



**Ministry of Forests, Lands, Natural Resource Operations
and Rural Development**

Regional groundwater protection and licensing update – South Coast Region

**Michele Lepitre, Regional Hydrogeologist
Emily Elsliger, Groundwater Protection Officer**

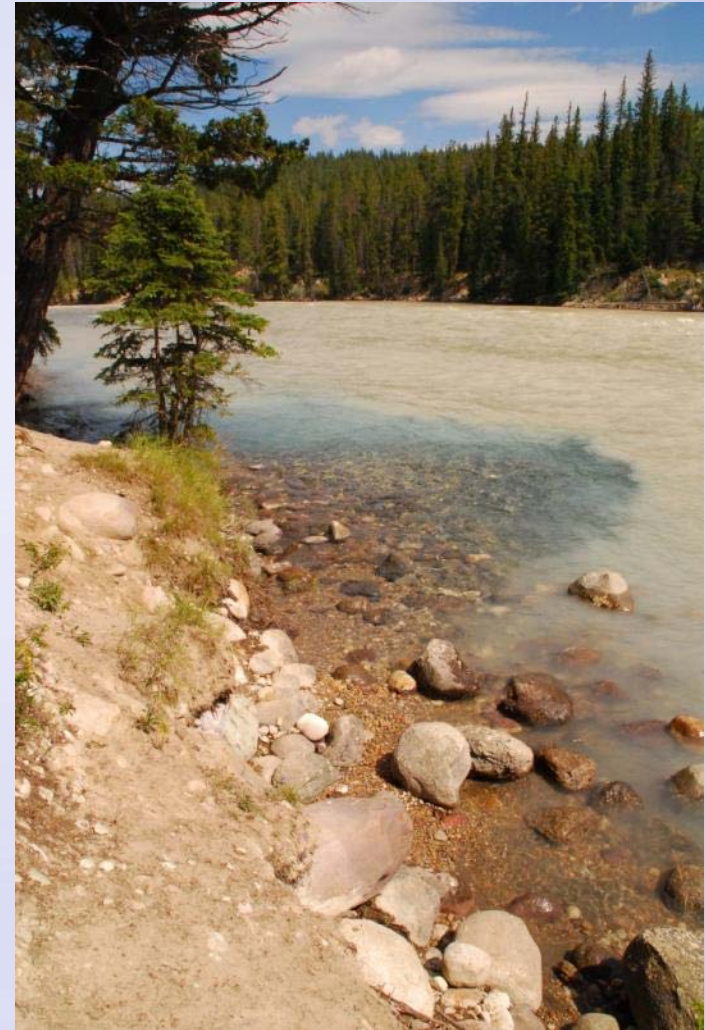
**The British Columbia Ground Water Association
Regional Meeting, Langley, BC
November 4, 2017**



Ministry of **Forests, Lands, Natural Resource Operations** and **Rural Development**

Outline

- Well drilling advisories and flowing artesian wells updates
- Licencing groundwater use
- Well record submission
- Well inspection conducted by Natural Resource Officers





Ministry of Forests, Lands, Natural Resource Operations and Rural Development

Well drilling advisories

- Before drilling, drillers are encouraged to check for flowing artesian conditions well drilling advisories:
<http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/groundwater-wells/information-for-well-drillers-well-pump-installers/well-drilling-advisories/flowing-artesian-conditions-advisories>
- Existing advisory for Kelowna
- New advisory for Vancouver, Burnaby and New Westminster
- New advisory for Chetwynd soon
- Advisories under development (e.g., Nicomekl-Serpentine)



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

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.

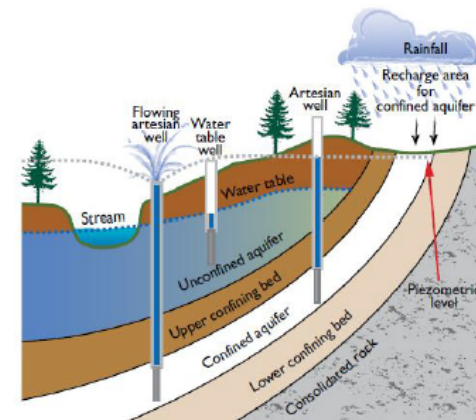


Figure 1: Geological and topographical controls affecting artesian and flowing artesian wells.

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.



Ministry of Forests, Lands, Natural Resource Operations and Rural Development

Flowing artesian wells

➤ Qualifications and experience

The registered well driller or professional stopping or controlling the flow must have the training, experience, knowledge, skills and equipment required for dealing with flowing artesian conditions.

➤ Preparing and budgeting

It is the responsibility of the well driller to advise the home owner of potential hazards associated with uncontrolled artesian flow (e.g., potential for erosion, flooding, subsidence) and the associated costs. The home owner and well driller should always have an agreement in place ahead of time to minimize any misunderstandings in the event that flowing artesian conditions are encountered.

➤ Constructing a well for flowing conditions

For bedrock aquifers, the bottom of the casing should be sealed securely into the bedrock to ensure the flowing water can not rise up through the annular space of the well.

For sand and gravel aquifers, a permanent outer casing should be grouted into the lowest confining layer before the inner production casing is drilled into the aquifer. An annular seal should be installed between the two casings to ensure flowing water can not rise up between the casings.





Ministry of Forests, Lands, Natural Resource Operations and Rural Development

Existing flowing artesian wells in BC - Update

➤ **Flowing well on Beechwood Street, Vancouver, BC**

The work to decommission the well in accordance with alternative specifications has been completed. The contractor has demobilized from the site. This will be followed by two years of monitoring to ensure no leakage

➤ **Flowing well in Westwold, BC**

The ministry is currently reviewing regulatory options.

Over one billion litres of water spews from Vancouver aquifer after inexperienced contractor error



MATT ROBINSON

[More from Matt Robinson](#)

Published on: January 2, 2017 | Last Updated: January 2, 2017 12:59 PM PST

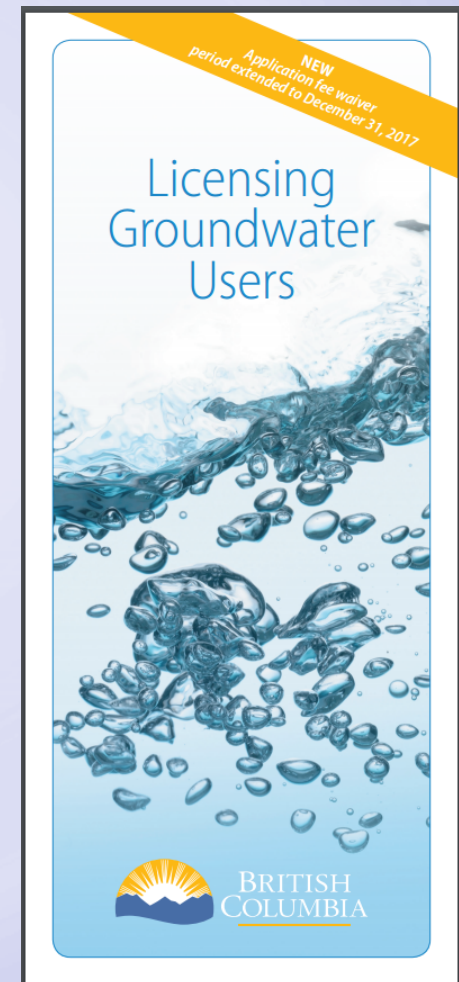




Ministry of Forests, Lands, Natural Resource Operations and Rural Development

Licensing Groundwater Use

- Licence or Use Approval now required for non-domestic groundwater use: irrigation, industrial, commercial, etc.
- Drillers must submit a well report for most classes of new wells although domestic use wells are exempt from licensing.
- Existing users (on or before Feb 29, 2016) must apply by March 1, 2019 to have their historical use recognized and lawfully divert groundwater. Application fee exemption until December 31, 2017.
- New users (after February 29, 2016) require a licence before the water can be lawfully diverted.
- Licensing gives greater security to water users.
- Apply at: FrontCounterBC.gov.bc.ca





Licence Applications – South Coast Region

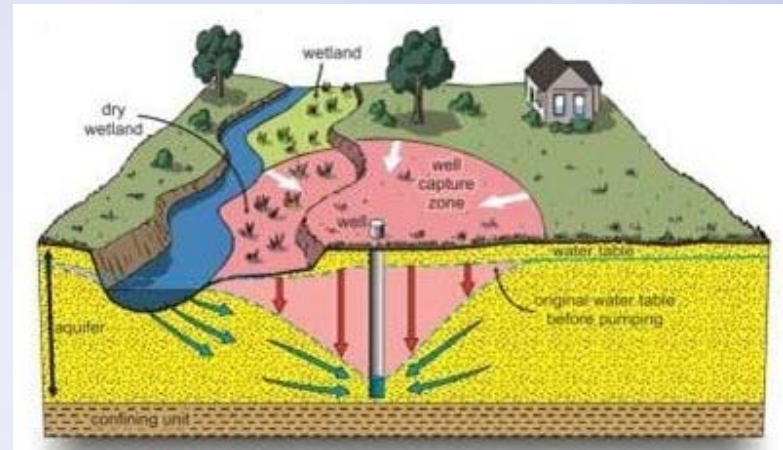
- As of Oct 19 South Coast Region has received:
 - 253 applications for existing use of groundwater.
 - 20 applications for new use of groundwater.
 - 8 applications for short-term use approvals for dewatering.
- Short term use for dewatering requires an authorization (approval)
- Time lines for licensing – staff are prioritizing new use applications (aiming for 140 day target)



Ministry of Forests, Lands, Natural Resource Operations and Rural Development

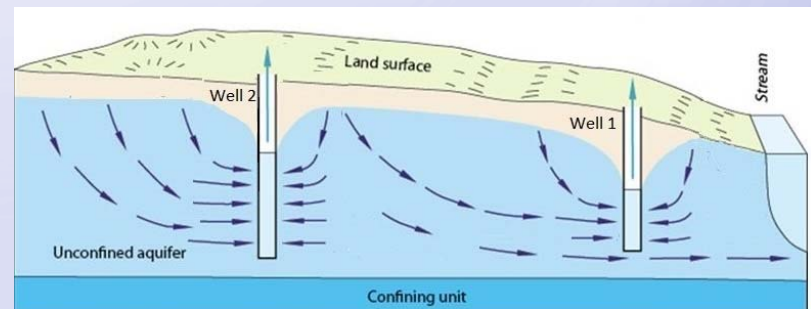
Licensing Groundwater Use – Hydraulic Connectivity

- New requirement to consider Environmental Flow Needs (EFNs) in streams when reviewing applications for surface water and groundwater in connected aquifers.
- Groundwater diversion can affect surface water flows, even at a distance.
- Depending on the specifics of the application, if connected stream has water availability issues a new Licence may be refused or have limits - even if the well has already been drilled.



Groundwater diversion can impact stream flow.

Image: Canada's Groundwater Resource 2014.



Both wells divert water flowing towards the connected stream.

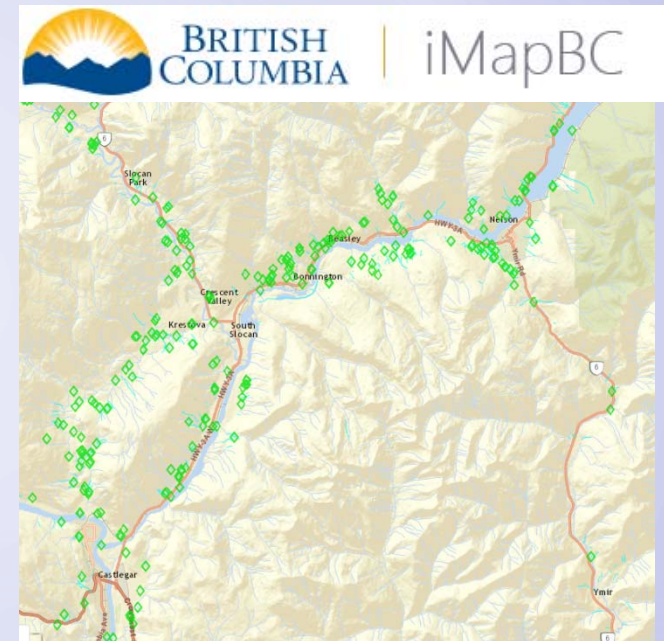
Source: adapted from USGS 2017



Ministry of Forests, Lands, Natural Resource Operations and Rural Development

Licensing Groundwater Use – understanding water availability

- Water may not be available in some parts of the province
- Having an understanding of water availability before drilling reduces risk
- iMapBC has some information about streams with water notations and restrictions
- Also consider local knowledge of water availability issues
- In areas with issues (e.g., low stream flows, drought), recommend client talk to FLNRO staff before drilling (call FrontCounter BC).





Ministry of Forests, Lands, Natural Resource Operations and Rural Development

Well record submission

- Well construction and well decommissioning reports are required to be submitted to government for certain types of wells

Class of Well	Subclass of Category	Well Construction	Well Decommission
Water Supply	All	✓	✓
Recharge or injection	Made by drilling or boring	✓	✓
Dewatering	Permanent	✓	✓
Closed-loop Geoexchange	All	One per system	One per system

- A report is required for ANY well that encounters flowing artesian conditions



Ministry of Forests, Lands, Natural Resource Operations and Rural Development

GWELLS

- New groundwater and aquifer application to replace the WELLS Database
- Functionality to be released in phases
- First phase: Search – **now LIVE:**
<https://apps.nrs.gov.bc.ca/gwells/>
- Project goal:

Develop an integrated system for record submission and use of groundwater data, which meets the needs of different user groups in order to support:

- *water resource management,*
- *groundwater authorizations,*
- *aquifer classification and mapping,*
- *groundwater related studies, and*
- *compliance.*

Search

Search with text or by viewing an area on the map.
You must be zoomed into a small area before you can search for wells within that area.

For text searching:

- Search by well tag or well ID plate number (if known) for the most precise results
- If not known, try searching with one or more additional fields


Use [Advanced Search](#) for additional search options

Well Tag Number or Well Identification Plate Number ⓘ
example: 123456

Street Address ⓘ
example: 123 main

Legal Plan or District Lot or PID ⓘ
example: 123a

Owner Name ⓘ
example: Smith or smi



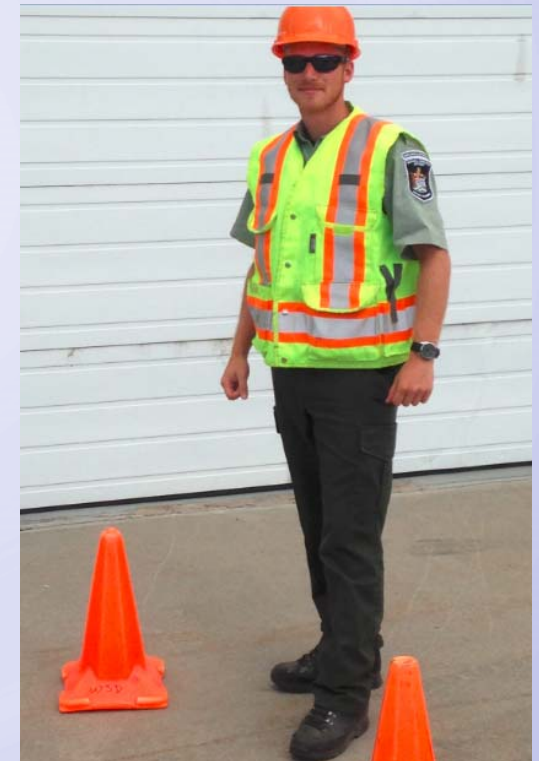
Leaflet | Powered by Esri | Government of British Columbia, DataBC, GeoBC



Ministry of Forests, Lands, Natural Resource Operations and Rural Development

Natural Resources Officer (NRO) training for well inspections

- Better utilize provincial resources
- NRO training completed across the province
- iPad well inspection form makes data collections/sharing more efficient
- Some regions have set inspection priorities (water supply wells, etc.)
- More well inspections conducted by NROs to be expected across the province





Ministry of Forests, Lands, Natural Resource Operations and Rural Development

Thank You!

More information:

Michele Lepitre, P.Geo.
Regional Hydrogeologist
Email: Michele.Lepitre@gov.bc.ca
Phone: 604-586-2821

Emily Elsliger
Groundwater Protection Officer
Email: Emily.Elslinger@gov.bc.ca
Phone: 604-586-2802

