



# Drinking Water & Watershed Protection

May 12, 2022 Technical Advisory Committee Meeting

**AGENDA**

**GUEST  
PRESENTATIONS**

**ROUNDTABLE**

**PROJECT UPDATE  
PRESENTATIONS**

**NEW  
BUSINESS**



# AGENDA

Approval of the agenda

Adoption of minutes

- Minutes from February 17, 2022

Roundtable Updates

Invited Presentations

Project Update Presentations

New Business

Adjournment







# ROUNDTABLE UPDATES

All committee members





# Guest Presentations

**School Water Stewards Program**  
Linda Brooymans

**Stewardship Toolkit**  
Rosie Barlak

**City of Nanaimo Water Supply Strategy**  
Mike Squire





# PROJECT UPDATES

PRESENTATIONS

**Awareness &  
Stewardship**

**Information  
& Science**

**Policy &  
Planning  
Support**







**Water to  
Earth Month  
2022**

**Rebate  
Program  
Update**

**Outreach Events  
Update**

# Awareness & Stewardship

**Irrigation  
Check-Ups**

**Stewardship &  
Monitoring  
GetInvolved Page**





# Water to Earth Month 2022

- In partnership with City of Nanaimo, NALT, MABBRI, Mosaic and through DWWP, The District of Lantzville, Town of Qualicum Beach and City of Parksville
- 10 total events plus online contests and activities
- Prizes included rainbarrels, native plants and seeds from NALT Nursery, Reusable water bottles and coffee mugs, Zero waste bags, Umbrellas

Event	In Person	Virtual
Nanaimo River Stream Walk	8	
<u>WaterSmart</u> Gardening and Landscaping Workshop	10	1
Rainwater Management Workshop		21
Educational Video Series Quiz		40
Social Media Contest		90 <u>FaceBook</u> 12 <u>Instagram</u>
<b>Totals</b>	<b>18</b>	<b>164</b>



# 2022 Outreach Events



RDN Board approved a return to in-person events in April 2022

## May 2022

- Presentation to Lantzville Probus Group
- Team WaterSmart booth at River Never Sleeps

## Upcoming Events:

- May 18th- City of Parksville
- May 29th- Qualicum Beach Family Day
- June 8th French Creek Residents Association
- July 17th- Qualicum Beach Day
- August- Macmillan Arts Centre "A Tale of One Urban Creek" Ethos display and workshops
- TBD- Team WaterSmart "Pop-up" in parks





# Irrigation Check-ups

- Residential Irrigation Check ups will resume for Summer 2022
- Letters sent to top 100 water users in each municipality
- Team WaterSmart will conduct 12-15 irrigation checks this year
- Residents receive a report with findings, recommendations and information on WaterSmart landscaping
- Irrigation and Soil rebate to make upgrades more affordable



# Water Stewardship Rebates

## Rainwater Harvesting Rebate

- Maximum rebate of up to \$750 off the installation of 1000 imperial gallons or more of rainwater storage
- Open and accepting applications from all Electoral Areas and Muni's, except currently closed to further applications from Electoral Area B
- 2022 Rainwater Harvesting Notification List
- 3-step application process: Pre-approval, 90-day completion of work, Claim application



<b>Rebate Applications:</b>	<b>Total Allocated:</b>	<b>Rebates Issued:</b>	<b>Total Issued:</b>
24	\$18,000	8	\$5,980.23

Issued Rebate Distribution by Electoral Area/Municipality:										
A	B	C	E	F	G	H	Nan	Lantz	Parks	QB
1	15	2	0	1	0	0	4	1	0	0

Application forms and program details available at [RDNrebates.ca](http://RDNrebates.ca)



# Water Stewardship Rebates

## Irrigation Upgrades & Soil Improvements Rebate

- Maximum rebate of up to **\$675** for irrigation upgrades (sensors, control timers, drip irrigation, & MP rotators) and soil improvements (mulch, topsoil, compost).
- Currently open and accepting applications for all Electoral Area and Muni's
- 3-step application process: Pre-approval, 90-day completion of work, Claim application



<b>Rebate Applications:</b>	<b>Total Allocated:</b>	<b>Rebates Issued:</b>	<b>Total Issued:</b>
<b>14</b>	<b>\$3,475</b>	<b>8</b>	<b>\$1,873.70</b>

<b>Issued Rebate Distribution by Electoral Area/Municipality:</b>										
<b>A</b>	<b>B</b>	<b>C</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>	<b>Nan</b>	<b>Lantz</b>	<b>Parks</b>	<b>QB</b>
1	3	0	0	0	4	0	4	0	0	2

Application forms and program details available at [RDNrebates.ca](http://RDNrebates.ca)

# Water Stewardship Rebates

## Wellhead Upgrades Rebate

- Maximum rebate of up to **\$650** for wellhead upgrades (secure well cap, well casing stick-up, surface seal). Up to **\$500** for the well closure.
- Open and accepting applications from all Electoral Areas and Muni's
- 3-step application process: Pre-approval, 90-day completion of work, Claim application



<b>Rebate Applications:</b>	<b>Total Allocated:</b>	<b>Rebates Issued:</b>	<b>Total Issued:</b>
3	\$1,250	2	\$300

<b>Issued Rebate Distribution by Electoral Area/Municipality:</b>										
A	B	C	E	F	G	H	Nan	Lantz	Parks	QB
0	1	1	0	0	1	0	0	0	0	0

Application forms and program details available at [RDNrebates.ca](http://RDNrebates.ca)



# Water Stewardship Rebates

## Well Water Testing Rebate

- Maximum rebate of up to \$175 for full spectrum analysis from accredited lab.
- Open and accepting applications for all Electoral Areas and Muni's
- 2-step application process: Pre-approval, sample drop-off upon receipt of voucher.



<b>Rebate Applications:</b>	<b>Rebates Issued:</b>	<b>Total Issued:</b>
29	14	\$1,130.02

Issued Rebate Distribution by Electoral Area/Municipality:										
A	B	C	E	F	G	H	Nan	Lantz	Parks	QB
4	7	8	1	4	0	2	0	3	0	0

Application forms and program details available at [RDNrebates.ca](http://RDNrebates.ca)

## DWWP Monitoring & Stewardship Network

A GetInvolved network for streamkeepers and stewardship groups to connect, share ideas, and more!

- A private online open-environment platform for members of the Community Watershed Monitoring Network (CWMN) and partner stewardship groups to:
  - Stay connected with DWWP
  - Highlight their team and work
  - Share projects and ideas
  - Recruit volunteers from other groups
  - Find resources and information



- **Housed through RDN GetInvolved, however, it is completely private, and members will login with their own private account.**
- **Currently in development! Will be introduced to stewardship groups at CWMN Results Session this Summer 2022.**





**Preliminary  
Overview: 2021  
Community  
Watershed  
Monitoring  
Network Results**

**Pre-Summer  
Groundwater  
Levels**

**Community  
Watershed  
Monitoring  
Equipment  
Update**

**Riparian Spatial  
Analysis for  
Restoration  
Prioritization**



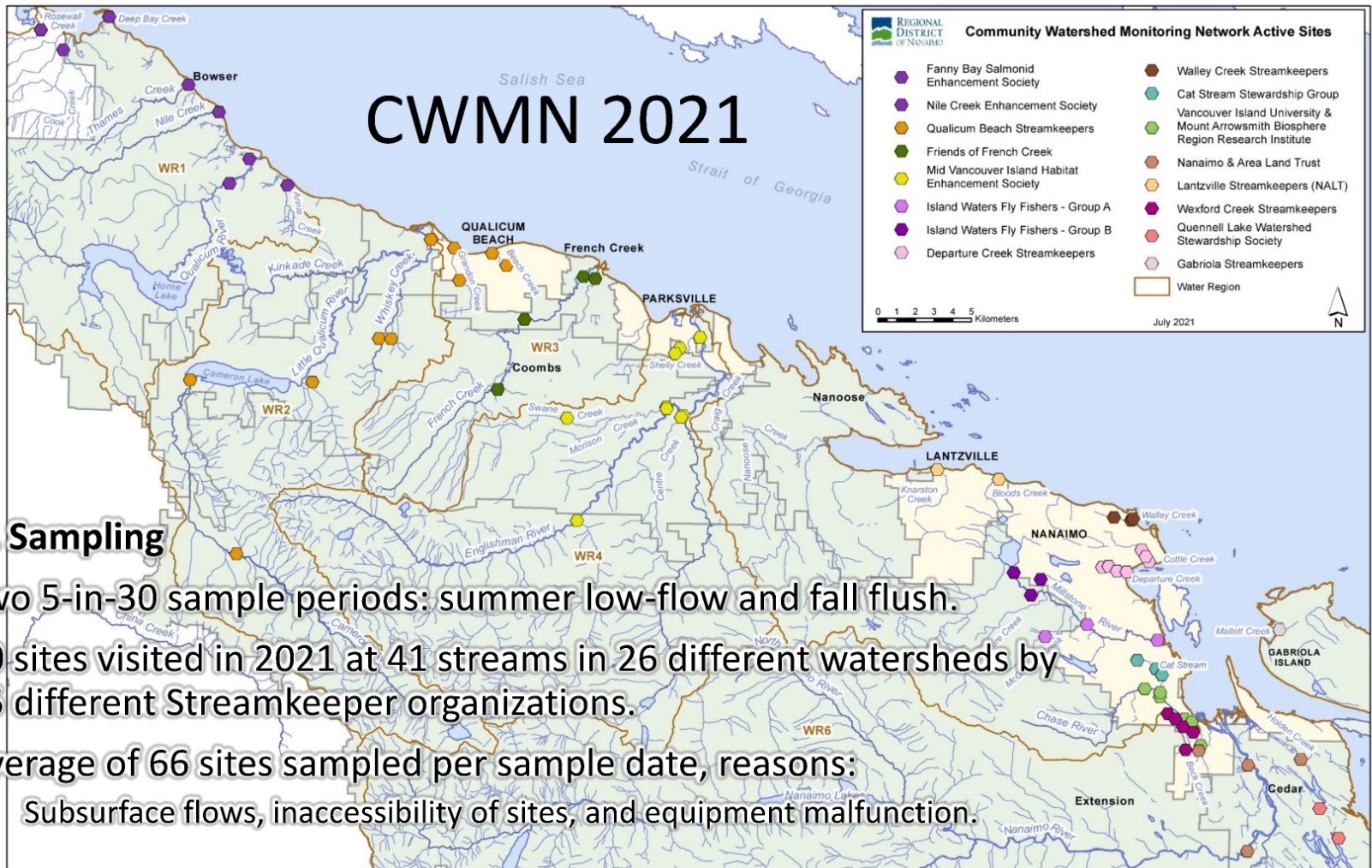
**Information &  
Science**



# Community Watershed Monitoring Network 2021 Data Summary

Photo: 2021 Island Waters Fly Fishers CWMN Sampling curtesy of IWFF





## 2021 Sampling

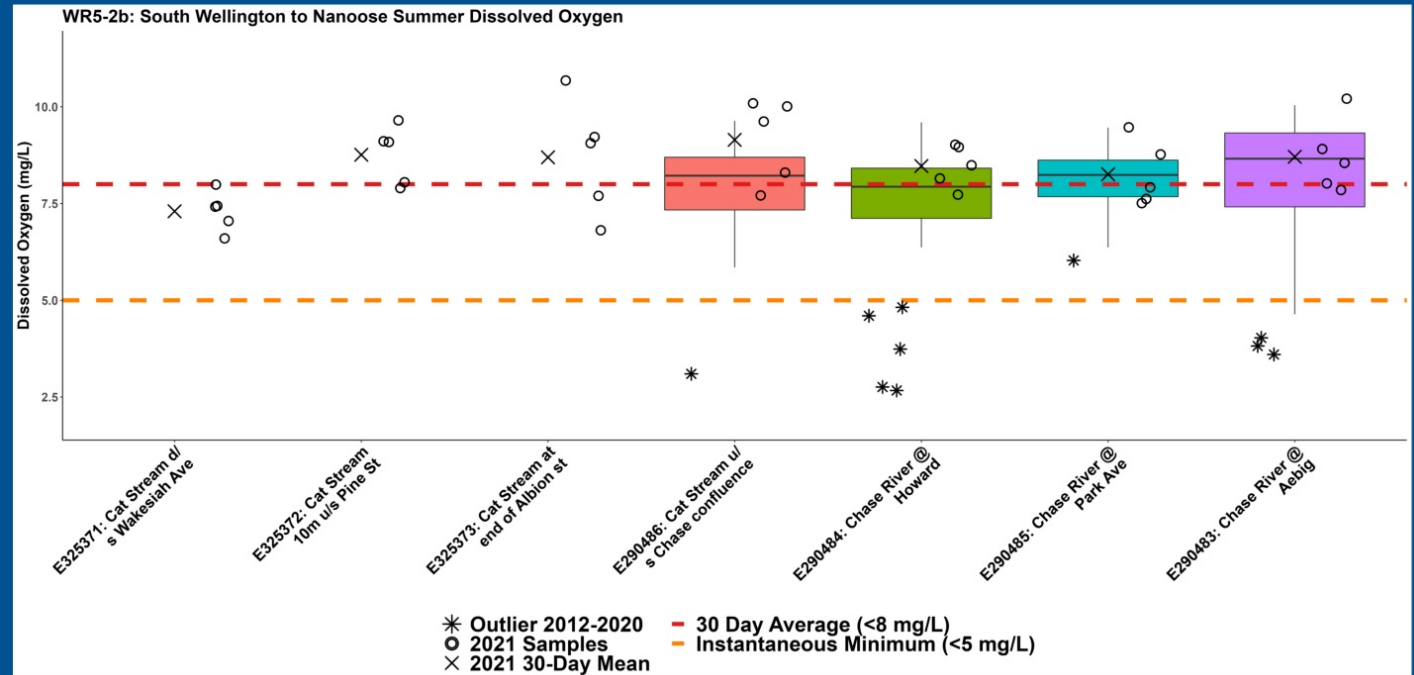
- Two 5-in-30 sample periods: summer low-flow and fall flush.
- 70 sites visited in 2021 at 41 streams in 26 different watersheds by 15 different Streamkeeper organizations.
- Average of 66 sites sampled per sample date, reasons:
  - Subsurface flows, inaccessibility of sites, and equipment malfunction.

# 2021 Data Analysis

- Recorded samples and field notes uploaded to provincial EMS database.

- Results graphed by Ecoscape Environmental Consulting.

- Data compared to provincial water quality guidelines and objectives (WQG/O).





# CWMN 2021 Data Summary

Year	Parameter	Water Quality Guideline / Objective	Percent sites within WQG/O (%)
2018	DO	5 mg/L + 8 mg/L	58.1
2019	DO	5 mg/L + 8 mg/L	36.9
2020	DO	5 mg/L + 8 mg/L	71.6
<b>2021</b>	<b>DO</b>	<b>5 mg/L + 8 mg/L</b>	<b>68.8</b>
2018	temperature	17°C	69.4
2019	temperature	17°C	44.6
2020	temperature	17°C	64.2
<b>2021</b>	<b>temperature</b>	<b>17°C</b>	<b>40.6</b>
2018	turbidity	2 NTU + 5 NTU	61.3
2019	turbidity	2 NTU + 5 NTU	27.7
2020	turbidity	2 NTU + 5 NTU	23.9
<b>2021</b>	<b>turbidity</b>	<b>2 NTU + 5 NTU</b>	<b>50.0</b>

## Water Quality Guidelines / Objectives

- Dissolved Oxygen (DO) minimums: 5 mg/L instantaneous and 8 mg/L 30-day average.
- Temperature 17°C for Coho rearing.
- Turbidity maximums: 2 NTU Jan. – Sept. and 5 NTU Oct. – Dec.

## Findings

- DO and temperature – fewer sites met WQG/Os. Potentially due to heat dome (record breaking air temps).
- Turbidity – more sites met WQG/Os. Potential reasons: restoration efforts, one fall flush captured in 2021.
- **In-depth discussion June 20, 2022 at the Annual CWMN Results Session. For event details, email [watermonitoring@rdn.bc.ca](mailto:watermonitoring@rdn.bc.ca).**



# Volunteer Observation Well Network Groundwater Levels Pre-Summer





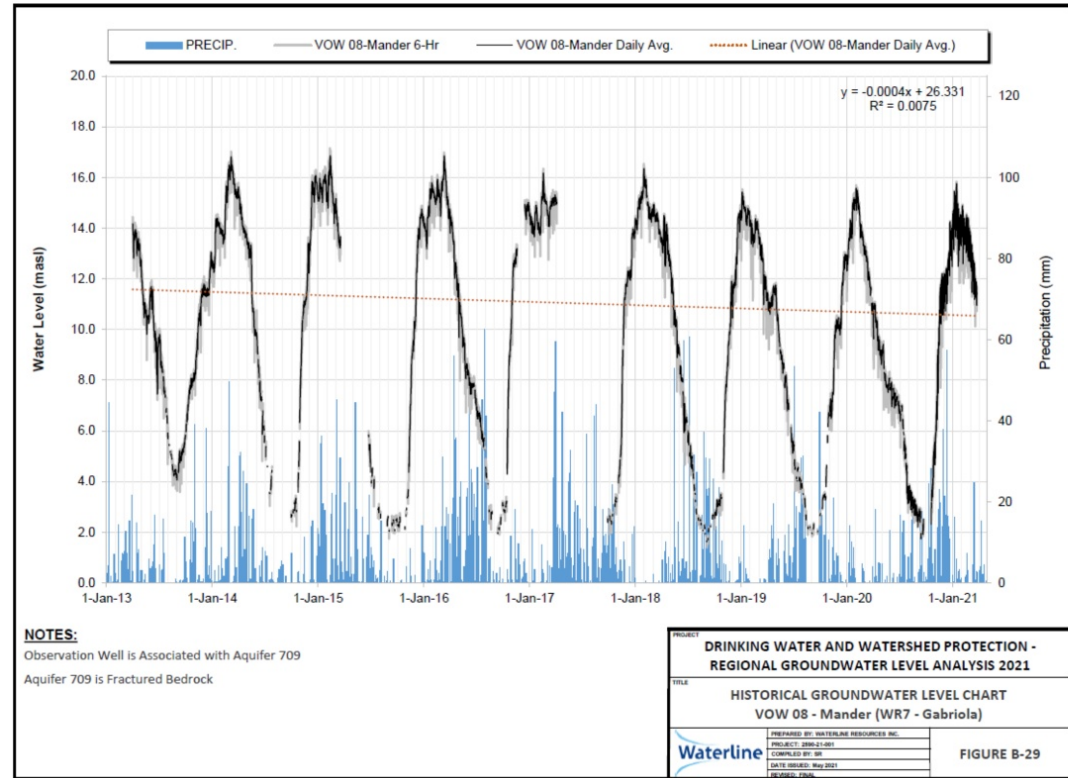
# VOW Groundwater Levels Pre-Summer

## Project

- Update graphs for VOW wells.
- Compared to previous years, report if current groundwater levels are increasing, decreasing, or stable.
- Report presented to RDN Board and shared with VOW volunteers June 28, 2022.

## Previous Studies

1. [Regional Groundwater Level Analysis for Summer 2020](#) – full report
2. [Regional Groundwater Level Analysis 2021](#) – graphing update



Example from 2021 report, available at [www.rdn.bc.ca/dwwp-reports](http://www.rdn.bc.ca/dwwp-reports).



# CWMN Equipment Replacement



Photo: 2021 Nile Creek Enhancement Society Training Session at Rose Community Park



# CWMN Equipment Turbidity Meter Replacement



LaMotte 2020we meter (top); Hach 2100Q (bottom)

## Rationale

- LaMotte 2020we meters used since 2011.
- Repairs on meters older than 2014 no longer supported.
- Need to replace over half of turbidimeter assets (10/18).
- Investigation into options – 4 units selected for analysis.
- Factors considered:
  - Cost of unit and supplies, level of accuracy, ease of use and training, repair location and times, expected maintenance and repairs, 10-year asset feasibility, and how data collected from LaMotte would compare to a new model.

## Selected Equipment

- Hach 2100Q Portable Turbidimeter

# Turbidity Meter Replacement



Hach 2100Q Portable Turbidimeter kit

## Where we are at?

- Ten Hach 2100Q Portable Turbidimeters ordered.
- 10-year plan for asset management drafted and reviewed.

## Next Steps

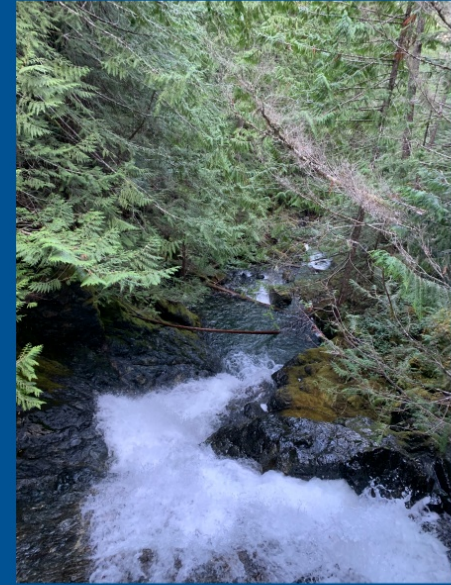
- Once arrived, add assets into inventory.
- Creation of detailed and cheat-sheet calibration documents.
- In-house how-to calibration video.
- Organization of training sessions on new equipment.
- Set up annual maintenance with Water Services Operations staff (July 2023).



# Riparian Analysis for Restoration Prioritization

## Project Objectives

- Compile existing data to map and analyze current functional riparian cover levels across the region's major watercourses.
- Quantify current riparian cover / vegetative extents in terms of length, width / depth and quality.
- Present criteria for health / prioritization of areas based on defensible ecological, geomorphological, cultural, climate change and regulatory parameters, and other parameters as advised.
- Use that criteria to map areas where the riparian vegetative area is deficient, to identify priority areas for restoration, enhancement, or improvement.
- Present the results spatially in a map format as well as tabulated in accompanying tables.
- Create an interactive map tool to allow decision-makers, practitioners and community members to interact with the results on multiple scales. The interactive map should have the capacity to include relevant supporting data such as water quality monitoring locations, previous restoration sites, fish presence, eagle nest trees, etc.



Contract value: \$35,800  
Awarded to McTavish &  
Chartwell Resource Group

# Mapping Data and Polygons

## Data used

- Aerial Photography
- LiDAR Hillshade Model
- Biogeoclimatic Units
- Consolidated Cutblocks
- Fire Perimeters - Historical and Current
- Forest Tenure Roads
- Vegetation Resource Inventory (VRI)
- Terrestrial Ecosystem Mapping (TEM)
- Sensitive Ecosystem Inventory (SEI) Mapping
- Soils of Southern Vancouver Island



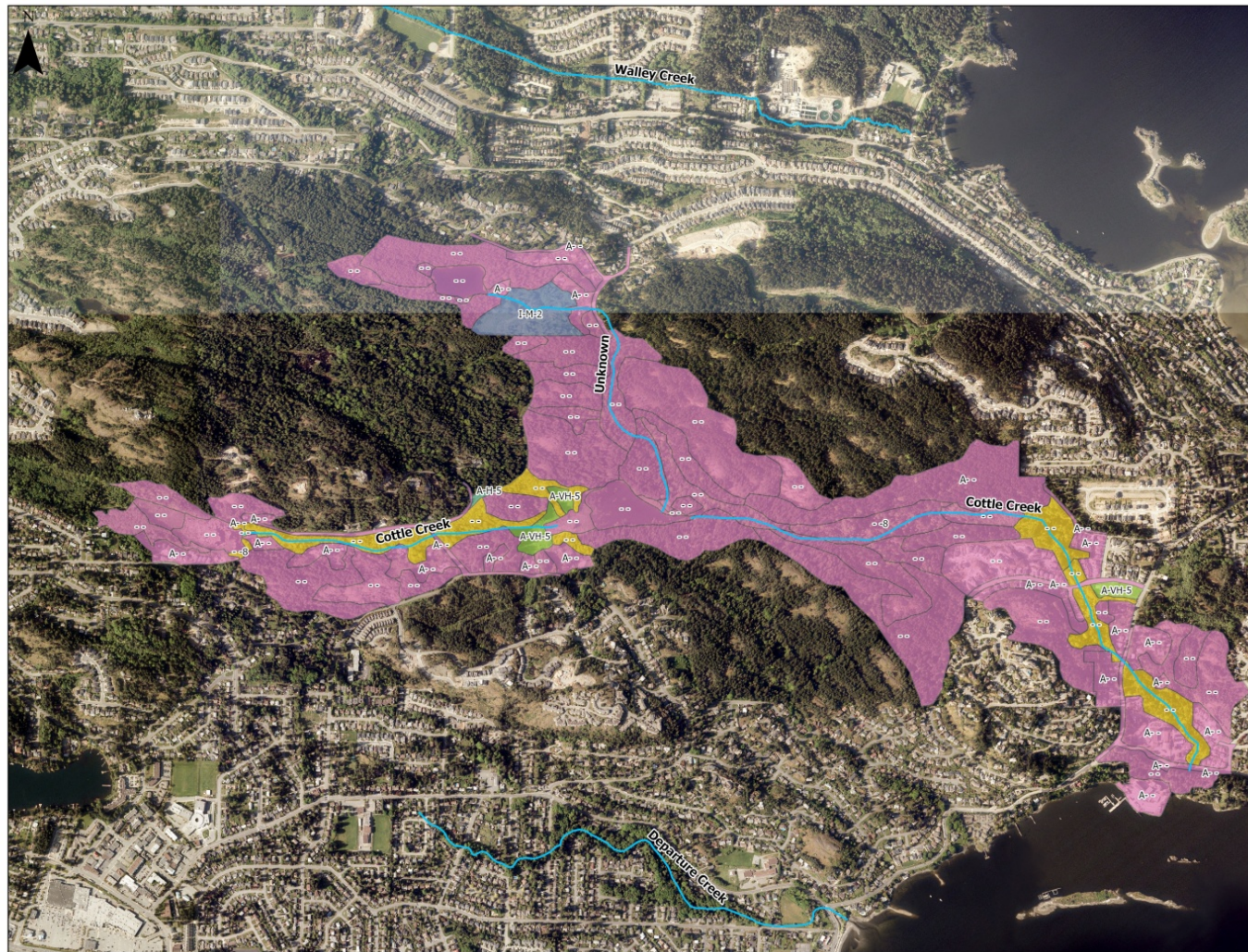
## Polygon Delineations

1. Land Cover Classification (LCC)
2. Biogeoclimatic Ecosystem (BEC) Unit
3. Ecosystem Attribution
4. Successional Status
5. Structural Stage
6. Crown Closure
7. Canopy Height
8. Soil Parent Material & Soil Texture Class
9. Disturbance
  - a. Potential Vegetation Severity
  - b. Potential Vegetation Complex
  - c. Autogenic Regeneration Potential









**REGIONAL DISTRICT OF NANAIMO**

**Legend**

- Watercourse
- Autogenetic Regeneration Potential
  - Very Low
  - Fair
  - Poor
  - High
  - Highly Degraded
  - Somewhat Degraded
  - Forested or Permanent Disturbance

**Label Definition**

Potential Veg Severity

Disturbance - Potential Veg Complex

0 145 290 580  
Meters  
Scale: 1:112,000  
Name: NAD 1983 UTM Zone 10N

Project: Regional District of Nanaimo  
Riparian Spatial Analysis  
Drawn By: Anna Yuill  
Date Exported: 5/6/2022 4:46 PM

**MSTAVISH**  
RESOURCE & MANAGEMENT CONSULTANTS LTD.

**Disturbance Classification Riparian Cover Analysis**



# Project Timeline

	Task	Deliverable Date
<input checked="" type="checkbox"/>	Data Compilation	April 10
	Riparian Cover Analysis Complete	May 20
	Restoration Prioritization & Progress Report	May 27
	Draft Report	June 10
	Final Report & Map Package	June 24
	Interactive Map Tool	July 1
	Map Tool Workshop to Stewardship Partners	July 8

# Policy & Planning Support

French Creek  
Water Budget  
Phase 3

Regional Strategy  
for Rainwater  
Management

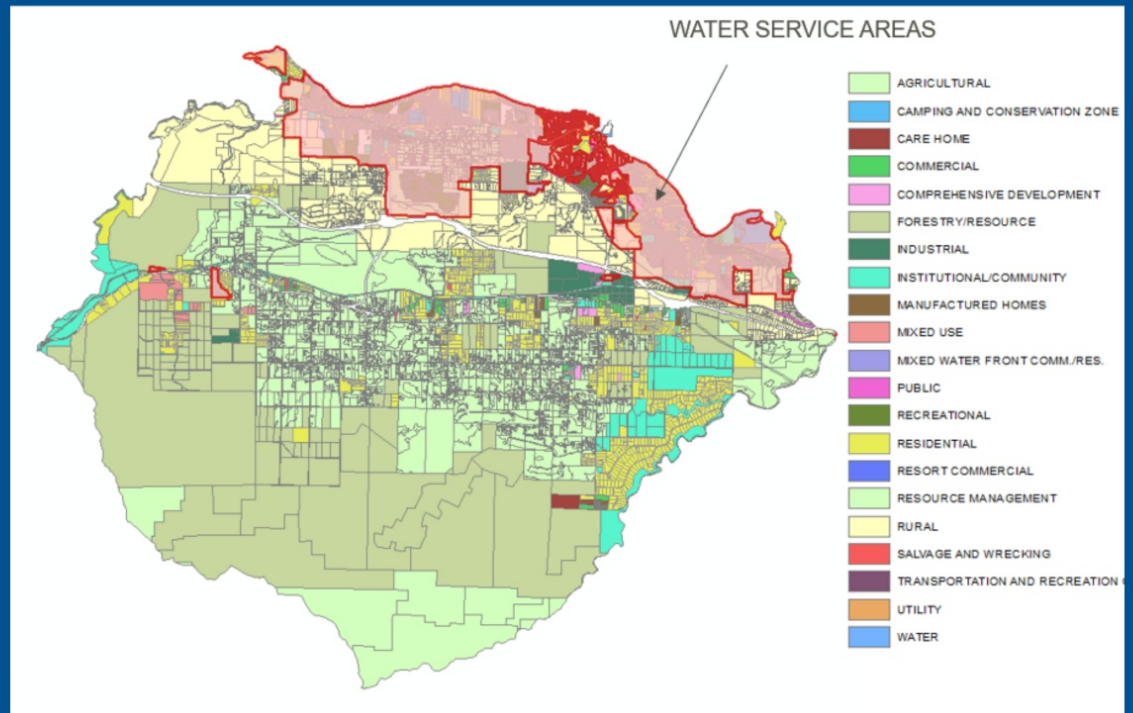
Area F OCP  
Update





# French Creek Water Budget Phase 3

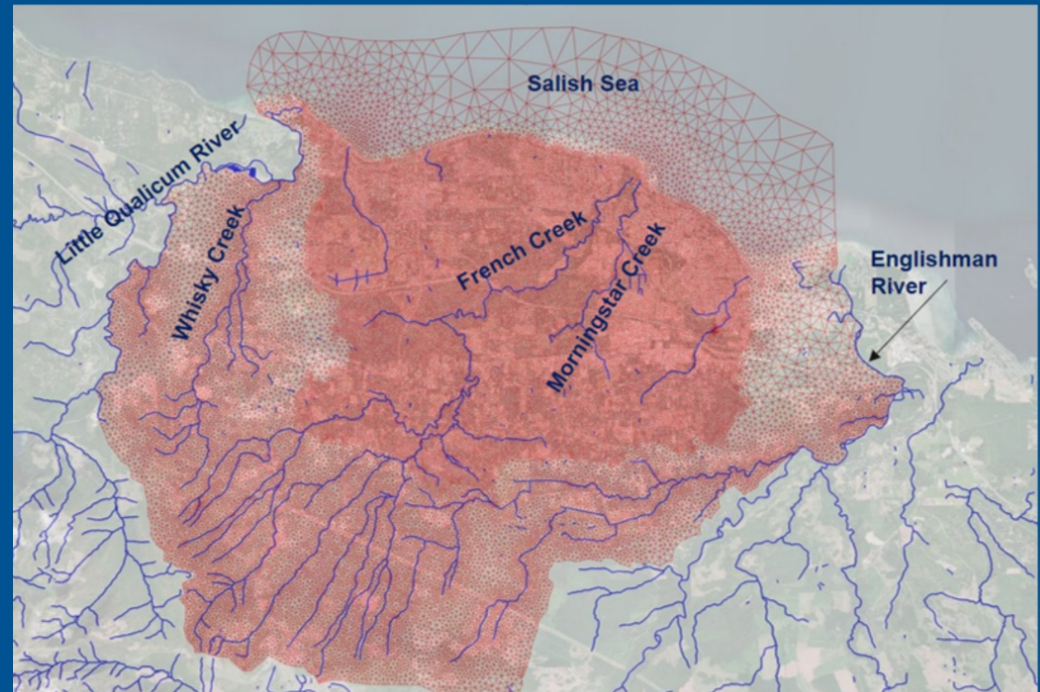
**Project Objective:** to build a 3D numerical groundwater flow model to be used as a tool to assess stress on aquifers and watersheds by comparing water availability with water use and setting boundary conditions for sustainable water extraction in various scenarios. The findings of this technical analysis will guide recommendations for water supply planning, land use decisions, and water objectives.



# French Creek Water Budget Phase 3

## Progress Update:

- Data compilation complete.
- Conceptual model refinement mostly complete, includes:
  - geology, hydrostratigraphy
  - recharge areas, groundwater flow direction & hydraulic gradients
  - monitoring wells and water levels, surface water discharge and baseflow
  - surface water / groundwater connectivity
  - water use -serviced and unserviced areas

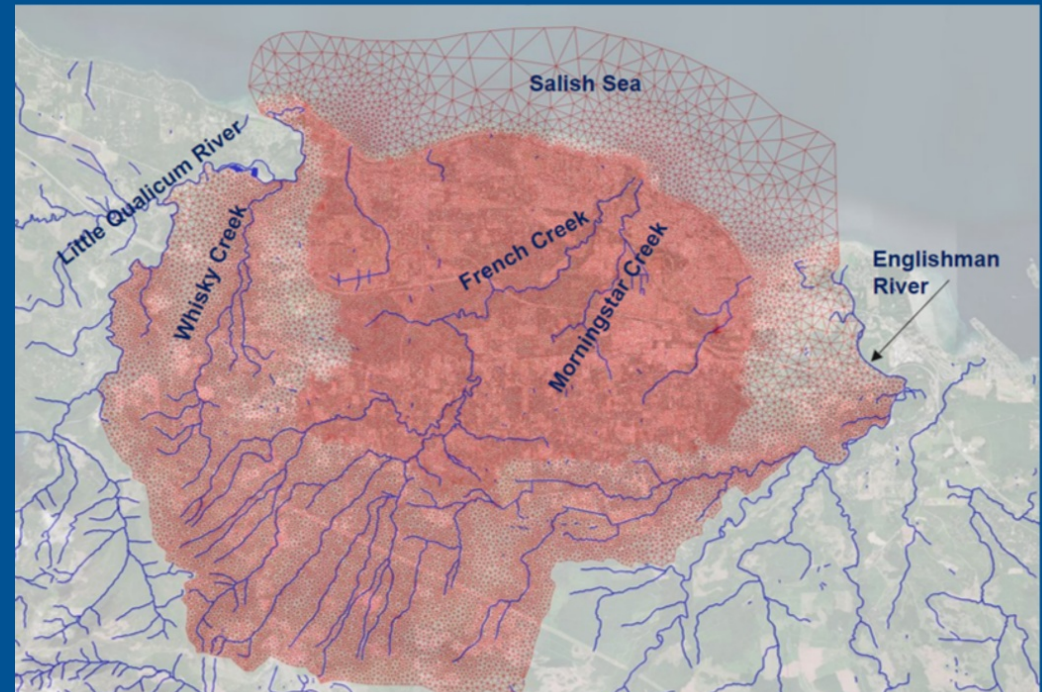




# French Creek Water Budget Phase 3

## Next Steps:

- Model Calibration (average and seasonal conditions)
- Water Budget Analysis and Stress Assessments
- Analysis with Future Predictions
- Presentation of model from Golder at next DWWP TAC meeting in September



# Regional Strategy for Rainwater Management

## Objectives:

1. To outline a strategy for collaborative rainwater management in the region, at the watershed scale, for the protection of private property and the environment.
2. To coordinate actions across jurisdictions to maintain healthy watersheds in the context of climate change, land use pressures and evolving best practices for rainwater management.
3. To provide a basis to update policies, standards and bylaws, inform education and outreach, and support grant funding applications for infrastructure upgrades and natural asset protection.





# Regional Strategy for Rainwater Management

## Key Elements

Foundation Setting Studies  
& Assessments



Watershed studies, monitoring, regional climate change assessment, funding options assessment

Development of  
Performance Targets



Release rate, retention volume, recharge volume, water quality

Implementation tools



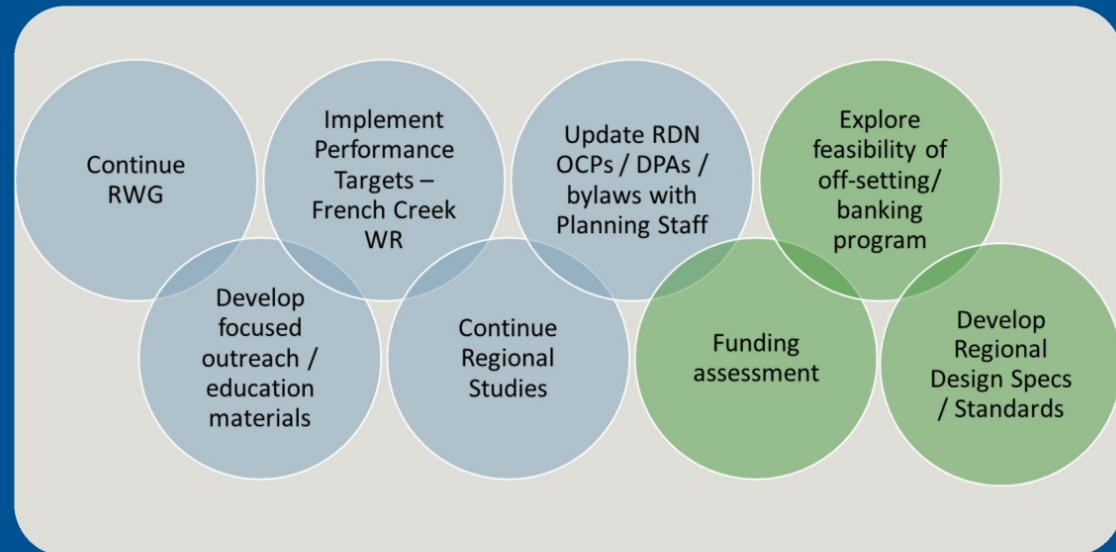
Design standards and specifications, guidance documents / manuals, policies, bylaws, DPAs, strategic planning tools.

# Regional Strategy for Rainwater Management

## Next Steps/Priorities

- Implementation will require ongoing collaboration
- Some actions are continued / planned in the short term
- Some actions are new / will need to be planned over the longer term

\$30,000 in 2022 DWWP budget for first steps of implementation



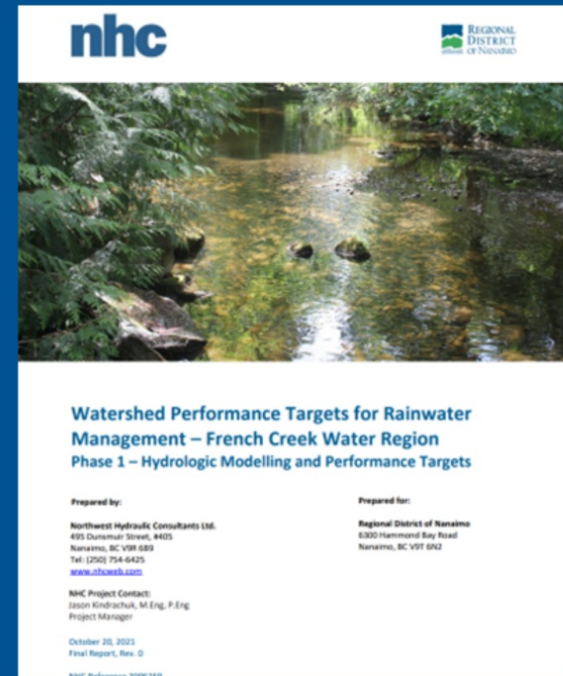


# Watershed Performance Targets for Rainwater Management in French Creek Water Region - Phase 2

The overall objective of the performance targets are ensuring no increase in the magnitude of flood events and maintaining the groundwater component of the water balance.

**Phase 1 report recommendation:** Mitigation measures need to be applied to runoff from both pervious and impervious areas to **meet pre-development conditions.**

**Initiating Phase 2** - Implementation, Monitoring, and Adaptive Management



# Watershed Performance Targets for Rainwater Management in French Creek Water Region - Phase 2

## Considerations in the potential applicability of the performance targets:

- Examine potential exemptions due to local conditions within the French Creek water regions
- Consider applicability of the targets established for French Creek to other zones given watershed characteristics
- Define responsibility and accountability
- Propose methods for achieving targets
- Develop monitoring and adaptive management metrics to evaluate effectiveness
- Recommend monitoring systems to aid in periodic reviews, track progress, and when to apply course-correction
- Provide high-level recommendations for other initiatives that are essential to improving overall watershed health



# Watershed Performance Targets for Rainwater Management in French Creek Water Region - Phase 2

## Approach & Deliverable

1. Literature Review
2. Develop Implementation Monitoring, and Adaptive Management Plan
3. Inform and solicit feedback from the Rainwater Working Group
4. Final Reporting - October 2022

# Area F Official Community Plan Update

Presented by Nicholas Redpath  
Senior Planner, Strategic and Community Development  
Regional District of Nanaimo





# Drinking Water & Watershed Protection

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**NEW  
BUSINESS**





Climate-  
Informed Water  
Supply Planning

**NEW  
BUSINESS**



# State of Climate-Informed Water Supply Planning study

## Project Goals:

- to get a sense of water supply planning practice strengths and challenges across the region, particularly how climate change projections are being considered in supply planning
- to get a sense of how supply planning approaches are being communicated to the public
- to develop a set of best practices for use by area suppliers - both for supply planning and communications
- to help improve public understanding of how supply planning in our region works, particularly in the context of climate change

For more information contact:

Jessica Beaubier, Climate Change and Resilience Coordinator  
Regional District of Nanaimo

T: (250) 390-6568 | Email: [jbeaubier@rdn.bc.ca](mailto:jbeaubier@rdn.bc.ca)



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**Thank you!**

Next meeting:  
September 20, 2022

