

Convening for Action on Vancouver Island
Leadership in Water Sustainability



A Regional Perspective on Water Supply in the Comox Valley

Context for Source Quality & Watershed Protection, Population Support Capacity,
Infrastructure Upgrading and Implementation Issues



The New Business As Usual:
Visualize What We Want Vancouver Island to Look Like in 50 years

***The Mission is to
Create a Legacy***

- 1. Influence choices by individuals and organizations***
- 2. Use the term “sustainability” as a lens for considering approaches that influence choices***

2009 Vancouver Island Learning Lunch Seminar Series

Comox Valley is the Provincial Pilot for a Regional Team Approach

Water Bucket Web Story #4 posted September 2009

Preface

A series of stories published on the Convening for Action community-of-interest on the Water Bucket progressively foreshadow and/or elaborate on the curriculum for the 2009 Comox Valley Learning Lunch Seminar Series. Briefly:

- **On July 14, 2009:** Story #1 titled *Comox Valley Regional District will host 2009 Learning Lunch Seminar Series* introduced the purpose of a 'regional team approach' as a springboard beyond the Comox Valley.
- **On July 28, 2009:** Story #2 titled *CAVI releases program details for 2009 Vancouver Island Learning Lunch Seminar Series* provided context for a paradigm-shift that will result in regional alignment around the concept of settlement in balance with ecology.
- **On August 24, 2009:** Story #3 titled *What Drives Settlement on the East Coast of Vancouver Island* initiated a conversation about "one market, from Cobble Hill to Campbell River".
- **On September 9, 2009:** This Story #4 titled *A Regional Perspective on Water Supply in the Comox Valley* provides a broad-brush picture of source identification, source quality and watershed protection, population source capacity, infrastructure upgrading and implementation issues.
- **On September 9, 2009:** Story #5 titled *An Integrated Watershed Approach to Settlement* connected the dots between the Comox Valley Conservation Strategy and the regional team approach.
- **On September 15, 2009:** Story #6 titled *The Comox Valley Learning Lunch Seminar Series is for Implementers* will reflect the perspectives of municipal staffs who will be tasked with implementing regional outcomes.
- **On September 22, 2009:** Story #7 titled *Today's Expectations are Tomorrow's Standards* will elaborate on provincial expectations and programs that provide direction as to where the Province wants to go.

Additional stories will be published during the October through December 2009 period to summarize what was accomplished at each seminar.

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1. Context for a Regional Water Supply Strategy

This article is the fourth in a series of resource materials for the 2009 Learning Lunch Seminar Series. The organizing team is encouraging Series participants to take the time to read and reflect on these articles in preparation for the Town Hall sharing sessions.

Regional Team Approach

By sharing core concepts and key information in advance, the organizing team hopes this will inspire participants to think about collaboration and the roles they can play in implementing a 'regional team approach' as follows:

"How we will simultaneously work together as staff within a municipality and as a region AND externally with the stewardship sector, developers and other private sector players, to ensure we implement sustainable approaches to development"

The Comox Valley is the designated provincial pilot for a 'regional team approach' to implementing green infrastructure practices that in turn will lead to water sustainability. The 2009 Learning Lunch Seminar Series is a pathway to that destination.

Regional Water Supply Commission

When the Comox Valley Regional District (CVRD) was established in February 2008, the provincial government required, through letters patent, that the CVRD (excluding Hornby and Denman Islands) develop a comprehensive regional water supply strategy. In accordance with this mandate, the CVRD Board established three groups to guide strategy development, namely:

- Comox Valley Water Supply Commission
- Comox Valley Water Supply Advisory Body
- Comox Valley Water Supply Steering Committee.

The Comox Valley Water Supply Commission is a select committee of the CVRD Board.

Commission Mandate:

"These three bodies, working together, are charged with the responsibility to ensure that the concept of a regional water system is fully studied and investigated," explains Kevin Lorette, General Manager of the CVRD Property Services Branch.



"The mandate of the commission is to develop an overall regional water supply strategy that identifies all viable water sources; and further, to provide a recommended water supply service plan and operating structure for a regional water supply system."

"In addition to identifying how to supply bulk water, the regional water supply strategy will enable the CVRD to develop plans, policies and actions related to regional water demand management and watershed protection."

Scope of the Regional Water Supply Strategy

The CVRD inherited ownership of three water supply systems from the former Comox-Strathcona Regional District. The largest of these is the **Comox Valley Water System** which serves the City of Courtenay and Town of Comox.

The Comox Valley Regional Water Supply Strategy is examining the issue of water supply to all communities and settlement areas within the CVRD. Because the scope is the entire regional district, all options are being considered. At the end of the strategy development process, it is expected that there will be a clear definition and common understanding of what is meant by the term 'regional system' in a Comox Valley context.

During the current interim period, the Comox Valley Water System is described as a 'sub-regional' system.

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2. Comox Lake Water System

Water originates in Comox Lake, is taken from the Puntledge River downstream of the lake, and delivered to some 40,400 people. This is about 60% of the total population residing within the CVRD.



In addition to being a drinking water source, Comox Lake is used for power generation by BC Hydro, maintenance of fish hatcheries by the Department of Fisheries and Oceans, recreation by anglers, boaters and swimmers.

The Comox Lake service population includes approximately 23,100 residents in the City of Courtenay and almost 13,300 water users in the Town of Comox.

Comox Lake Watershed Assessment

Because Comox Lake is an unprotected watershed, the **Comox Lake Watershed Assessment** was initiated in 2006 to address public health concerns. This was the first watershed assessment to be completed in British Columbia in accordance with the then-new drinking water source to tap guidelines.

“In 2006, continued urbanization within the valley coupled with competing land uses and recreational interests within the watershed highlighted the need for co-operative actions aimed at managing watershed uses to ensure water quality is preserved,” states **Michael Zbarsky, CVRD Engineering Analyst**.



“The Watershed Assessment identified actions to mitigate high level risks or threats to the current and future quality of the water. The CVRD is currently proceeding with engineering studies that build on the technical foundation provided by that body of work.”

Vancouver Island Health Authority

In July 2008, VIHA (i.e. the Vancouver Island Health Authority) notified the CVRD of their new water treatment standards policy for surface water supplies. This policy is known by the acronym **4-3-2-1**, which is a way of expressing the technical requirements for a multiple-barrier approach to public health protection.

Under the 4-3-2-1 policy, filtration and/or watershed protection are usually required in addition to disinfection, unless specific exclusion criteria are met.

“Because order-of-magnitude cost estimates are in the \$30M to \$60M range for filtration, CVRD is investigating all its options,” reports Kevin Lorette.

Water Advisory Committee

A water management advisory committee comprising CVRD, Courtenay and Comox staff meets monthly. This committee deals with issues related to the planning, management and operation of the Comox Lake sub-regional water system. Outcomes are then fed into the CVRD Board decision process via the elected representatives on the Water Committee.

“The profile and importance of water in the Comox Valley is underscored by the fact that the chief administrative officers and the directors of engineering and finance for the three local governments all participate on the advisory water management committee,” notes Michael Zbarsky.

“In a very real sense, the Comox Lake advisory committee is an existing example of the *regional team approach*. How, and how well we collaboratively deal with water-centric issues, has a bearing on our ability to move forward effectively with *integrated implementation* on other fronts.”

“Our **Draft Water Efficiency Plan**, released in June 2009, provides a timely illustration of how the three jurisdictions are now working together at the regional scale in order to come up with consistent implementation strategies at the local scale.”

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3. Drought Creates a 'Teachable Moment'

"Development activity and population growth is putting extreme pressure on our regional water resources, both in terms of protecting water supply sources and preventing rainwater runoff impacts in streams and rivers," observes **Michael Zbarsky**.

"A key message is that the Comox Valley needs to use less water for a number of reasons; in particular, using less water will result in infrastructure cost savingsbecause we can reduce the sizes of treatment and transmission facilities."

"Also, three times in recent years we have exceeded the Water Licence limit for withdrawals from Comox Lake; and this has happened at a time when the reliability of supply is increasingly of concern."

"In 2009, the weather extremes and the resulting impacts on the Comox Lake water supply have highlighted concerns about the way we develop and service communities. The good news is that climate impacts on the water cycle have at least created a teachable moment for *water-centric planning*."

'Water-Centric Planning' Defined

Water-centric planning means planning with a view to water. At the core of water-centric planning is a water balance way-of-thinking and acting. The underpinning premise is that resource, land use and community design decisions will be made with an eye towards their potential impact on the watershed.

Water-centric planning means...

- We will plan with a view to water – *whether for a site, a region, or the province*
- We will integrate missions, mandates and accountabilities
- We will move towards a water balance way-of-thinking and acting to deal with risk and manage uncertainty



Water OUT = Water IN

Draft Water Efficiency Plan

"In terms of a 'teachable moment', the release of the **Draft Water Use Efficiency Plan** in June 2009 was perfect timing," notes Michael Zbarsky. "Because 2009 is the driest year in the 41-year recorded history for Comox Lake we had the attention of the public."

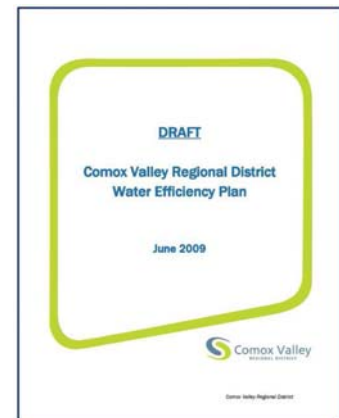
"The teachable moment creates the window of opportunity to change behaviour," continues **Kim Stephens, Program Coordinator** for the **Water Sustainability Action Plan for British Columbia**.

"Reachable, teachable – that's the sequence. Reachable means people have their minds open and are receptive to the teachable lesson (moment). They're listening!"

Water Consumption and Reduction:

"Water consumption in the Comox Valley is relatively high, and is close to 550 litres per capita per day. We know that we can be more efficient to reduce wasteful use; and do it without impacting on lifestyles," reports Michael Zbarsky.

"The Draft Plan first introduces and assesses various measures that would improve efficient and reduce water use; and then identifies how a 40% total reduction could be achieved by 2014. Universal water metering would account for half the projected reduction."



"But our target is a 27% reduction by 2014. We are in the process of deciding which measures will be included in the implementation program. The 27% target is what it will take for the Comox Lake Water System to achieve compliance with provincial Water Licence requirements."

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4. The Water Challenge

“The Comox Valley is a desirable place in which to live. This is why the findings of the **Regional Growth Strategy** and **Comox Valley Sustainability Strategy** are so important for everyone to understand. They provide the backdrop for the Regional Water Supply Strategy,” states **Kevin Lorette**.

“Yet, at the end of the day, water is the underpinning of the community; and this is why an integrated watershed approach to settlement and land development is essential for the Comox Valley.”

Nature of the Challenge

“From the water efficiency perspective, we have to balance the need to save money while providing capacity for continued population growth. At the same time, we also have to balance technical and governance issues.”

Scope of Integration:

According to **Kevin Lorette**, a desired outcome in developing a comprehensive Comox Valley Regional Water Supply Strategy is to address and integrate these four issues as they specifically relate to the Comox Lake system:

- Source Quality & Watershed Protection
- Support Capacity
- Infrastructure Upgrading
- Financing & Implementation

In addition, the regional strategy is addressing a fifth issue – that is, source identification and the question of whether there are viable alternatives and/or supplements to Comox Lake.

“Each of these issues has its own set of complexities, and we need to identify and understand the implicit and/or explicit synergies that will achieve their integration. Our immediate challenge is managing expectations during a period when the Regional water supply strategy is underway,” elaborates **Michael Zbarsky**.

Issues within Issues:

“Also, there are issues within the issues, and they cross over – for example, metering and efficiency go hand-in-hand, and both also have a bearing on population-support capacity, water treatment and infrastructure financing.”

“It seems like everyone wants answers right now to questions that are still being explored or investigated. The net effect is to complicate how we move forward during this transition period.”

Source Quality & Watershed Protection

“Source watershed protection is all about water quality. This may sound straightforward to address, but in reality is a really complex issue to resolve.” According to Michael Zbarsky, this issue has a number of dimensions, for example:

- How will the CVRD control the array of land uses that impact on both the watershed landscape and the quality of lake water?
- What is an affordable and reasonable level of capital investment in water treatment that will be effective in managing risk?
- What are the risks that the community is willing to live with? What is acceptable?

“Drinking water certainly appears to be the #1 *water issue* in the Comox Valley right now. This is mainly due to the fact there is a myriad of water topics on the community’s radar screen. As a result, we believe other water-centric issues are likely secondary in the public mind.”

“So, given the clear priority placed on the water supply function, the primary responsibility of the CVRD is to ensure a clean source of drinking water; and to deliver drinking water effectively and efficiently to water users.”

“Achieving *effectiveness and efficiency* will depend on how well we integrate the issues, and the issues within the issues.”

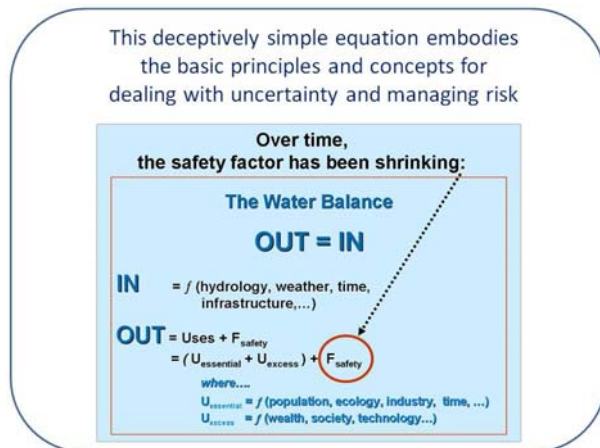
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Population-Support Capacity

“Ensuring a safe and adequate water supply depends on understanding the science behind the **Water OUT = Water IN** equation, as well as understanding what this means on the ground...at the operational level,” states **Kim Stephens**.



‘Water OUT = Water IN’ Explained:

“Population-support capacity is one of many variables. When water demand is small relative to the available water resource, variability is not that noticeable. But when demand is large relative to the available supply, a small variation on the supply side magnifies the perception of impact. In many cases, BC communities are operating on narrow margins.”



“While it rains a lot in BC, we generally don’t have an abundance of supply when demand is greatest. Because mountain watersheds are typically storage-constrained, the issue is already one of *under-supply*. Climate change is therefore aggravating an existing vulnerability.”

“So, if we are vulnerable on the IN side of the equation, then we must build in resiliency on the OUT side. This means we have to look for the little things that will yield cumulative benefits – for example, a topsoil sponge on development sites reduces *water need* and also limits *water runoff*.”

Water-Centric Development:

“As a bulk water supplier, the CVRD is looking for synergies that will help us deal with uncertainty and manage risk, while at the same time accommodating population growth,” continues **Michael Zbarsky**.

“From the bulk water supply perspective, a goal is to stretch the population-support capacity of the Comox Lake water resource during the summer peak demand period. Reducing wasteful outdoor water use holds the key to achieving this goal.”

“Green infrastructure is a means to this end. So, in terms of *Win/Win* synergies, the way to look at it is that an efficient and effective regional water supply depends on land development practices in all Comox Valley communities achieving common water sustainability objectives.”

Living Water Smart:

“Connecting these dots leads into the relevance of the Comox Valley as a case study on how to meet the commitments and targets in **Living Water Smart, BC’s Water Plan**. One of the targets is that fifty percent of new municipal water needs will be acquired through conservation by 2020.”

“As an outcome of the 2009 Comox Valley Series, we want to get people thinking about how to **make real** the 2020 objective of supplying 50% of new water demand by using less,” adds **Kim Stephens**. “Getting there requires going well beyond the usual indoor water saving measures. It entails accelerating the current momentum for changing what we do on and to the land.”



B.C.’s Plan to protect and preserve water resources through planning, regulatory change, education, and incentives such as economic instruments and rewards.

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Infrastructure Upgrading & Financing

The infrastructure upgrading and financing issues go hand-in-hand: what the Comox Valley eventually implements in the way of infrastructure upgrading and/or expansion depends in large part on how the communities in the service area can or will pay for it. According to **Michael Zbarsky**, the two drivers for new water infrastructure are quantity and quality.

Delivering Water Quantity:

“In the past, communities simply installed bigger pipes to supply more water to a growing population. This is no longer automatically accepted practice. The other aspect of infrastructure expansion is the need/cost to extend a water delivery system to serve new development areas. Today we look at this aspect differently than practitioners did a generation ago.”

“In particular, there is now more emphasis on ensuring that capacity-expansion strategies are holistic and consistent with community values. We need to think things through properly to get to the right answer. Then we can move forward with the right strategies and plans in the Comox Valley.”

Ensuring Water Quality:

“Water treatment is a big ticket item. Therefore, we must get the strategy right: do we protect the source by controlling and managing activities in the Comox Lake watershed; or do we build a treatment plant; or do we implement a combination of the two? We don't have an answer yet,” states Michael Zbarsky.

“To provide context, we do have a \$53 million cost estimate for a deep water intake. This was an outcome of the Comox Lake Watershed Assessment; the logic at that time was to divert drinking water upstream of the potential risk areas. The leap of faith was that water quality would meet the drinking water requirements.”

“There now seems to be a belief or perception on the part of some community members that a deep intake would also resolve the quantity issue, even though this does not make technical sense from the **Water OUT = Water IN** perspective.”

Alignment with Regional Growth Strategy

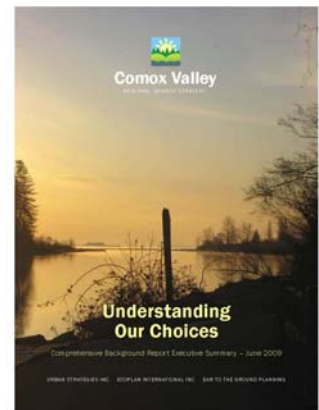
The Regional water supply strategy is one of a number of inter-connected regional processes that are currently works-in-progress. The Regional Growth Strategy, for example, is a tool that helps promote alignment of regional and municipal actions pursuant to an implementation plan for the Regional Water Supply Strategy.

Accommodating Population Growth:

Challenges that could be reconciled through the intersection and/or integration of these two processes include:

- managing supply and usage of drinking water,
- handling rainwater, grey/black water and the attendant ecological concerns,
- adopting ‘design with nature’ strategies and technologies for green infrastructure,
- location of developments (infill, brown-field, green-field), and
- evaluating land uses, conservation uses, transportation services, and design footprint, etc., to manage green house gas emissions.

By 2031, it is estimated that the population in the Comox Valley will grow by almost 40% from 63,700 to 88,500 people. The Regional Growth Strategy will provide a framework for future decision-making and land use. The purpose of the Regional Growth Strategy is to coordinate growth among the local governments on issues that cross municipal boundaries.



“A key message is that proposed new developments will have to be water-centric and water-efficient,” concludes Michael Zbarsky.

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5. An Integrated Watershed Approach to Settlement

The vision for **An Integrated Watershed Approach to Settlement** is an early outcome of the 2009 Learning Lunch Series. The organizing team has created the graphic below to conceptualize the elements that must ultimately be integrated to achieve the shared goal.



Integration that Leads to Action

“Looking ahead to 2010 and beyond, the ultimate goal of the regional team approach is to maximize the intersection of the elements. This means creating linkages among the different areas of action, thereby helping to create a stronger implementation plan – that is, *what all the plans will achieve*,” states **Kevin Lorette**.

“Desired outcomes include inter-departmental collaboration, inter-municipal sharing, and regional alignment. Achieving these outcomes means we need to think of ourselves as members of an integrated team, not as individuals within silos.”

Water is the Unifying Element

Local governments in the Comox Valley are convening for action around this paradigm: *Water is the finite resource; however, management of development is the control.*

“When you think about it, water truly is the unifying element for the myriad of regional strategies and plans that are currently under development,” reflects **Michael Zbarsky**. “Furthermore, the *Water OUT = Water IN* equation touches on all aspects of land development; and embodies the principle of settlement in balance with ecology.”

“On a practical level, for example, this way-of-thinking means the CVRD will be looking for synergies between the Regional water supply strategy and the Regional Sewer Master Plan.”

Dealing with Uncertainty:

“How do you solve the *Water OUT = Water IN* equation when both sides are variable? After all, it is mathematically not possible to solve for two or more unknowns when you have a single equation,” asks **Kim Stephens** rhetorically.

“The inherent variability creates uncertainty which in turn creates risk. There are multiple *what if* combinations and permutations.”

“Thus, a key message is that the future will always be different than expected...because there are so many decision points along the way that influence the outcome.”

“Unfortunately, we now have a culture of expecting one answer; and this ignores uncertainty. Over the past generation, engineering standards have become the epitome of the *singular answer* mindset.”

“When it comes to dealing with uncertainty and managing risk, there is no silver bullet. We need to do a whole bunch of little things because the flip side of a problem is an opportunity; hence, the flip side of a cumulative impact is a cumulative benefit. Over time the benefits accumulate.”

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Closing the Loop

Circumstances have provided the Comox Valley with the opportunity to embrace a 'closed loop' approach to water resource management. In short, this means water is water. Drinking water, waste water and drainage water are uses at different points within a cycle.

Low flow conditions in the Comox Lake system have provided a reality-check in terms of how water is managed. The drinking water allocation is fully utilized by the existing population, and is in fact being exceeded on occasion. This is a catalyst for doing business differently going forward.

Another catalyst is the Province's expectation that there will be alignment of actions at three scales – provincial, regional and local – to live water smart and build greener communities.

The New Business As Usual:

"Living Water Smart and the Green Communities Initiative provide British Columbians with a vision of what the regions of our province can look like if local governments prepare communities for change, choose to be water smart, and strive to achieve settlement in balance with ecology – in other words, implement *The New Business As Usual*," states **Kim Stephens**.

Learning Lunch Program

Living Water Smart comprises 45 commitments, two of which frame the learning outcomes for the Comox Valley Learning Lunch Program:

- **2008 Series:** *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* (p 43 Living Water Smart)
- **2009 Series:** *Fifty percent of new municipal water needs will be acquired through conservation by 2020* (p 75 Living Water Smart)

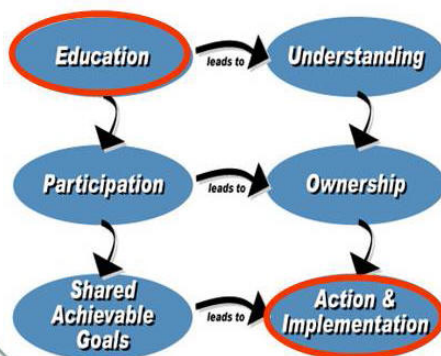
These are complementary outcomes. The link is water-centric land development standards.

Integration that Leads to Action:

The graphic below illustrates how education leads to implementation; and captures the essence of what the Learning Lunch Series is endeavouring to accomplish via the **regional team approach**.

The elements can be read in both the horizontal and vertical directions. Learning is a gradual process. Adults take in new information, reflect on it, blend it with their own experience, test it, and eventually apply it in making decisions.

This is what needs to happen to achieve **integration** that leads to **action**



Critical Success Factors:

- *Commitment* to take action & deliver
- *Champions* to provide energy & drive
- *Accountability* to deliver at all levels
- *Resources* to get the job done

Inform, Educate & Inspire