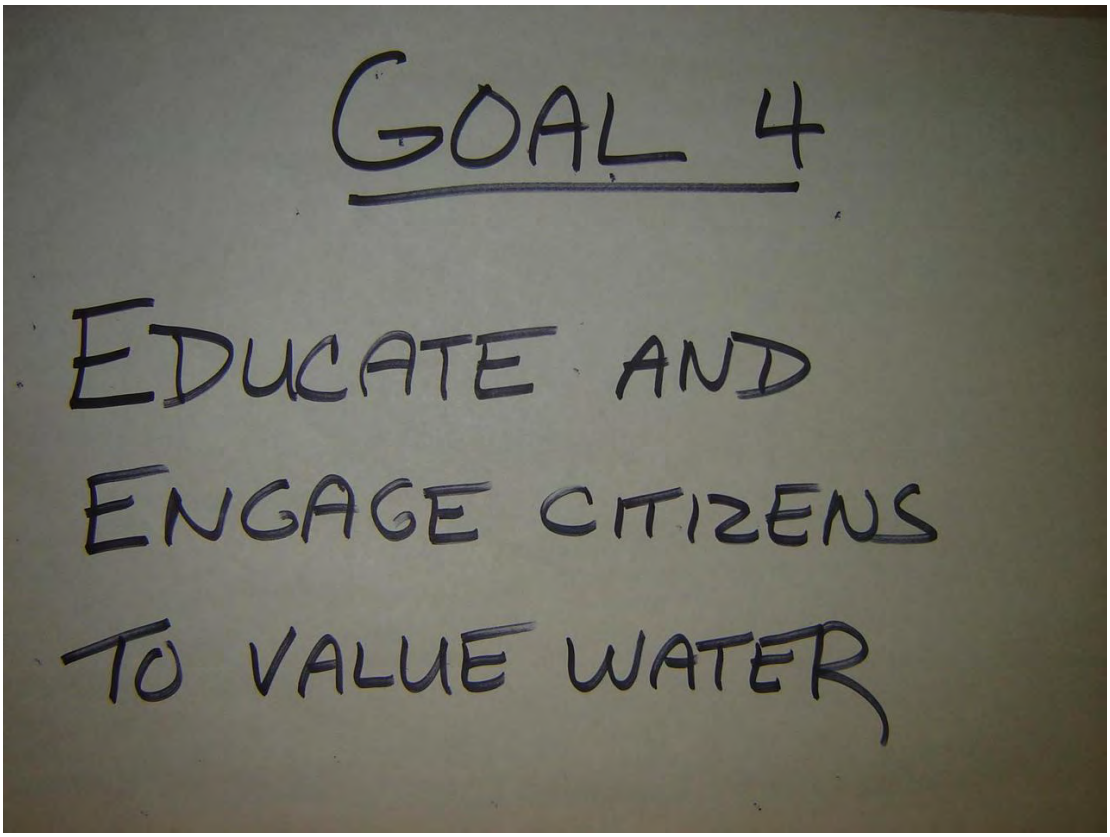

GOAL 2
Objectives:
- Scaleable, developed for the future+up scale. where needed
- phazed in and affordable
- user pay tiered system w/ penalties + incentives
- moniter + police water supply.
- maintain back-up systems for emergency.
- focus on demand management. to maximize water use + achieve cost-effectiveness
- (explore opportunities) to:
Support water re-use reguarding grey water + storm water
- reservoirs + containment for peak demands.
- work toward intergration + utilization of ~~with~~ existing systems
- minimize life cycle costs, long-term
- watershed conservation
- demand-side management
- align with provincial "living water smart" strategy

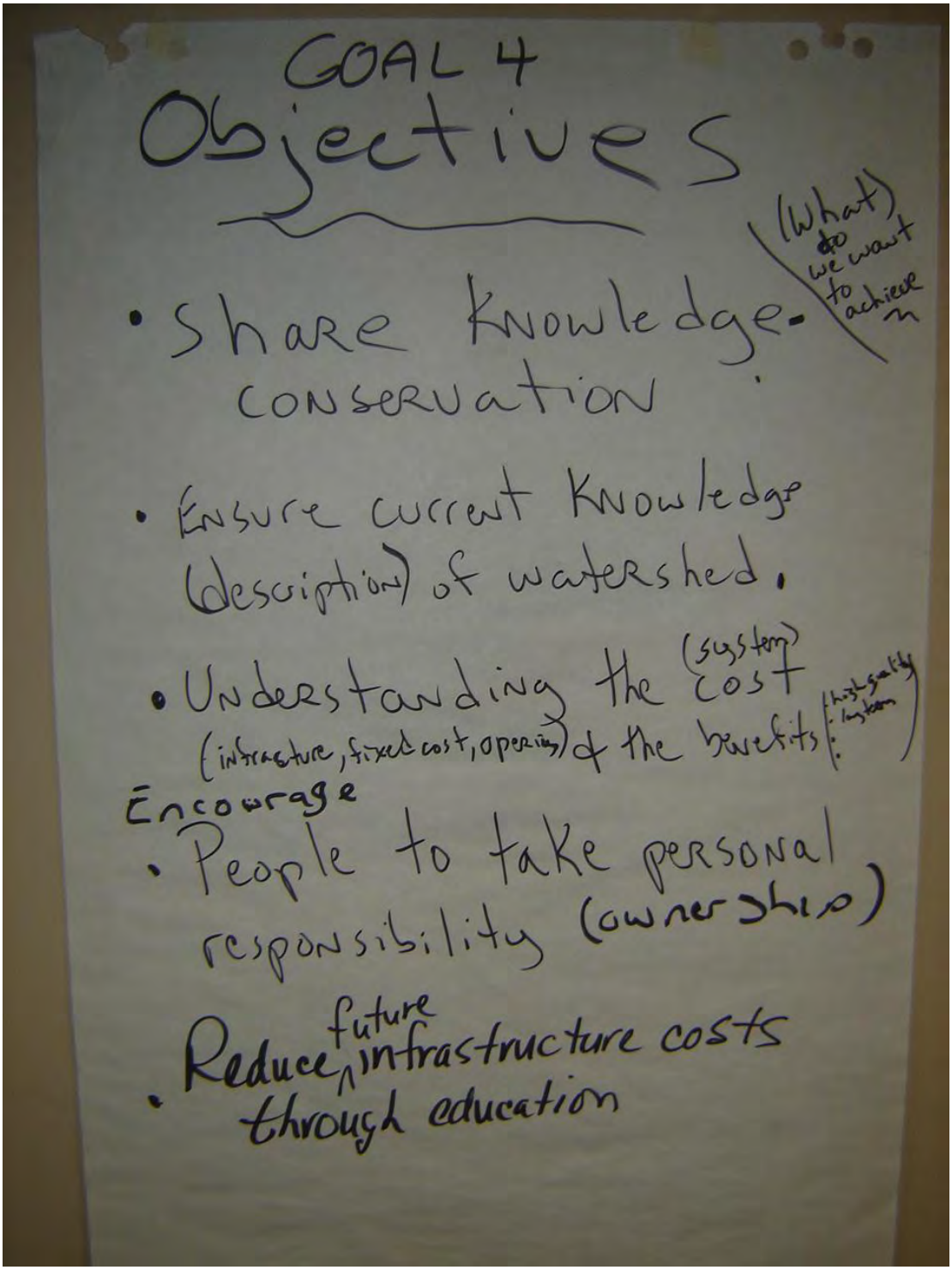

Actions? (GOAL 2)
1 advocate to senior government to facilitate regulatory changes reguarding water re-use (Storm water + greg water)
2 meet regularly with water Suppliers
3 To Develope & Maintain a reasonable attainable + cost efective work plan that can be modified & phased in as future needs dictate

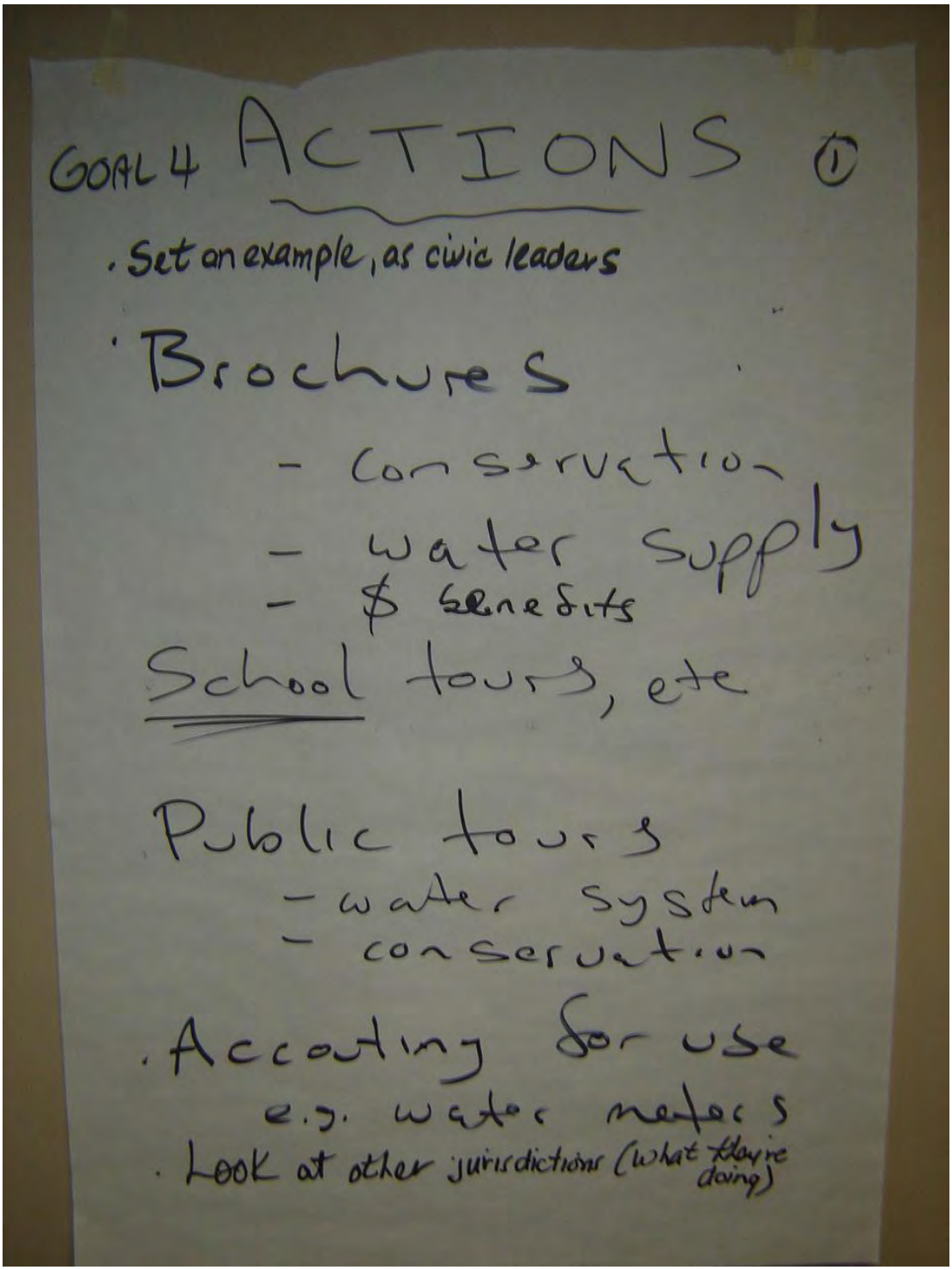

GOAL 3
ENSURE CLEAR,
ACCOUNTABLE AND
EQUITABLE WATER
MANAGEMENT AND
GOVERNANCE.

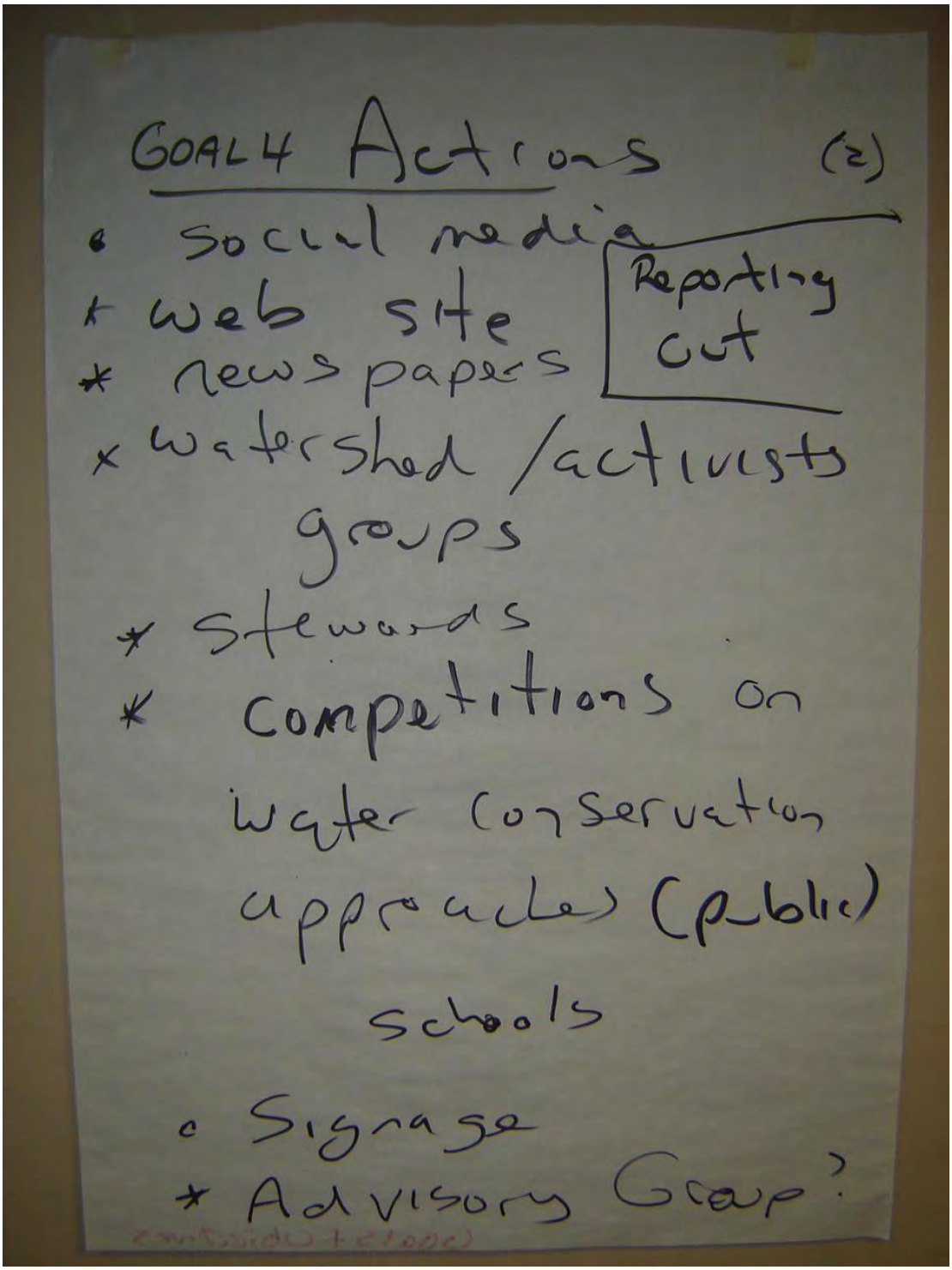

Objectives
GOAL 3 ①
ENHANCE 'MAINTAIN' (CURRENT SYSTEM?)
① (ESTABLISH) AND FUND A WATER MANAGEMENT ADVISORY (ADVISING COMMISSION/COMMITTEE THAT REPRESENTS REGIONAL INTERESTS, MAINTAINS ONGOING DIALOGUE WITH STAKEHOLDERS, AND BUILDS TRUST AMONG PARTICIPANTS AND THE PUBLIC.
Develop governance model.
CVRD BOARD
↓
COMMISSION
② ENSURE THE PUBLIC ARE INFORMED OF MAJOR DECISIONS SURROUNDING WATER SUPPLY/MANAGEMENT IN A TIMELY MANNER

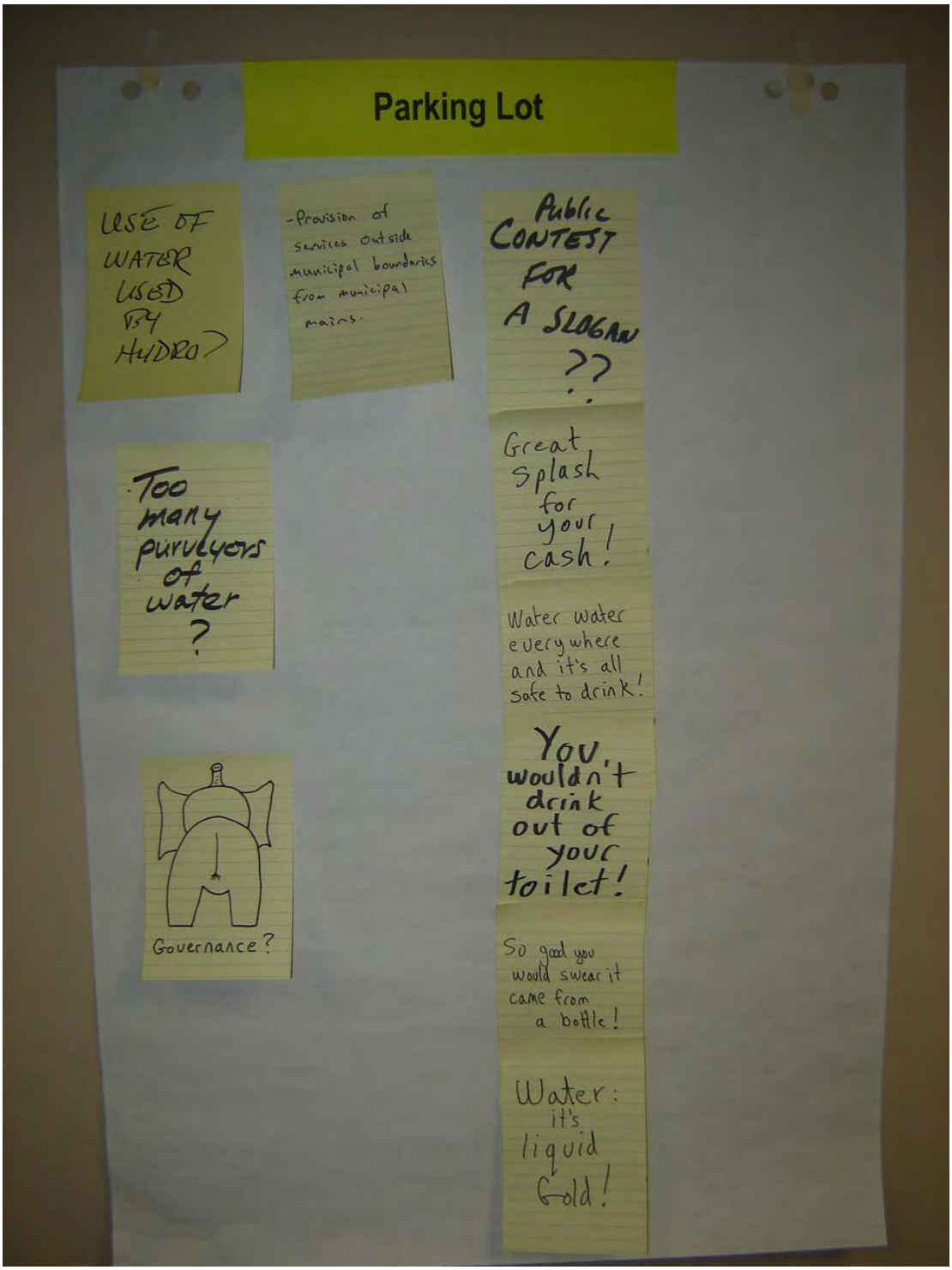

(GOAL 3)
2
3. ENSURE THE COSTS OF WATER
MAN. FAC. & O&M ARE SHARED
FAIRLY & EQUITABLY AMONG RESPONSIBLE
AND BENEFITTING PARTIES.
1
CURD BOARD
WATER COMMISSION
ADVIS. COMMITTEE
Management
TECHNICAL COMM
Purveyors
FB
UB
Cumb
Private


GOAL 4
EDUCATE AND
ENGAGE CITIZENS
TO VALUE WATER


GOAL 4
Objectives
(What) do we want to achieve
• Share knowledge. CONSERVATION
• Ensure current knowledge (description) of watershed.
• Understanding the (system) cost (infrastructure, fixed cost, operating) & the benefits (ecosystem, high quality)
Encourage
• People to take personal responsibility (ownership)
• Reduce future infrastructure costs through education


GOAL 4 ACTIONS ①
. Set an example, as civic leaders
· Brochures
- Conservation
- water supply
- $ benefits
School tours, etc
Public tours
- water system
- conservation
. Accounting for use
e.g. water meters
. Look at other jurisdictions (what they're doing)


GOAL 4 Actions (2)
* social media
* web site
* newspapers
Reporting out
* watershed / activists groups
* stewards
* competitions on water conservation approaches (public) schools
* Signage
* Advisory Group?


Parking Lot
USE OF WATER USED BY HYDRO?
-Provision of services outside municipal boundaries from municipal mains.
Public CONTEST FOR A SLOGAN ??
Great Splash for your cash!
Too many purveyors of water ?
Water water everywhere and it's all safe to drink!
You wouldn't drink out of your toilet!
Governance?
So good you would swear it came from a bottle!
Water: it's liquid Gold!

APPENDIX D: Technical Reports

Technical Memorandum #1 – Task 2.1.5 – Comox Lake Hydrology Climate Change Analysis
Technical Memorandum #2 - Task 2.1.5.A – Climate Change Impacts on Waterborne Infectious Diseases
Task 2.1.6 – Regional Alternative Water Supplies
Technical Memorandum #3 – Task 2.1.8 – Water Quality and Treatment – Comox Lake
Technical Memorandum #4 – Task 2.1.9 – Water User Profiles
Technical Memorandum #5 – Task 2.2.2 – Water Distribution Evaluation
Technical Memorandum #6 – Phase 4 – Regional Water Supply Options
Technical Memorandum #7 – Phase 4 – Consolidated Water Supply Options

These documents are available on the CVRD site as follows: ftp://ftp.comoxvalleyrd.ca/RegionalWater

These documents are also available in the CVRD engineering library. Please see staff for assistance.

APPENDIX E: Governance Discussion Paper and Meeting Records

WEDLER ENGINEERING

Paul G. Murrin, P. ENG. MBA
Kelly Kerr, P. ENG.
Andrew Gower, P. ENG. PE
Collin Johnson, P. ENG. PE
Sean Moore, ENG. L
Glen Darychuk, AScT.

April 9, 2010 File Ref: V09-0058/A

Comox Valley Regional District
600 Comox Road
Courtenay BC V9N 3P6

Attention: Kevin Lorette

Dear Sir:

Reference: CVRD – Regional Water Supply Strategy - Governance Discussion Paper

This paper is intended to provide sufficient information and options to facilitate a discussion and eventual decision on the form of governance that will be implemented for the CVRD's Regional Water Supply Strategy (RWSS). The following will be covered:

- Terminology, Assumptions and Strategic Direction Review
- Current Water Governance Structures within the CVRD
- Example Water Governance Structures from BC Municipalities
- Possible Governance Structures for the CVRD for Water Supply
- Governance options analysis
- Recommended Governance Option and Implementation Strategies

Terminology, Assumptions and Strategic Direction Review

Terminology used in this discussion paper:

- Integration – means one governance structure for supply and/or distribution of water. This is not the same as "interconnection". For example – an integrated supply system could have several water sources that run to distinct treatment plants that than feed separate distribution systems – however operations, funding and governance of any integrated portions of the water supply and distribution system would be combined.
- Distribution – all piping and equipment in a water system down stream of major reservoirs.
- Transmission – all piping, equipment and facilities between a water source and distribution system, including major reservoirs.
- Supply – the function of providing bulk water, either raw or treated. Fulfilling this function usually involves owning a water license and owning and operating a treatment facility.

Assumptions:

- Key government standards and policies will stay at the current levels of authority that enforce them. i.e.:
  - Treatment levels – Provincial (VIHA – 4-3-2-1) Drinking Water Protection Regulation and Federal – Canadian Drinking Water Standards
  - MOE standards stay with MOE – Water management and licensing

- Governance is only effective if the body governing a system is also given financial control of and full liability for that system (i.e. asset transfer).

Review of key strategic statements that should assist with decision making:

The following statement was agreed to represent the Vision for water supply in the Comox Valley:

We provide a long term, high quality, reliable water supply to the entire Comox Valley while protecting ecosystems and the environment.

To support the execution of this vision, the following goals were developed:

Goal 1 – Deliver safe high quality drinking water.

Goal 2 – Provide cost effective and reliable water supply and delivery into the future.

Goal 3 – Ensure clear, accountable, and equitable water management and governance.

Goal 4 – Educate and engage citizens to value water.

Governance can be easily defined as "how we make decisions". The "governance structure" that is needed could consist of the following:

- Elected officials organized in either a "committee" or "commission" with representation from all areas included in the "Water supply" for the Regional District.
- Definition of "functions" to be governed and roles and responsibilities of the governance organization.

The governance organization that supports and executes decision making could consist of some of the following elements:

- Staff dedicated to the operations and maintenance and capital planning for the water infrastructure required to supply potable water.
- Policies governing how development is funded with "development cost charges" designed to offset the impact of new developments on water infrastructure.
- Policies governing how water supply is charged between government entities and from government entities to users/customers. Policies around taxation for infrastructure improvements and maintenance.

<u>Current Water Governance Structures within the CVRD</u>

There are several existing governance structures in the CVRD that manage the supply, treatment and delivery of potable water. These include municipalities, improvement districts, private systems (private water utilities) and the regional district which would include the "sub-regional" system and "local service areas". In total, there are 14 water systems, or water purveyors that provide water to systems greater than 15 residences.

All water in British Columbia is owned by the Crown on behalf of the residents of the province. Authority to divert and use surface water is obtained by a licence or approval in accordance with the statutory requirements of the Ministry of Environment's Water Stewardship Division *Water Act* and the *Water Protection Act*.

British Columbia's Ministry of Healthy Living and Sport creates and is responsible for the *Drinking Water Protection Act* and Regulation. The *Drinking Water Protection Act* and regulations are administered and enforced by the Drinking Water Officer (DWO) within the Vancouver Island Health Authority (VIHA). The DWO is a part of a larger health protection team that has the power to determine the most appropriate way to address potential concerns in a particular water system. The Drinking Water Program is administered locally by DWO, Public Health Engineers and Medical Health Officers, who are responsible for direct service delivery in BC's Health Authorities. Drinking Water Officers provide surveillance and monitoring of drinking water systems which may affect the public's health.

The *Drinking Water Protection Act* focuses on four main areas:

- Drinking Water Supply
- Water System Assessments and Plans
- Drinking Water Protection
- Drinking Water Protection Plans

Water system owners are responsible for the provision of safe drinking water and notification of water quality problems.

Comox Valley Regional District

The Comox Valley Regional District Board has the responsibility and authority over water supply within it's geographic boundary for water supply that is owned by the CVRD (i.e. CVRD is the license holder). There are two governance organizations working as a part of the CVRD that have been delegated certain decision making power by the board as follows:

- Comox Valley Sub-Regional System

The existing Comox Valley water committee governs the supply of water from Comox Lake to the City of Courtenay, Town of Comox, the Vancouver Island portion of Baynes Sound- Denman/ Hornby Islands (Area 'A), Lazo North (Area 'B') and Puntledge-Black Creek (Area 'C'). The Comox Valley water committee determines all policy related to the administration and operation of the Comox Valley water system and has the exclusive authority to approve or refuse the connection of any municipality or local service area under the *Local Government Act*, to the water system. However, this committee is strictly operating at the "supply" level, with governance over distribution aspects provided by either Courtenay or Comox for their respective distribution systems and the CVRD for the various Water Local Service Areas that are connected to the Comox Lake Source.

- Black Creek/Oyster Bay

This system, serving 913 connections, is run under the purview of the CVRD Board. The "Black Creek/Oyster Bay Services Committee" provides governance within certain delegated parameters with two regional directors, one from the CSRD and one from the CVRD being the committee members.

Water for Royston is also governed by the Regional District with the Supply of water provided by the Village of Cumberland. Distribution is now a CVRD service and at the moment, governance is provided by the Board only.

Village of Cumberland Municipal System

The Village of Cumberland has water licenses and operating permits for its own water system providing water to all residents and businesses. Decision on water supply, treatment and distribution are made directly by the Village Council. Some decisions are discussed at the Committee of the Whole where appropriate. No separate "water committee" exists.

Improvement Districts

There are four improvement districts that provide water within the boundaries of the CVRD. These are:

Name	No. of Connections	Water Source
Union Bay I.D.	640	Langley Lake is water source
Fanny Bay I.D.	82	Cowie Creek
Sandwick I.D.	706	Wells and Tsolum River
Ships Point I.D.	247	Well source

Each I.D. has a board of trustees who are elected by the rate payers. All decisions rest with the board. Operating licenses for the systems are granted under the Drinking Water Protection Act and Regulation and governed by VIHA. Extraction (quantity) is governed by MOE under the Water Act.

Private Systems

The following significant private systems, or private water utilities have been reviewed in preparation of the RWSS. It is important to note that other private systems exist, and there are also many areas where homeowners have private wells, however these were not examined in detail in preparation of the strategy.

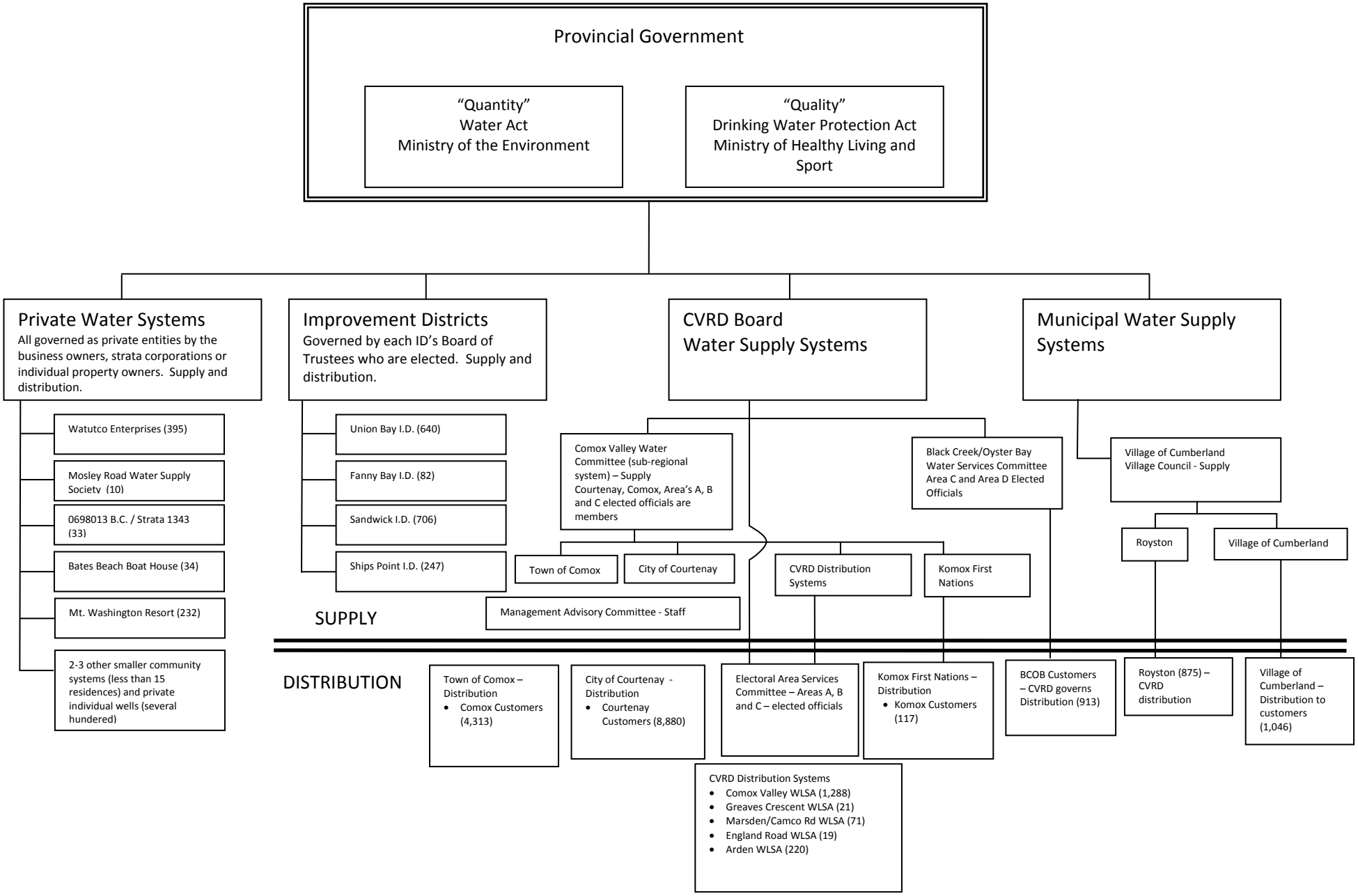
- Watutco Enterprises
- Mosley Road Water Supply Society
- 0698013 B.C. / Strata 1343
- Bates Beach Boat House
- Mount Washington Resort

These private systems operate under the Utilities Act.

Current Governance Structure for Water in the Comox Valley Regional District:

The figure on the next page illustrates the current model of governance within the CVRD.

Current Water Governance Structure



Example Governance Structures in BC

Capital Regional District

The Capital Regional District, centred around the City of Victoria, has water supplied by one source with various transmission and distribution systems serving several municipalities and regional areas. Governance of supply and transmission is provided by the Water Commission made up of elected officials. All commissioners are appointed by the CRD Board. There are also several other governance bodies involved with water supply and distribution including the "Juan de Fuca Water Distribution Committee" and "Saanich Peninsula Water Commission".

Metro Vancouver

Metro Vancouver (formerly the Greater Vancouver Regional District) has three major sources for potable water and provides treated water at bulk rates to member municipalities. Governance is provided by a Water Committee made up elected officials from the member municipalities. The member communities do all distribution under their own governance systems.

Regional District of Nanaimo

Within the Regional District of Nanaimo (RDN) are seven water services which are all managed by the RDN. They are all stand-alone systems which rely on a mix of sources, primarily ground water. Some were originally ID's, and some private developments initially governed by user committees and strata's prior to being incorpirated into the RDN. All water systems and supply is governed directly by the Board with no select committee of commission. The water services department runs all of the systems in close coordination with residents. The City of Nanaimo has its own source, treatment, transmission, distribution and governance structure separate from the RDN.

The RDN is also a partner in the Arrowsmith Water Service, which provides water to the Nanoose peninsula in the summer only. The Arrowsmith Water Service, which uses the Englishman River as its source, provides water to the following partners:

- City of Parksville - 63.9%
- Regional District of Nanaimo - 22.4%
- Town of Qualicum Beach - 13.7%

Percentages denote operating cost splits for the partnership.

Possible Governance Structures

The following lays out some thoughts and details of three conceptual governance structures. It should be noted that the first two options, either "status quo" or "full integration" are offered to define the bounds of discussion on this matter. The third option is of primary interest as it is in line with neighbouring municipalities and regions (i.e. proven effective) and seems to be the logical progression of current trends. Implementation of this option will need further discussion.

Some issues and variables with respect to governance that will require consideration include:

- Task (for the Commission) is to define: Governance of what?
- Geography vs function: system based governance vs regional function based.
- Single jurisdiction vs multiple jurisdictions
- Operational considerations: economies via integration of function vs economies via contractual relationships

- Governance structures such as committees, etc, are subsidiary to the governing bodies.....variables include:
    - Board, as governing body, decides on whether or not to have subsidiary bodies
    - Purpose / role / status
    - Membership
    - Advisory (to the RD Board) vs decision making
    - If decision making, scope as delegated by the Board

The "options" are described below:

- "Status Quo" – individual systems/entities remained governed as is.
    - Advantages:
        - No implementation costs
        - Governance structures already in place
    - Disadvantages
        - No coherent structure to support the current RWSS
        - Loss of potential economies of scale when systems combined/integrated (not necessarily connected) as operational knowledge and expertise would remain fragmented
        - Obtaining senior authority level funding for infrastructure improvement will be complicated as coordination won't be ongoing.
        - Extensions to new users will remain challenging without extension of municipal or Improvement District or LSA boundaries.

- "Full Integration" – all activities and service supply integrated into one organization – all decisions/governance made at the Regional level – RD supplies all water and maintains all distribution systems. This would be similar to how natural gas, electricity, cable and power are delivered – the infrastructure is in a municipality's boundaries and ROW's, but the municipality doesn't maintain it or charge money for it.
    - Advantages:
        - Economies of scale with one management/operations entity running all systems.
        - Coordination and integration of operations and maintenance funding and planning District wide.
        - Application for senior authority level funding greatly simplified as one entity would be managing, building and maintaining all water infrastructure.
    - Disadvantages
        - Major asset transfers required from all existing systems to some central entity.
        - Major staffing/employee issues with employee transfers and potential layoffs.
        - Determination of voting structure could be problematic
        - Municipalities and other small government organizations would lose flexibility and local control of water distribution.

- "Supply Integration" – overall supply function/activity integrated with all expertise and management for supply and treatment services centralized. This would be similar to the GVRD/Metro Vancouver system or the Capitol Regional District. Maintaining more than one supply would not be a major problem (as proven by the City of Chilliwack who maintain several supplies). All supply and treatment of water would be under one structure and organization from an operational standpoint.
    - Advantages:
        - Economies of scale with one management/operations entity running all supply systems.
        - Coordination and integration of operations and maintenance funding and planning District wide for supply and treatment.
        - Application for senior authority level funding greatly simplified as one entity would be managing, building and maintaining all water supply infrastructure – this to a lesser extent would have a large impact on distribution infrastructure.
        - Allows existing entities to maintain control over distribution and distribution assets which in turn helps with the control of growth.
        - Would enhance safety and operational standards of supply and treatment district wide.
        - Minimizes asset transfer while still centralizing key operations.
        - Would ease the implementation of development cost charges – i.e. all properties would have a similar two tiered DCC with an upper level for supply/treatment/transmission and a lower level for distribution (per the current model in Courtenay and Comox).
    - Disadvantages
        - Still requires interaction with several governance entities at the distribution level.
        - Some loss of potential economies of scale when systems combined/integrated (not necessarily connected).
        - Would require re-licensing and transfer of assets and infrastructure which may not come with a funding transfer.

Governance options analysis

The table below illustrates the three proposed governance options, and how they either support or do not support the goals and objectives developed for the RWSS.

Goals and Objectives	Option 1 – Status Quo	Option 2 – Full Integration	Option 3 – Supply integration
Deliver safe high quality drinking water.	Not optimal as the levels of expertise, funding and infrastructure management vary greatly across all water systems.	As one entity would be controlling and responsible for all infrastructure from supply through transmission to distribution to the tap.	Would be very comparable to the effectiveness of Option 2
Provide cost effective and reliable water supply and delivery into the future.	Each entity left to make decision independently. No economies of scale across the region. Provincial funding for large scale infrastructure would be difficult to obtain without on-going discussions with all entities which could become unwieldy.	This might actually be more challenging than either remaining as is or having only supply responsibility centralized. There is a tendency for larger organizations to lose efficiencies due to bureaucracy and over-administration.	This option may well provide the ideal balance of a centralized component with de-centralized distribution. Specific expertise (treatment/supply versus distribution) would be in specific organizations. Distribution, which has more impact on a municipalities day to day affairs, would be controlled by each municipality, thus flexibility and efficiency would be maintained.
Ensure clear, accountable, and equitable water management and governance.	More than likely not achievable. A high level "commission" type organization could be formed, however without asset control, compliance by most entities would be voluntary.	While this option would provide the most clear governance in theory, in practice public perception could be otherwise.	Again – the competing interest of various entities with critical operations (treatment and transmission) controlled by a central entity could provide the highest level of clarity for governance.
Educate and engage citizens to value water.	Again – coordination of any education campaign between various entities would be challenging.	Both of these options offer advantages over staying with the status quo governance model. A comparison of the two from the education standpoint would be difficult, however the perception of a smaller centralized entity with decentralized control of distribution would be more beneficial.	

Recommended Governance Option and Implementation Strategies

Option 3 – integration of supply and treatment – appears to be the most favourable. This is especially true considering the proposed least cost options for regional water supply. Any combination of the suggested options would lead to having multiple jurisdictions/entities fed from single water sources (although no option or combination of options points to having only one source for the entire Comox Valley).

Other Advantages:

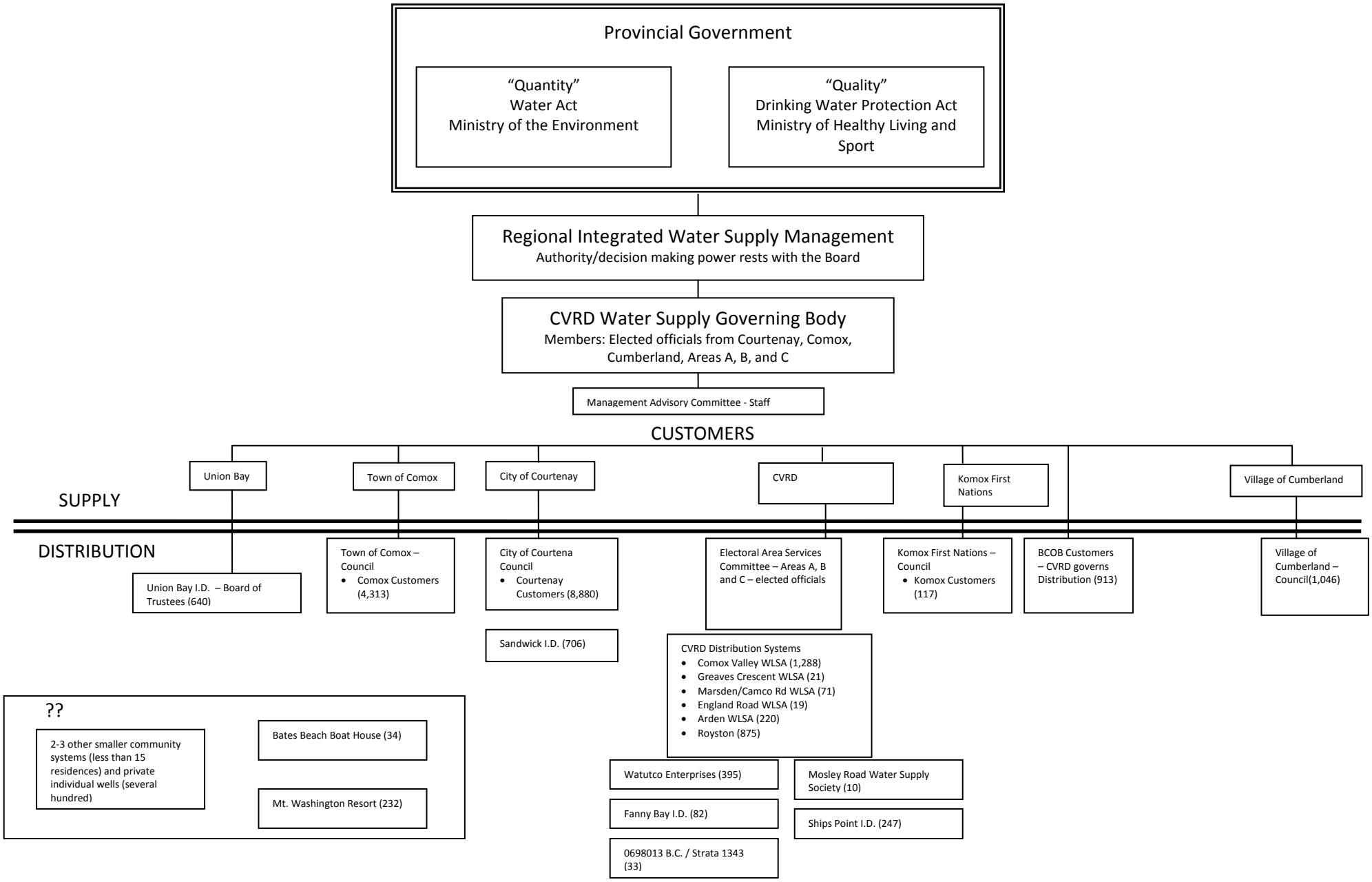
- Existing Models that can be used as examples and sources of information/guidance:
    - GVRD/Metro Vancouver – three reservoirs, Capilano, Seymour and Coquitlam, provide all raw water. Treatment is located in two different locations with two separate feeds to a combined transmission system. Metro-Vancouver's customers are all municipalities with bulk rate structures.
    - CRD – Victoria region – one water source and treatment system. Supplies bulk water to member municipalities (wholesale) and retail water to the West Shore Communities and Sooke.
- Existing governance structures and some ongoing changes already in line with this option:
    - Existing "Water Committee" interfaces the supplier (CVRD) with the two major municipal customers, Courtenay and Comox.
    - The existing Water Commission has brought together representation from across the District, and when combined with the Advisory Committee, provides a point of contact for all water systems and stakeholders.
    - The current negotiations with Royston to have water become a regional function for the ID would be in line with either Option 2 or 3 for governance.
- Servicing of properties outside municipal boundaries with distribution through a municipality would be supported by this governance structure.

Possible Implementation Strategies:

- Consider asset transfers at the same time major infrastructure spending is planned on a supply/transmission system.
- Selection of the "technical" solution should be assessed with the governance structure in mind.

Possible governance organization is presented on the next page:

Proposed Governance Option



Possible roles, responsibilities and membership:

Entity/Organisation	Membership	Roles/Responsibilities	Assets
CV Water Commission	All municipalities and local government organizations with distribution systems supplied by RD sources (Comox, Cumberland, Courtenay, First Nations, LSA's and ID's)	Supply and treatment, watershed protection and public education/engagement. Sets bulk water rates for member municipalities and LSA's	All water licenses, treatment facilities and transmission mains and major reservoirs
Technical Advisory Committee	Technical staff from all member municipalities and the RD	Recommendations to the Commission on infrastructure planning and projects. Education and engagement planning.	N/A
Watershed Protection and Planning Committee	Technical staff, some elected representation, major land owners, logging companies, stewardship groups	Recommendations to the Commission on watershed protection, watershed activities. Communications and cooperation to protect water sources.	Land base
Municipalities, ID's, LSAs and First Nations	All local governments who are supplied by Regional water sources	Internal operations of each municipality's distribution systems. Charging customers for water use.	Distribution systems, minor reservoirs, service connections and meters.

Conclusion

The intent of this letter is to lay out possible options, issues and ideas for governance for a Regional Water Supply system. It is hoped that the ideas presented will further this process with the eventual goal of a water strategy that has enough details to begin in depth capital and governance implementation planning.

Yours truly,
Wedler Engineering LLP

Per:

Andrew Gower, P.Eng., PE

Comox Valley REGIONAL DISTRICT

Agenda

Notice of meeting of the
COMOX VALLEY WATER SUPPLY STEERING COMMITTEE

GOVERNANCE DISCUSSION SESSION
Thursday, April 1, 2010

Comox Valley Regional District boardroom
Commencing at 1:00 pm

TIME		
1300-1315	A.	Introductions/ Expectations/ Session outline
		1. Project manager opens meeting and reviews process to date – provides technical briefing on key items/issues
		2. Project manager reviews possible combined infrastructure options and governance implications
1315-1415	B.	Governance Models
		1. Project manager leads a review of governance models developed in the "Discussion Paper" and helps guide the group to a recommendation
1415-1445	C.	Servicing Outside Municipal Boundaries
		1. Project manager provides an overview of the servicing options/strategies
		2. Project manager leads a discussion of servicing options and policy development
1445-1500	D.	Next Steps/Summary
		1. Project Manager provides summary of next steps in preparing the draft strategy document. Agenda for Water Commission discussion session reviewed
1500	E.	Termination

Comox Valley REGIONAL DISTRICT

Agenda

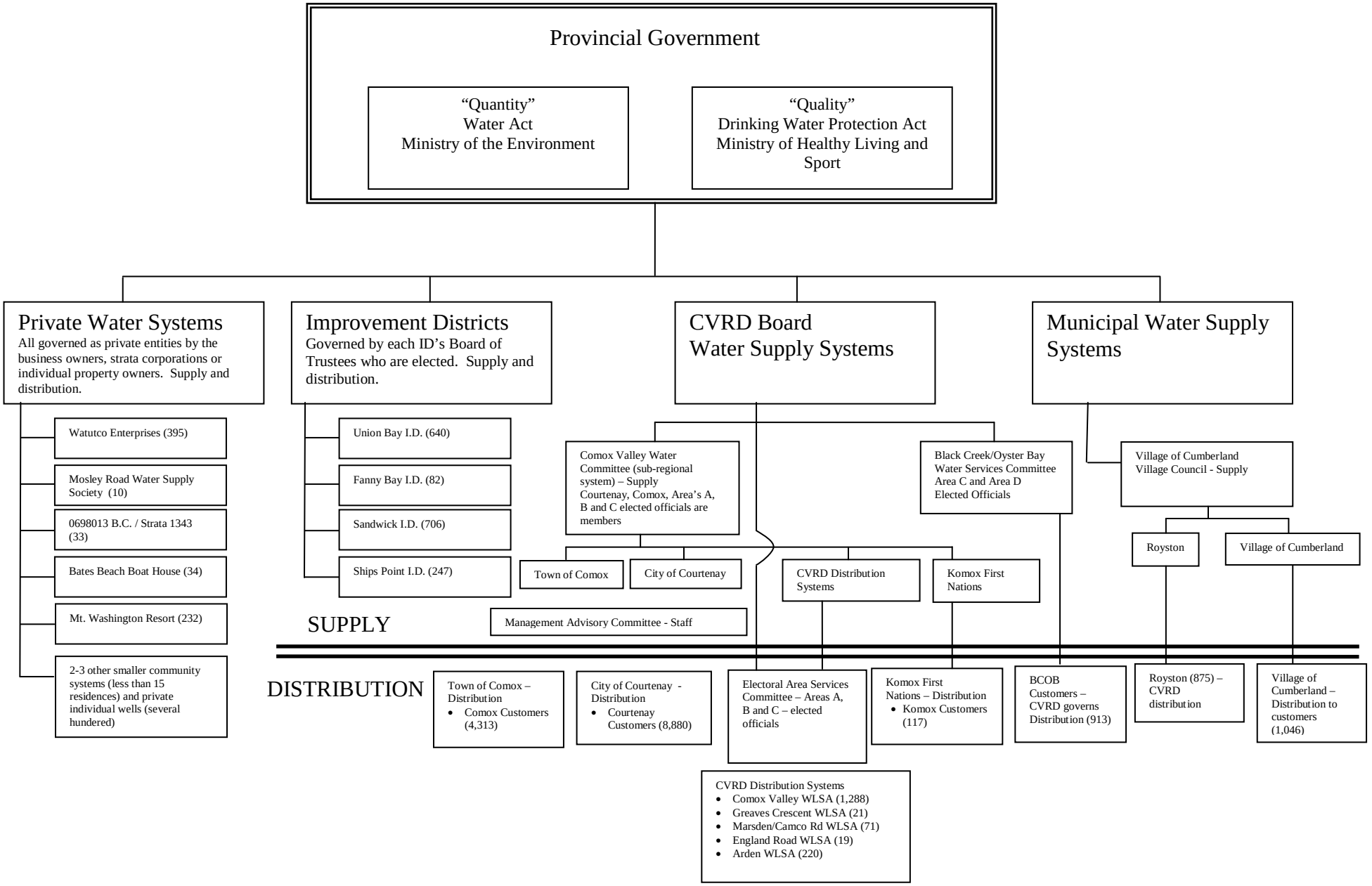
Notice of meeting of the
COMOX VALLEY WATER SUPPLY COMMISSION

GOVERNANCE DISCUSSION SESSION
Tuesday, April 13, 2010

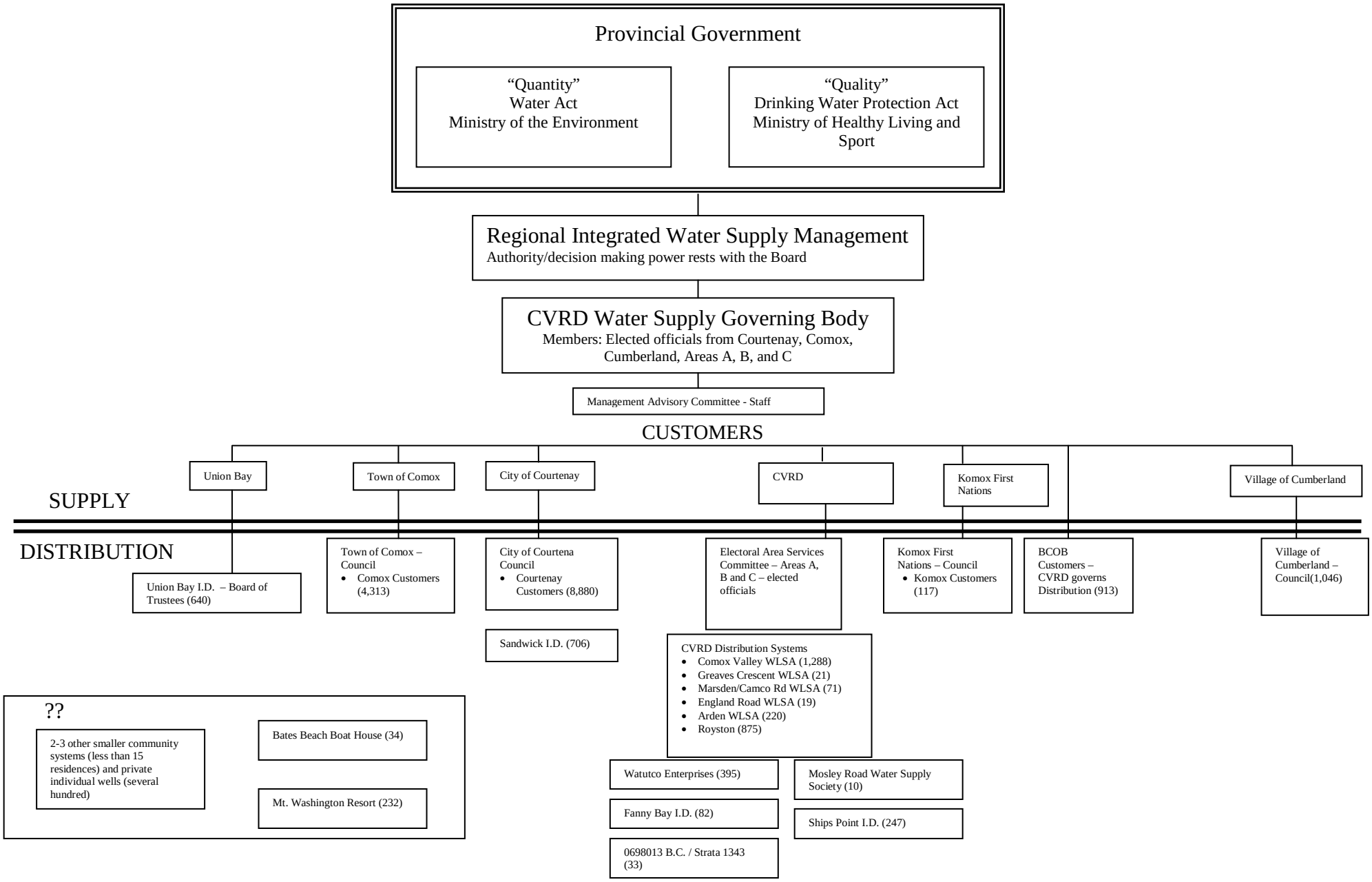
Comox Valley Regional District boardroom
Commencing at 9:30 am
Following the Public Portion commencing at 9:00 am

TIME		
0930-1000	A.	Introductions/ Expectations/ Day outline
		1. Chair of the water commission opens meeting
		2. Facilitator reviews goals for the day and "rules of engagement"
1000-1130	B.	Background
		1. Project manager reviews current water governance in the CVRD
		2. Project Manager reviews vision and goals developed for the water strategy
		3. Project Manager provides an overview of example governance structures from other municipalities
		4. Provincial staff review Provincial position on water governance
1130-1230	C.	Governance Option and Recommendation
		1. Facilitator leads a review of Governance Options per the staff recommendations.
1300-1400	D.	Recommended Governance Structure
		1. Facilitator leads a discussion to develop a governance structure for the CVRD Regional Water Supply governing body.
1400-1430	E.	Roles and Responsibilities for the Members of the Governing Body
		1. Facilitator leads a discussion to develop specific roles and responsibilities.
1430-1500	F.	Next Steps
		1. Project Manager provides summary of next steps in preparing the draft strategy document
1500	G.	Termination

CVRD Water - Existing Governance



CVRD Water - Proposed Governance option



APPENDIX C

KERR WOOD LEIDAL
associates limited
CONSULTING ENGINEERS
201 - 3045 Douglas Street
Victoria, B.C.
V8T 4N2
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March 8, 2011

Andrew Gower, P.Eng., P.E.
Project Manager, CVRD Regional Water Strategy
Wedler Engineering
211-2459 Cousins Avenue
Courtenay, B.C.
V9N 3N6

Dear Mr. Gower:

RE: CVRD Regional Water Supply Strategy Study
Proposal for Evaluation of Additional Option
Our File 2623.004/2623.005

INTRODUCTION

As part of the Regional Water Supply Strategy (RWSS) project, Kerr Wood Leidal Associates Ltd. (KWL) developed conceptual designs and cost estimates for several local and regional water supply options; these options are summarized in a RWSS report delivered in May 2010.

Subsequent to report delivery, the RWSS project entered a consultative phase; through the consultation process, an additional regional water supply option has been proposed. This option, called Option R-5, has the following elements:

- an intake constructed on Comox Lake in Cumberland;
- a raw water pump station constructed close to the lake which would boost pressure to a nominal Hydraulic Grade Line of 225 m Geodetic Elevation (adequate to service the entire service area including Cumberland and Sage Hills);
- a water treatment plant constructed in Cumberland;
- transmission mains to Sage Hills, Union Bay, Royston, South Courtenay and the Comox Lake Regional Water System (CLRWS).

This letter provides a proposal for engineering services for the development of Option R-5, associated reporting and revisions to technical memoranda.

SCOPE OF WORK

The project tasks are outlined as follows:

1) Use the existing hydraulic model of the regional water system to develop and size infrastructure and facilities for Option R-5;
2) Use the cost estimating unit rates developed for the RWSS to determine the Class "D" life cycle cost of Option R-5 and appropriate cost sharing for each utility;
3) Prepare a technical memorandum summarizing the study findings and comparing Option R-5 to the other options;
4) Provide a preliminary implementation memorandum which identifies technical issues to be resolved and further technical work to be done.

LEVEL OF EFFORT AND FEES

A detailed breakdown of the level of effort and fees for this assignment is provided in Table 1, attached. Charge-out rates are based on KWL's current fee schedule, also attached. We propose to undertake this work based on the terms and conditions outlined in the existing contract between KWL and the CVRD for the RWSS.

CLOSING

We thank you for the opportunity to submit a proposal for this assignment. Please do not hesitate to contact the undersigned if you have any questions or comments.

Yours truly,

KERR WOOD LEIDAL ASSOCIATES LTD.

Eric Morris, M.A.Sc., P.Eng.
Project Engineer

EM

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Table 1
Schedule of Effort and Fees (excluding HST)

TASK NO.	Description of Task	ESTIMATED HOURS (HOURLY RATE)					KWL Total	KWL Disburse-ments	COSTS
		Project Manager Dave Murray $194	Project Engineer Eric Morris $156	GIS Ryan Taylor $104	Technical Review and Governance Mike Nolan $206	Clerical $72		$	$
1	Water Modelling and Option R-5 Development	1	20	12	3		**$5,180**	$400	**$5,580**
2	Life Cycle Cost Estimate and Cost Sharing	1	12		2		**$2,478**	$250	**$2,728**
3	Option R-5 Technical Memorandum	4	30	20	6	5	**$9,132**	$550	**$9,682**
4	Implementation Memorandum	4	26		20	6	**$9,384**	$550	**$9,934**
	TOTAL (Excluding HST)	**10**	**88**	**32**	**31**	**11**	**$26,174**	**$1,750**	**$27,924**

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FEE SCHEDULE FOR CONSULTING SERVICES
EFFECTIVE TO FEBRUARY 1, 2012

This schedule is categorized to provide a scale of hourly rates by classification. Where appropriate, alternative arrangements can be made for lump sum invoicing.

HOURLY RATES

Hourly rates apply for project work and travel. Special rates apply for legal work.

CLASSIFICATION	HOURLY RATE			
Engineer 7	238	248	258	268
Engineer 6	194	206	218	230
Engineer 5	171	175	179	184
Engineer 4	142	149	156	163
Engineer 3	123	126	129	132
Engineer 2	106	109	112	115
Engineer 1	88	93	96	100
Engineering Assistant	54	59	64	69
Geoscientist	87	113	126	138
Technician/Technologist 7	164	167	170	173
Technician/Technologist 6	148	152	155	158
Technician/Technologist 5	133	136	139	142
Technician/Technologist 4	116	120	124	127
Technician/Technologist 3	101	104	107	110
Technician/Technologist 2	82	86	90	94
Technician 1	63	67	71	75
Clerical / Word Processor / Project Assistant 3	66	69	72	75
Clerical / Word Processor / Project Assistant 2	54	57	60	63
Clerical / Word Processor / Project Assistant 1	42	45	48	51

REIMBURSABLE COSTS

Disbursements (such as long distance telephone, travel expenses, courier and printing charges) are charged at cost plus 10%. Vehicle use is charged at 52¢ per km, with a minimum for continuous duty of $40 per day for car and $60 per day for survey truck. Alternatively, routine disbursements may be charged at 8% of the total professional fee (equipment rental, out-of-town travel and major reproduction costs are additional at cost plus 10%).

Subconsultants are charged at cost plus 5%, unless engaged directly by the client. HST is charged where applicable.

PAYMENT

Invoices for professional services are submitted monthly, and payment is due on receipt of invoice, net 30 days. Overdue accounts are charged 1.0% interest per month on the unpaid balance (12.7% annual rate of interest), unless agreed otherwise.

APPENDIX D

BRITISH COLUMBIA
The Best Place on Earth

January 31, 2011

Ms. Debra Oakman
Chief Administrative Officer
Comox Valley Regional District
800 Comox Rd
Courtney BC V9N 3P6

Dear Ms. Oakman:

Thank you for your letter of December 15, 2010, requesting information on the gaps between the CVRD Water Supply Strategy and the requirements of a Drinking Water Protection Plan (DWP Plan) as well as the question on the potential authorities and powers provided under a DWP Plan order.

First, your request that we "identify what authority and powers are provided to a local government when a drinking water protection order is issued" requires some clarification. Authority and powers are not provided to local government via a DWP Plan order *per se*. A DWP order under the *DWP Act* is a mechanism by which the Province can ask local government to prepare a DWP Plan. Since the Province has authorities and powers in a very broad range of areas that may be relevant to CVRD's Watershed Protection Plan and its Regional Water Supply Strategy, local government might identify some Provincial powers relevant to its risk mitigation strategies for drinking water source protection. The *DWP Act* provides a means for those provincial powers to be invoked. The DWP Plan prepared by local government in consultation with stakeholders, can include recommendations that Provincial authorities and powers be used to address outstanding issues or "gaps" that a local government has determined are beyond its power to address. For example, a local government could theoretically use this mechanism to recommend that the province place conditions on provincial authorizations or licenses.

I am pleased to hear that CVRD is working on a comprehensive template for a Watershed Protection Plan through funding from the Public Health Agency of Canada. I expect that this tool and the process to develop it could identify specific risk management measures to address present and future risks to drinking water sources within watersheds in the region. Because the *DWP Act* provides a formal mechanism through which Provincial authorities and powers can be requested (per the paragraph above), we would encourage the Watershed Protection Plan process to consider and identify any potentially relevant Provincial powers that might be invoked as part of the risk mitigation strategies. If there are, these could be formally conveyed to the Provincial Cabinet for consideration to assist local government with its Watershed Protection Plan.

...2

Ministry of Health Services Health Protection
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1515 Blanshard St 4-2
Victoria BC V8W 3C8
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I and my colleagues at Vancouver Island Health Authority (VIHA) feel the Regional Growth Strategy and the Regional Water Supply Strategy goes a long way to addressing land use issues and appropriately identifies the importance of watersheds. The committee deserves credit for the work and effort that has gone into development of these strategies. In light of further consultation with my colleagues at VIHA, it appears that the remaining challenges and gaps that could be examined further can be generally described as follows:

- Specific actions for achieving the overarching goals of watershed and drinking water protection require identification. I expect these will be developed as current processes evolve.
- Governance around the activities that occur in the Comox Valley that pose risks to drinking water is a significant issue, particularly in the watersheds and around unconfined aquifers. Many of the risks to drinking water sources could be addressed by both regional and municipal government authority such as zoning, building inspection, etc. Nevertheless, there may be risks associated with activities such as logging, mining, hydro, etc that local government has limited authority to manage. The DWP order could potentially play a role in these areas.
- A co-ordinated decision-making approach for water systems in the region may have management and financial benefits and could be explored as part of a DWP Plan.
- VIHA has received a number of complaints over the years about threats to surface water supplies and the vast majority of them pertain to logging practices in the watersheds. As much of the land around the watersheds in the Comox Valley is privately owned, a DWP Plan could examine potential management actions on private land.
- While Municipal governments are the Approving Officers for Subdivision approvals, in rural areas, the Ministry of Transportation and Infrastructure Approving Officer is tasked with this role. As any development within a watershed could have a detrimental effect on the source quality, those processes could be reviewed under a DWP Order.

These are the main issues I and my colleagues at VIHA have identified. I would expect that as the process continues, other gaps may be identified, or outstanding issues may potentially be resolved. In any event, I would encourage you to continue to work directly with VIHA as watershed protection planning continues.

Yours truly,

Tim Lambert
Executive Director
Health Protection

pc. Kevin Lorette – Comox Valley Regional District
Glen Brown – Ministry of Community, Sport and Cultural Development
Dwayne Stroh – Vancouver Island Health Authority
Dr. Charmaine Enns – Vancouver Island Health Authority

APPENDIX E

The Corporation of the
Village of Cumberland

2673 Dunsmuir Avenue
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Cumberland, B.C. V0R 1S0
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Fax: 250-336-2321

February 15, 2011

Comox Valley Regional District
600 Comox Road
Courtenay, BC
V9N 3P6

Attention: Edwin Grieve, Chair

Re: Comox Valley Regional Water Supply Strategy – November 23, 2010 board resolution

Dear Chair Grieve,

In response to your letter dated December 1, 2010 regarding the Comox Valley Regional Water Supply Strategy, the Council of the Village of Cumberland is unable to reach consensus in support of the draft strategy at this time. Council members cited concerns that there is insufficient information provided in the draft strategy regarding capital infrastructure options and the proposed future approach to water supply within the Region, to begin discussions about the timing and triggers for the transfer of Cumberland assets and licenses to the Region.

Council expressed interest in receiving further information on regional options and does support the addition, to the water supply strategy, of "Option R-5" as outlined in Kevin Lorette's letter of February 9th.

Thank you for the opportunity to comment on the draft strategy.

Sincerely,

Christine Mathews, CGA
Corporate Services Manager
cmathews@cumberlandbc.net

APPENDIX F

THE CORPORATION OF THE CITY OF COURTENAY

Office of the Mayor
830 Cliffe Avenue
Courtenay BC V9N 2J7

phone: (250) 334-4441
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info@courtenay.ca

File #0630-20 RWSS

March 1, 2011

Comox Valley Regional District
600 Comox Road
Courtenay, B.C.
V9N 3P6

Attention: Edwin Grieve, Chair

Dear Sir:

Re: Comox Valley Regional Water Supply Strategy

Please be advised at its Committee of the Whole meeting held February 28th, 2011 Council passed the following resolutions:

"That the Regional Water Supply Strategy prepared for the Comox Valley Regional District and the report from the Director of Operational Services be received."

"That the City seek clarification regarding the areas of concern expressed by the Director of Operational Services."

The City requests a response to the following questions:

1. The report from Wedler Engineering dated May 18th, 2010 is marked draft and was provided to the City by the CVRD with a covering letter dated Dec 1, 2010. Is there a final report expected from Wedler Engineering, and will it be provided by March 31, 2011?

2. In the letter from the CVRD dated Dec 1, 2010 it advises that "..the requirements of the letters patent have been met..". If further work is contemplated on the implementation of the Regional Water Supply Strategy where will the authority for this come from? How will this be administered and how will it be financed?

3. In Appendix A to the letter dated Dec 1, 2010 process dates are provided up to August 2010 and the next steps are listed but no dates provided. What are the next step timelines and what is contemplated by the CVRD staff for Board consideration as the future next steps?

Please provide a response to the above questions at your earliest convenience.

Yours truly,

Gregory T. Phelps
Mayor

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