



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

# **Groundwater Protection and Licensing Update**

**Ben Robinson – Groundwater Protection  
David Robinson – Water Authorizations**

**The British Columbia Ground Water Association  
Regional Meeting, Parksville, BC  
2017/10/28**



## Outline

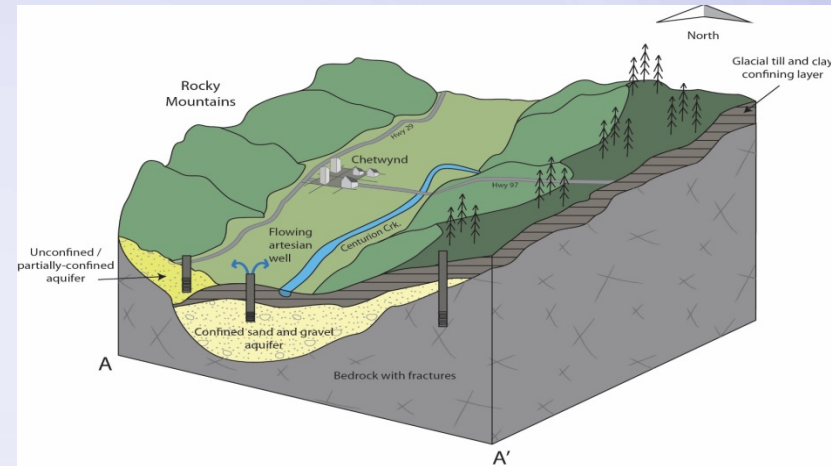
- Update on Flowing Artesian Wells
- Well Record Submissions
- Natural Resource Officer Collaboration
- Groundwater Protection Outreach
- Groundwater Licensing Update





## Flowing artesian well - 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 advisories for Kelowna; Vancouver and Chetwynd in progress
- Additional well drilling advisories are under development







# Flowing artesian well

## ➤ 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.*



## 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](#)

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## Well report submission

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

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

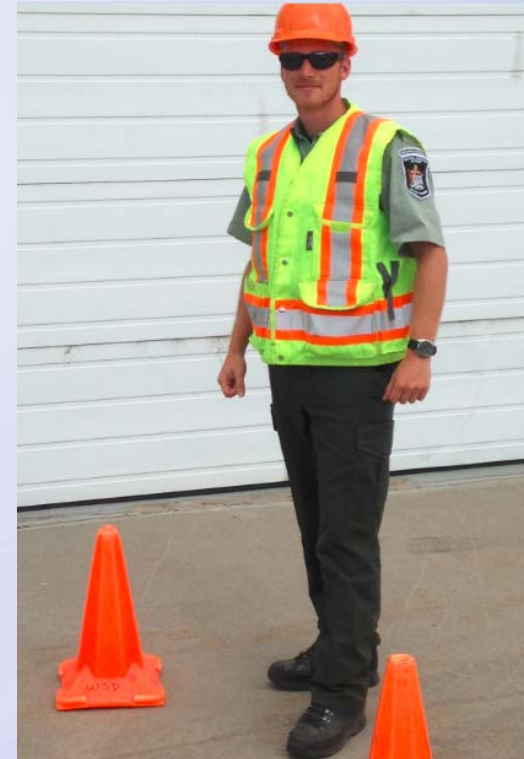
- A report is required for ANY well that encounters flowing artesian conditions





# Natural Resources Officer (NRO) training for well inspections

- Better utilize provincial resources
- NRO training completed across the province
- iPad well inspection form makes data collection/sharing more efficient
- Some regions initiating joint compliance projects e.g., water supply system well audits (West Coast, South Area)
- Increase in NRO well inspections and collaboration with groundwater staff expected across the province





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

## Natural Resource Officer Collaboration – West Coast

### NRO Training







## Natural Resource Officer Collaboration – West Coast

**NRO/GW Steering Committee** – NROs, and groundwater staff from FLNR & ENV  
(Provincial Scale)

**Joint Inspections - Proactive** →





## Natural Resource Officer Collaboration – West Coast

**West Coast Compliance Committee** – NRO, Water Protection, Water Authorizations, and Ecosystems (Regional Scale)

**Joint Inspections - Compliance** →

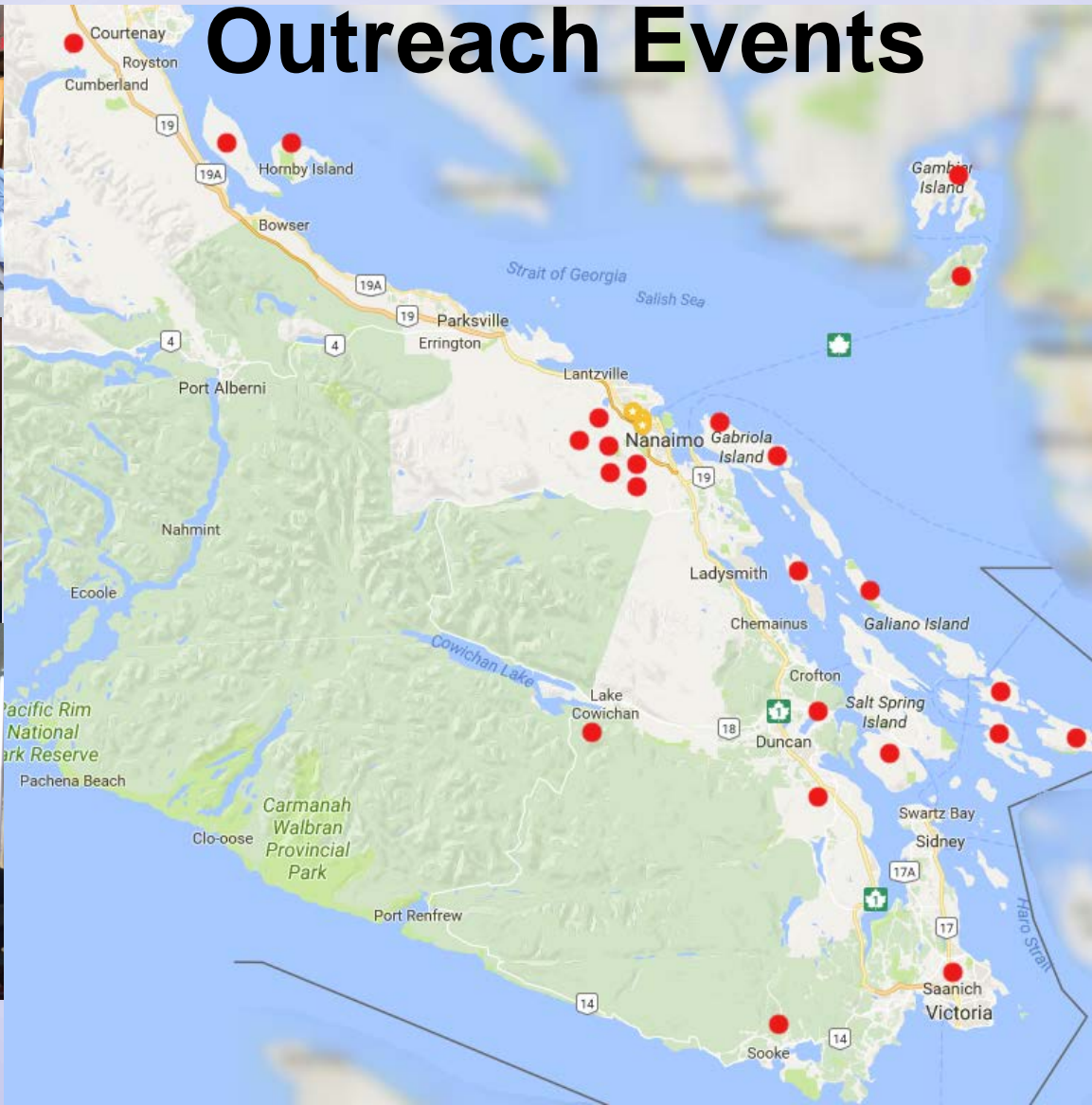






# Ministry of Forests, Lands, Natural Resource Operations and Rural Development

## Outreach Events







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

## Brochure Updates

### Best Practices for Dug Wells

Water Stewardship Information Series



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### Water Well Disinfection

Using the Simple Chlorination Method

Water Stewardship Information Series



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Well disinfection is used to inactivate or control bacteria populations in a well and the distribution system. There are several methods used to disinfect water wells including simple chlorination, shock chlorination or bulk displacement and a procedure for wells that are difficult to disinfect. This brochure describes the simple chlorination method. For information on the treatment of wells that are hard to disinfect see ([www.env.gov.bc.ca/wsd/pln\\_protect\\_sustain/groundwater/wells/factsheets/PFRA\\_well\\_recovery.pdf](http://www.env.gov.bc.ca/wsd/pln_protect_sustain/groundwater/wells/factsheets/PFRA_well_recovery.pdf)).

#### Are there things I need to do before disinfecting my well?

A well should be tested regularly for water quality. If coliforms or *Escherichia coli* (*E. coli*) are repeatedly detected in your well water, the first step to take to eliminate them is to look for the following:

- Are there any potential contamination sources near the well, such as manure or compost piles, septic disposal fields, or hazardous materials storage?
- Does the ground slope promote drainage of surface water toward the well or ponding of water around the well?
- Is the well cap missing, cracked or damaged?
- Does the well cap allow water or vermin to enter into the well?
- Does the well casing stick up less than 30 cm (12 inches) from the ground surface (see Figure 1) or the floor of the

### Guide to Conducting Well Pumping Tests

Water Stewardship Information Series



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### Upgrading Wells In Pits

Water Stewardship Information Series



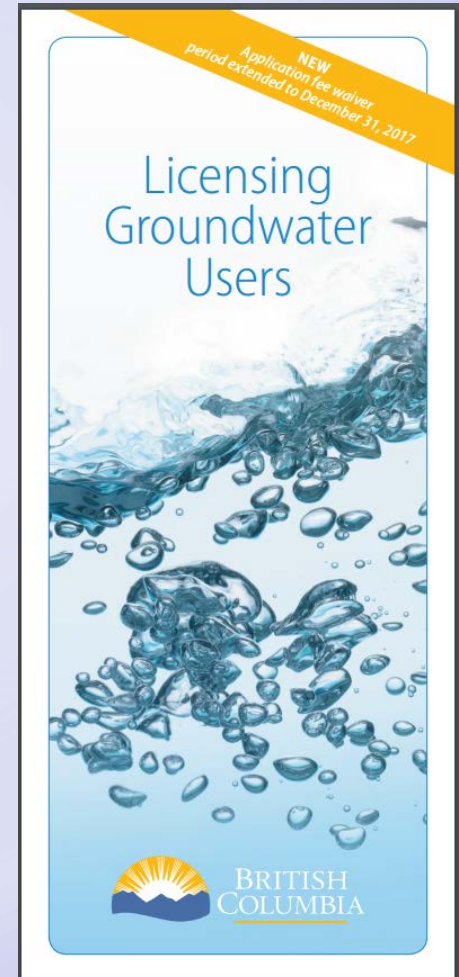
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# Licensing Groundwater Use

- A Licence or Use Approval is now required for non-domestic groundwater use: irrigation, industrial, commercial, etc.
- **Existing users** (on or before Feb 29, 2016) must apply by March 1, 2019 to have their historical use recognized and continue to lawfully divert groundwater.
- **New users** (after February 29, 2016) require a licence before the water can be lawfully diverted.
- Licensing gives greater security to water users, particularly in times of scarcity.
- Rental fees for existing users accrue from February 29, 2016.
- Application fee exemption available to December 31, 2017.
- Apply at: [FrontCounterBC.gov.bc.ca](http://FrontCounterBC.gov.bc.ca)



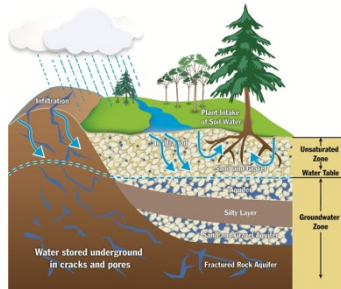
# Steps for water licence application

1. Applicant: logon with BCeID to FrontCounter website and fill out application

BCeID



2. FrontCounter: staff will review application for completeness and process payment



3. Water authorizations staff: consultation, referrals, technical report



4. Decision: water manager will decide whether to approve application



# Priority date for transitioning groundwater use based on historic date of first use of water

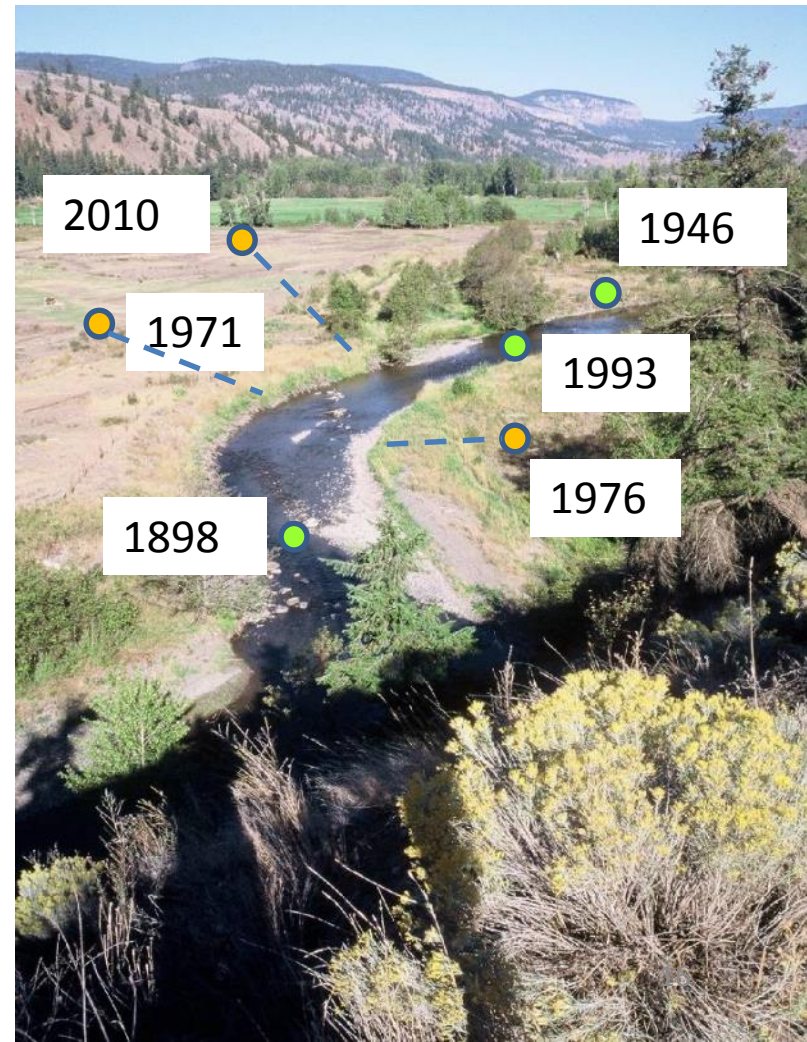
Date from which the **decision maker** is satisfied that groundwater has been used from an aquifer

- Regularly and beneficially on an ongoing basis
- For a water use purpose
- On the appurtenant land, mine or undertaking



# Applicant must provide history & evidence of water use to support date of first use

- Government approvals or permits (e.g., EA certificate)
- Well construction report
- Pumping or water quality test records
- Invoice for pump installation or other work
- Signed statements from knowledgeable persons
- Other relevant evidence



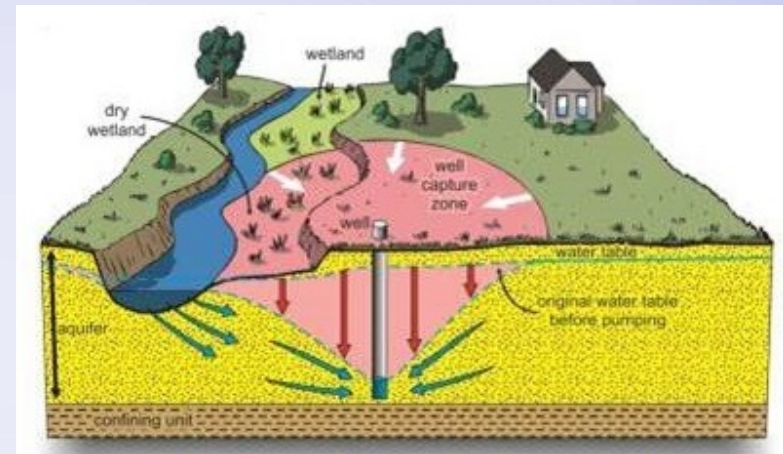




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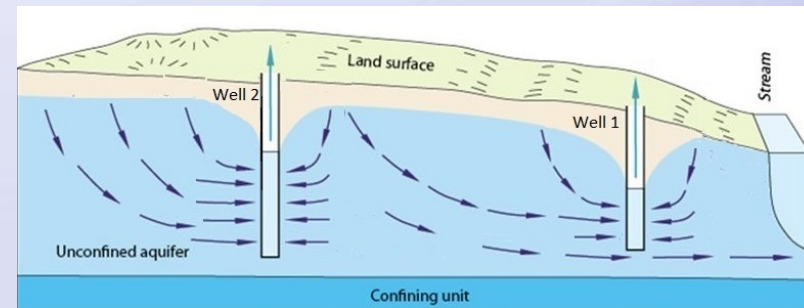
# Licensing Groundwater Use – Hydraulic Connectivity

- New requirement to consider Environmental Flow Needs (EFNs) in streams when reviewing new applications for surface water and groundwater in connected aquifers.
- Groundwater diversion can affect surface water flows. A diversion some distance from the stream may still have an impact over time.
- If connected stream has water availability issues a new Licence may be refused - 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



# Decision-maker can require a technical assessment to inform his/her decision



- Adequacy of supply
- Potential impacts to other users
- Assessing likelihood of hydraulic connectivity to streams or another aquifer
- Other relevant issues

# Screening tool will indicate if a technical assessment may be needed



- Quantity of water
- Type of aquifer
- Proximity to other users
- Ultimate decision making authority rests with SDM



# Technical assessments done under direction of professional with competency in hydrogeology

- Desktop study – available information
- Field study – test drilling, pumping test, well survey etc.
- Developing guidance materials

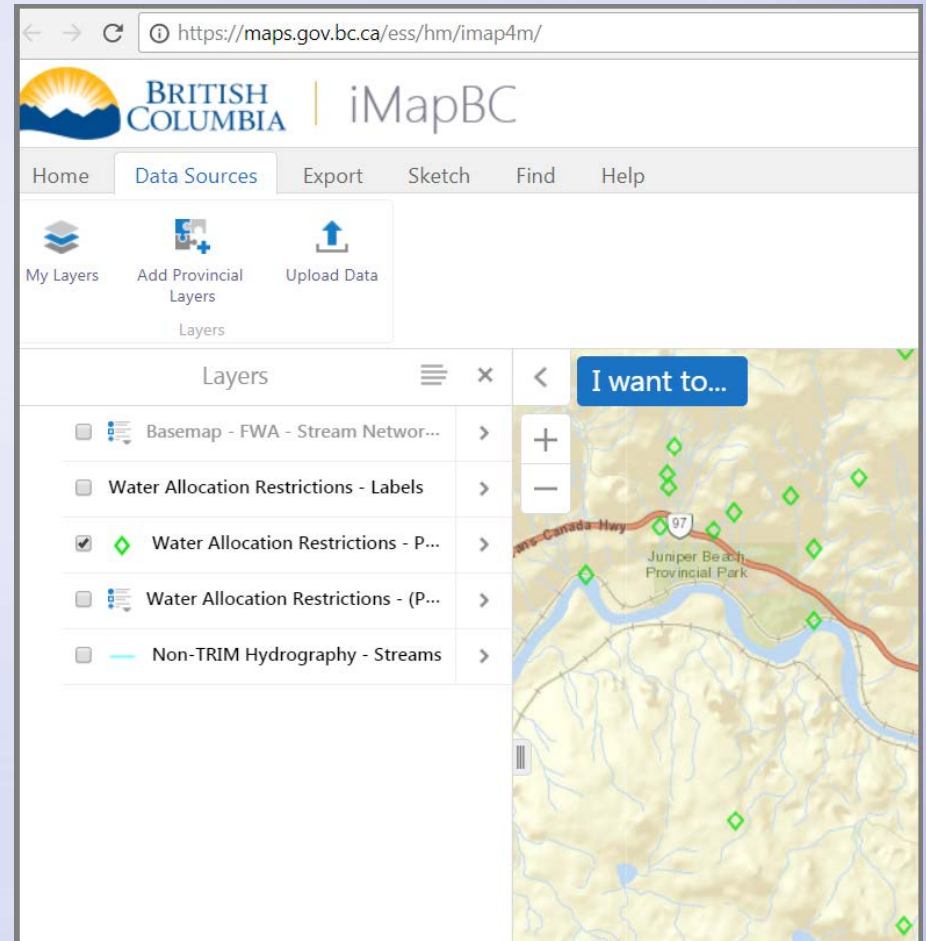






## Licensing Groundwater Use – Drill first? Apply first?

- iMapBC has information about streams with water notations and restrictions
- Also consider local knowledge of water availability issues
- If in an area with water availability issues (e.g., low streamflow periods), recommend client talk to FLNRORD water authorizations staff before drilling (can contact via FrontCounter BC).





# Questions?

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