Provincial Government Update

BCGWA Regional Meetings
October 2022

Nicole Fulcher
Groundwater Protection Officer
West Coast Region

Outline

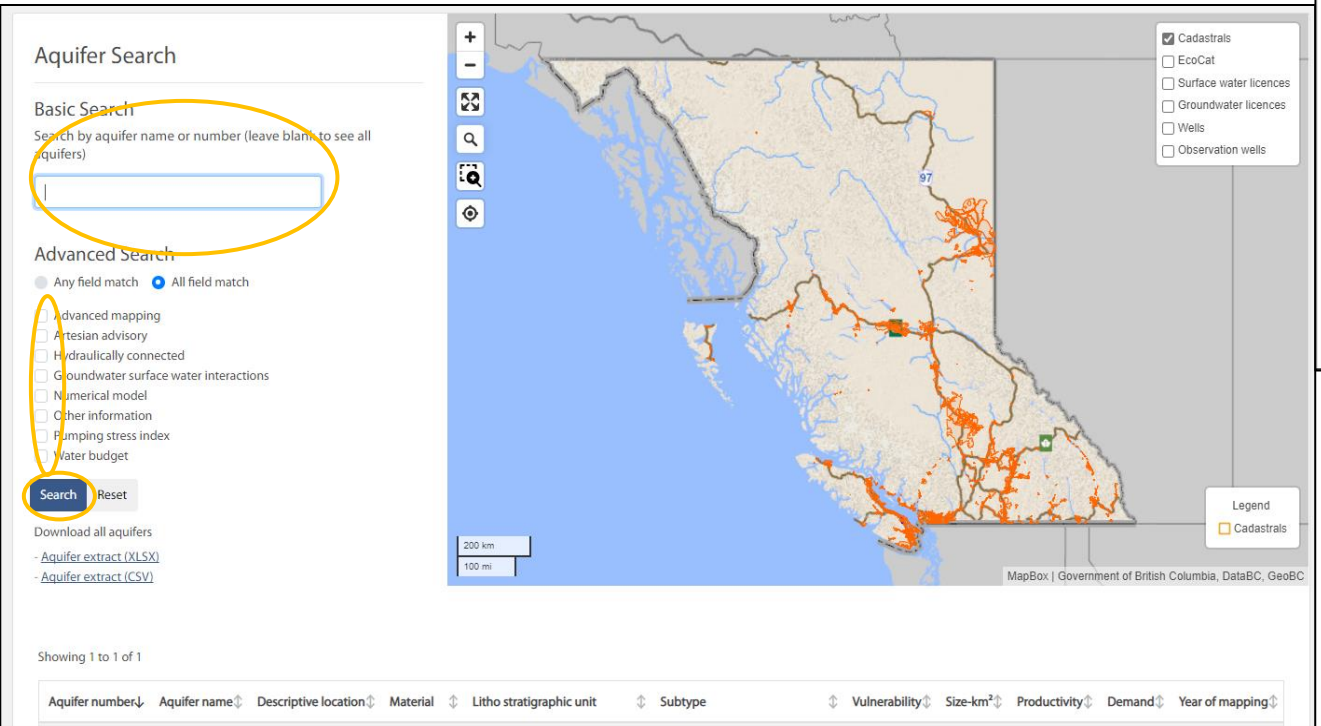
- GWELLS and Resources
- Aquifer Summary Pages
- Aquifer Fact Sheets
- New Ministry Re-organization
- Artesian Flowing Well Advisories
- Compliance and Enforcement
- Saltwater Intrusion and licensing

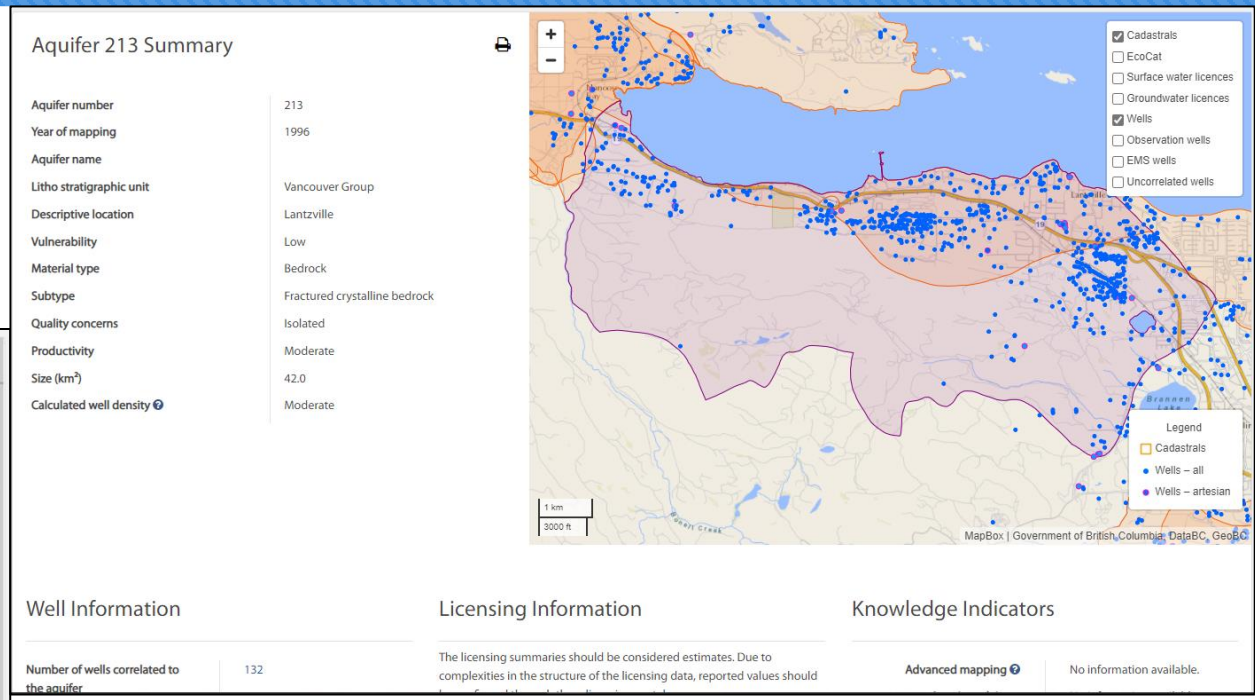
GWELLS & Resources

- Remember to update your contact information in the well driller & pump installer registry – this will allow clients to be able to search and contact you
- Well construction/alteration/decommission reports must be submitted within 90 days of completion
- GWELLS and Provincial websites can provide helpful information prior to and during being onsite

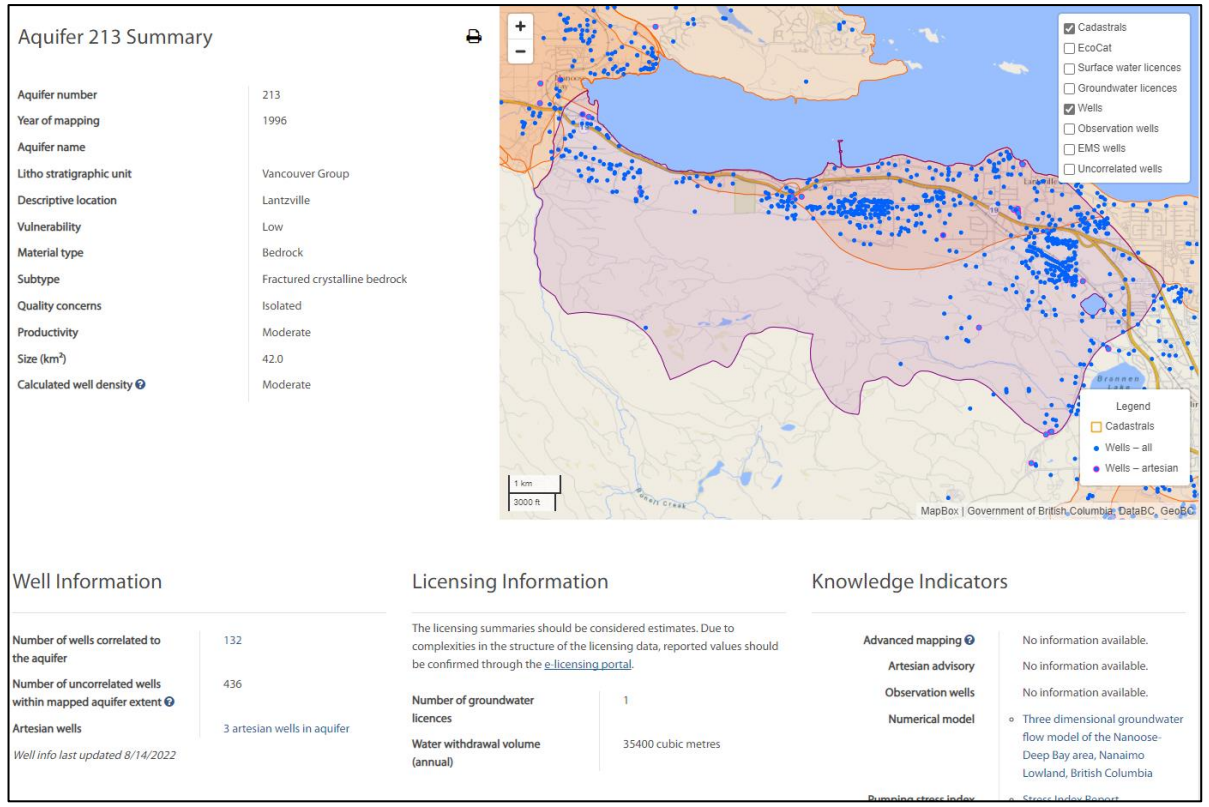
Aquifer Summary Page

- [Groundwater Wells and Aquifers - Province of British Columbia (gov.bc.ca)]





Aquifer Summary Page



Aquifer 213 Summary

Aquifer number	213
Year of mapping	1996
Aquifer name	
Litho stratigraphic unit	Vancouver Group
Descriptive location	Lantzville
Vulnerability	Low
Material type	Bedrock
Subtype	Fractured crystalline bedrock
Quality concerns	Isolated
Productivity	Moderate
Size (km²)	42.0
Calculated well density	Moderate

Well Information

Number of wells correlated to the aquifer	132
Number of uncorrelated wells within mapped aquifer extent	436
Artesian wells	3 artesian wells in aquifer

Well info last updated 8/14/2022

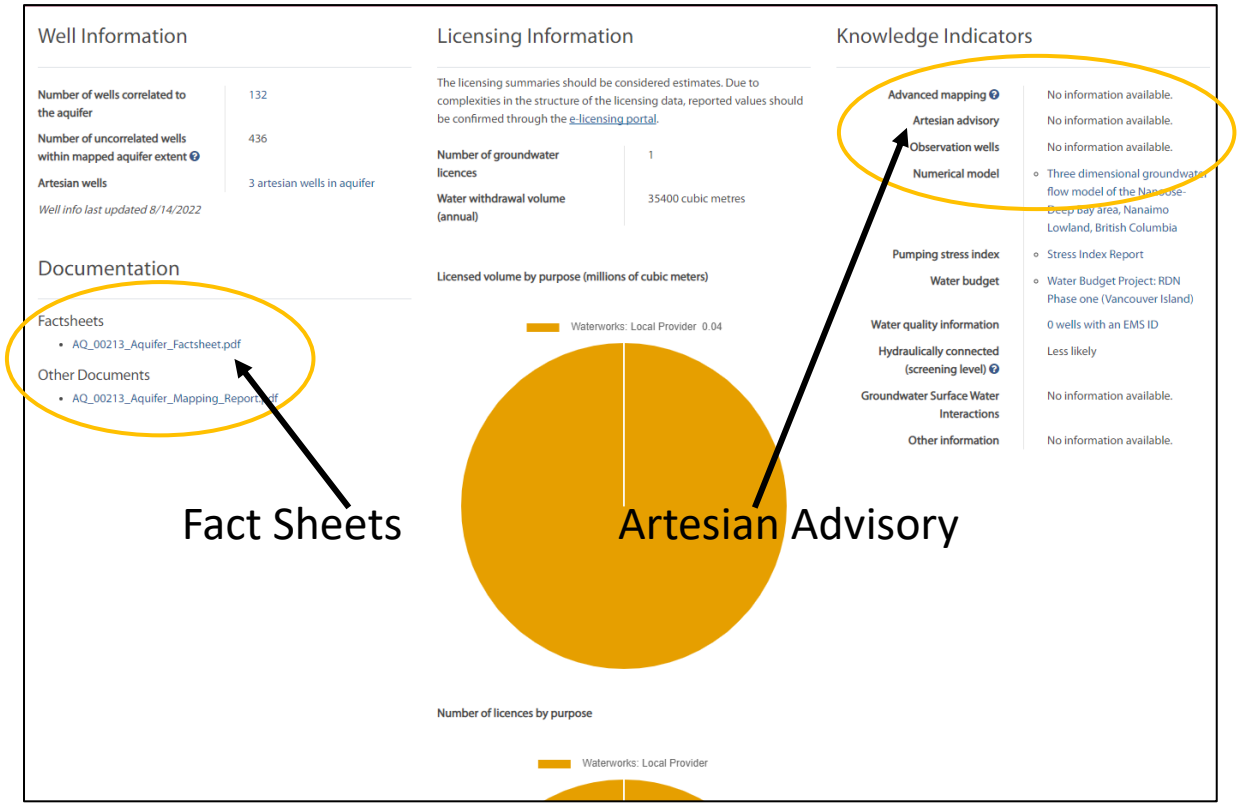
Licensing Information

The licensing summaries should be considered estimates. Due to complexities in the structure of the licensing data, reported values should be confirmed through the e-licensing portal.

Number of groundwater licences	1
Water withdrawal volume (annual)	35400 cubic metres

Knowledge Indicators

Advanced mapping	No information available.
Artesian advisory	No information available.
Observation wells	No information available.
Numerical model	Three dimensional groundwater flow model of the Nanoose-Deep Bay area, Nanaimo Lowland, British Columbia



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Well info last updated 8/14/2022

Documentation

Factsheets

- AQ_00213_Aquifer_Factsheet.pdf

Other Documents

- AQ_00213_Aquifer_Mapping_Report.pdf

Fact Sheets

Licensing Information

The licensing summaries should be considered estimates. Due to complexities in the structure of the licensing data, reported values should be confirmed through the e-licensing portal.

Number of groundwater licences	1
Water withdrawal volume (annual)	35400 cubic metres

Licensed volume by purpose (millions of cubic meters)

Number of licences by purpose

Knowledge Indicators

Advanced mapping	No information available.
Artesian advisory	No information available.
Observation wells	No information available.
Numerical model	Three dimensional groundwater flow model of the Nanoose-Deep Bay area, Nanaimo Lowland, British Columbia
Pumping stress index	Stress Index Report
Water budget	Water Budget Project: RDN Phase one (Vancouver Island)
Water quality information	0 wells with an EMS ID
Hydraulically connected (screening level)	Less likely
Groundwater Surface Water Interactions	No information available.
Other information	No information available.

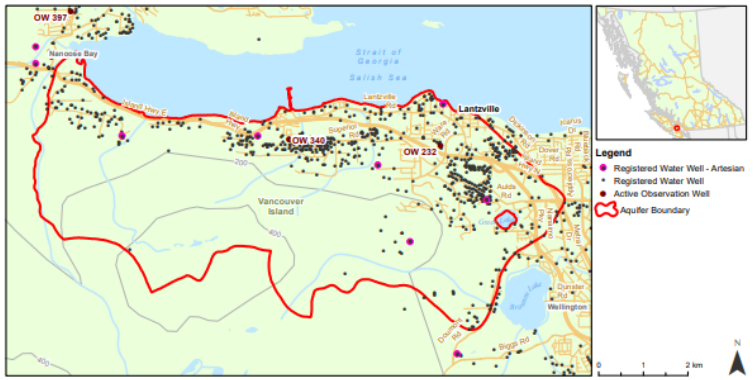
Artesian Advisory

Aquifer Fact Sheets

- In March 2019, Aquifer Factsheets were first published online through the Aquifer Summary Page
- Latest update in July 2022 included adding over 1200 Aquifer Factsheets
- New info includes hydraulic conductivity, storativity and transmissivity values
- Can be used to gather information prior constructing/altering wells or to gather information about aquifers/wells in an area

Aquifer Fact Sheet Example

Aquifer #213

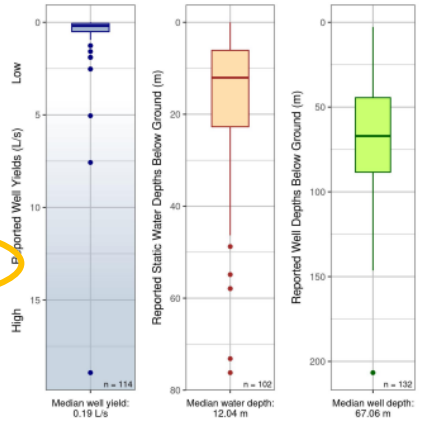


Aquifer Description (Mapping Report - 1996): Fractured crystalline (igneous intrusive or metamorphic, meta-sedimentary, meta-volcanic, volcanic) rock aquifer (subtype = 6b).

Aquifer Details	
Region	West Coast
Water District	Nanaimo
Aquifer Area	42 km²
No. Wells Correlated	132
Vulnerability to Contamination	Low
Productivity	Moderate
Aquifer Classification	IIC
Hydraulic Conductivity *	2.9×10^{-6} - 4.2×10^{-6} m/s (n=2)
Transmissivity *	1.6×10^{-5} - 2.1×10^{-5} m²/s (n=2)
Storativity *	Unknown
No. Water Licences Issued to Wells	1
Observation Wells (**Active**, Inactive)	None

* min - max

For Hydraulic Connection see guidance document



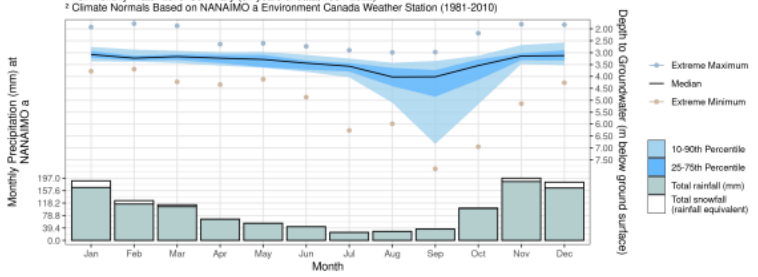
Detailed methods for all figures are described in the companion document (Aquifer Factsheet - Companion Document.pdf).

Factsheet generated: 2022-07-27. Aquifers online: https://apps.nrs.gov.bc.ca/gwells/aquifers.

(Interactive map) **Observation Well #312** (Well record) **Aquifer #161**

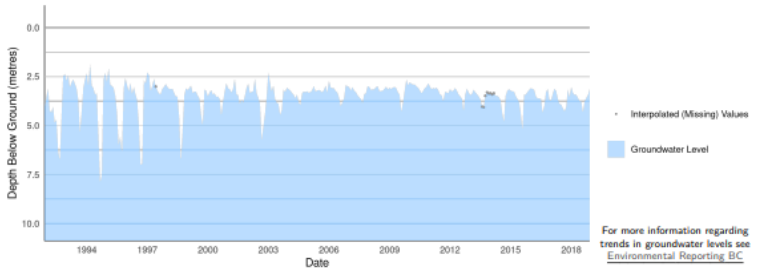
Monthly Groundwater Level[1] with Precipitation from Climate Normals[2]

[1] Full Monthly Water Level Summary (31 years of data: 1991-2022)
[2] Climate Normals Based on NANAIMO a Environment Canada Weather Station (1981-2010)



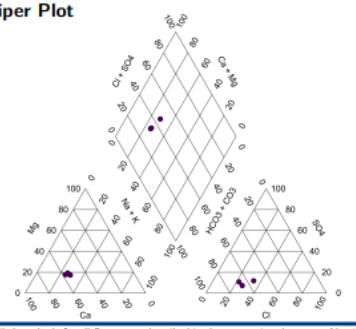
Groundwater Levels and Long-term Trend

Category: Stable



For more information regarding trends in groundwater levels see Environmental Reporting BC

Piper Plot



The groundwater samples are typically of the Ca-Na-HCO3-Cl type. Ca is the dominant cations, which indicate a less evolved/short flow path recharge area type of groundwater. Cation-exchange could be attributed to the replacement of divalent ions like Mg by univalent ions such as Na for the Na dominated water types. The fact that HCO3 is the dominant anion shows the source is primarily recent precipitation in the surficial unconfined sand and gravel aquifer #161. Cl enrichment could be attributed to sea water intrusion and/or anthropogenic activities such application of chemical fertilizers and sewage effluents. For EMS water chemistry data, see EMS ID E216600.

Detailed methods for all figures are described in the companion document (Aquifer Factsheet - Companion Document.pdf)

Supplementary Info #1 **Aquifer #161**

Water Budget

Table 61: Summary of Aquifer Stress Analysis – WR6 (NR)

Aquifer Tag No.	Aquifer Lithology	Potential Groundwater-Surface water or Aquifer to Aquifer Interaction	MOE Obs Well	Seas. Fluc.	Long Term Fluc.	WL Trend (up or down)	Total Est. AQ. Rec. (TRin) (Rpt + Rmb)	Est. Ann. Disch to Cr. & Down Grad Aquifer (Tc out)	Ground Water Use Estimate (ANTHout)	Total Out (TcOut + $ANTH_{out}$)	Stress Anal. % GW Use of the avail. AQ. Rec.	Relative Stress Assess.
			ID	(m)	(m)	U/D	(m^3/yr)		(m3/yr)	(m^3/yr)	(%)	Lo, Mod, Hi
160	Vashon	NR	228	4, 4.5	0	L	1.26E+07	7.84E+06	2.7E+03	7.8E+06	62	Mod-Hi
161	Capilano	NR	330, 312	0, 3.5	9, 6	Aban., Dit.	1.26E+08	1.05E+08	2.0E+07	1.2E+08	99	Mod-Hi
162	NG	NR, Ocean	337, 315, 350	7, 15	5, 10	Dit.	1.30E+07	3.31E+06	1.1E+07	1.4E+07	110	Hi
163	Quadra	Ocean	?	?	?	?	2.87E+05	1.14E+06	3.1E+05	1.4E+06	502	V.Hi
164	NG	NR	?	?	?	?	1.11E+06	5.05E+03	8.5E+05	8.6E+05	77	Mod-Hi
165	NG	NR	?	?	?	?	3.20E+06	4.13E+05	1.8E+06	2.2E+06	68	Mod

Notes: NR means Nanaimo River, NA means not applicable, AQ means aquifer, Seas. Fluc. means seasonal fluctuation, PDO means Pacific Decadal Oscillation, WL means water level, Est means estimated, Disch. means discharge, Rec. means recharge, Cr. Means creek, TRin means total recharge into aquifer, Rpt means total recharge from precipitation and/or leakage from overlying aquifer, Rmb means total lateral recharge from upgradient aquifer or mountain block, Tc out means total aquifer groundwater discharge to creek, assess. means assessment, Total out means total discharge from aquifer (not including discharge to ocean), $ANTH_{out}$ mean total groundwater Anthropogenic groundwater extraction from aquifer, aquifer stress color codes: blue =low, green =low to moderate, yellow =moderate, orange =moderate to high, red =high to very high .

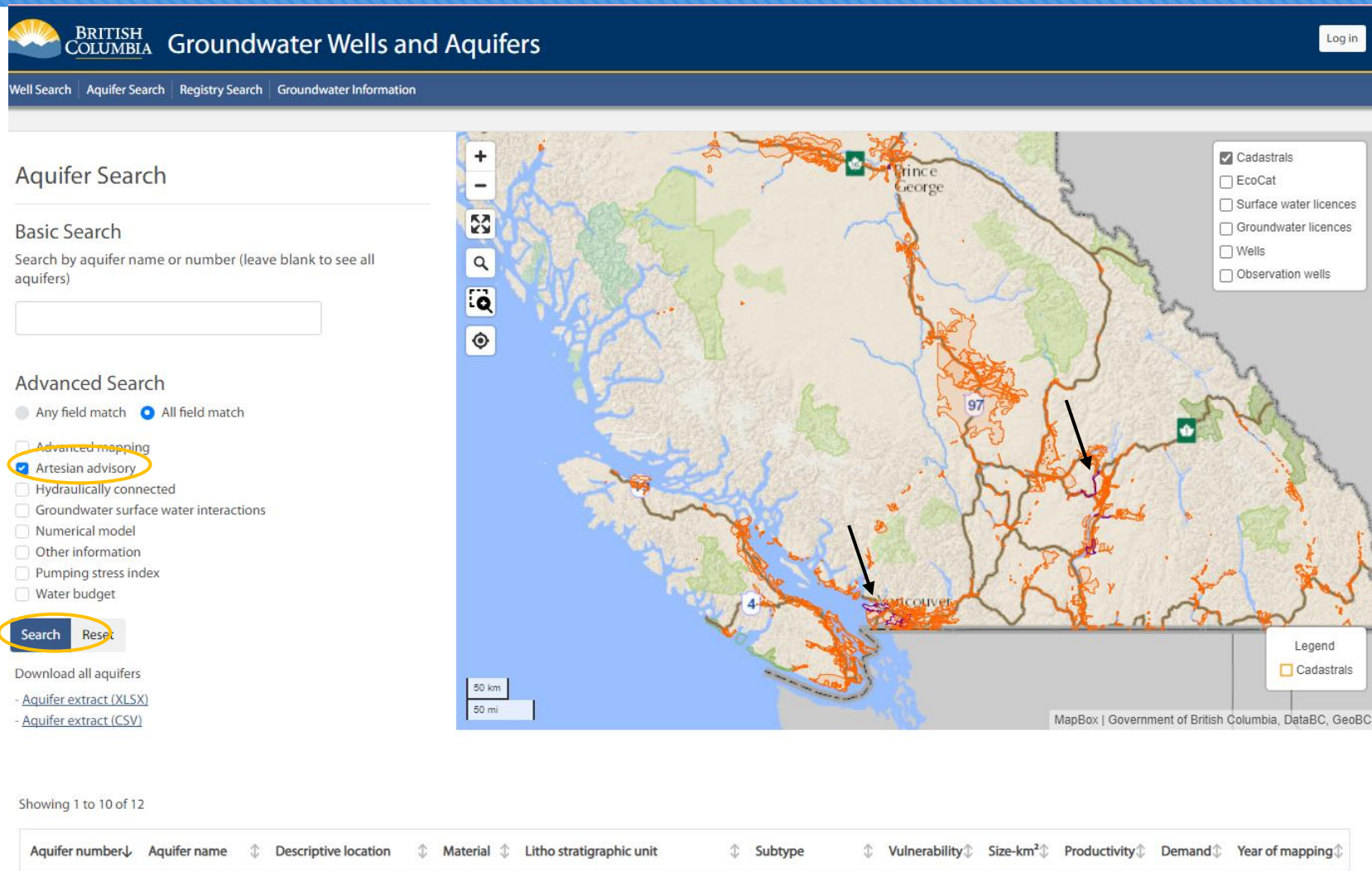
Based on the water budget estimates for mapped aquifers within WR6 (NR), moderately high to highly stressed aquifers appear to dominate this region. Only aquifer 165 located in South Wellington exhibits a moderate stress level. The most stressed aquifers include the Upper Cassidy Aquifer (161), the Cedar Yellow Point aquifer (162), and the small Quadra Aquifer 163 mapped near the Holden Cross Road and Haro Road. Many of the aquifers have moderate to higher density wells that likely contribute to well to well interference, particularly in the lower productivity bedrock aquifers with limited recharge.

Reference: WATER BUDGET PROJECT: RDN PHASE ONE (VANCOUVER ISLAND) 1924-11-001 Regional District of Nanaimo, British Columbia (June 2013) Author: Waterline Resources Inc.

Artesian Flowing Well Advisories

- Published online for Vernon Ck., Coldstream, Westwold, Surrey and Langley, Lower Mission Ck. Kelowna, Vancouver Burnaby and New Westminster, Chetwynd, Fort St. James
- Fort St. James is new and Surrey and Langley were updated
- Quadra Island advisory being finalized
- Access online through "Aquifer Search" in GWELLS or in Well Drilling Advisories

- Groundwater Wells and Aquifers - Province of British Columbia (gov.bc.ca)
- Flowing Artesian Conditions Advisories - Province of British Columbia (gov.bc.ca)



Artesian Flowing Advisories

- Even if there are no advisories, this does not mean that artesian conditions aren't present

WELL DRILLING ADVISORY
Flowing artesian conditions: Vancouver, Burnaby and New Westminster, BC

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Flowing artesian conditions potentially exist along the south slopes of Vancouver, Burnaby and New Westminster. Well drillers and home owners should be aware of potential complications and costs of flowing artesian wells.

Where do artesian conditions occur?

The potential area under artesian pressure is located where the ground slopes to the south towards the Fraser River in the southern area of Vancouver and Burnaby and the southeastern area of New Westminster.

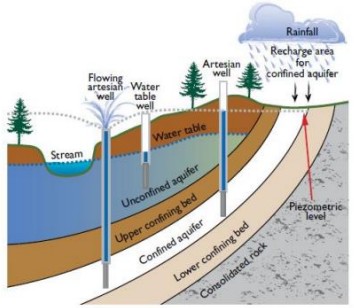


Figure 1: Geological and topographical controls affecting artesian and flowing artesian wells.

What is a flowing artesian well?

Flowing artesian wells occur when a well is drilled into an aquifer under pressure that is high enough to force the water level in the well to rise above the ground surface and flow over the top of the well (Figure 1).

It is important to properly construct the well to control this flow. Controlling artesian flow conserves groundwater resources, preserves the pressure within the aquifer, and prevents damage to the natural environment (i.e., property damage, flooding, erosion and impacts to surface water). A flowing artesian well can cause substantial damage and incur significant and unexpected costs if not carefully planned and constructed. Well drillers and well owners should be prepared in advance in case flowing artesian conditions are encountered.

Aquifer #49 underlies most of Vancouver, Burnaby and New Westminster, and it is comprised of the glaciomarine sands and gravels of the Quadra Sands formation. In 2015, an uncontrolled flowing artesian well was drilled into this aquifer on a residential lot on Beechwood Street in the Kerrisdale area of Vancouver, resulting in significant costs to control and decommission the well. The hydrogeological conditions for this aquifer are not well-defined due to the limited number of well records available. However, there is potential for the conditions that exist at the Beechwood Street well to exist in other areas of the aquifer, in particular where the aquifer is confined and the ground slopes towards the Fraser River (Figure 2).

Known flowing artesian wells in south Vancouver, Burnaby and New Westminster

A review of the BC WELLS database indicates that four (4) known wells in the area had reported flowing artesian conditions at the time of drilling. It is possible that there are additional flowing wells in the area, but these wells have not been registered in the BC WELLS database (submission of well records for most types of wells became mandatory in 2016. Until this point, well records were submitted on a voluntary basis.) Of the known artesian wells, flow rates range up to 1363 m^3/day (250 US gallons per minute). The depths at which these wells have encountered the artesian aquifer range from 25 to 73 m (82 to 239 feet) below ground surface.

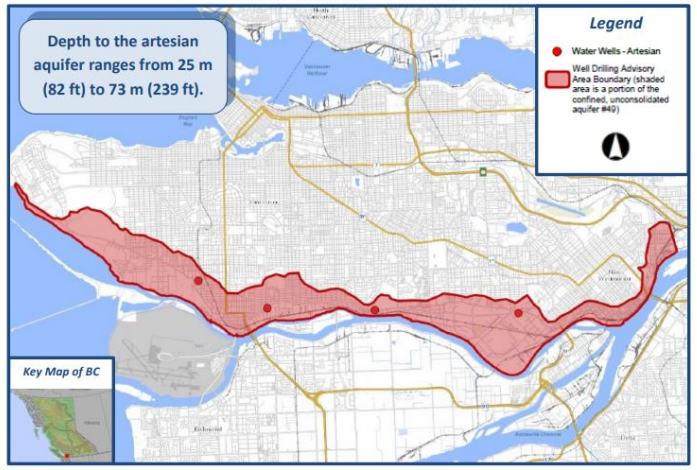


Figure 2: Map of the location of potential flowing artesian conditions (part of aquifer #49) in Vancouver, Burnaby and New Westminster, B.C.

Do all wells in the area encounter flowing artesian conditions?

Aquifer #49 ranges from unconfined to confined and based on limited well records available, there are areas that are not likely under artesian pressure (e.g., areas of the aquifer outside the boundary on Figure 2). In addition, a shallow unconfined aquifer within the subject area (aquifer #45, which is comprised of recent Fraser River sands and gravels) likely does not have artesian conditions; however, if you drill through aquifer #45 into an underlying confined aquifer, there is an increased likelihood of encountering flowing artesian conditions.

Preparing for drilling in the south areas of Vancouver, Burnaby and New Westminster

Qualifications and experience

In B.C., anyone constructing a well[1] (with some exceptions for shallow excavated wells) must be registered as a well driller or be working under the supervision of a registered well driller or a professional (engineer or geoscientist, with competency in hydrogeology or geotechnical engineering). Registered well drillers must also be classified and have the qualifications required to work on the particular class of well that they are working on (e.g., water supply wells, geoexchange wells, dewatering wells, etc.)

If artesian conditions are encountered and the well has the likelihood to flow, a well driller who is qualified in respect of the activity, or a professional, must be engaged to stop or control the flow regardless of the class of well. The well driller or professional must have competency in stopping or controlling artesian flow (as a result of training, experience, knowledge and skills) and have the equipment required to deal with flowing artesian conditions. A well driller may also undertake that activity if supervised by another registered well driller, or a professional, who has competency in stopping or controlling artesian flow.

Water well drillers in BC must be registered and must be qualified to work on the particular class of well that they are working on.

If a person constructing a well (other than a well driller or professional) encounters flowing artesian conditions that person, or the home owner, must engage a well driller who is qualified, or a professional, to ensure that any artesian flow is stopped or brought under control.

Controlling artesian flow means that the entire flow:

- Must be conveyed through the well's production casing;
- Can be stopped indefinitely without leakage outside of the production casing;
- Must not pose a threat to property, public safety or the environment.

Flow is not considered controlled if:

- Water is surfacing outside the well casing or in another location nearby;
- The flow cannot be stopped (e.g., with a valve shut-off or packer assembly);
- There is subsurface erosion (i.e., evident if flowing water is muddy or murky).

New Ministry Re-Organization

Ministry of Forests, Lands, Natural Resource Operations and Rural Development	→	Ministry of Forests
Ministry of Environment and Climate Change Strategy	→	Ministry of Environment and Climate Change Strategy
New ministry with staff from existing ministries (including FLNRORD and MOECCS)	→	Ministry of Land, Water and Resource Stewardship

Ministry of Forests

- Regional Hydrogeologists
- Groundwater Protection Officers
- PGOWN operations, maintenance and expansion (GW technicians)
- Compliance and Enforcement for WSA
- Groundwater and surface water authorizations
- Dike and dam safety and drought management

Ministry of Land, Water and Resource Stewardship

- Water policies and guidelines
- Aquifer mapping
- Source to tap protection
- Provincial water quality guidelines
- GWELLS management

Ministry of Environment and Climate Change Strategy

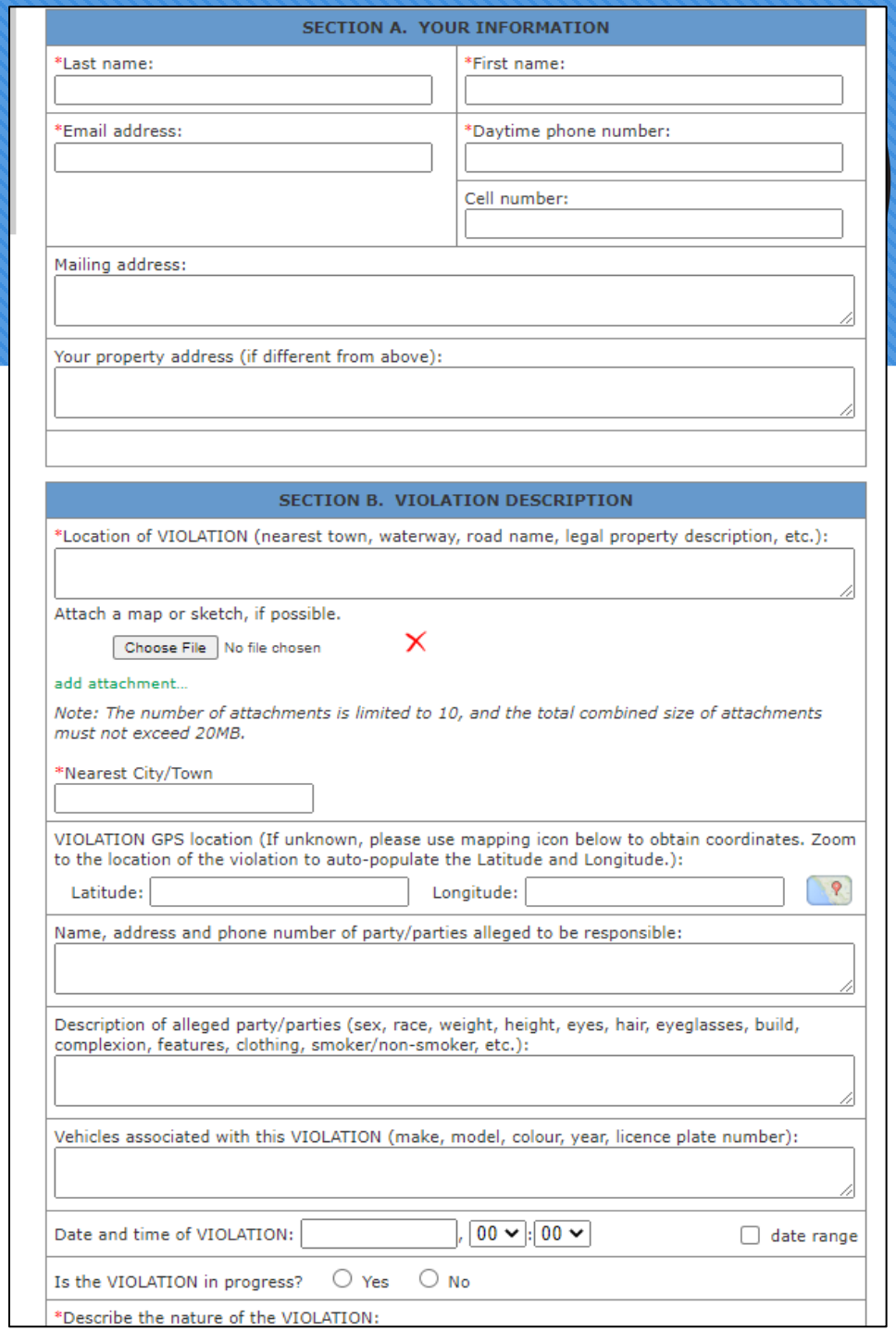
- Observation well network management
- Pollution and spills
- Remediation
- Point source water contamination
- Environmental Management Act

New Ministry Reorganization

Who does what?

Compliance and Enforcement

- Generally prioritises formal complaints through the Natural Resource Violations (NRV), direct to GPO, Front Counter referrals etc.
- Conduct additional compliance projects where resources available
- Best way to address an issue is to make a complaint – this can be anonymous through the NRV or to the Groundwater Protection Officer
- Compliance and Enforcement Program - Ministry of Forests, Lands and Natural Resource Operations (gov.bc.ca)



SECTION A. YOUR INFORMATION

*Last name:

*First name:

*Email address:

*Daytime phone number:

Cell number:

Mailing address:

Your property address (if different from above):

SECTION B. VIOLATION DESCRIPTION

*Location of VIOLATION (nearest town, waterway, road name, legal property description, etc.):

Attach a map or sketch, if possible.

Choose File No file chosen

add attachment...

Note: The number of attachments is limited to 10, and the total combined size of attachments must not exceed 20MB.

*Nearest City/Town

VIOLATION GPS location (If unknown, please use mapping icon below to obtain coordinates. Zoom to the location of the violation to auto-populate the Latitude and Longitude.):

Latitude: Longitude:

Name, address and phone number of party/parties alleged to be responsible:

Description of alleged party/parties (sex, race, weight, height, eyes, hair, eyeglasses, build, complexion, features, clothing, smoker/non-smoker, etc.):

Vehicles associated with this VIOLATION (make, model, colour, year, licence plate number):

Date and time of VIOLATION: 00 : 00 date range

Is the VIOLATION in progress? Yes No

*Describe the nature of the VIOLATION:

Basic Compliance Process (varies with region and resources)

Complaint/Issue is received through reporting or directly to staff member

Assigned to appropriate staff and Ministry depending on the issue and nature of the violation

Inspection is completed if necessary, by appropriate staff. This could include the GPO, habitat specialist, surface water specialist and/or a Natural Resource Officer

Appropriate compliance action depending on the risk and chance of compliance

Examples:

- An Advisory>Warning>Order
- A ticket from the NRO
- An Order

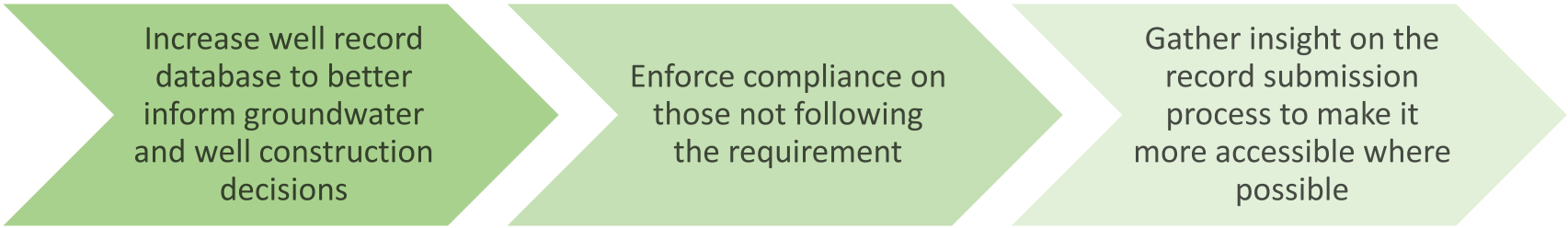
Making some kind of complaint is the best way to get any issue addressed

Anonymity

- NRV forms can be submitted anonymously, put “anonymous or NA where applicable
- You could also call the GPO and state that you wish to remain anonymous

Compliance and Enforcement
Well Record Submission Project

- Upcoming Compliance Project – Well Record Submissions
- Well records that have not been submitted within 90 day requirement
- Will be completed across the Province
- An initial letter will be sent to all drillers to inform them of the upcoming compliance project and to promote submitting any outstanding records without any enforcement action



Compliance Issues

The GPO can only enforce violations under Water Sustainability Act or Groundwater Protection Regulation

- Bad field practices
  - Can enforce if there is an Act or regulation violation
  - Examples: entry of foreign matter into wells, well contamination, improper well construction
  - If there is no violation, this could be addressed through BCGWA, ITA etc.

- Unregistered well pump installers or well drillers
  - Certification comes from ITA, registration is with the Province following certification
  - Must be registered or under direct supervision of a registered well driller or pump installer

<u>Making formal complaints through NRV or GPO is the best way to get complaints/issues addressed. This can be done anonymously</u>

Sea water Intrusion

- Well operation causing sea water intrusion violates *Water Sustainability Act* S.58
- Seeing more wells with sea water intrusion & at risk areas being developed
- Changing climate is causing more impacts (i.e. deepening groundwater levels due to longer drought periods)
- LWRS & FOR is working on a sea water intrusion advisory for the southern Gulf Islands

Best Practices for Prevention of Saltwater Intrusion

BRITISH COLUMBIA

What is saltwater intrusion and why is it a concern?

Saltwater intrusion occurs when saline (salty) water is drawn into a freshwater aquifer. Saltwater intrusion can affect one well, or multiple wells in an aquifer, making the water unpotable (unpleasant to drink). People with hypertension should not drink groundwater with a high salt content. The health of plants and fertility of soil can be negatively impacted if irrigated with saline groundwater. Once saltwater intrusion occurs, the changes in the aquifer may be permanent or may take many years to recover.

What causes saltwater intrusion?

Saltwater intrusion can occur due to either natural processes or human activities. In aquifers adjacent to the coast and on islands like the Gulf Islands, freshwater floats as a lens above the saltwater, forming a wedge that extends inland from the shoreline *(see Fig. 1)*. Salinity typically increases gradually at the base of the freshwater lens, but in fractured rock aquifers a single fracture can deliver saltwater to a well *(Fig. 3)*. The

While intermixing of freshwater and seawater is one of the main causes of saltwater intrusion in coastal B.C., groundwater within deeper aquifers may also be salty due to geologic processes and interactions between rocks and water over a long time period (e.g. millennia). If a well draws water from one of these deeper aquifers, it can cause saline water to migrate or mix with fresher groundwater in shallow aquifers. Isolated areas of saltwater have also been found at relatively shallow depths e.g.< 50 m in some areas such as Saanich, Mayne Island, Saltspring Island and near Parksville.

What areas are at highest risk?

Areas at highest risk of saltwater intrusion include locations:

- Close to the coast;
- Where there is a low to moderate slope;
- On peninsulas or in areas with a limited source area for groundwater recharge;
- Where there is a high density of wells;

Sea water Intrusion Mitigation
Drilling

- Inform landowners of risks
- Site wells away from coast
- Avoid deep drilling (including for well alteration)
- Monitor water quality while drilling
- Decommission or fill in lower portion of well bore intersecting saline fractures
- Seek hydrogeologist advice
- Other suggestions or techniques that you use?

Best management practices in areas at high risk of saltwater intrusion:

Well drilling:

Well siting: Avoid drilling in locations immediately adjacent to the coast e.g. within 50 m.

Well depth: Avoid drilling excessively deep within areas proximal to the coast. The depth to the freshwater-saltwater interface varies locally, and drillers often have local knowledge, based on past experience, regarding the depth that they might expect to encounter salty water. There are established formulas for estimating the depth of the transition zone based on static groundwater level e.g. Ghyben-Herzberg, Hubbert *(see references 3, 5)*, although these formulas may be inacurate for fractured bedrock.

Well alteration: Avoid using technologies such as hydrofracturing in areas <100 m from the coast to reduce risk of opening fractures that are directly connected with the sea.

Know the risks: Be aware of areas that are at risk of saltwater intrusion and educate property owners, site managers or water system operators that their well or locale could be affected.

Monitor during drilling: When drilling in coastal areas, drillers should use a hand held meter to measure specific conductivity or salinity to monitor the quality of water encountered during drilling. If there is a significant increase in the measurements during drilling, consider stopping, and testing the chloride concentration of the groundwater. If a saline zone has been encountered it may be necessary to seal the well below a certain depth to prevent this water from entering shallow freshwater aquifers.

Close wells: Close unusable (e.g. very low yielding) wells or wells that are no longer needed. Abandoned wells, open boreholes, wells with failing surface seals or corroded casings can provide a flow pathway for aquifer cross-contamination and the vertical movement of saline groundwater. Refer to the *Water Sustainability Act* (*reference 6*) for the rules regarding well closure.

Get advice: If needed, consult a qualified professional (e.g. hydrogeologist) for help assessing saltwater intrusion risk, interpreting water quality tests, or designing a monitoring program.

Best Practices for Prevention of Saltwater Intrusion (gov.bc.ca)

Sea Water Intrusion Mitigation
Well pump set-up and Operation

- Reduce pump depth
- Avoid excessive drawdown of groundwater level below sea level
- Adjust pumping rate & frequency
- Timing
- Increase storage (pump in wet season)
- ★ Leak prevention ★
- Stop use (may be necessary during drought periods or to allow a well to freshen)
- Monitor water quality during pumping tests

Well pump set-up and well operation:

Reduce use: Conserve water, install low water use appliances and irrigation systems, xeriscape gardens, and consider options for water re-use.

Pump depth: Reduce the pump depth.

Low-volume, high-frequency pumping: Increase the frequency and reduce the duration of well pumping ("well sipping") to minimize drawdown in the well and the surrounding aquifer.

Pump timing: For multi-well systems, program the wells to pump at different times rather than simultaneously.

Increase storage: Increase water storage (e.g. cisterns) and pump in wet season for use in drier periods, or augment the supplies using water from other sources such as rainwater collection. Ensure water in tanks or cisterns is kept free from contaminants by following health guidelines for water storage and disinfection.

Prevent leaks: Install water meters or other alarms/indicators so that leaks can be detected and fixed quickly. Many intrusion problems start with over-pumping because of an unchecked leak.

Discontinue use: If a well is severely impacted by saltwater intrusion, it may be necessary to discontinue using it for a period of time, and use alternate sources, to give the well time to recover, or the well may need to be decommissioned permanently. Refer to the *Water Sustainability Act* (*reference 6*) for the regulations regarding well operation and saltwater intrusion.

Sea water intrusion water quality indicators - Thresholds and Guidelines

Well should only be pumped if water produced meets these operational thresholds

Groundwater quality parameter	Operational threshold for prevention of sea water intrusion[1]	Drinking Water Quality Guideline[2] (guideline type)	BC Water Quality Guidelines for Aquatic Life, Wildlife & Agriculture[3]		
			Aquatic life (Long-term)	Livestock	Irrigation
Chloride (mg/L)	150	250 (AO)	150	600	100
Electrical conductivity (EC) (µS/cm)	1000	ng	ng		
Total Dissolved Solids (mg/L)	700	500 (AO)	ng		

ng=No guideline

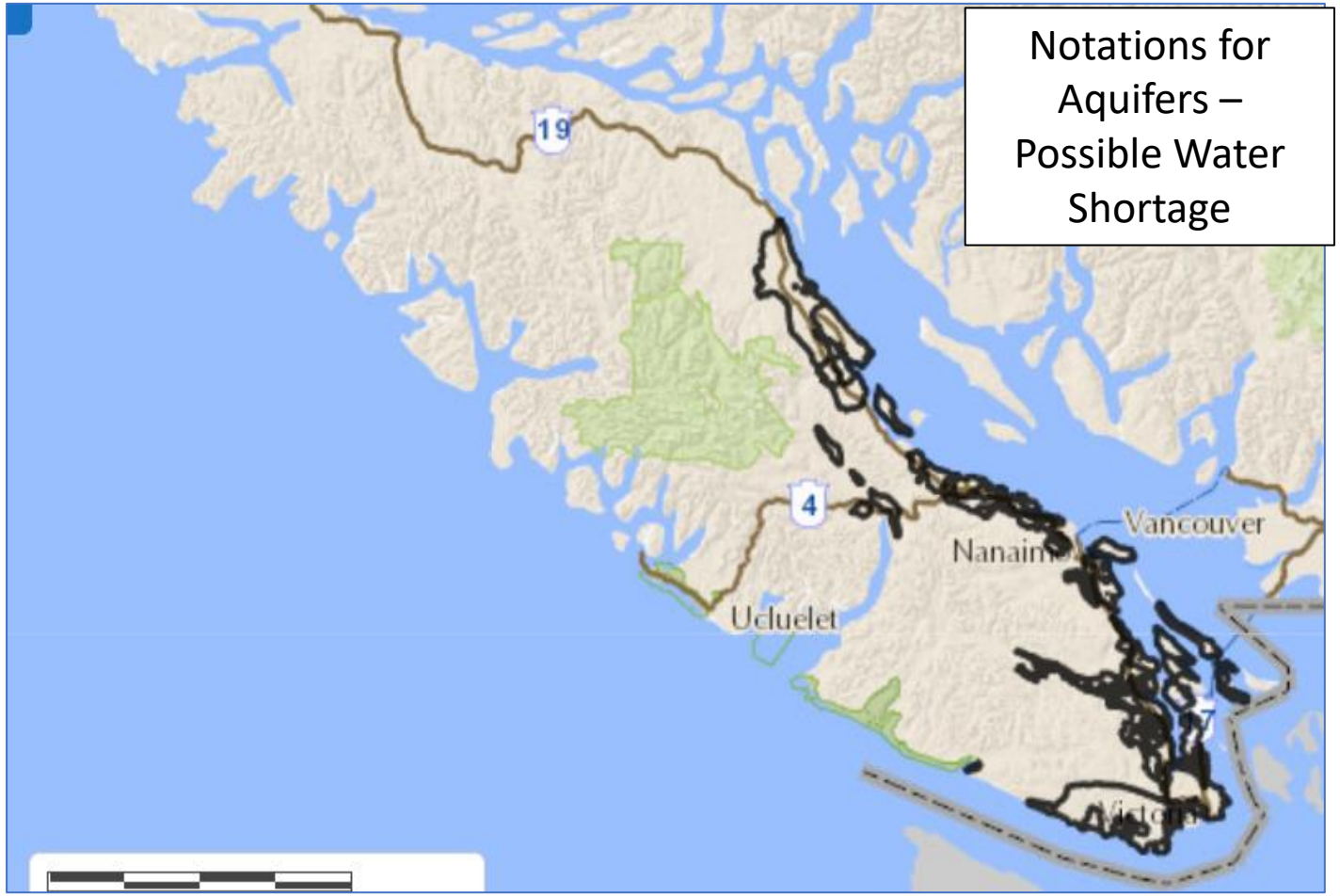
[1]Province of B.C., 2017. Best Practices for the Prevention of Salt Water Intrusion.

[2]Health Canada, 2020. Guidelines for Canadian Drinking Water Quality.

[3]Province of B.C. 2021. B.C. Approved Water Quality Guidelines: Aquatic Life, Wildlife and Agriculture.

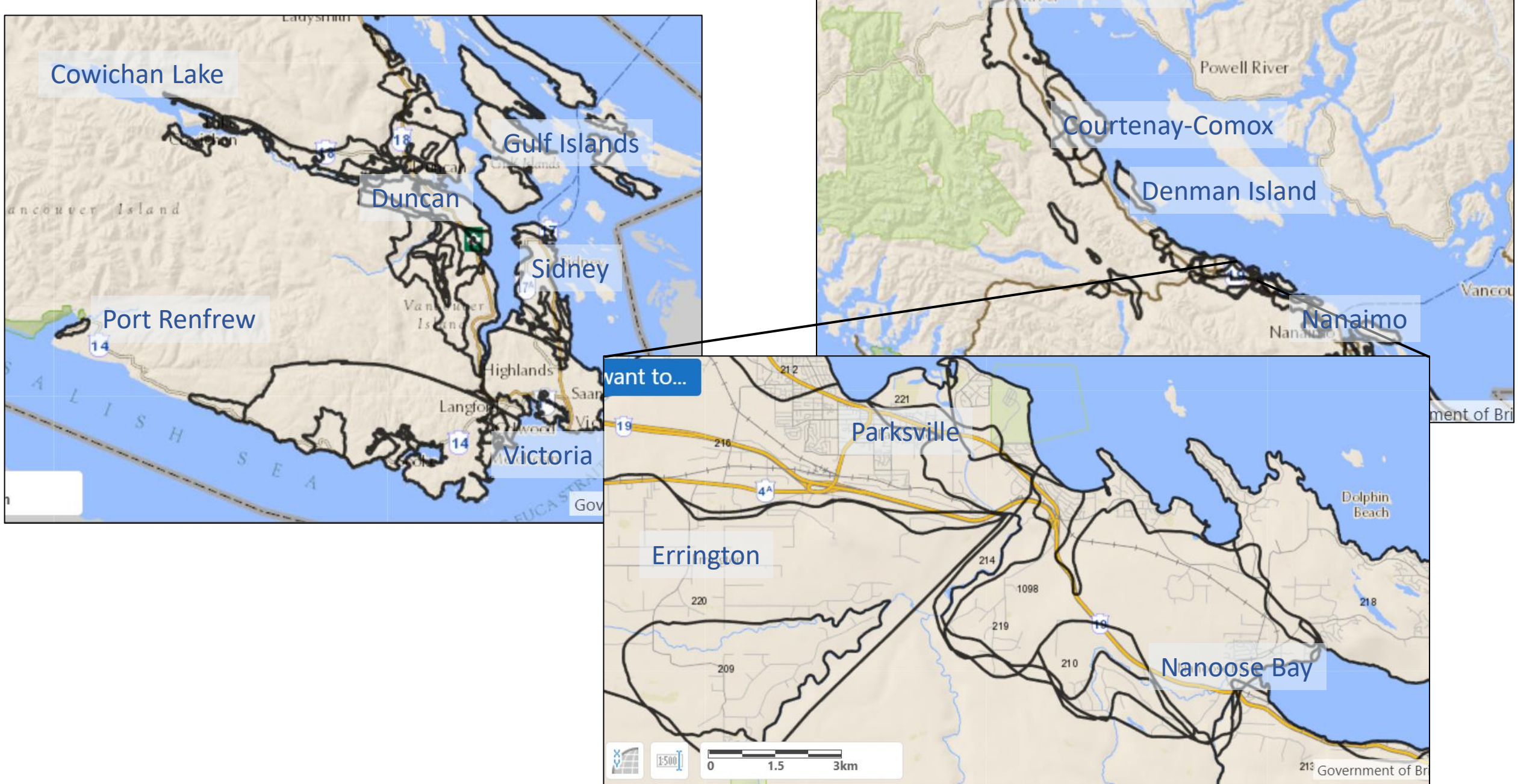
Water Licensing and Allocation

- Deadline for existing use license application has passed (March 2022)
  - Received double the applications leading up to the deadline
  - 50% of anticipated existing use submissions and most of larger volume users
- All non-domestic new use groundwater users must have a license before using groundwater
- Large backlog of existing and new use license applications
- Water authorizations continue to use techniques to streamline and improve backlog/time for applications
- Authorizations has spatialized the applications to get a better idea of areas that have applied and to be more efficient
- Water allocation notations on imapBC identify aquifers with poossible water shortages or fully recorded sources
- Uncertainty with sustainable water sources growing and scarcity becoming more of a concern



: Water Allocation Notations - Province of British Columbia (gov.bc.ca)
iMapBC (gov.bc.ca)

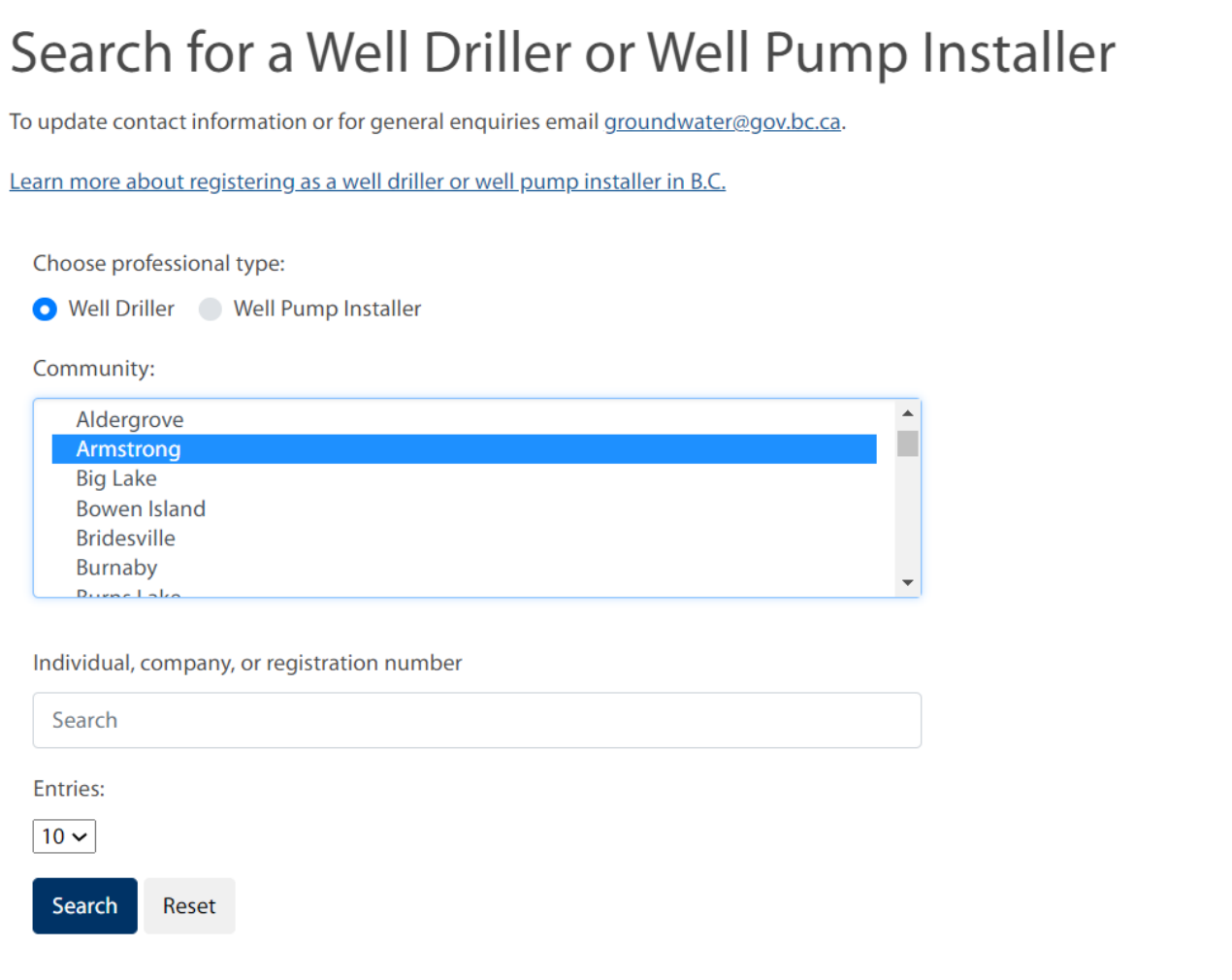
Aquifers with “Possible Water Shortage” Notations



Survey

- Background:
- We are improving the search capabilities of the well drillers/well pump installers registry
- Current method – select a community – will only list personnel whose office is physically located in that community
- No way to search surrounding area; personnel likely operate in multiple areas

- What we need from you:
- Feedback today (survey included)



GWELLS Well Driller/Well Pump Installer Search

Implementation	Benefits	Challenges
Map (WD/WPI specify radius)	-Easy for user: can zoom/pan, visual -Easy for new WD/WPI to specify radius on application form	-Harder/more costly to implement - Hard for WD/WPI to specify a radius; might work in some communities and not others
Map (use location from registry – one point per WD/WPI)	-Easy for user: can zoom/pan, visual	-Harder/more costly to implement -No option for WD/WPI to specify which communities they belong to
Map (WD/WPI specify communities they operate in – multiple points per WD/WPI)	-Easy for user: can zoom/pan, visual	-Harder/more costly to implement -Repetitive for WD/WPI working in multiple areas -Cumbersome to add all possible communities to WD/WPI application form
Community List	-Easier/cheaper to implement	-Cumbersome to add all possible communities to WD/WPI application form
Region List	-Easier/cheaper to implement -Easy for new drillers/pump installers to specify region on application form	- Personnel might not operate throughout entire region (misleading)

Questions and Discussion

Thank you!

Natural Resource Violations
1-877-952-7277
Compliance and Enforcement Program - Ministry of Forests, Lands and Natural Resource Operations (gov.bc.ca)

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