



**REGIONAL DISTRICT OF NANAIMO  
DRINKING WATER AND WATERSHED PROTECTION TECHNICAL ADVISORY COMMITTEE**

**November 19, 2015  
Meeting at 12:30pm – 3:30pm**

***(RDN Board Chambers, 6300 Hammond Bay Road, Nanaimo)***

**A G E N D A**

**PAGES**

**CALL TO ORDER**

Introduce new TAC member: Dr. Pam Shaw, Research Director at the Mt Arrowsmith Biosphere Region & Director, Master of Community Planning Program, Vancouver Island University

**MINUTES**

4-6 Minutes of the DWWP Technical Advisory Committee meeting held July 23, 2015.

**BUSINESS ARISING FROM THE MINUTES**

**COMMUNICATIONS/CORRESPONDENCE**

**UNFINISHED BUSINESS**

**MUNICIPAL UPDATES**

- Summary of 2015; Outlook for 2016

**REPORTS**

7-13      Sept. Board Report – Challenges and Opportunities for Water Resource Mgmt. (M. Donnelly)

            USHP Stream Assessments for Grandon Creek and French Creek *(to be distributed at meeting)* (J. Pisani)

            NRCAN/GSC Nanaimo Lowlands Aquifer Characterization Atlas *(to be distributed at meeting)* (J. Pisani)

## **UPDATE PRESENTATIONS / DISCUSSION**

- 2015 recap from DWWP Staff
  - Irrigation Check-Up Program (D. McGillivray)
  - WSA Graphical Water Billing (D. McGillivray)
  - Rebate Programs (D. McGillivray / L. Fegan)
  - TWS Event & Workshop Summary (L. Fegan)
  - State of our Streams Publications (L. Fegan)
  - New DWWP Website (J. Pisani)
  - Mt Arrowsmith Snowpillow-Wx Station (J. Pisani)
  
- 2016 outlook for DWWP (J. Pisani)
  - Phase 2 Water Budget for Nanoose
  - Area H Water Information Update for OCP Review
  - Proposed VIU Partnership for Wetland Mapping & Research
  - TWS Water Day Event(s)
  - Streamflow monitoring – Haslam, Nanoose, French

## **OTHER DWWP UPDATES**

## **ADDENDUM**

## **BUSINESS ARISING FROM COMMUNICATIONS**

## **NEW BUSINESS**

## **ADJOURNMENT**

## **IN CAMERA**

Distribution:

Mike Donnelly, CHAIR.....	Manager, Water & Utility Services, RDN
Randy Alexander.....	General Manager, Regional & Community Utilities, RDN
Aleksandra Brzozowski.....	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
Ryan Evanoff.....	Ministry of Transportation and Infrastructure
Faye Smith.....	Environment Community Representative
Ken Epps.....	Forest Industry Representative
Chris Cole.....	Forest Industry Representative
Kate Miller.....	Manager, Environmental Initiatives, Cowichan Valley Regional District
Oliver Brandes.....	Academic Community Representative
Alan Gilchrist.....	Academic Community Representative (VIU)
Fred Spears.....	Director of Public Works, District of Lantzville
Deb Epps.....	Registered Professional Biologist Representative
Leon Cake.....	Water Purveyors' Representative
Julie Pisani.....	Drinking Water and Watershed Protection Coordinator, RDN
Lauren Fegan.....	Special Projects Assistant, RDN
Deanna McGillivray.....	Special Projects Assistant, RDN
Bob Weir.....	Director of Engineering and Utilities, Town of Qualicum Beach
Mike Squire.....	City of Parksville / Program Manager, Arrowsmith Water Service
Bill Sims.....	Manager, Water Resources, City of Nanaimo
Pam Shaw.....	Director, Mt. Arrowsmith Biosphere Region Research Institute

## For Information only:

P. Thorkelsson, CAO, RDN

G. Garbutt, GM Strategic and Community Development, RDN

S. Norum, Wastewater Program Coordinator, RDN



**MINUTES OF THE REGULAR MEETING OF THE  
DRINKING WATER AND WATERSHED PROTECTION  
TECHNICAL ADVISORY COMMITTEE  
HELD ON THURSDAY, JULY 23 2015 AT 12:30 PM**

**Present:**

Mike Donnelly, CHAIR .....	Manager, Water & Utility Services, RDN
Neil Goeller .....	Ministry of Forests, Lands and Natural Resource Operations
Faye Smith .....	Environment Community Representative
Chris Cole .....	Forest Industry Representative, TimberWest
Kate Miller .....	Manager, Environmental Initiatives, CVRD
Leon Cake .....	Water Purveyors' Representative
Bob Weir .....	Director of Engineering, Town of Qualicum Beach
Ken Epps.....	Forest Industry Representative, Island Timberlands
Fred Spears.....	Director of Public Works, District of Lantzville
Peter Law .....	General Public Representative (North)
Heather Florence .....	Island Health
Mike Squire .....	City of Parksville / Program Manager, Arrowsmith Water Service

**Regrets:**

Pat Lapcevic.....	Ministry of Forests, Lands and Natural Resource Operations
Bill Sims.....	Manager, Water Resources, City of Nanaimo
Gilles Wendling .....	General Public Representative (South)
Kirsten Fagervik .....	Ministry of Transportation and Infrastructure
David Vincent .....	Hydrologist Representative (Northwest Hydraulic Consultants)
Deb Epps .....	Registered Professional Biologist Representative
Oliver Brandes.....	Academic Community Representative
Lynne Magee.....	Island Health
Aleksandra Brzozowski.....	Planner, Islands Trust

**Also In attendance:**

Julie Pisani .....	Drinking Water and Watershed Protection Coordinator, RDN
Lauren Fegan.....	Special Projects Assistant, RDN
Deanna McGillivray .....	Special Projects Assistant, RDN
Randy Alexander .....	General Manager, Regional & Community Utilities, RDN

## **CALL TO ORDER**

M. Donnelly called the meeting to order at 12:03 pm.

## **MINUTES**

MOVED Ken Epps, SECONDED Fred Spears, that the minutes from the regular meeting of the Drinking Water and Watershed Protection Advisory Committee held April 14, 2015 be adopted.

CARRIED

## **BUSINESS ARISING FROM MINUTES**

## **COMMUNICATIONS/CORRESPONDENCE**

Chair Stanhope welcomed the committee and offered thanks for the dedication and efforts of all members, who serve to guide the implementation of the important work under the Drinking Water and Watershed Protection Program Action Plan.

The committee received, for information, an email correspondence of July 22, 2015 intended for the committee from Mr. Laurie Gourlay of the Vancouver Island and Coast Conservation Society, re: Water & Watershed Initiatives.

## **UNFINISHED BUSINESS**

## **MUNICIPAL UPDATES**

Updates were given from City of Parksville, Town of Qualicum Beach, District of Lantzville and Regional District of Nanaimo on drought response and watering restrictions.

## **ADDITIONAL UPDATES**

N. Goeller provided a brief verbal update from the Province on drought response measures including agricultural water conservation and drought monitoring in streams of interest.

H. Florence indicated that there is a recent survey for water purveyors put together by Island Health re: water supply security and supporting neighbouring communities.

P. Law brought comments forward regarding the drought response on behalf of residents of RDN area north. Good support for the Level 4 Restrictions, concern with some land development and potential impacts.

## **PRESENTATIONS**

J. Pisani provided a visual walk-thru of the new DWWP web interface that is map-based and structured by water region, which is currently under development. Launch is targeted for September and committee members will be sent the link of the website for review and comment, prior.

L. Fegan gave a brief presentation on the State of our Streams publication, which will be mailed out in September as a user-friendly report on the Community Watershed Monitoring Network, profiling creeks and streams of interest, based on the past three years of water quality sampling.

J. Pisani presented a brief update on Nanoose Water Monitoring in the Parker Road area.

#### **VERBAL REPORTS**

J. Pisani gave an update on the Regional Hydrometric & Climate Monitoring Scoping Study – actions taken to date to implement priority monitoring sites at Mt. Arrowsmith and in Nanoose.

D. McGillivray updated the committee on the BC Water Use Reporting Centre and the latest implementation of this tool with smaller water purveyors in our region, the improvement districts and Epcor.

L. Fegan spoke briefly about the continuing work of the Community Watershed Monitoring Network, whose sampling of water quality commences for 2015 on August 4<sup>th</sup>.

#### **FEEDBACK ACTIVITY**

Committee members were given sticky notes to provide ideas on two topics: 1) VIU Student Research Partnerships and 2) New projects for 2016. The results of this exercise will be compiled to assist DWWP staff in work planning.

#### **ADDENDUM**

#### **NEW BUSINESS**

#### **BUSINESS ARISING FROM COMMUNICATIONS**

#### **ADJOURNMENT**

The meeting was adjourned at 3:00 pm.

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Mike Donnelly, Chair

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**TO:** Randy Alexander  
General Manager,  
Regional & Community Services

**DATE:** August 27, 2015

**FROM:** Mike Donnelly  
Manager, Water & Utility Services

**MEETING:** CoW, September 8, 2015

**FILE:** 5500-22-01

**SUBJECT:** Challenges and Opportunities for Regional Water Resources

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### **RECOMMENDATIONS**

1. That the Board direct staff to work with the region's partners, including municipalities and First Nations, to develop a regional water governance model proposal for the Board's consideration.
2. That the Board direct staff to develop recommendations for water pricing and regulation changes to the eight Regional District of Nanaimo (RDN) operated water service areas that reflect water conservation priorities.
3. That the Board direct staff to update water requirements for subdivision and development under Bylaw No. 500 for the Board's consideration.
4. That the Board direct staff to work with member municipalities and other water purveyors to review standardized regional drought communication protocols and water restrictions policies for the Board's consideration.

### **PURPOSE**

To obtain Board approval on a number of initiatives associated with water resource management issues related to current and long term climate challenges.

### **BACKGROUND**

This report provides background information on current and long term climate trends for our region as it relates to water resource management. The report also outlines processes and actions that are currently underway to address water protection challenges, and a number of recommendations that will strengthen the region's ability to adapt to changing precipitation patterns, temperatures and increased hot weather periods.

#### **A Changing Climate**

The climate on the east coast of Vancouver Island has been evolving for a number of years. Higher temperatures, modified precipitation patterns, reduced snow pack and warmer summers are impacting our region now. These changes impact groundwater recharge and late spring contributions to rivers and lakes. Groundwater is also an important contributor to summer river flows. Reduced aquifer levels can result in reduced river flow during critical periods.

Changing rainfall patterns will most likely impact the recharge of aquifers. Quick, high intensity storms will provide significant water volumes for surface water storage facilities such as Jump Lake and the Arrowsmith Lake dams, however high intensity storms produce quick runoff that does not provide the same level of groundwater recharge that rainfall events of a longer duration would provide.

From a community water supply perspective these climactic changes may result in reduced supply, increased demand, and stresses on stream health. Agricultural water demands have the potential to rise due to higher temperatures and increased evapotranspiration. This additional water use demand must be met with greater supply or a reduction in agricultural demand either through improved water use efficiencies or changes in crops.

### **2015 Drought Impacts**

This year's drought combined very warm temperatures along with almost no precipitation during the spring and summer months. Historic low flows in local river systems due to reduced precipitation and a record low snow pack and associated snow melt moved the province to declare a Level 4 drought in early July. A Level 4 drought is declared when "water supply is insufficient to meet socio-economic and ecosystem needs". This is the province's highest drought level. While this drought illustrates the outcomes of short term change in weather patterns, it is the long term implications of a changing climate that emphasizes the need for continued sound management of the water resources in our region for the future.

The drought conditions through southern British Columbia continue to stress ground and surface water supplies in many communities. Here in the RDN the drought response from community water suppliers and rural properties has varied based on actual and anticipated impacts to water supplies.

Private well owners, typically the most water-conscious, have been observing earlier than normal low levels in their wells. This anecdotal information varies across the region but in general there is an indication that well levels are approximately a month ahead of typical low level periods. Water haulers in the region have noted that, while water hauling activity began earlier this year, there has not been an increase in water hauling, most likely due to well owners using less water. This may change as the drought continues into the fall.

Ministry of Forest Lands and Natural Resource Operations (FLNRO) staff have recently indicated that 32% of the regions network of observation wells are "at or below minimum" historic values. Further work is being carried out at this time to include recent readings for analysis. Drinking Water Watershed Protection (DWWP) staff is working with FLNRO to help coordinate public communications.

### **2015 Drought Response**

The RDN Water Service areas are all currently under Water Conservation Level 4 (WCL 4) restrictions. This prohibits irrigation but allows hand watering of vegetables, trees, flowers and shrubs. The RDN operates eight water service areas with varying demands and supply modes, however all systems were brought into the WCL 4 restrictions on July 9, 2015 in response to increased early demand that saw water use reaching mid-summer levels in May. This would have resulted in approximately four months of heavy demand versus the normal two months. The public has been cooperative in reducing demand and as such we anticipate a secure water supply into the fall.



Community water suppliers have all instituted drought responses in step with their supply conditions. The City of Nanaimo, District of Lantzville, City of Parksville and the Town of Qualicum Beach and others have responded to the drought to ensure a viable water supply into the fall.

The ability of the RDN to respond to the current drought conditions on a regional basis has been greatly improved through the outcomes of the Drinking Water & Watershed Protection (DWWP) program. The impetus for that program came from the Board in 2003 as a result of the significant drought at that time, with the Board directing staff to develop a function that would address the lack of water resource knowledge available for decision making purposes.

The establishment of the DWWP program in 2008 has moved the understanding of the region's water resources significantly forward. It has done so through scientific research, public education, and policy development. Partnerships developed as part of this program have been invaluable in establishing common priorities from various stakeholders and the subsequent scientific, education and policy outcomes.

Work carried out under the program that has allowed us to develop strategies for the 2015 drought response include;

- **Regional Observation Well Network Expansion**
  - doubled the number of observation wells in the region representing a larger number of key regional aquifers.
- **Regional Water Budget Study (Phase 1)**
  - provided relative risk assessments for surface and groundwater resources.
- **Regional Community Watershed Monitoring Network**
  - provided four years of baseline water quality data in 23 of the region's rivers, creeks and streams that will assist in determining the impacts of the current drought on surface water sources in the region.
- **Water Use Reporting Centre**
  - assists in tracking large water withdrawals from both groundwater and surface water sources.
- **Team WaterSmart Outreach**
  - provides a ready-made platform to disseminate drought and water conservation related information and to receive feedback from the public on their concerns.
- **Partnership Communications**
  - carried out through the DWWP Technical Advisory Committee: provides direct communication with partner municipalities, industry and community representatives, and provincial and federal counterparts.
- **Rainwater Harvesting Rebate and Toilet Rebate Programs**
  - in place for its fourth year, the rainwater harvesting program has helped a significant number of residents install rainwater collection systems as an additional water supply.
  - the past toilet rebate program generated significant interest and continues to save significant volumes of water every year.

Actions taken in response to this year's drought include;

- Newsletters mailed to all RDN Water Service Area residents detailing the need for further conservation due to drought conditions.

- Radio advertisements, in partnership with the City of Parksville, regarding drought conditions and the need to conserve water.
- Yard Sign Campaign, in partnership with member municipalities, to encourage water conservation. The campaign recognizes residents who are taking action to conserve water, coupled with a weekly draw contest for neighbours nominating neighbours who are water savers.
- Resident's associations, working with the RDN to communicate the water conservation message at the grass roots level. The approach of residents sharing information with their neighbors is very effective.
- Ticketing bylaw established to assist in enforcing watering restrictions when necessary (although social encouragement is the first and most effective approach).
- Compliance monitoring for watering restrictions, no significant compliance problems to date.
- Electronic roadside billboards with water conservation messaging. We have received positive feedback from residence regarding their effectiveness.
- Coordinating with municipalities to improve consistency and effectiveness of our water conservation efforts.
- Community events attended by Team WaterSmart staff are interacting directly with residents and resident's groups to communicate the conservation message throughout the summer.
- Residential irrigation system checks carried out across the region. Automatic irrigation systems use very large amounts of water, and our system checks reveal a high incidence of leakage.
- Letter from the RDN Chair to RDN Water Service Area residents thanking them for their conservation efforts and reminding them to maintain low water use.

Additional upcoming actions;

- Region wide newsletter to all residents outlining the effects of the drought on water resources with an update on predicted weather patterns for this fall and the spring/summer of 2016. This newsletter will be available in late September.
- Continuing to work with Ministry of Environment and FLNRO staff to provide updates on changes in water resource related issues and to coordinate messaging.
- Web page on the regional drought response providing an information hub for residents.

### **Looking Forward**

For the remaining summer and fall period of 2015 Environment Canada predicts very little rainfall and higher than normal temperatures through October. A moderate to strong El Nino effect will likely result in a warmer winter. Precipitation will be slightly below normal with rain predominating. Snow accumulations are anticipated to be very low. The River Forecast Centre does not see a recovery in river levels until late fall of this year.

The potential exists for this year's drought conditions to be repeated next year.

This information suggests that while rainfall will be available for recharge of surface water reservoirs in the region there may be reduced groundwater recharge resulting from diminished snow pack and reduced precipitation augmenting ground water supplies. Some rivers and streams may be impacted under this scenario due to limited snow melt and reduced inputs from groundwater interaction.

By continuing to adapt to changing conditions, the region can maintain the ability to provide consistent and safe water supplies into the future. The regional district and the municipal partners have

consistently applied sound management principles with respect to the water resources and are well positioned to adapt to our changing climate, but more work needs to be done.

## **Next Steps in Enhanced Regional Water Resource Leadership**

### Governance

Effective stewardship of water resources is a shared responsibility. The Province, First Nations, Local and Regional Governments, land owners, and stewardship groups all have an important role to play. Effective water stewardship requires a framework to establish and maintain partnerships who can work together to ensure water resources are managed sustainably. A regional approach to managing water resources provides an effective balance between the need for provincial standards while recognizing the need for local flexibility in applying those standards.

The RDN's DWWP function serves as a coordinating body tasked with improving communication and coordination, gathering and using data to better understand our water resources and directing water-related information to decision makers. This function is region wide, comprehensive and funded by all residents in the region.

The established DWWP program has been demonstrated to provide an effective mechanism for senior government, regional stakeholders, municipalities, First Nations, and private land owners to develop solutions to water resource issues. There is a recognition among all stakeholders that a more formal approach to water governance is warranted, and it is recommended that the RDN continue to move forward, through the DWWP program, to establish regional effective governance models.

Meaningful engagement of First Nations is of utmost importance, so that decisions pertaining to water management can be inclusive and coordinated with respect to First Nations perspectives, methods of decision-making, cultural values and historical connections to the land and water. A common understanding of the goals - both scientific and cultural - that we share to protect our water is essential for long term successful governance at the local level. It is recommended that the RDN, through the DWWP program, engage with local First Nations to seek their participation in building effective regional water governance.

Staff are recommending that discussions with First Nations and member municipalities be carried out to assist in the development of an improved regional water governance model and that a proposed governance model be brought back to the Board for consideration. These discussions would be consistent with the City of Nanaimo's direction to engage in discussions with the RDN regarding water resource protection.

### Valuing Water

Increased pressure on water resources brought on by a changing climate indicates a need to revisit water use pricing and regulations for RDN water service areas. Community water supply priorities are public health and safety, with safe drinking water and fire protection of primary importance. The infrastructure supporting these priorities is impacted significantly by the demands placed on community water systems primarily by residential and commercial irrigation practices. 30% to 50% of all water withdrawn from ground and surface water sources during peak summer demand is used to irrigate landscaping, primarily lawns.

Strategies are required to reduce stresses on infrastructure and supplies from current water use patterns (in particular outdoor water use), as well as the adverse, long term, ecological effects on ground and surface water resources.

Staff are recommending that water policy including incentives, pricing and regulation options for outdoor water use be developed and brought forward for public input and subsequent Board consideration.

#### RDN Bylaw No. 500 Water Requirements Regulation

The current requirements under RDN Bylaw No. 500 for provision for water supply for subdivision and new development should be reviewed to ensure proper assessment that a long term sustainable water supply is in place for future properties. This review should consider the impacts of a changing climate, potential impacts of future development and the impacts that additional water demand may have on existing properties.

#### Regional Coordination of Communications and Policy

To address the need to communicate water management measures during times of drought and over the long term, communication protocols and water restriction policies should be streamlined region-wide where possible.

This year's drought conditions resulted in every community water system implementing their own approach to managing water supply issues based on their particular circumstances. The City of Nanaimo, the Town of Qualicum Beach and others were able to maintain a lower level of restrictions based on their water supply circumstances. The City of Parksville and the Regional District's approach reflect concerns with demands on groundwater sources impacted by a longer summer peak period and a strategy to maintain the Arrowsmith Dam levels well into the fall.

While each community was effective in their individual responses, there was confusion in the public with respect to the various water restriction levels and the provincial level of drought being announced at the same time.

While each community will approach such events based on their particular circumstances there may be ways, through coordination of efforts, standardization of restrictions/regulations etc., that future communication can be more streamlined to assist in reducing any potential confusion.

This is one of the benefits of the DWWP program: it provides a hub for discussion of regional water issues across municipalities and sectors. Through this venue, water purveyors across the region can proactively align communication and policy initiatives where possible.

Staff are recommending that the member municipalities and other water purveyors, working within the DWWP Technical Advisory Committee structure, develop a working sub-committee to review standardized communication protocols and water restriction policies and to bring forward recommendations for the Board's consideration.

#### **ALTERNATIVES**

1. That the recommendations associated with water resource management issues related to current and long term climate challenges be adopted.
2. That the Board provides alternate direction.

## FINANCIAL IMPLICATIONS

There are no financial implications at this time. Financial implications associated with the outcome of the staff recommendations will be outlined in subsequent Board reports.

## STRATEGIC PLAN IMPLICATIONS

The primary focus of the RDN Strategic Plan is to build resiliency through the recognition of challenges and influencing adaptive change. The changing climate is altering what has been considered normal in the past. A resilient future will depend on how we, as a region, continue to adapt and improve our understanding and management of our changing water resources. These recommendations will support and enhance the RDN's ability to protect our environment and sustain a resilient local economy.

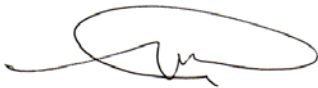
## SUMMARY/CONCLUSIONS

A changing climate continues to present challenges to the health and sustainability of our region's water resources and economic development. The drought experienced this summer has impacted those resources to varying degrees depending on individual water system circumstances; however, long term changes in climate will continue to impact the dynamics of water supply in the region.

The key to addressing these changes is through continuing to adapt our policies to ensure sound decision making. Efficient and collaborative governance at a regional level combined with cultural shifts in how we perceive the value of our water resource are key areas that require strengthening.

The following actions are recommended:

- Work with the region's partners, including municipalities and First Nations, to develop a regional water governance model proposal for the Board's consideration;
- review water pricing and regulation changes to the eight RDN operated water service areas that reflect water conservation priorities;
- Update water requirements for subdivision and development under Bylaw No. 500 for the Board's consideration; and,
- Work with member municipalities and other water purveyors to review standardized regional drought communication protocols and water restrictions policies for the Board's consideration.



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Report Writer

*Randy Alexander*

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General Manager Concurrence

*Dennis Trudeau*

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A/CAO Concurrence