REGIONAL DISTRICT OF NANAIMO

SUSTAINABILITY SELECT COMMITTEE
TUESDAY, SEPTEMBER 16, 2014
2:00 PM

(RDN Committee Room)

A G E N D A

PAGES

CALL TO ORDER

MINUTES

2 - 3 Minutes of the Sustainability Select Committee meeting held on Thursday June 12, 2014.

4 - 11 Minutes of the Drinking Water and Watershed Protection Technical Advisory Committee held on Wednesday July 23, 2014.

BUSINESS ARISING FROM THE MINUTES

COMMUNICATIONS/CORRESPONDENCE

UNFINISHED BUSINESS

REPORTS

12 - 15 Release of Corporate Climate Action Reserve Funds – September 2014.

16 - 20 2014 Regional Emission Reduction Projects.

Quarterly Energy Update (presentation).

Energy & Sustainability – Ongoing Initiatives (presentation).

- Real Estate Energy Efficiency Project
- Green Building Series
- Green Building Bylaw Amendments
- Woodstove Exchange Program

21 - 52 Drinking Water Watershed Protection Technical Advisory Committee Information Package.

ADDENDUM

BUSINESS ARISING FROM DELEGATIONS OR COMMUNICATIONS

NEW BUSINESS

ADJOURNMENT

IN CAMERA

Distribution: J. Stanhope (Chair), A. McPherson, H. Houle, M. Young, B. Veenhof, J. de Jong, J. Kipp, D. Brennan, M. Lefebvre, D. Willie, P. Thorkelsson, G. Garbutt, C. Midgley, T. Pan, M. Donnelly, J. Pisani, N. Hewitt

J. Fell

For information only: G. Holme, J. Ruttan, B. Bestwick, D. Johnstone, T. Greves, G. Anderson, M. Brown, T. Graff, F. Manson, J. Hill, C. Golding, Matt O'Halloran

REGIONAL DISTRICT OF NANAIMO

MINUTES OF THE SUSTAINABILITY SELECT COMMITTEE MEETING HELD ON THURSDAY, JUNE 12, 2014 AT 2:10 PM IN THE RDN COMMITTEE ROOM

Present:

Director J. Stanhope	Chairperson
Director A. McPherson	Electoral Area A
Director H. Houle	Electoral Area B
Director M. Young	Electoral Area C
Director B. Veenhof	Electoral Area H
Director M. Lefebvre	City of Parksville
Director J. de Jong	District of Lanztville
Director D. Willie	Town of Qualicum Beach

Also in Attendance:

Director J. Fell	Electoral Area F
P. Thorkelsson	Chief Administrative Officer
G. Garbutt	General Manager, Strategic & Community Development
C. Midgley	Manager, Energy & Sustainability
T. Pan	Sustainability Coordinator
N. Hewitt	Recording Secretary

Regrets:

Director D. Brennan	City of Nanaimo
Director J. Kipp	City of Nanaimo

CALL TO ORDER

The meeting was called to order at 2:10 p.m. by the Chair.

MINUTES

MOVED Director Lefebvre, SECONDED Director Houle, that the minutes of the Sustainability Select Committee meetings held on Wednesday March 12, 2014 and Tuesday May 20, 2014 be adopted.

CARRIED

REPORTS

Carbon Neutral Operations – 2013.

MOVED Director Lefebvre, SECONDED Director Willie, that the report be received for information purposes only.

CARRIED

Additional Funding for RDN Woodstove Exchange Program.

MOVED Director Veenhof, SECONDED Director Houle, that the Sustainability Select Committee recommend the Board release up to $20,000 from the Regional Sustainability Initiatives Reserve Fund to support the RDN Woodstove Exchange Program in 2014.

CARRIED

Green Building Outreach Strategy and Implementation Plan.

MOVED Director Lefebvre, SECONDED Director Veenhof, that the Sustainability Select Committee endorse the 2014-2015 Green Building Outreach Strategy and Implementation Plan

CARRIED

2014 Green Building Series.

MOVED Director Houle, SECONDED Director Lefebvre, that the report be received for information purposes only.

CARRIED

Update on Overcoming Barriers to Green Buildings.

MOVED Director Willie, SECONDED Director McPherson, that the report be received for information purposes only.

CARRIED

Quarterly Energy Update.

MOVED Director de Jong, SECONDED Director Veenhof, that the presentation be received for information purposes only.

CARRIED

ADJOURNMENT

MOVED Director Veenhof, SECONDED Director Houle, that this meeting be adjourned.

CARRIED

Time 3:25 pm

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CHAIRPERSON

MINUTES OF THE REGULAR MEETING OF THE DRINKING WATER AND WATERSHED PROTECTION TECHNICAL ADVISORY COMMITTEE HELD ON WEDNESDAY, JULY 23, 2014 AT 12:30 PM

Present:

Mike Donnelly, CHAIR	Manager, Water & Utility Services, RDN
Courtney Simpson	Islands Trust Representative
Peter Law	General Public Representative (North)
Gilles Wendling	General Public Representative (South)
Lynne Magee	Island Health
Pat Lapcevic	Ministry of Forests, Lands and Natural Resource Operations
Faye Smith	Environment Community Representative
Ken Epps	Forest Industry Representative
Domenico Iannidinardo	Forest Industry Representative
Kate Miller	Manager, Environmental Initiatives, CVRD
Oliver Brandes	Academic Community Representative
Alan Gilchrist	Academic Community Representative (VIU)
Deb Epps	Registered Professional Biologist Representative
Leon Cake	Water Purveyors' Representative
Mike Squire	City of Parksville / Program Manager, Arrowsmith Water Service
Bill Sims	Manager, Water Resources, City of Nanaimo
David Vincent	Hydrologist Representative (Northwest Hydraulic Consultants)
Chris Cole	Forestry Industry Representative
Kirsten Fagervik	Ministry of Transportation and Infrastructure

Regrets:

Bob Weir	Director of Engineering and Utilities, Town of Qualicum Beach
Fred Spears	Director of Public Works, District of Lantzville

Also In attendance:

Julie Pisani	Drinking Water and Watershed Protection Coordinator, RDN
Alex King	Special Projects Assistant, RDN
Deanna McGillivray	Special Projects Assistant, RDN
Rebecca Graves	Recording Secretary, RDN
Shelley Norum	Wastewater Coordinator, RDN
Randy Alexander	General Manager, Regional & Community Utilities, RDN
Geoff Garbutt	General Manager, Strategic & Community Development, RDN
Twyla Graff	CAO, District of Lantzville

CALL TO ORDER

M. Donnelly called the meeting to order at 12:35 pm.

MINUTES

Minutes from the regular meeting of the Drinking Water and Watershed Protection Advisory Committee held June 19, 2013 were adopted.

COMMUNICATIONS/CORRESPONDENCE

M. Donnelly welcomed and introduced Peter Law (new TAC member), Dave Vincent (new TAC member), Kirsten Fagervik, (new TAC member), Jessica Dorzinsky (RDN, Special Projects Assistant), Alex King (RDN, Special Projects Assistant), Deanna McGillivray (RDN, Special Projects Assistant).

INTRODUCTORY GROUP PARTICIPATION

TAC Member	Focal Current Project?	Biggest Priority for our Region's Watersheds?
Mike Squire, City of Parksville	To build a new water intake and enhanced water treatment on the Englishman River for the ERWS.	Funding.
Kate Miller, Cowichan Valley Reg. District	Focusing on development and implementation of a number of dykes to protect central area and drought management issues; Governance issues & development of WMPs.	Communication within community.
Courtney Simpson, Islands Trust	Looking at riparian areas / surface water on Gabriola.	Understanding what water is available for development.
Lynne Magee, Island Health	Surface water / groundwater treatment objectives.	Safe drinking water and having an integrated watershed management approach that also considers the ecological values of water.
Bill Sims, City of Nanaimo	Water treatment/ filtration plant that CoN is building for 2015 completion.	Looking at climate change and water conservation, managing supply limits.
Ken Epps, Island Timberlands	Water quality and how our activities affect that and strategies to improve.	Always getting science based information to move forward.
Domenico Iannidinardo, TimberWest	Process and make sure we keep up with the science and best communicate and share information.	Ensure new staff become familiar with these processes.

Chris Cole, TimberWest	To interface with operations and stakeholders; Learning and implementing BMPs.	Increase communication and awareness of TimberWest operations in the watersheds.
Kirsten Fagervik, MOTI	The three hundred development application files for Vancouver Island and review each file to look at water and watershed practices.	Availability of drinking water that meets the drinking water standards and to protect the watersheds.
Alan Gilchrist, VIU	Climate change and agricultural water demand.	To determine water-stressed areas, a greater level of science is needed.
Mike Donnelly, RDN	The ERWS and new intake for Parksville / Nanoose.	Developing an integrated watershed management approach and building relationships with First Nations to help move together in watershed processes.
Oliver Brandes, POLIS	Looking at the implementation of the WSA in BC and what that means.	Watershed governance - how to integrate decision making that's appropriate and engaging First Nations.
Gilles Wendling, GW Solutions	Working with Faye in the Englishman River watershed to better understand the watershed and focusing on the flow in the bedrock aquifer.	To understand the connection between surface water and ground water and create the tools to pass the message back to the public and be more connected to the watershed.
Deb Epps, MOE	To manage and support staff across the province, and all their water monitoring projects.	-
Faye Smith, MVIHES	Groundwater mapping in the Englishman River watershed.	Better inform our elected representatives and developers of the importance of watershed sustainability.
Peter Law	The partnership for Water Sustainability in BC and the Water Balance Model.	Watershed health, engaging the public on this.
David Vincent, Northwest Hydraulic Consulting	Surface water environmental issues.	-
Leon Cake, Coastal Water Suppliers Assoc.	Partnership with other organizations that do operator training.	Open communication with watershed owners.
Pat Lapcevic, MFLNRO	Water Sustainability Act implementation and the preparation for licensing of groundwater.	Sustaining watershed health, looking at cumulative effects and salt water intrusion, especially on the Gulf Islands. Also, engaging the public.
Geoff Garbutt, RDN (guest)	Fairwinds area development.	Coordination of development approvals and standards.

Take away: biggest priorities are effective ongoing communication and improved science.

DISCUSSION QUESTIONS FOR THE COMMITTEE

1) First Nations Engagement

Mike Donnelly presented the committee with discussion questions which included:

- How can we meaningfully engage First Nations in the process of visioning and planning for watershed protection?
- Share personal experiences that lend wisdom to successful partnership with First Nations?
- Anyone working closely with local First Nations on current projects that relate to water?

Comments included:

- Maintaining ongoing contact with FN requires commitment.
- There is a legal requirement to engage FN, no longer just a "nice to do".
- We need something "co-created" with First Nations. Simple things like where you meet, how you notify, and how you set up the agenda in a co-created way is the minimum starting point.
- Cowichan tribes participation in the Water Board process in Cowichan… at the table, doing the sampling, participating, very engaged.
- Work with FN groups in the north includes gathering Traditional Ecological Knowledge about their traditional territories, concerns in the watershed, special interests, cultural significance i.e. bathing areas, etc. Important to have the TEK and the science working together… valuing traditional knowledge demonstrates effort to make sure FN needs are met and their rights are protected as well.
- Important to identify key contacts and understand each other's way of thinking. Connect with youth and elders. Be aware that, and respect that, elders play a key role. Trust building is very important.
- We have the tendency to focus too much on plans and schedules, and need to adapt to First Nations approaches. Coming to a meeting without an agenda would provide more chances to listen.
- A key to engagement and participation is really being clear what you are there for. To actively participate there needs to be an end goal. Gaining trust and building a good relationship as well as being very clear and engaging them.
- Our typical approach of sending a letter, and waiting for a response is not very effective.
- Not "one size fits all" answer. Approaches to effective relationship building will differ from one regional district to another, and from one First Nation to another
- Conflict and crisis can be an opportunity for a frank discussion with the issue rather than putting it off. For example, a water shortage crisis that affects everyone can bring all parties together to find solutions.

- Discussions may be uncomfortable but provide an important opportunity to speak up and discuss how we move together as a group. Continuing to meet and talk about specific issues helps build an understanding of each other's perspectives. Need to get out to each other's "living rooms and backyards" to understand each other's needs and perspectives.
- Communities are then given the tools to come to a discussion with knowledge and understanding of the others in the room. Allowing First Nations to lead can reduce conflict.
- The most important thing that goes wrong is that a discussion takes place then it fizzles/disappears.
- When you partner with FN you must have knowledge in dealing with the culture of the people… they are very educated on the process of their water in their communities. How do you engage their particular process and partner with that process which opens that door? With First Nations you need to open the door in a respectful way.
- One way is to come in as a pilot project with a community effort of water education for the children – engage the elders, the community, whoever is governing, with the initiative to provide education opportunities for the children.
- Inviting, engaging, forming partnerships should happen in a community format.
- It's about staying engaged, maintaining what you are bringing to the community and helping the community with, and what we are trying to accomplish in the relationship. You can engage the communities, with the WaterSmart program. It can be grass rooted or technical - just engage with them.
- First Nations should be respected as right holders and not just invited to a process we already have. Focus on trust building and relationship building. Find the best way forward for both.
- One approach is to build those relationships, build that trust one-on-one level to the point to set up a separate or parallel process with First Nations. Or they might express interest to sit in the room with us and participate in a forum. We don't know for sure until we meaningfully engage with them and ask.
- The TAC is a group of stakeholders and advisors. FN are not "stakeholders", they want to participate and actually make decisions. Decision making may require engaging board members and elected officials in an entirely different way.
- In a large region with a lot of sub regions, recommended scaling it to the community and scaling it to the resources in that community in order to participate effectively.

2) Streamflow Monitoring Partnerships

Julie Pisani delivered a short PowerPoint and opened the floor to discussions and input.

Comments included:

- Data quality can be an issue. Bad data is much worse than no data. Running the stations, selecting the site and maintaining the data base requires very high quality control.
- Data should be stored at an agreed upon centralized location, for example a Provincial or Federal database.

- Used BCCF for flow monitoring for projects and received good service, good data.
- For MVIHES' flow monitoring program, they have a piece of equipment that they calibrate and volunteers use as a flow tracker.
- CVRD is struggling in their region, desperate for data.
- We should be supporting and pushing the federal government in a constructive way to encourage the investment in these data collection and management systems, also to say community based science is very important to us.
- Would be good to have a geo-referenced map to display where everyone's data is collected. Getting all the data on a map is a start.
- Important to have historic data when we want to look at climate change.
- P. Law, B. Sims, K. Epps, D. Iannidinardo, A. Gilchrest, D. Vincent, K. Fagervik, G. Wendling, N. Goeller (nominated by P. Lapcevic) all showed interest in being involved in the sub-committee.

REPORTS

Update on Community Watershed Monitoring Network – 3 year Trend Report and Program Adaptions for 2014

Julie Pisani gave the committee an overview on the community watershed monitoring network.

Key points:

- Monitoring will continue in 2014 and sampling will occurs at 50 sites; 8 sites have been newly added this year, upstream of sites that had displayed turbidity exceedances in the first three years of the program.
- Seven sites were identified at priority sites for expanded monitoring, based on the trends of the past three years of sampling. These sites will now have lab analysis done for Phosphorus and Bacteria in addition to the usual monitoring to determine potential contaminants associated with observed turbidity exceedances.
- 26 out of 51 sites had three years of data by the end of 2013; the remaining sites need to be monitored for 1 - 2 more years to reach three years of data, the earliest point at which a trend report can be produced by the MOE.
- The three-year trend report for the eligible sites that had three years of data at the end of 2013 has been produced by the MOE, and is just pending final edits prior to publishing.
- Some sample sites within the program are marked now as "flagship" sites for their watershed and will be monitored each year for the additional purpose of serving as an indicator for the regional stream water quality for the RGS.
- This program is a partnership between the RDN, volunteer stewardship groups, the Ministry of Environment and Island Timberlands.

Introduction to Integrated Watershed Management Strategy Framework Development

Jessica Dorzinsky presented the report on the Integrated Watershed Management Strategy Framework Development.

Key Points:

- The DWWP action plan outlines Program 4 as "Watershed Management Planning" – this is something we are embarking on starting this year
- The idea is to design a framework or operational structure for enhancing, protecting and restoring watersheds in our region that can be adapted to each water region or basin.
- The framework would involve: alignment of existing tools, expertise and resources; creating a unified strategy for implementation of common water protection mandates; establishment of community-based and science-based watershed objectives and targets for and indicators of watershed health; participation of all interested parties in the process; define a tool-box of management options (policies, bylaws, voluntary measures) that will incorporate watershed protection into land and resource use decisions.
- The framework must be jointly determined and this will be an exercise for the TAC to provide guidance on in the coming months – a proposed process was outlined in a diagram, for consideration.
- Take home question: How do we move from a siloed approach to an integrated water region approach in the work each of us already does?

Update from Team WaterSmart

Alex King and Deanna McGillivray did a mock presentation on Team WaterSmart's interaction with the public.

Key Points:

- Summary of curriculum connected watershed field trips to Jump Lake Dam and Nanaimo River Regional Park, for grades 4 & 5 in SD68 during the spring.
- Update on Irrigation Check-up program, free visits to assist homeowners with their automatic irrigation system to increase efficiency and reduce waste.
- Description of the Watershed Friendly Yard campaign – where residents with yards that have water-wise features can receive a locally made cedar sign to promote this throughout the community.
- Update on Rainwater Harvesting Rebate program and Rural Water Quality (well testing and upgrades) Rebate program
- Summary of TWS community events, interactive outreach display

Update on RDN Water Budget

Julie Pisani updated the committee on the water budget, geodatabase and web-map.

Key Points:

- Data that went into the Water Budget Report calculations is now viewable in a GIS web map format
- Staff are in the process of streamlining the pre-existing Water Map with this new Water Budget Map to result in one web map that is effective for housing, inter-relating and displaying water data
- This tool should be used by consultants, professionals, RDN staff
- A suite of data entry spreadsheet templates and protocols will be developed to ensure data is kept current

Take-away questions for the TAC (perhaps to answer at next meeting):

1. What data would be most helpful to you to be housed and interrelated in an RDN served Water Map? What data would you search for / use the most?

2. What data can your organization provide to contribute to the inventory of regional water data to include in a GIS map and database?

ADJOURNMENT

The meeting was adjourned at 3:15 pm.

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Mike Donnelly, Chair

REGIONAL DISTRICT OF NANAIMO

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MEMORANDUM

TO: Geoff Garbutt
General Manager,
Strategic and Community Development

DATE: September 5, 2014

FROM: Chris Midgley
Manager, Energy and Sustainability

FILE: 1855-03-CARIP

SUBJECT: **Release of Corporate Climate Action Reserve Funds – September 2014**

PURPOSE

To request that funds up to $34,500 be released from the Corporate Climate Action Reserve Fund for investment in two projects that contribute to corporate energy conservation and emissions reductions.

BACKGROUND

The Corporate Climate Action Reserve Fund was established by bylaw at the Regular Board Meeting held November 22, 2011. The fund is intended to support capital investment in vehicles, equipment, infrastructure and initiatives that result in corporate energy conservation and emissions reductions.

The source of revenue for the Corporate Climate Action Reserve Fund is the Provincial Climate Action Revenue Incentive Program (CARIP), which provides an annual grant to the Regional District of Nanaimo (RDN) in an amount equal to that paid by the RDN in the Carbon Tax. In 2014, the CARIP grant was $112,558 and at present, the total amount available for projects is approximately $275,600.

2014 NEW PROJECTS

For 2014, two new projects have been identified for funding: a variable frequency drive pump speed controller for one new pump to be installed at the Departure Bay Pump Station (DBPS); and software costs for ongoing regional use of the SMARTTool Energy and Emissions Monitoring and Reporting tool.

Departure Bay Pump Station (DBPS) – Variable Frequency Drive (VFD) Pump Control ($30,000)

At present, the DBPS has four Worthington Model 10CFA-2, 350 horsepower pumps in service. These pumps were installed in 1973, and are scheduled to be replaced over the ten-year period beginning in 2014/2015. In March of 2014, AECOM completed a *Technical Memorandum* recommending replacing the existing pumps with new models that closely match the existing configuration, controlled with variable frequency drives (VFD) rather than the Eddy current magnetic coupling pump speed controllers presently in use.

When compared to the controllers currently installed, and conventional permanent magnetic drives, the VFD option is the most energy efficient. Table 1 (adapted from the AECOM *Technical Memorandum*) lists the efficiency of the three pump control options at the 80-95% speed range.

Table 1: Pump Speed Control Technology Efficiency

Pump Speed Control Technology	Efficiency Rating (80-95% Speed Range)
Eddy Current Magnetic Coupling	70-88%
Permanent Magnetic Drive	80-95%
Variable Frequency Drive	95-98%

Source: Ken Moysiuk, P.Eng, *AECOM Memorandum: RDN Departure Bay Pump Station Assessment (Final)*, March 31, 2014, p. 5

In large horsepower, reliability-critical applications such as the Departure Bay Pump Station, VFDs are an untested technology for the RDN. As such, the RDN has opted to apply this new technology on a pilot basis on one new pump, and monitor for reliability, effectiveness and efficiency before committing to investing in VFD controls for additional pump replacements.

Actual savings to be realized by this investment are unknown, but the DBPS is the second largest single consumer of electricity in the RDN portfolio of facilities. In 2013, over 2 million kilowatt hours (kWh) were consumed there (more than 16% of the total electricity consumed in all RDN facilities).

Every one-percent reduction in energy use at DBPS represents approximately 20,000 kWh savings[1]. Real-time energy monitoring tools have been installed at the DBPS, and before and after consumption will be monitored for any measurable impact attributable to the installation.

The cost for the VFD controller is quoted at $60,000. It is proposed that 50% of that cost or $30,000 come from the Corporate Climate Action Fund.

SMARTTool Software for Energy and Emission Monitoring and Reporting ($4,500)

SMARTTool is a web based energy and emission inventory tool produced by the Province to assist local governments develop and report accurate corporate emission inventories. Reporting corporate energy use and emissions to the Province is the prerequisite for receiving the CARIP grant described above.

The Province has enabled the RDN to bundle a regional purchase of the SMARTTool, allowing the RDN and participating member municipalities (District of Lantzville, City of Parksville, and the Town of Qualicum Beach) to access the software and technological support at a reduced rate.

The software and support costs of the SMARTTool have previously been covered by releases from the Corporate Climate Action Fund.

ALTERNATIVES

1. Approve the release of up to $30,000 from the Corporate Climate Action Reserve Fund for investment in a pilot test of Variable Frequency Drive pump controllers for one new pump at the Departure Bay Pump Station.

2. Approve the release of up to $4,500 from the Corporate Climate Action Reserve Fund for the regional purchase SMARTTool.

3. Do not approve the release of funds, or provide alternate direction to staff.

[1] For comparison, in 2010 average household electricity consumption in the RDN (electoral areas and member municipalities) was approximately 13,500 kWh (Source: Province of BC, *Regional District of Nanaimo 2010 Community Energy and Emission Inventory (CEEI) Report,* 2012).

FINANCIAL IMPLICATIONS

Contributing $30,000 from the Corporate Climate Action Fund toward the installation of new, energy efficient infrastructure will allow that same amount to remain in the existing Capital Reserve, Southern Wastewater – General reserve account. While the amount is small in relation to wastewater infrastructure costs in general, every dollar that remains in reserve now reduces amounts to be borrowed in the future, benefitting future taxpayers accordingly.

In addition, the project should result in a measurable reduction in electricity use for the facility. Actual savings associated with this test of VFD technology are not known, but will be estimated by comparing pre- and post-installation electricity consumption in real-time. Reliability and effectiveness will also be closely monitored, and if the technology proves itself, then greater savings will be possible with the installation of VFD pump controls on future pump replacements.

Contributing $4,500 toward the regional purchase of the SMARTTool allows the RDN and member municipalities to continue to have access to the software and support intended to simplify measuring, monitoring and reporting corporate energy use and emissions at a reduced rate. Reporting corporate emissions to the Province is required to access the CARIP grant, which in 2014 amounted to $112,558 for the RDN.

STRATEGIC PLAN IMPLICATIONS

The financial savings from reduced energy use, and the opportunity to reduce future borrowing support the strategic priority to ensure economic viability for RDN services. Monitoring and communication is a second strategic priority supported by this project. Data gathered as a result of this pilot project will help determine the RDN's approach to future investments in wastewater pumping infrastructure.

Investing $4,500 in the regional purchase of the SMARTTool supports the strategic priority of regional collaboration between the RDN and member municipalities

SUMMARY/CONCLUSIONS

At the November 2, 2011 Board Meeting, the Regional District of Nanaimo Board of Directors established by bylaw the Corporate Climate Action Reserve Fund. Revenues into the Reserve Fund come from the Provincial CARIP grant, which is accessible to the RDN for signing on to the Climate Action Charter, and measuring, monitoring and reporting corporate emissions. The Provincial grant is provided annually in the amount equal to what the RDN pays in the Carbon Tax, as reported to the Province. For 2014, the CARIP grant was $112,558, and the total available in reserve is approximately $275,600.

Two new projects have been identified as suitable for investment from the Corporate Climate Action Reserve Fund for 2014:

- A Variable Frequency Drive pump speed controller for a new pump to be installed at the Departure Bay Pump Station (up to $30,000); and
- Regional purchase of the SMARTTool energy and emissions monitoring software (up to $4,500).

RECOMMENDATIONS

1. That the Board approve the release of up to $30,000 from the Corporate Climate Action Reserve Fund for investment in a variable frequency drive pump speed controller for the Departure Bay Pump Station.

2. That the Board approve the release of up to $4,500 from the Corporate Climate Action Reserve Fund for the regional purchase of SMARTTool.

Report Writer

General Manager Concurrence

CAO Concurrence

REGIONAL DISTRICT OF NANAIMO

RDN REPORT
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MEMORANDUM

TO: Geoff Garbutt
General Manager, Strategic and Community Development

DATE: September 10, 2014

FROM: Chris Midgley
Manager, Energy and Sustainability

FILE: 6430-05-CNOP

SUBJECT: **2014 Regional Emission Reduction Projects**

PURPOSE

To update the committee on regional emission reduction projects under development for the 2014 emission inventory year.

BACKGROUND

In 2008, the Regional District of Nanaimo (RDN) became a signatory to the Climate Action Charter, which includes the commitment to develop strategies and take actions to achieve carbon neutral operations. To achieve carbon neutral operations, a local government must quantify and offset corporate emissions. Whether through investing in local emission reduction projects, or purchasing verified third-party carbon offsets, achieving carbon neutral operations represents a financial cost for local governments.

While committed to taking actions to achieve carbon neutral operations, the RDN Board of Directors has maintained a strong desire to ensure that any costs associated with carbon neutrality remains within the region, directly benefitting residents of the region. To that end, the Regional District of Nanaimo and Member Municipalities executed a *Memorandum of Agreement* (MOA) to implement regional emission reduction projects. According to the MOA, regional emission reduction projects are to be implemented with funds reserved annually based $25 per tonne CO_2e for local government emissions. At the Regular Board meeting held June 26, 2012, the Board carried the following recommendation of the Sustainability Select Committee:

> *That the Regional Emission Reduction Project Memorandum of Agreement be endorsed by the RDN Board and forwarded to the member municipalities.*

To date, one regional reduction emission reduction project has yielded reductions for the RDN and member municipalities. The curbside organic collection program operated by the RDN's Solid Waste department and the City of Nanaimo diverts household food waste from the landfill to a private sector composting facility. Since 2011, a total of 15,615 tonnes of diverted organic waste has resulted in emission reductions totaling 8,375 tonnes CO_2e, enough for the RDN, Town of Qualicum Beach, City of Parksville and the District of Lantzville to achieve carbon neutral operations for the 2012 emission inventory year; and for the City of Parksville and the District of Lantzville to achieve carbon neutral operations for the 2013 emission inventory year. In 2012, emission reductions from organic diversion were not sufficient for the City of Nanaimo to achieve carbon neutral operations, nor were they

sufficient for the City of Nanaimo, the Regional District of Nanaimo or the Town of Qualicum Beach to achieve carbon neutral operations for the 2013 emission inventory year. In those circumstances, the City of Nanaimo, the Regional District of Nanaimo and the Town of Qualicum Beach were recognized for 'making progress' toward carbon neutral operations.

New Regional Emission Reduction Projects for the 2014 Inventory Year

Emissions for the 2014 inventory year will be calculated upon the conclusion of 2014, and verified and reported by March 31, 2015. The final deadline to report emissions for the 2014 inventory year is expected to be the first week of June 2015.

Low Emission Vehicles

A new opportunity for a regional emission reduction project relates to the incorporation of 25 compressed natural gas buses into the regional transit fleet. Much like the opportunity to count reductions associated with organic diversion, the Province of BC, through the Climate Action Secretariat, has developed a method to count reductions associated with switching to lower emission fuel sources for vehicles against local government emission inventories. The shift from diesel fuel to compressed natural gas for 25 buses in the regional transit fleet is applicable within this project type.

This is a new project type for the RDN with an unknown quantity of potential reductions, and it remains to be determined whether any or all reductions are to be shared with BC Transit. Preliminary discussions with BC Transit have taken place, and the RDN will use the simplified provincial method to determine the total quantity of reductions made possible by this project. Any reductions available to the RDN and member municipalities will be counted against the respective local governments' inventories.

Avoided Deforestation

Another regional emission reduction project type also developed by the Climate Action Secretariat relates to avoided deforestation. In general, if a parcel of forested land is at risk of development as a result favourable zoning, and some or all the forested portion of that parcel is protected in perpetuity, then a measurable amount standing carbon is protected, or 'sequestered' in the form of living trees. This sequestered carbon can be counted as a reduction against a corporate emission inventory.

The Phased Development Agreement for the Fairwinds project represents an ideal opportunity to translate large areas of park land previously zoned for development into local government emission reductions. As land previously zoned for development comes under the ownership of the RDN as park, any potential emissions reductions will similarly come under the ownership of the RDN. It is unlikely that any park land contemplated in the Fairwinds Phased Development Agreement will come under RDN ownership in 2014, but a preliminary assessment of the park area eventually to come under RDN ownership shows enormous potential for reductions.

On a smaller scale, single parcels where an area greater than one hectare could be protected from deforestation also show promise. If an owner of such a parcel agreed to protect a forested portion of their property in perpetuity, and the parcel owner was willing to convey ownership of that sequestered carbon to the RDN, the RDN could provide a financial contribution to the land owner on a price-per-tonne basis for the sequestered carbon.

Staff have budgeted professional fees to assess the viability of investing funds reserved for regional emission reduction projects toward forest land protection on private parcels for the purpose of carbon sequestration. For this opportunity, qualified consultants are needed to determine whether the simplified method developed by the Province requires refinement, as well as the legal instruments most appropriate for protecting private property in perpetuity for the purpose of carbon sequestration. The ability to apply reductions from avoided deforestation to the 2014 emission inventory year depends on the complexity of the results of this project and the Board's willingness to proceed, based on those results.

ALTERNATIVES

1. Recommend that staff proceed with a proposed project to evaluate potential legal instruments and develop the legal language necessary to protect private forest land in perpetuity for the purpose of implementing regional emission reduction projects.

2. Recommend that staff do not proceed with the proposed project, and provide alternate direction to staff.

FINANCIAL IMPLICATIONS

Implementing regional emission reduction projects based on methods developed by the Province of BC through the Climate Action Secretariat are free of charge. The only investment necessary is the staff time needed to gather data and input values into spreadsheets provided by the Province.

In the case of curbside organic diversion, the Regional District of Nanaimo and member municipalities have been able to claim emission reductions for implementing an important regional project, thereby receiving additional benefits as a result of good work directed by the Board. This regional emission project alone has saved local governments in the region an estimated $209,375 (8,375 tonnes of reductions at $25 dollars per tonne).

Moving forward, organic diversion is not likely to yield sufficient annual reductions for the RDN and all member municipalities to achieve carbon neutral operations, so additional regional emission reduction projects are under consideration.

The opportunity to quantify reductions from switching regional transit buses to compressed natural gas from diesel fuel is another example of a good project implemented by the Regional District of Nanaimo that may reap additional rewards in terms of corporate carbon neutrality – though the actual numbers have yet to be determined. The only financial implications associated with this project are the financial savings that result from counting reductions against corporate emission inventories, much like the organic diversion program.

The opportunity to implement regional emission reduction projects based on avoided deforestation and carbon sequestration on private parcels is a unique project that has the potential to yield a very significant quantity of emission reductions, while providing a financial benefit to local land owners, but will come at a cost to the RDN.

The RDN has established a reserve account to implement regional emission reduction projects. Presently, there is $51,381.20 held in reserve in that account. Based on an internalized price of $25/tonne CO_2e, this sum is sufficient to 'offset' 2,055 tonnes of corporate emissions. It is from this account that funds would be requested to provide to private land owners with a financial incentive for protecting forest land that could legally be deforested.

After accounting for curbside organic collection, it is estimated that the Regional District of Nanaimo will have to offset approximately 1,000 tonnes CO_2e for the 2014 inventory year. At $25 per tonne, this amounts to $25,000, which will be raised by the RDN services that generate emissions.

If avoided deforestation projects prove to be viable and supported by the Board of Directors; and enough private land owners volunteer to participate, up to the full $25,000 can be redirected into the regional community. If viable, this could generate financial benefits for land owners while increasing areas of protected forest land, protecting regional watersheds and air quality, and contributing to carbon neutral operations for the Regional District of Nanaimo.

The Energy and Sustainability Department has up to $20,000 to allocate toward professional fees for regional sustainability initiatives. It is proposed that the project to evaluate legal instruments and develop the legal language necessary to protect private forested land in perpetuity for the purpose of implementing regional emission reduction projects be funded through this budget item. The actual value of the professional fees will be known upon receipt of proposals from qualified professionals, but will not exceed $20,000.

STRATEGIC PLAN IMPLICATIONS

Implementing regional emission reduction projects is strongly supported by the Board Strategic Plan.

Under the Strategic Priority of Self-Sufficiency, the Board Strategic Plan includes the objective "to work with each local government and electoral area to reduce emissions and meet provincial and global targets for emission reductions while generating benefits for the region." (Regional District of Nanaimo Board of Directors, *Working Together for a Resilient Future: 2013-2015 Board Strategic Plan*, p. 18).

Similarly, within the Regional Federation Action Area, the goal to "strengthen the working relationships between municipalities and electoral areas in the RDN and increase operational effectiveness through cooperation," is to be achieved in part by "collaborat[ing] with municipal partners to develop local emission reduction projects that contribute to carbon neutrality for local governments while benefitting local residents." (Regional District of Nanaimo Board of Directors, *Working Together for a Resilient Future: 2013-2015 Board Strategic Plan* p. 23).

Finally, within the Strategic and Community Development Action Area, the goal to "improve community self-sufficiency with energy conservation, renewable energy initiatives and regional emission reduction projects," is to be achieved in part by "develop[ing] regional emission reduction projects that retain carbon tax dollars in the region, and provide benefits to residents." (Regional District of Nanaimo Board of Directors, *Working Together for a Resilient Future: 2013-2015 Board Strategic Plan*, p. 25).

SUMMARY/CONCLUSIONS

In signing the Climate Action Charter, the Regional District of Nanaimo has made the commitment to develop strategies and take actions to achieve carbon neutral operations. The Regional District of Nanaimo and member municipalities have fulfilled this commitment as a result of implementing the organic diversion program through the Solid Waste department.

Moving forward, organic diversion is not likely to yield the emission reductions necessary to achieve corporate carbon neutral operations, and if viable, two new regional emission reduction projects are proposed to reduce emissions for the 2014 emission inventory year and beyond.

Firstly, it may be possible to quantify emission reductions resulting from the switch from diesel fuel to compressed natural gas for 25 buses in the regional transit fleet. The quantity of reductions remains to be determined, as does the ownership of those reductions. RDN staff have initiated preliminary discussion with BC Transit to clarify the ownership of reductions arising from this beneficial project. Any reductions available to the RDN and member municipalities from this project type will be counted against the respective local government inventories.

It is also possible to quantify emission reductions resulting from the protection of forested land from deforestation. The potential for carbon sequestration projects to contribute to corporate carbon neutral operations is significant, both in terms of total tonnes of reductions and direct benefits to residents of the region but work needs to be done to assess the viability of this project type.

It is proposed that the Regional District of Nanaimo allocate budgeted professional fees to evaluate potential legal instruments and develop the legal language necessary to protect private forest land in perpetuity for the purpose of implementing regional emission reduction projects.

RECOMMENDATION

That staff proceed with developing a request for proposals from qualified professionals to evaluate potential legal instruments and develop the legal language necessary to protect private forest land in perpetuity for the purpose of implementing regional emission reduction projects.

Report Writer

General Manager Concurrence

CAO Concurrence

Drinking Water Watershed Protection

Technical Advisory Committee

Information Package

Why Monitor Streamflow?

Context:

- There are strong interactions with the physical, chemical, and biological structure and function of a river ecosystem and watershed… streamflow impacts all of these. The amount of water flowing in a stream is influenced primarily by: water running off the land (rainfall, snowmelt) and groundwater discharge.
- Analyzing streamflow data can help the interpretation of other data collected in the watershed -- the streamflow of a river and its tributaries can have considerable variation seasonally and annually; consequently this influences other components monitored to assess watershed health, such as water quality, groundwater levels etc.
- Monitoring streamflow reveals how much water is moving off the watershed land into the waterway - which is influenced by how pervious the surrounding land is and by the precipitation patterns of the region.
- There are currently 6 active Water Survey of Canada hydrometric stations in our region; 29 have been deactivated. The RDN Water Budget Report (Waterline & KWL, 2013) recommends the collection of additional streamflow data to improve stress assessment calculations.

Impacts:

- Streamflow monitoring provides critical information on potential flooding hazards and low water/ drought warnings for communities in the watershed.
- Streamflow can potentially alter water and sediment quality of the watercourses, affect wetlands adjacent to rivers and impact fish habitat.
- Stream flow monitoring can indicate impacts of human activity; water withdrawals for irrigation or industry can deplete flow levels, dams block the flow of a stream and create altered flow patterns, impervious areas can contribute to flash flooding

Next Steps:

- ➢ Assess where improved stream flow monitoring would be most beneficial in the RDN based on current issues or gaps or red flags.
- ➢ Determine how the data will be collected, where it will be stored, who will analyze / interpret the data, how it will be communicated and used.

DRINKING WATER WATERSHED PROTECTION

Program Action 2

…in the DWWP Action Plan

Water Resources Inventory & Monitoring - *2B: Additional or NEW Data Collection*

Surface Water Sources

a) Prepare tables/graphs from existing data to show trends. Identify data gaps and set priorities for adding new stream monitoring sites and/or snowpack monitoring sites, and for upgrading existing sites.

To effectively assess changes in stream flow and the effects of water use may require continuous monitoring. Relatively inexpensive stream data loggers that record water level and temperature at every 10 minutes (or less) are available for this purpose. Some streams may require multiple monitoring sites to identify the impact of water demands in various stream sections.

b) Coordinate and support volunteers to operate and maintain stream monitoring sites throughout the year. Volunteers can assist staff by measuring stream flows, downloading data loggers and most importantly, visually monitor stream changes (erosion, sediment deposition, channel changes) on a monthly basis and after major events.

Core Objectives

Improve hydrometric information in the Region to:

- support a range of water management activities including climate change adaptation, drought planning, water supply reporting, evaluating ecosystem health, land-use decision making, public understanding;
- aid with modelling, research and developing decision support tools

What Opportunities Exist for Streamflow Monitoring?

- collaboration between various levels of government and stewardship groups
- water level loggers can installed to "re-activate" old hydrometric stations (WSC historic sites) and collect time series data
- stewardship groups are/ can be trained to collect flow (discharge) data
- data housed in centralized place - Provincial database; WSC database as "non-integrated"; RDN geodatabase; BCCF database? Other?
- monitor flow at intersection of bedrock aquifer fractures and the river/stream; this will help with understanding how much groundwater is contributed to the surface water base flows throughout the year
- other partnerships?; other opportunities?

Relationship with WSC and BC MOE (excerpt from "Terms of Hydrometric Station Operation by Water Survey of Canada and the Ministry of Environment, March 2010)

- "WSC will operate stations for third parties such as local government bodies. By agreement, the administration of arrangements for all such stations is handled by the BC MoE since the stations often relate to Provincial interests or jurisdiction. Coordination by MoE includes advice on hydrometric services to meet client needs such as station location, hydrometric operations program, and ancillary services. In general, MoE has the primary mandate for water and resource management, and therefore has expertise in how hydrometric operations meet client needs in these areas. WSC specializes in hydrometric operations and data production." *Note: WSC does train groups like BCCF*

In this scheme, technical expertise for hydrometric stations comes from WSC and MoE. RDN DWWP can potentially support MoE (now MFLNRO) in the coordination of partners, some funding contribution and provide the local context, as this data will support the RDN water budget calculations for local decision making.

Questions to Address:

- Which organizations represented on the TAC are currently engaged in stream flow monitoring? Directly or indirectly.
- What do you see as the value of improved stream flow monitoring to drinking water and watershed protection in our region?
- Who is interested in being involved on a sub-committee to discuss:

Priority sites

Data storage /interpretation

Partners (roles & resources)

June 9th, 2014 – Staff from the WSC, MFLNRO, MOE, BCCF and RDN got together to start a conversation about streamflow monitoring partnerships.

There was interest from all parties in continuing to explore the possibilities.

It was left that RDN staff would go to the DWWP TAC for guidance and potentially organize a sub-committee workshop on flow monitoring site prioritization /selection and role/responsibility delineation.

The Okanagan Basin Water Board has embarked on a similar project with success. See more info here.

Integrated Watershed Management

Integrated watershed management (IWM) is an ecosystem-based approach to protecting the water resources and aquatic ecosystems on which human and non-human communities depend. Watersheds become the planning unit. The process operates through a collaborative approach with the province, other local governments, First Nations, stewardship organizations, and industry.

Integrated Watershed Management Planning At a Glance

- **Ecosystem-based**: Uses the watershed as the planning unit; integrates water quality, quantity & ecosystem health.
- **Collaborative**: Watersheds are by nature inter-jurisdictional, as is responsibility for them.
- **Iterative**: Plans are monitored & revised to incorporate new knowledge.
- **Goal-Oriented**: Implementation is based on specific & measurable objectives & targets.
- **Realistic**: Recognizes the limits to water use given population pressures & climate change.

*Adapted from BCWWA *Position Statement on Watershed Management Planning*, 2011.

Local governments and organizations are perhaps the best positioned to coordinate efforts on the watershed scale. Under the new *Water Sustainability Act*, they are also legally enabled to do so.

These are some ideas to start the discussion!

Goals of IWM:

- Creation of a unified strategy for implementation of common water protection mandates;
- To establish community-based and science-based watershed objectives and targets for and indicators of watershed health;
- To align existing tools, expertise and resources to actively meet watershed objectives;
- To ensure that new development minimizes impacts on surface and groundwater resources from a quality, quantity, and ecosystem health perspective; and
- To involve all interested parties in the process.

Initial Outcome:

A framework for enhancing, protecting and restoring watersheds in our region that can be adapted to each water region or basin.

Supportive Local Context

Protecting water quality and watersheds as a whole is common vision articulated in the RDN and member municipality Strategic Plans, OCPS and the RDN Regional Growth Strategy. This vision supports a number of shared goals. They include:

- maintaining water quantity and quality for local water utilities;
- managing stormwater in a way that maintains the original hydrologic function of an area;
- mitigating and building resilience to climate change; and
- protecting nature, watersheds (including groundwater), and sensitive ecosystems.

Further water-based goals and actions have been developed and approved through sustainability plans, stormwater management plans, and water conservation plans, to name a few. Virtually all OCPs contained language encouraging water stewardship, many going further to protect vulnerable aquifers or other sensitive areas through Development Permit Area designations.

Member municipalities and the RDN have also encoded watershed protection features into other existing bylaws. Pesticide use, tree removal, erosion and sediment control, water use restriction, and soil removal and depositing bylaws are all local examples.

Examples of Watershed Protection Goals & Commitments in Local Guiding Documents

RDN Regional Growth Strategy
Goal 2: Protect the Environment
Water Policies:
Protecting the function of watersheds including capacity of groundwater to recharge;
Undertaking watershed-based planning which is integrated with the protection of environmentally sensitive areas, including wildlife corridors.

Nanaimo 2012-2014 Strategic Plan
Continue to work with industry, landowners, Snuneymuxw First Nations, Province, RDN to protect water supply, watershed, ensure quality water treatment and comprehensive management practices … Support RDN Strategic Plan and RGS commitments to watershed health and environmental protection

Qualicum Beach 2012-2014 Strategic Plan.
Protect the environment – farmland, watersheds, clean air and drinking water… Collaborate with federal, provincial, regional & local partners.

Area A Official Community Plan
Consider the formation and implementation of a comprehensive water conservation program in cooperation with the provincial ministry responsible for water planning, community water service providers, and plan area residents… The creation and implementation of a comprehensive area wide rain water management plan is supported.

Additionally, rainwater management commitments are a provincially-mandated feature of Liquid Waste Management Plans. The RDN's LWMP amendment (2014) includes commitments to manage rainwater in the region through the implementation of the DWWP Action Plan.

With so many existing commitments and strategies, the goal of IWM is not to duplicate or undo any existing initiatives. The goal is instead to *align* these common water protection mandates into a unified strategy for implementation *at the watershed scale*.

Drinking Water and Watershed Protection Action Plan

"Watershed Management Planning" is Program Four in the *Drinking Water and Watershed Protection Action Plan*. When initially conceived of, this program was split into two tiers:

- A basic ***framework*** for watershed management that would seek to update and/or harmonize protection requirements throughout the region; and
- the creation of customized watershed management plans for at-risk areas within the region.

The framework will provide all involved with a common approach to undertaking integrated watershed management. Developing a framework is a collaborative process that must involve First Nations (as rights holders), member municipalities, industry and community groups. This step precedes the development of individual watershed management plans (or strategies) for at-risk water regions in the RDN.

The role of the framework must be jointly determined. Some possibilities include to:

- **Determine the appropriate structure to facilitate collaborative efforts between rights holders, stake holders, staff, and subject matter experts for watershed management in the region;**
- **Pool resources and expertise to support the protection of watersheds in the region;**
- **Establish in detail the scope of watershed management activities in the region;**
- **Determine the responsibility-sharing (including cost-sharing) structure for watershed management planning, implementation, monitoring, and revision;**
- **Build in a system of shared accountability among members;**
- **Define a shared vision, and develop new or harmonize existing objectives, targets and indicators for watershed protection;**
- **Oversee watershed-specific activities, including the development of customized watershed management plans for at-risk areas within the region; and**
- **Implement, monitor indicators and results, and revise the watershed plans and activities on an ongoing basis.**

What do you think?

Local Government Tools for Watershed Management

We imagine the goal of an IWM Strategy as being *to align existing tools for the protection, enhancement and restoration of water resources and aquatic ecosystems on the watershed scale*. One of the primary tools for local governments is land use decision-making. It is an important leverage point for managing watershed health. Transportation, drainage and other service infrastructure, as well as residential and commercial development all create impacts that remain in place for long periods of time. The opportunity to channel certain types of development away from sensitive areas, as well as to incorporate habitat and water resource protection measures arises when land use decisions are being made.

Local government tools for watershed management include:

- Regional Growth Strategies
- Official Community Plans (and Development Permit Areas)
- Pollution prohibition bylaws
- Soil deposition and erosion control measures / bylaws
- Zoning bylaws
- Development Approval Information Areas bylaws
- Runoff control (setting maximum impermeable coverage)
- Landscaping standards and regulations
- Subdivision servicing requirements
- Incentives (green building, rainwater harvesting, water conservation, etc.)
- Outreach and education activities
- Other buildings/engineering standards, codes of practise and best management practises.
- Other planning documents (such as Agricultural Area Plans, Drought Management Plans, Water Conservation Plans, Liquid Waste Management Plans, Stormwater Management Plans, etc.)

Of course, these tools only paint part of the picture. Community watershed monitoring, provincial Water Quality Objectives, existing watershed management plans developed by Island Timberlands and TimberWest, traditional indigenous knowledge and laws, and academic research are all examples of integral parts of a watershed management strategy. Most importantly, cooperation and a shared vision between rights holders and stakeholders are essential for managing what is essentially a commons – our water resources.

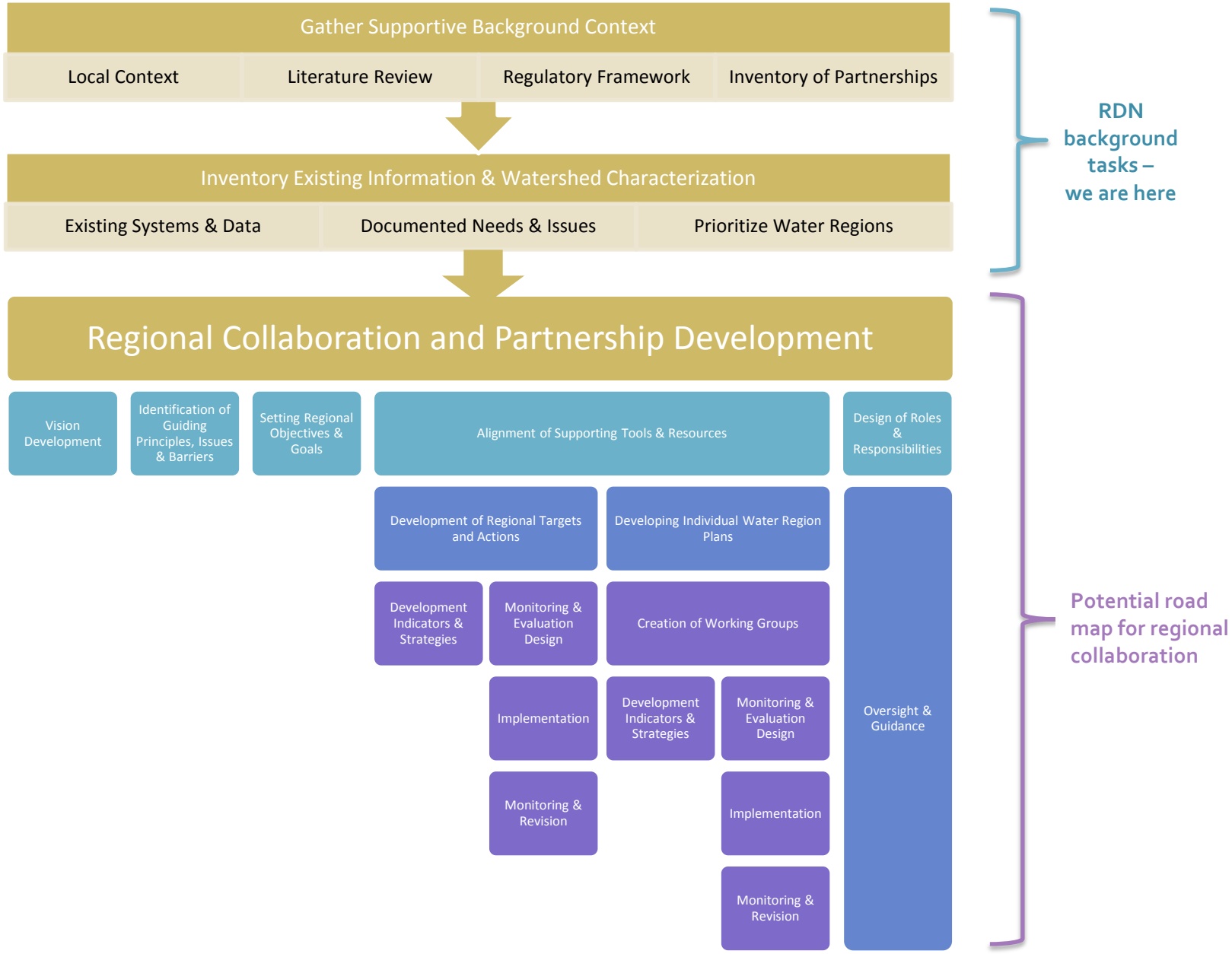
The Process & Deliverables

Before the framework development gets underway, all interested parties must be at the table. In particular, this process requires First Nations participation; it would be incomplete without each First Nation's traditional knowledge to guide the process.

We have created a tentative work plan for RDN staff in the development of the framework (see following page). It represents a series of milestones we suggest to be important to this process; however, both the timelines and process undertaken will depend on the input of all parties.

The development of a framework will be a primary outcome, or deliverable, of this process, but it isn't the end goal. The end goal would be to have in place a strategy to manage and protect RDN watersheds on a water region scale. What this will look like – overarching strategies or localized plans – will depend on the feedback and participation of the regional team.

Integrated Watershed Management - Process



Team WaterSmart Outreach Activities Update

New Staff! Alex King joined the RDN in early June as Lauren Fegan left on maternity leave. Deanna McGillivray was hired mid-June as a Special Projects Assistant for the summer. Together they are Team WaterSmart, delivering outreach and education to the municipalities and rural areas that make up the RDN's Drinking Water and Watershed Protection area.

Team WaterSmart focuses efforts on the following areas:

Irrigation Check-ups

Team WaterSmart is continuing this action-oriented program for the 5th summer to save residents water and money. A letter goes out in the spring to the top 100 water users informing them of the opportunity to have an audit of their irrigation system. People voluntarily book an audit, and Team WaterSmart visits single-family homes and strata neighborhoods to run through the irrigation system zone by zone, checking for leaks and inefficiencies and helping to schedule appropriate run-times. A summary report informs the resident or a hired irrigation professional about serious leaks that need repair and improvements that are suggested. The program space is limited to 40 bookings for the summer.

- ***Quick Stats – 7 strata, 24 homes have participated or are booked for an upcoming visit between June and August, 2014***

Outreach

Our public display features engaging and interactive elements:

- A groundwater model showing a cross-section of underground hydrogeological features.
- A watershed model for demonstrating non-point source pollution,
- A rain garden model to showcase one way of slowing surface water runoff from residential properties.
- A map of the watersheds in our region and where the drinking water supply comes from in each community
- Numerous brochures and freebies like native plants, sprinkler gauges and toilet leak test tablets

At events we communicate information to the public about:

- watering restrictions, and irrigation system maintenance and programming,
- rebates for well protection upgrades and rainwater harvesting,
- watershed-friendly home and garden best practices, and
- source and supply of drinking water in rural areas and municipalities.

- ***Quick Stats – 18 + community events this spring summer fall (including festivals, fairs and farmers markets)***

Education

A new education program was launched by DWWP in 2014 that gave students the opportunity to participate in a day-long **field trip** to the source of their drinking water, and to learn about watershed dynamics by seeing them firsthand. A **curriculum connected** pre and post-trip activity guide was provided to the teachers; this was adapted from Metro Van with permission.

This program is a great partnership with the forestry companies, the municipalities and the RDN Parks dept. Students in SD68 visited Jump Lake reservoir and the Nanaimo River Regional Park. Trips for SD69 to the Englishman River upper watershed and Regional Park were postponed due to the labour dispute.

Team WaterSmart will visit RDN **summer camps** in District 69 to engage kids about watershed dynamics and watershed protection through fun games and activities. The goal is to help kids understand the water cycle and our place in it, and encourage a conservative attitude to our precious shared resource.

- ***Quick Stats – School trips: 3 trips Spring 2014, expect 3-6 trips Fall 2014.***
  – Summer camp goal: 4-6 visits to summer camps (ages 6-12 years old)

Social Media

Using the RDN's Facebook and Twitter pages, we provide information about events we are attending, promote water conservation with our "Team WaterSmart Tip of the Week", and share pictures of Watershed Friendly Yard Campaign participants' gardens. Be sure to "like" us on Facebook (*Regional District of Nanaimo*) and "follow" us on Twitter *(@RDNanaimo*) to keep up with all the action this summer.

Rebate and Incentive Programs

We are continuing to offer two DWWP related rebate programs this summer:

- Rural Water Quality Stewardship Rebate Program
- Rainwater Harvesting Incentive Program

The new Rural Water Quality Stewardship Rebate Program offers 50% off up to a set maximum for various well construction upgrades including: well cap, surface seal, casing stick-up, and decommissioning. This encourages residents with old wells to upgrade to safer construction standards to protect groundwater quality.

Additionally this program offers a 50% off rebate voucher for comprehensive well water testing for rural residents. The purpose is to encourage full-spectrum testing by making it more affordable. This way issues can be identified so well protection measures can be prompted.

- **Quick Stats – rebates have been issued to 4 residents for well upgrades; 66 participants have accessed the water quality testing rebate since November 2013. At this time, approximately 20% of the program funding has been spoken for.**

Now in its 4th year, the Rainwater Harvesting Incentive Program provides up to $750.00 towards the purchase and installation of a Rainwater Harvesting System. $450 is reserved for the purchase of a 1000 gallon + storage cistern and $300 may be put towards other project costs, such as, transport piping, debris traps/ filters or labour. More information about the rebate programs is at www.rdnrebates.ca

- **Quick Stats – 5 rebates have been issued for the 2014 program, and 16 projects have been approved for funding. In total 39% of a total $42,000 in program funds are spoken for at this time, and new applications are arriving every week!**
- **Notable: 2 Lantzville residents have accessed the rebate this year, 1 Nanaimo resident, 13 Gabriola residents and the remainder of the interest has come from Area A, F and H so far.**

Watershed Friendly Yard Campaign

Our Drinking Water Week education campaign for 2014 encouraged RDN residents to send in photos of their landscaping that includes native plants, xeriscaping, golden lawns, a chemical free garden, rainwater harvesting, pervious hardscaping, or other features that reduce water consumption and slow surface water flow from residential areas. In exchange, participants receive a sign for their yard to showcase their commitment to watershed protection through landscaping. This campaign is continuing throughout the summer.

- **Quick Stats – So far 15 signs have been distributed across the region to residents with exemplary yards**

Update on the RDN Water Budget Study

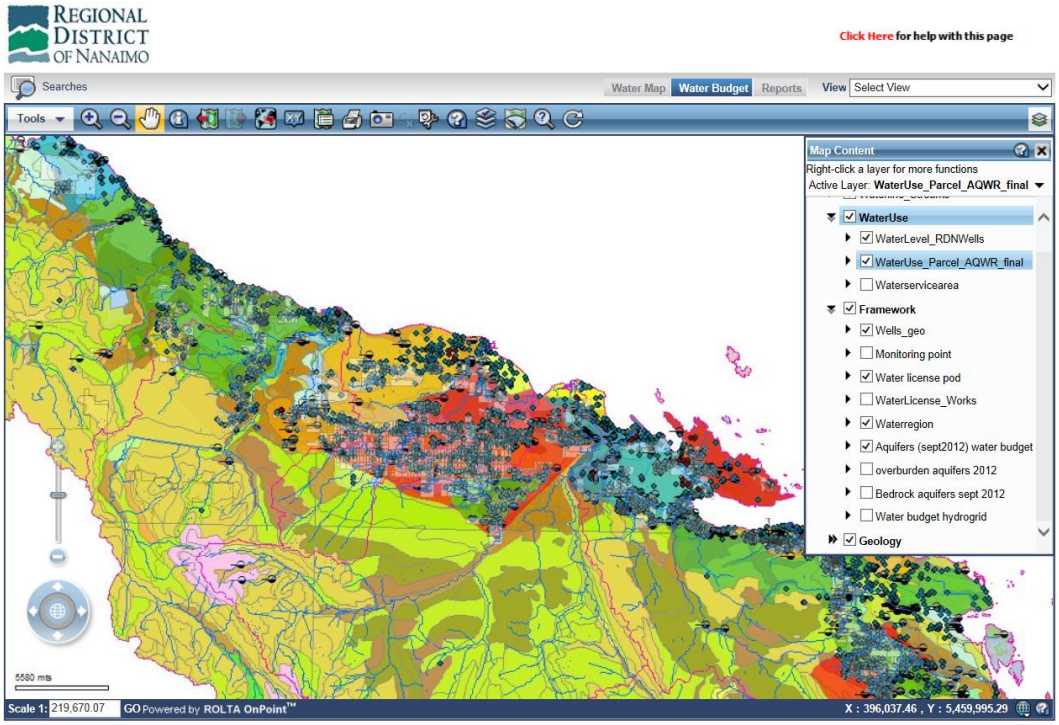
Available at www.rdnwaterbudget.ca

Part of the Phase One Water Budget project work done in 2012 - 2013 by the lead consultants (Waterline Resources Inc.) was to assemble existing surface water and groundwater data from across the RDN into a single, centralized Geodatabase. The data was compiled in a consistent format that allowed the Waterline team to complete their water budget assessments. The Geodatabase is intended to be a "living system" that continues to receive new information so that the state of knowledge on surface and groundwater systems in the RDN can be expanded with every new study.

Waterline Resources Inc. handed-over the **ArcHydro Geodatabase that contains the data that went into the water budget calculations** in March of this year. Part of this submission included:

- guidance document
- data dictionary
- web portal

Glitches with the web portal that was handed-over and the resulting failure to load layers lead us to forgo using the Waterline-provided viewer and opt to publish the geodatabase web portal in-house, using the onPoint GIS viewing software. **The water budget data now appears in map form as a tab in our "Water Map"**.



The next step is to bridge the two - the new Water Budget geodatabase and the existing Water Map.

The main difference between the two is that the Water Budget map **interrelates the data** rather than simply displaying stand-alone data. The Water Budget map also can display and house **time-series data** from the monitoring points – at this time it just has time-series data on water levels from monitoring wells. Additionally, it provides a **water use layer,** which associates parcels with the average water use based on their land-use code and the average water use for City of Nanaimo properties associated with those land-use codes.

The purpose of this geodatabase and map is to serve as a **repository for data that helps to calculate supply and demand i.e. water budget calculations** and ultimately it is intended to be accessible to practitioners. It can be utilized by RDN and municipal staff, consultants, academics, and the public. In the future it can potentially expand to house water quality information, habitat information, and more.

We will be working **on developing a series of spreadsheets** that are formatted to input data into the ArcHydro geodatabase. These spreadsheets will be used to streamline data coming into the geodatabase, on a regular interval or on a project-by- project basis. They will be accompanied by guidelines and policies for data submission to elevate the accuracy of water budget estimates that can ultimately help inform land use decisions.

Questions:

1. What data would be most helpful to you to be housed and interrelated in an RDN served Water (Budget) Map? What data would you search for/ use the most?

2. What data can your organization provide to contribute to the inventory of regional water data to include in a GIS map and database?

Phase 2 of the Water Budget Study is to continue with further data collection and analysis to enable more refined stress assessment calculations.

Next steps that contribute to Phase 2 of the Water Budget Project:

- improve stream flow monitoring, by potentially establishing/re-activating key hydrometric stations
- input of more data from consultants and professionals working on local studies to add to the geodatabase i.e. data from more focused aquifer studies
- development of an Integrated Watershed Management framework to assist with prioritization of the first water region for further hydrological modelling and water budget modelling
- Water Use Reporting Centre software (developed by Okanagan Basin Water Board) is being used by all four municipalities and the RDN water service areas to compile water use data from each major service area in a central place, for reporting and regional comparison.

Also…Academic Partnerships:

For the Gabriola Water Budget, Phase 2 work will be wrapped into a Masters student's research from SFU working under hydrogeologist Dr. Diana Allen. That project will involve **the development of a numerical coupled groundwater-surface water model for Gabriola Island**. This will improve estimates of groundwater recharge and will enable better water budget calculations. The model will look at pumping scenarios and climate change scenarios. It will commence September 2014 and be completed August 2016.

WELCOME

July 23rd, 2014

REGIONAL DISTRICT OF NANAIMO

DWWP Technical Advisory Committee

DRINKING WATER WATERSHED PROTECTION

TECHNICAL ADVISORY COMMITTEE

- **Need:** To foster healthy and sustainable water resources in our region.
- **Purpose:** To proactively work together to achieve watershed protection and health in our region through the Drinking Water and Watershed Protection Service.
- **Principles:** Collaboration, communication, on-going learning, oriented around action. What other principles should guide our work?
- **People:** We represent the stakeholders and decision-makers in the region's watersheds; each member holds important perspective and information to contribute to the knowledge of the group and our concerted actions moving forward. Who else can we engage from a technical advisory perspective?
- **Concept:** Meet 2 – 3 times per year, or more when necessary. Everyone leaves with actions to activate in their own organizations / networks to further the purpose of this initiative.
- **Harvest:** Establish strong working relationships and aligned purpose; This group will provide guidance on how to move forward with different initiatives – in the form of supported options to select from, partners to directly work with, and resources to pool.

DRINKING WATER WATERSHED PROTECTION

PARTICIPATORY INTRO Q'S

1. What is your focal current project?

2. What do you see as the current biggest priority for our region's watersheds?

FIRST NATIONS ENGAGEMENT

- How can we meaningfully engage First Nations in the process of visioning and planning for watershed protection?
- Share personal experiences that lend wisdom to successful partnership with First Nations?
- Anyone working closely with local First Nations on current projects that relate to water?

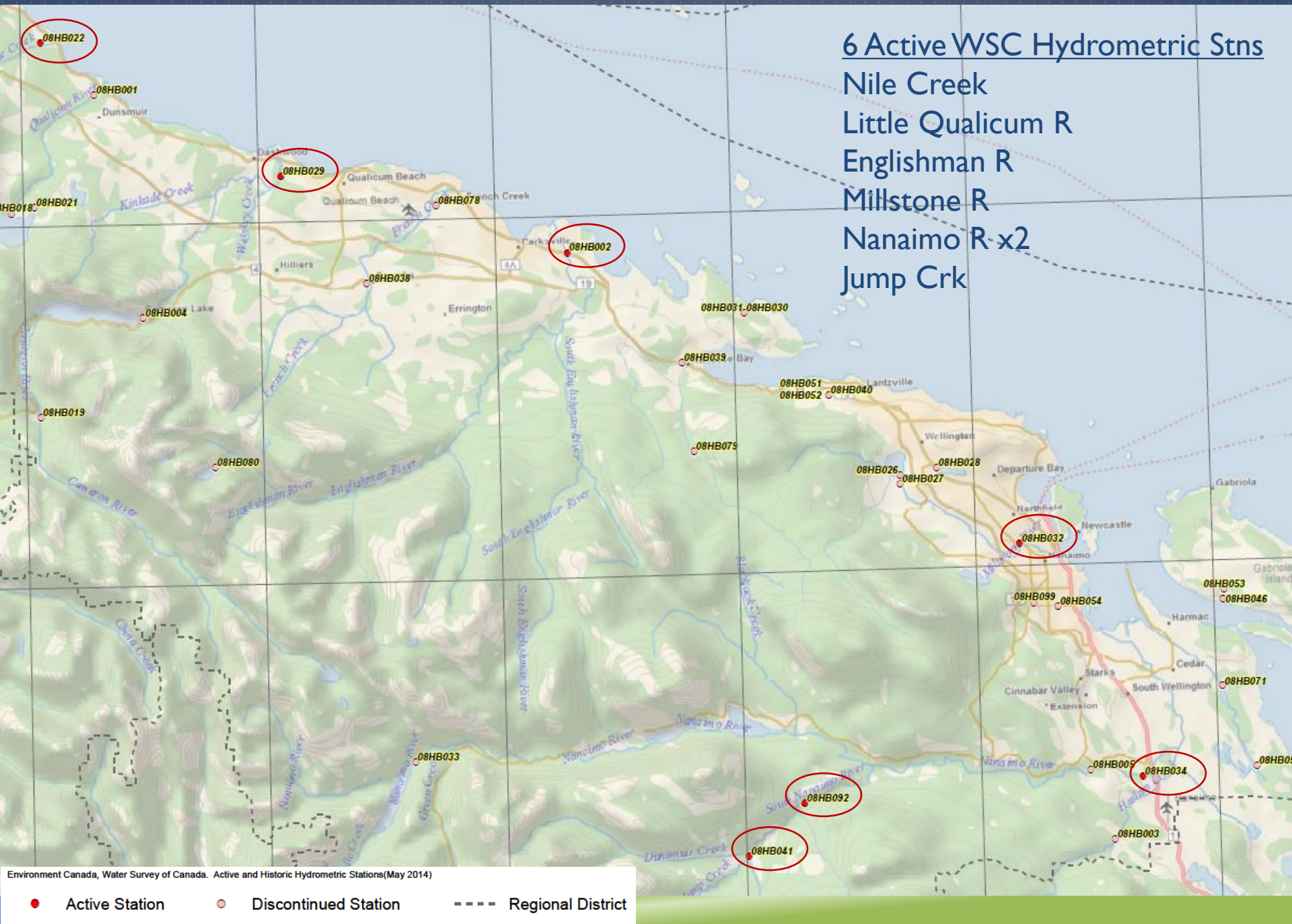


STREAM FLOW MONITORING

- Which organizations represented on the TAC are currently engaged in (or have interest in) stream flow monitoring?

- What do you see as the value of improved stream flow monitoring to drinking water and watershed protection in our region? Who do you suggest should be involved?

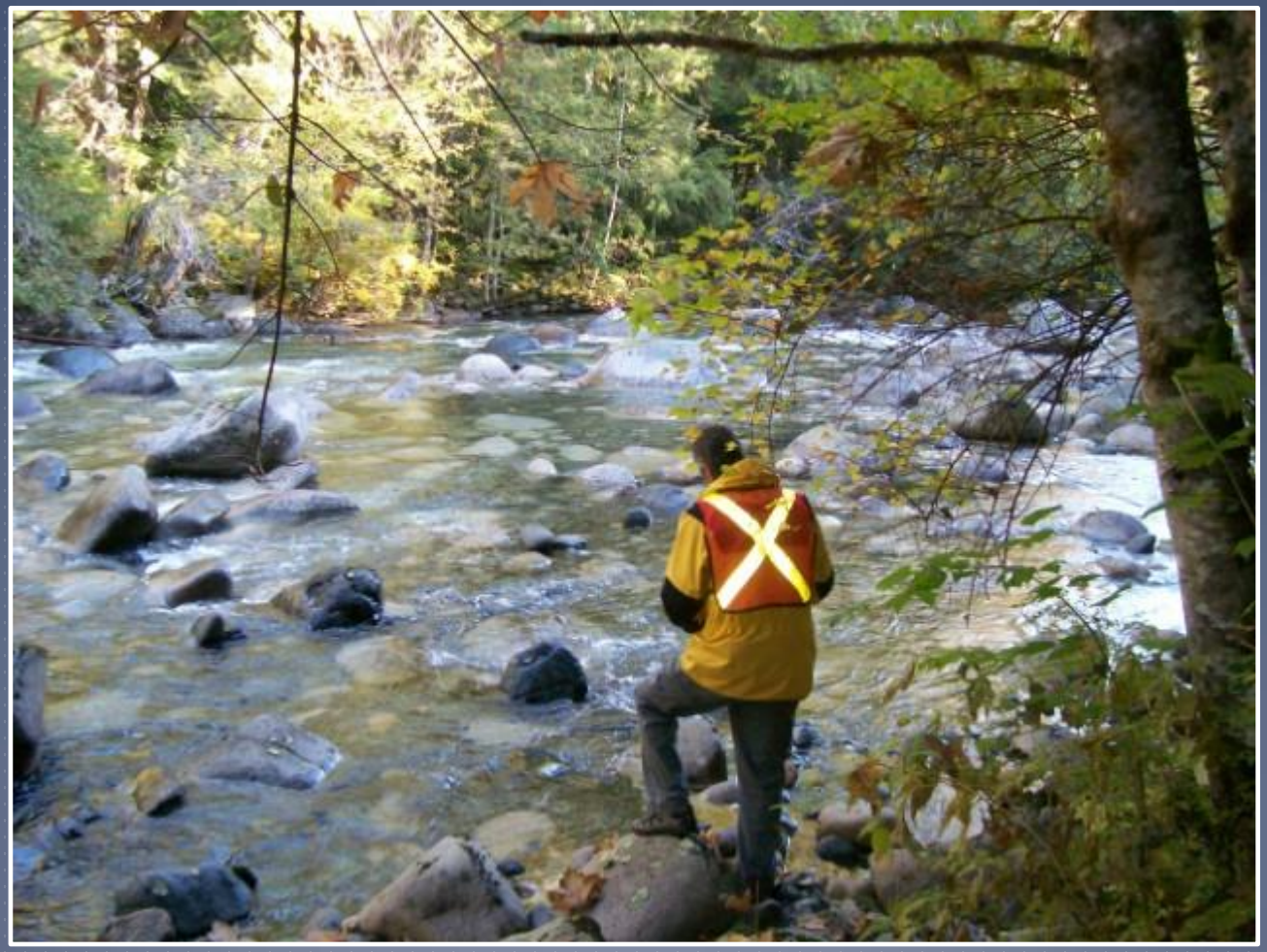
- Who here is interested in being involved on a sub-committee to discuss:
  - Priority sites
  - Data storage /interpretation
  - Partners (roles & resources)



6 Active WSC Hydrometric Stns

Nile Creek
Little Qualicum R
Englishman R
Millstone R
Nanaimo R x2
Jump Crk

COMMUNITY WATERSHED MONITORING



Surface Water Quality sampling

PRIORITY SITES BASED ON 3 YEAR TRENDS

Group	Watershed	Sample Location	EMS ID
QBS	Grandon Creek	West Crescent (Caissons)	E288090
QBS	Grandon Creek	at Laburnum	E288091
QBS	Beach Creek	at Hemsworth Rd	E288092
MVIHES	Englishman River	Morrison Ck u/s ER	E248835
MVIHES	Englishman River	ER at Hwy 19a	121580
MVIHES	Englishman River	Shelly Creek at Blower	E290452
FFCCS	French Creek	Grafton Rd bridge	E243024

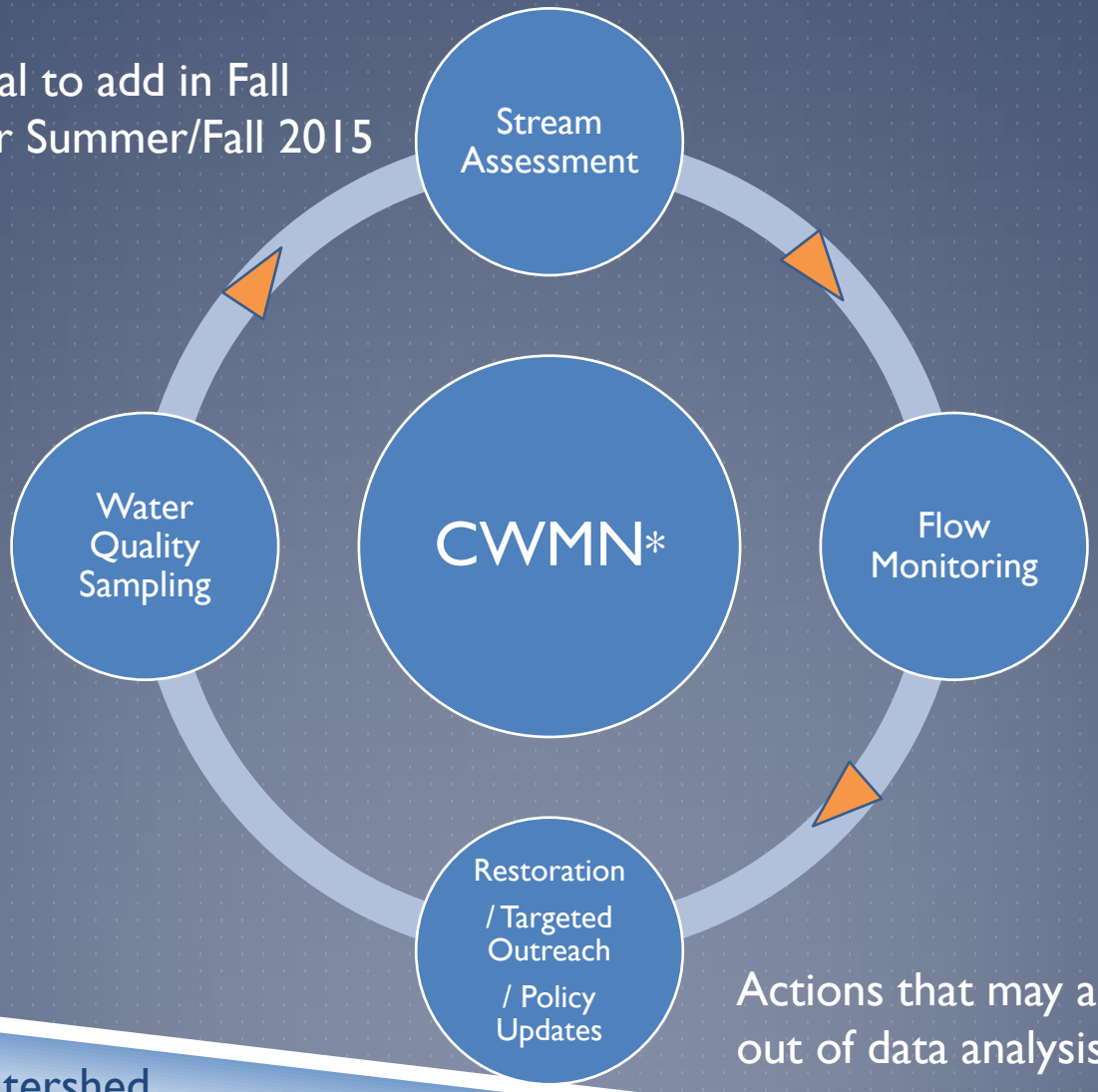
Sites with exceedances in more than one parameter during the 2011- 2013 sample periods

PROGRAM ADAPTATIONS FOR 2014

- Some new sample sites have been added upstream of sites that had displayed turbidity exceedances, to get a better idea of upstream influences.
- Some sites will now also be sampled for Phosphorus and Bacteria, additional lab analysis to determine potential contaminants associated with observed turbidity exceedances.
- Some sites that did not display any concerns over the first 3 years of the program are suggested as *Do Not Monitor in 2014* to return in 3-5 years. This is under review, still TBD.
- Some sites are now marked as "flagship" sample sites for their watershed, and will be monitored each year for the additional purpose of serving as an indicator for regional stream water quality for the RDN Regional Growth Strategy (RGS) targets and indicators initiative.
- At least 44 sites will be monitored in 2014 on 23 rivers/creeks/streams.

FUTURE OF THE PROGRAM…

Potential to add in Fall 2014 or Summer/Fall 2015



2011 to present

Potential to add for 2015

Actions that may arise out of data analysis

(*) Community Watershed Monitoring Network

TEAM WATERSMART

Outreach & Awareness Update

SCHOOL FIELD TRIPS

Nanaimo River Watershed
May 2014

team watersmart
because every drop counts

IRRIGATION CHECK-UPS

team watersmart
because every drop counts

WATERSHED FRIENDLY YARD CAMPAIGN

team watersmart
because every drop counts

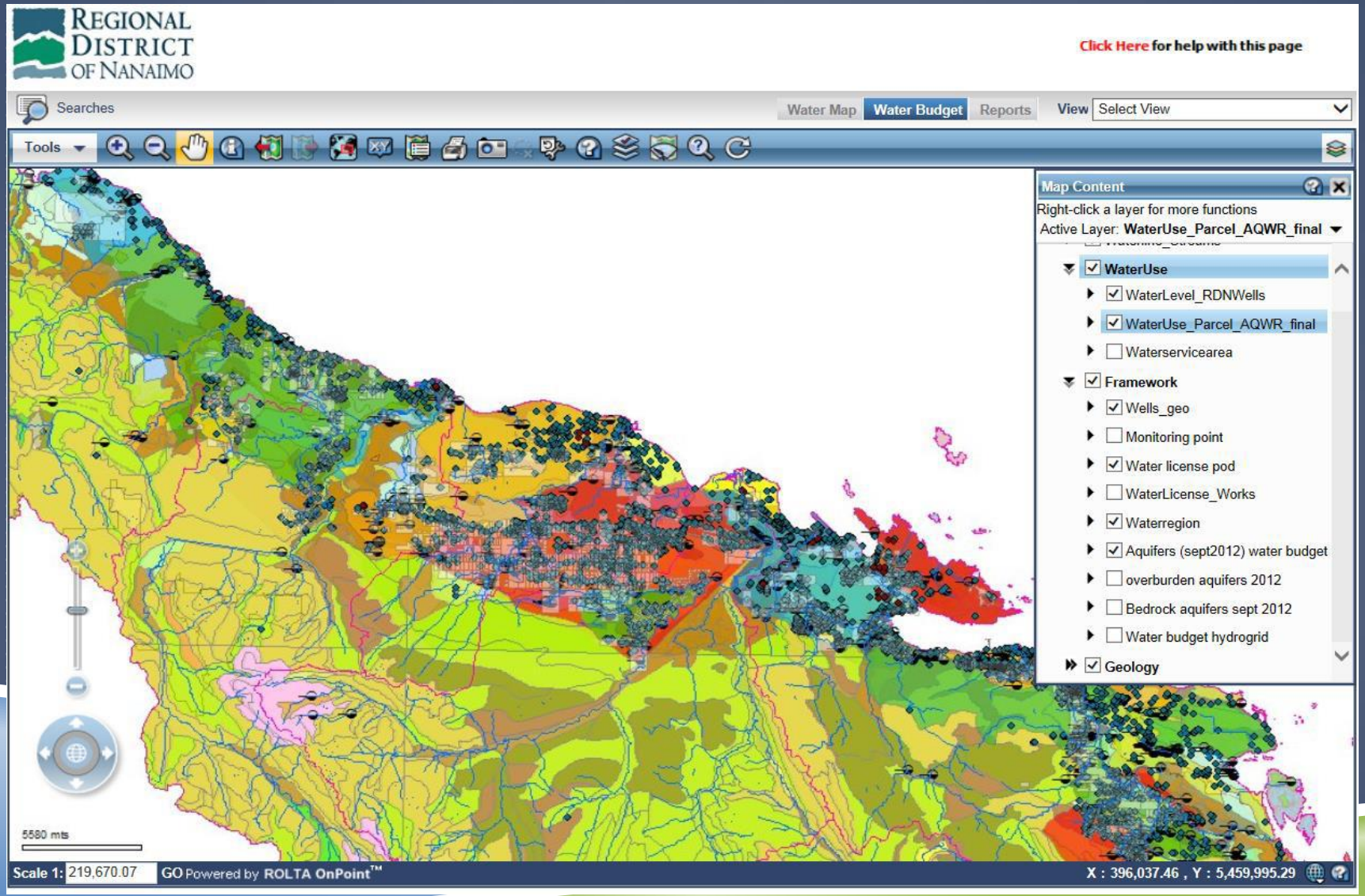
REBATES AND INCENTIVES

team watersmart
because every drop counts

OUTREACH BOOTH AT COMMUNITY EVENTS

team watersmart
because every drop counts

WATER BUDGET GEODATABASE & MAP



CURRENT DATA (2012)

- Streams
- Water Region
- Water Level (RDN wells)
- Water Use Parcel
- Water Service Area
- Wells (BC Wells Database)
- Monitoring Point – climate, well, hydrometric stations (active & deactivated)
- Water License – point of diversion
- Aquifers – overburden aquifers, bedrock aquifers
- Hydrogrid – precipitation, temp, evapotranspiration, recharge
- Geology – soils (texture and drainage), surficial geology, terrain area

Questions:

1. What data would be most helpful to you to be housed and interrelated in an RDN served Water (Budget) Map? What data would you search for/ use the most?

2. What data can your organization provide to contribute to the inventory of regional water data to include in a GIS map and database?

THANK YOU FOR YOUR CONTRIBUTIONS AND GUIDANCE!

DRINKING WATER
WATERSHED
PROTECTION