Water Sustainability Act

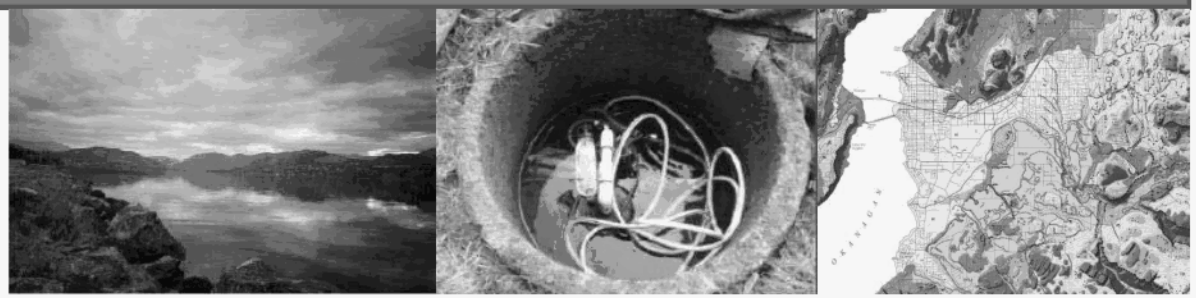
Part 3, Division 3
and the Groundwater Protection Regulation

NRO targeted training – Module 1, Version 1

July 7, 2016

BRITISH COLUMBIA

Ministry of
Forests, Lands and
Natural Resource Operations



OUTLINE:

Introduction – South Area groundwater team, our role in compliance and enforcement

Legislation – *Water Sustainability Act* Part 3, Division 3 and the Groundwater Protection Regulation

Site Inspections – standardized approach, involvement of other staff/agencies, key ticketable offences

Ticketable Offences – groundwater provisions in the Violation Ticket Administration and Fines Regulation

Other Considerations – tools, resources, next steps

SOUTH AREA GROUNDWATER TEAM:

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<u>Penticton</u>
Skye Thomson – Section Head (hydrogeologist)
Nicole Pyett – Regional Hydrogeologist
s.22
Hiring – Groundwater Protection Officer
Twyla Legault – Groundwater Technician s.22
s.22

<u>Vernon</u>
Dave Thomson – Regional Hydrogeologist

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<u>Kamloops</u>
Melissa Wade – Regional Hydrogeologist
Laurie Lyons – Groundwater Protection Officer

WSA Part 3, Division 3 and the GWPR

Groundwater staff + compliance and enforcement:

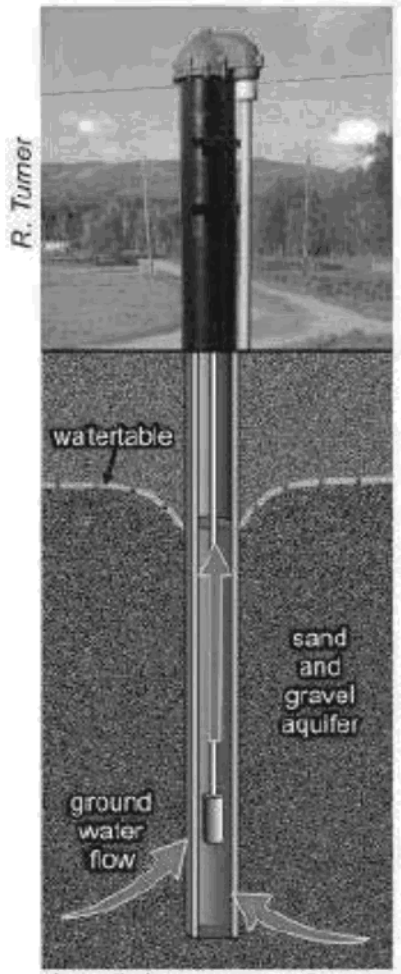
- Roles of Groundwater Protection Officers and Regional Hydrogeologists
- Potential non-compliances outcomes – education, advisory letters, warning letters, tickets, order, charges

Water Sustainability Act

Part 3, Division 3

Groundwater Protection Regulation

To promote sustainable use and protection of BC's aquifers by specifying requirements for wells to be properly constructed, maintained, and, at the end of their service, deactivated and decommissioned.



A well draws groundwater from an aquifer.

HISTORY OF GROUNDWATER LEGISLATION IN BC:

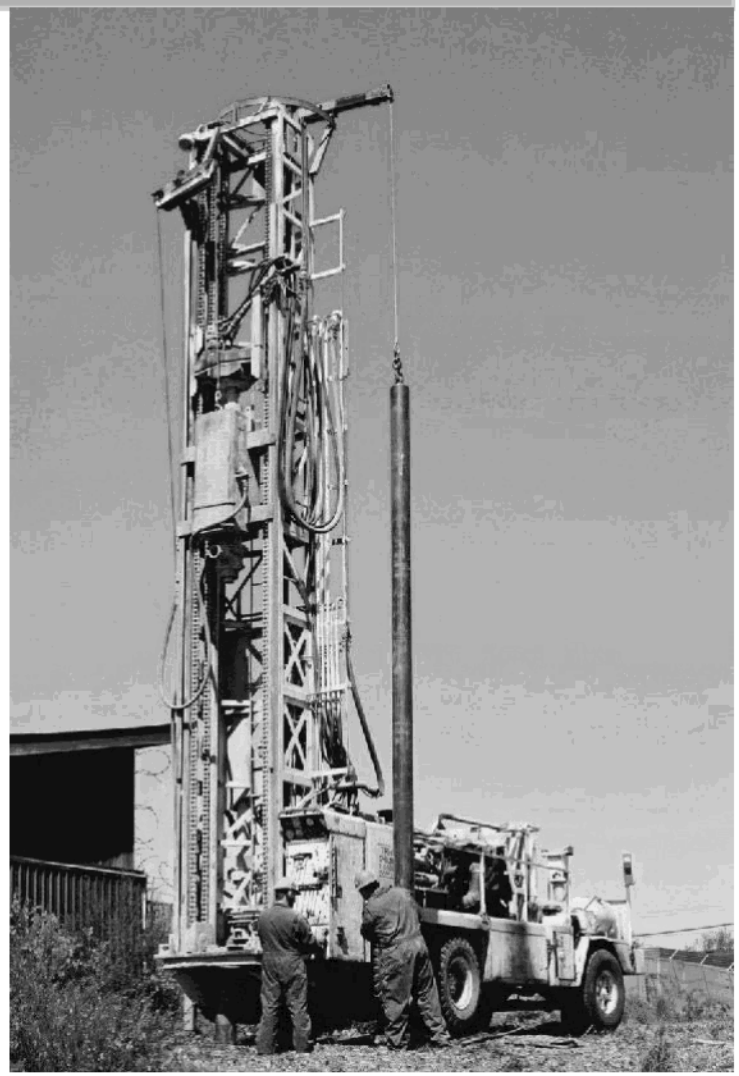
Prior to 2004 – basically no regulation of well construction, groundwater use, etc.

Nov 1, 2004 – *Water Act* amendments to include groundwater provisions and the introduction of the Ground Water Protection Regulation

February 29, 2016 – The *Water Sustainability Act* and the Groundwater Protection Regulation come into force.

QUICK OVERVIEW OF SELECT PROVISIONS

- Qualification requirements (constructing a well, installing a pump, etc.)
- Artesian flow
- Well caps and covers
- Well identification
- Decommissioning or deactivating a well
- Well reports
- Well operation
- “Junk” in wells
- Wells on Crown Land



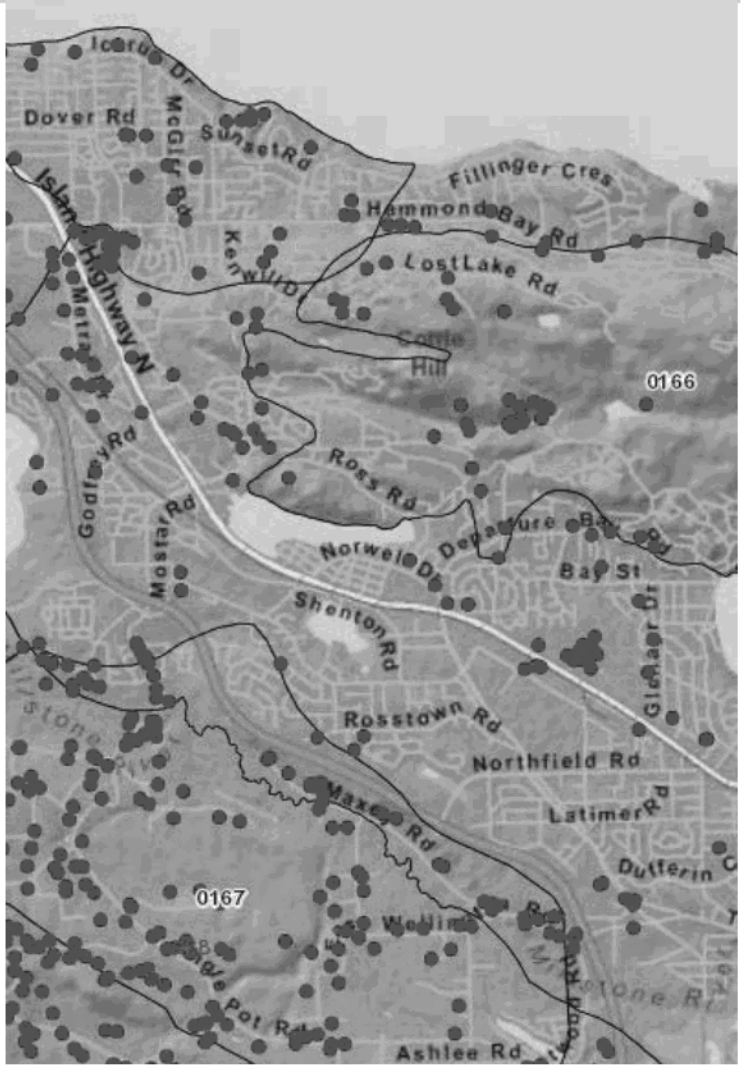
"well" means an artificial opening in the ground made for the purpose of

(a) exploring for or diverting groundwater,
(b) testing or measuring groundwater,
(c) recharging or dewatering an aquifer,
(d) groundwater remediation,
(e) use as a monitoring well,
(f) use as a closed-loop geoexchange well, or
(g) use as a geotechnical well,

but does not include
(h) an artificial opening, other than a water source well, to which the *Geothermal Resources Act* or the *Oil and Gas Activities Act* applies, or
(i) an artificial opening of a prescribed class, made for a prescribed purpose or in prescribed circumstances;

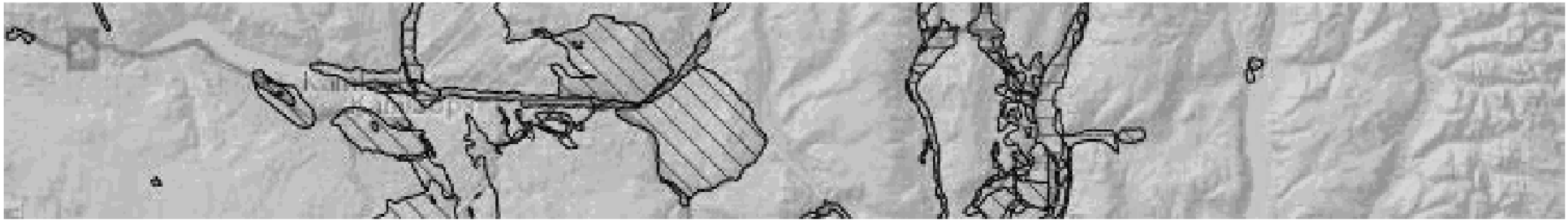
SITE INSPECTION PLANNING:

- Pre-trip planning and desktop review
- Field equipment and forms
- Field safety checklist



SITE INSPECTION PLANNING:
Pre-trip planning and desktop review

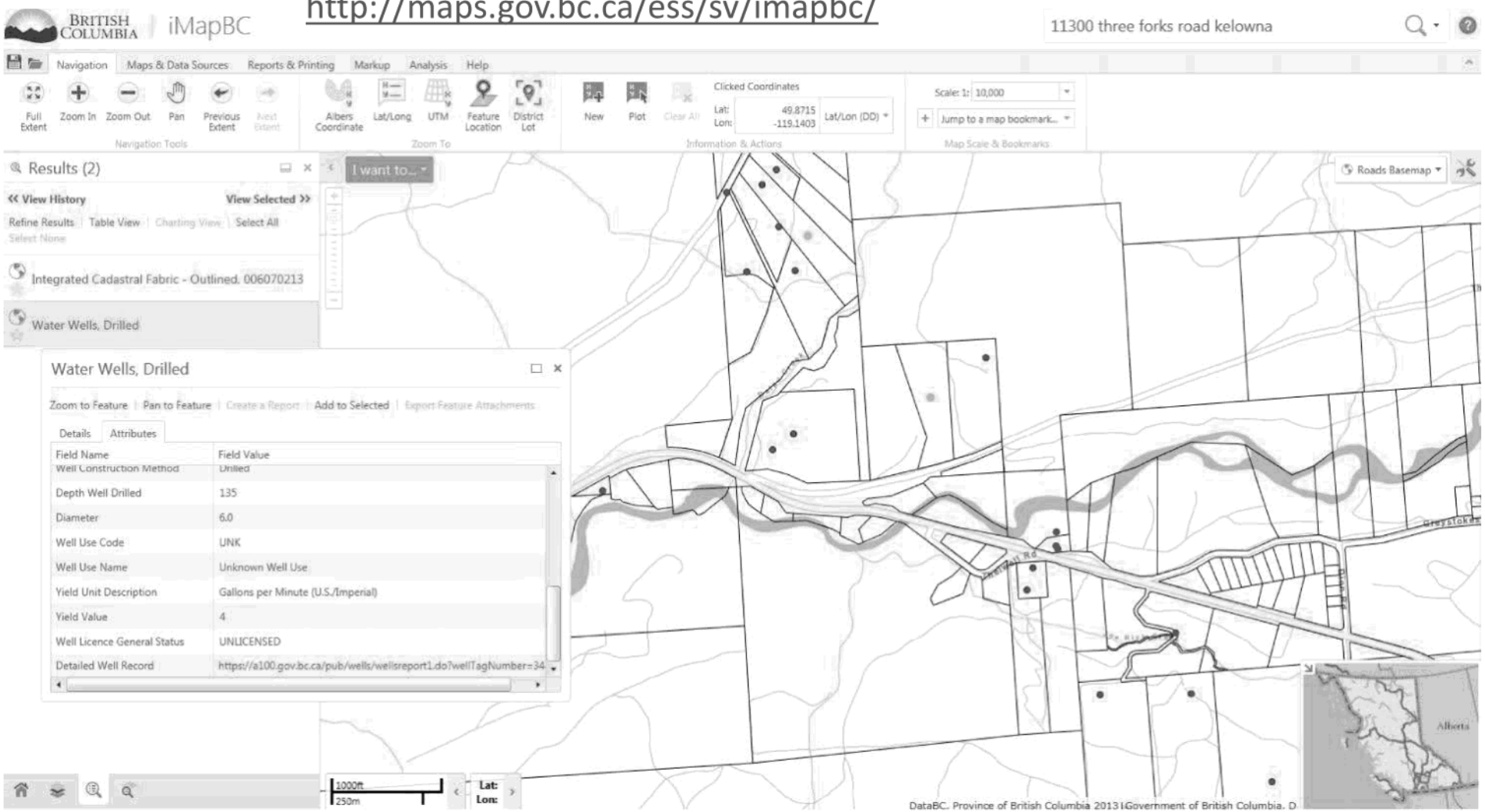
- Obtain available information on property owner, property, and the well (iMapBC, WELLS, complaint information, etc.)
- Form a general impression of the area (number of wells, types of aquifers, etc.)
- Gather specific directions to the site (maps to the site, maps of the site, etc.)
- Contact the well owner to arrange a visit



WSA Part 3, Division 3 and the GWPR

Introduction | Legislation | **Site Inspections** | Ticketable Offences | Other Considerations

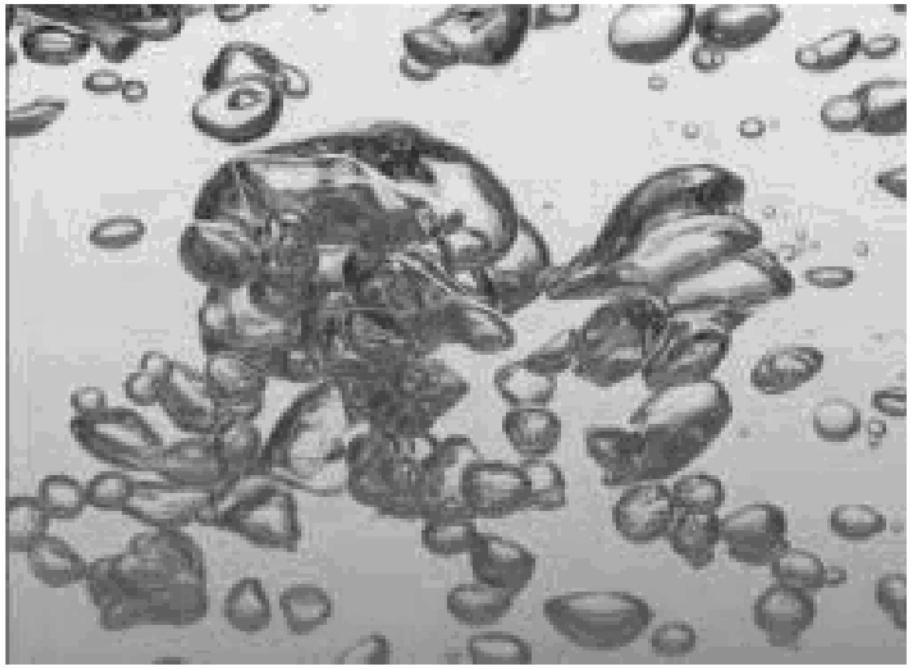
http://maps.gov.bc.ca/ess/sv/imapbc/



ACCESSING WELL INFORMATION

WELLS

https://a100.gov.bc.ca/pub/wells/public/common/wellsreport1.jsp



•Ministry Home • Government of British Columbia

Water Well Application Ministry of Environment

Report 1 - Detailed Well Record

Search by Well ID Plate Number or Well Tag Number

This search returns a detailed record for a particular well in a format developed in conjunction with the British Columbia Ground Water Association or a complete replacement water well record form.

The Well Tag Number is a unique database number automatically assigned to each water well when it is entered into the database. This number can be found using Report 2 or Report 6.

The Well ID Plate Number is the number found on the steel plate attached to some wells.

Print out a complete replacement water well record form ☐

Well ID Plate Number: [ ] Search Erase
(from the steel ID plate on some wells)

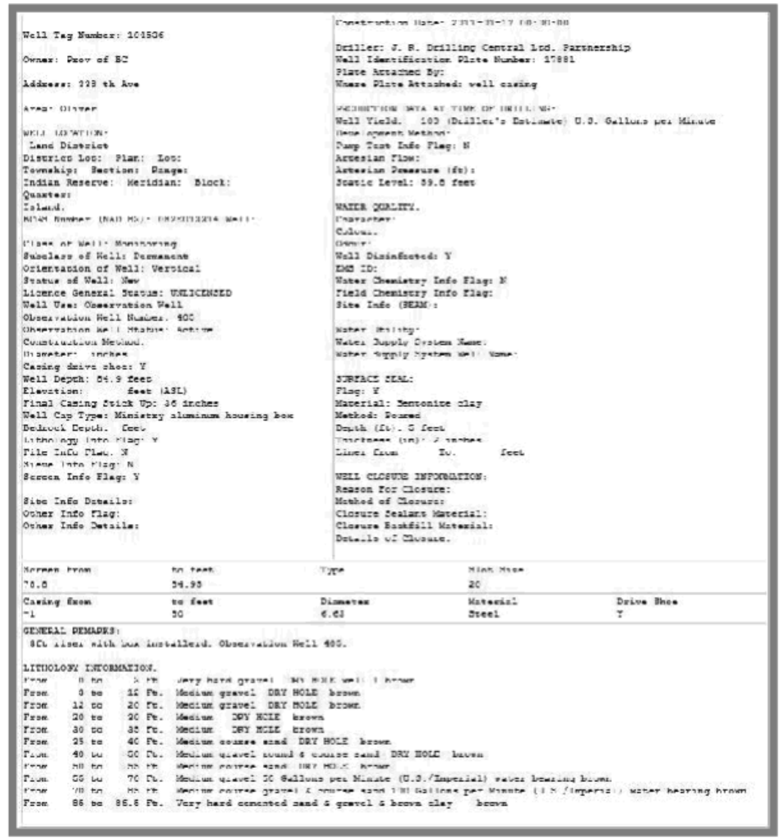
Well Tag Number: 104536 Search Erase
(a unique database number given to each well)

When you have entered your data request, please click on the "**SEARCH**" button adjacent to the entry box.

WELL IDENTIFICATION/CLASSIFICATION DETAILS

Well Construction Reports (completed by the driller) or *Detailed Well Records* (system files) provide:

- Date of construction
- WTN, Well ID Plate No.
- Well owner
- Classification details (well class, subclass)
- Construction details (depth, diameter, etc.)
- Lithology (geologic materials encountered by the driller during construction)



Well Tag Number: 104536

Owner: Prov of BC

Address: 228 th Ave

Land District
District Lot: Plan: Lot:
Township: Section: Range:
Indian Reserve: Meridian: Block:
Quarter:
Island:

Subclass of Well: Permanent
Orientation of Well: Vertical
Status of Well: New
Licence General Status: UNLICENSED
Well Use: Observation Well
Observation Well Number: 400
Construction Method:
Casing drive shoe: Y
Well Depth: 84.9 feet
Elevation: feet (ASL)
Final Casing Stick Up: 36 inches
Well Cap Type: Ministry aluminum housing box
Bedrock Depth: feet
File Info Flag: N
Screen Info Flag: Y

Site Info Details:
Other Info Flag:
Other Info Details:

Driller: J. R. Drilling Central Ltd. Partnership
Well Identification Plate Number: 17881
Plate Attached By:
Where Plate Attached: well casing

Well Yield: 100 (Driller's Estimate) U.S. Gallons per Minute
Pump Test Info Flag: N
Artesian Flow:
Artesian Pressure (ft):
Static Level: 69.6 feet

WATER QUALITY:
Colour:
Well Disinfected: Y
EMS ID:
Water Chemistry Info Flag: N
Field Chemistry Info Flag:
Site Info (SEAM):

Water Supply System Name:

SURFACE SEAL:
Flag: Y
Material: Bentonite clay
Method: Poured
Depth (ft): 0 feet
Liner from To: feet

WELL CLOSURE INFORMATION:
Reason For Closure:
Method of Closure:
Closure Sealant Material:
Closure Backfill Material:
Details of Closure:

Screen from	to feet	Type	Slot Size	
78.8	84.93		20	
Casing from	to feet	Diameter	Material	Drive Shoe
-1	80	6.63	Steel	Y

GENERAL REMARKS:
8ft riser with box installed. Observation Well 400.

LITHOLOGY INFORMATION:
From 0 to 12 Ft. Medium gravel DRY HOLE brown
From 12 to 20 Ft. Medium gravel DRY HOLE brown
From 20 to 30 Ft. Medium DRY HOLE brown
From 30 to 35 Ft. Medium DRY HOLE brown
From 35 to 40 Ft. Medium coarse sand DRY HOLE brown
From 40 to 50 Ft. Medium gravel round & coarse sand DRY HOLE brown
From 55 to 70 Ft. Medium gravel 50 Gallons per Minute (U.S./Imperial) water bearing brown
From 86 to 86.6 Ft. Very hard cemented sand & gravel & brown clay brown

Well Tag Number: 104536

Owner: Prov of BC

Address: 338 th Ave

Area: Oliver

WELL LOCATION:
Land District
District Lot: Plan: Lot:
Township: Section: Range:
Indian Reserve: Meridian: Block:
Quarter:
Island:
BCGS Number (NAD 83): 082E013314 Well:

Class of Well: Monitoring
Subclass of Well: Permanent
Orientation of Well: Vertical
Status of Well: New
Licence General Status: UNLICENSED
Well Use: Observation Well
Observation Well Number: 405

Construction Date: 2011-01-17 00:00:00

Driller: J. R. Drilling Central Ltd. Partners
Well Identification Plate Number: 17881
Plate Attached By:
Where Plate Attached: well casing

PRODUCTION DATA AT TIME OF DRILLING:
Well Yield: 100 (Driller's Estimate) U.S. G
Development Method:
Pump Test Info Flag: N
Artesian Flow:
Artesian Pressure (ft):
Static Level: 59.8 feet

WATER QUALITY:
Character:
Colour:
Odour:
Well Disinfected: Y
EMS ID:
Water Chemistry Info Flag: N
Field Chemistry Info Flag:
Site Info (SEAM):

SITE INSPECTION PLANNING: Field equipment and forms

- Identification and business cards
- iPad or notebook
- GPS
- Measuring tape
- Camera (or phone/iPad)
- Reference material (legislation, brochures, guidance material)
- Well Inspection Forms
- Optional – tools, water level tape, bentonite chips, soil probe

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SITE INSPECTIONS:
Field safety

- Road side visibility/ traffic/ off-road vehicles – vehicle positioning, use safety vests, cones, etc. as appropriate. s.22
- Physical hazards (weather, obstacles, animals or pests, etc.) – dress appropriately, take actions to eliminate hazards where possible
- **Confined spaces – Do not go into a well pit or subterranean pump house!**
- Conflict with clients - apply conflict resolution training

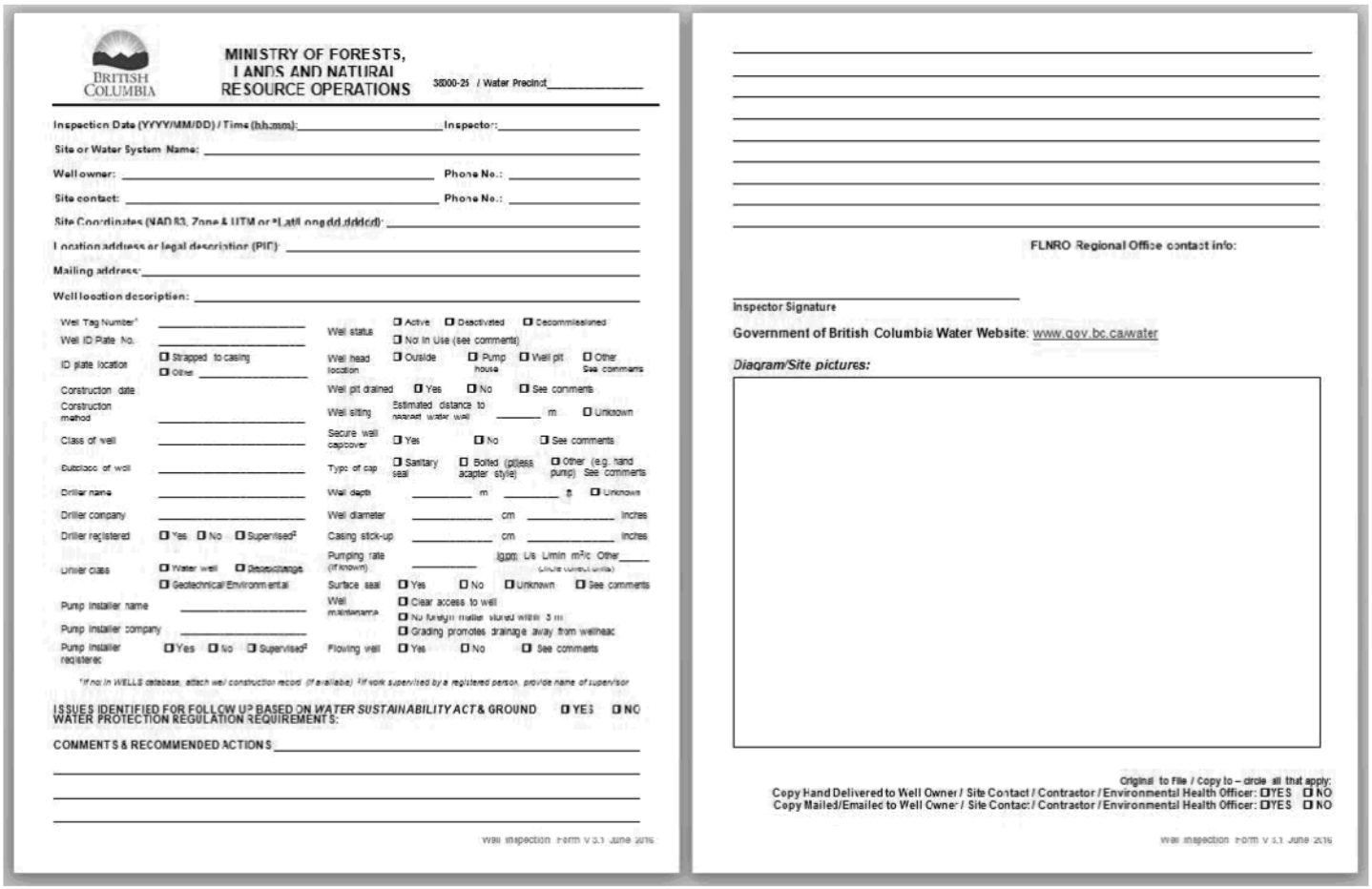
SITE INSPECTIONS:

- General impression - Is it a “well”? Is the site cluttered? Does the well look new or old? …
- Documentation – Well inspection form, photographs, notes
- Client resources – your contact information, brochures, other resources

WSA Part 3, Division 3 and the GWPR

Introduction | Legislation | **Site Inspections** | Ticketable Offences | Other Considerations

WELL INSPECTION FORM



BRITISH COLUMBIA

MINISTRY OF FORESTS, LANDS AND NATURAL RESOURCE OPERATIONS

3800-25 / Water Precinct:_____

Inspection Date (YYYY/MM/DD) / Time (hh:mm):_____ Inspector:_____

Site or Water System Name: _____

Well owner: _____ Phone No.: _____

Site contact: _____ Phone No.: _____

Site Coordinates (NAD 83, Zone & UTM or °Lat/Long dd.dddd): _____

Location address or legal description (PID): _____

Mailing address: _____

Well location description: _____

Well Tag Number* _____
Well ID Plate No. _____
ID plate location ☐ Strapped to casing ☐ Other _____
Construction date
Construction method _____
Class of well _____
Subclass of well _____
Driller name _____
Driller company _____
Driller registered ☐ Yes ☐ No ☐ Supervised*
Driller class ☐ Water well ☐ Geotechnical/Environmental ☐ Geoexchange
Pump installer name _____
Pump installer company _____
Pump installer registered ☐ Yes ☐ No ☐ Supervised*

Well status ☐ Active ☐ Deactivated ☐ Decommissioned ☐ Not in Use (see comments)
Well head location ☐ Outside ☐ Pump house ☐ Well pit ☐ Other ☐ See comments
Well pit drained ☐ Yes ☐ No ☐ See comments
Well siting Estimated distance to nearest water well _____ m ☐ Unknown
Secure well cap/cover ☐ Yes ☐ No ☐ See comments
Type of cap ☐ Sanitary seal ☐ Bolted (pitless adapter style) ☐ Other (e.g. hand pump) ☐ See comments
Well depth _____ m _____ ft ☐ Unknown
Well diameter _____ cm _____ inches
Casing stick-up _____ cm _____ inches
Pumping rate (if known) _____ (circle correct units) igpm L/s L/min m³/c Other_____
Surface seal ☐ Yes ☐ No ☐ Unknown ☐ See comments
Well maintenance ☐ Clear access to well ☐ No foreign matter stored within 3 m ☐ Grading promotes drainage away from wellhead
Flowing well ☐ Yes ☐ No ☐ See comments

*If not in WELLS database, attach well construction record (if available). If work supervised by a registered person, provide name of supervisor

ISSUES IDENTIFIED FOR FOLLOW UP BASED ON *WATER SUSTAINABILITY ACT* & GROUND WATER PROTECTION REGULATION REQUIREMENTS: ☐ YES ☐ NO

COMMENTS & RECOMMENDED ACTIONS _____

Well Inspection Form V 3.1 June 2016

FLNRO Regional Office contact info:

Inspector Signature

Government of British Columbia Water Website: www.gov.bc.ca/water

Diagram/Site pictures:

Original to File / Copy to – circle all that apply:
Copy Hand Delivered to Well Owner / Site Contact / Contractor / Environmental Health Officer: ☐ YES ☐ NO
Copy Mailed/Emailed to Well Owner / Site Contact / Contractor / Environmental Health Officer: ☐ YES ☐ NO

Well Inspection Form V 3.1 June 2016

ADMINISTRATIVE DETAILS

BRITISH COLUMBIA

MINISTRY OF FORESTS, LANDS AND NATURAL RESOURCE OPERATIONS

38000-25 / Water Precinct_____

Inspection Date (YYYY/MM/DD) / Time (hh:mm):_____ **Inspector:**_____

Site or Water System Name: _____

Well owner: _____ **Phone No.:** _____

Site contact: _____ **Phone No.:** _____

Site Coordinates (NAD 83, Zone & UTM or °Lat/Long dd.ddddd): _____

Location address or legal description (PID): _____

Mailing address:_____

Well location description: _____

WELL IDENTIFICATION/CLASSIFICATION DETAILS

Well Tag Number[1] _____

Well ID Plate No. _____

ID plate location
- ☐ Strapped to casing
- ☐ Other _____

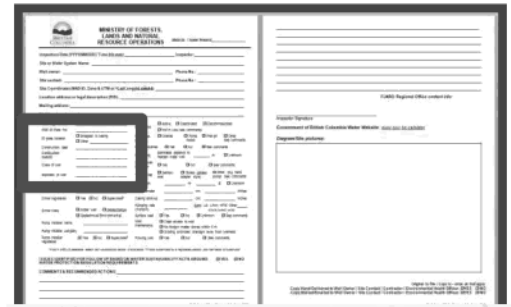
Construction date _____

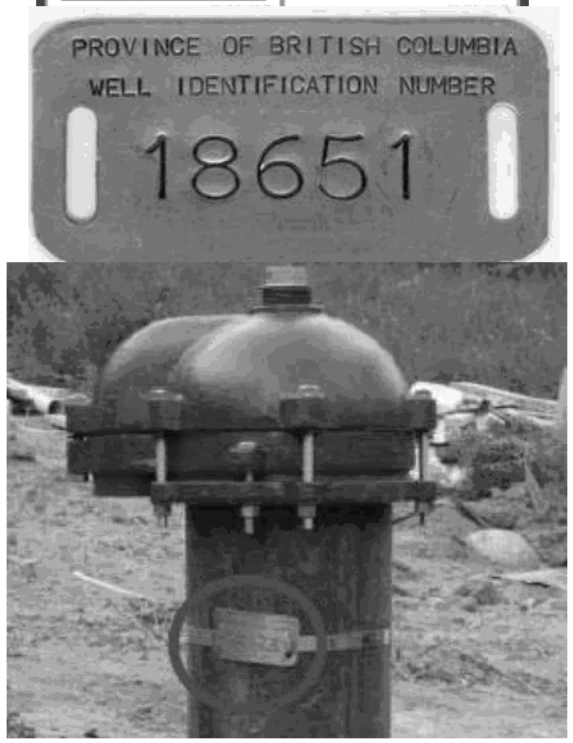
Construction method _____

Class of well _____

Subclass of well _____

[1]*If not in WELLS database, attach well construction record (if available)*





TICKETABLE OFFENCES

section 106 (5) (e)	Fail to attach identification plate to a well or wellhead or to remove identification plate when required	$100	$15	$115
section 106 (5) (f)	Destroy, injure or tamper with identification plate attached to a well or wellhead	$100	$15	$115

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QWD/QWPI DETAILS

Driller name _____

Driller company _____

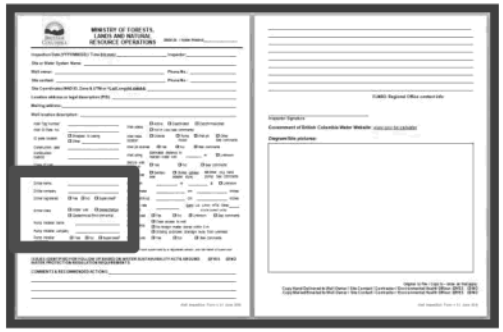
Driller registered ❒ Yes ❒ No ❒ Supervised[2]

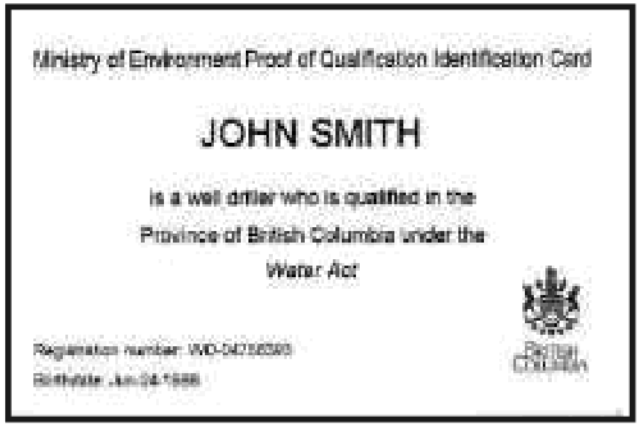
Driller class ❒ Water well ❒ Geoexchange
❒ Geotechnical/Environmental

Pump installer name _____

Pump installer company _____

Pump installer registered ❒ Yes ❒ No ❒ Supervised[2]

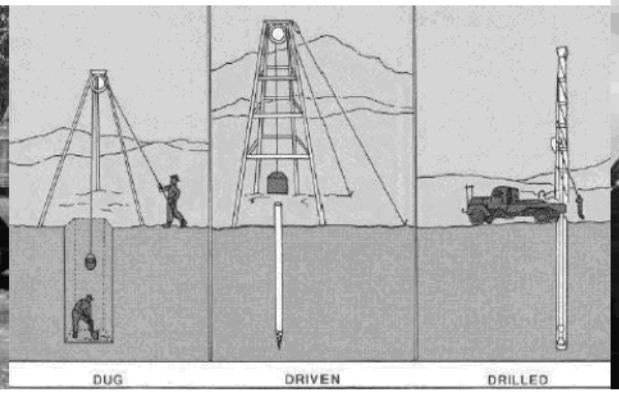




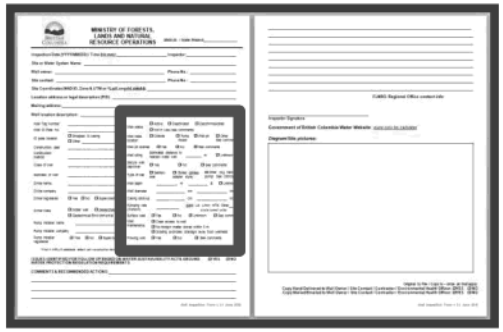
[2]*If work supervised by a registered person, provide name of supervisor*

TICKETABLE OFFENCES

section 106 (4) (o)	Construct a well, close a well or install a well pump or wellhead without holding the required qualifications	$350	$53	$403
section 106 (4) (o)	Disinfect a well without holding the required qualifications	$100	$15	$115
section 106 (4) (o)	Perform an activity in relation to a well, other than constructing, closing or disinfecting a well or installing a well pump or wellhead, without holding the required qualifications	$200	$30	$230



COMPLIANCE ASSESSMENT



Well status ❒ Active ❒ Deactivated ❒ Decommissioned ❒ Not in Use (see comments)

Well head location ❒ Outside ❒ Pump house ❒ Well pit ❒ Other See comments

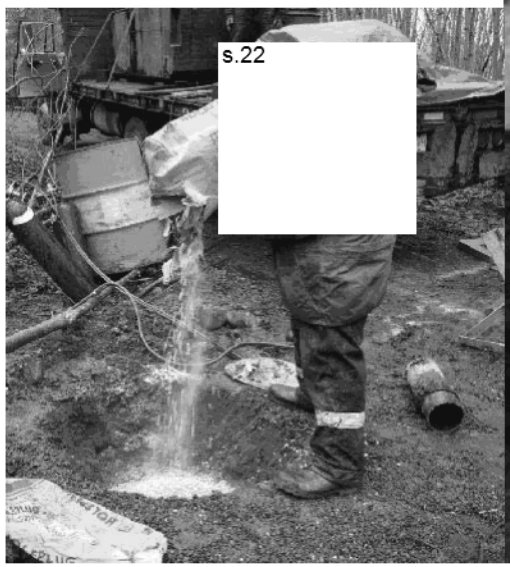
TICKETABLE OFFENCES

section 106 (5) (g)	Fail to deactivate well when required	$200	$30	$230
section 106 (5) (g)	Fail to decommission a well when required	$350	$53	$403

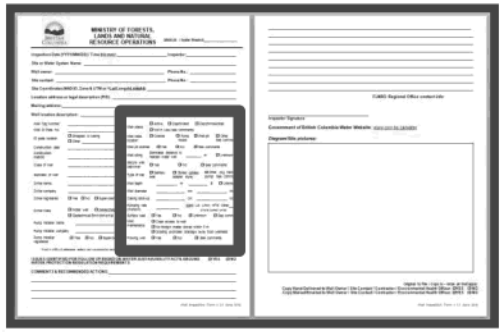
WSA DEFINITIONS:

DEACTIVATE = take the well out of service temporarily

DECOMMISSION = take the well out of service permanently (“closure”)

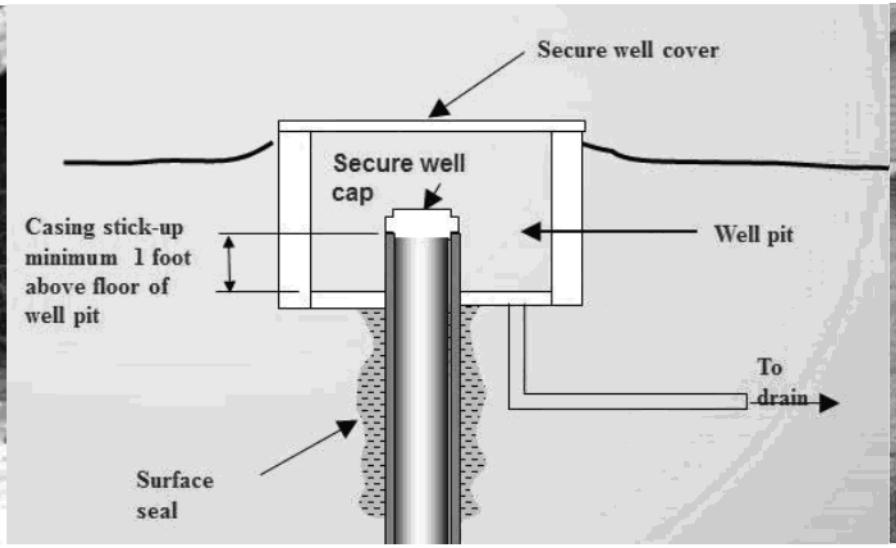


COMPLIANCE ASSESSMENT



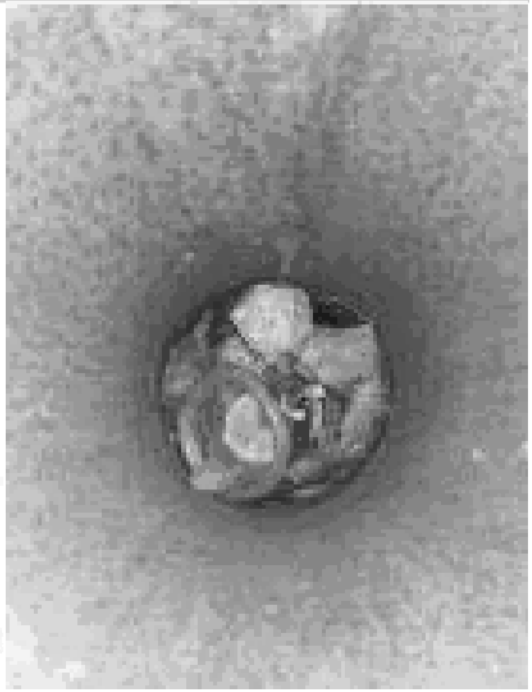
Well pit drained ❒ Yes ❒ No ❒ See comments

Well siting Estimated distance to nearest water well _____ m ❒ Unknown



TICKETABLE OFFENCES

section 106 (5) (k)	Introduce, allow or cause to be introduced into a well anything contrary to section 59 (1)	$350	$53	$403
section 107 (1) (d)	Fail to comply with an order under section 60 (1), (2), (3) or (4) in relation to foreign matter in a well	$500	$75	$575



Prohibition on introducing foreign matter into well

59 (1) A person must not introduce, allow to be introduced or cause to be introduced any of the following into a well:

(a) refuse;

(b) carcasses;

(c) human or animal waste;

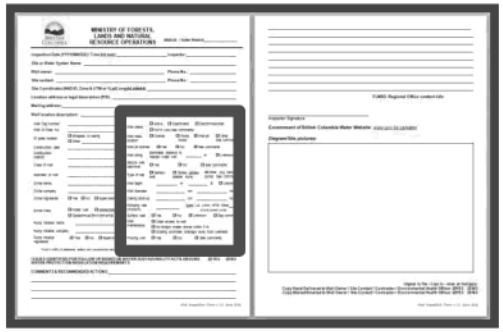
(d) pesticides or fertilizers;

(e) material from construction or demolition;

(f) a prescribed matter or substance;

(g) another contaminant, clay, silt, rock or a similar material, or another matter or substance, in such amounts or in such a manner as to cause or to be likely to cause a significant adverse impact on ...

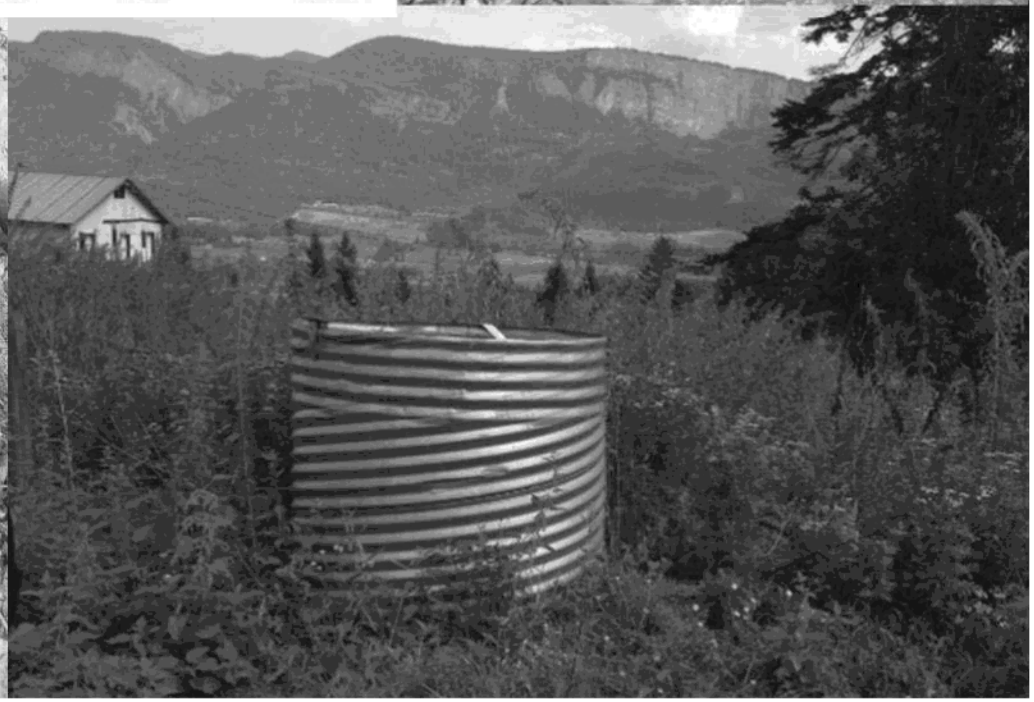
COMPLIANCE ASSESSMENT



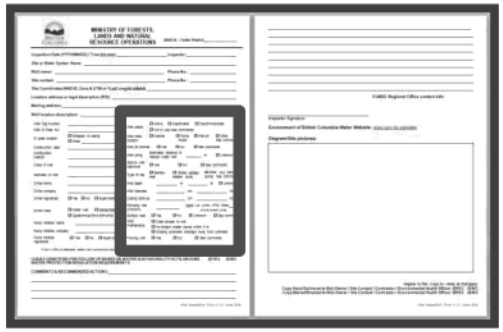
Secure well cap/cover	❒ Yes	❒ No	❒ See comments
Type of cap	❒ Sanitary seal	❒ Bolted (pitless adapter style)	❒ Other (e.g. hand pump) See comments

TICKETABLE OFFENCES

section 106 (5) (c)	Fail to secure well cap or well cover or removes well cap or well cover when not authorized	$200	$30	$230
section 106 (5) (d)	Fail to replace well cap or well cover when required	$200	$30	$230



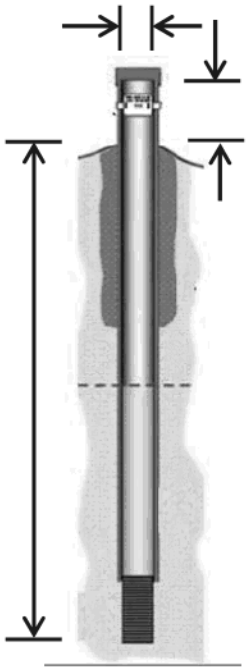
COMPLIANCE ASSESSMENT



Well depth _____ m _____ ft ❒ Unknown

Well diameter _____ cm _____ inches

Casing stick-up _____ cm _____ inches

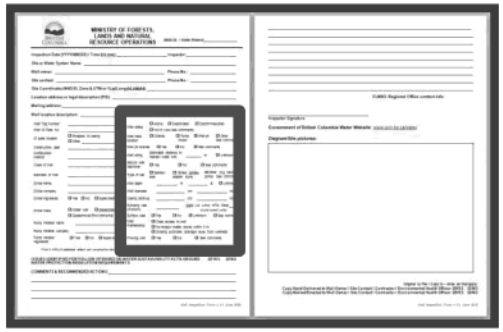


Well depth
= distance from top of ground surface to the bottom of the well

Diameter
= distance across the casing

Stick-up
= distance from the ground surface to the top of the casing

COMPLIANCE ASSESSMENT



Pumping rate (if known) _____ lgpm L/s L/min m³/d Other_____
(circle correct units)

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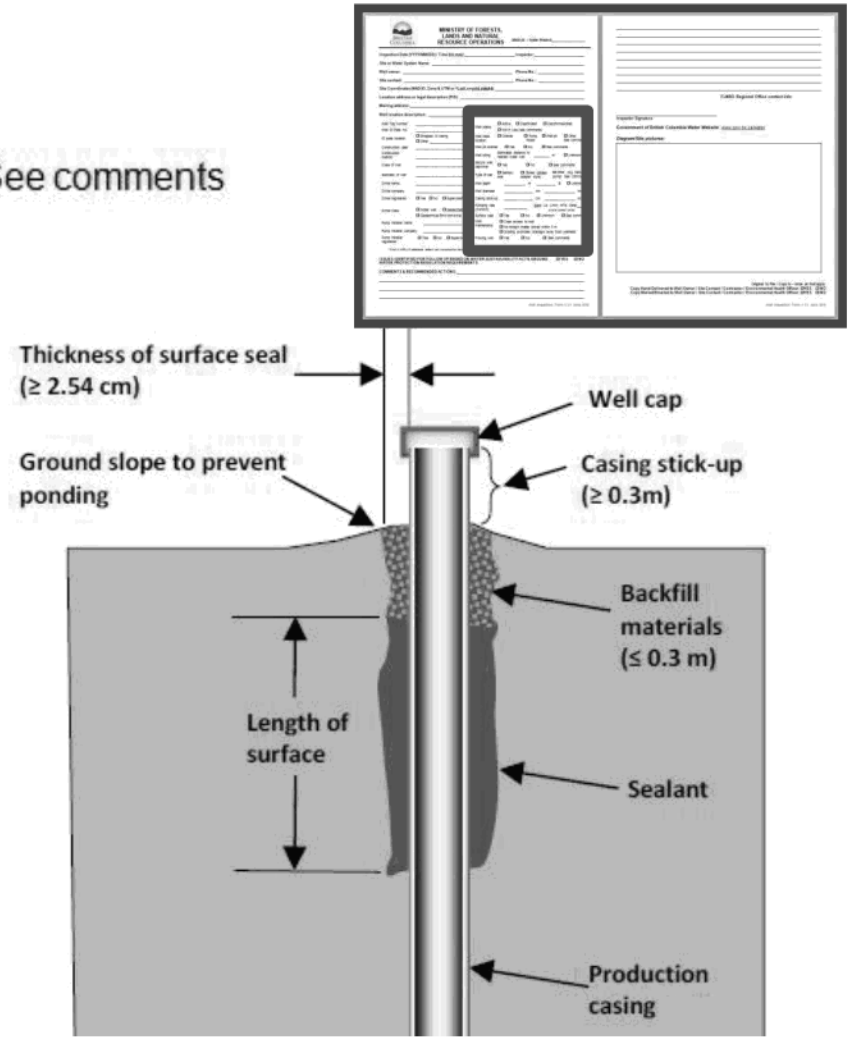
COMPLIANCE ASSESSMENT

Surface seal ☐ Yes ☐ No ☐ Unknown ☐ See comments



TICKETABLE OFFENCES

section 106 (5) (i)	Operate a well contrary to section 58	$350	$53	$403

Well operation

58 (1) A person must operate a well in accordance with the regulations and any directions of an engineer in respect of the well.

(2) A person must not operate a well in a manner that causes or is likely to cause

(a) the intrusion of saline groundwater, sea water or contaminated water into

(i) the aquifer from which that well diverts water,

(ii) another aquifer, or

(iii) a stream that is hydraulically connected to an aquifer referred to in subparagraph (i) or (ii), and

(b) a significant adverse impact on

(i) the quality of water in

(A) the aquifer from which a well diverts water,

(B) another aquifer, or

(C) a stream that is hydraulically connected to an aquifer referred to in clause (A) or (B), or

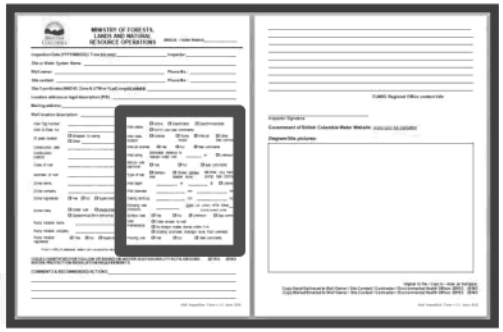
(ii) the existing uses made of the water diverted from

(A) a well that diverts water from the aquifer,

(B) a well that diverts water from another aquifer, or

(C) a stream that is hydraulically connected to an aquifer referred to in clause (A) or (B).

COMPLIANCE ASSESSMENT



Well maintenance
- ☐ Clear access to well
- ☐ No foreign matter stored within 3 m
- ☐ Grading promotes drainage away from wellhead

Flowing well ☐ Yes ☐ No ☐ See comments

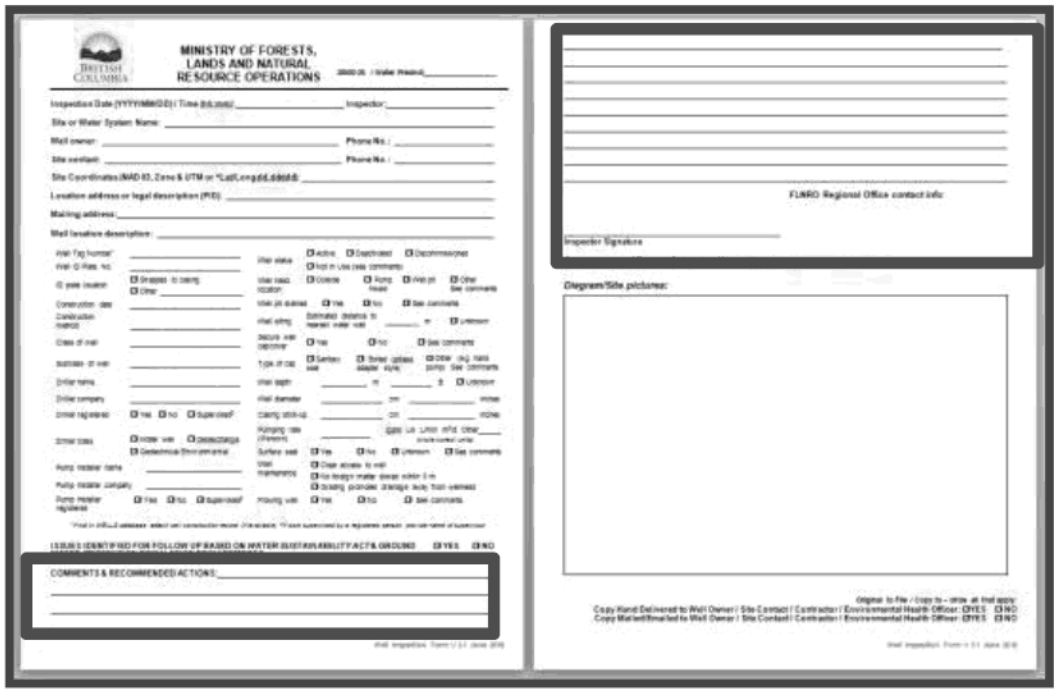
TICKETABLE OFFENCES

section 106 (5) (a)	Fail to stop or bring artesian flow under control or give notice as and when required	$350	$53	$403
section 106 (5) (b)	Fail to engage a qualified well driller or a professional or to ensure that that person stops or brings artesian flow under control	$350	$53	$403

COMMENTS AND RECOMMENDED ACTIONS

Notes on next steps required to bring the well into compliance

e.g. provide photographs of an installed secure and vermin-proof well cap by a specific date



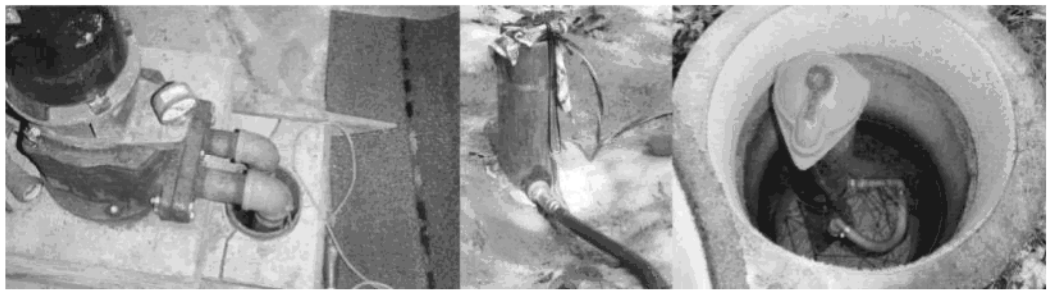
MINISTRY OF FORESTS,
LANDS AND NATURAL
RESOURCE OPERATIONS

COMMENTS & RECOMMENDED ACTIONS:

FLNRO Regional Office contact info:

Inspector Signature

Diagram/Site pictures:

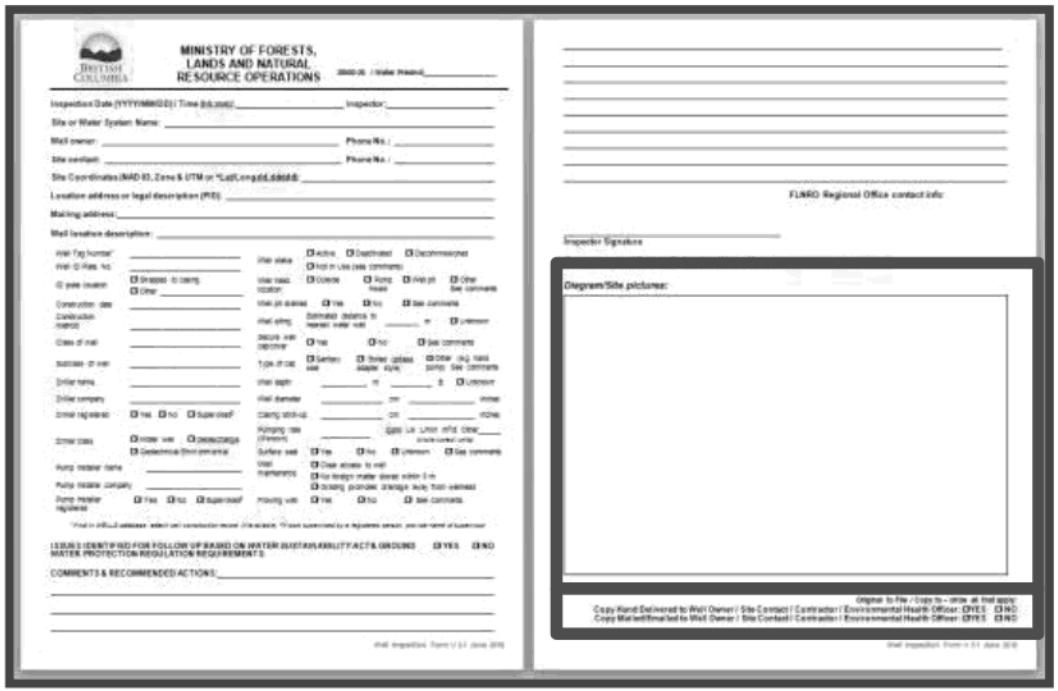


DIAGRAMS/SITE PICTURES

Hand sketches or add electronically.

DELIVERY OPTIONS

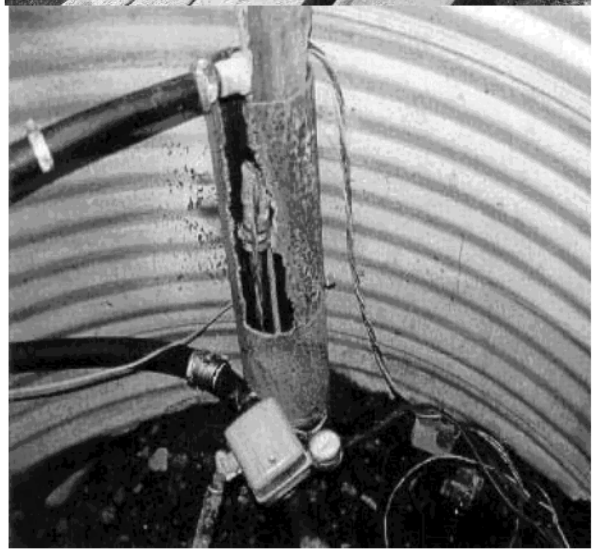
The well inspection form can be hand delivered on site, mailed or emailed at a later date, or used to support an advisory or warning letter.



MINISTRY OF FORESTS,
LANDS AND NATURAL
RESOURCE OPERATIONS

OTHER STAFF AND AGENCY INVOLVEMENT:

- *Contaminants or contaminated site?* Ministry of Environment - Environmental Protection Division (EP)
- *Unregistered small water system, Drinking Water Protection Act or Health Hazard Regulation compliance issue?* Ministry of Health – Environmental Health Officers
- *Complex files?* Groundwater staff



TICKETABLE OFFENCES

Page 67-69 of the Violation Ticket and Fines Regulation

VIOLATION TICKET ADMINISTRATION AND FINES REGULATION 89/97

	under section 37			
section 106 (4) (m)	Fail to pay amount owing to a water bailiff under and in accordance with section 38	$200	$30	$230
section 106 (4) (n)	Contravene section 46 (1) by introducing, allowing or causing to be introduced matter or substance into stream in prohibited quantity or manner	$350	$53	$403
section 106 (4) (o)	Construct a well, close a well or install a well pump or wellhead without holding the required qualifications	$350	$53	$403
section 106 (4) (o)	Disinfect a well without holding the required qualifications	$100	$15	$115
section 106 (4) (o)	Perform an activity in relation to a well, other than constructing, closing or disinfecting a well or installing a well pump or wellhead, without holding the required qualifications	$200	$30	$230
section 106 (4) (p)	Fail to comply with section 49 (4)	$500	$75	$575
section 106 (4) (q) (i)	Fail to comply with the applicable regulations when constructing or decommissioning a well	$350	$53	$403
section 106 (4) (q) (i)	Fail to comply with the applicable regulations when deactivating a well	$100	$15	$115
section 106 (4) (q) (i)	Fail to comply with the applicable regulations when disinfecting a well	$100	$15	$115
section 106 (4) (q) (ii)	Fail to comply with the applicable regulations when installing a well pump or wellhead	$350	$53	$403
section 106 (4) (q) (ii)	Fail to comply with the applicable regulations when performing activities in relation to a well pump or a wellhead or conducting a flow test or disinfecting a well pump	$200	$30	$230
section 106 (4) (r)	Fail to provide proof of qualifications when required	$200	$30	$230
section 106 (4) (s)	Fail to carry the prescribed amount of liability insurance when required	$200	$30	$230
section 106 (4) (t)	Fail to provide proof of liability insurance when required	$200	$30	$230

VIOLATION TICKET ADMINISTRATION AND FINES REGULATION 89/97

section 106 (5) (a)	Fail to stop or bring artesian flow under control or give notice as and when required	$350	$53	$403
section 106 (5) (b)	Fail to engage a qualified well driller or a professional or to ensure that that person stops or brings artesian flow under control	$350	$53	$403
section 106 (5) (c)	Fail to secure well cap or well cover or removes well cap or well cover when not authorized	$200	$30	$230
section 106 (5) (d)	Fail to replace well cap or well cover when required	$200	$30	$230
section 106 (5) (e)	Fail to attach identification plate to a well or wellhead or to remove identification plate when required	$100	$15	$115
section 106 (5) (f)	Destroy, injure or tamper with identification plate attached to a well or wellhead	$100	$15	$115
section 106 (5) (g)	Fail to deactivate well when required	$200	$30	$230
section 106 (5) (g)	Fail to decommission a well when required	$350	$53	$403
section 106 (5) (h)	Fail to maintain, retain, produce or submit a well report when required	$200	$30	$230
section 106 (5) (i)	Operate a well contrary to section 58	$350	$53	$403
section 106 (5) (j)	Perform an activity for which a drilling authorization is required without holding a drilling authorization	$350	$53	$403
section 106 (5) (k)	Introduce, allow or cause to be introduced into a well anything contrary to section 59 (1)	$350	$53	$403
section 106 (5) (l)	Fail to take or cause to be taken and analyzed a groundwater sample when required	$200	$30	$230
section 106 (5) (m)	Tamper with a groundwater sample required to be taken under section 63	$500	$75	$575
section 106 (5) (n)	Fail to submit the results of a groundwater analysis as and when required	$200	$30	$230
section 106 (5) (o)	Fail to comply, other than willfully, with an order of the comptroller, a water manager or an engineer	$200	$30	$230

VIOLATION TICKET ADMINISTRATION AND FINES REGULATION 89/97

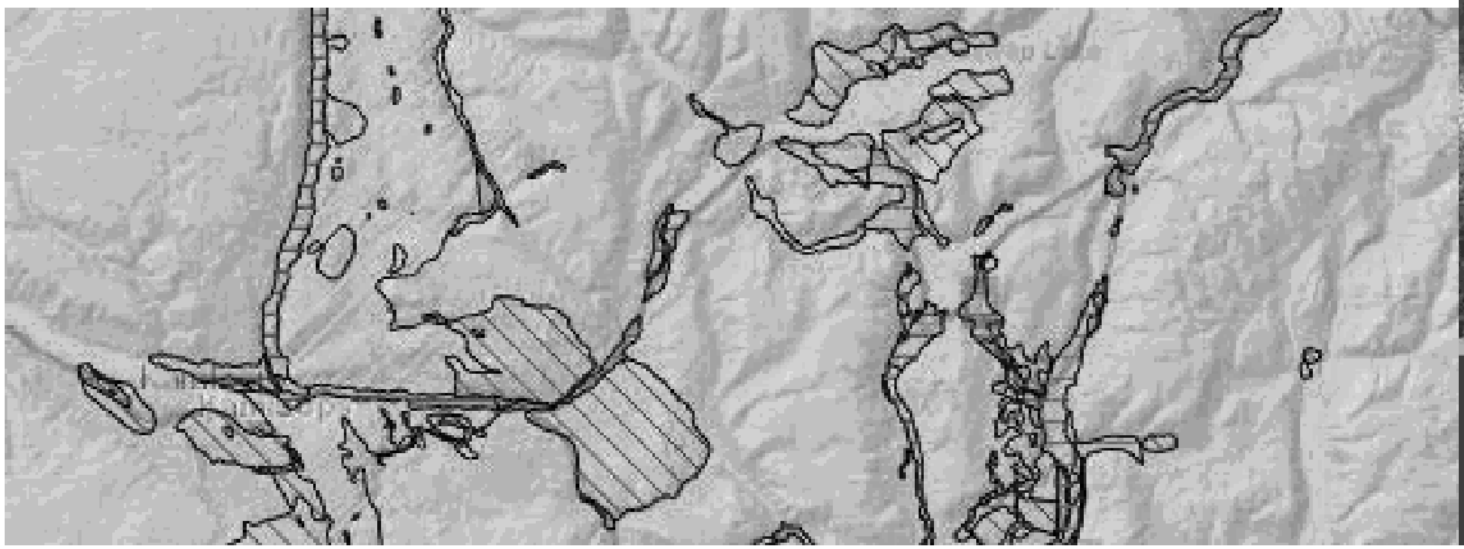
section 106 (5) (p)	Fail to keep information and records as required under section 116 (1)	$200	$30	$230
section 106 (5) (q)	Fail to keep information and records for the prescribed period under section 116 (1)	$100	$15	$115
section 106 (5) (r)	Fail to produce records when required under section 116 (2) (a)	$100	$15	$115
section 106 (5) (s)	Fail to provide records to persons as required under section 116 (2) (b)	$200	$30	$230
section 106 (5) (t)	Fail to install works, prepare reports or submit reports as required under section 116 (3)	$200	$30	$230
section 106 (5) (u)	Knowingly contravene section 116 (5)	$500	$75	$575
section 107 (1) (a)	Fail to comply with a term or condition of an authorization, change approval, permit or drilling authorization that relates to a sensitive stream	$350	$53	$403
section 107 (1) (b)	Construct a bank-to-bank dam on a protected river	$500	$75	$575
section 107 (1) (c)	Fail to comply with an order under section 47 (1) or (2) in relation to foreign matter in a stream	$500	$75	$575
section 107 (1) (d)	Fail to comply with an order under section 60 (1), (2), (3) or (4) in relation to foreign matter in a well	$500	$75	$575
section 107 (1) (e)	Contravene a fish population protection order under section 88	$500	$75	$575
section 107 (1) (f)	Construct, place, maintain or make use of an obstruction in the channel of a stream without lawful authority	$200	$30	$230
section 107 (1) (g)	Drill or alter a well, install a well pump or conduct a flow test when prohibited	$500	$75	$575
section 107 (1) (i)	Willfully contravene an order of the comptroller, a water manager or an engineer	$200	$30	$230
section 107 (1) (j)	Willfully interfere with works in respect of which the comptroller, a water manager, an engineer, an officer or a water bailiff has taken action	$500	$75	$575

WSA Part 3, Division 3 and the GWPR

Introduction | Legislation | Site Inspections | Ticketable Offences | **Other Considerations**

INFORMATION AND RESOURCES:

- Databases - WELLS, iMapBC, BC Water Resource Atlas; EcoCat
- Provincial outreach materials – brochures, guidances
- Standardized compliance forms and letters



NEXT STEPS

- Additional training - field-based, classroom, shared “practice” files;
- Joint development of a groundwater file prioritization matrix; and,
- Development of resource materials.

For further information:

NICOLE PYETT
Regional Hydrogeologist

Nicole.Pyett@gov.bc.ca
250-490-2285

Provincial Groundwater Website
http://www.env.gov.bc.ca/wsd/plan_protect_sustain/groundwater/

Water Sustainability Act
http://engage.gov.bc.ca/watersustainabilityact/

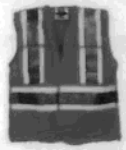
Well Inspection Quick Reference Card

Field Safety

1. ***Do not enter confined spaces***, e.g., well pits or underground pump houses.
2. Wear a hard hat, bright vest, steel-toe boots, eye and ear protection at drilling sites.
3. Dress appropriately for the weather and take actions to eliminate natural hazards.
4. Use road cones and a bright safety vest when working near traffic.



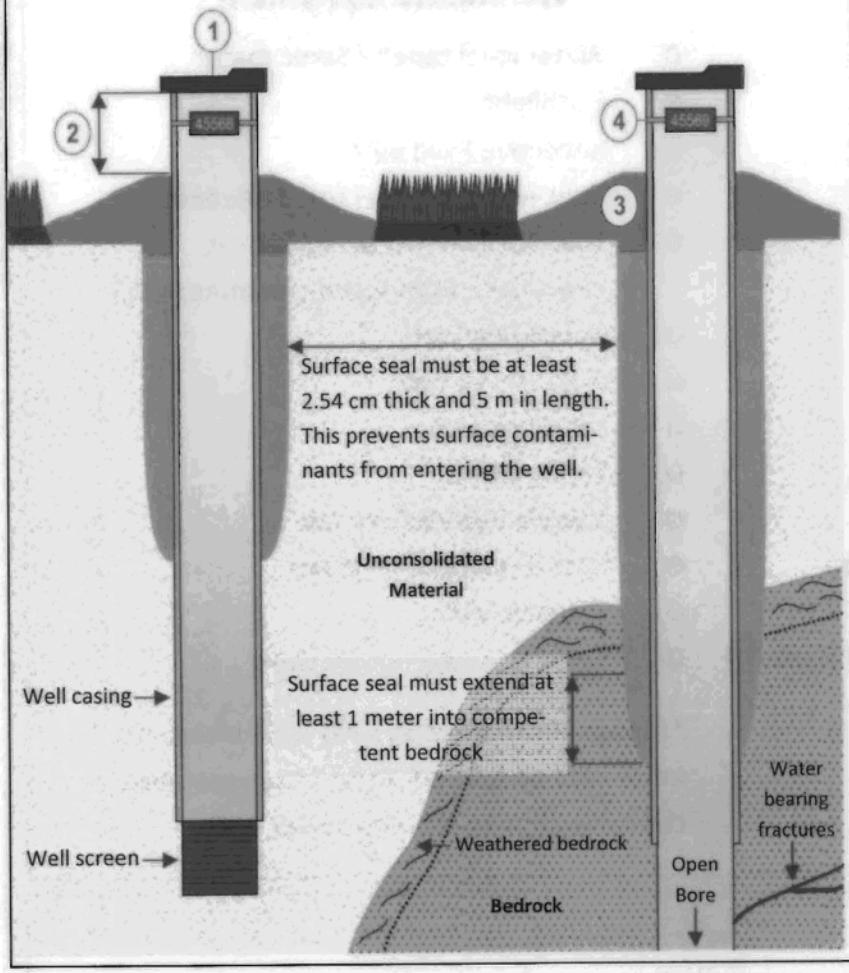




Drilled Well Construction (Water Supply Wells)

Drilled wells can be constructed in unconsolidated material (e.g., sand, gravel and silt), or can extend into bedrock. Below are the basic construction requirements for a water supply well.

Drilled Well (Loose Earth) **Drilled Well (Bedrock)**



Drilled wells must have:

1. Securely attached well cap.
2. Well casing stick-up of at least 30cm.
3. Graded surface around wellhead.
4. Securely attached and visible I.D. plate.

Common Compliance Issues

- Well cap missing or in poor condition
- No surface seal[1]
- Casing stick up less than 30 cm[1]
- Missing/damaged/poorly attached ID plate[2]
- Surface not graded around wellhead
- Well operation causes saltwater intrusion
- Foreign matter introduced into well
- Foreign matter within 3 m of wellhead
- Well is within 30 m of contaminant source[3]
- Failure to stop/control artesian flow
- Thermoplastic casing not protected
- Unqualified person doing restricted work

[1]Applies to water supply wells constructed since Nov. 1, 2005 and applies to pre-2005 water supply wells if change is made to well depth, diameter or screen assembly.
[2]Applies to water supply wells constructed since Nov. 1, 2005 and applies to all water systems.
[3]Refer to Public Health Act, Health Hazards Regulation

1 meter = 3.28 feet	1 cm = 0.39 inches	1 inch = 2.54 cm	1 cm = 10 mm	1 US gallon = 3.785 litres

Well Inspection Quick Reference Card

Pre-Inspection Planning

Carry out a desktop review before you go into the field:

1. Obtain available information on complainant and other involved parties, property owners and their properties, and well(s) from iMapBC or BCWRA, and WELLS.
2. Form a general impression of the area, e.g., # of wells, type and classification of aquifers.
3. Prepare detailed directions and maps to the site, and maps of the site.
4. Consult with groundwater staff to briefly discuss issue.
5. Contact the well owner to arrange a visit.

Equipment Checklist

The equipment needed will depend on the type of data you need. The following is a general list of equipment required for routine inspections. Check with your local groundwater staff if you have any questions about data collection and equipment.

Office Equipment

- o Field binder
- o Field book
- o Laptop w/ appropriate cables
- o Cellphone w/ charger
- o Pens and Pencils
- o Permanent Markers
- o Batteries
- o Calculator
- o Camera
- o GPS
- o Maps and Directions
- o Contact numbers and information
- o iPad
- o brochures and other educational material
- o inspection form
- o well registration form
- o well ID plates & ring clamps
- o weather appropriate clothing

Warehouse Equipment

- o Water level tape* / Sonic meter
- o Flashlight
- o Reflective Field vest
- o Rubber boots (steel toe if needed)
- o Tool Box (allen keys, socket set, wrenches, screwdrivers, hammer etc.)
- o Measuring tape
- o Field survey tape
- o Safety glasses
- o Traffic cones
- o Sample bottles from lab
- o Well ID plates and straps
- o Flagging tape
- o Soil auger + bentonite chips

*Always disinfect tape with 10% bleach solution and de-ionized water to prevent cross contamination in drinking water wells.

Important Contacts

RAPP: 1-877-952-7277

Provincial water web: http://www.gov.bc.ca/water

iMapBC Groundwater Quick Start Guide

1. Access the application: http://maps.gov.bc.ca/ess/sv/imapbc/

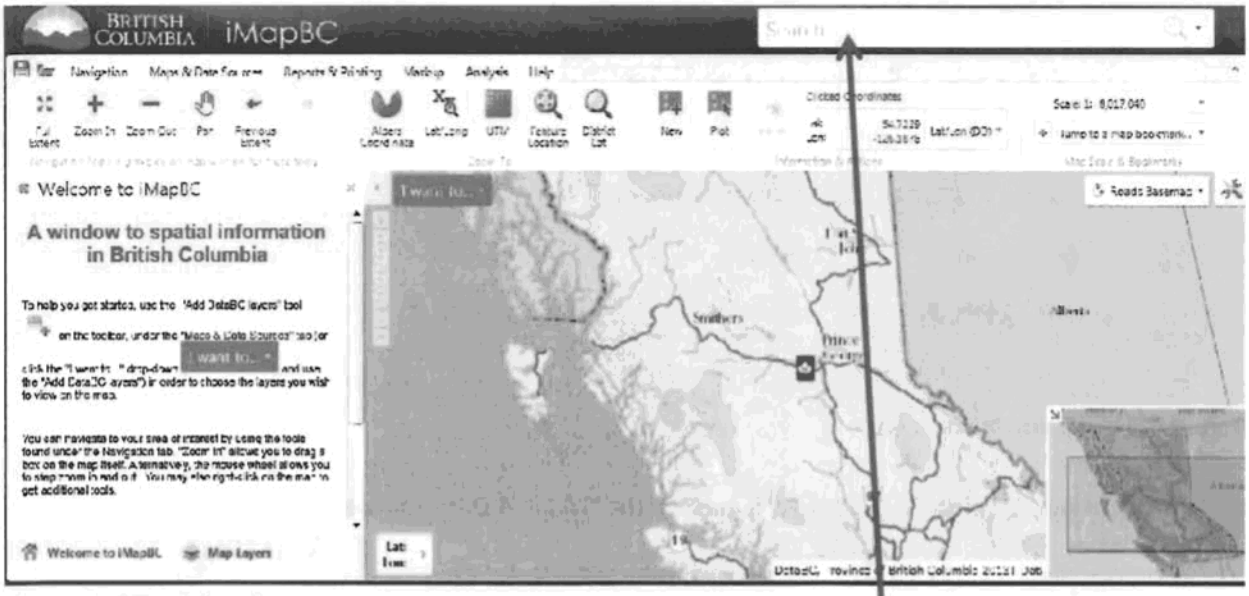


Figure 1: iMapBC main page

1. Enter location of interest (address, town name, etc.) into "Search"

2. Select the appropriate option from the results list on the left hand side. A new dialogue box will appear (Figure 2).

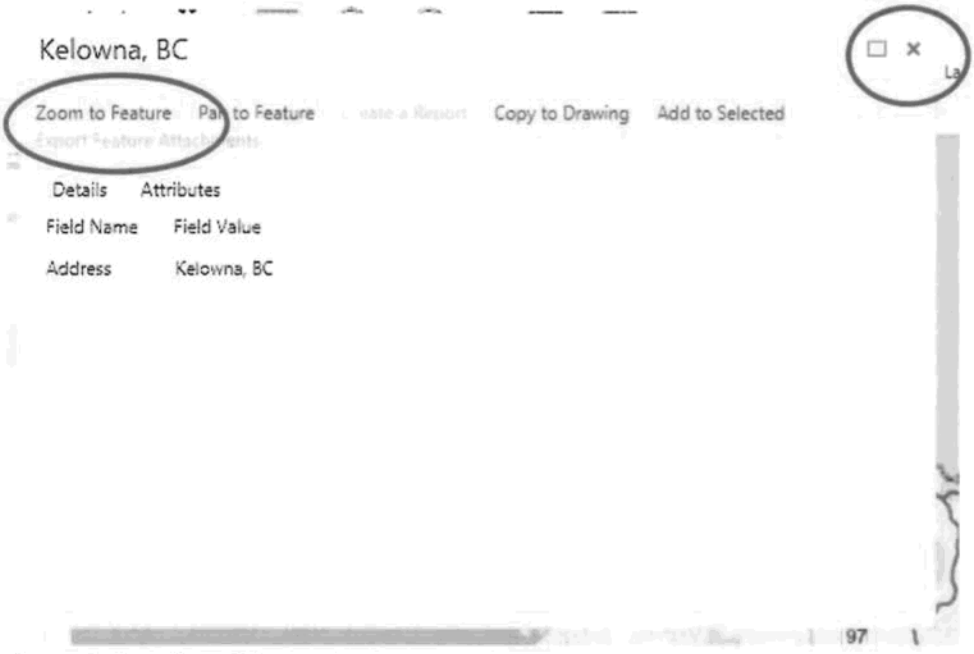


Figure 2: Location dialogue box

3. Select "Zoom to Feature" and then close the location dialogue box (Figure 2).

4. Use the navigation tools to refine your area of interest (Figure 3).

Figure 3: Navigation tools

5. To add layers, select "Add DataBC layers" in the "Maps & Data Sources" tab (Figure 4).

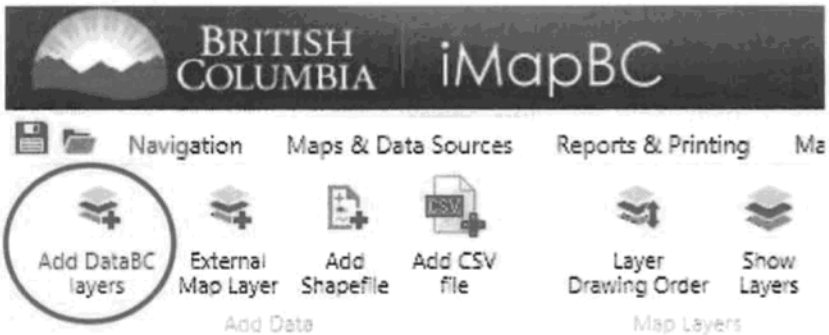


Figure 4: Maps & Data Sources Tab

6. Select information of interest in the Layer Catalog by clicking on the addition sign next to "Fresh Water and Marine" and checking "Aquifers – BC – Outlined" in "Aquifers – BC" and/or "Water Wells" (Figure 5).

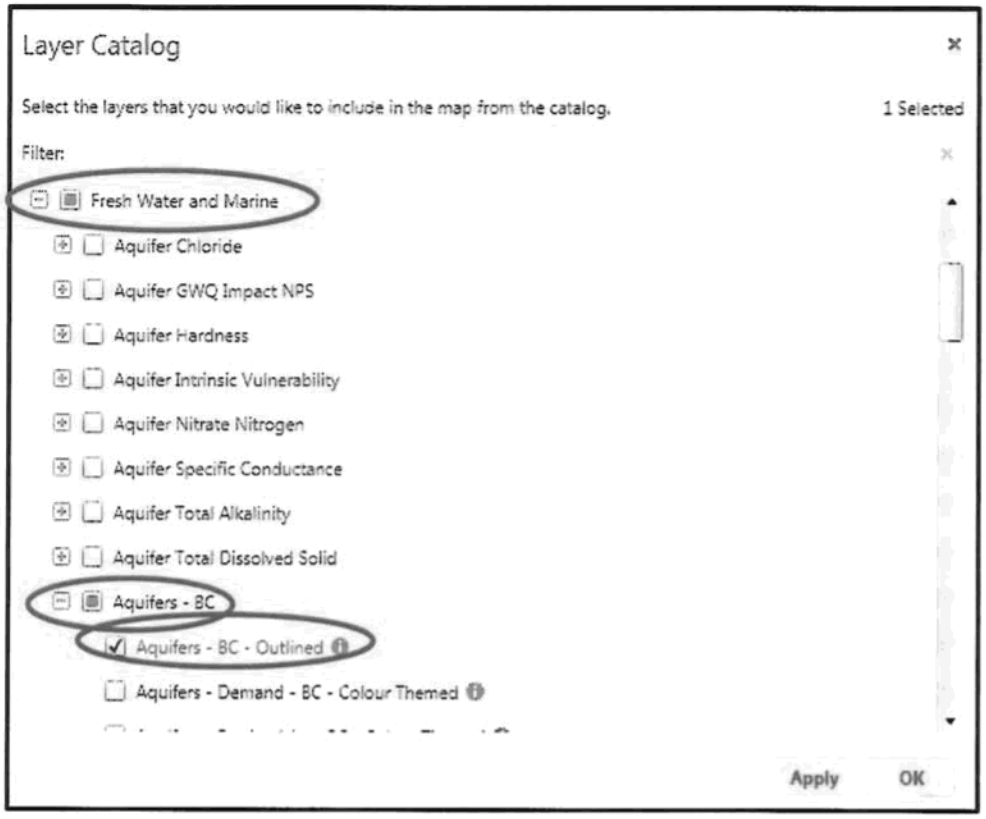


Figure 5: Layer Catalog Box

7. Select "Apply" and "OK". The Layer Catalog box will close automatically and the map will now include the selected information layers.

8. Right click in area of interest and select "What's here? (Identify)" (Figure 6).

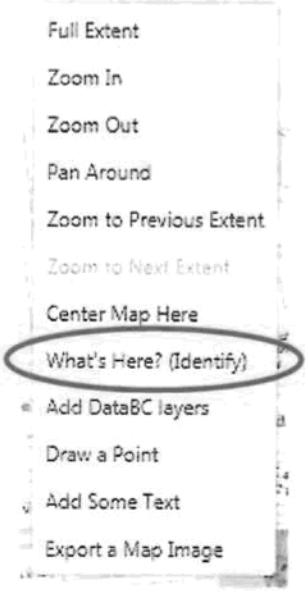


Figure 6: Right click options

9. Select your feature of interest in the table of search results on the left of the screen to reveal a table of attributes (Figure 7).

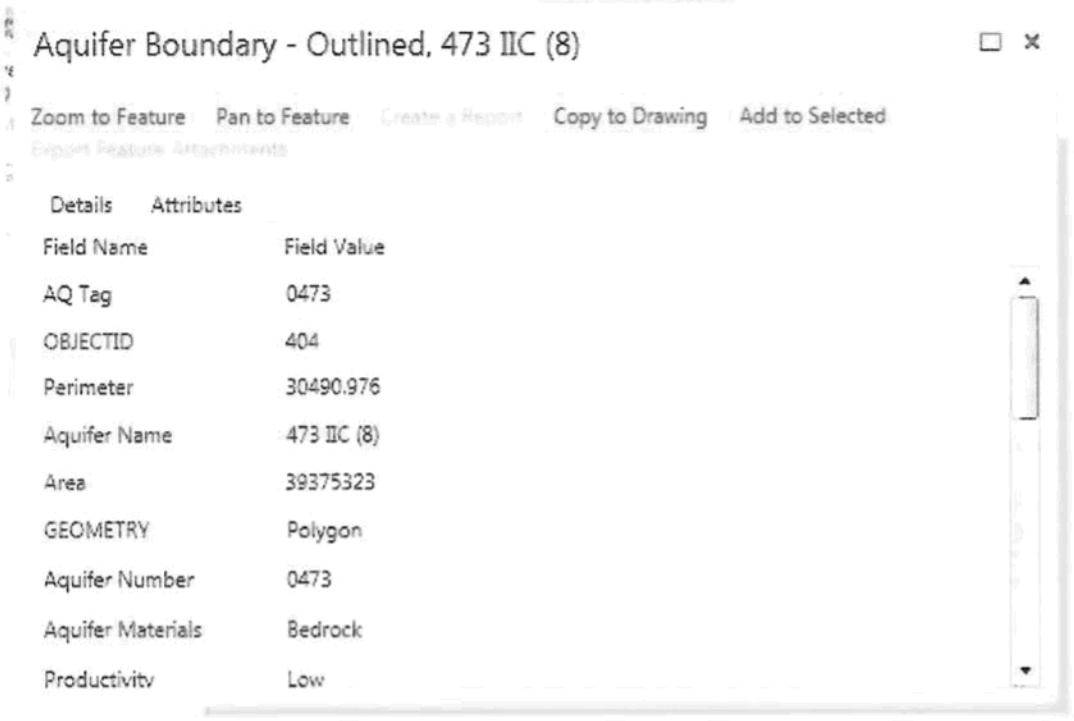


Figure 7: Example table of attributes

NOTES:

- The very end of the table of attributes for a well (Figure 8) will provide a link to the well's Detailed Well Record (Figure 9).
- Adding the layer "Integrated Cadastral Fabric – Outlined" found in "Land Ownership and Status", "Integrated Cadastral Fabric" will pull up property lines and allow you to investigate ownership as well as search for a property using the Property Identification Number (PID).

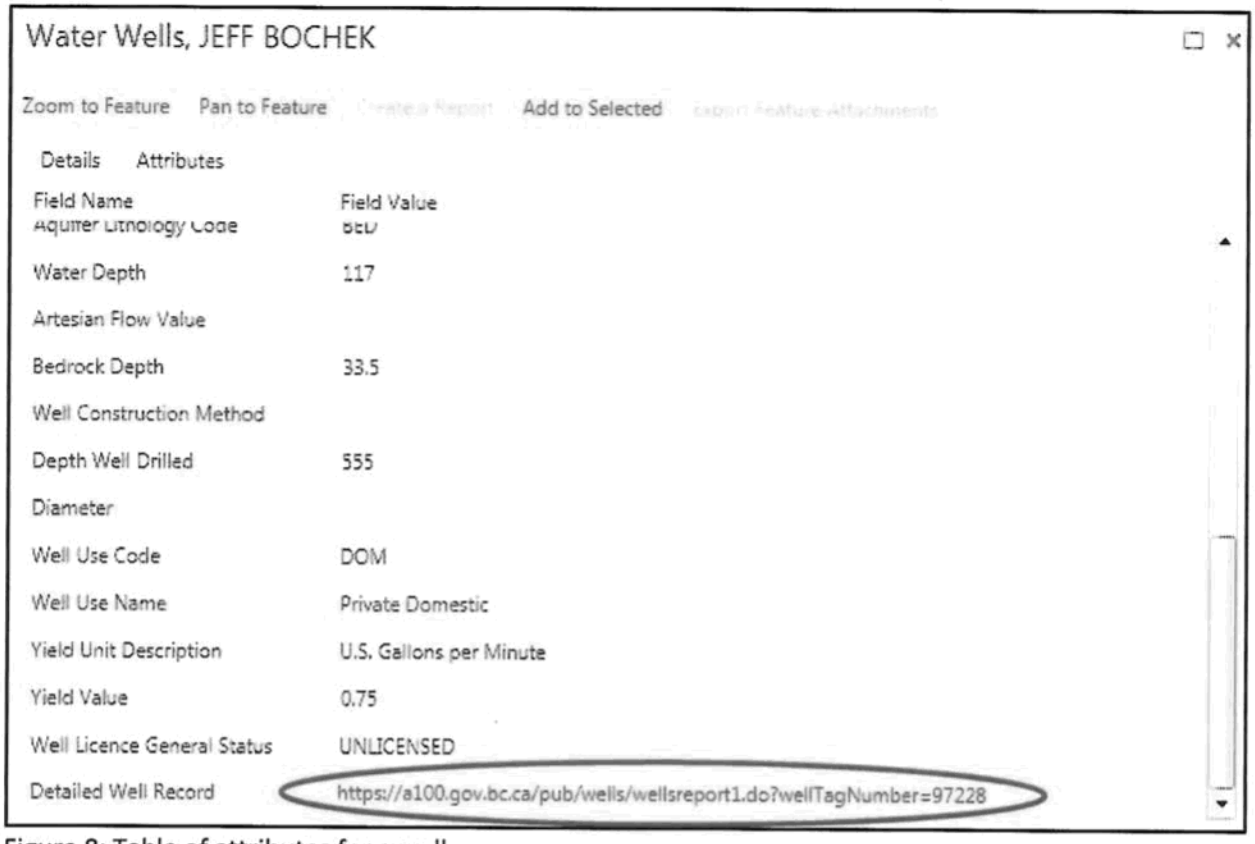


Figure 8: Table of attributes for a well

BRITISH COLUMBIA

Report 1 - Detailed Well Record

```
Well Tag Number: 97228

Owner: DANELUZZI

Address: YD RANCH ROAD

Area: BARNES LAKE AREA

WELL LOCATION:
 Land District
District Lot:  Plan:  Lot:
Township: 20 Section: 19 Range:  23
Indian Reserve:  Meridian:  Block:
Quarter:
Island:
BCGS Number (NAD 83): 092I075113 Well:

Class of Well: Water supply
Subclass of Well: Domestic
Orientation of Well: Vertical
Status of Well: New
Licence General Status: UNLICENSED
Well Use: Private Domestic
Observation Well Number:
```

```
Construction Date: 2008-10-02 00:00:00

Driller: Bud's Water Wells
Well Identification Plate Number: 25249
Plate Attached By: JEFF BOCHEK
Where Plate Attached: ON SIDE OF WELL

PRODUCTION DATA AT TIME OF DRILLING:
Well Yield:   .75 (Driller's Estimate) U.S. Gallons per Minute
Development Method: Air lifting
Pump Test Info Flag: N
Artesian Flow:
Artesian Pressure (ft):
Static Level: 117 feet

WATER QUALITY:
Character:
Colour:
Odour:
Well Disinfected: Y
EMS ID:
Water Chemistry Info Flag: N
Field Chemistry Info Flag:
Site Info (SEAM):
```

Figure 9: A portion of a Detailed Well Report

Water Sustainability Act

Part 3, Division 3
and the Groundwater Protection Regulation

NRO targeted training – Module 1, Version 1

November 14-15, 2016

BRITISH COLUMBIA

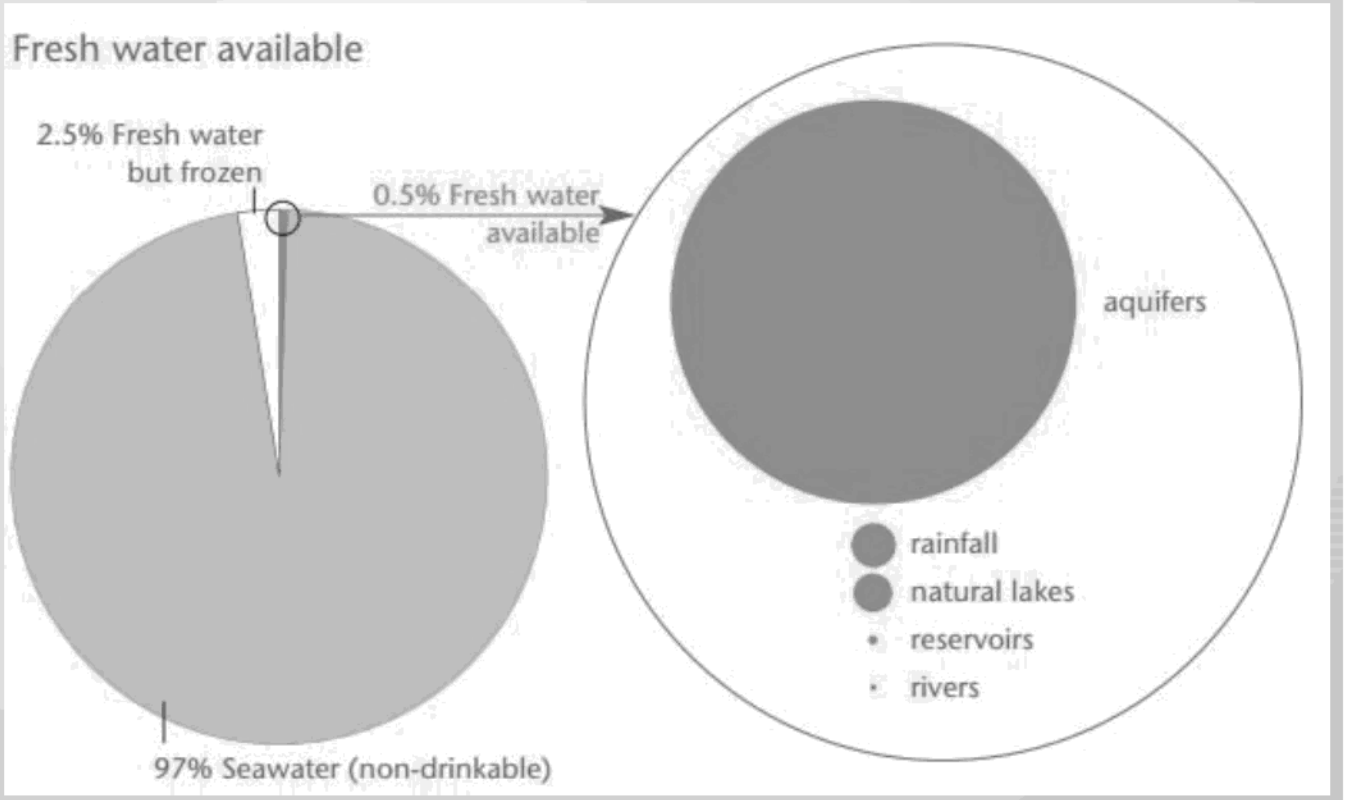
Ministry of
Forests, Lands and
Natural Resource Operations

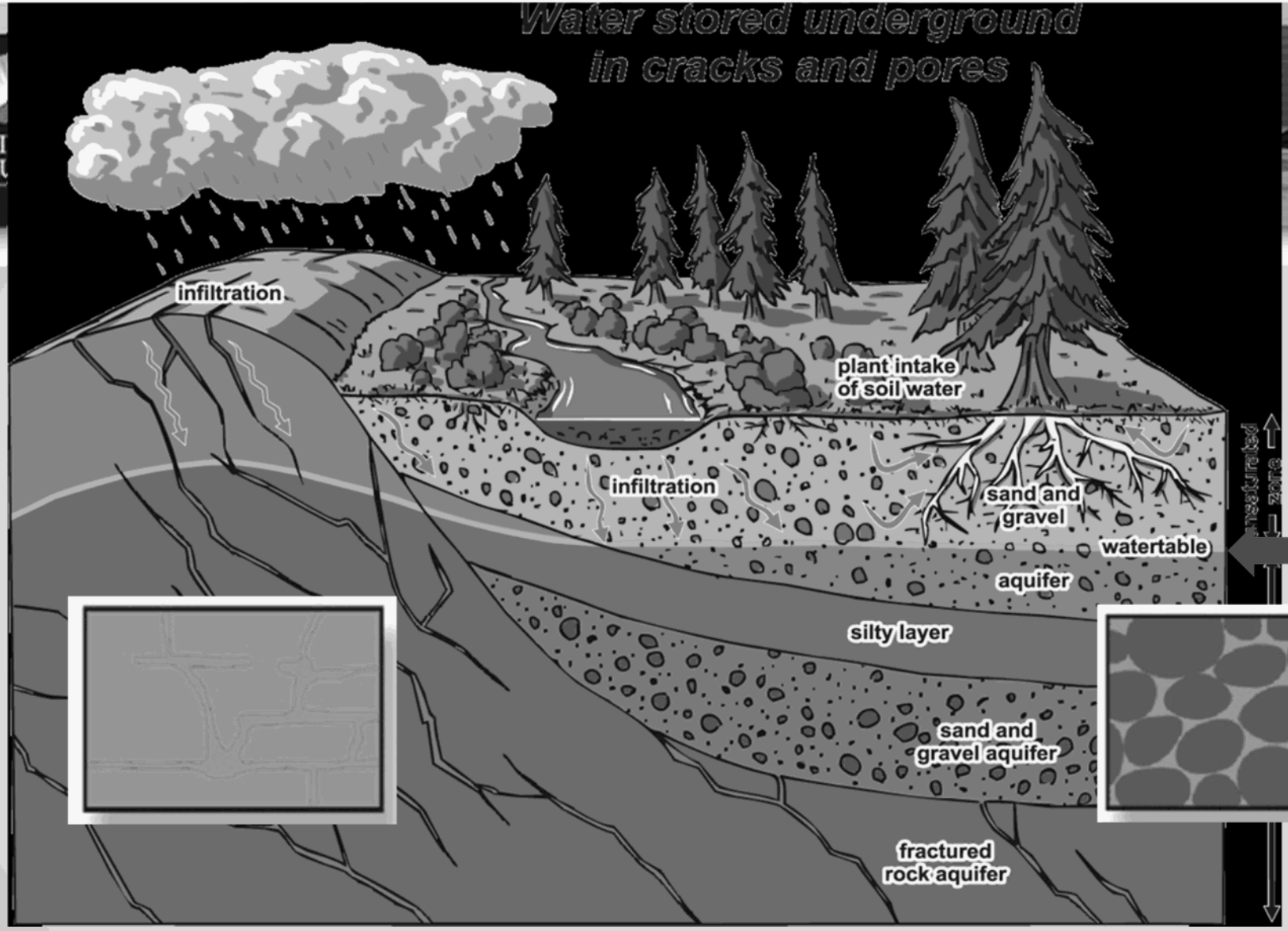
Outline

- Introductions
- Groundwater 101
- Well construction basics
- Groundwater Protection Regulation (GWPR)
- GWPR inspections, resources
- Virtual field inspections
- Groundwater licensing

Groundwater 101

- What is an aquifer?
- What is it made of?
- What kinds are there?





Aquifers

Geological unit (e.g., sand and gravel, fractured bedrock) that is saturated, permeable, and yields useful quantities of water

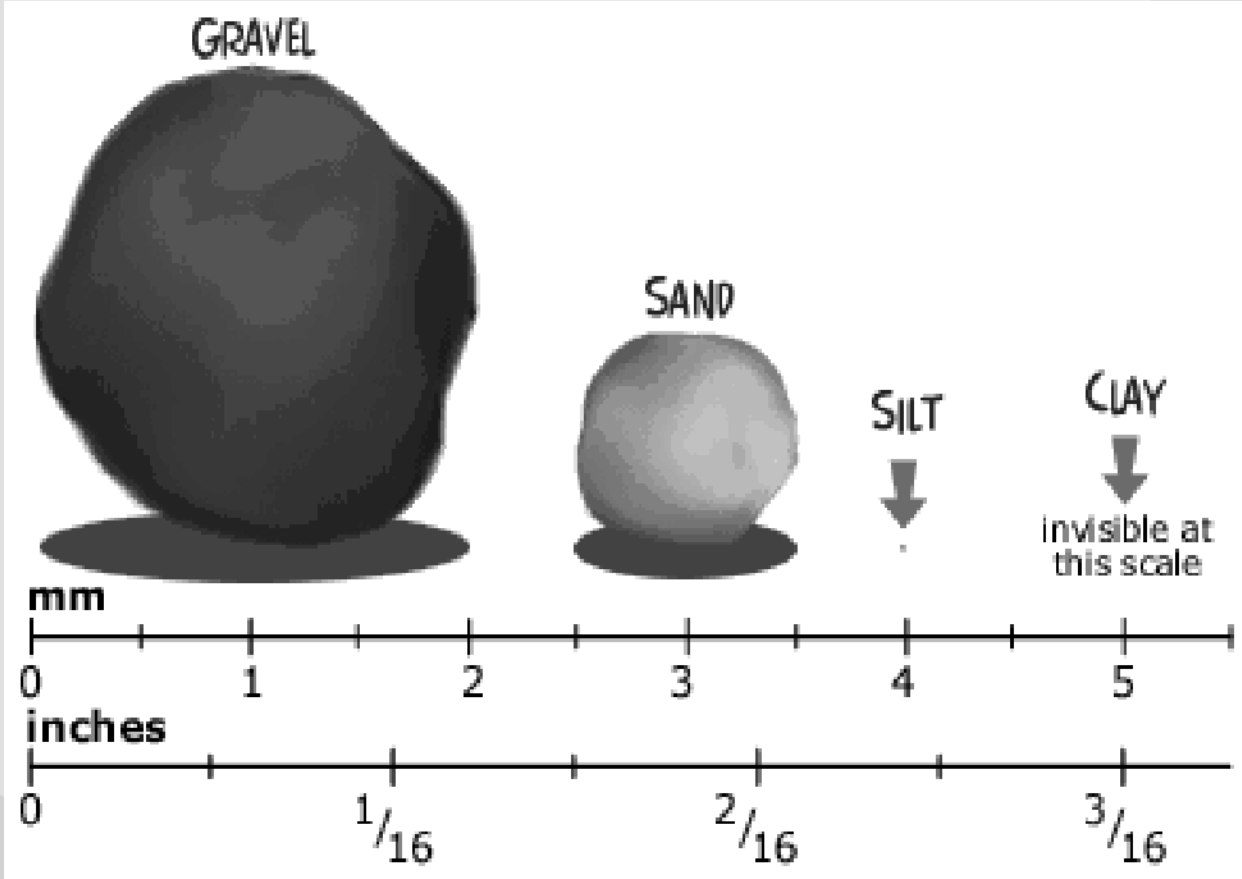
Unconsolidated Aquifers & Aquitards

Aquifers

Typically SAND and GRAVEL

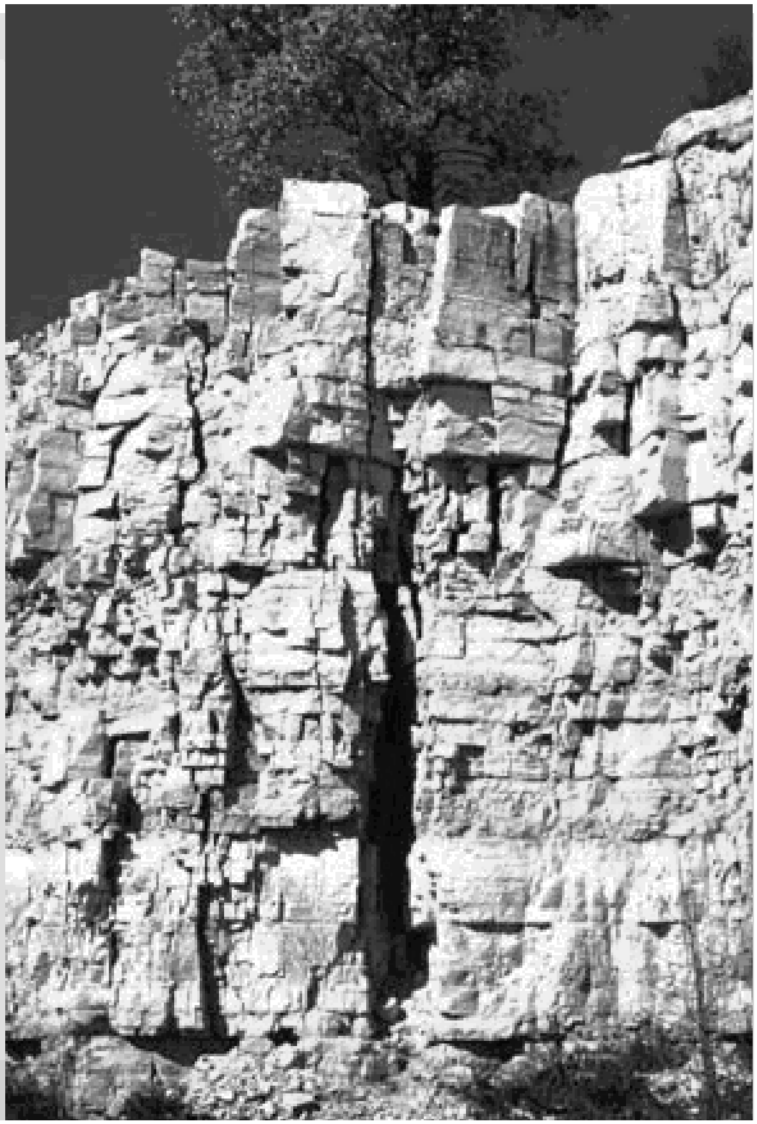
Aquitard

Typically SILT and CLAY



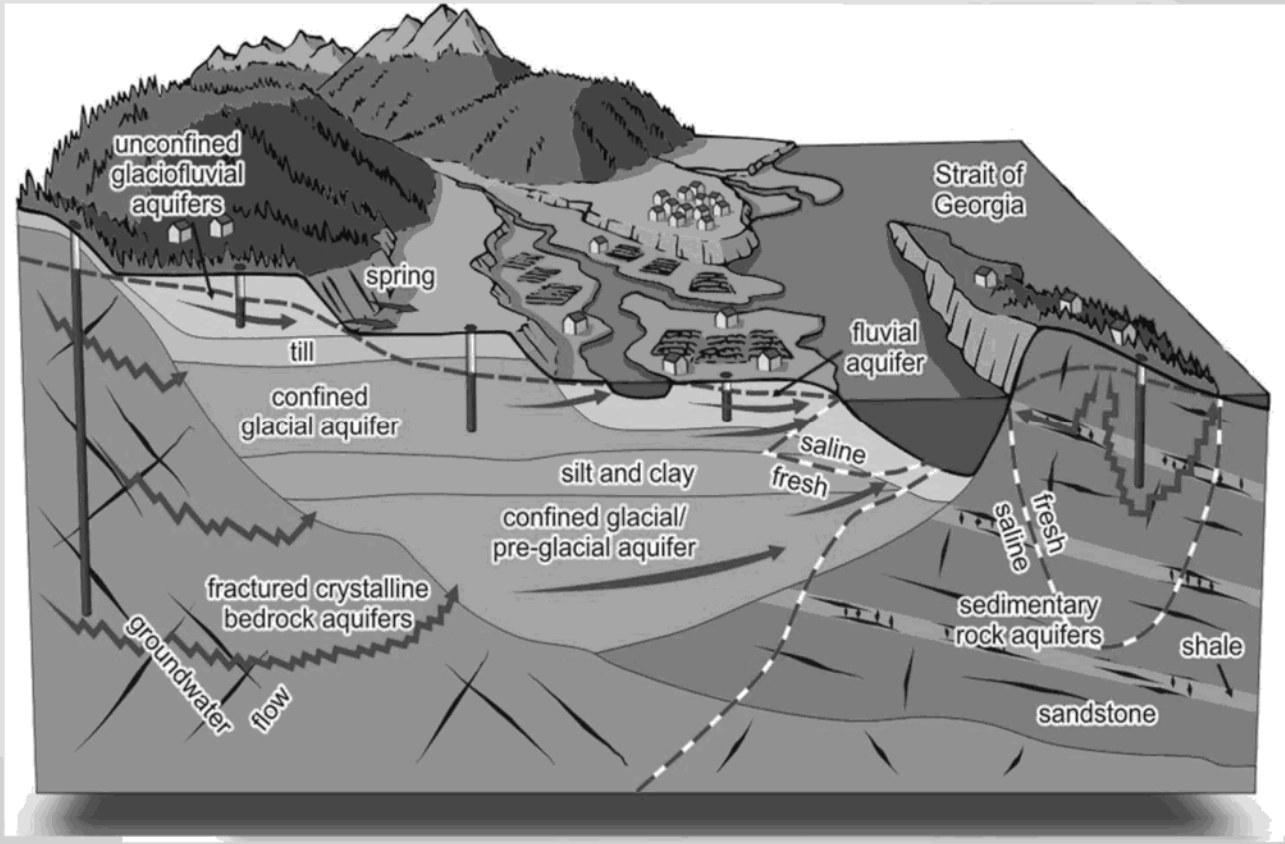
Bedrock Aquifers & Aquitards

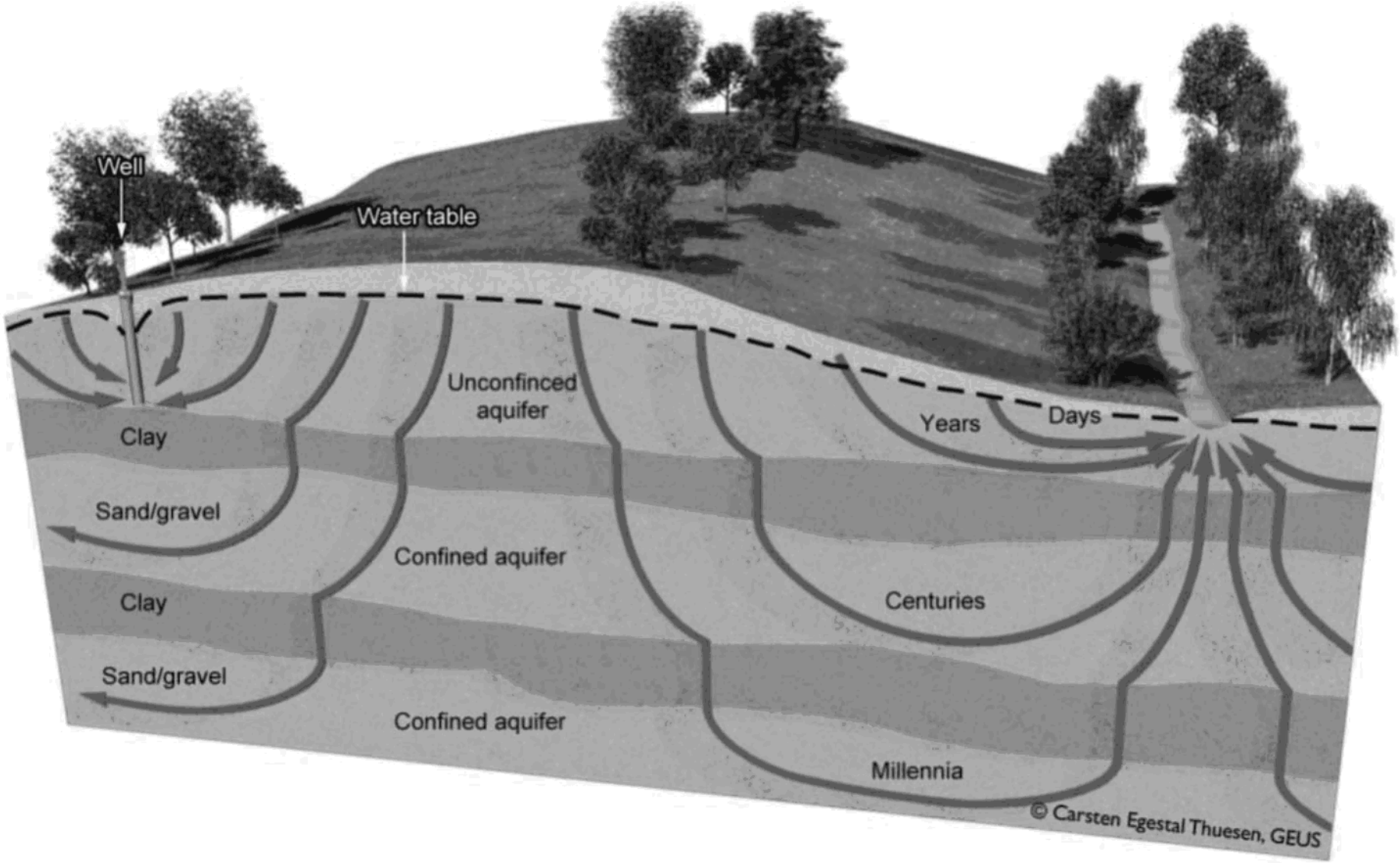
- Aquifer
  - Typically – Fractured bedrock
- Aquitard
  - Typically – Unfractured bedrock



Aquifers

1. *Sand and Gravel* (aka unconsolidated; more water available)
2. *Fractured Bedrock* (aka consolidated; less water available)
3. *Unconfined Aquifers* – No aquitard (aka confining unit) on top; Water table forms the top of the aquifer
4. *Confined Aquifers* - Aquifer confined between two aquitards (aka confining unit)



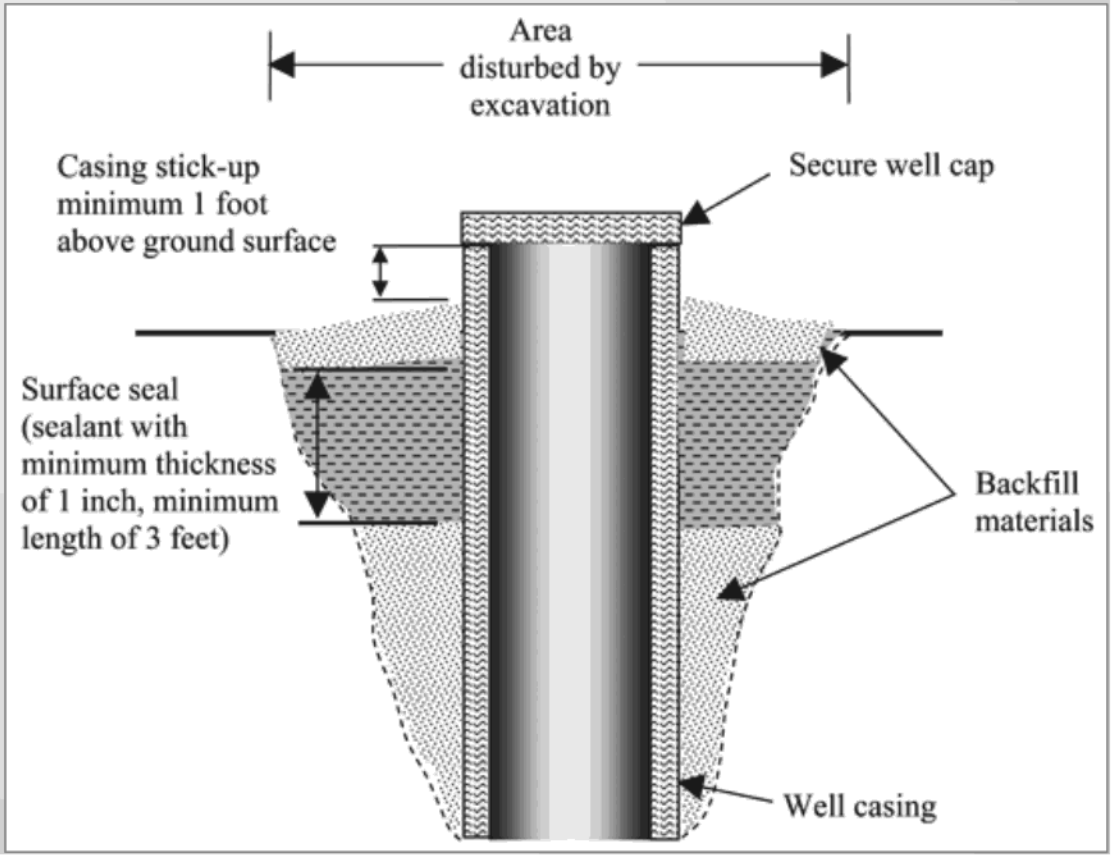

Well
Water table
Unconfinced aquifer
Clay
Sand/gravel
Confined aquifer
Clay
Sand/gravel
Confined aquifer
Years
Days
Centuries
Millennia
© Carsten Egestal Thuesen, GEUS

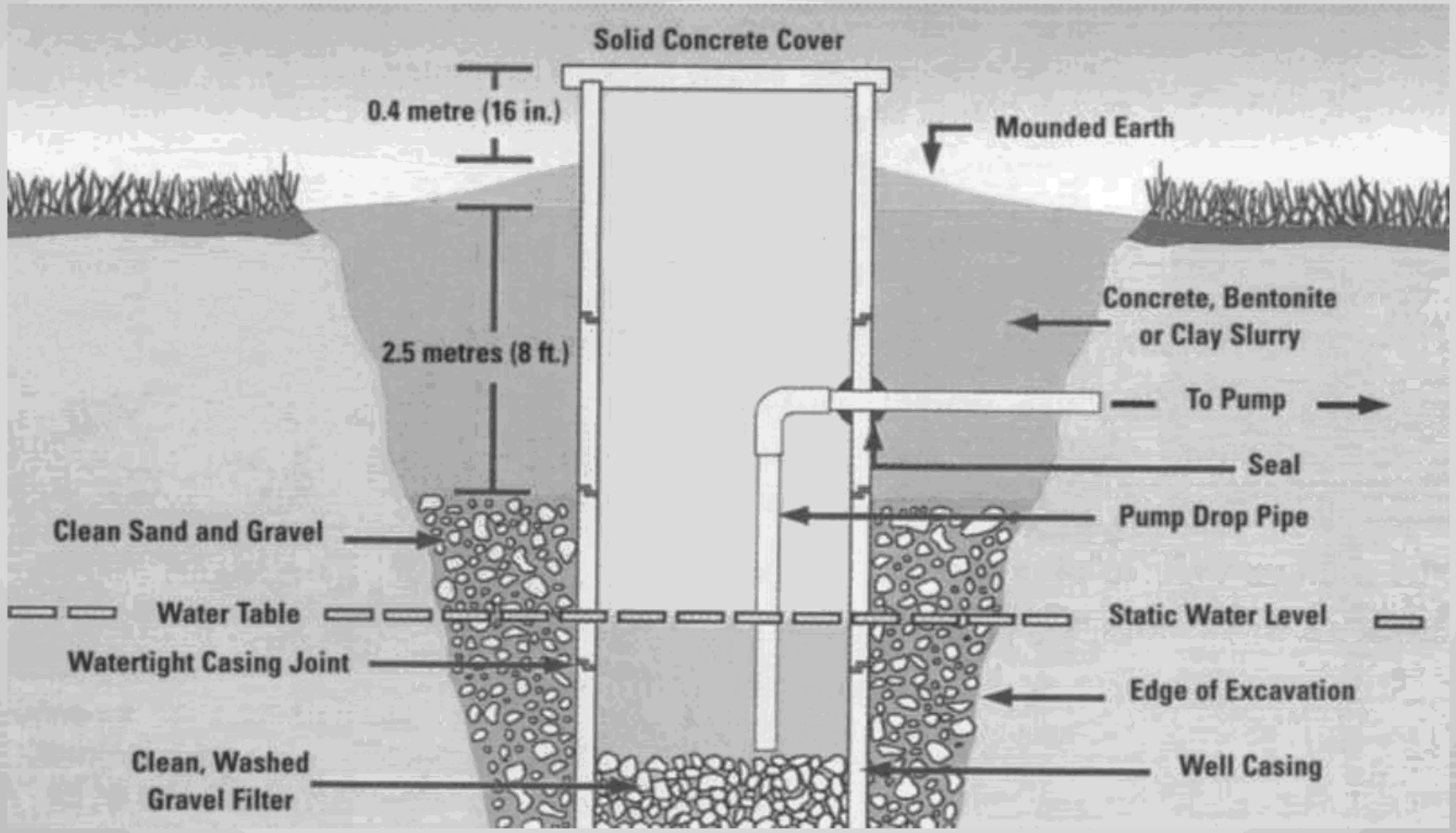
Well Construction Basics

- What is a well ?
- What kinds are there ?
- Why do we care ?

Dug wells

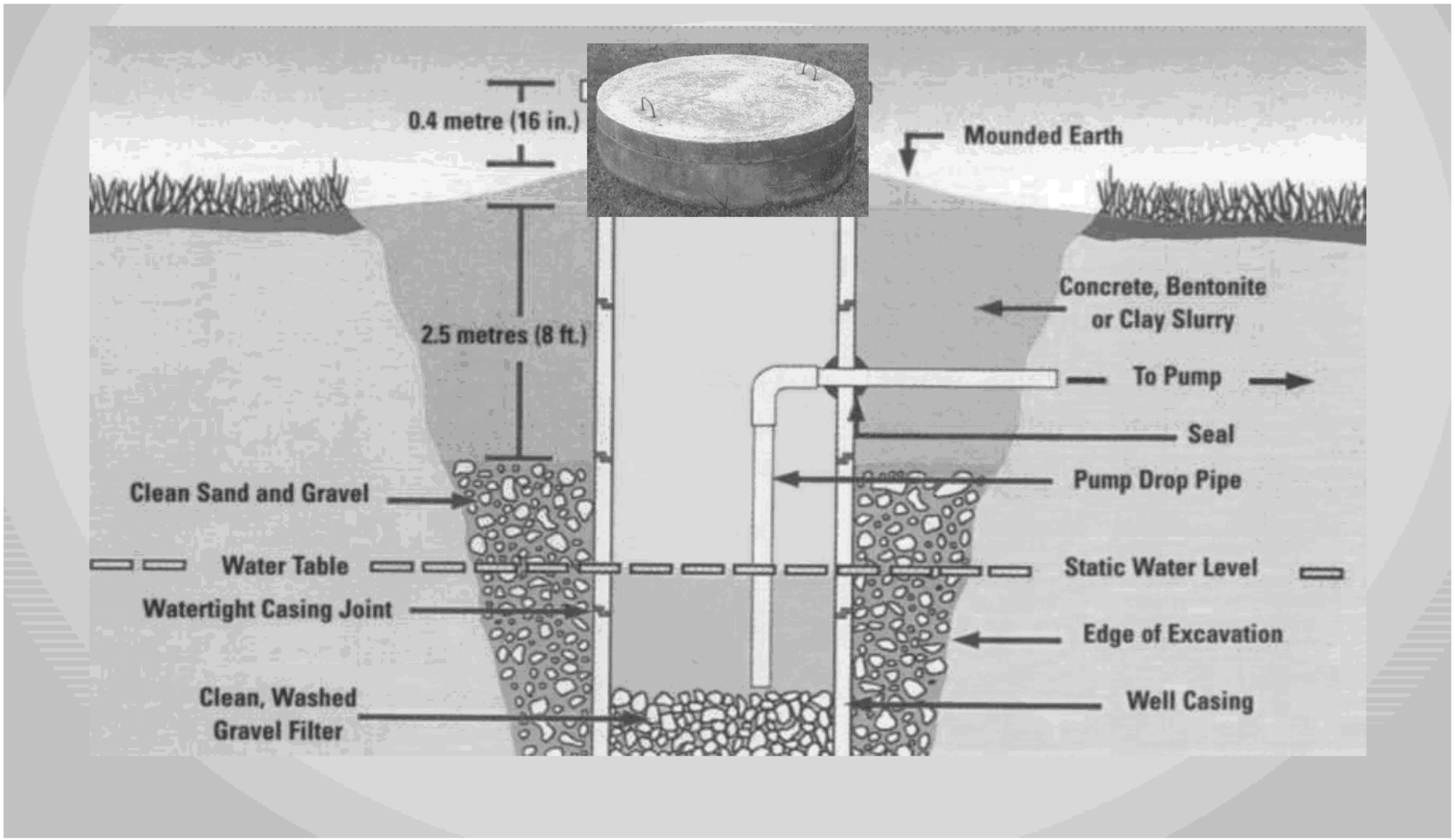
- Large diameter – up to 3 feet in diameter.
- Shallow – less than 50 feet in depth.




Solid Concrete Cover
0.4 metre (16 in.)
Mounded Earth
Concrete, Bentonite
or Clay Slurry
2.5 metres (8 ft.)
To Pump
Seal
Pump Drop Pipe
Clean Sand and Gravel
Water Table
Static Water Level
Watertight Casing Joint
Edge of Excavation
Clean, Washed
Gravel Filter
Well Casing

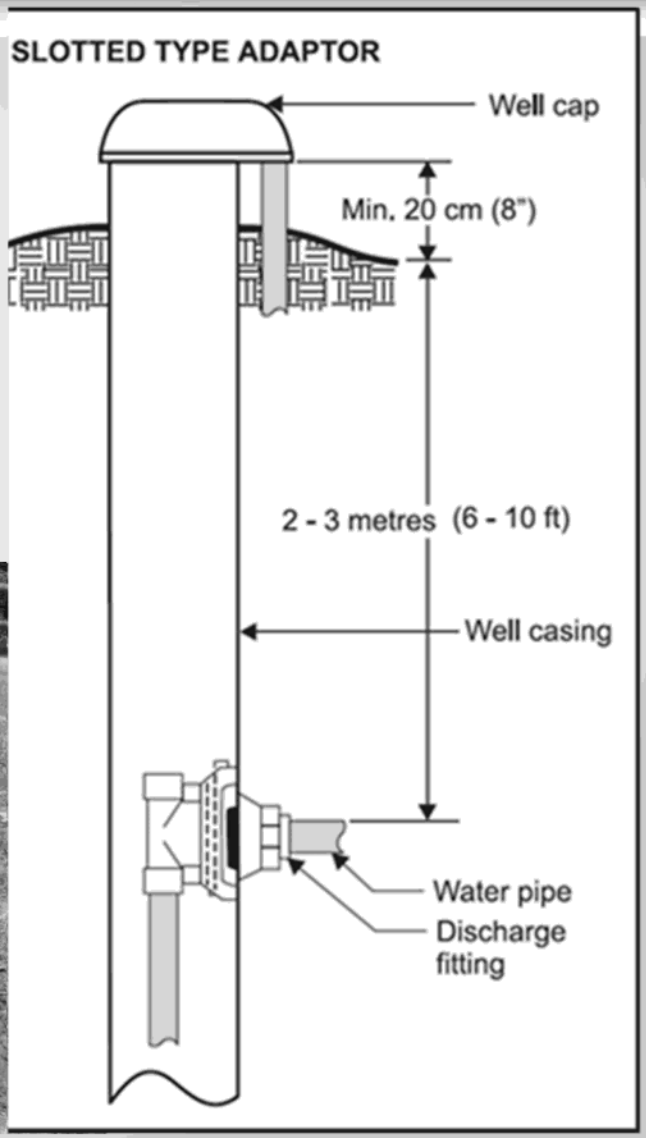
BRITISH COLUMBIA

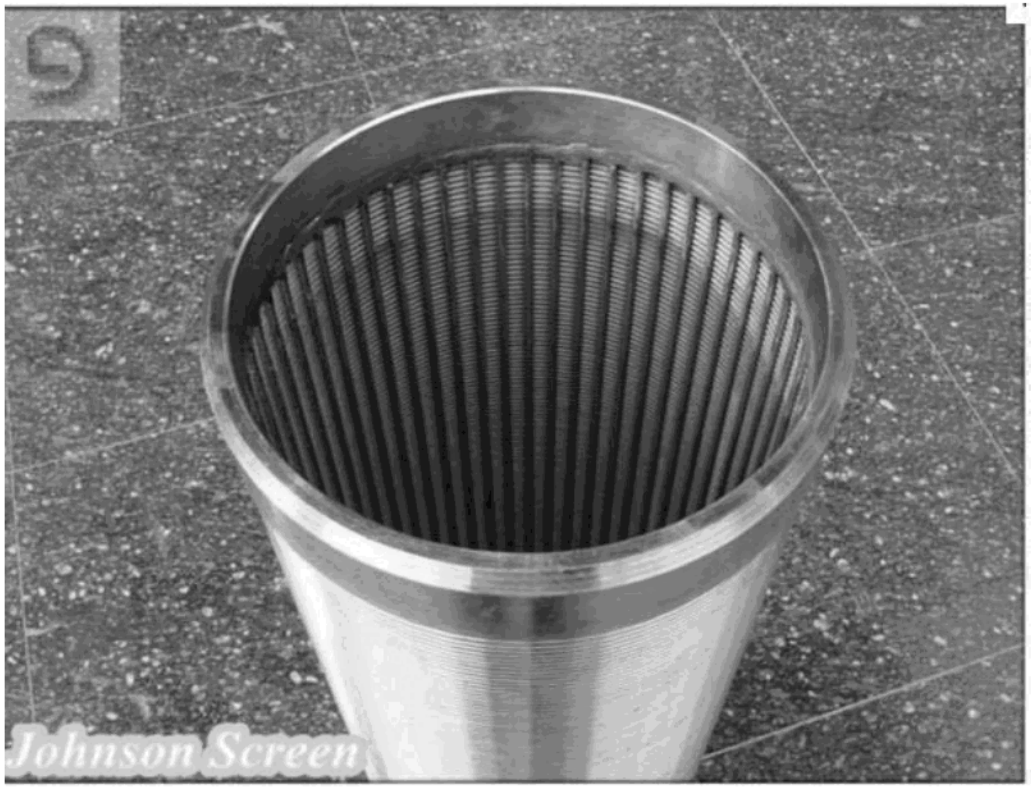
Ministry of Forests, Lands and Natural Resource Operations

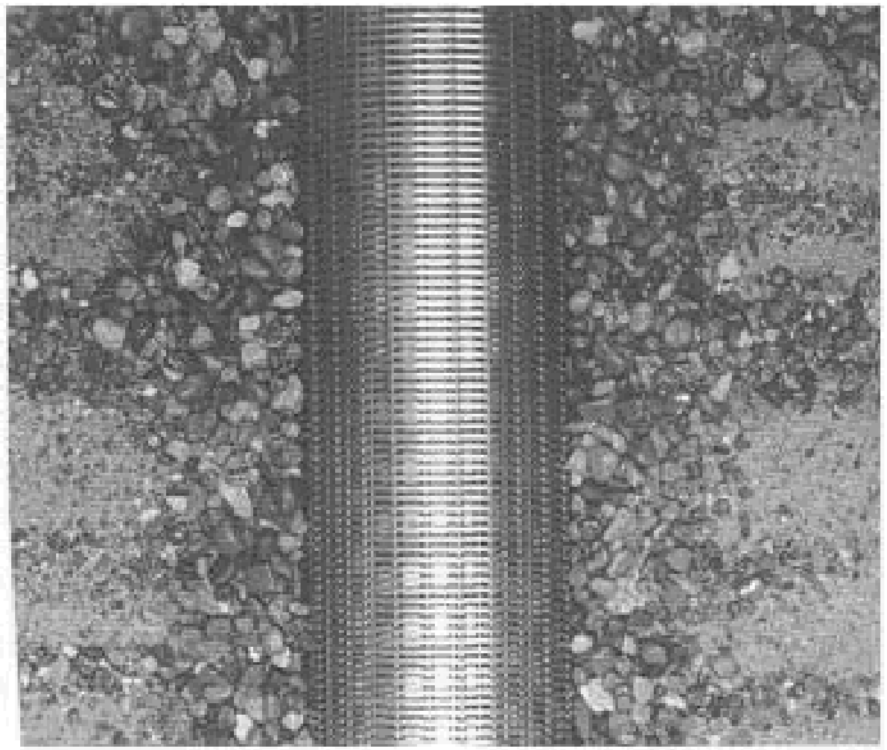


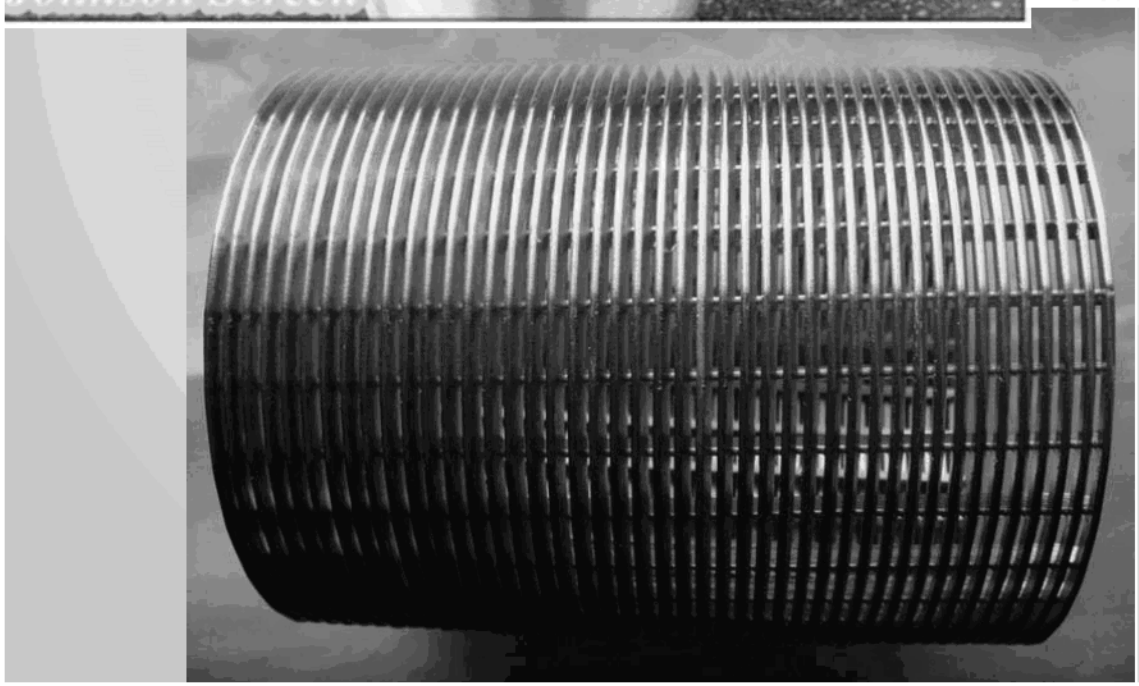
Drilled wells

- Usually 6 inches in diameter for domestic wells.
- Depths can vary depending on the aquifer
- Unconsolidated (S&G) or Bedrock



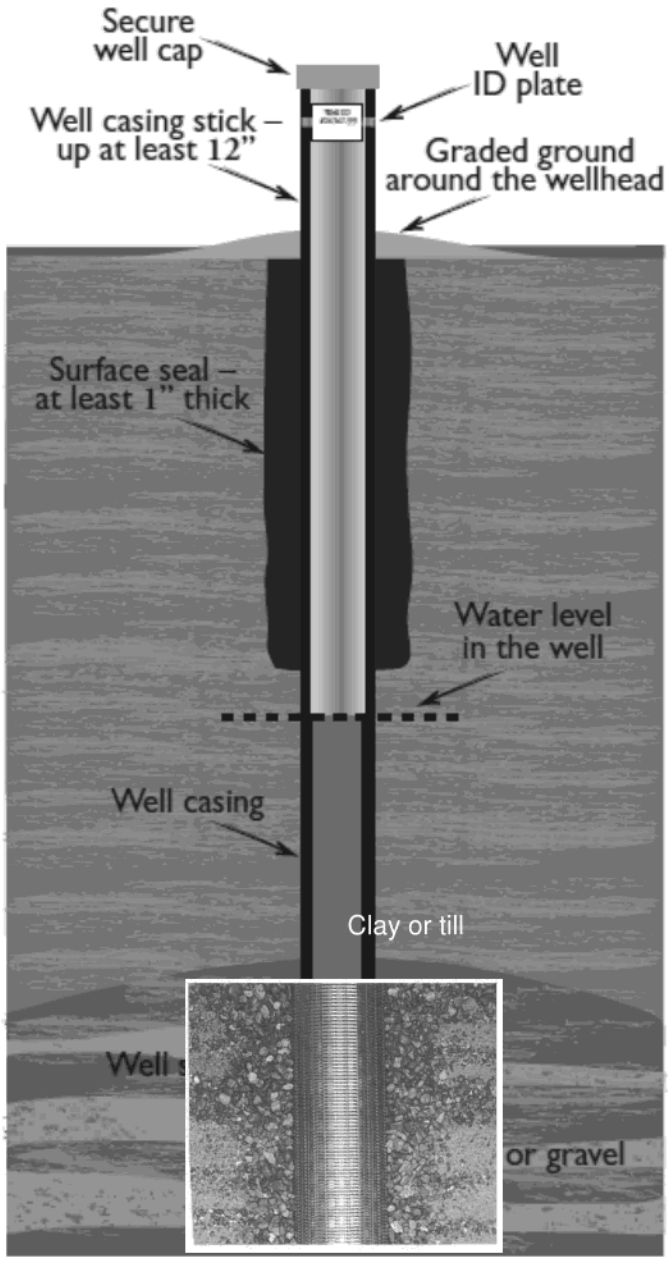

Johnson Screen



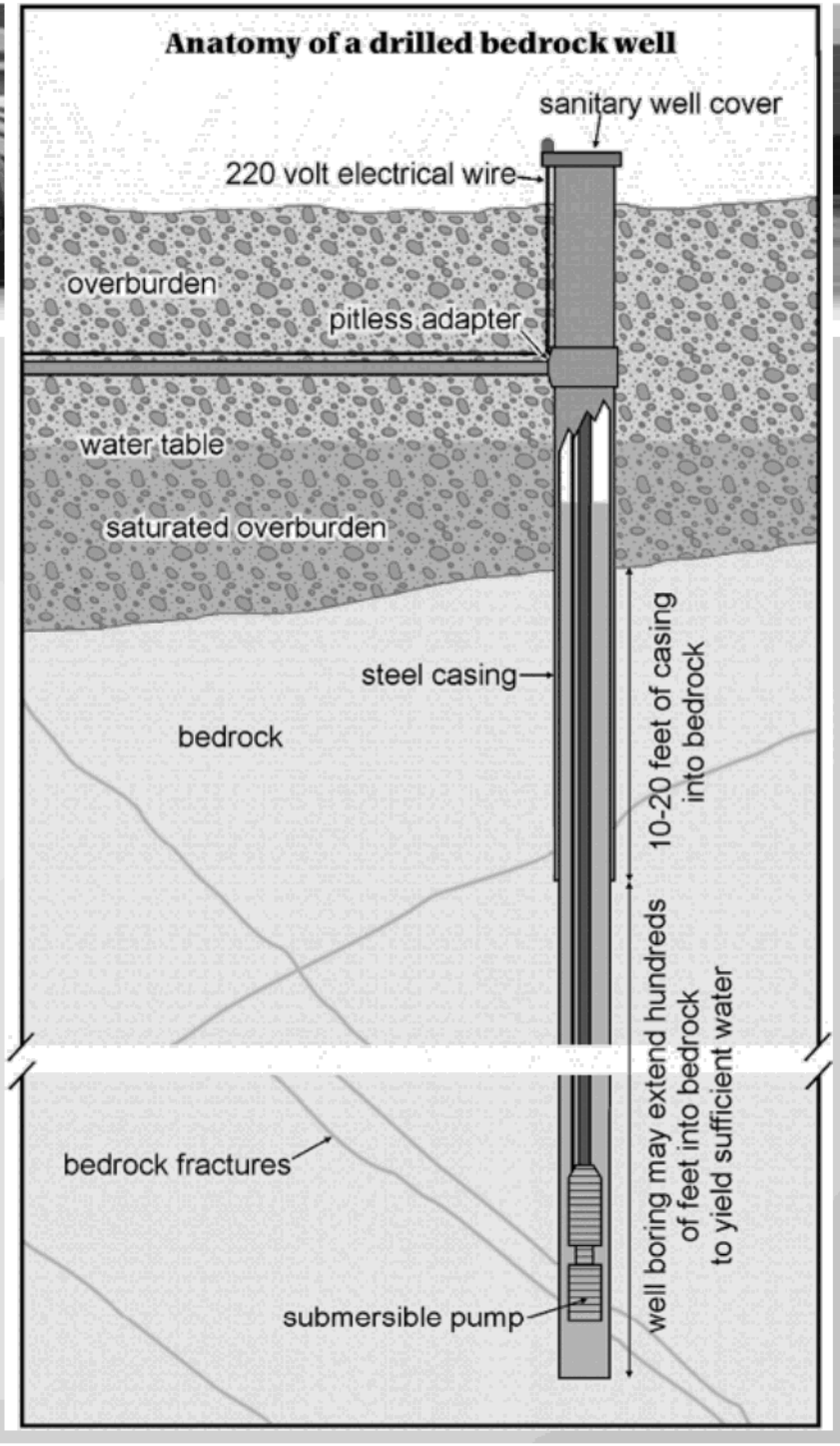


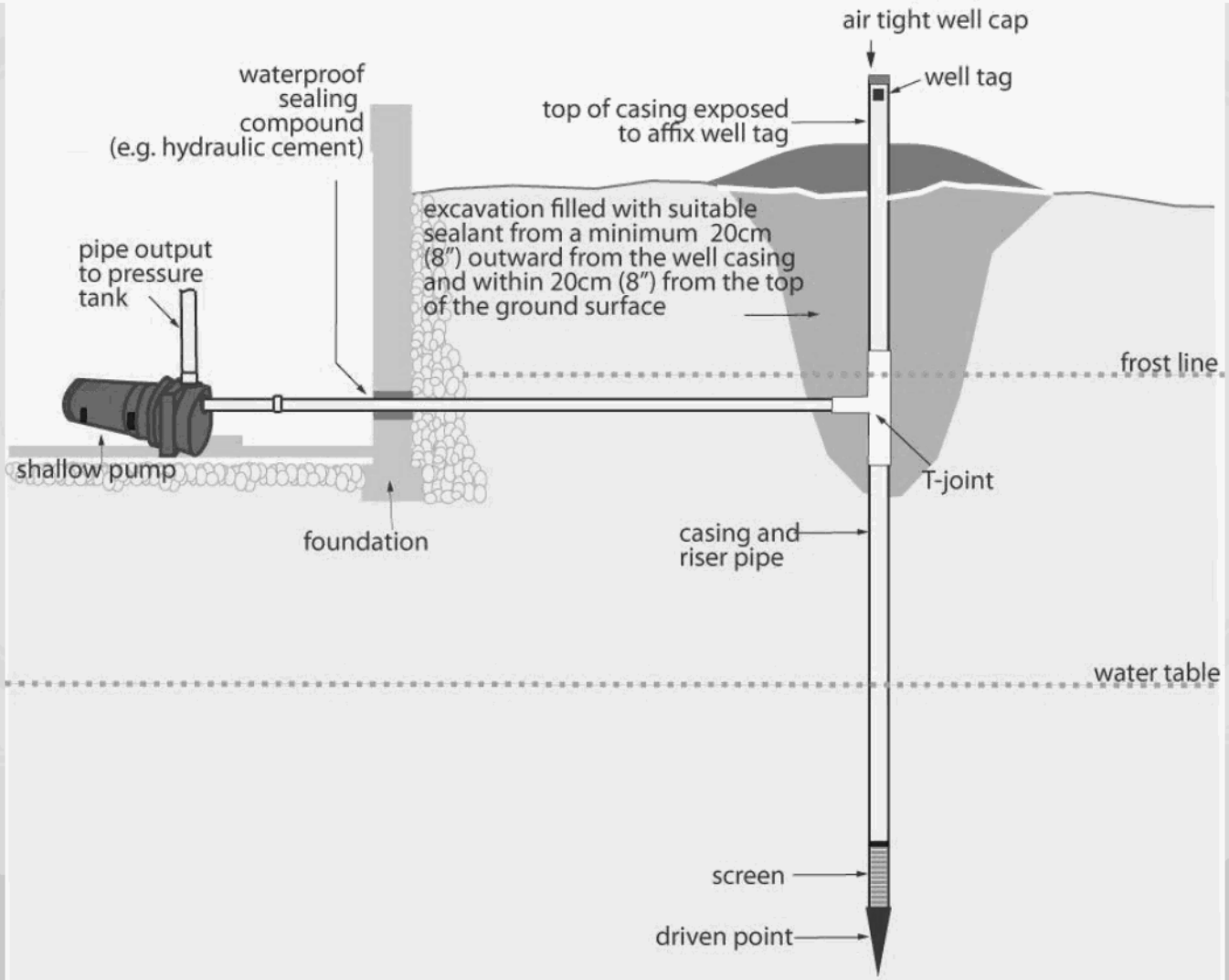

TradeTT.com

Drilled well: Unconsolidated (Sand and Gravel) Aquifer



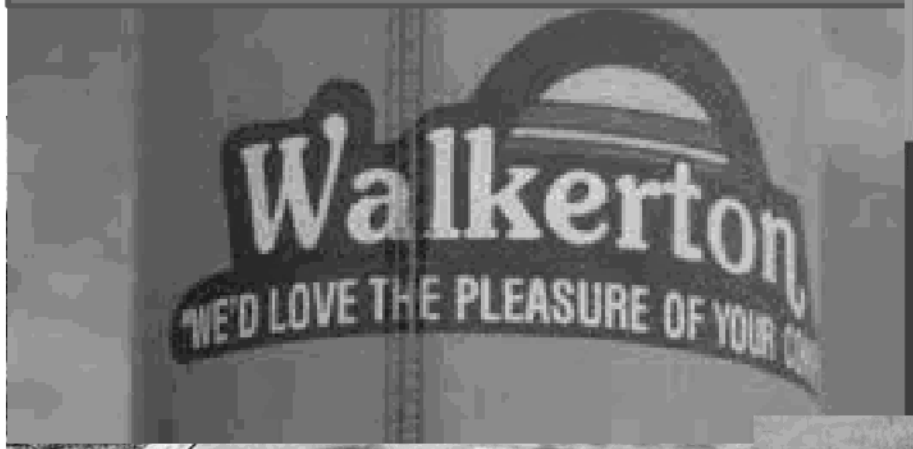
Drilled well: Bedrock Aquifer

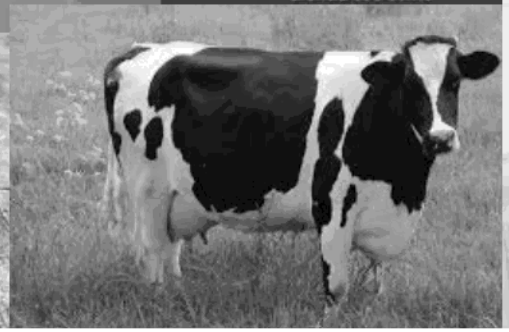



air tight well cap
well tag
top of casing exposed to affix well tag
waterproof sealing compound (e.g. hydraulic cement)
excavation filled with suitable sealant from a minimum 20cm (8") outward from the well casing and within 20cm (8") from the top of the ground surface
pipe output to pressure tank
frost line
shallow pump
T-joint
foundation
casing and riser pipe
water table
screen
driven point

Why is it Important to Protect Groundwater?

Old wells putting water at risk. Unsealed and forgotten, they give contaminants a speedy route to groundwater.





History of Groundwater Legislation in BC:

Prior to 2004 – no regulation of well construction or groundwater use. Voluntary code of practice only.

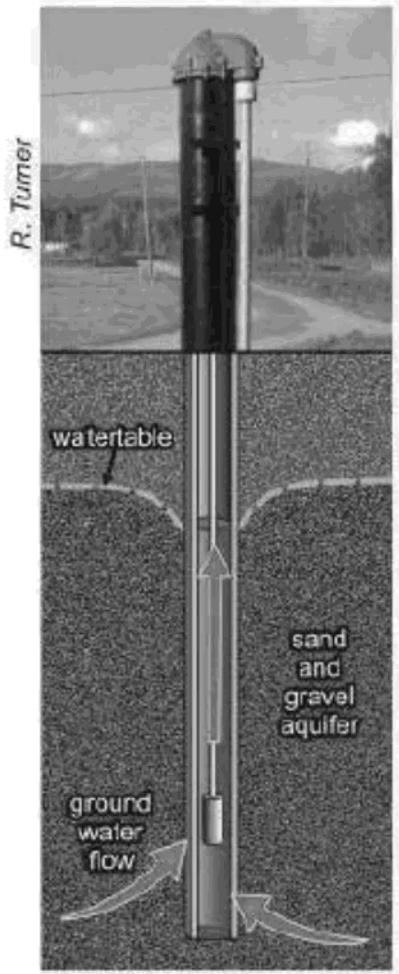
Nov 1, 2005 – *Water Act* amended to include groundwater provisions. Ground Water Protection Regulation introduced.

February 29, 2016 – The *Water Sustainability Act* and the Groundwater Protection Regulation came into force. Note this includes licensing for all wells except single domestic.

Water Sustainability Act
Part 3, Division 3

Groundwater Protection Regulation

To promote sustainable use and protection of BC's aquifers by specifying requirements for wells to be properly constructed, maintained, and, at the end of their service, deactivated and decommissioned.



A well draws groundwater from an aquifer.

What is a Well?

It's a well if it is used for:

- Groundwater extraction (Water Supply)
- Groundwater monitoring/remediation
- Geotechnical investigation
- Geoexchange (>5 m deep)

Wells are not (s. 3 & 4 of GWPR):

- Boreholes used for oil & gas or geothermal exploration (deep wells)
- Openings in the ground used for drainage
- Drill holes made for mineral exploration

Qualified Well Drillers

	Water well driller	Geotech / env driller	GX driller	Well pump installer
Water supply well	✓			
Monitoring well	✓	✓		
Recharge/injection well	✓			
Dewatering well	✓			
Remediation well	✓	✓		
Geotechnical well	✓	✓		
Closed-loop geoexchange well			✓	
Well pump in water supply, injection or dewatering well	✓			✓

Well Identification

- Drillers to attach well identification (ID) plate to new water supply wells
- Well ID plate must be attached on all existing public water supply wells and then submit Schedule 2 form to MOE
- No well identification plate required for monitoring wells or geotechnical wells (boreholes, test-pits and closed-loop geothermal wells)

Photo by J. Maxwell

Well tag number (WTN) vs well ID number

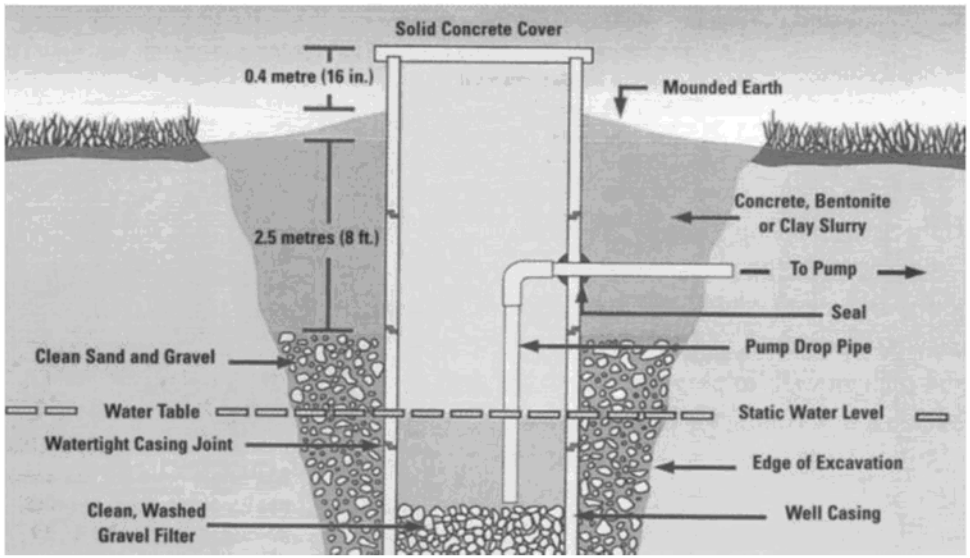
- WTN is a number in the WELLS database assigned to a well record
- Well ID plate number is the number of the stainless steel plate attached to a well
- The two numbers do not generally correspond

Well Caps and Covers

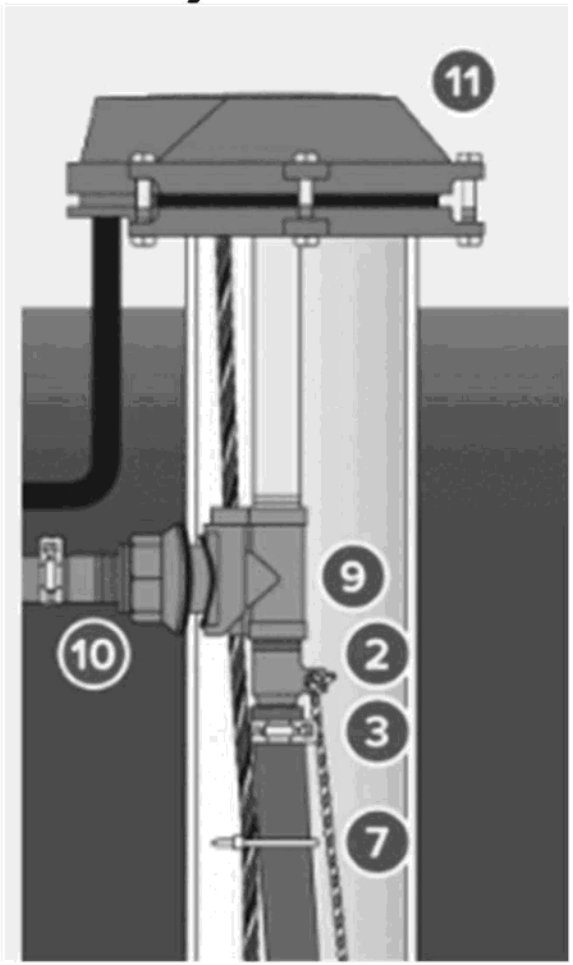
- All wells are required to have a proper cap regardless of when they were drilled
- New water wells (including open-loop geothermal wells) and monitoring wells must have a secure cap
- New geotechnical wells (boreholes, test pits, and closed loop geothermal wells) do not require cap
- Existing wells must be capped by November 1, 2007

Photo by S. Kenny

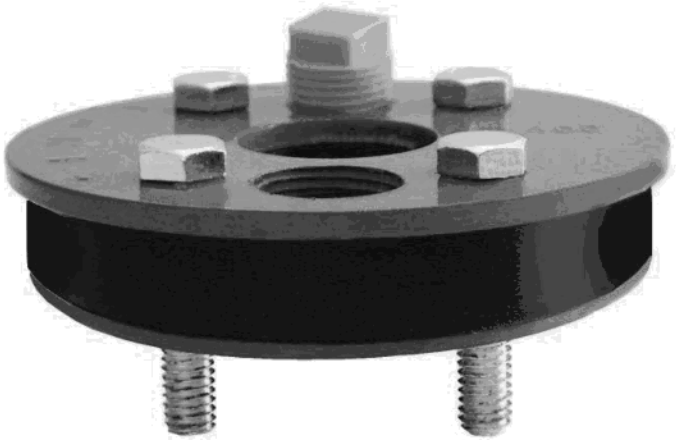
Dug well caps

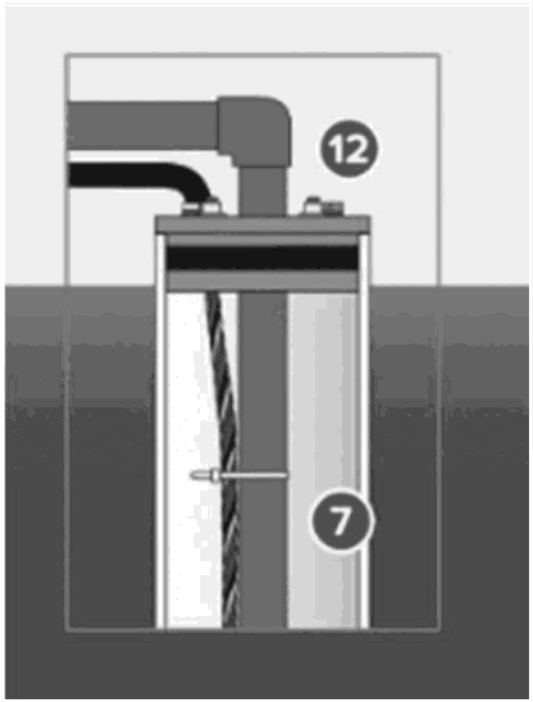


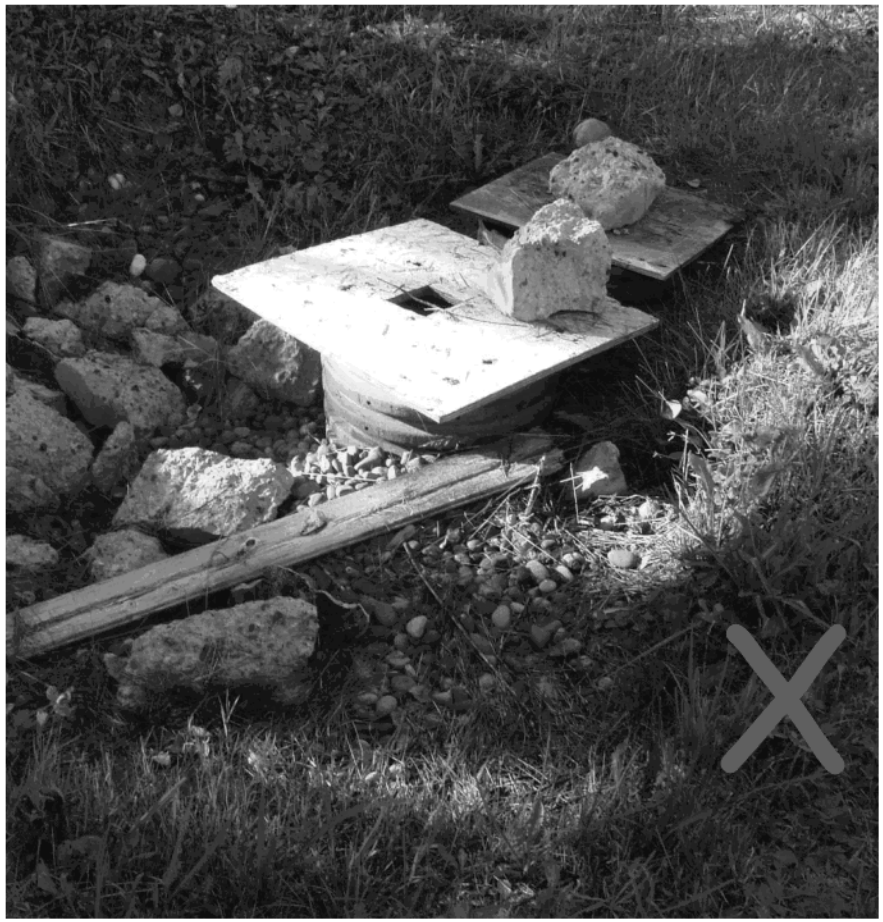
Drilled well caps: Pitless Adapter style



Drilled well cap: Well Seal / Sanitary Seal



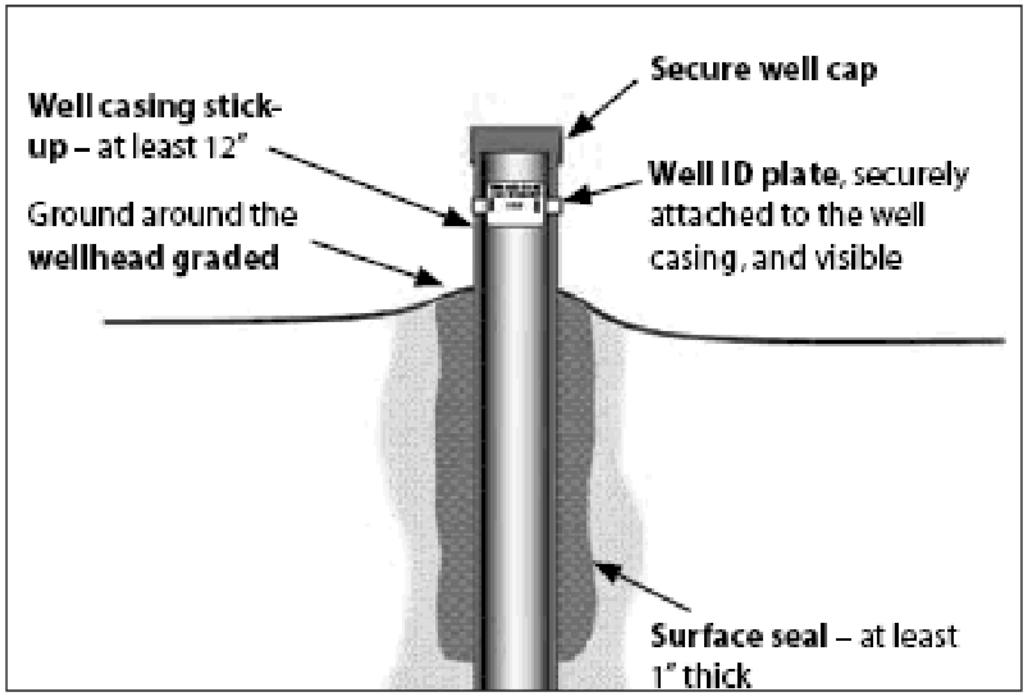




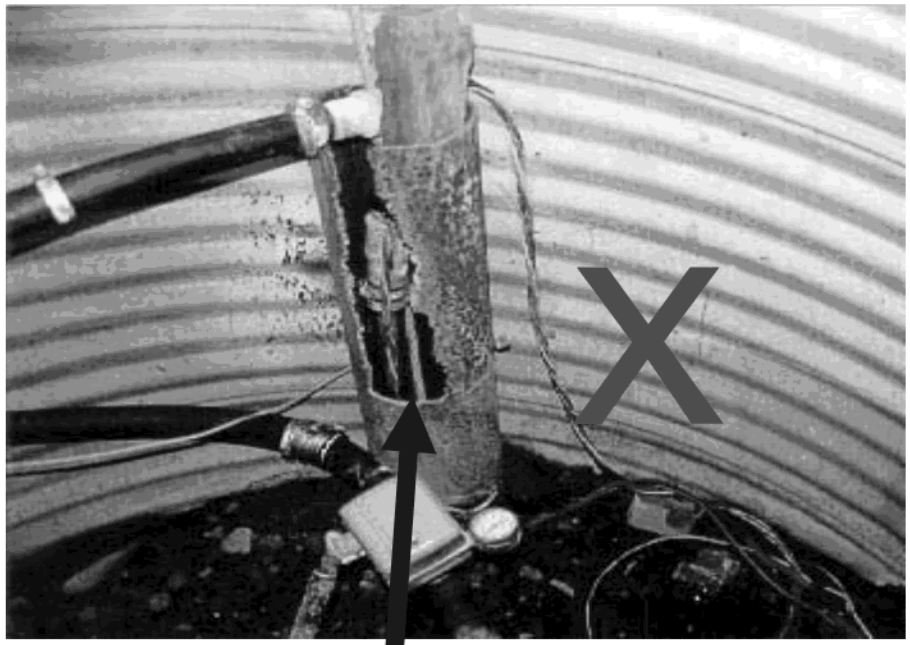
Well must have a secure, vermin proof cap

Protection of Wellhead and Floodproofing

- Sanitary and physical protection of the wellhead
- A new well must have a minimum stick-up of 0.3 m (1 foot)
- Ground around a new well must be graded to prevent ponding of water around the wellhead



Protection of Wellhead

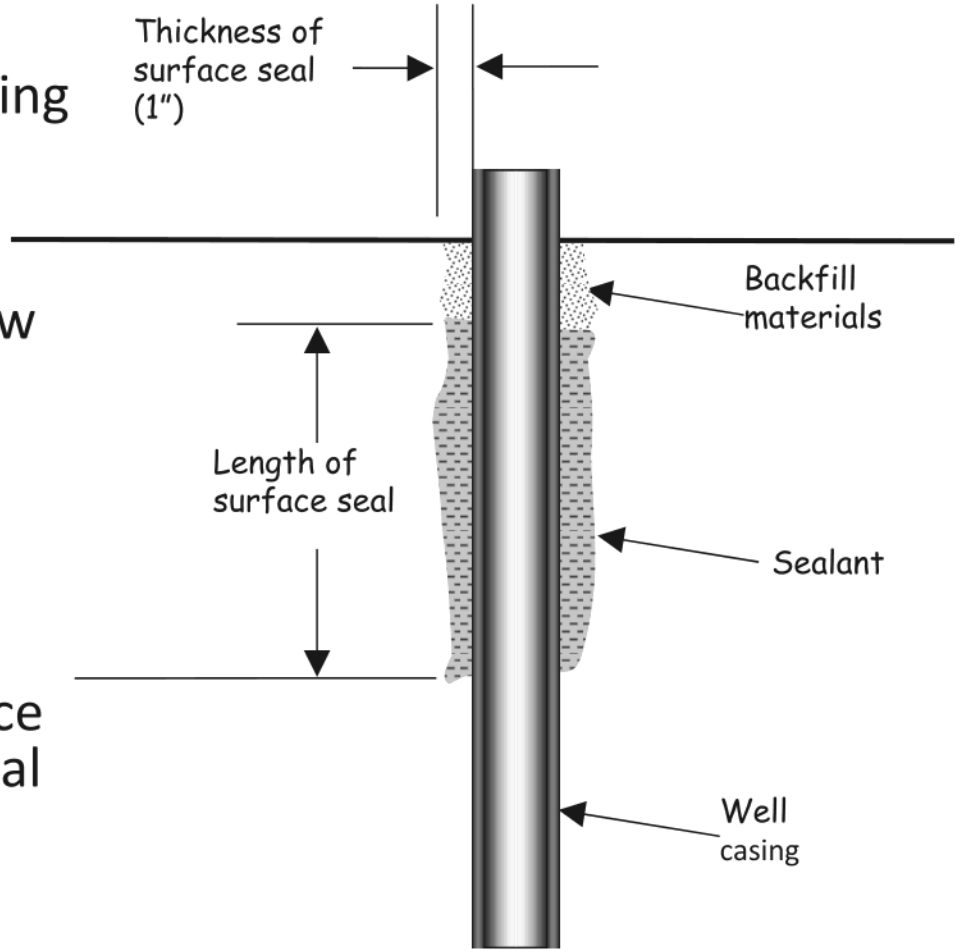


Well Casing deliberately cut to drain flood water

No stickup and broken well cap

Surface Sealing

- Prevent contaminants from entering the ground along the outside of the casing
- Surface seal required for most new wells
- No surface seal required for:
  - Geotechnical wells, including boreholes and test pits.
  - Monitoring wells with depth less than 15 feet.
- Owner of a new well with a surface seal must maintain the surface seal



Slide 32

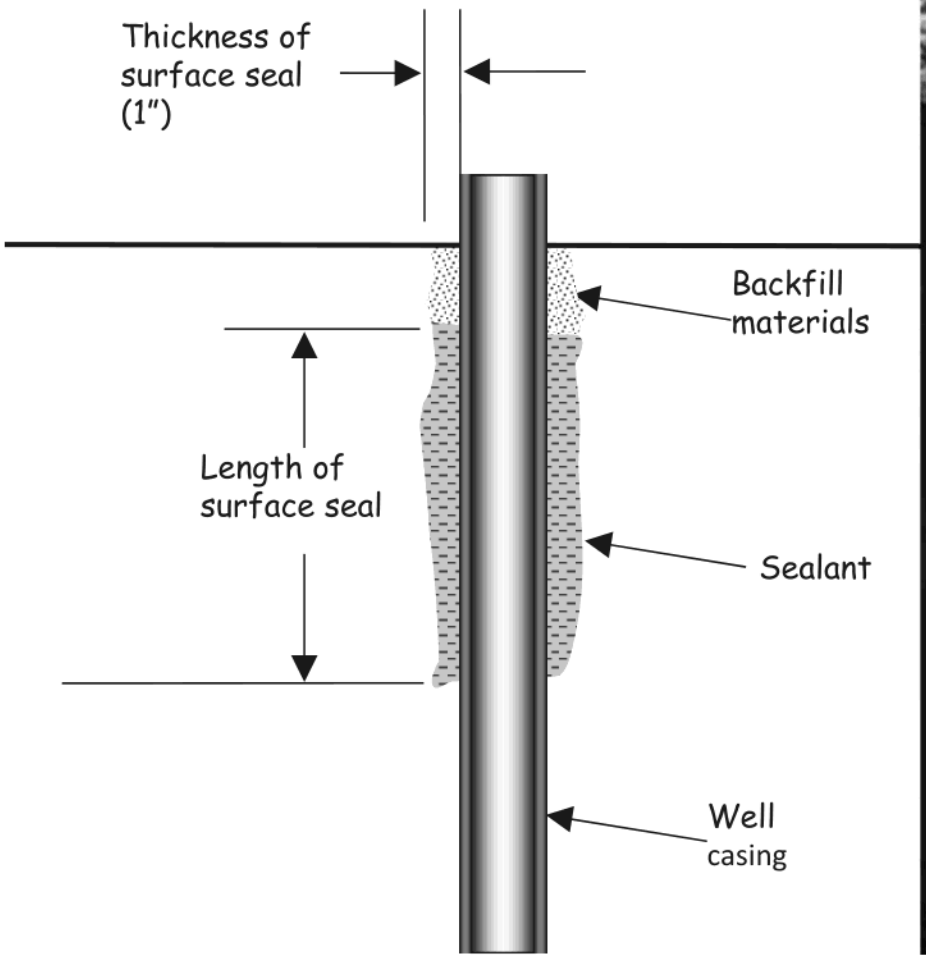
EEF1 I couldn't find where it says that geotechnical and monitoring wells are exempt from needing a surface seal.

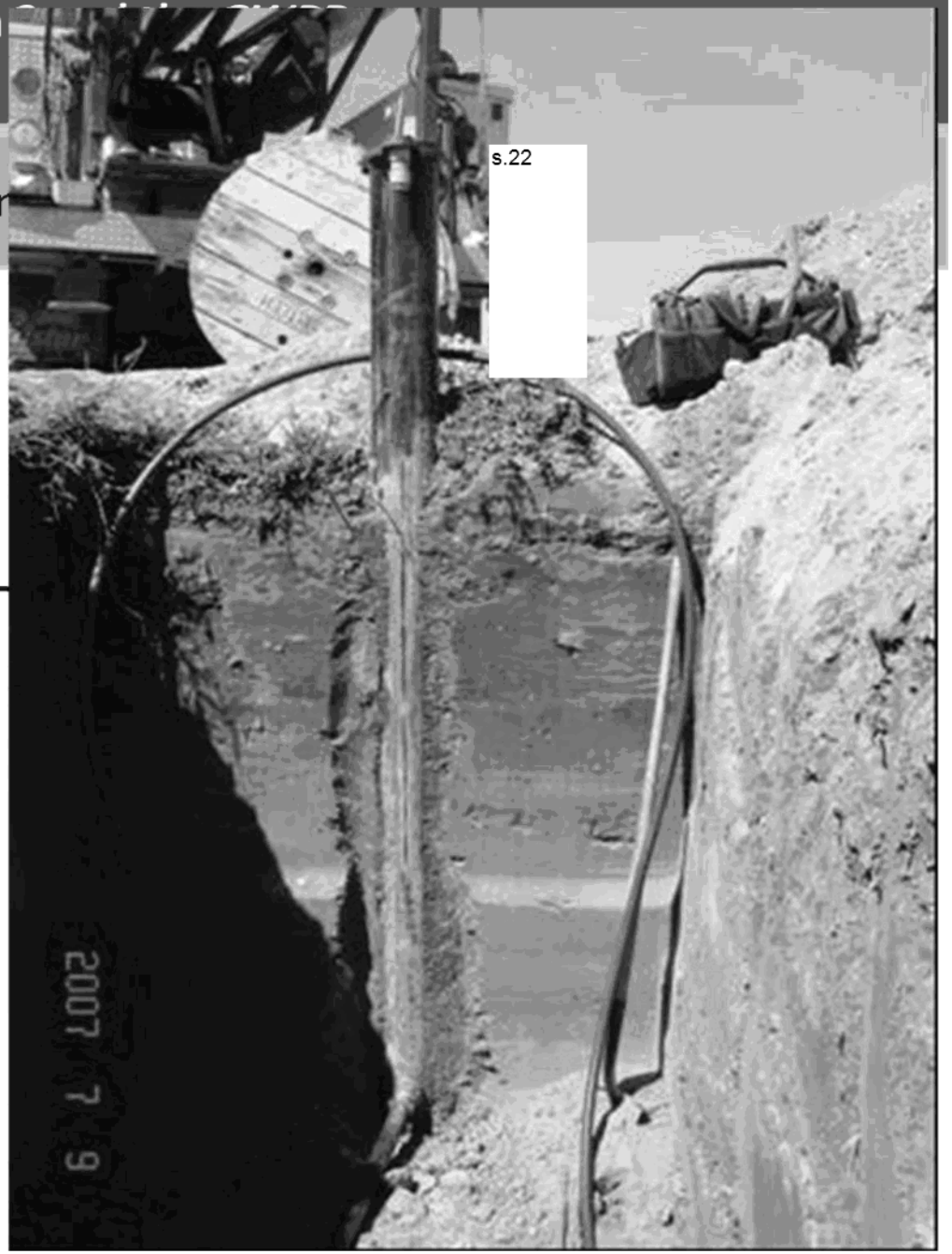
Not sure where Table 1 came from.
Elsliger, Emily FLNR:EX, 2016-10-12

EEF3

WSA Part 3, Division

Introduction | **Legislation** | Site Inspection





Slide 33

EEF3 I couldn't find where it says that geotechnical and monitoring wells are exempt from needing a surface seal.

Not sure where Table 1 came from.
Elsliger, Emily FLNR:EX, 2016-10-12

Surface Sealing

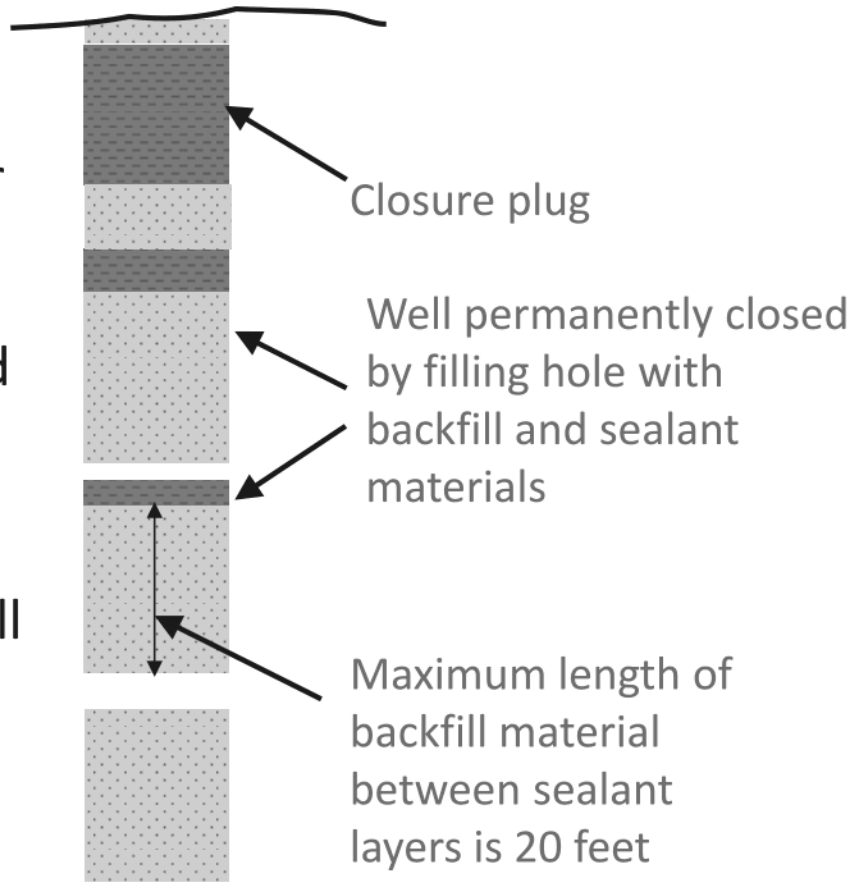
- Example of wells with unfilled annular spaces – retrofitting of surface seal is recommended

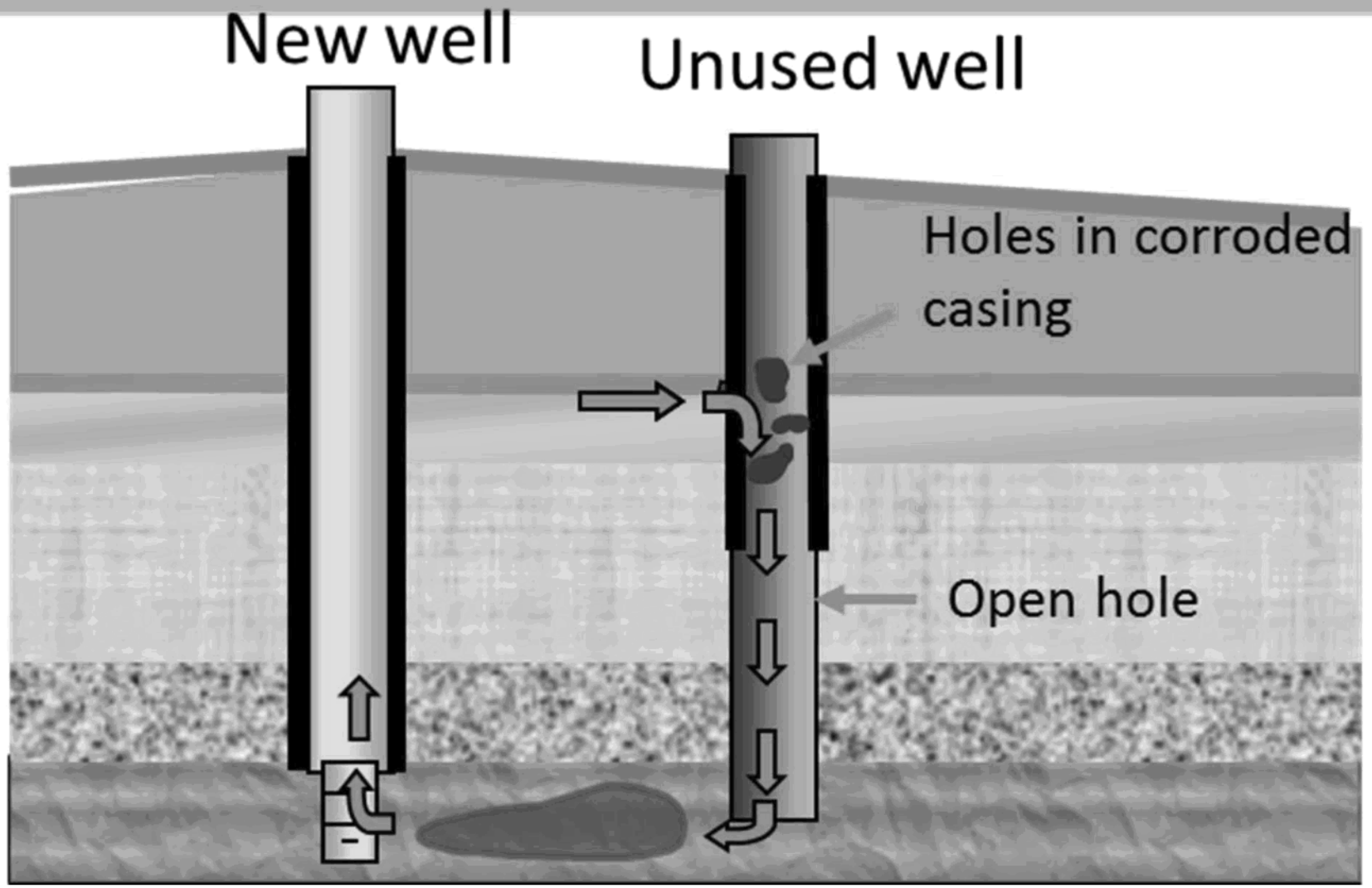
Picture: S. Kenny

Picture: P. Epp

Deactivating or Decommissioning (Closing a Well)

- Remove pathways for groundwater contamination
- Wells not in use must be deactivated or decommissioned
- A well is permanently closed by backfilling with a combination of fill and sealant materials
- Requirements vary by depth and well type
- A well must be closed by a qualified well driller and a well closure report is required



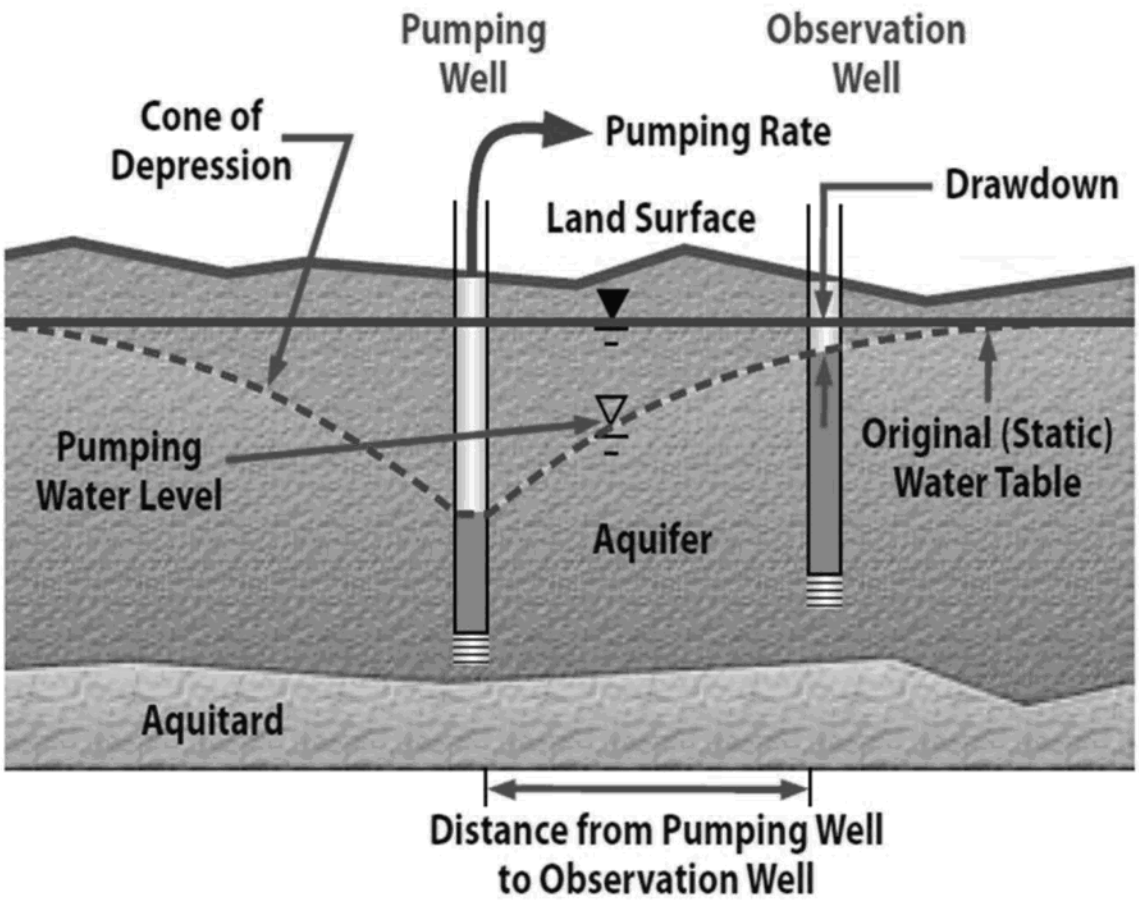

New well
Unused well
Holes in corroded casing
Open hole

Post WSA GWPR

Well Siting

- A new water supply or permanent dewatering well must be >15m away from an existing water supply well
- Minimize risk of excessive well interference
- The owner of an existing water supply well can drill one additional well within 15 metres of the existing well
- If not feasible to meet siting requirements, a professional can recommend an alternative setback distance that is acceptable to the engineer
- No setbacks from rivers, lakes, etc.

Well Siting


Pumping Well
Observation Well
Cone of Depression
Pumping Rate
Drawdown
Land Surface
Pumping Water Level
Original (Static) Water Table
Aquifer
Aquitard
Distance from Pumping Well to Observation Well

Thermoplastic Casings, Liners, & Sounding Tubes

Thermoplastic casings, liners, sounding tubes in water supply wells must be certified for use for drinking water by:

- Canadian Standards Association;
- Underwriters' Laboratories of Canada;
- American Standards Testing and Materials;
- National Sanitation Foundation.

Requirements for Well Pits

- A person must not construct a well pit for a new or altered water supply well, unless the well pit is:
  - Designed and supervised by a professional;
  - Designed so water that enters the well pit does not pond in the well pit and is conveyed away

❖ **Safety precaution: Confined spaces – Do not go into a well pit or subterranean pump house! Anoxic/harmful gas.**

Photo by L. Lyons

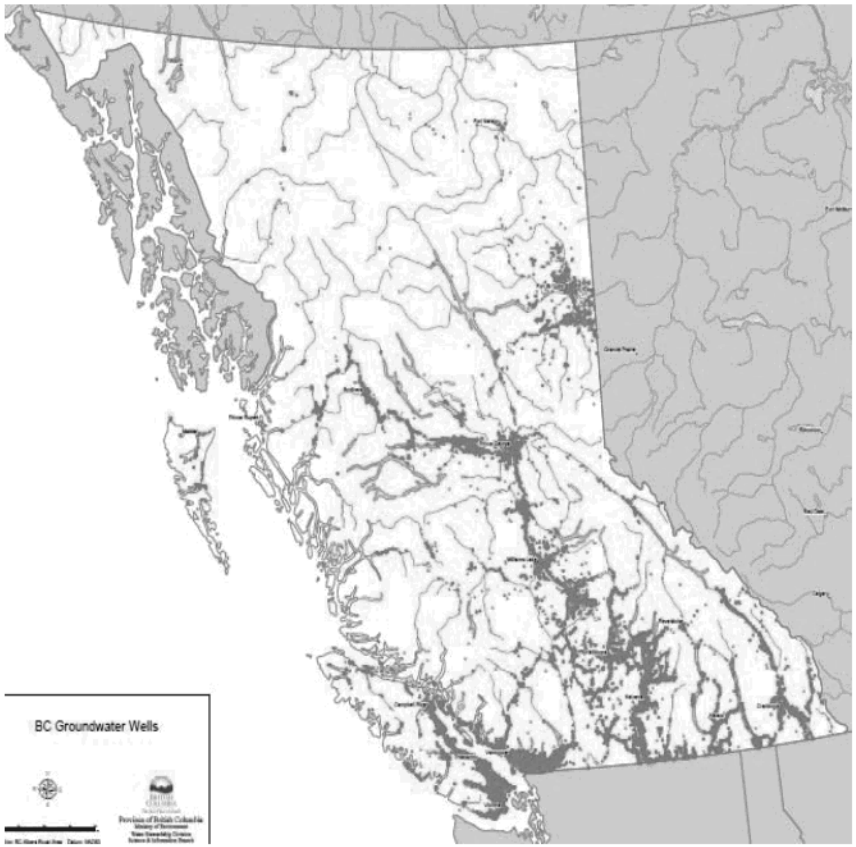
Minimum well pump standards

- Well pump installation must not cause movement of the casing
- Requirements for installing pitless adaptors (e.g., water tight seal, prevent corrosion of different metals), and backflow prevention (permanent well pumps)
- Requirement to repair surface seal
- Hand pumps must meet requirements of a well cap
- Existing water supply wells equipped with a hand pump that do not meet the requirements will have until March 1, 2018 to ensure that the hand pump is upgraded or replaced so that it meets the requirements.

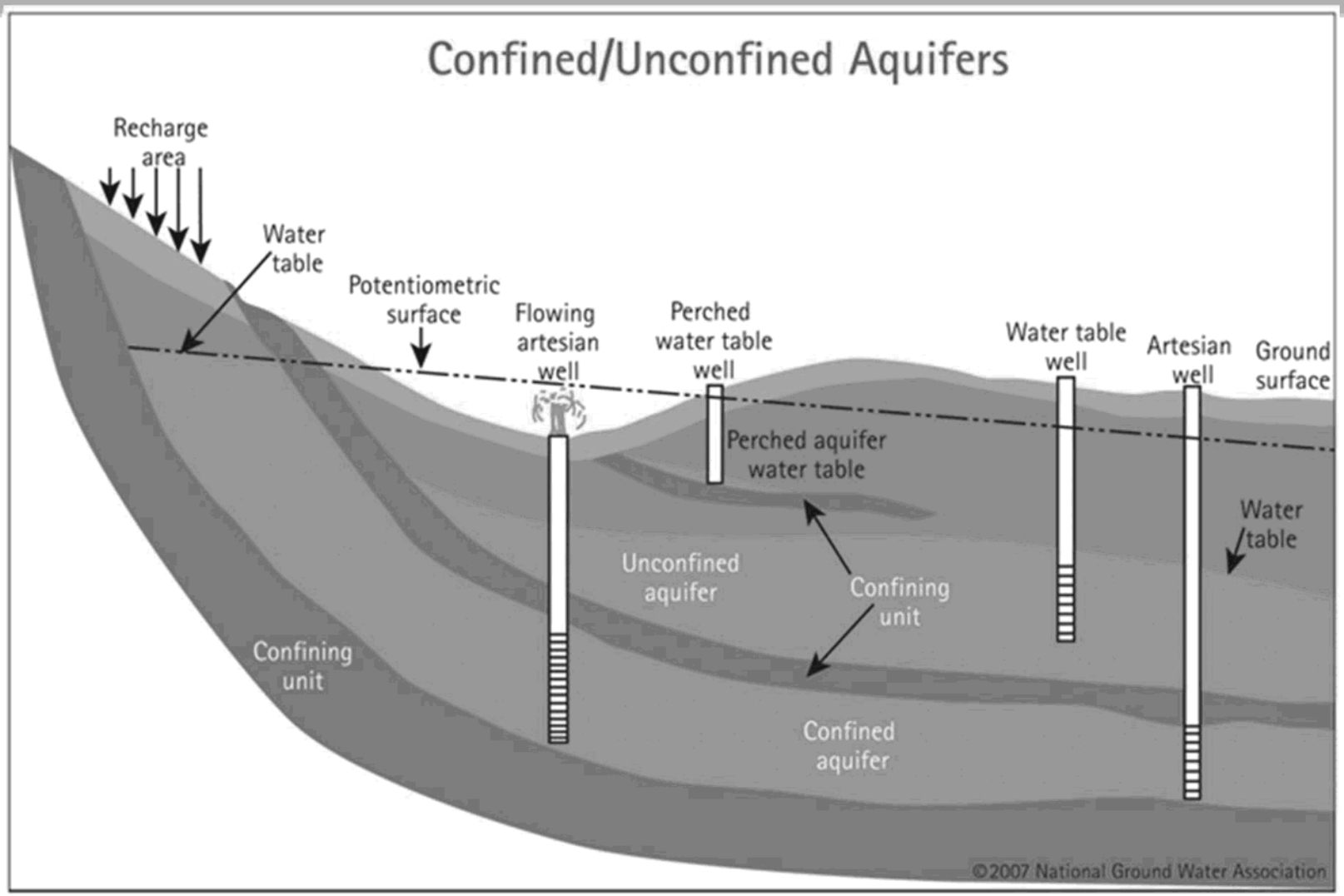
Well Maintenance Requirements

- Prohibiting storage of foreign matter within 3m of the wellhead of a water supply well, or allow any foreign matter to travel within 3m of the well
- Maintain and protect equipment installed to control artesian flow
- Protecting the sounding tube in a well
- Maintaining clear, safe access to the well

Well Reporting Requirements



- Mandatory submission of construction reports for new water supply wells
- Geoexchange wells would require one construction report per system submitted to the comptroller (all reports submitted to the owner)
- All reports related to flowing artesian wells to be submitted to the comptroller


Confined/Unconfined Aquifers
Recharge area
Water table
Potentiometric surface
Flowing artesian well
Perched water table well
Water table well
Artesian well
Ground surface
Perched aquifer water table
Water table
Unconfined aquifer
Confining unit
Confining unit
Confined aquifer
©2007 National Ground Water Association

Requirements for Flowing Artesian Wells

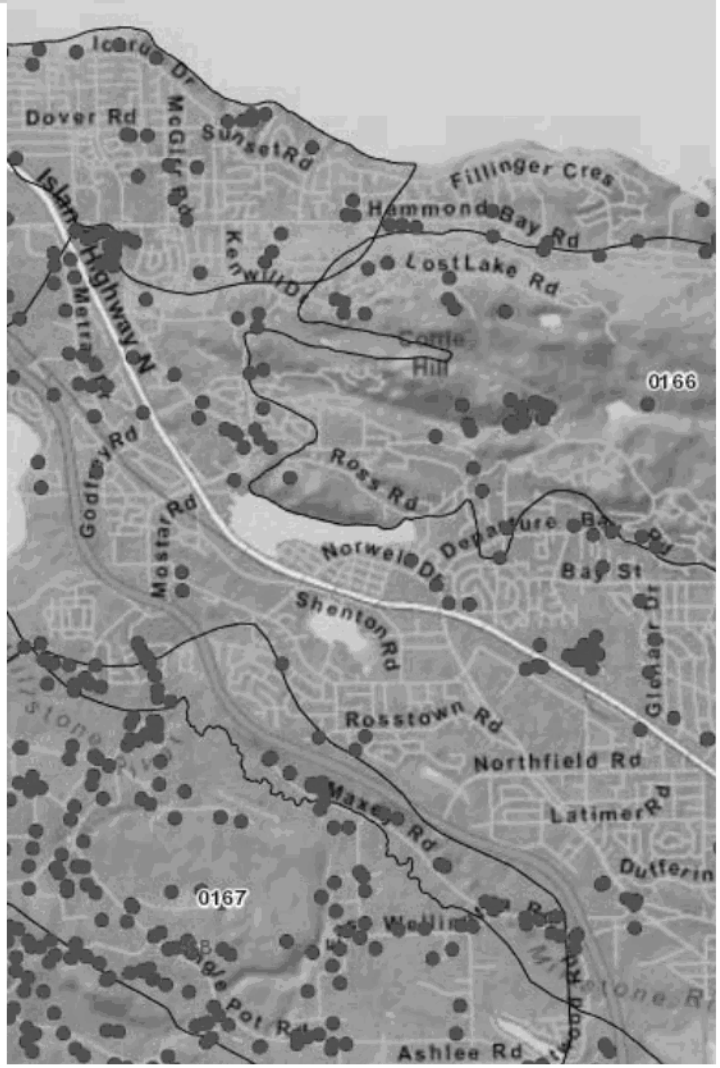
- **Artesian flow must be stopped or brought under control (WSA s. 52, 53)**
- **Responsible parties:**
  - Driller at time of construction
  - Well owner or land owner for existing well
- **"Under control" means:**
  - Clear of sediment
  - Entirely conveyed through casing (if applicable)
  - Can be turned off indefinitely
  - Does not pose a threat to property, public safety or the environment

Controlling Artesian Flow

- Artesian flow may be managed in accordance with directions of a decision maker, if:
  - Due to exceptional circumstances it is not practicable to bring artesian flow under control, and
  - The artesian flow can be managed without posing a threat to property, public safety or the environment
- Require well construction reports and well decommission reports for all flowing artesian wells, regardless of the class of the well

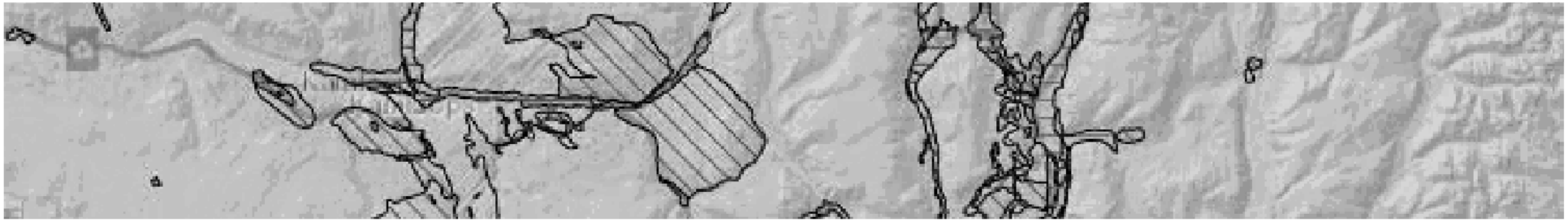
Site Inspection Planning:

1. Pre-trip planning (desktop review)
2. Field equipment
3. Field safety
4. Inspection Form Use & Key Ticketable Offences



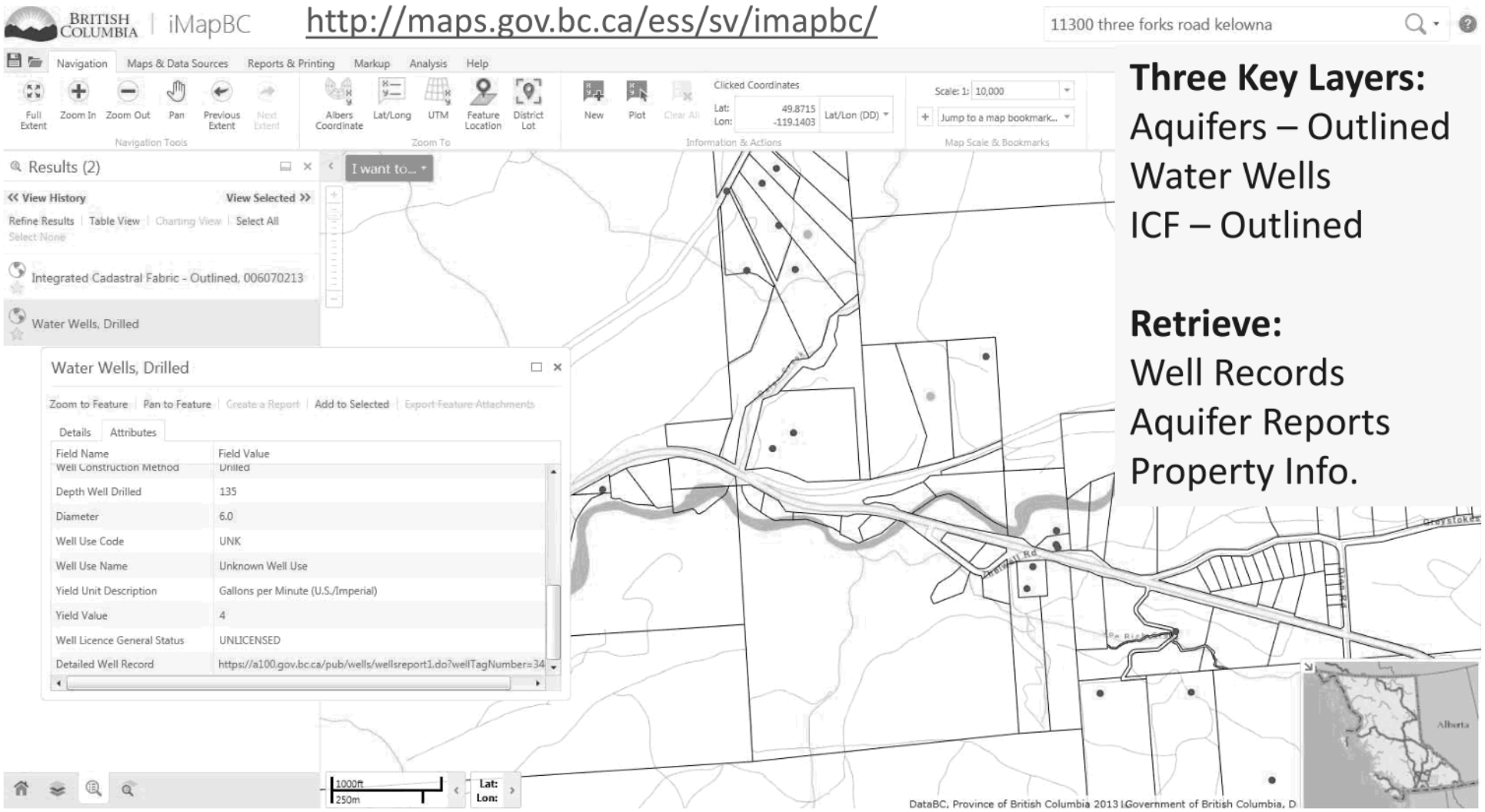
Site Inspection Planning:
Pre-trip planning and desktop review

- Obtain available information on property owner, property, and the well (iMapBC, WELLS, complaint information, etc.)
- Form a general impression of the area (number of wells, types of aquifers, etc.)
- Gather specific directions to the site (maps to the site, maps of the site, etc.)
- Contact the well owner to arrange a visit



WSA Part 3, Division 3 and the GWPR

Introduction | Legislation | **Site Inspections** | Ticketable Offences | Other Considerations



Three Key Layers:
Aquifers – Outlined
Water Wells
ICF – Outlined

Retrieve:
Well Records
Aquifer Reports
Property Info.

Accessing Well Information

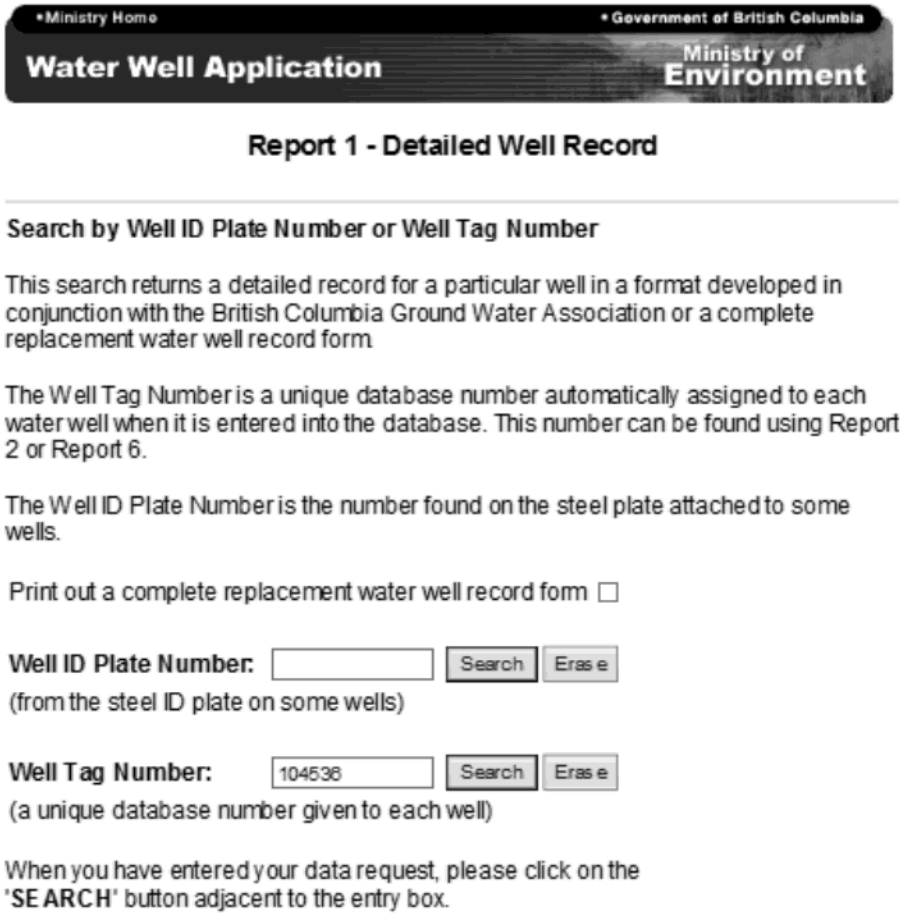
WELLS DATABASE

https://a100.gov.bc.ca/pub/wells/public/common/wellsreport1.jsp

Not all wells are in WELLS

- Water Systems: yes
- Wells after Feb 29 2016: yes
- Private wells before Feb 29 2016: voluntary

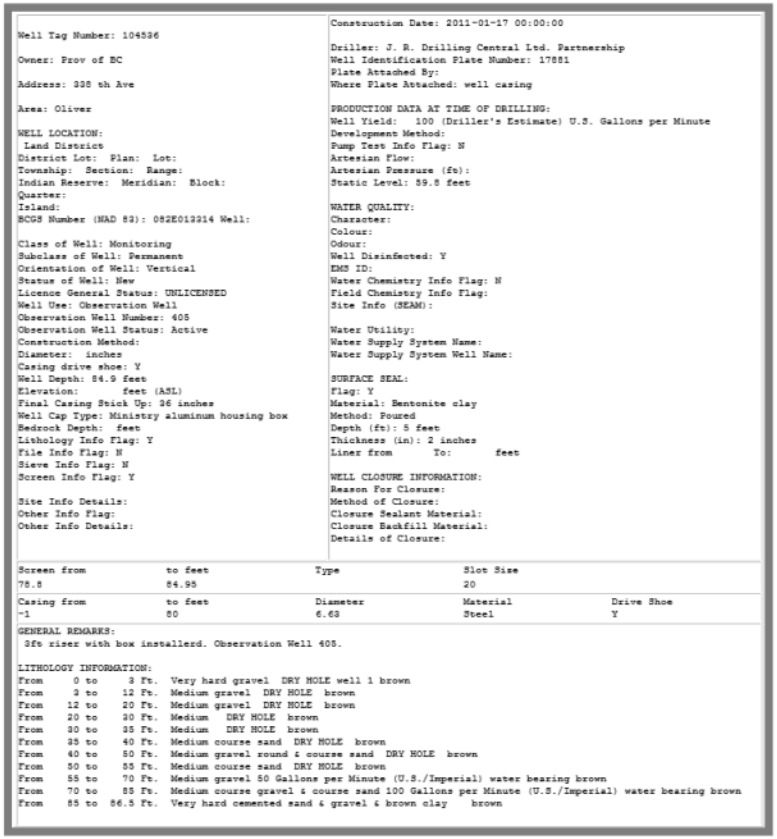
Contact FCBC or groundwater staff for help.



Well Identification/Classification Details

Well Construction Reports (completed by the driller) or *Detailed Well Records* (system files) provide:

- Date of construction
- WTN, Well ID Plate No.
- Well owner
- Classification details (well class, subclass)
- Construction details (depth, diameter, etc.)
- Lithology (geologic materials encountered by the driller during construction)



Well Tag Number: 104536

Owner: Prov of BC

Address: 338 th Ave

Area: Oliver

WELL LOCATION:
Land District
District Lot: Plan: Lot:
Township: Section: Range:
Indian Reserve: Meridian: Block:
Quarter:
Island:
BCGS Number (NAD 83): 082E013214 Well:

Class of Well: Monitoring
Subclass of Well: Permanent
Orientation of Well: Vertical
Status of Well: New
Licence General Status: UNLICENSED
Well Use: Observation Well
Observation Well Number: 405
Observation Well Status: Active
Construction Method:
Diameter: inches
Casing drive shoe: Y
Well Depth: 84.9 feet
Elevation: feet (ASL)
Final Casing Stick Up: 36 inches
Well Cap Type: Ministry aluminum housing box
Bedrock Depth: feet
Lithology Info Flag: Y
File Info Flag: N
Sieve Info Flag: N
Screen Info Flag: Y

Site Info Details:
Other Info Flag:
Other Info Details:

Construction Date: 2011-01-17 00:00:00

Driller: J. R. Drilling Central Ltd. Partnership
Well Identification Plate Number: 17881
Plate Attached By:
Where Plate Attached: well casing

PRODUCTION DATA AT TIME OF DRILLING:
Well Yield: 100 (Driller's Estimate) U.S. Gallons per Minute
Development Method:
Pump Test Info Flag: N
Artesian Flow:
Artesian Pressure (ft):
Static Level: 59.8 feet

WATER QUALITY:
Character:
Colour:
Odour:
Well Disinfected: Y
EMS ID:
Water Chemistry Info Flag: N
Field Chemistry Info Flag:
Site Info (SEAM):

Water Utility:
Water Supply System Name:
Water Supply System Well Name:

SURFACE SEAL:
Flag: Y
Material: Bentonite clay
Method: Poured
Depth (ft): 5 feet
Thickness (in): 2 inches
Liner from To: feet

WELL CLOSURE INFORMATION:
Reason For Closure:
Method of Closure:
Closure Sealant Material:
Closure Backfill Material:
Details of Closure:

Screen from	to feet	Type	Slot Size	
75.8	84.95		20	
Casing from	**to feet**	**Diameter**	**Material**	**Drive Shoe**
-1	80	6.63	Steel	Y

GENERAL REMARKS:
3ft riser with box installerd. Observation Well 405.

LITHOLOGY INFORMATION:
From 0 to 3 Ft. Very hard gravel DRY HOLE well 1 brown
From 3 to 12 Ft. Medium gravel DRY HOLE brown
From 12 to 20 Ft. Medium gravel DRY HOLE brown
From 20 to 30 Ft. Medium DRY HOLE brown
From 30 to 35 Ft. Medium DRY HOLE brown
From 35 to 40 Ft. Medium course sand DRY HOLE brown
From 40 to 50 Ft. Medium gravel round & course sand DRY HOLE brown
From 50 to 55 Ft. Medium course sand DRY HOLE brown
From 55 to 70 Ft. Medium gravel 50 Gallons per Minute (U.S./Imperial) water bearing brown
From 70 to 85 Ft. Medium course gravel & course sand 100 Gallons per Minute (U.S./Imperial) water bearing brown
From 85 to 86.5 Ft. Very hard cemented sand & gravel & brown clay brown

Well Tag Number: 104536

Owner: Prov of BC

Address: 338 th Ave

Area: Oliver

WELL LOCATION:
Land District
District Lot: Plan: Lot:
Township: Section: Range:
Indian Reserve: Meridian: Block:
Quarter:
Island:
BCGS Number (NAD 83): 082E013314 Well:

Class of Well: Monitoring
Subclass of Well: Permanent
Orientation of Well: Vertical
Status of Well: New
Licence General Status: UNLICENSED
Well Use: Observation Well
Observation Well Number: 405

Construction Date: 2011-01-17 00:00:00

Driller: J. R. Drilling Central Ltd. Partners
Well Identification Plate Number: 17881
Plate Attached By:
Where Plate Attached: well casing

PRODUCTION DATA AT TIME OF DRILLING:
Well Yield: 100 (Driller's Estimate) U.S. G
Development Method:
Pump Test Info Flag: N
Artesian Flow:
Artesian Pressure (ft):
Static Level: 59.8 feet

WATER QUALITY:
Character:
Colour:
Odour:
Well Disinfected: Y
EMS ID:
Water Chemistry Info Flag: N
Field Chemistry Info Flag:
Site Info (SEAM):

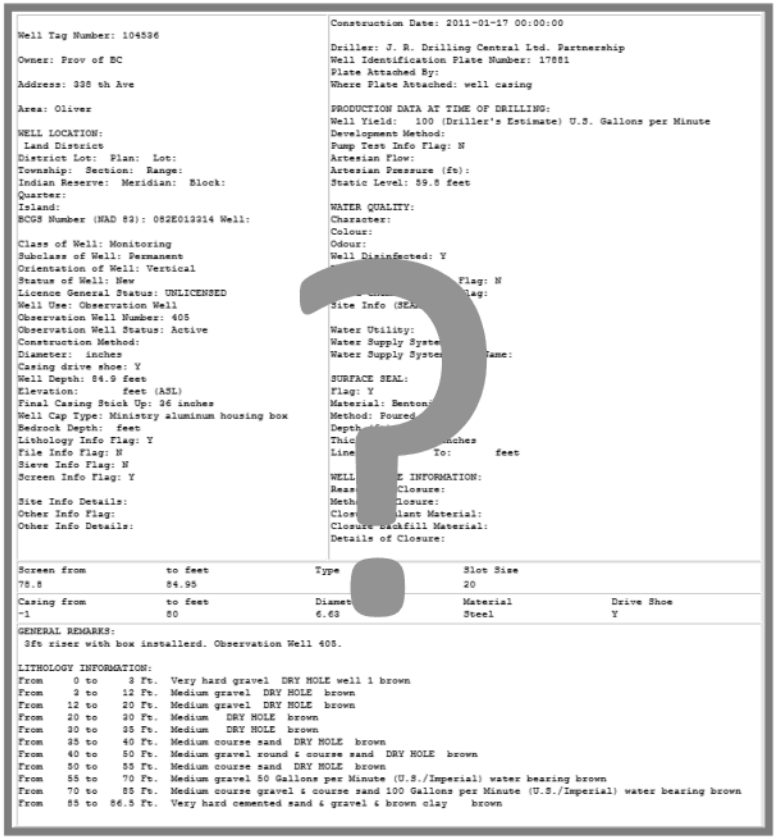
Cross Reference a Well Record

Make sure you have the right record:

- Spatial data may be off
- Not all wells are in WELLS
- Don't rely unless reasonable fit

Ask the owner:

- Address
- Date constructed
- Who constructed it
- Previous owners
- Well Depth



Well Tag Number: 104536

Owner: Prov of BC

Address: 338 th Ave

Area: Oliver

WELL LOCATION:
Land District
District Lot: Plan: Lot:
Township: Section: Range:
Indian Reserve: Meridian: Block:
Quarter:
Island:
BCGS Number (NAD 83): 082E013214 Well:

Class of Well: Monitoring
Subclass of Well: Permanent
Orientation of Well: Vertical
Status of Well: New
Licence General Status: UNLICENSED
Well Use: Observation Well
Observation Well Number: 405
Observation Well Status: Active
Construction Method:
Diameter: inches
Casing drive shoe: Y
Well Depth: 84.9 feet
Elevation: feet (ASL)
Final Casing Stick Up: 36 inches
Well Cap Type: Ministry aluminum housing box
Bedrock Depth: feet
Lithology Info Flag: Y
File Info Flag: N
Sieve Info Flag: N
Screen Info Flag: Y

Site Info Details:
Other Info Flag:
Other Info Details:

Construction Date: 2011-01-17 00:00:00

Driller: J. R. Drilling Central Ltd. Partnership
Well Identification Plate Number: 17881
Plate Attached By:
Where Plate Attached: well casing

PRODUCTION DATA AT TIME OF DRILLING:
Well Yield: 100 (Driller's Estimate) U.S. Gallons per Minute
Development Method:
Pump Test Info Flag: N
Artesian Flow:
Artesian Pressure (ft):
Static Level: 59.8 feet

WATER QUALITY:
Character:
Colour:
Odour:
Well Disinfected: Y

Water Utility:
Water Supply Syste
Water Supply Syste

SURFACE SEAL:
Flag: Y
Material: Benton
Method: Poured
Depth
Thic nches
Line To: feet

WELL INFORMATION:
Reas Closure:
Meth losure:
Clos lant Material:
Closure Backfill Material:
Details of Closure:

Screen from	to feet	Type	Slot Size
75.8	84.95		20

Casing from	to feet	Diamet	Material	Drive Shoe
-1	80	6.63	Steel	Y

GENERAL REMARKS:
3ft riser with box installerd. Observation Well 405.

LITHOLOGY INFORMATION:
From 0 to 3 Ft. Very hard gravel DRY HOLE well 1 brown
From 3 to 12 Ft. Medium gravel DRY HOLE brown
From 12 to 20 Ft. Medium gravel DRY HOLE brown
From 20 to 30 Ft. Medium DRY HOLE brown
From 30 to 35 Ft. Medium DRY HOLE brown
From 35 to 40 Ft. Medium course sand DRY HOLE brown
From 40 to 50 Ft. Medium gravel round & course sand DRY HOLE brown
From 50 to 55 Ft. Medium course sand DRY HOLE brown
From 55 to 70 Ft. Medium gravel 50 Gallons per Minute (U.S./Imperial) water bearing brown
From 70 to 85 Ft. Medium course gravel & course sand 100 Gallons per Minute (U.S./Imperial) water bearing brown
From 85 to 86.5 Ft. Very hard cemented sand & gravel & brown clay brown

Site Inspection Planning:

Field equipment and forms

- Identification and business cards
- iPad or notebook
- GPS
- Measuring tape
- Camera (or phone/iPad)
- Reference material (legislation, brochures, guidance material)
- Well Inspection Forms
- Optional – tools, water level tape, bentonite chips, soil probe

s.22

Field safety

- **Visibility:** Road side visibility/ traffic/ off-road vehicles – vehicle positioning, use safety vests, cones, etc.

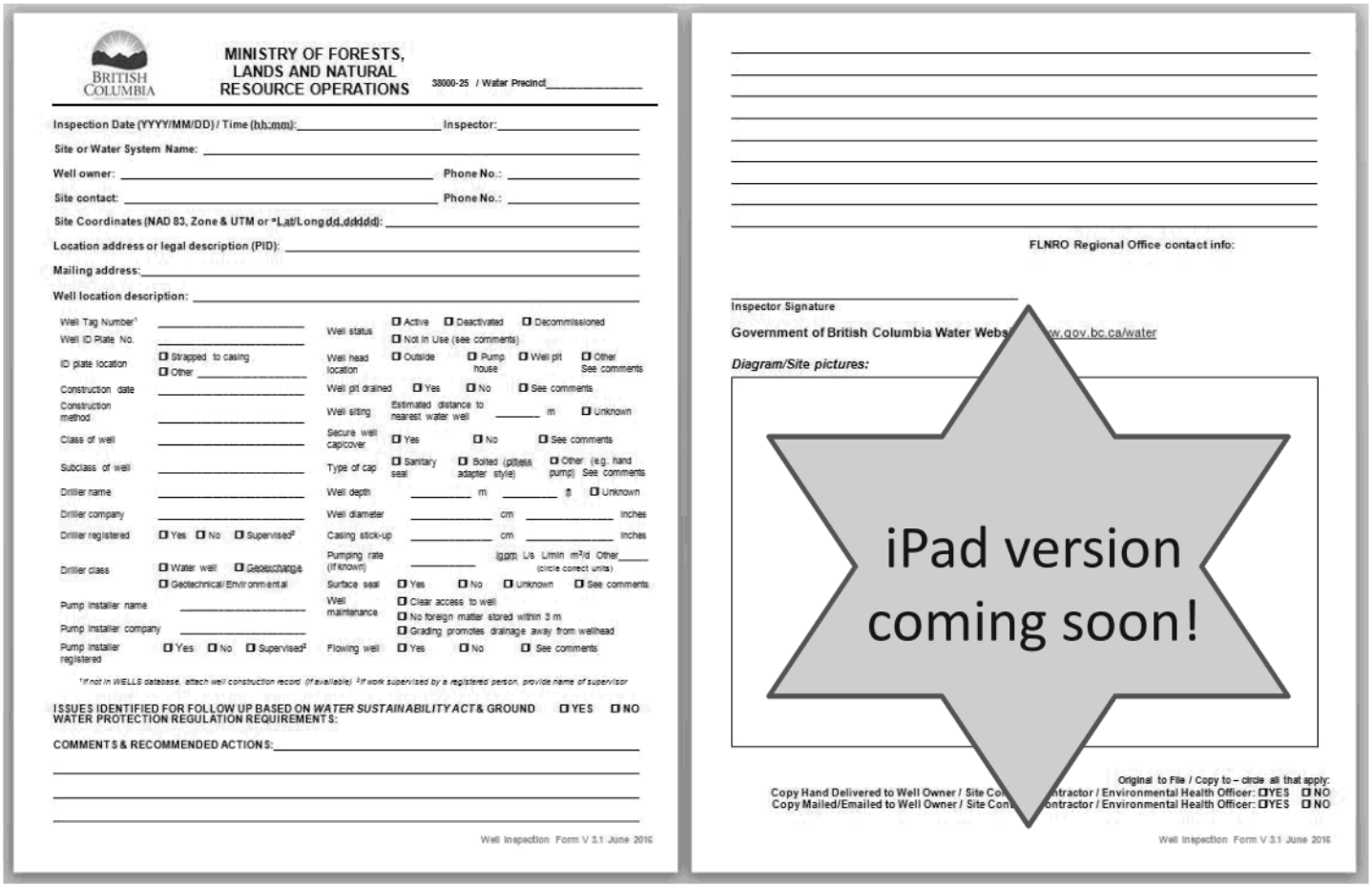
s.22

- **Physical hazards:** weather, obstacles, animals or pests, etc. Dress appropriately, take actions to eliminate hazards where possible
- **Human Conflict** - apply conflict resolution training
- **Confined spaces – Do not go into a well pit or subterranean pump house! Anoxic/harmful gas.**

WSA Part 3, Division 3 and the GWPR

Introduction | Legislation | **Site Inspections** | Ticketable Offences | Other Considerations

Well Inspection Form: (available on FTP)



BRITISH COLUMBIA

MINISTRY OF FORESTS, LANDS AND NATURAL RESOURCE OPERATIONS

38000-25 / Water Precinct_____

Inspection Date (YYYY/MM/DD) / Time (hh:mm):_____ Inspector:_____

Site or Water System Name: _____

Well owner: _____ Phone No.: _____

Site contact: _____ Phone No.: _____

Site Coordinates (NAD 83, Zone & UTM or °Lat/Long dd.ddddd): _____

Location address or legal description (PID): _____

Mailing address: _____

Well location description: _____

Well Tag Number[1] _____
Well ID Plate No. _____
ID plate location ☐ Strapped to casing ☐ Other _____
Construction date _____
Construction method _____
Class of well _____
Subclass of well _____
Driller name _____
Driller company _____
Driller registered ☐ Yes ☐ No ☐ Supervised[2]
Driller class ☐ Water well ☐ Geoexchange ☐ Geotechnical/Environmental
Pump installer name _____
Pump installer company _____
Pump installer registered ☐ Yes ☐ No ☐ Supervised[2]

Well status ☐ Active ☐ Deactivated ☐ Decommissioned ☐ Not in Use (see comments)
Well head location ☐ Outside ☐ Pump house ☐ Well pit ☐ Other See comments
Well pit drained ☐ Yes ☐ No ☐ See comments
Well siting Estimated distance to nearest water well _____ m ☐ Unknown
Secure well capicover ☐ Yes ☐ No ☐ See comments
Type of cap ☐ Sanitary seal ☐ Bolted (pitless adapter style) ☐ Other (e.g. hand pump) See comments
Well depth _____ m _____ ft ☐ Unknown
Well diameter _____ cm _____ inches
Casing stick-up _____ cm _____ inches
Pumping rate (if known) _____ igpm L/s L/min m³/d Other_____ (circle correct units)
Surface seal ☐ Yes ☐ No ☐ Unknown ☐ See comments
Well maintenance ☐ Clear access to well ☐ No foreign matter stored within 3 m ☐ Grading promotes drainage away from wellhead
Flowing well ☐ Yes ☐ No ☐ See comments

[1] If not in WELLS database, attach well construction record (if available) [2] If work supervised by a registered person, provide name of supervisor

ISSUES IDENTIFIED FOR FOLLOW UP BASED ON *WATER SUSTAINABILITY ACT* & GROUND WATER PROTECTION REGULATION REQUIREMENTS: ☐ YES ☐ NO

COMMENTS & RECOMMENDED ACTIONS: _____

Well Inspection Form V 3.1 June 2016

FLNRO Regional Office contact info:

Inspector Signature

Government of British Columbia Water Webs[illegible]w.gov.bc.ca/water

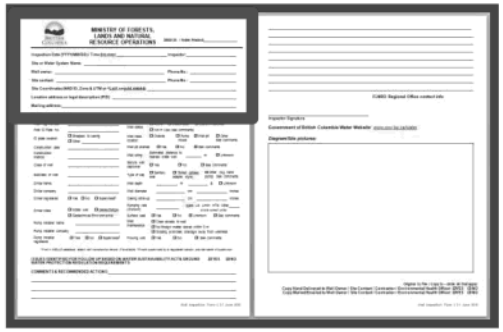
Diagram/Site pictures:

Original to File / Copy to – circle all that apply:
Copy Hand Delivered to Well Owner / Site Co[illegible]ntractor / Environmental Health Officer: ☐ YES ☐ NO
Copy Mailed/Emailed to Well Owner / Site Con[illegible]ontractor / Environmental Health Officer: ☐ YES ☐ NO

Well Inspection Form V 3.1 June 2016

iPad version coming soon!

Administrative Details



BRITISH COLUMBIA

MINISTRY OF FORESTS, LANDS AND NATURAL RESOURCE OPERATIONS

38000-25 / Water Precinct_____

Inspection Date (YYYY/MM/DD) / Time (hh:mm):_____ **Inspector:**_____

Site or Water System Name: _____

Well owner: _____ **Phone No.:** _____

Site contact: _____ **Phone No.:** _____

Site Coordinates (NAD 83, Zone & UTM or °Lat/Long dd.ddddd): _____

Location address or legal description (PID): _____

Mailing address:_____

Well location description: _____

Well Identification/Classification Details

Well Tag Number[1] _____

Well ID Plate No. _____

ID plate location
- ❒ Strapped to casing
- ❒ Other _____

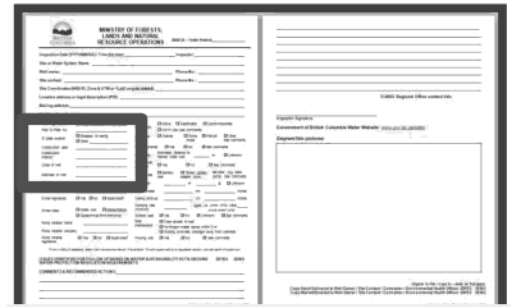
Construction date _____

Construction method _____

Class of well _____

Subclass of well _____

[1]If no well record, ask owner if they have the drilling log. Submit this to MoE to help create a new record for the well.



Ticketable Offences

section 106 (5) (e)	Fail to attach identification plate to a well or wellhead or to remove identification plate when required	$100	$15	$115
section 106 (5) (f)	Destroy, injure or tamper with identification plate attached to a well or wellhead	$100	$15	$115

QWD/QWPI Details

Driller name _____

Driller company _____

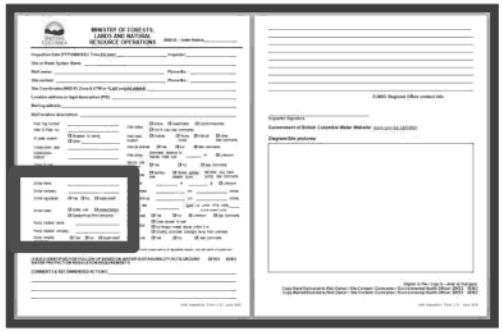
Driller registered ❒ Yes ❒ No ❒ Supervised[2]

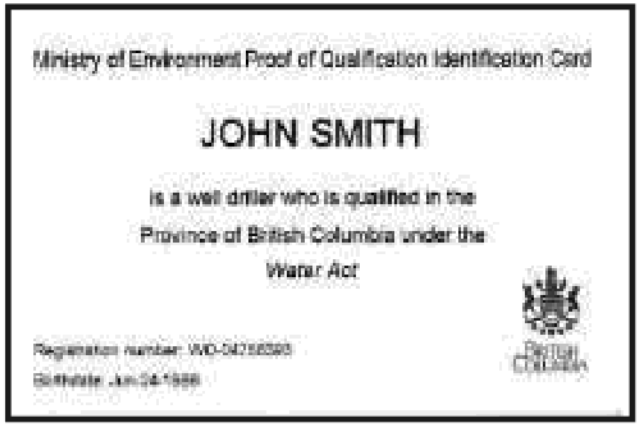
Driller class ❒ Water well ❒ Geoexchange
❒ Geotechnical/Environmental

Pump installer name _____

Pump installer company _____

Pump installer registered ❒ Yes ❒ No ❒ Supervised[2]

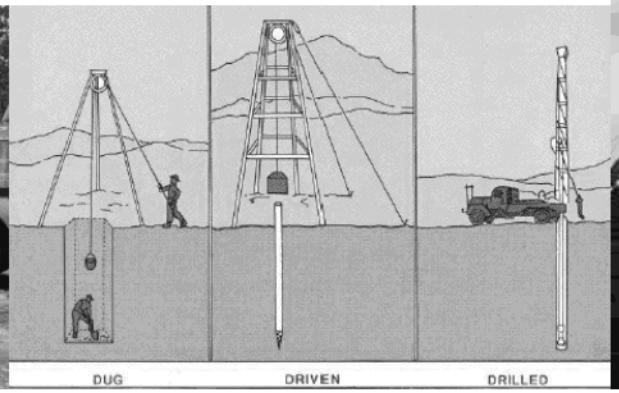




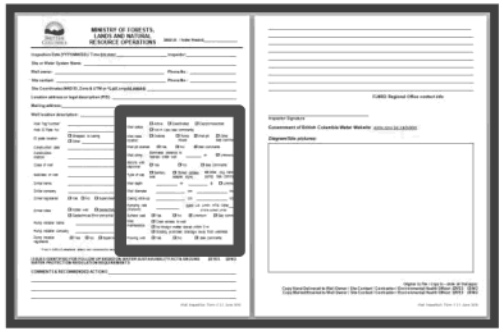
[2]*If work supervised by a registered person, provide name of supervisor*

Ticketable Offenses

section 106 (4) (o)	Construct a well, close a well or install a well pump or wellhead without holding the required qualifications	$350	$53	$403
section 106 (4) (o)	Disinfect a well without holding the required qualifications	$100	$15	$115
section 106 (4) (o)	Perform an activity in relation to a well, other than constructing, closing or disinfecting a well or installing a well pump or wellhead, without holding the required qualifications	$200	$30	$230



Compliance Assessment



Well status
- ❒ Active
- ❒ Deactivated
- ❒ Decommissioned
- ❒ Not in Use (see comments)

Well head location
- ❒ Outside
- ❒ Pump house
- ❒ Well pit
- ❒ Other See comments

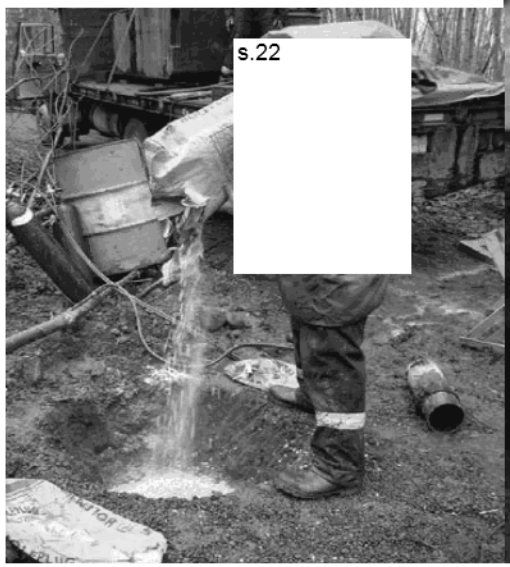
Ticketable Offenses

section 106 (5) (g)	Fail to deactivate well when required	$200	$30	$230
section 106 (5) (g)	Fail to decommission a well when required	$350	$53	$403

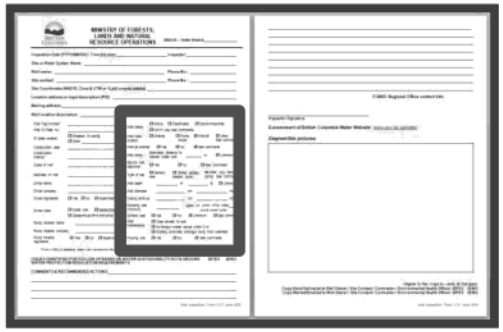
WSA DEFINITIONS:

DEACTIVATE = take the well out of service temporarily

DECOMMISSION = take the well out of service permanently (“closure”)

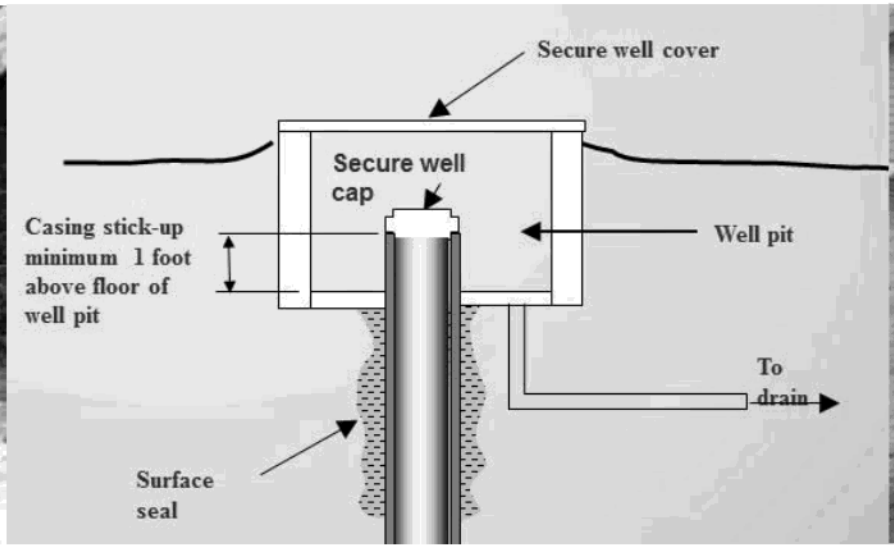


Compliance Assessment



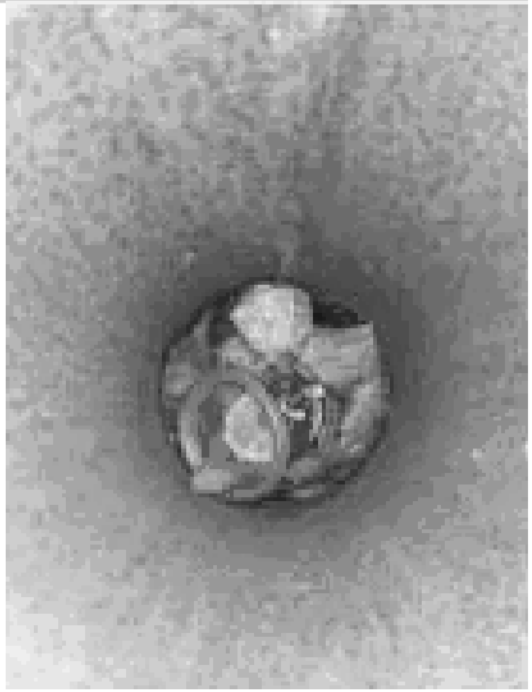
Well pit drained ❒ Yes ❒ No ❒ See comments

Well siting Estimated distance to nearest water well _____ m ❒ Unknown



Ticketable Offenses

section 106 (5) (k)	Introduce, allow or cause to be introduced into a well anything contrary to section 59 (1)	$350	$53	$403
section 107 (1) (d)	Fail to comply with an order under section 60 (1), (2), (3) or (4) in relation to foreign matter in a well	$500	$75	$575



Prohibition on introducing foreign matter into well

59 (1) A person must not introduce, allow to be introduced or cause to be introduced any of the following into a well:

(a) refuse;

(b) carcasses;

(c) human or animal waste;

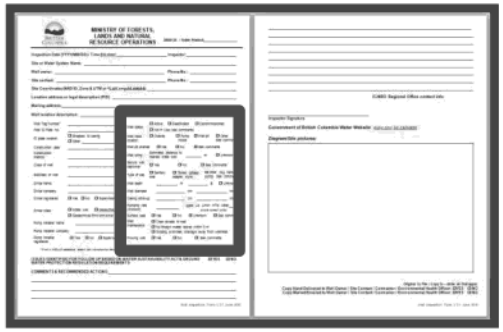
(d) pesticides or fertilizers;

(e) material from construction or demolition;

(f) a prescribed matter or substance;

(g) another contaminant, clay, silt, rock or a similar material, or another matter or substance, in such amounts or in such a manner as to cause or to be likely to cause a significant adverse impact on ...

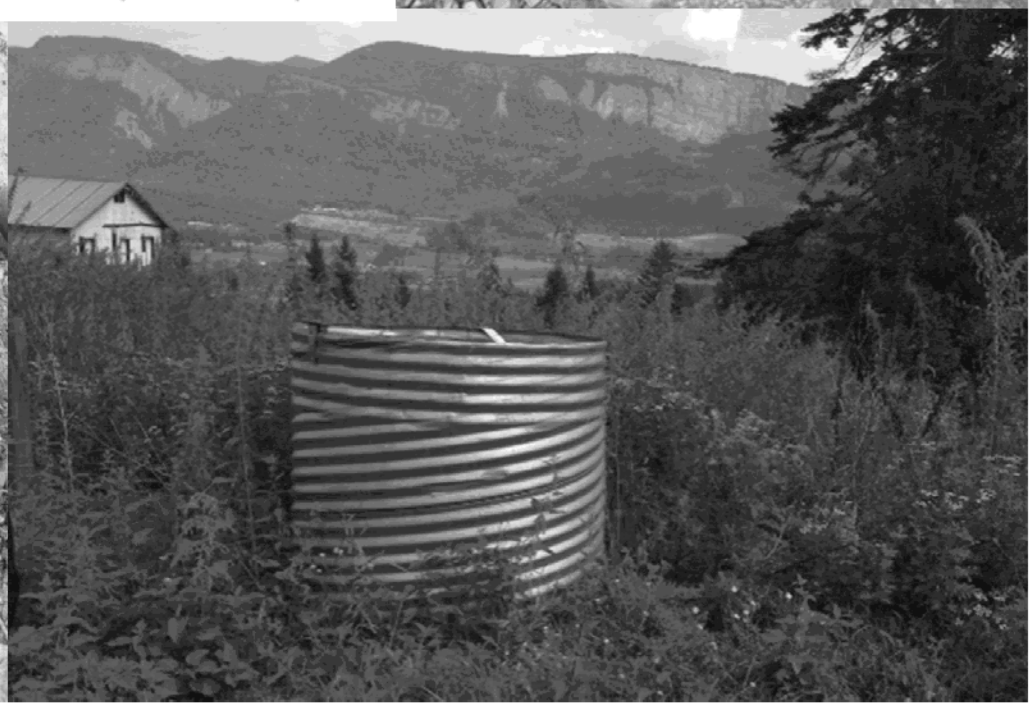
Compliance Assessment



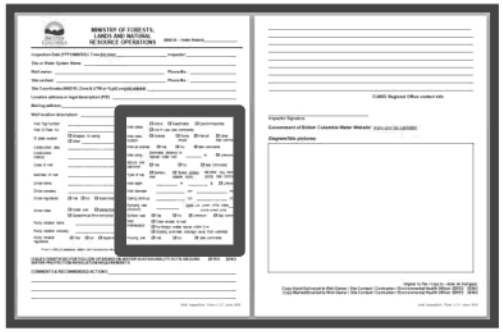
Secure well cap/cover	❒ Yes	❒ No	❒ See comments
Type of cap	❒ Sanitary seal	❒ Bolted (pitless adapter style)	❒ Other (e.g. hand pump) See comments

Ticketable Offenses

section 106 (5) (c)	Fail to secure well cap or well cover or removes well cap or well cover when not authorized	$200	$30	$230
section 106 (5) (d)	Fail to replace well cap or well cover when required	$200	$30	$230



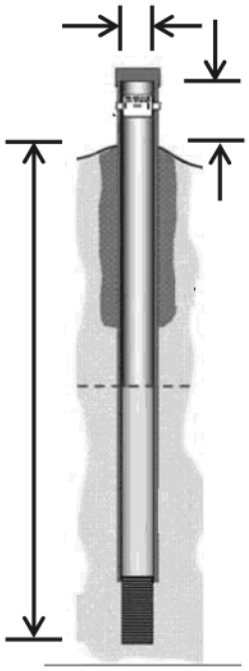
Compliance Assessment



Well depth _____ m _____ ft ❒ Unknown

Well diameter _____ cm _____ inches

Casing stick-up _____ cm _____ inches

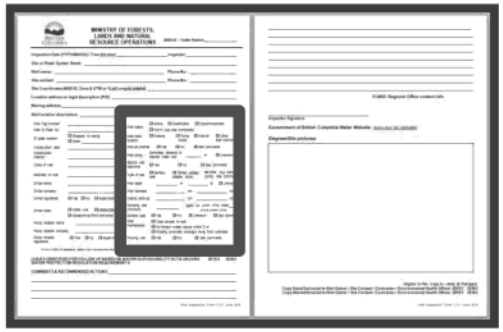


Well depth
= distance from top of ground surface to the bottom of the well

Diameter
= distance across the casing

Stick-up
= distance from the ground surface to the top of the casing

Compliance Assessment

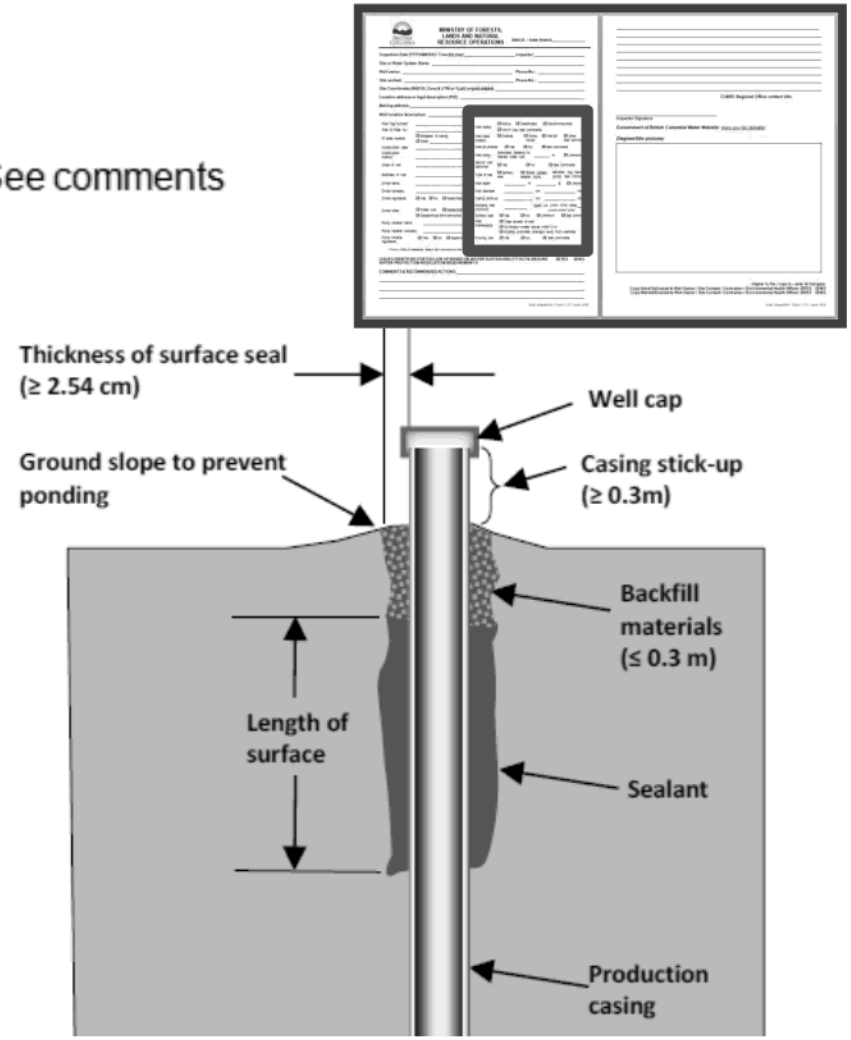


Pumping rate (if known) _____ lgpm L/s L/min m³/d Other_____
(circle correct units)

s.22

Compliance Assessment

Surface seal ❒ Yes ❒ No ❒ Unknown ❒ See comments



Ticketable Offenses

section 106 (5) (i)	Operate a well contrary to section 58	$350	$53	$403

Well operation

58 (1) A person must operate a well in accordance with the regulations and any directions of an engineer in respect of the well.

(2) A person must not operate a well in a manner that causes or is likely to cause

(a) the intrusion of saline groundwater, sea water or contaminated water into

(i) the aquifer from which that well diverts water,

(ii) another aquifer, or

(iii) a stream that is hydraulically connected to an aquifer referred to in subparagraph (i) or (ii), and

(b) a significant adverse impact on

(i) the quality of water in

(A) the aquifer from which a well diverts water,

(B) another aquifer, or

(C) a stream that is hydraulically connected to an aquifer referred to in clause (A) or (B), or

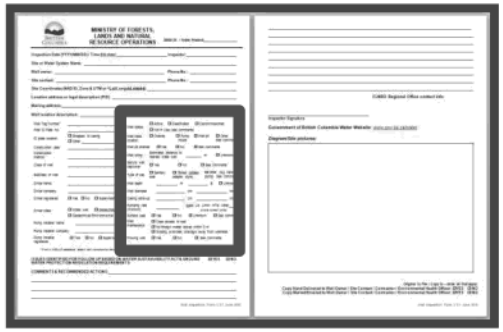
(ii) the existing uses made of the water diverted from

(A) a well that diverts water from the aquifer,

(B) a well that diverts water from another aquifer, or

(C) a stream that is hydraulically connected to an aquifer referred to in clause (A) or (B).

Compliance Assessment

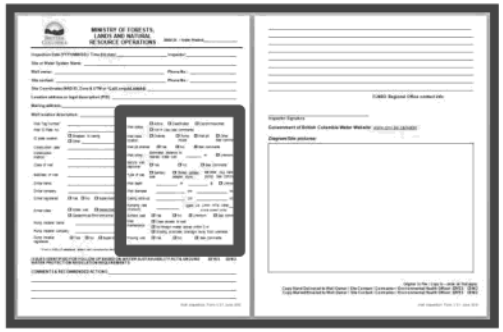


Well maintenance

- ❒ Clear access to well
- ❒ No foreign matter stored within 3 m
- ❒ Grading promotes drainage away from wellhead

Compliance Assessment

Flowing well ❒ Yes ❒ No ❒ See comments



Ticketable Offenses

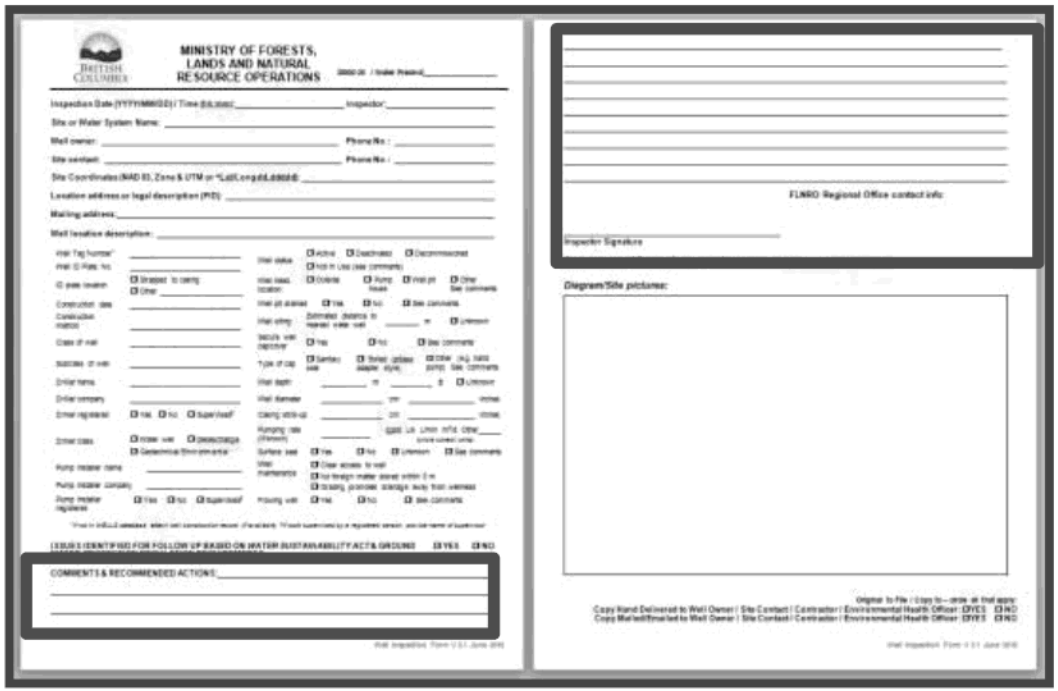
section 106 (5) (a)	Fail to stop or bring artesian flow under control or give notice as and when required	$350	$53	$403
section 106 (5) (b)	Fail to engage a qualified well driller or a professional or to ensure that that person stops or brings artesian flow under control	$350	$53	$403



Comments and Recommended Actions

Notes on next steps required to bring the well into compliance

e.g. provide photographs of an installed secure and vermin-proof well cap by a specific date

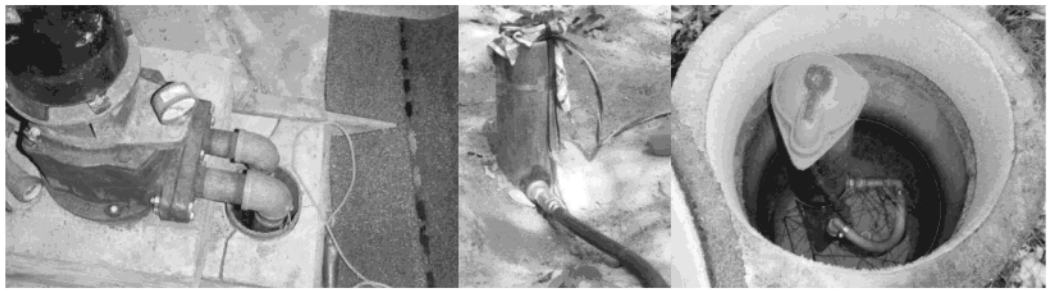

MINISTRY OF FORESTS,
LANDS AND NATURAL
RESOURCE OPERATIONS

COMMENTS & RECOMMENDED ACTIONS:

FLNRO Regional Office contact info:

Inspector Signature

Diagram/Site pictures:

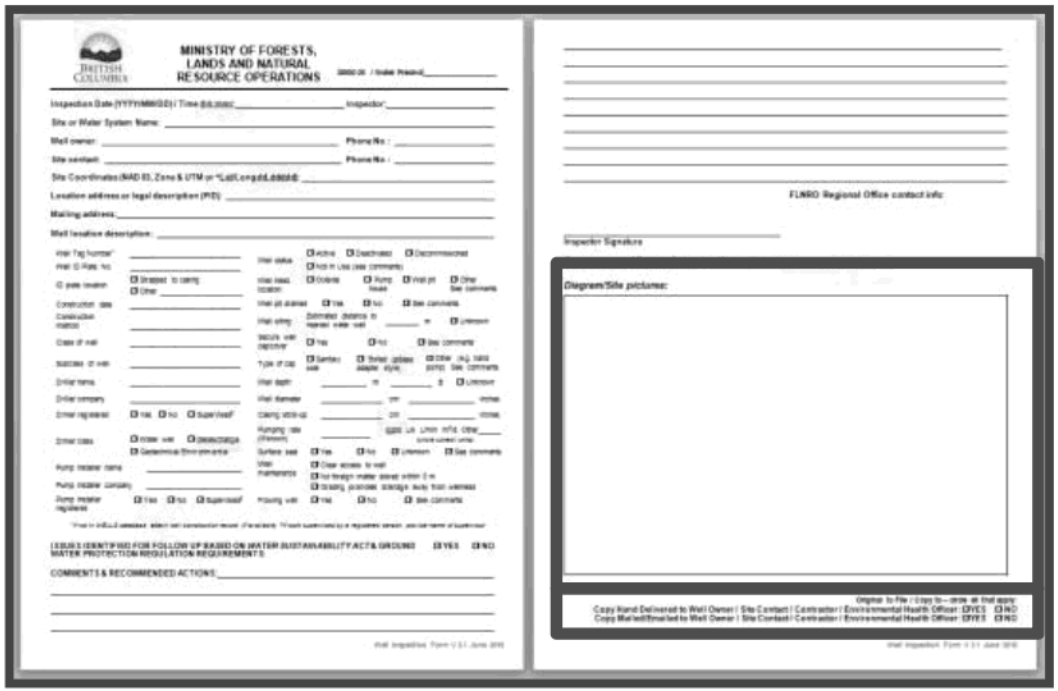


Diagrams/Site Pictures

Hand sketches or add electronically

Delivery Options

The well inspection form can be hand delivered on site, mailed or emailed at a later date, or used to support an advisory or warning letter



MINISTRY OF FORESTS,
LANDS AND NATURAL
RESOURCE OPERATIONS

FLNRO Regional Office contact info:

Inspector Signature

Diagram/Site pictures:

Other Staff and Agency Involvement:

- *Contaminants or contaminated site?* Ministry of Environment - Environmental Protection Division (EP)
- *Unregistered water system or within 30 m of potential contaminants (DWPA & HHR)?* Ministry of Health – Environmental Health Officers
- *Unlicensed commercial well or water system?* FLNRO Groundwater Staff
- *Complex file?* FLNRO Groundwater staff

Health Hazard Regulation Setbacks from Potential Sources of Contamination

20 ft → Nearest building or private dwelling

100 ft → Any probable source of contamination

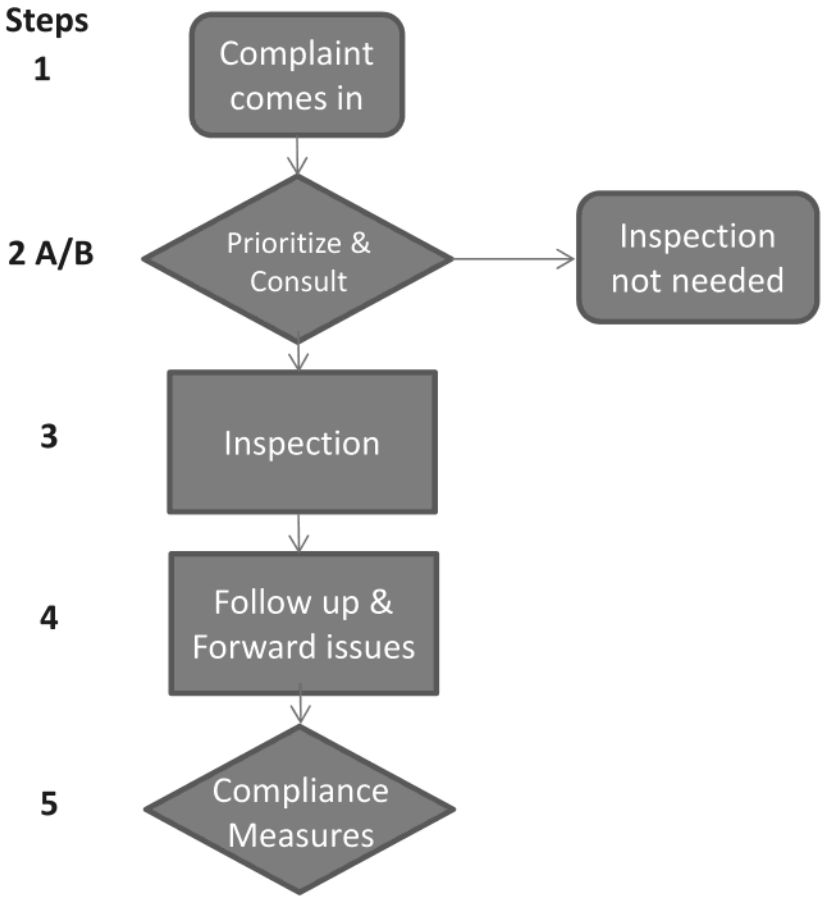
400 ft → Cemetery or dumping ground

**Note: these are minimum setbacks, the distance can be greater.*

Information and Resources

- Databases and tools (WELLS, iMapBC, BCWRA, EcoCat etc.)
- http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-science-data/water-data-tools
- Provincial outreach materials (brochures)
- http://www.env.gov.bc.ca/wsd/plan_protect_sustain/groundwater/brochures_forms.html
- Standardized forms (well inspection, registration etc.)
- Relevant Regulation (WSA, GWPR, HHR, DWPA etc.)

Suggested Interim Compliance Work Flow:



Steps

1. Complaint comes in via NRVR
2. a) NRO determines priority (matrix TBD)
   - Consult GW staff

   b) Decide if inspection is required
   - Consult GW staff (joint inspection)
3. Inspection: record information/ID issues
4. Inspection follow up
   a) Review results & compare to legislation
   b) Complete and send report to owner (GW staff)
5. Carry out compliance measures
   a) Routine: Educate owner and follow up (GW staff)
   b) Letters for more complex issues (GW Staff)
   c) Orders (GW Staff)
   d) Tickets (NRO)

Ticketable Offenses:

VIOLATION TICKET ADMINISTRATION AND FINES REGULATION 89/97

	under section 37			
section 106 (4) (m)	Fail to pay amount owing to a water bailiff under and in accordance with section 38	$200	$30	$230
section 106 (4) (n)	Contravene section 46 (1) by introducing, allowing or causing to be introduced matter or substance into stream in prohibited quantity or manner	$350	$53	$403
section 106 (4) (o)	Construct a well, close a well or install a well pump or wellhead without holding the required qualifications	$350	$53	$403
section 106 (4) (o)	Disinfect a well without holding the required qualifications	$100	$15	$115
section 106 (4) (o)	Perform an activity in relation to a well, other than constructing, closing or disinfecting a well or installing a well pump or wellhead, without holding the required qualifications	$200	$30	$230
section 106 (4) (p)	Fail to comply with section 49 (4)	$500	$75	$575
section 106 (4) (q) (i)	Fail to comply with the applicable regulations when constructing or decommissioning a well	$350	$53	$403
section 106 (4) (q) (i)	Fail to comply with the applicable regulations when deactivating a well	$100	$15	$115
section 106 (4) (q) (i)	Fail to comply with the applicable regulations when disinfecting a well	$100	$15	$115
section 106 (4) (q) (ii)	Fail to comply with the applicable regulations when installing a well pump or wellhead	$350	$53	$403
section 106 (4) (q) (ii)	Fail to comply with the applicable regulations when performing activities in relation to a well pump or a wellhead or conducting a flow test or disinfecting a well pump	$200	$30	$230
section 106 (4) (r)	Fail to provide proof of qualifications when required	$200	$30	$230
	insurance when required	$200	$30	$230

VIOLATION TICKET ADMINISTRATION AND FINES REGULATION 89/97

section 106 (5) (a)	Fail to stop or bring artesian flow under control or give notice as and when required	$350	$53	$403
section 106 (5) (b)	Fail to engage a qualified well driller or a professional or to ensure that that person stops or brings artesian flow under control	$350	$53	$403
section 106 (5) (c)	Fail to secure well cap or well cover or removes well cap or well cover when not authorized	$200	$30	$230
section 106 (5) (d)	Fail to replace well cap or well cover when required	$200	$30	$230
section 106 (5) (e)	Fail to attach identification plate to a well or wellhead or to remove identification plate when required	$100	$15	$115
section 106 (5) (f)	Destroy, injure or tamper with identification plate attached to a well or wellhead	$100	$15	$115
section 106 (5) (g)	Fail to deactivate well when required	$200	$30	$230
section 106 (5) (g)	Fail to decommission a well when required	$350	$53	$403
section 106 (5) (h)	Fail to maintain, retain, produce or submit a well report when required	$200	$30	$230
section 106 (5) (i)	Operate a well contrary to section 58	$350	$53	$403
section 106 (5) (j)	Perform an activity for which a drilling authorization is required without holding a drilling authorization	$350	$53	$403
section 106 (5) (k)	Introduce, allow or cause to be introduced into a well anything contrary to section 59 (1)	$350	$53	$403
section 106 (5) (l)	Fail to take or cause to be taken and analyzed a groundwater sample when required	$200	$30	$230
section 106 (5) (m)	Tamper with a groundwater sample required to be taken under section 63	$500	$75	$575
section 106 (5) (n)	Fail to submit the results of a			$230
	engineer	$200	$30	$230

VIOLATION TICKET ADMINISTRATION AND FINES REGULATION 89/97

section 106 (5) (p)	Fail to keep information and records as required under section 116 (1)	$200	$30	$230
section 106 (5) (q)	Fail to keep information and records for the prescribed period under section 116 (1)	$100	$15	$115
section 106 (5) (r)	Fail to produce records when required under section 116 (2) (a)	$100	$15	$115
section 106 (5) (s)	Fail to provide records to persons as required under section 116 (2) (b)	$200	$30	$230
section 106 (5) (t)	Fail to install works, prepare reports or submit reports as required under section 116 (3)	$200	$30	$230
section 106 (5) (u)	Knowingly contravene section 116 (5)	$500	$75	$575
section 107 (1) (a)	Fail to comply with a term or condition of an authorization, change approval, permit or drilling authorization that relates to a sensitive stream	$350	$53	$403
section 107 (1) (b)	Construct a bank-to-bank dam on a protected river	$500	$75	$575
section 107 (1) (c)	Fail to comply with an order under section 47 (1) or (2) in relation to foreign matter in a stream	$500	$75	$575
section 107 (1) (d)	Fail to comply with an order under section 60 (1), (2), (3) or (4) in relation to foreign matter in a well	$500	$75	$575
section 107 (1) (e)	Contravene a fish population protection order under section 88	$500	$75	$575
section 107 (1) (f)	Construct, place, maintain or make use of an obstruction in the channel of a stream without lawful authority	$200	$30	$230
section 107 (1) (g)	Drill or alter a well, install a well pump or conduct a flow test when prohibited	$500	$75	$575
section 107 (1) (i)	Willfully contravene an order of the comptroller, a water manager or an engineer	$200	$30	$230
section 107 (1) (j)	Willfully interfere with works in respect of which the comptroller, a water manager, an engineer, an officer or a water bailiff has taken action	$500	$75	$575

Page 67-69 of the Violation Ticket and Fines Regulation

Virtual Field Inspections!!

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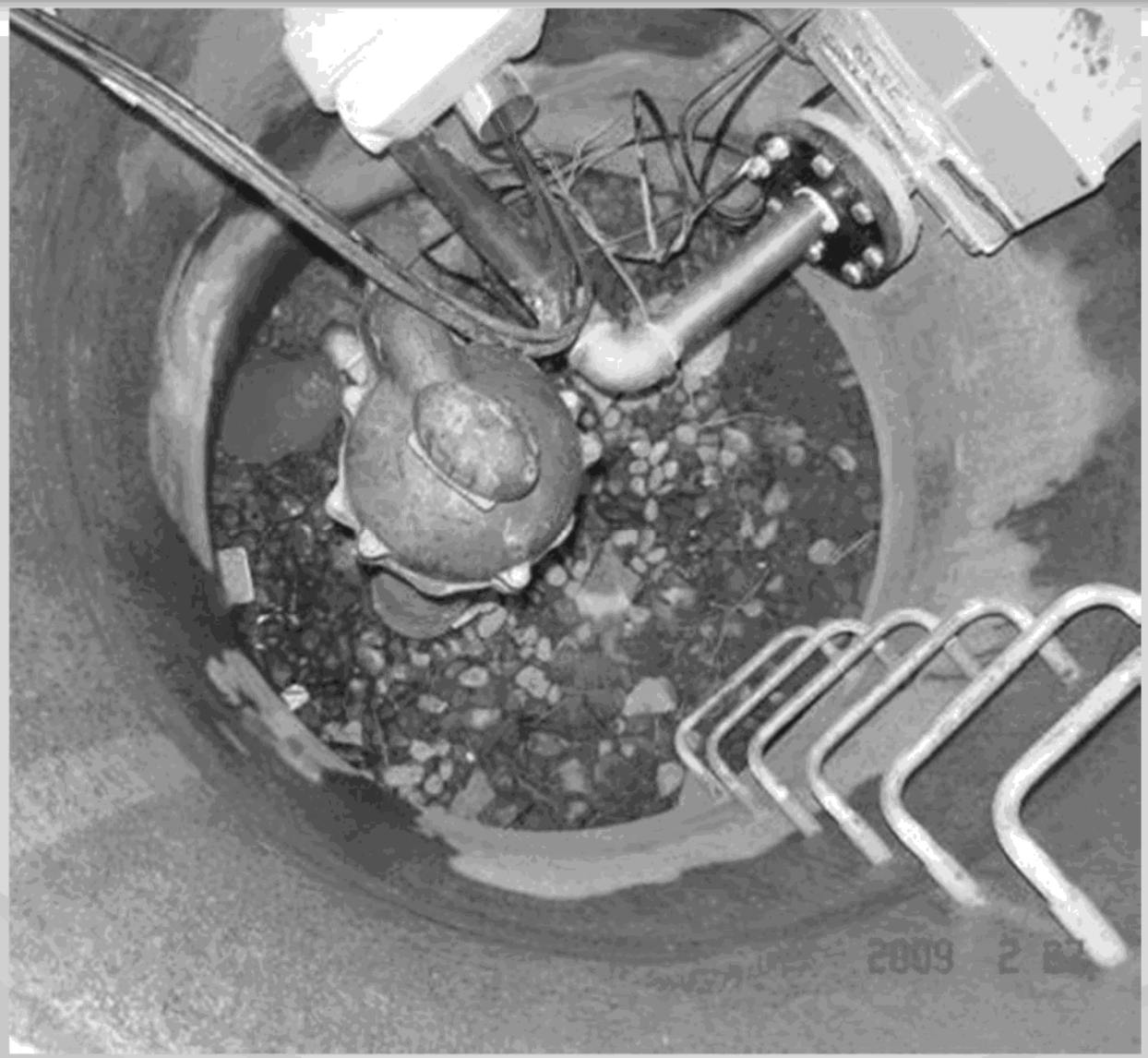

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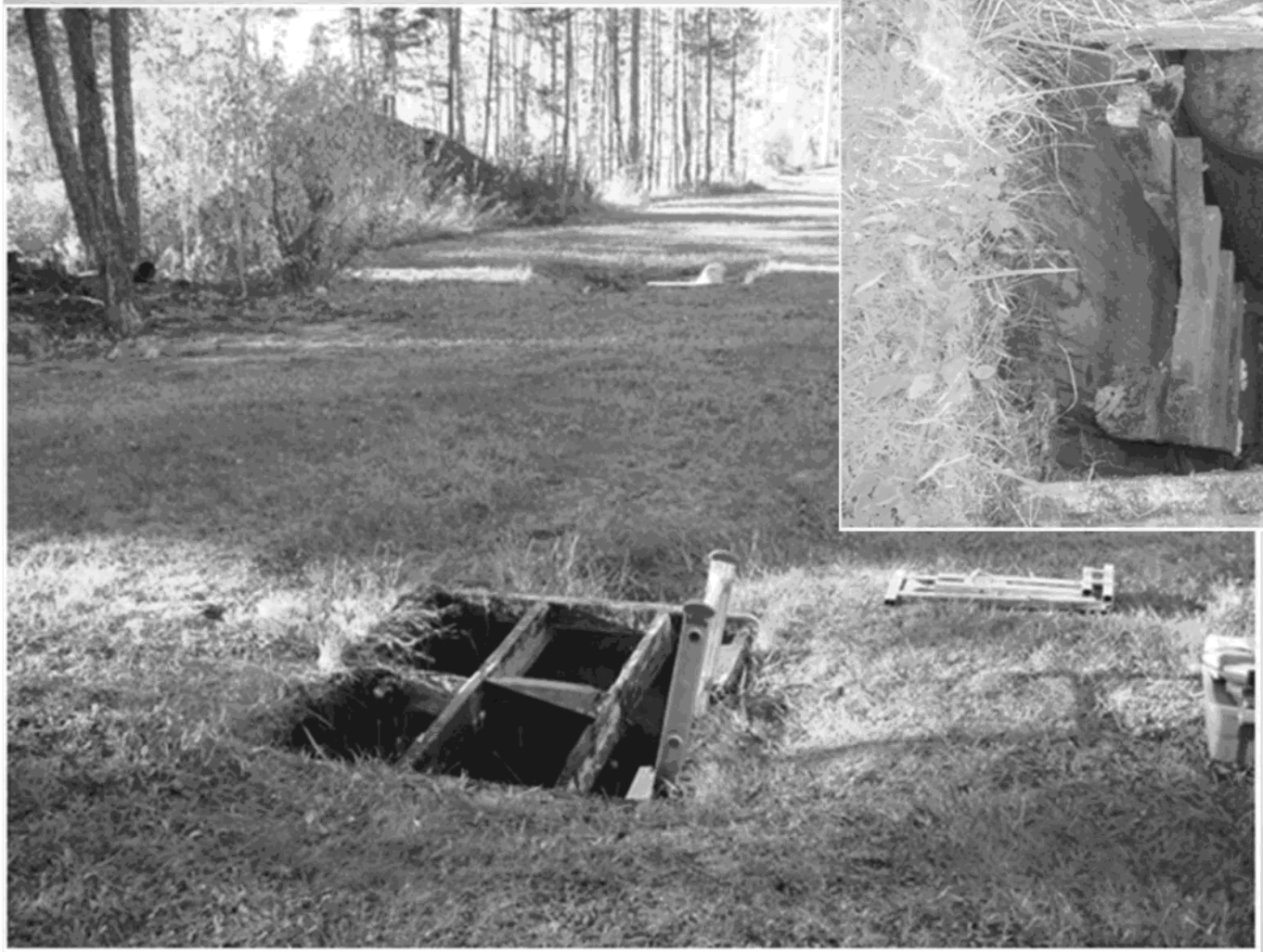


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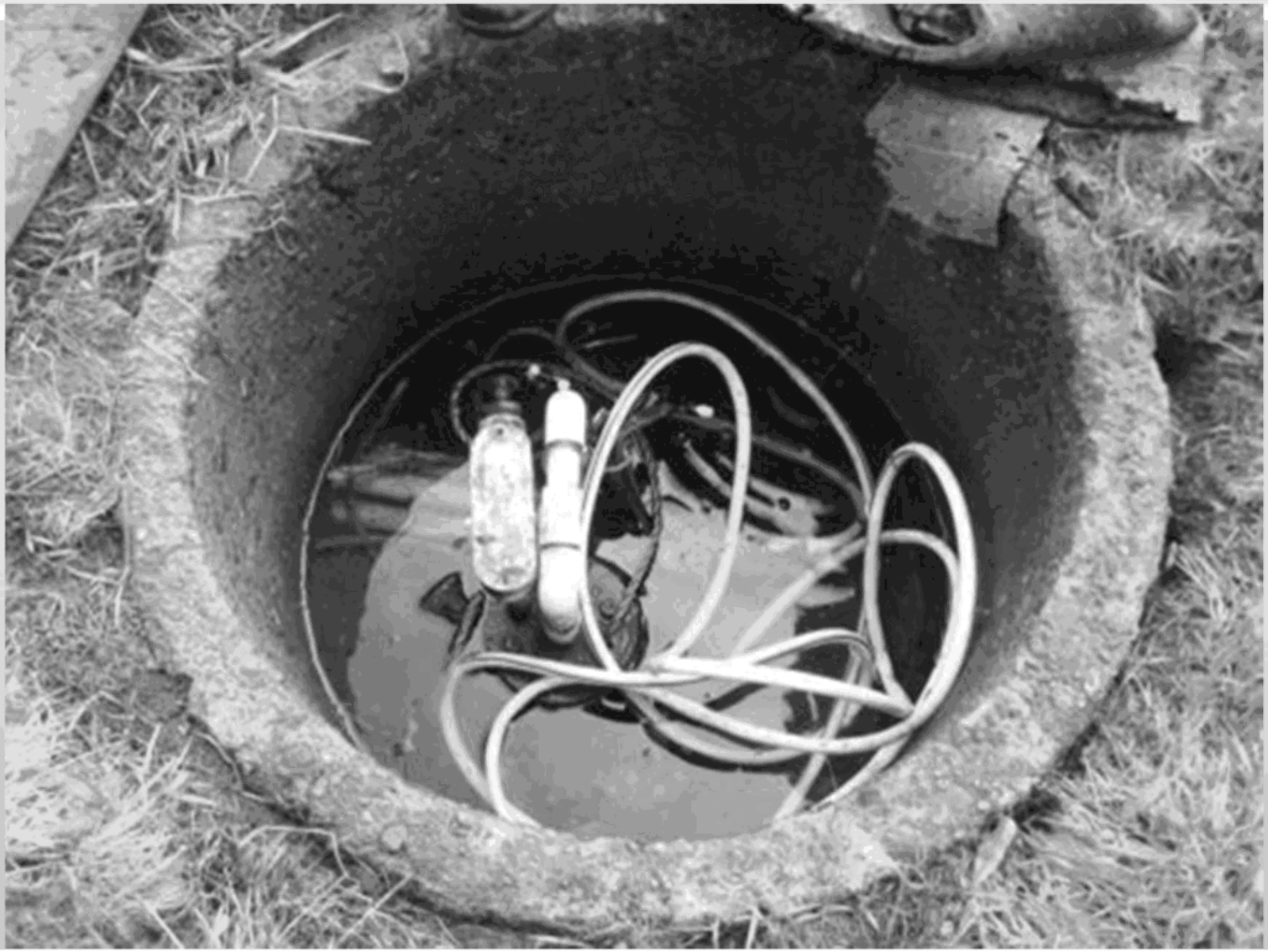

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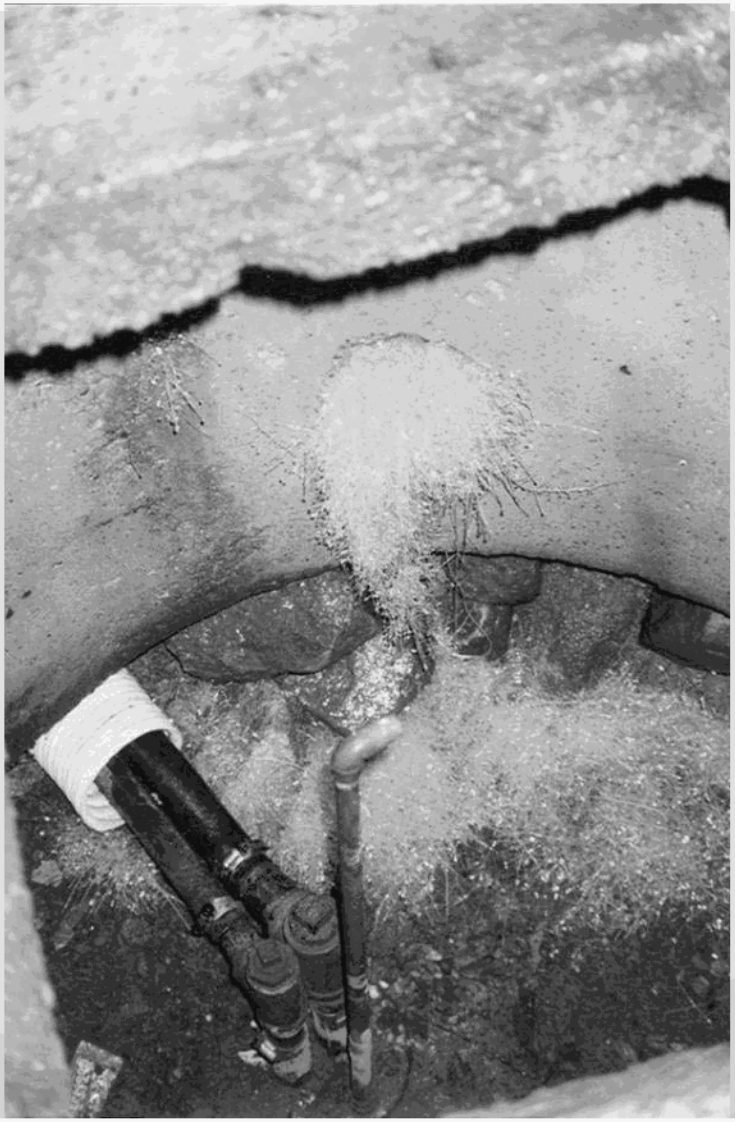

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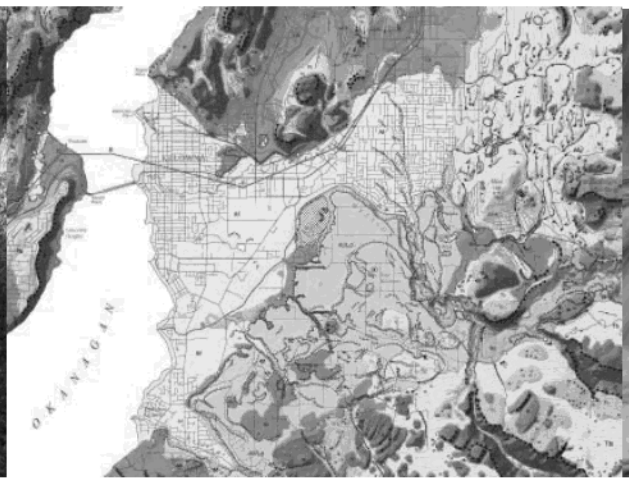
Next Steps

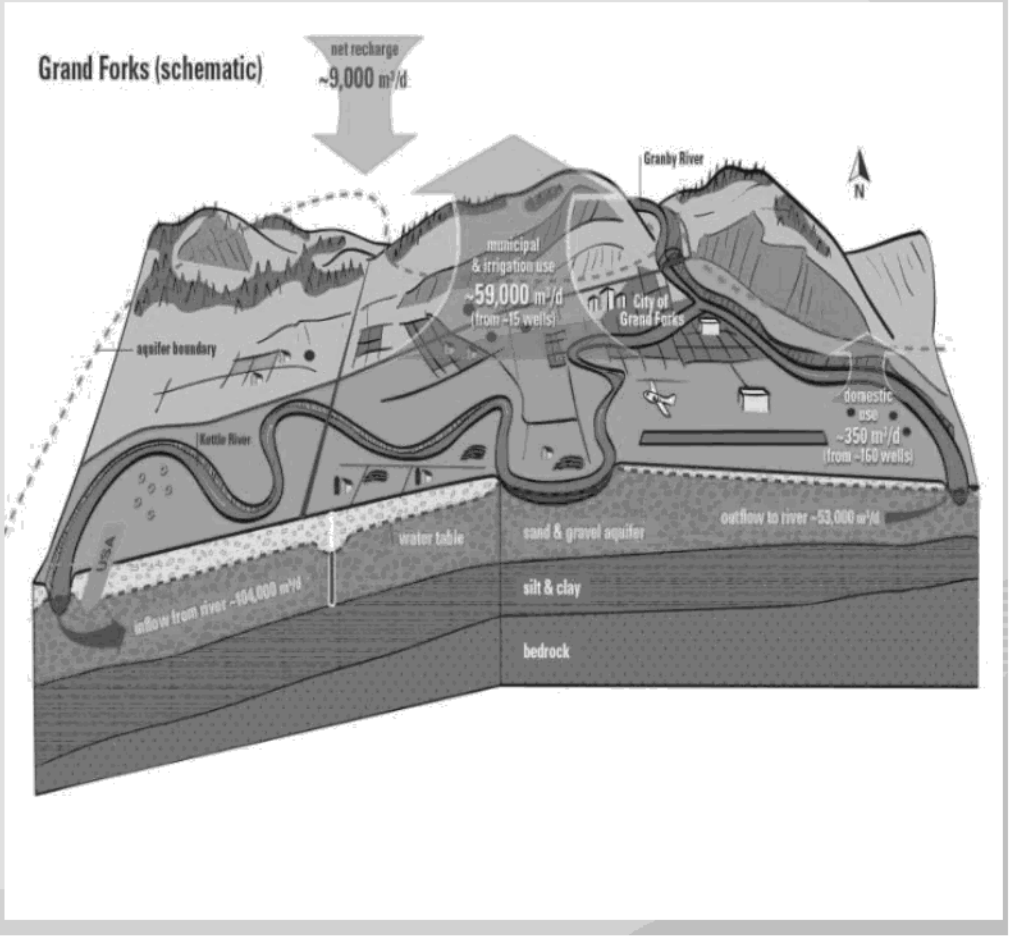
- Joint inspections for additional field training
- Joint development of a groundwater file prioritization matrix
- NRO/GW team steering committee to monitor and improve



- Break for questions regarding GWPR before going onto licensing

Water Sustainability Act (WSA)

- Into force early 2016
- Regulate groundwater
- Consider hydraulic connection between surface and groundwater (regulated as one resource)



Water licensing: Basic principles

- Grants a right to use water (with conditions)
- Right runs with the property
- Water rights are subject to FITFIR (first in time, first in right) principle
  - Seniority based on date of first beneficial use
  - More senior licensees get their full allocation before junior licensees (related to water scarcity)
  - Exceptions: Essential household use (250 L/day), Critical Environmental Flow, Fish Protection Order

Licensing Wells

- Domestic use exempt
- Non-domestic – irrigation, industrial, waterworks, etc. will need a license
  - Both existing and new wells
- Similar licensing scheme as for surface water – fees, rentals
- FITFIR model
- Recognize hydraulic connection between surface water and groundwater (i.e. consider long term effects of well pumping on streams)

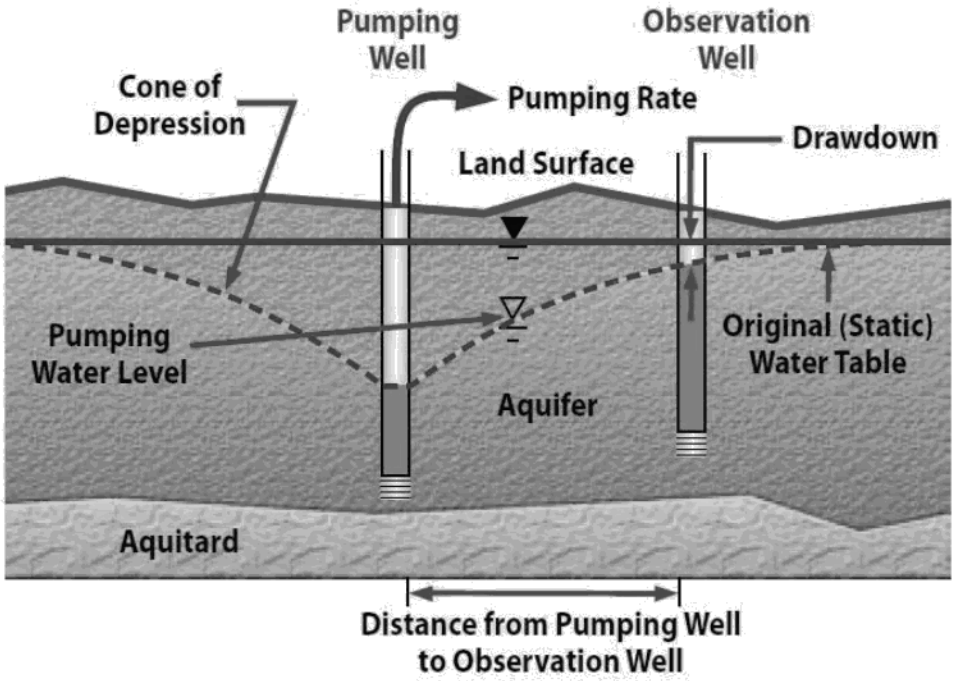
"Non-domestic"

- All non-domestic wells require a license
- "domestic":
  - household purposes (drinking, cleaning, food prep, etc)
  - Watering animals kept as pets or for household use
  - Irrigation of garden < 1,000 m^2 (0.25 acre)

Existing vs. New

- Existing (well <u>in use</u> pre-Feb 29, 2016) vs new wells
- Existing wells:
  - have until March 1, 2019 to apply for a license
  - can use the water in the meantime
  - until March 1, 2017 the application fee is waived ($250 to $10,000)
  - date of precedence based on date of first use
  - post March, 2019: priority rights are lost
  - water rental fees begin the date the *WSA* comes into force (February 29, 2016)
- <u>New wells: can't use the water until a license is granted</u>

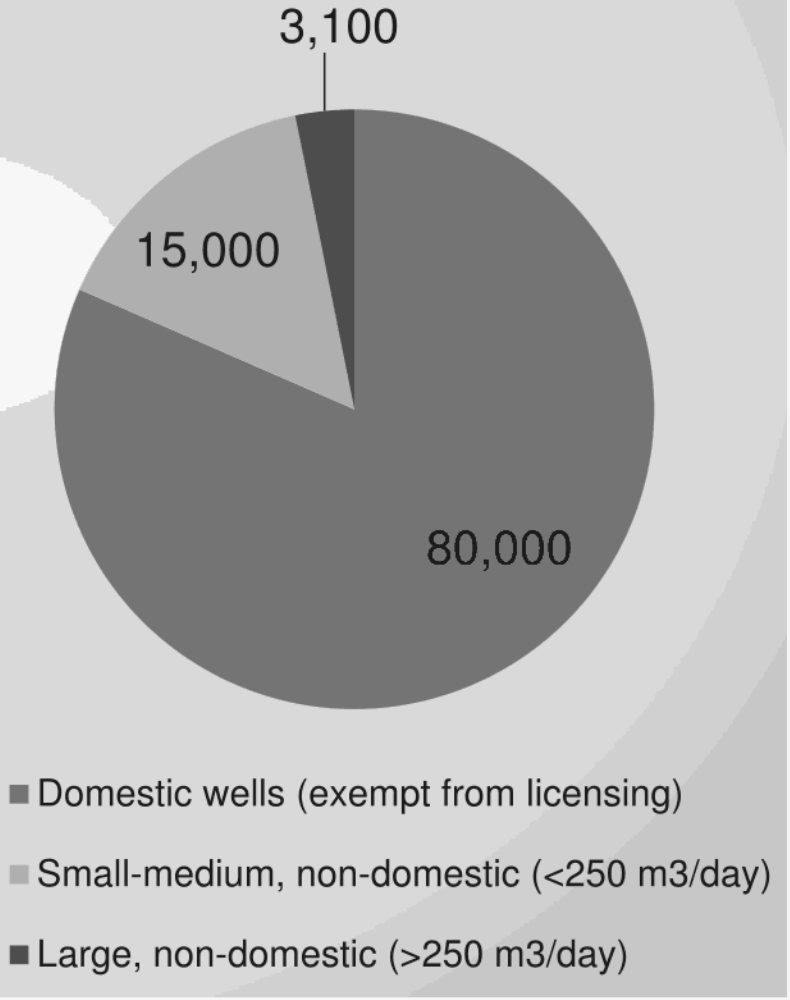
Implications for new wells



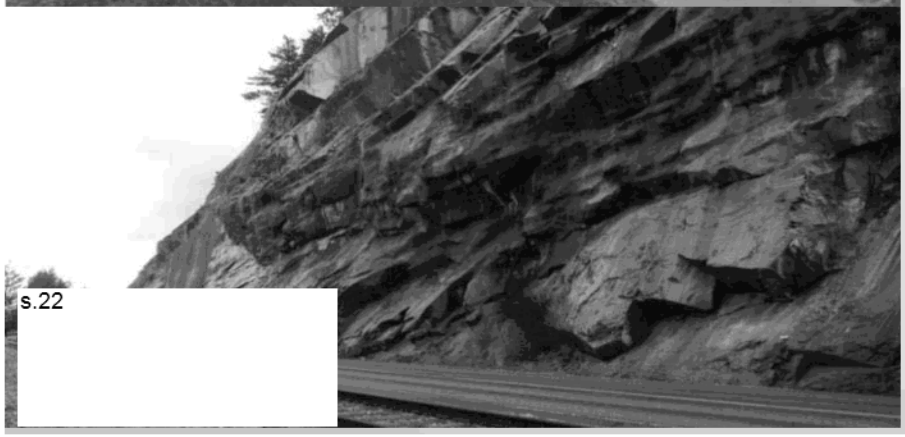
- Can drill a well before getting a license, but can't use the water until a license is granted
- Quantity authorized by a license will depend on impacts (existing users, streams, etc)
- Well depth, setbacks from existing wells, proximity to streams, etc. should be considered prior to drilling

Domestic wells

- Not licensed, unless have an area based regulation
- Well owners have no license, but have a deemed water right
- Rights are considered when adjudicating a water license
- Priority based on date of first use
- Subject to regulations during times of water shortage



Groundwater diversions exempt from authorization requirements



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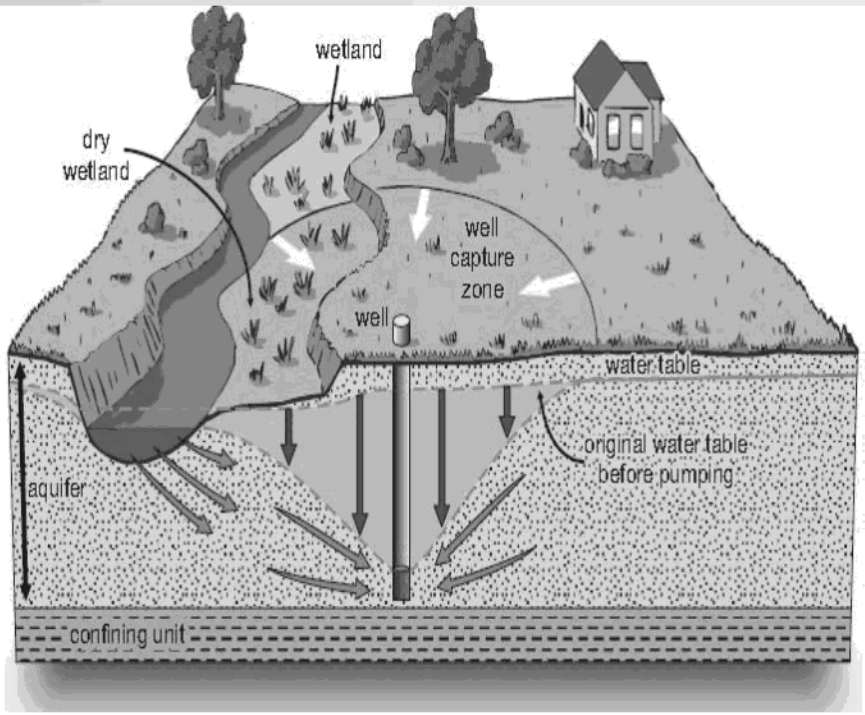
- Corridor ditches
- Local government drainage
- Agricultural drainage
- Building perimeter drains
- Pumping from a remediation well
- Drainage from a drainage well

Decision-maker considers how pumping may impact nearby wells, ecosystems and existing rights



- Drawdown around a pumping well can be significant
- Area of drawdown can also extend up-gradient
- Depth and extent of drawdown depend on geology & pumping rate

QUESTIONS?

For further information:

Mike Simpson
mike.simpson@gov.bc.ca
604-586-2809

Emily Elsliger
Emily.elsliger@gov.bc.ca
604-702-5793

http://www.env.gov.bc.ca/wsd/plan_protect_sustain/groundwater/

Water Sustainability Act

http://engage.gov.bc.ca/watersustainabilityact/

- Additional slides to help answer questions

Wells regulated by the WSA and GWPR

Class of well	Category or subclass
Water supply	All*
Monitoring	Temporary, Permanent
Recharge/Injection	Drilled, bored Driven, jetted, excavated
Dewatering	Temporary, Permanent
Drainage	All*
Remediation	Temporary, Permanent
Geotechnical	Borehole, Test pit*
Closed-loop geoexchange	All*

Wells exempt from *most* requirements

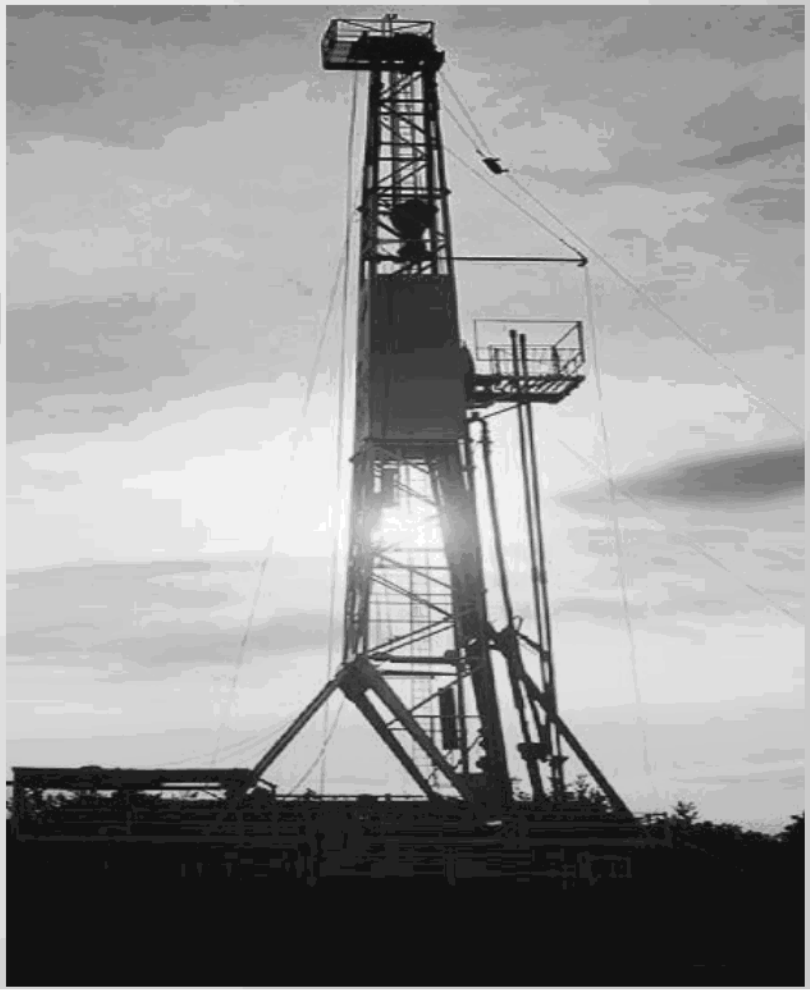
- Test pits
- Drainage wells
- Horizontal closed loop geoexchange wells < 5m deep
- Water source wells in NE BC diverting "deep groundwater" for oil and gas purpose

Must comply with requirements for:

- Stopping/controlling artesian flow
- Submitting reports for flowing artesian wells
- Decommissioning test pits
- Prohibiting/remediating foreign matter in wells
- Wells on Crown land

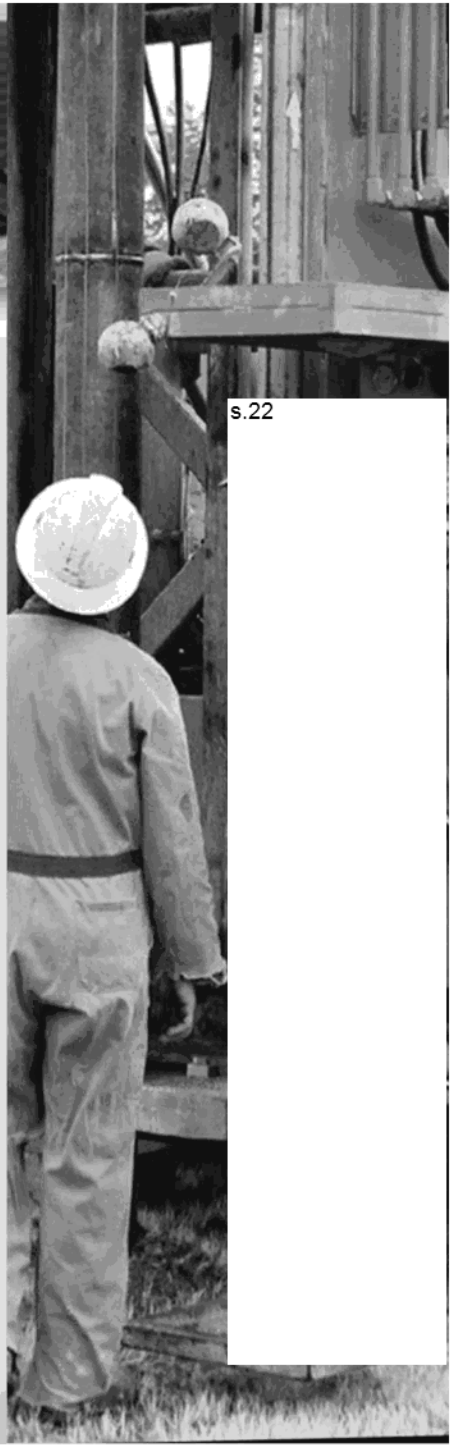
Artificial openings *not* regulated by WSA & GWPR

- Building drains, sumps
- Ditches, infiltration trenches
- Pre-fab vertical drains, sand d soil consolidation
- Seismic relief holes
- Mineral exploration drill holes
- Geothermal wells
- Oil and gas wells



Water for well drilling

- Written consent to use private land/works
- No permanent/semi-permanent works; existing wells only
- Limit of 10 m^3 per day **unrecorded** water
  - 5 consecutive days
  - 10 days in a month
- Not from certain streams
  - Wetland, sensitive stream or stream in a park
  - Lake < 1 hectare or stream < 5m wide
  - Existing water reservation
  - Active temporary protection order
- WSA Sec 10 Use Approvals (Short Term Use of Water)



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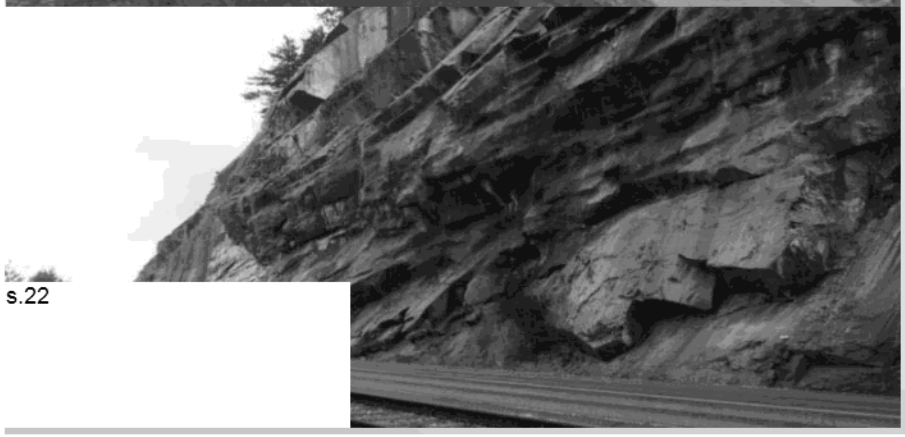

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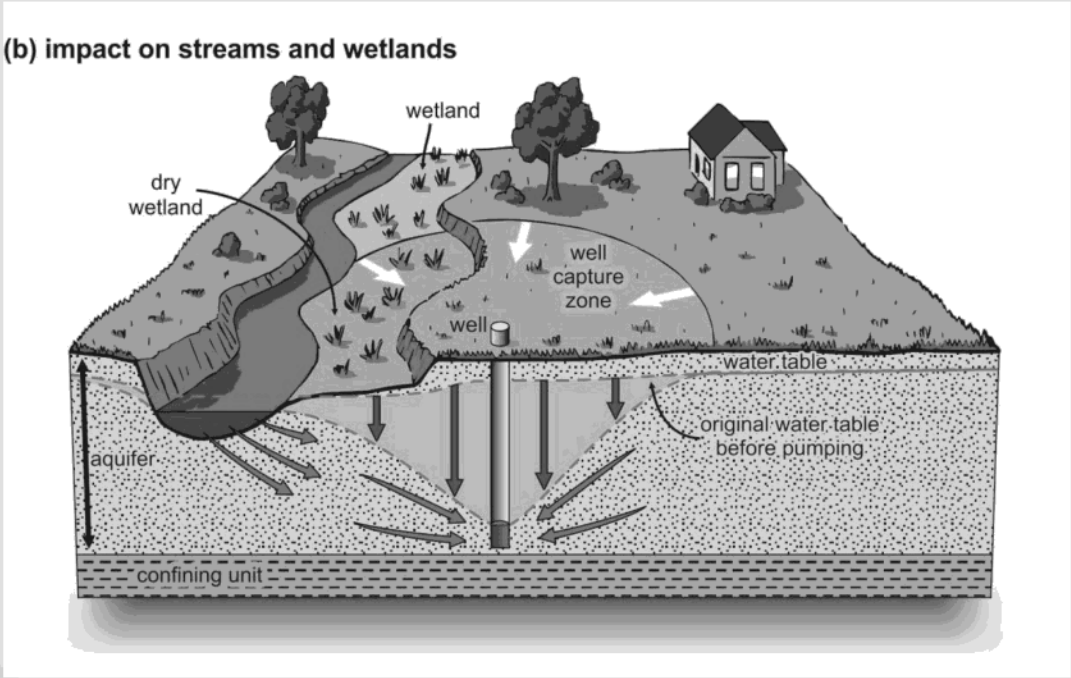
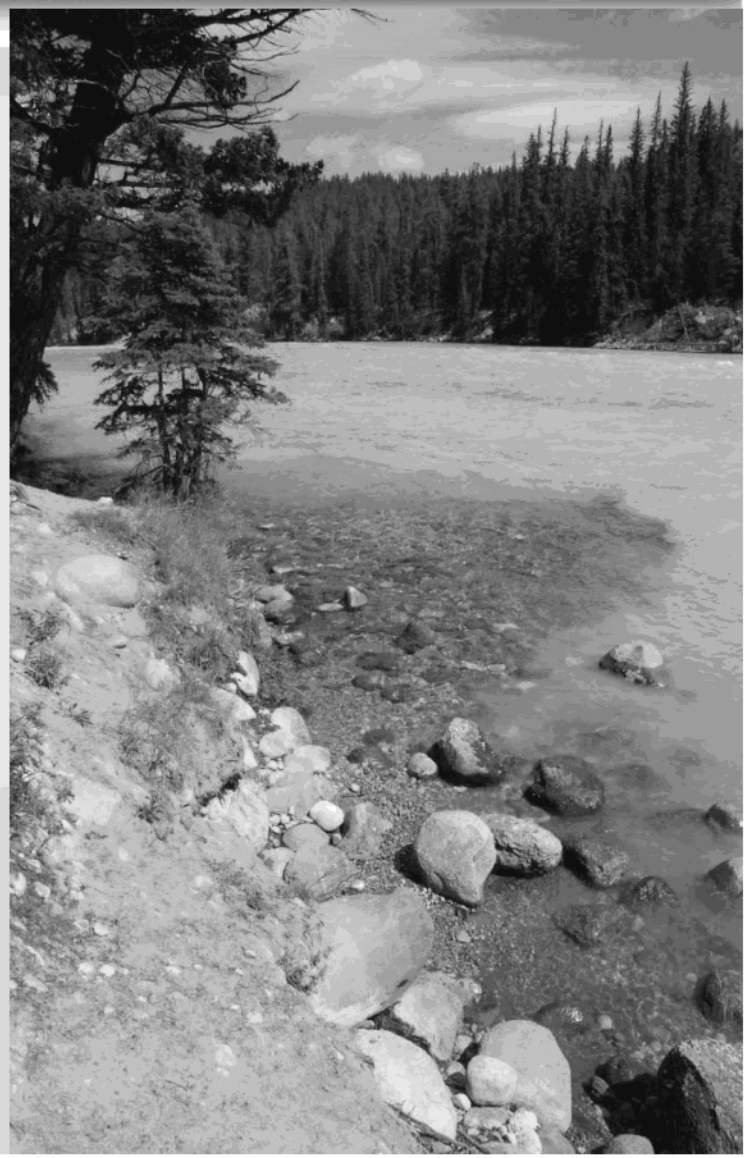


Canada's Groundwater Resources, 2014

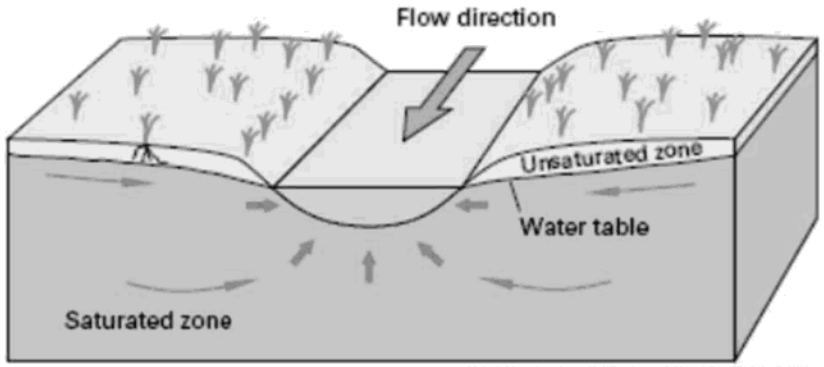
Hydraulic Connectivity

Operational Definition

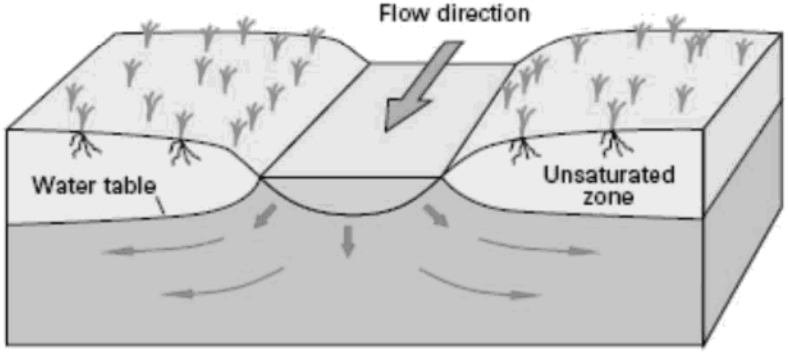
The reasonable likelihood that pumping of groundwater from a well will eventually result in a change in the flow of a stream or spring or change in the level of a lake, pond, wetland that overlies or borders the aquifer, over a time period and to an extent that the decision maker must take into account in considering the environmental flow needs of the stream or whether the rights of other authorized users on the stream are likely to be detrimentally affected.

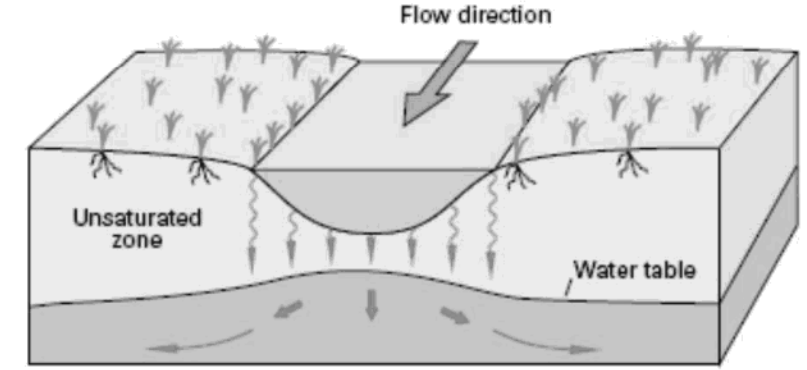


Connectivity & Baseflow

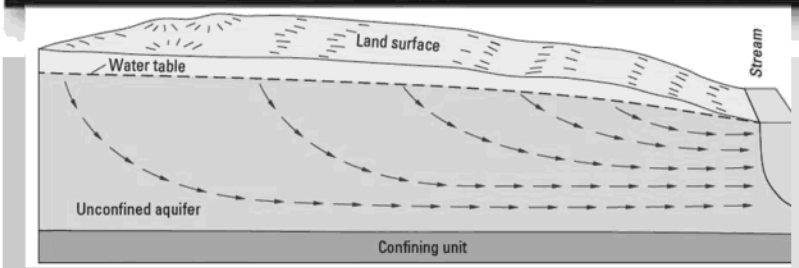


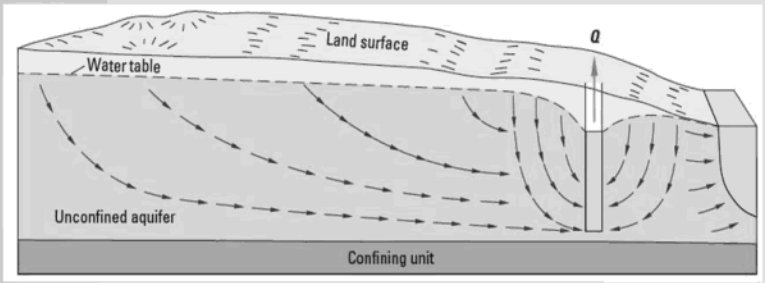
Source: Alley et al. (1999)





Source: Alley et al. (1999)


Land surface
Water table
Stream
Unconfined aquifer
Confining unit


Land surface
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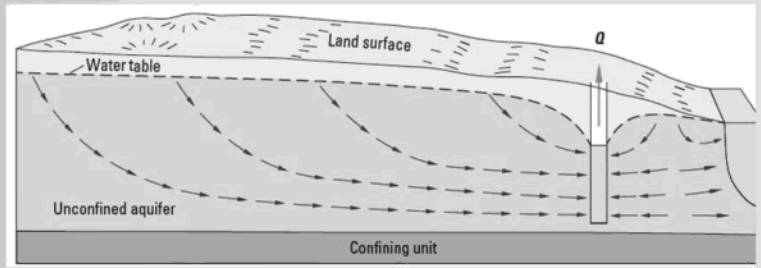
Water table
Unconfined aquifer
Confining unit


Land surface
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Water table
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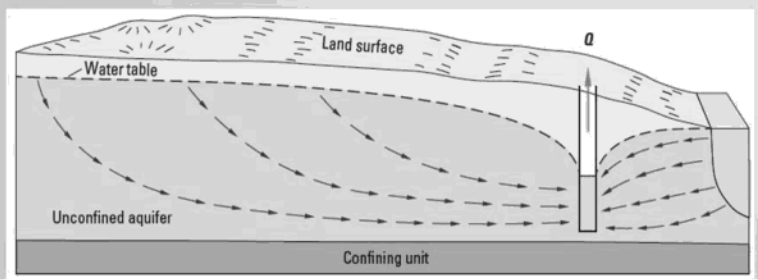
Land surface
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Water table
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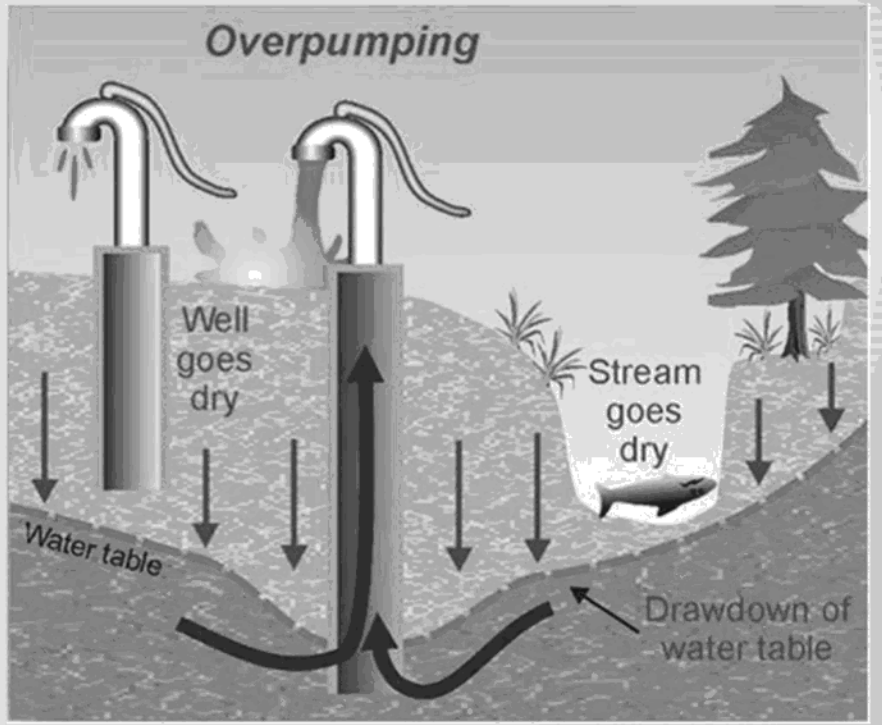
Overpumping
Well goes dry
Stream goes dry
Water table
Drawdown of water table

Agenda

Activity	Duration	Times
Meet at 1812 Miracle Beach Dr.	-	10 am
Introductions & housekeeping	20 min	10:00 to 10:20
Presentation + Questions	70 min	10:20 to 11:30
Break	15 min	11:30 to 11:45
Travel to inspection site #1	~5 min	11:45 to 11:50
Black Creek Oyster Bay Wells x 4	60 min	11:50 to 12:50
Break	30 min	12:50 to 13:20
Travel to inspection site #2	~30 min	13:20 to 13:50
Parkside Campground Wells x 2	50 min	13:50 to 14:40
Closing Remarks	10 min	14:40 to 14:50

Water Sustainability Act

Part 3, Division 3
and the Groundwater Protection Regulation

NRO targeted training – Module 1, Version 1

September 28, 2016

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Ministry of
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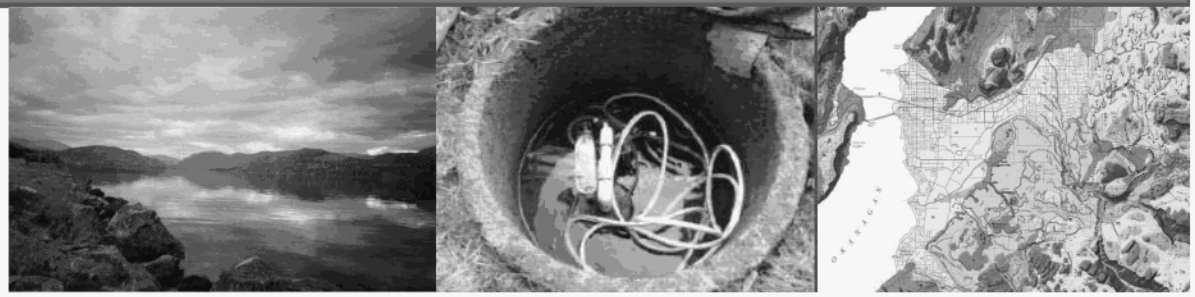

OUTLINE:

Introduction – West Coast Region groundwater team, how we handle compliance and enforcement

Legislation – *Water Sustainability Act* Part 3, Division 3 and the Groundwater Protection Regulation

Site Inspections – standardized approach, key ticketable offences, involvement of other staff/agencies, possible compliance workflow

Ticketable Offences – groundwater provisions in the Violation Ticket Administration and Fines Regulation

Other Considerations – tools, resources, next steps

WEST COAST GROUNDWATER TEAM:

s.22

Nanaimo

Pat Lapcevic – Section Head (hydrogeologist)

Sylvia Barroso – Regional Hydrogeologist

Ben Robinson – Groundwater Protection Officer

Graeme Henderson – Groundwater Technician

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WSA Part 3, Division 3 and the GWPR

How Groundwater Staff Operate:

- Receive complaints (public, government, other)
- Groundwater Protection Officer: takes on case
- Regional Hydrogeologist: advises, writes orders
- Compliance Tools: education -> advisory letters

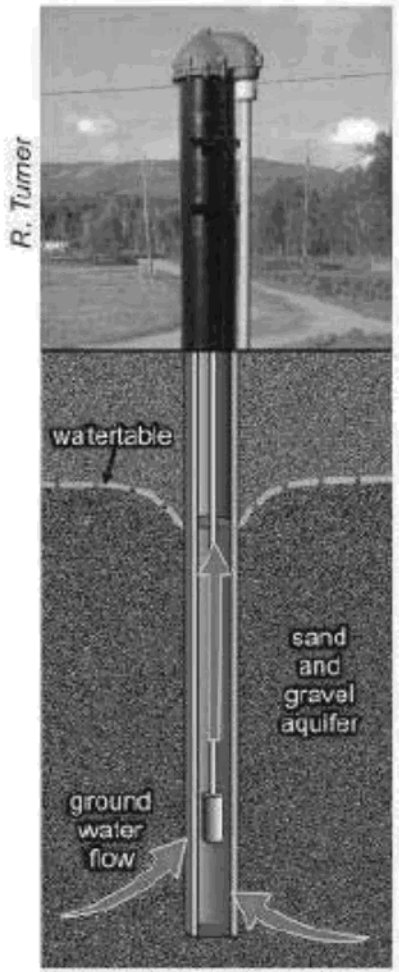
  -> warning letters -> orders -> tickets -> charges

Water Sustainability Act

Part 3, Division 3

Groundwater Protection Regulation

To promote sustainable use and protection of BC's aquifers by specifying requirements for wells to be properly constructed, maintained, and, at the end of their service, deactivated and decommissioned.



A well draws groundwater from an aquifer.

HISTORY OF GROUNDWATER LEGISLATION IN BC:

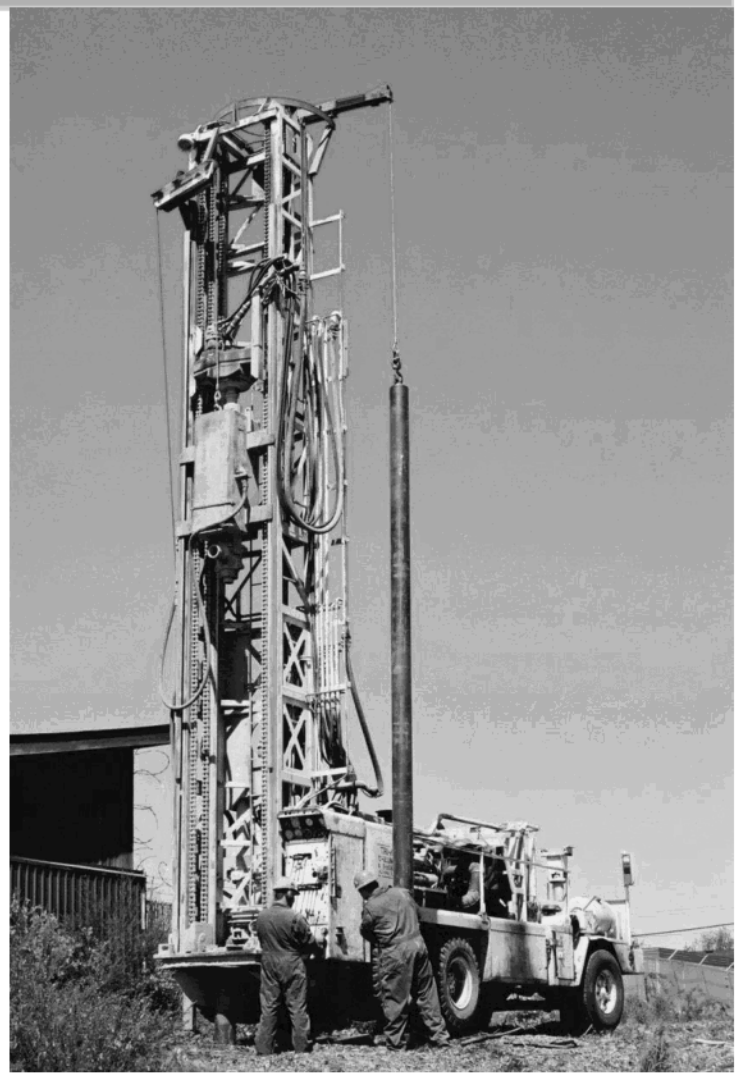
Prior to 2004 – no regulation of well construction or groundwater use. Voluntary code of practice only.

Nov 1, 2005 – *Water Act* amended to include groundwater provisions. Ground Water Protection Regulation introduced.

February 29, 2016 – The *Water Sustainability Act* and the Groundwater Protection Regulation come into force. Note this includes licensing for all wells except single domestic.

QUICK OVERVIEW OF SELECT PROVISIONS

- Qualification requirements
- Artesian flow
- Well caps and covers
- Well identification
- Decommissioning or deactivating a well
- Well reports
- Well operation
- “Junk” in wells
- Wells on Crown Land



WHAT IS A WELL?

It's a well if it is used for:

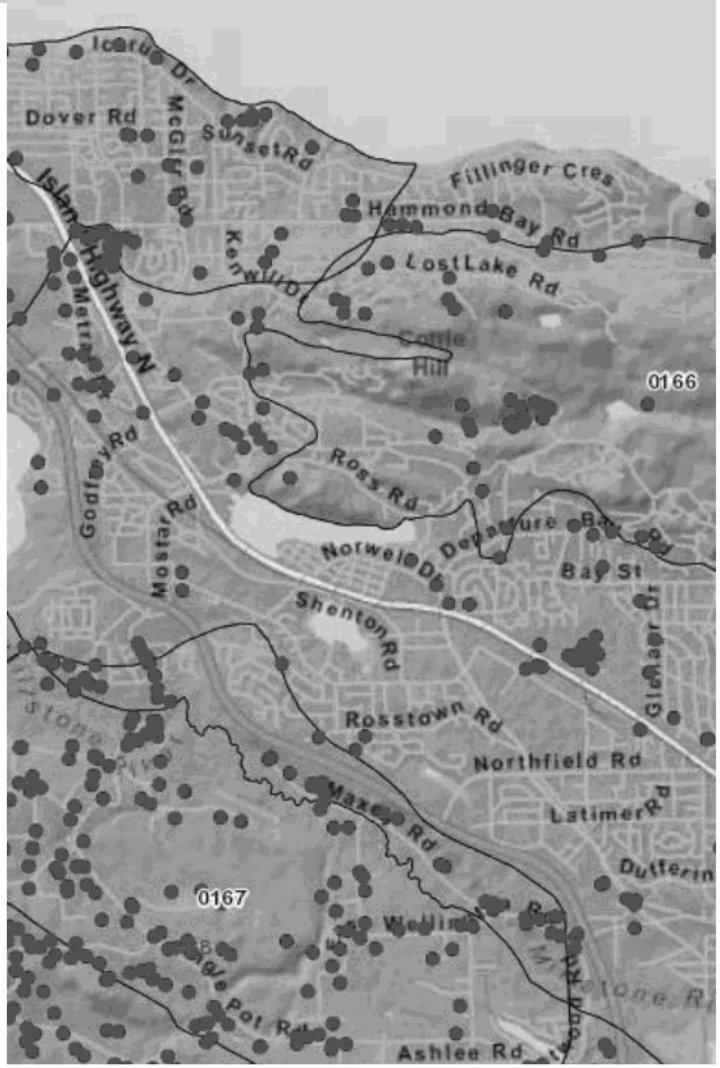
- Groundwater extraction (Water Supply)
- Groundwater monitoring/remediation
- Geotechnical investigation
- Geoexchange (>5 m deep)

Wells are not (s. 3 & 4 of GWPR):

- Boreholes used for oil & gas or geothermal exploration (deep wells)
- Openings in the ground used for drainage
- Drill holes made for mineral exploration

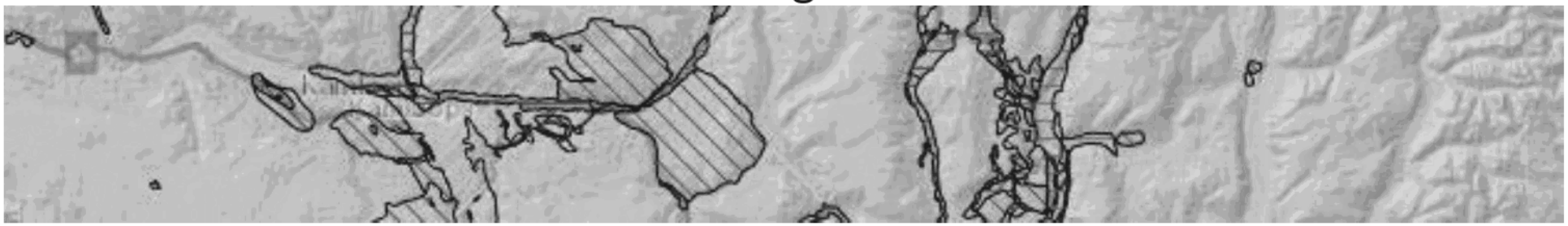
SITE INSPECTION PLANNING

1. Pre-trip planning (desktop review)
2. Field equipment and forms
3. Field safety
4. Inspection Form Use & Key Ticketable Offences



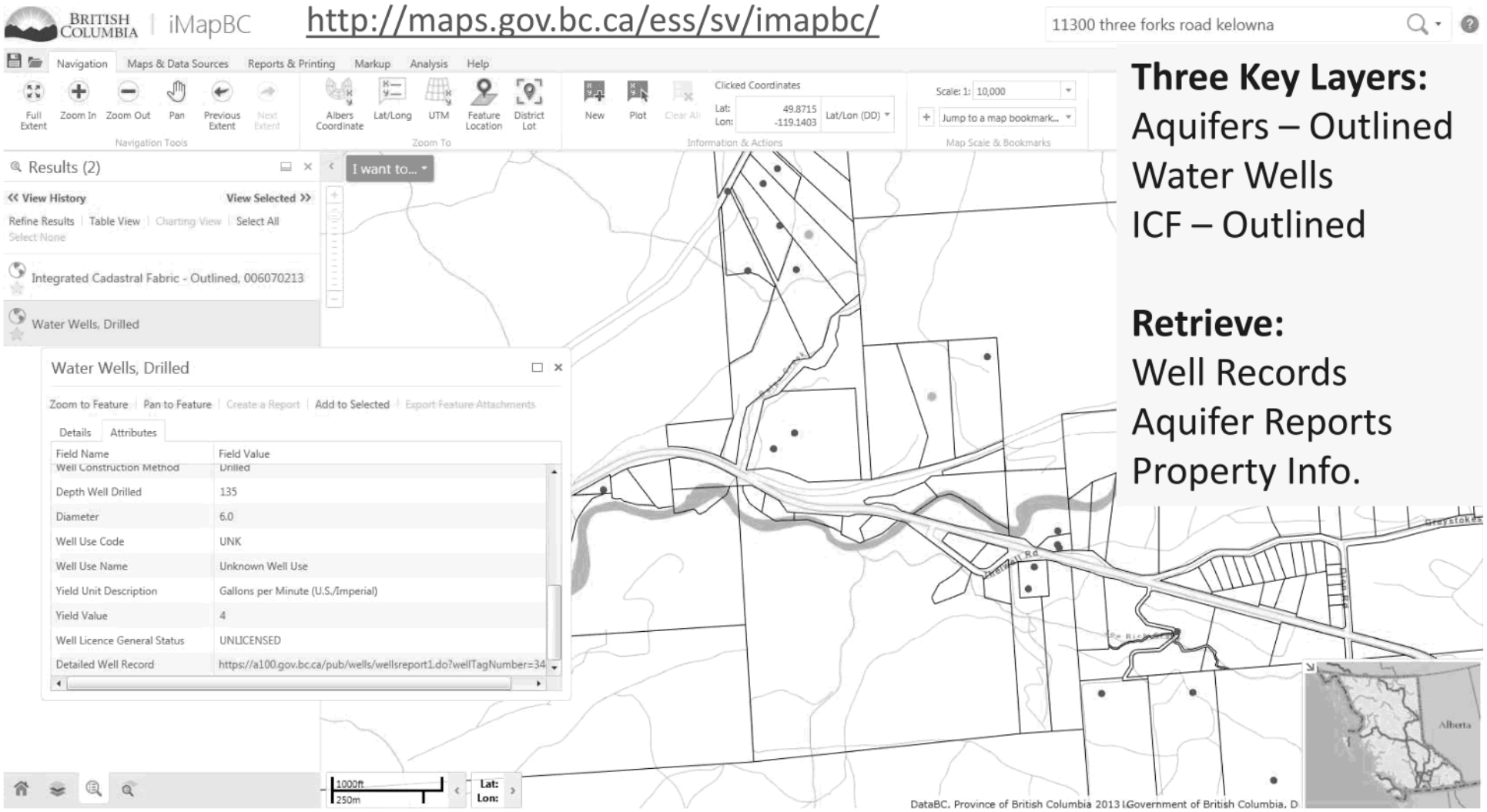
SITE INSPECTION PLANNING:
Pre-trip planning and desktop review

- Obtain available information on property owner, property, and the well (iMapBC, WELLS, complaint information, etc.)
- Form a general impression of the area (well density, aquifer vulnerability etc.)
- Gather specific directions to the site (maps to the site, maps of the site, etc.)
- Contact the well owner to arrange a visit



WSA Part 3, Division 3 and the GWPR

Introduction | Legislation | **Site Inspections** | Ticketable Offences | Other Considerations



Three Key Layers:
Aquifers – Outlined
Water Wells
ICF – Outlined

Retrieve:
Well Records
Aquifer Reports
Property Info.

ACCESSING WELL INFORMATION

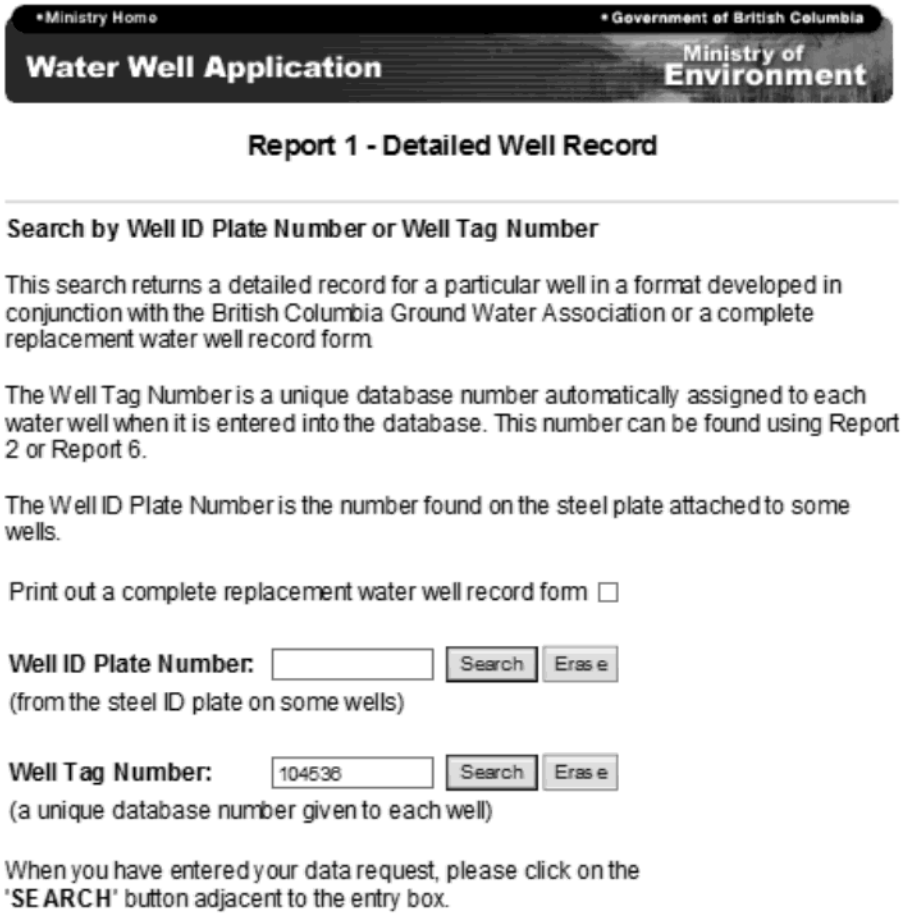
WELLS DATABASE

https://a100.gov.bc.ca/pub/wells/public/common/wellsreport1.jsp

Not all wells are in WELLS

- Water Systems: yes
- Wells after Feb 29 2016: yes
- Private wells before Feb 29 2016: voluntary

Contact FCBC or groundwater staff for help.



•Ministry Home • Government of British Columbia

Water Well Application Ministry of Environment

Report 1 - Detailed Well Record

Search by Well ID Plate Number or Well Tag Number

This search returns a detailed record for a particular well in a format developed in conjunction with the British Columbia Ground Water Association or a complete replacement water well record form.

The Well Tag Number is a unique database number automatically assigned to each water well when it is entered into the database. This number can be found using Report 2 or Report 6.

The Well ID Plate Number is the number found on the steel plate attached to some wells.

Print out a complete replacement water well record form ☐

Well ID Plate Number: Search Erase
(from the steel ID plate on some wells)

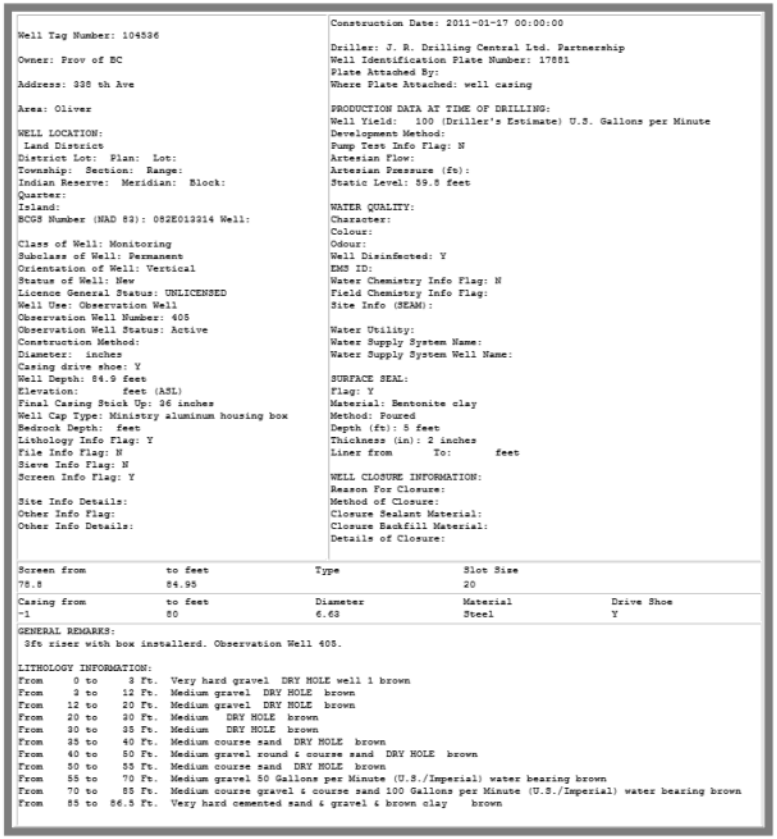
Well Tag Number: 104536 Search Erase
(a unique database number given to each well)

When you have entered your data request, please click on the '**SEARCH**' button adjacent to the entry box.

WELL IDENTIFICATION/CLASSIFICATION DETAILS

Well Construction Reports (completed by the driller) or *Detailed Well Records* (system files) provide:

- Date of construction
- WTN, Well ID Plate No.
- Well owner
- Classification details (well class, subclass)
- Construction details (depth, diameter, etc.)
- Lithology (geologic materials encountered by the driller during construction)



Well Tag Number: 104536

Owner: Prov of BC

Address: 338 th Ave

Area: Oliver

WELL LOCATION:
Land District
District Lot: Plan: Lot:
Township: Section: Range:
Indian Reserve: Meridian: Block:
Quarter:
Island:
BCGS Number (NAD 83): 082E013214 Well:

Class of Well: Monitoring
Subclass of Well: Permanent
Orientation of Well: Vertical
Status of Well: New
Licence General Status: UNLICENSED
Well Use: Observation Well
Observation Well Number: 405
Observation Well Status: Active
Construction Method:
Diameter: inches
Casing drive shoe: Y
Well Depth: 84.9 feet
Elevation: feet (ASL)
Final Casing Stick Up: 36 inches
Well Cap Type: Ministry aluminum housing box
Bedrock Depth: feet
Lithology Info Flag: Y
File Info Flag: N
Sieve Info Flag: N
Screen Info Flag: Y

Site Info Details:
Other Info Flag:
Other Info Details:

Construction Date: 2011-01-17 00:00:00

Driller: J. R. Drilling Central Ltd. Partnership
Well Identification Plate Number: 17881
Plate Attached By:
Where Plate Attached: well casing

PRODUCTION DATA AT TIME OF DRILLING:
Well Yield: 100 (Driller's Estimate) U.S. Gallons per Minute
Development Method:
Pump Test Info Flag: N
Artesian Flow:
Artesian Pressure (ft):
Static Level: 59.8 feet

WATER QUALITY:
Character:
Colour:
Odour:
Well Disinfected: Y
EMS ID:
Water Chemistry Info Flag: N
Field Chemistry Info Flag:
Site Info (SEAM):

Water Utility:
Water Supply System Name:
Water Supply System Well Name:

SURFACE SEAL:
Flag: Y
Material: Bentonite clay
Method: Poured
Depth (ft): 5 feet
Thickness (in): 2 inches
Liner from To: feet

WELL CLOSURE INFORMATION:
Reason For Closure:
Method of Closure:
Closure Sealant Material:
Closure Backfill Material:
Details of Closure:

Screen from	to feet	Type	Slot Size	
75.8	84.95		20	
Casing from	**to feet**	**Diameter**	**Material**	**Drive Shoe**
-1	80	6.63	Steel	Y

GENERAL REMARKS:
3ft riser with box installerd. Observation Well 405.

LITHOLOGY INFORMATION:
From 0 to 3 Ft. Very hard gravel DRY HOLE well 1 brown
From 3 to 12 Ft. Medium gravel DRY HOLE brown
From 12 to 20 Ft. Medium gravel DRY HOLE brown
From 20 to 30 Ft. Medium DRY HOLE brown
From 30 to 35 Ft. Medium DRY HOLE brown
From 35 to 40 Ft. Medium course sand DRY HOLE brown
From 40 to 50 Ft. Medium gravel round & course sand DRY HOLE brown
From 50 to 55 Ft. Medium course sand DRY HOLE brown
From 55 to 70 Ft. Medium gravel 50 Gallons per Minute (U.S./Imperial) water bearing brown
From 70 to 85 Ft. Medium course gravel & course sand 100 Gallons per Minute (U.S./Imperial) water bearing brown
From 85 to 86.5 Ft. Very hard cemented sand & gravel & brown clay brown

Well Tag Number: 104536

Owner: Prov of BC

Address: 338 th Ave

Area: Oliver

WELL LOCATION:
Land District
District Lot: Plan: Lot:
Township: Section: Range:
Indian Reserve: Meridian: Block:
Quarter:
Island:
BCGS Number (NAD 83): 082E013314 Well:

Class of Well: Monitoring
Subclass of Well: Permanent
Orientation of Well: Vertical
Status of Well: New
Licence General Status: UNLICENSED
Well Use: Observation Well
Observation Well Number: 405

Construction Date: 2011-01-17 00:00:00

Driller: J. R. Drilling Central Ltd. Partners
Well Identification Plate Number: 17881
Plate Attached By:
Where Plate Attached: well casing

PRODUCTION DATA AT TIME OF DRILLING:
Well Yield: 100 (Driller's Estimate) U.S. G
Development Method:
Pump Test Info Flag: N
Artesian Flow:
Artesian Pressure (ft):
Static Level: 59.8 feet

WATER QUALITY:
Character:
Colour:
Odour:
Well Disinfected: Y
EMS ID:
Water Chemistry Info Flag: N
Field Chemistry Info Flag:
Site Info (SEAM):

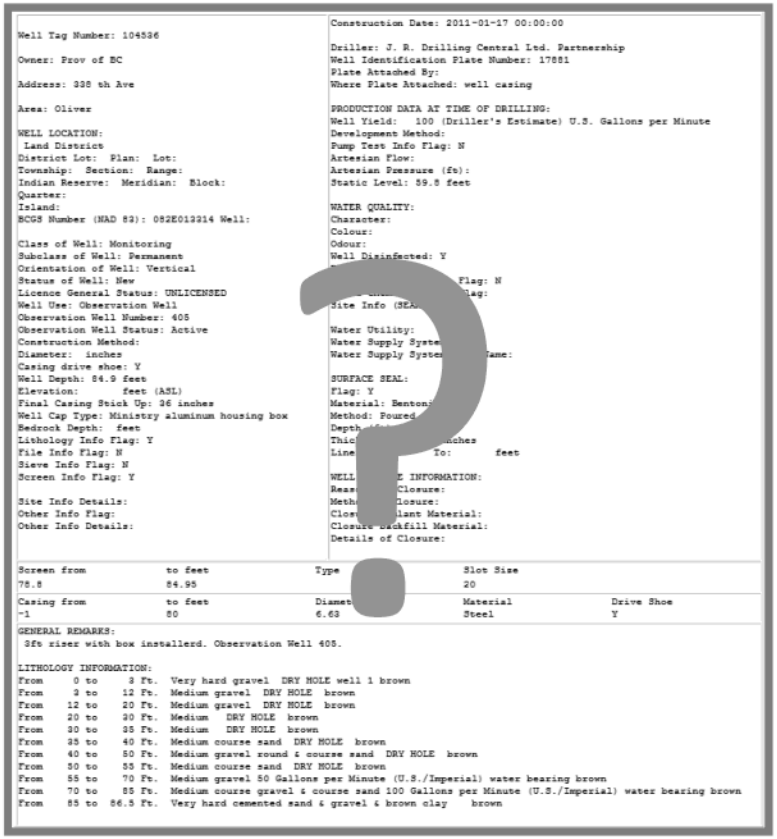
CROSS REFERENCE A WELL RECORD

Make sure you have the right record:

- Spatial data may be off
- Not all wells are in WELLS
- Don't rely unless reasonable fit

Ask the owner:

- Address
- Date constructed
- Who constructed it
- Previous owners
- Well Depth



Well Tag Number: 104536

Owner: Prov of BC

Address: 338 th Ave

Area: Oliver

WELL LOCATION:
Land District
District Lot: Plan: Lot:
Township: Section: Range:
Indian Reserve: Meridian: Block:
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Construction Method:
Diameter: inches
Casing drive shoe: Y
Well Depth: 84.9 feet
Elevation: feet (ASL)
Final Casing Stick Up: 36 inches
Well Cap Type: Ministry aluminum housing box
Bedrock Depth: feet
Lithology Info Flag: Y
File Info Flag: N
Sieve Info Flag: N
Screen Info Flag: Y

Site Info Details:
Other Info Flag:
Other Info Details:

Construction Date: 2011-01-17 00:00:00

Driller: J. R. Drilling Central Ltd. Partnership
Well Identification Plate Number: 17881
Plate Attached By:
Where Plate Attached: well casing

PRODUCTION DATA AT TIME OF DRILLING:
Well Yield: 100 (Driller's Estimate) U.S. Gallons per Minute
Development Method:
Pump Test Info Flag: N
Artesian Flow:
Artesian Pressure (ft):
Static Level: 59.8 feet

WATER QUALITY:
Character:
Colour:
Odour:
Well Disinfected: Y

Water Utility:
Water Supply Syste
Water Supply Syste

SURFACE SEAL:
Flag: Y
Material: Benton
Method: Poured
Depth
Thic nches
Line To: feet

WELL INFORMATION:
Reas Closure:
Meth losure:
Clos lant Material:
Closure Backfill Material:
Details of Closure:

Screen from	to feet	Type	Slot Size
75.8	84.95		20

Casing from	to feet	Diamet	Material	Drive Shoe
-1	80	6.63	Steel	Y

GENERAL REMARKS:
3ft riser with box installerd. Observation Well 405.

LITHOLOGY INFORMATION:

From	0 to	3 Ft.	Very hard gravel DRY HOLE well 1 brown	
From	3 to	12 Ft.	Medium gravel DRY HOLE brown	
From	12 to	20 Ft.	Medium gravel DRY HOLE brown	
From	20 to	30 Ft.	Medium DRY HOLE brown	
From	30 to	35 Ft.	Medium DRY HOLE brown	
From	35 to	40 Ft.	Medium course sand DRY HOLE brown	
From	40 to	50 Ft.	Medium gravel round & course sand DRY HOLE brown	
From	50 to	55 Ft.	Medium course sand DRY HOLE brown	
From	55 to	70 Ft.	Medium gravel 50 Gallons per Minute (U.S./Imperial) water bearing brown	
From	70 to	85 Ft.	Medium course gravel & course sand 100 Gallons per Minute (U.S./Imperial) water bearing brown	
From	85 to	86.5 Ft.	Very hard cemented sand & gravel & brown clay brown	

SITE INSPECTION PLANNING: Field equipment and forms

- Identification and business cards
- iPad or notebook
- GPS
- Measuring tape
- Camera (or phone/iPad)
- Reference material (legislation, brochures, guidance material)
- Well Inspection Forms
- Optional – tools, water level tape, bentonite chips, soil probe

s.22

SITE INSPECTIONS:
Field safety

- **Visibility:** Road side visibility/ traffic/ off-road vehicles – vehicle positioning, use safety vests, cones, etc. as appropriate. s.22
- **Physical hazards:** weather, obstacles, animals or pests, etc. Dress appropriately, take actions to eliminate hazards where possible
- **Human Conflict** - apply conflict resolution training

- **Confined spaces – Do not go into a well pit or subterranean pump house! Anoxic/harmful gas.**

SITE INSPECTION:

- **General impression:** Is it a "well"? Is the site cluttered? Does the well look new or old?
- **Documentation:** use well inspection form, take photos & notes
- **Client resources**: always have business cards, brochures, regulations, other resources on hand for the public



WSA Part 3, Division 3 and the GWPR

Introduction | Legislation | **Site Inspections** | Ticketable Offences | Other Considerations

WELL INSPECTION FORM – available on FTP

BRITISH COLUMBIA

MINISTRY OF FORESTS, LANDS AND NATURAL RESOURCE OPERATIONS

38000-25 / Water Precinct_____

Inspection Date (YYYY/MM/DD) / Time (hh:mm):_____ Inspector:_____

Site or Water System Name: _____

Well owner: _____ Phone No.: _____

Site contact: _____ Phone No.: _____

Site Coordinates (NAD 83, Zone & UTM or *Lat/Long dd.ddddd): _____

Location address or legal description (PID): _____

Mailing address: _____

Well location description: _____

Well Tag Number[1] _____
Well ID Plate No. _____
ID plate location ☐ Strapped to casing ☐ Other _____
Construction date _____
Construction method _____
Class of well _____
Subclass of well _____
Driller name _____
Driller company _____
Driller registered ☐ Yes ☐ No ☐ Supervised[2]
Driller class ☐ Water well ☐ Geoexchange ☐ Geotechnical/Environmental
Pump installer name _____
Pump installer company _____
Pump installer registered ☐ Yes ☐ No ☐ Supervised[2]

Well status ☐ Active ☐ Deactivated ☐ Decommissioned ☐ Not in Use (see comments)
Well head location ☐ Outside ☐ Pump house ☐ Well pit ☐ Other ☐ See comments
Well pit drained ☐ Yes ☐ No ☐ See comments
Well siting Estimated distance to nearest water well _____ m ☐ Unknown
Secure well capicover ☐ Yes ☐ No ☐ See comments
Type of cap ☐ Sanitary seal ☐ Bolted (ptlass adapter style) ☐ Other (e.g. hand pump) See comments
Well depth _____ m _____ ft ☐ Unknown
Well diameter _____ cm _____ inches
Casing stick-up _____ cm _____ inches
Pumping rate (if known) _____ igpm L/s L/min m³/d Other_____ (circle correct units)
Surface seal ☐ Yes ☐ No ☐ Unknown ☐ See comments
Well maintenance ☐ Clear access to well ☐ No foreign matter stored within 3 m ☐ Grading promotes drainage away from wellhead
Flowing well ☐ Yes ☐ No ☐ See comments

[1]If not in WELLS database, attach well construction record (if available) [2]If work supervised by a registered person, provide name of supervisor

ISSUES IDENTIFIED FOR FOLLOW UP BASED ON *WATER SUSTAINABILITY ACT* & GROUND WATER PROTECTION REGULATION REQUIREMENTS: ☐ YES ☐ NO

COMMENTS & RECOMMENDED ACTIONS: _____

Well Inspection Form V 3.1 June 2016

_____

FLNRO Regional Office contact info:

_____
Inspector Signature

Government of British Columbia Water Webs…w.gov.bc.ca/water

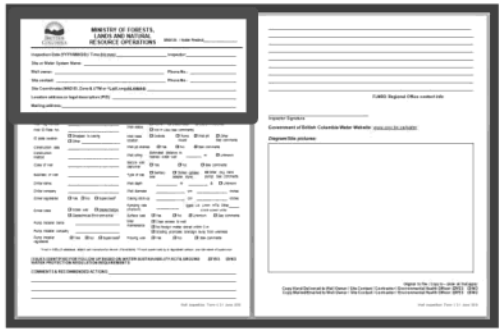
Diagram/Site pictures:

Original to File / Copy to – circle all that apply:
Copy Hand Delivered to Well Owner / Site Co… …ntractor / Environmental Health Officer: ☐YES ☐NO
Copy Mailed/Emailed to Well Owner / Site Con… …ontractor / Environmental Health Officer: ☐YES ☐NO

Well Inspection Form V 3.1 June 2016

iPad version coming soon!

ADMINISTRATIVE DETAILS



BRITISH COLUMBIA

MINISTRY OF FORESTS, LANDS AND NATURAL RESOURCE OPERATIONS

38000-25 / Water Precinct_____

Inspection Date (YYYY/MM/DD) / Time (hh:mm):_____ **Inspector:**_____

Site or Water System Name: _____

Well owner: _____ **Phone No.:** _____

Site contact: _____ **Phone No.:** _____

Site Coordinates (NAD 83, Zone & UTM or °Lat/Long dd.ddddd): _____

Location address or legal description (PID): _____

Mailing address:_____

Well location description: _____

WELL IDENTIFICATION/CLASSIFICATION DETAILS

Well Tag Number[1] _____

Well ID Plate No. _____

ID plate location
- ❒ Strapped to casing
- ❒ Other _____

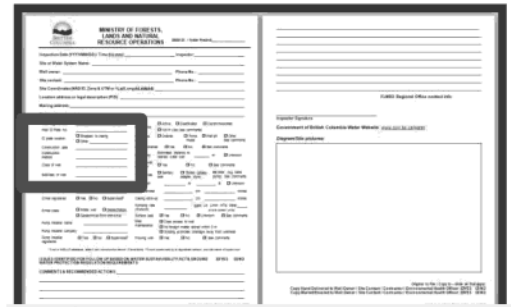
Construction date _____

Construction method _____

Class of well _____

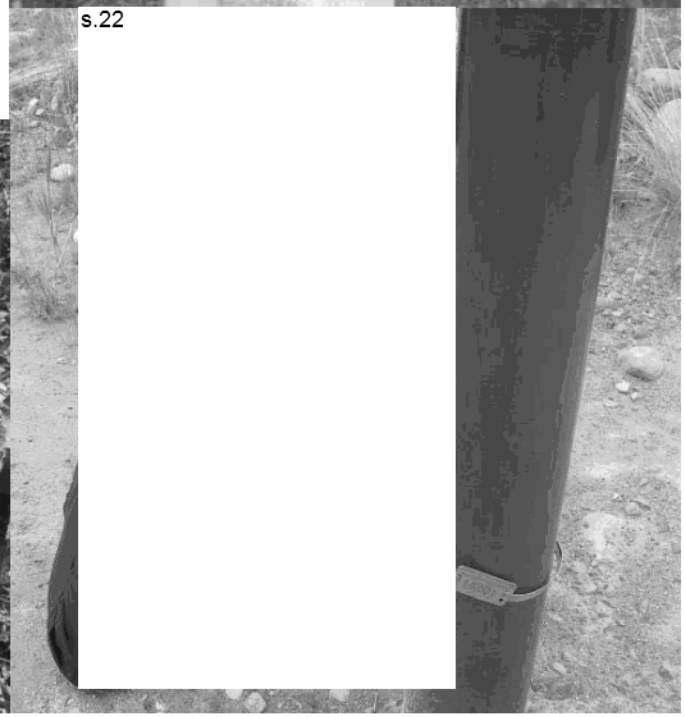
Subclass of well _____

[1]If no well record, ask owner if they have the drilling log. Submit this to MoE to help create a new record for the well.



TICKETABLE OFFENCES

section 106 (5) (e)	Fail to attach identification plate to a well or wellhead or to remove identification plate when required	$100	$15	$115
section 106 (5) (f)	Destroy, injure or tamper with identification plate attached to a well or wellhead	$100	$15	$115



QWD/QWPI DETAILS

Driller name _____

Driller company _____

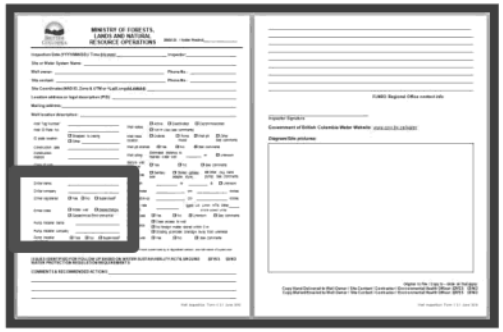
Driller registered ❒ Yes ❒ No ❒ Supervised[2]

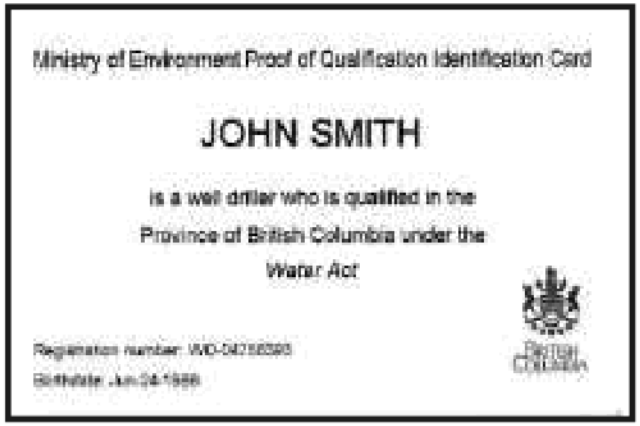
Driller class ❒ Water well ❒ Geoexchange
❒ Geotechnical/Environmental

Pump installer name _____

Pump installer company _____

Pump installer registered ❒ Yes ❒ No ❒ Supervised[2]

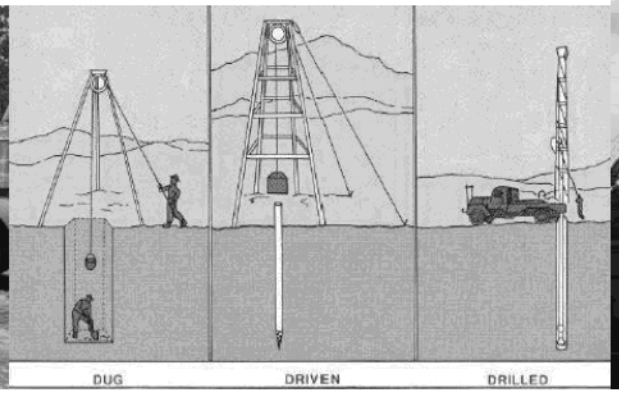




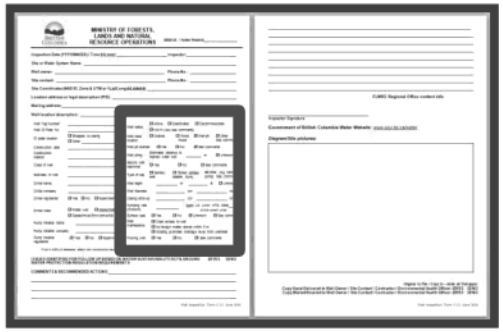
[2]*If work supervised by a registered person, provide name of supervisor*

TICKETABLE OFFENCES

section 106 (4) (o)	Construct a well, close a well or install a well pump or wellhead without holding the required qualifications	$350	$53	$403
section 106 (4) (o)	Disinfect a well without holding the required qualifications	$100	$15	$115
section 106 (4) (o)	Perform an activity in relation to a well, other than constructing, closing or disinfecting a well or installing a well pump or wellhead, without holding the required qualifications	$200	$30	$230



COMPLIANCE ASSESSMENT



Well status ❒ Active ❒ Deactivated ❒ Decommissioned ❒ Not in Use (see comments)

Well head location ❒ Outside ❒ Pump house ❒ Well pit ❒ Other See comments

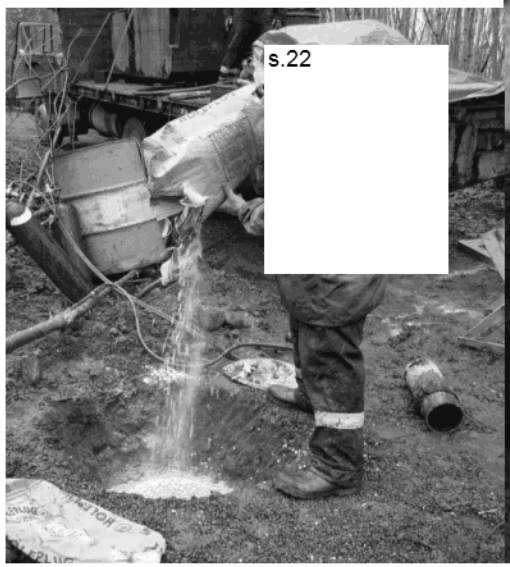
TICKETABLE OFFENCES

section 106 (5) (g)	Fail to deactivate well when required	$200	$30	$230
section 106 (5) (g)	Fail to decommission a well when required	$350	$53	$403

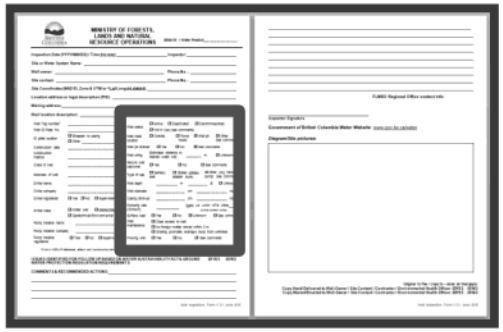
WSA DEFINITIONS:

DEACTIVATE = take the well out of service temporarily

DECOMMISSION = take the well out of service permanently (“closure”)

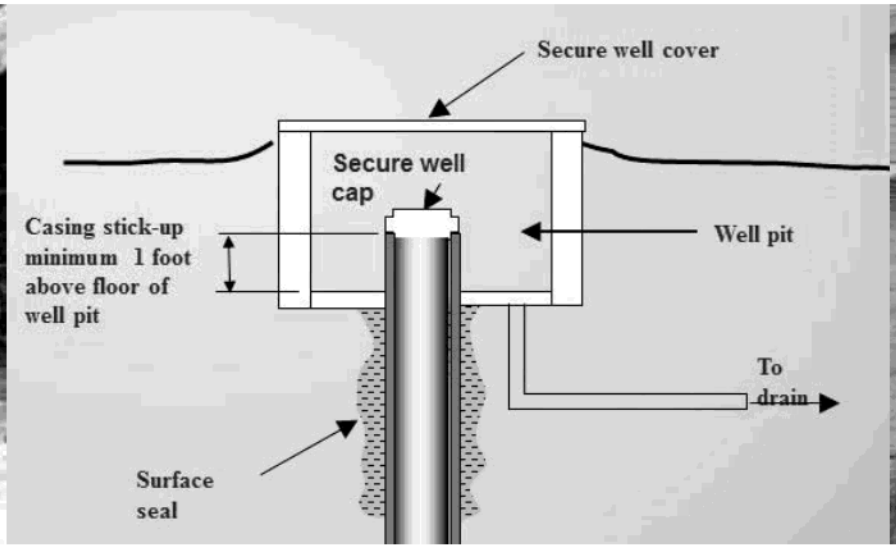


COMPLIANCE ASSESSMENT



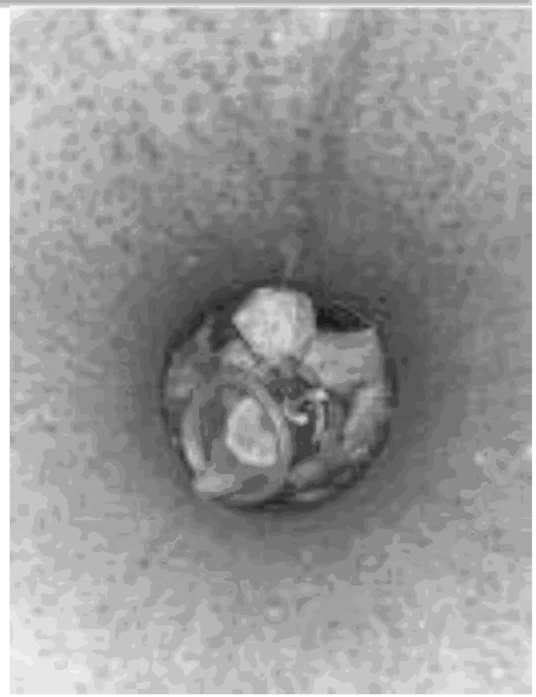
Well pit drained ❒ Yes ❒ No ❒ See comments

Well siting Estimated distance to nearest water well _____ m ❒ Unknown



TICKETABLE OFFENCES

section 106 (5) (k)	Introduce, allow or cause to be introduced into a well anything contrary to section 59 (1)	$350	$53	$403
section 107 (1) (d)	Fail to comply with an order under section 60 (1), (2), (3) or (4) in relation to foreign matter in a well	$500	$75	$575



Prohibition on introducing foreign matter into well

59 (1) A person must not introduce, allow to be introduced or cause to be introduced any of the following into a well:

(a) refuse;

(b) carcasses;

(c) human or animal waste;

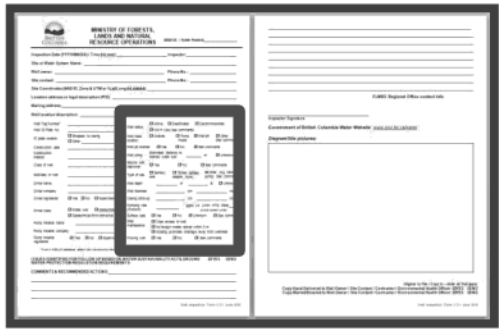
(d) pesticides or fertilizers;

(e) material from construction or demolition;

(f) a prescribed matter or substance;

(g) another contaminant, clay, silt, rock or a similar material, or another matter or substance, in such amounts or in such a manner as to cause or to be likely to cause a significant adverse impact on ...

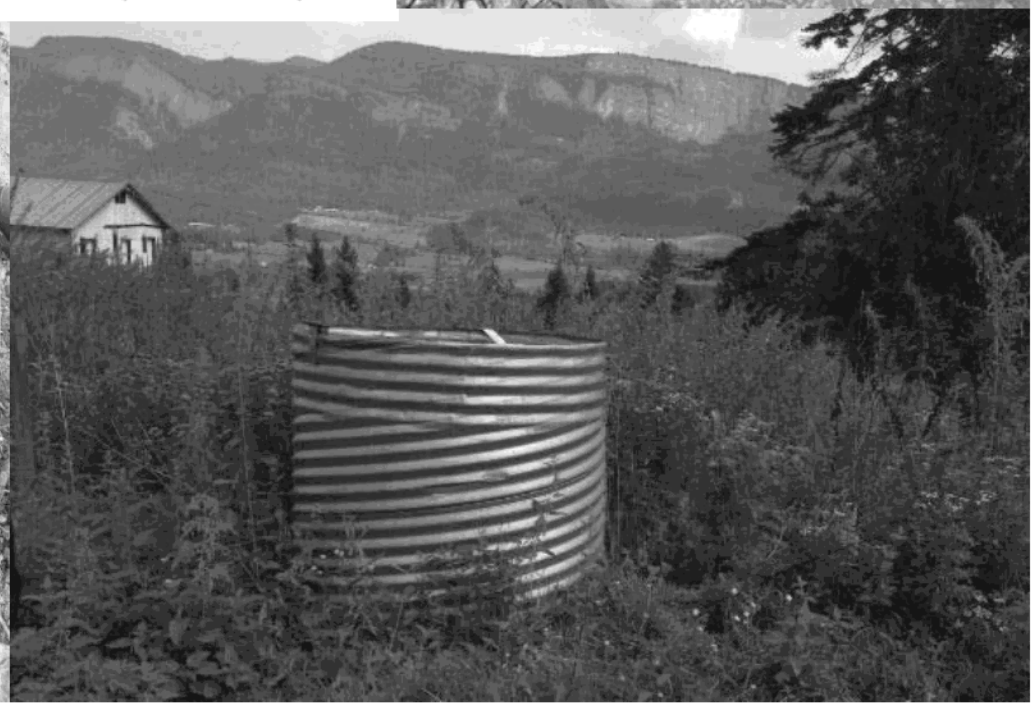
COMPLIANCE ASSESSMENT



Secure well cap/cover	❒ Yes	❒ No	❒ See comments
Type of cap	❒ Sanitary seal	❒ Bolted (pitless adapter style)	❒ Other (e.g. hand pump) See comments

TICKETABLE OFFENCES

section 106 (5) (c)	Fail to secure well cap or well cover or removes well cap or well cover when not authorized	$200	$30	$230
section 106 (5) (d)	Fail to replace well cap or well cover when required	$200	$30	$230

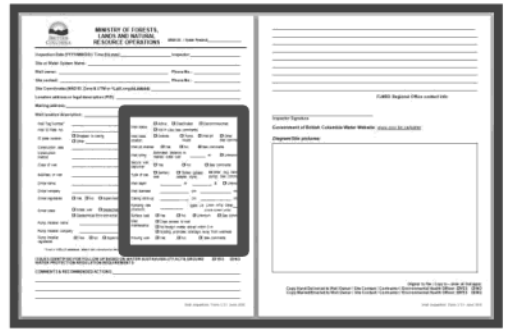


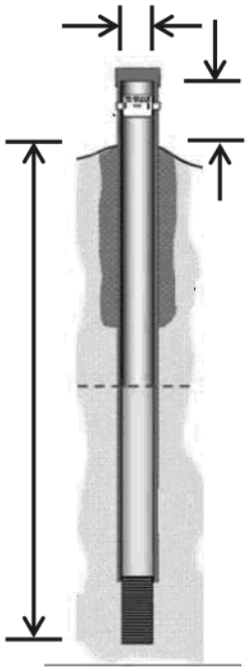
COMPLIANCE ASSESSMENT

Well depth _____ m _____ ft ❒ Unknown

Well diameter _____ cm _____ inches

Casing stick-up _____ cm _____ inches





Well depth

= distance from top of ground surface to the bottom of the well

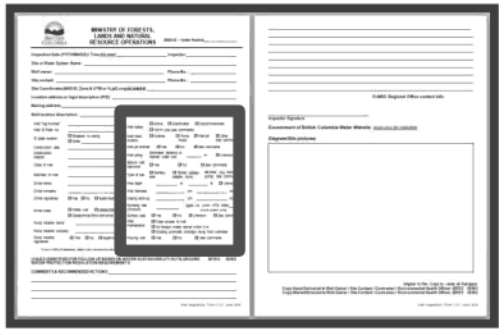
Diameter

= distance across the casing

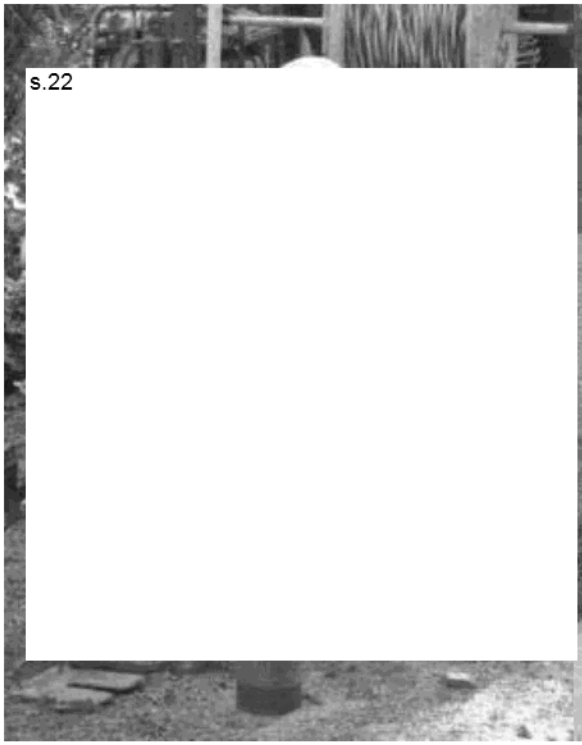
Stick-up

= distance from the ground surface to the top of the casing

COMPLIANCE ASSESSMENT

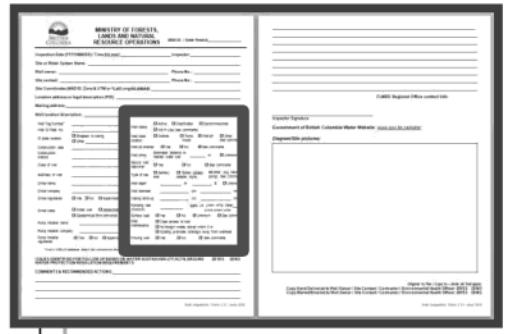


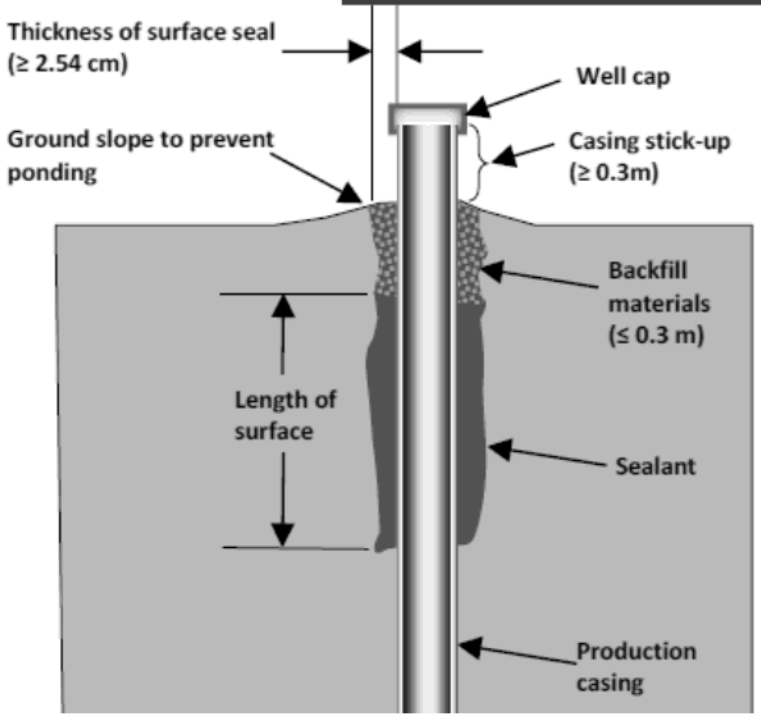
Pumping rate (if known) _____ lgpm L/s L/min m³/d Other_____
(circle correct units)



COMPLIANCE ASSESSMENT

Surface seal ❒ Yes ❒ No ❒ Unknown ❒ See comments





TICKETABLE OFFENCES

section 106 (5) (i)	Operate a well contrary to section 58	$350	$53	$403

Well operation

58 (1) A person must operate a well in accordance with the regulations and any directions of an engineer in respect of the well.

(2) A person must not operate a well in a manner that causes or is likely to cause

(a) the intrusion of saline groundwater, sea water or contaminated water into

(i) the aquifer from which that well diverts water,

(ii) another aquifer, or

(iii) a stream that is hydraulically connected to an aquifer referred to in subparagraph (i) or (ii), and

(b) a significant adverse impact on

(i) the quality of water in

(A) the aquifer from which a well diverts water,

(B) another aquifer, or

(C) a stream that is hydraulically connected to an aquifer referred to in clause (A) or (B), or

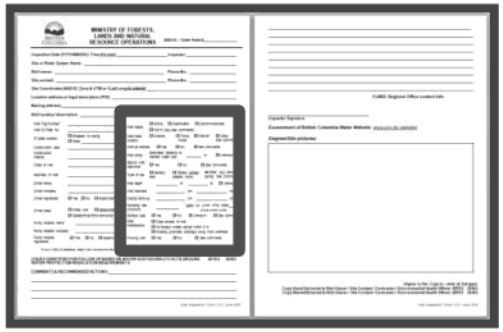
(ii) the existing uses made of the water diverted from

(A) a well that diverts water from the aquifer,

(B) a well that diverts water from another aquifer, or

(C) a stream that is hydraulically connected to an aquifer referred to in clause (A) or (B).

COMPLIANCE ASSESSMENT

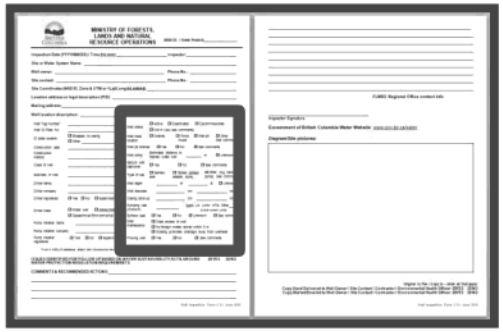


Well maintenance

- ❒ Clear access to well
- ❒ No foreign matter stored within 3 m
- ❒ Grading promotes drainage away from wellhead

COMPLIANCE ASSESSMENT

Flowing well ☐ Yes ☐ No ☐ See comments



TICKETABLE OFFENCES

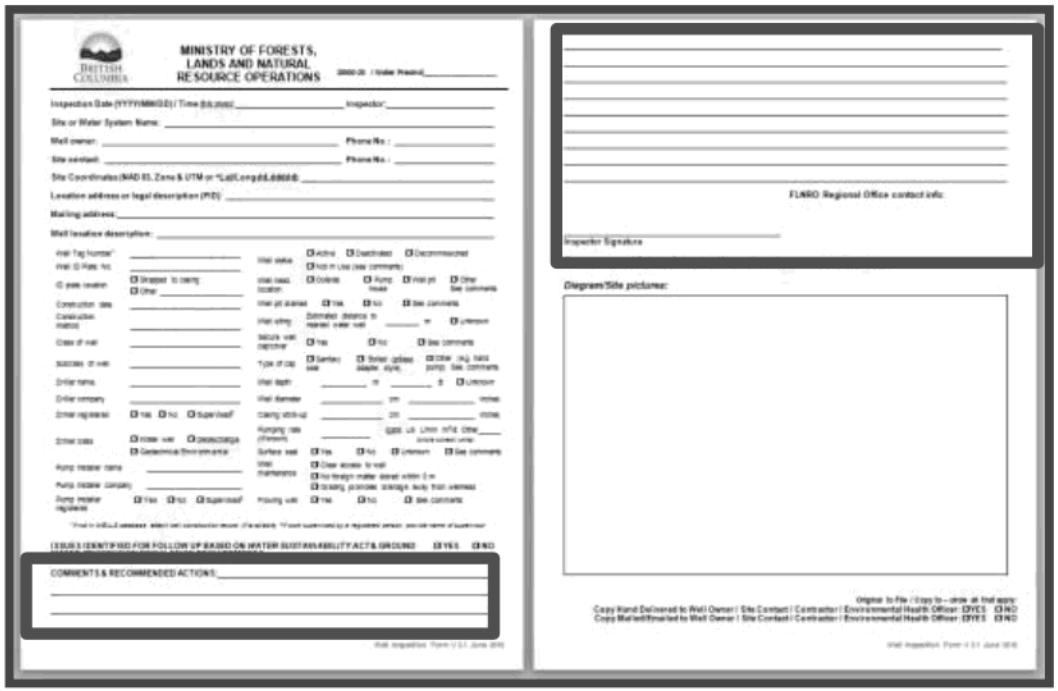
section 106 (5) (a)	Fail to stop or bring artesian flow under control or give notice as and when required	$350	$53	$403
section 106 (5) (b)	Fail to engage a qualified well driller or a professional or to ensure that that person stops or brings artesian flow under control	$350	$53	$403



COMMENTS AND RECOMMENDED ACTIONS

Notes on next steps required to bring the well into compliance

e.g. provide photographs of an installed secure and vermin-proof well cap by a specific date

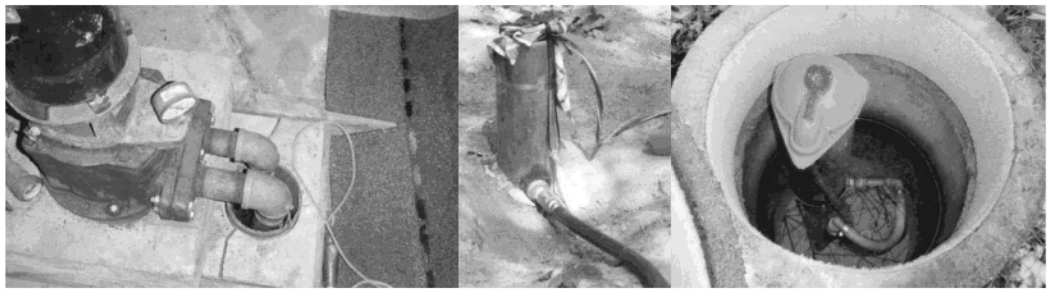

MINISTRY OF FORESTS, LANDS AND NATURAL RESOURCE OPERATIONS

COMMENTS & RECOMMENDED ACTIONS:

FLNRO Regional Office contact info:

Inspector Signature

Diagram/Site pictures:

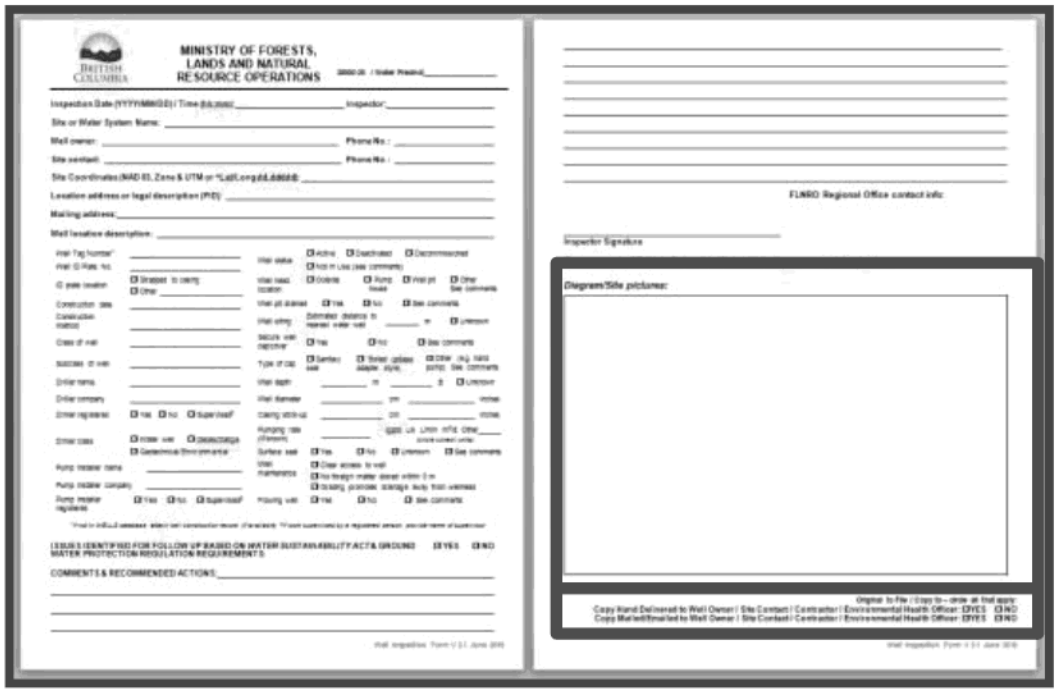


DIAGRAMS/SITE PICTURES

Hand sketches or add electronically.

DELIVERY OPTIONS

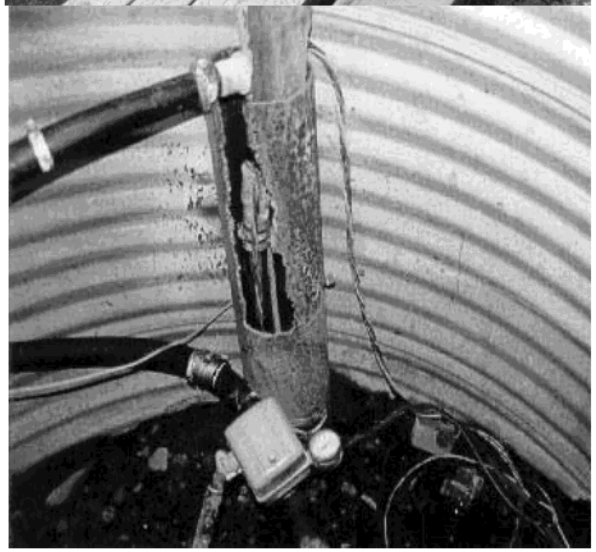
The well inspection form can be hand delivered on site, mailed or emailed at a later date, or used to support an advisory or warning letter.


MINISTRY OF FORESTS,
LANDS AND NATURAL
RESOURCE OPERATIONS

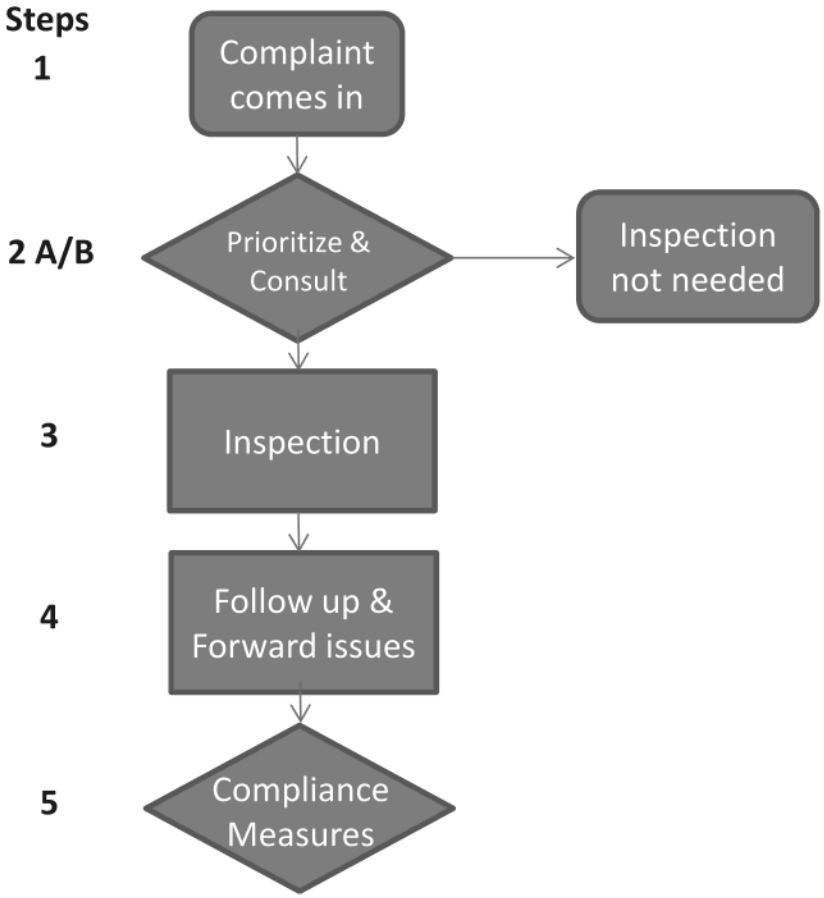
Diagram/Site pictures:

OTHER STAFF AND AGENCY INVOLVEMENT:

- *Contaminants or contaminated site?* Ministry of Environment - Environmental Protection Division (EP)
- *Unregistered water system or within 30 m of potential contaminants (DWPA & HHR)?* Ministry of Health – Environmental Health Officers
- *Unlicensed commercial well or water system?* FLNRO Authorizations Staff
- *Complex file?* Groundwater staff



SUGGESTED INTERIM COMPLIANCE WORK FLOW:



Steps

1. Complaint comes in via NRVR
2. a) NRO determines priority (matrix TBD)
   - Consult GW staff

   b) Decide if inspection is required
   - Consult GW staff (joint inspection)
3. Inspection: record information/ID issues
4. Inspection follow up
   a) Review results & compare to legislation
   b) Complete and send report to owner (GW staff)
5. Carry out compliance measures
   a) Routine: Educate owner and follow up (GW staff)
   b) Letters for more complex issues (GW Staff)
   c) Orders (GW Staff)
   d) Tickets (NRO)

TICKETABLE OFFENCES – available on FTP

VIOLATION TICKET ADMINISTRATION AND FINES REGULATION 89/97

	under section 37			
section 106 (4) (m)	Fail to pay amount owing to a water bailiff under and in accordance with section 38	$200	$30	$230
section 106 (4) (n)	Contravene section 46 (1) by introducing, allowing or causing to be introduced matter or substance into stream in prohibited quantity or manner	$350	$53	$403
section 106 (4) (o)	Construct a well, close a well or install a well pump or wellhead without holding the required qualifications	$350	$53	$403
section 106 (4) (o)	Disinfect a well without holding the required qualifications	$100	$15	$115
section 106 (4) (o)	Perform an activity in relation to a well, other than constructing, closing or disinfecting a well or installing a well pump or wellhead, without holding the required qualifications	$200	$30	$230
section 106 (4) (p)	Fail to comply with section 49 (4)	$500	$75	$575
section 106 (4) (q) (i)	Fail to comply with the applicable regulations when constructing or decommissioning a well	$350	$53	$403
section 106 (4) (q) (i)	Fail to comply with the applicable regulations when deactivating a well	$100	$15	$115
section 106 (4) (q) (i)	Fail to comply with the applicable regulations when disinfecting a well	$100	$15	$115
section 106 (4) (q) (ii)	Fail to comply with the applicable regulations when installing a well pump or wellhead	$350	$53	$403
section 106 (4) (q) (ii)	Fail to comply with the applicable regulations when performing activities in relation to a well pump or a wellhead or conducting a flow test or disinfecting a well pump	$200	$30	$230
section 106 (4) (r)	Fail to provide proof of qualifications when required	$200	$30	$230
	insurance when required	$200	$30	$230

VIOLATION TICKET ADMINISTRATION AND FINES REGULATION 89/97

section 106 (5) (a)	Fail to stop or bring artesian flow under control or give notice as and when required	$350	$53	$403
section 106 (5) (b)	Fail to engage a qualified well driller or a professional or to ensure that that person stops or brings artesian flow under control	$350	$53	$403
section 106 (5) (c)	Fail to secure well cap or well cover or removes well cap or well cover when not authorized	$200	$30	$230
section 106 (5) (d)	Fail to replace well cap or well cover when required	$200	$30	$230
section 106 (5) (e)	Fail to attach identification plate to a well or wellhead or to remove identification plate when required	$100	$15	$115
section 106 (5) (f)	Destroy, injure or tamper with identification plate attached to a well or wellhead	$100	$15	$115
section 106 (5) (g)	Fail to deactivate well when required	$200	$30	$230
section 106 (5) (g)	Fail to decommission a well when required	$350	$53	$403
section 106 (5) (h)	Fail to maintain, retain, produce or submit a well report when required	$200	$30	$230
section 106 (5) (i)	Operate a well contrary to section 58	$350	$53	$403
section 106 (5) (j)	Perform an activity for which a drilling authorization is required without holding a drilling authorization	$350	$53	$403
section 106 (5) (k)	Introduce, allow or cause to be introduced into a well anything contrary to section 59 (1)	$350	$53	$403
section 106 (5) (l)	Fail to take or cause to be taken and analyzed a groundwater sample when required	$200	$30	$230
section 106 (5) (m)	Tamper with a groundwater sample required to be taken under section 63	$500	$75	$575
section 106 (5) (n)	Fail to submit the results of a			$230
	engineer	$200	$30	$230

VIOLATION TICKET ADMINISTRATION AND FINES REGULATION 89/97

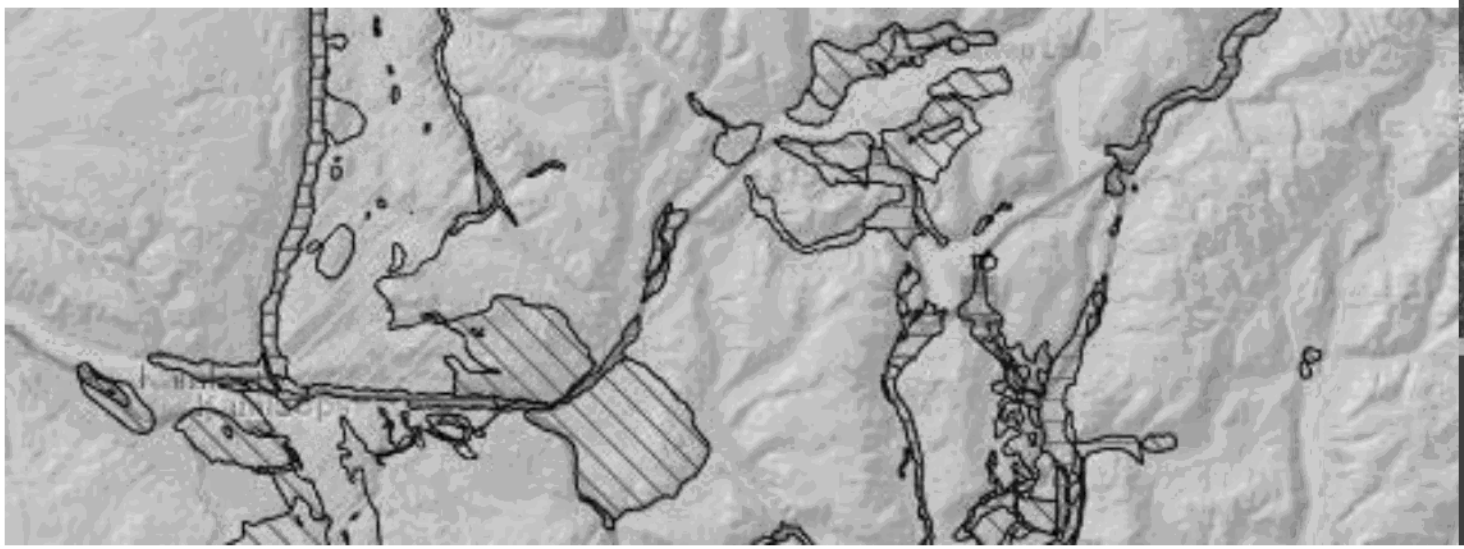
section 106 (5) (p)	Fail to keep information and records as required under section 116 (1)	$200	$30	$230
section 106 (5) (q)	Fail to keep information and records for the prescribed period under section 116 (1)	$100	$15	$115
section 106 (5) (r)	Fail to produce records when required under section 116 (2) (a)	$100	$15	$115
section 106 (5) (s)	Fail to provide records to persons as required under section 116 (2) (b)	$200	$30	$230
section 106 (5) (t)	Fail to install works, prepare reports or submit reports as required under section 116 (3)	$200	$30	$230
section 106 (5) (u)	Knowingly contravene section 116 (5)	$500	$75	$575
section 107 (1) (a)	Fail to comply with a term or condition of an authorization, change approval, permit or drilling authorization that relates to a sensitive stream	$350	$53	$403
section 107 (1) (b)	Construct a bank-to-bank dam on a protected river	$500	$75	$575
section 107 (1) (c)	Fail to comply with an order under section 47 (1) or (2) in relation to foreign matter in a stream	$500	$75	$575
section 107 (1) (d)	Fail to comply with an order under section 60 (1), (2), (3) or (4) in relation to foreign matter in a well	$500	$75	$575
section 107 (1) (e)	Contravene a fish population protection order under section 88	$500	$75	$575
section 107 (1) (f)	Construct, place, maintain or make use of an obstruction in the channel of a stream without lawful authority	$200	$30	$230
section 107 (1) (g)	Drill or alter a well, install a well pump or conduct a flow test when prohibited	$500	$75	$575
section 107 (1) (i)	Willfully contravene an order of the comptroller, a water manager or an engineer	$200	$30	$230
section 107 (1) (j)	Willfully interfere with works in respect of which the comptroller, a water manager, an engineer, an officer or a water bailiff has taken action	$500	$75	$575

Page 67-69 of the Violation Ticket and Fines Regulation

INFORMATION AND RESOURCES ARE ON THE FTP

The FTP has a lot of useful information and links:

- Databases and tools (WELLS, iMapBC, BCWRA, EcoCat etc.)
- Provincial outreach materials (brochures)
- Standardized forms (well inspection, registration etc.)
- Relevant Regulation (WSA, GWPR, HHR, DWPA etc.)



NEXT STEPS

- Joint inspections with Ben for additional field training
- Joint development of a groundwater file prioritization matrix
- NRO/GW team steering committee to monitor and improve

WSA Part 3, Division 3 and the GWPR

Introduction | Legislation | Site Inspections | Ticketable Offences | Other Considerations

For further information:

Ben Robinson
Groundwater Protection Officer

Ben.Robinson@gov.bc.ca
250-751-3266

Provincial Groundwater Website
http://www.env.gov.bc.ca/wsd/plan_protect_sustain/groundwater/

Water Sustainability Act
http://engage.gov.bc.ca/watersustainabilityact/

Well Inspection Quick Reference Card

Pre-Inspection Planning

Carry out a desktop review before you go into the field:

1. Obtain available information on complainant and other involved parties, property owners and their properties, and well(s) from iMapBC or BCWRA, and WELLS.
2. Form a general impression of the area, e.g., # of wells, type and classification of aquifers.
3. Prepare detailed directions and maps to the site, and maps of the site.
4. Consult with groundwater staff to briefly discuss issue.
5. Contact the well owner to arrange a visit.

Equipment Checklist

The equipment needed will depend on the type of data you need. The following is a general list of equipment required for routine inspections. Check with your local groundwater staff if you have any questions about data collection and equipment.

Office Equipment

- o Field binder
- o Field book
- o Laptop w/ appropriate cables
- o Cellphone w/ charger
- o Pens and Pencils
- o Permanent Markers
- o Batteries
- o Calculator
- o Camera
- o GPS
- o Maps and Directions
- o Contact numbers and information
- o iPad
- o brochures and other educational material
- o inspection form
- o well registration form
- o well ID plates & ring clamps
- o weather appropriate clothing

Warehouse Equipment

- o Water level tape* / Sonic meter
- o Flashlight
- o Reflective Field vest
- o Rubber boots (steel toe if needed)
- o Tool Box (allen keys, socket set, wrenches, screwdrivers, hammer etc.)
- o Measuring tape
- o Field survey tape
- o Safety glasses
- o Traffic cones
- o Sample bottles from lab
- o Well ID plates and straps
- o Flagging tape
- o Soil auger + bentonite chips

*Always disinfect tape with 10% bleach solution and de-ionized water to prevent cross contamination in drinking water wells.

Important Contacts

RAPP: 1-877-952-7277

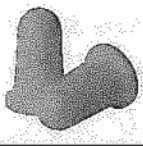
Provincial water web: http://www.gov.bc.ca/water

Well Inspection Quick Reference Card

Field Safety

1. ***Do not enter confined spaces***, e.g., well pits or underground pump houses.
2. Wear a hard hat, bright vest, steel-toe boots, eye and ear protection at drilling sites.
3. Dress appropriately for the weather and take actions to eliminate natural hazards.
4. Use road cones and a bright safety vest when working near traffic.

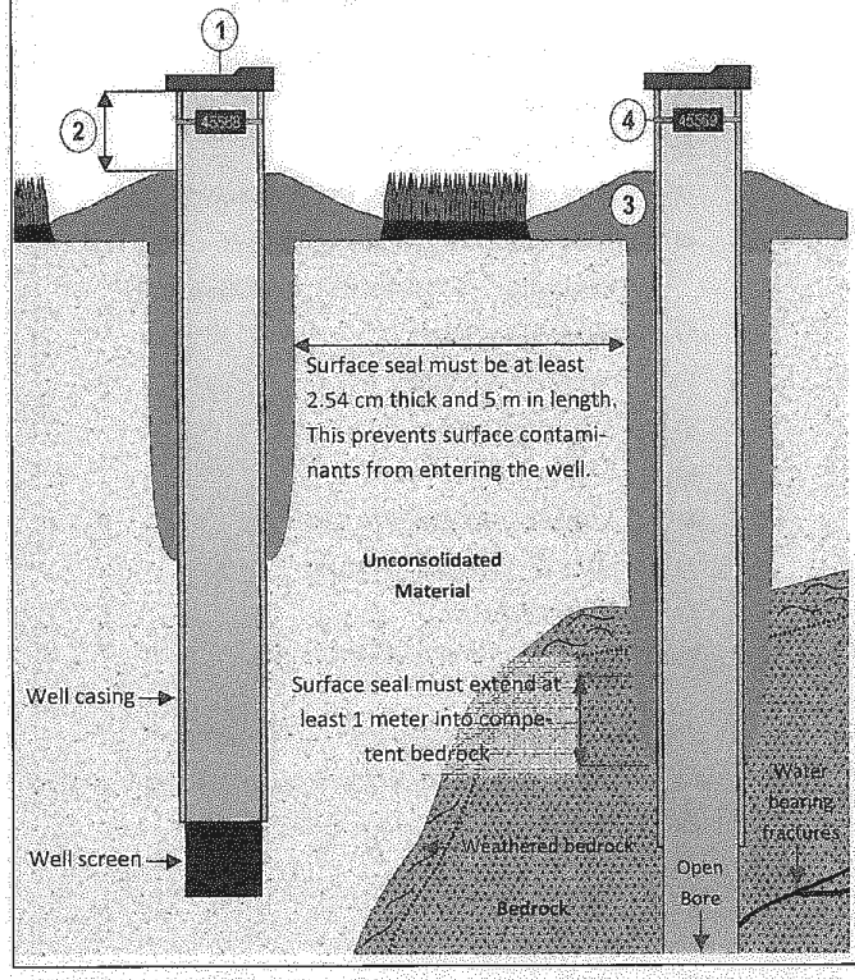



Drilled Well Construction (Water Supply Wells)

Drilled wells can be constructed in unconsolidated material (e.g., sand, gravel and silt), or can extend into bedrock. Below are the basic construction requirements for a water supply well.

Drilled Well (Loose Earth)



Drilled Well (Bedrock)

Drilled wells must have:

1. Securely attached well cap.
2. Well casing stick-up of at least 30cm.
3. Graded surface around wellhead.
4. Securely attached and visible I.D. plate.

Common Compliance Issues

- Well cap missing or in poor condition
- No surface seal[1]
- Casing stick up less than 30 cm[1]
- Missing/damaged/poorly attached ID plate[2]
- Surface not graded around wellhead
- Well operation causes saltwater intrusion
- Foreign matter introduced into well
- Foreign matter within 3 m of wellhead
- Well is within 30 m of contaminant source[3]
- Failure to stop/control artesian flow
- Thermoplastic casing not protected
- Unqualified person doing restricted work

[1]Applies to water supply wells constructed since Nov. 1, 2005 and applies to pre-2005 water supply wells if change is made to well depth, diameter or screen assembly.
[2]Applies to water supply wells constructed since Nov. 1, 2005 and applies to all water systems.
[3]Refer to Public Health Act, Health Hazards Regulation

1 meter = 3.28 feet	1 cm = 0.39 inches	1 inch = 2.54 cm	1 cm = 10 mm	1 US gallon = 3.785 litres

Well Inspection Quick Reference Card

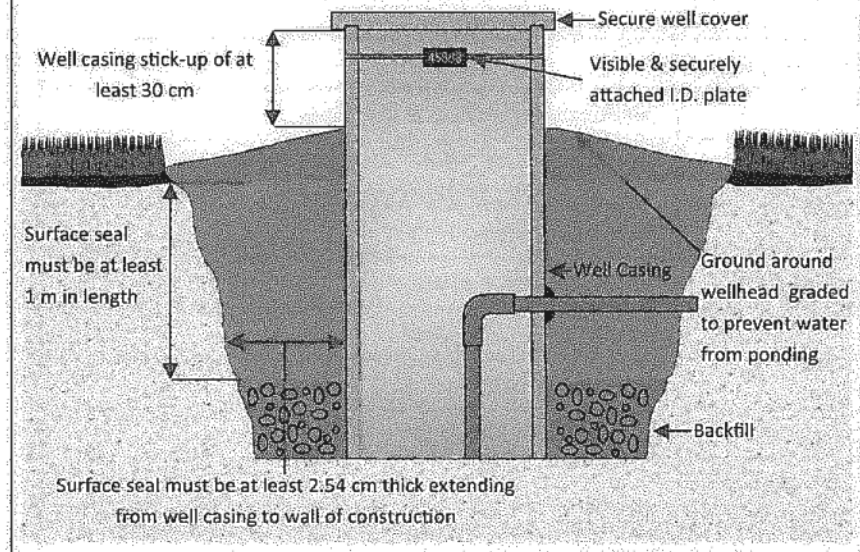
Well Inspection Form Descriptions

Inspection Form Heading	Description	
Site Coordinates	For Lat/Long enter degrees, minutes, seconds (e.g., 50 2' 21.037") or decimal degrees (e.g., 50.039175°)	
Well Tag Number	The Well Tag Number is found in the WELLs database record of a registered well. Also called the well database number. This is not the same as the Well ID plate number.	
Well ID Plate Number	The number shown on the steel plate attached to or near a well.	
Construction Date	May be provided in the well record if the well is registered. Note, a date of Jan 1, 1950 is a default used for unknown construction dates.	
Construction Method	Drilled, driven, jetted, dug, other	
Class/Subclass of Well	**Class**	**Subclasses/Intended Water Uses**
	Water Supply	Private Domestic; Water Supply System; Irrigation; Commercial or Industrial; Open-Loop Exchange; Other
	Monitoring	Temporary; Permanent
	Dewatering or Drainage	Temporary; Permanent
	Remediation	Temporary; Permanent
	Geotechnical	Borehole; Test Pit
	Recharge or Injection	Temporary; Permanent
	Closed-Loop Geoexchange	
Driller/Pump Installer Registered	Work must be carried out by, or directly supervised by, a registered individual. Registered individuals are listed on the MoE registry.	
Driller Class	Water Well – can construct all wells except closed-loop geoexchange wells. Geoexchange – can construct closed loop geoexchange wells. Geotechnical/Environmental – can construct monitoring, geotechnical and remediation wells.	
Well Status	Active – currently in use (consistently or periodically) Deactivated – out of service temporarily Decommissioned – out of service permanently	
Well Pit	A well pit is an excavated artificial opening in the ground containing a wellhead that is below the ground surface. Pits can be shallow vaults (<1 m deep) or deep vaults accessed by a ladder. **Do not enter if it is a confined space**. A drain to convey water away from the wellhead inside the pit is required.	
Secure Well Cap/Cover	A cap or cover must be installed to prevent vermin, contaminants, debris or other foreign objects or substances from entering the well.	
Type of Cap	See page 3.	
Casing Stick-up	Height of well casing above ground surface or floor of a well pit or pump house.	
Pitless Adapter	A water-tight coupling attached to the casing below ground surface to convey water underground. Commonly used in frost prone areas to prevent freezing of water lines.	
Surface Seal	A low permeability sealant (e.g., clay or grout) that is installed within the annular space between the exterior casing and surrounding ground to prevent entry of contaminants to the well. May extend from ~30 cm beneath ground surface to a prescribed depth depending on well class. Usually absent in wells constructed pre-2005.	
Flowing (artesian) Well	Water within the well naturally flows above the height of the well casing, either seasonally or year-round, as a result of artesian pressure in the aquifer. Artesian wells have special requirements for construction and maintenance.	

Well Inspection Quick Reference Card

Dug Well Construction (Water Supply Wells)

Dug wells are shallow (typically less than 50ft) and are constructed by digging or excavating into unconsolidated material (sand, gravel and silt). The shallow nature makes these wells more susceptible to contamination. The diagram below outlines basic construction requirements for an excavated water supply well.

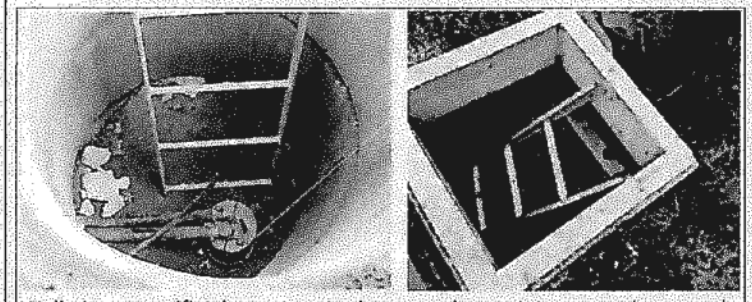


Common Compliance Issues

- Cap or cover missing or in poor condition
- No surface seal installed[1]
- Casing stick up less than 30 cm[1]
- Missing/damaged/poorly attached ID plate[2]
- Surface not graded around wellhead
- Foreign matter introduced into well
- Foreign matter within 3 m of wellhead
- Well is within 30 m of contaminant source[3]

[1]Applies to water supply wells constructed since Nov. 1, 2005 and applies to pre-2005 water supply wells if change is made to well depth, diameter or screen assembly.
[2]Applies to water supply wells constructed since Nov. 1, 2005 and applies to all water systems.
[3]Refer to Public Health Act, Health Hazards Regulation

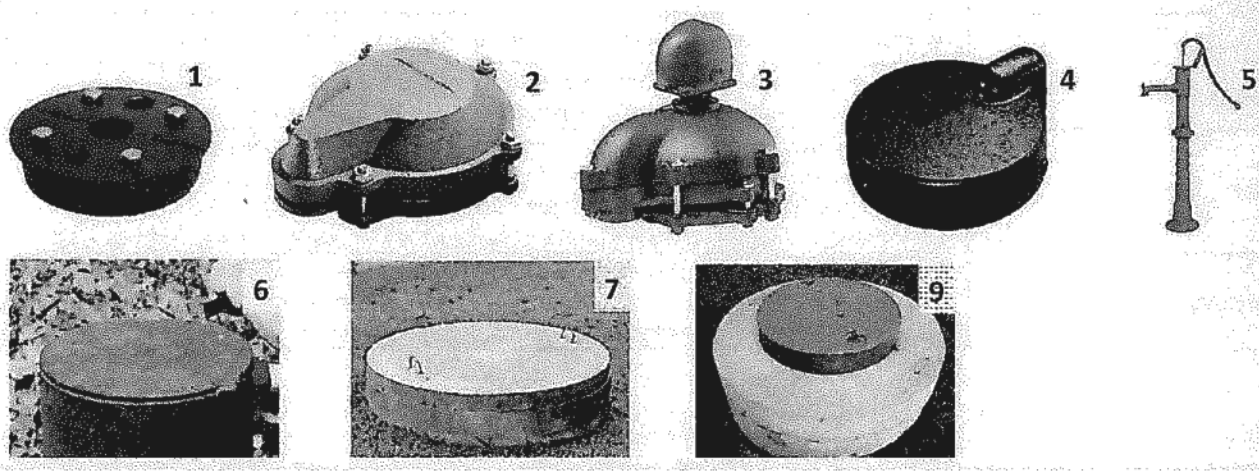
Well Pits, Covers and Caps for Water Supply Wells



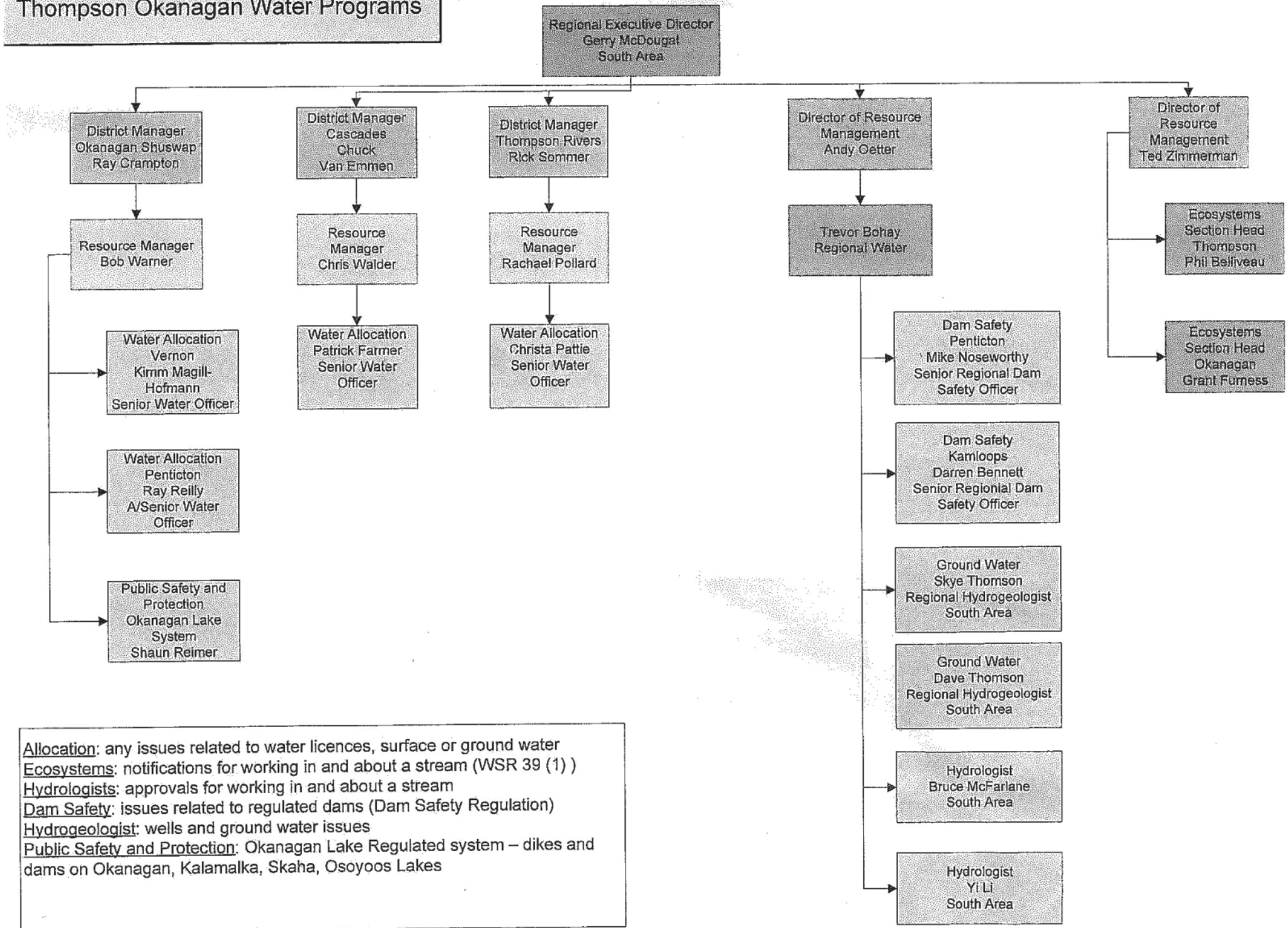
Well pits are artificial openings in the ground containing an underground wellhead. ***These hazardous spaces must not be entered***.

Types of Water Supply Well Caps & Covers

1. Well seal (also referred to as a sanitary seal)
2. Watertight cap (pitless adapter style w/rubber gasket)
3. Vented water tight cap (pitless adapter style w/rubber gaskets)
4. Standard cap (pitless adapter style w/o rubber gaskets)
5. Hand pump
6. Welded cap on top of casing
7. Concrete cover (dug well)
8. Metal cover (dug well)
9. Plastic cover bolted with gaskets (dug well)



Thompson Okanagan Water Programs



Allocation: any issues related to water licences, surface or ground water
Ecosystems: notifications for working in and about a stream (WSR 39 (1))
Hydrologists: approvals for working in and about a stream
Dam Safety: issues related to regulated dams (Dam Safety Regulation)
Hydrogeologist: wells and ground water issues
Public Safety and Protection: Okanagan Lake Regulated system – dikes and dams on Okanagan, Kalamalka, Skaha, Osoyoos Lakes

TOR Regional Water Programs

Director of Resource Management
Andy Oetter

Trevor Bohay
Regional Water

Dam Safety
Penticton
Mike Noseworthy
Senior Regional Dam Safety Officer

Dam Safety
Kamloops
Darren Bennett
Senior Regional Dam Safety Officer

Ground Water
Skye Thomson
Dave Thomson
Regional Hydrogeologist
South Area

Ground Water Protection Officer
Nicole Pyett
Okanagan

Ground Water Protection Officer
Laurie Lyons
Thompson

Ground Water Protection Officer
Twyla Legault
South Area

Hydrologist
Bruce McFarlane
Yi Li
South Area

Dam Safety staff are responsible for all regulated dam issues such as reviewing applications for construction and maintenance. They also do dam inspections to ensure dams are safe and in good repair.

Hydrogeologists and GW Techs are responsible for ground water issues outside of licensing. They monitor observation wells, determine aquifer budgets, monitor well drillers, and maintain the registered wells database.

Ecologists are responsible for issuing terms and conditions under Section 11 of the WSA. These activities are identified in Section 39 of the WSR.

Hydrologists are responsible for WSA Section 11's requiring an approval. These activities are those not listed in Section 39 of the WSR

Director of Resource Management
Ted Zimmerman

Ecosystems Section Head
Thompson
Phil Belliveau

Rich McCleary
Senior Regional Aquatic Ecologist

Ryan Whitehouse
Regional Aquatic Ecologist

Christian St Pierre
Ecosystems Officer

Mark Phillpotts
Ecosystem Officer

Ecosystems Section Head
Okanagan
Grant Furness

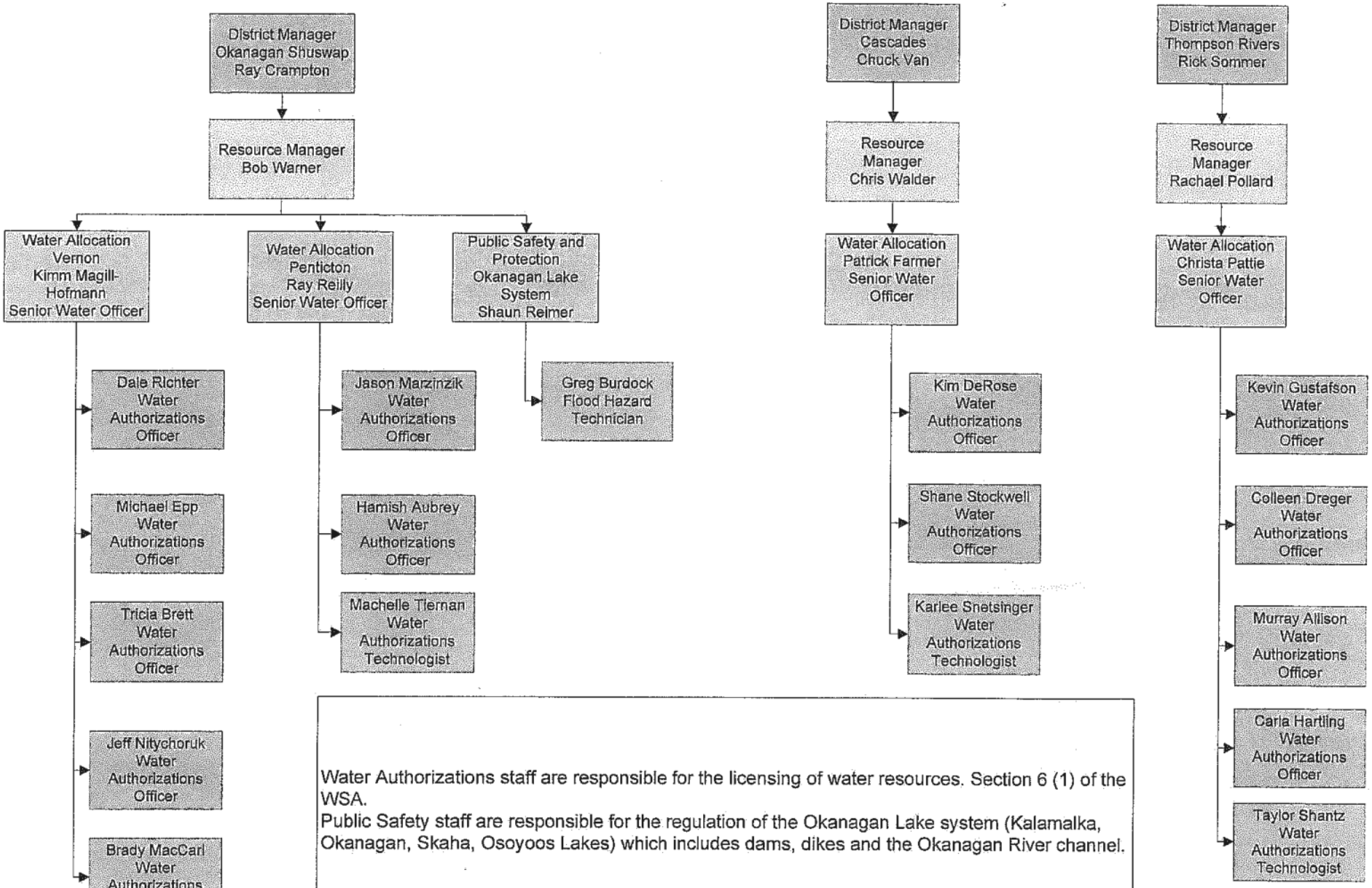
Lora Nield
Senior Ecosystem Biologist

Rob Stewart
Ecosystem Biologi

Josie Symonds
Ecosystem Biologi

Jamie
Leatham
Ecosystem Biologi

TOR District Water Program Org Charts



Water Authorizations staff are responsible for the licensing of water resources. Section 6 (1) of the WSA.
Public Safety staff are responsible for the regulation of the Okanagan Lake system (Kalamalka, Okanagan, Skaha, Osoyoos Lakes) which includes dams, dikes and the Okanagan River channel.

Well Inspection Quick Reference Card

Pre-Inspection Planning

Carry out a desktop review before you go into the field:

1. Obtain available information on complainant and other involved parties, property owners and their properties, and well(s) from iMapBC or BCWRA, and WELLS.
2. Form a general impression of the area, e.g., # of wells, type and classification of aquifers.
3. Prepare detailed directions and maps to the site, and maps of the site.
4. Consult with groundwater staff to briefly discuss issue.
5. Contact the well owner to arrange a visit.

Equipment Checklist

The equipment needed will depend on the type of data you need. The following is a general list of equipment required for routine inspections. Check with your local groundwater staff if you have any questions about data collection and equipment.

Office Equipment

- o Field binder
- o Field book
- o Laptop w/ appropriate cables
- o Cellphone w/ charger
- o Pens and Pencils
- o Permanent Markers
- o Batteries
- o Calculator
- o Camera
- o GPS
- o Maps and Directions
- o Contact numbers and information
- o iPad
- o brochures and other educational material
- o inspection form
- o well registration form
- o well ID plates & ring clamps
- o weather appropriate clothing

Warehouse Equipment

- o Water level tape* / Sonic meter
- o Flashlight
- o Reflective Field vest
- o Rubber boots (steel toe if needed)
- o Tool Box (allen keys, socket set, wrenches, screwdrivers, hammer etc.)
- o Measuring tape
- o Field survey tape
- o Safety glasses
- o Traffic cones
- o Sample bottles from lab
- o Well ID plates and straps
- o Flagging tape
- o Soil auger + bentonite chips

*Always disinfect tape with 10% bleach solution and de-ionized water to prevent cross contamination in drinking water wells.

Important Contacts

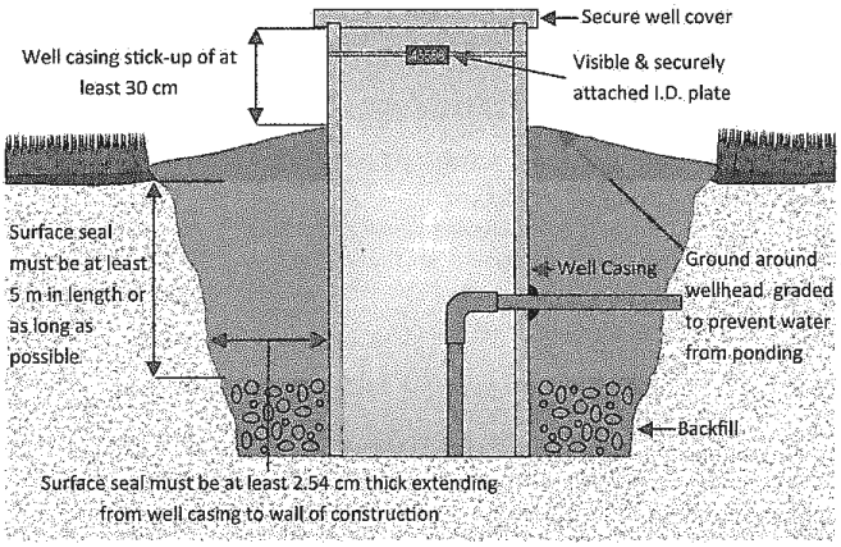
RAPP: 1-877-952-7277

Provincial water web: http://www.gov.bc.ca/water

Well Inspection Quick Reference Card

Dug Well Construction (Water Supply Wells)

Dug wells are shallow (typically less than 50ft) and are constructed by digging or excavating into unconsolidated material (sand, gravel and silt). The shallow nature makes these wells more susceptible to contamination. The diagram below outlines basic construction requirements for an excavated water supply well.

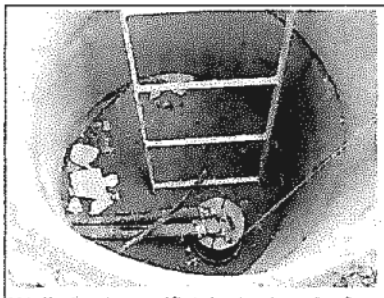


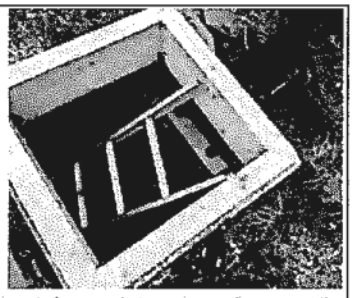
Common Compliance Issues

- Cap or cover missing or in poor condition
- No surface seal installed[1]
- Casing stick up less than 30 cm[1]
- Missing/damaged/poorly attached ID plate[2]
- Surface not graded around wellhead
- Foreign matter introduced into well
- Foreign matter within 3 m of wellhead
- Well is within 30 m of contaminant source[3]

[1]Applies to water supply wells constructed since Nov. 1, 2005 and applies to pre-2005 water supply wells if change is made to well depth, diameter or screen assembly.
[2]Applies to water supply wells constructed since Nov. 1, 2005 and applies to all water systems.
[3]Refer to Public Health Act, Health Hazards Regulation

Well Pits, Covers and Caps for Water Supply Wells

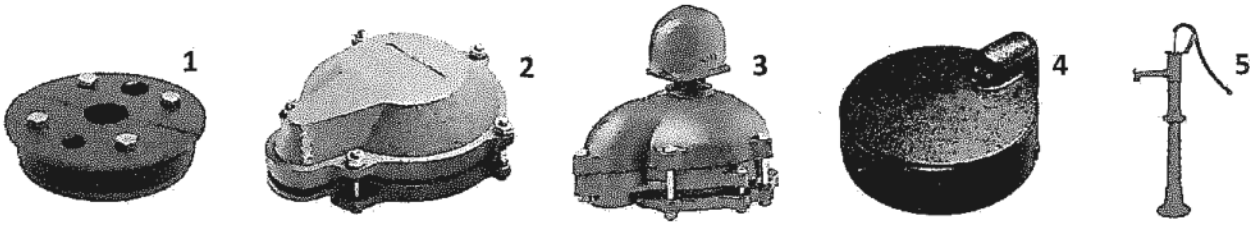


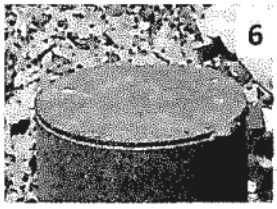


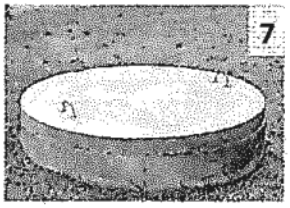
Well pits are artificial openings in the ground containing an underground wellhead. ***These hazardous spaces must not be entered***.

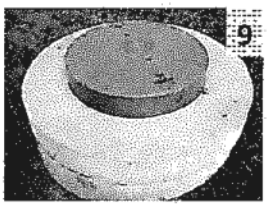
Types of Water Supply Well Caps & Covers

1. Well seal (also referred to as a sanitary seal)
2. Watertight cap (pitless adapter style w/rubber gasket)
3. Vented water tight cap (pitless adapter style w/rubber gaskets)
4. Standard cap (pitless adapter style w/o rubber gaskets)
5. Hand pump
6. Welded cap on top of casing
7. Concrete cover (dug well)
8. Metal cover (dug well)
9. Plastic cover bolted with gaskets (dug well)









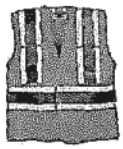
Well Inspection Quick Reference Card

Field Safety

1. ***Do not enter confined spaces***, e.g., well pits or underground pump houses.
2. Wear a hard hat, bright vest, steel-toe boots, eye and ear protection at drilling sites.
3. Dress appropriately for the weather and take actions to eliminate natural hazards.
4. Use road cones and a bright safety vest when working near traffic.



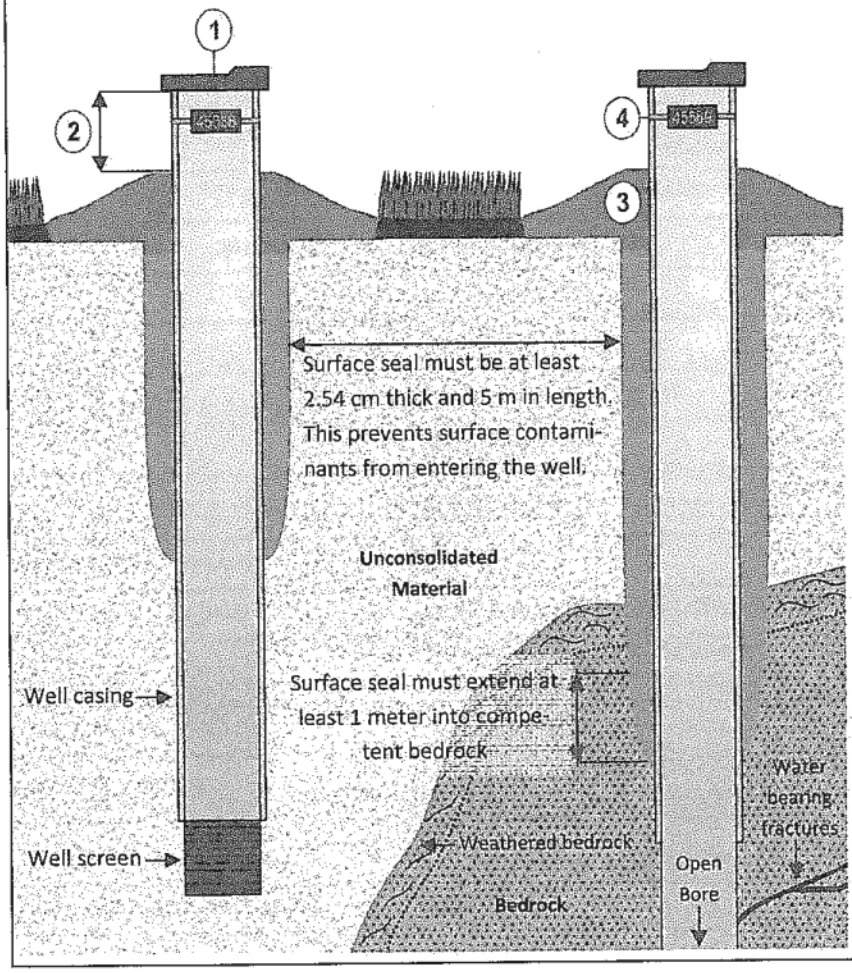




Drilled Well Construction (Water Supply Wells)

Drilled wells can be constructed in unconsolidated material (e.g., sand, gravel and silt), or can extend into bedrock. Below are the basic construction requirements for a water supply well.

Drilled Well (Loose Earth) **Drilled Well (Bedrock)**



Drilled wells must have:

1. Securely attached well cap.
2. Well casing stick-up of at least 30cm.
3. Graded surface around wellhead.
4. Securely attached and visible I.D. plate.

Common Compliance Issues

- Well cap missing or in poor condition
- No surface seal[1]
- Casing stick up less than 30 cm[1]
- Missing/damaged/poorly attached ID plate[2]
- Surface not graded around wellhead
- Well operation causes saltwater intrusion
- Foreign matter introduced into well
- Foreign matter within 3 m of wellhead
- Well is within 30 m of contaminant source[3]
- Failure to stop/control artesian flow
- Thermoplastic casing not protected
- Unqualified person doing restricted work

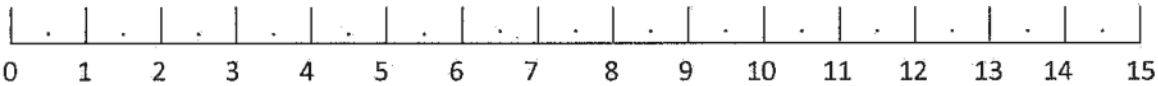
[1]Applies to water supply wells constructed since Nov. 1, 2005 and applies to pre-2005 water supply wells if change is made to well depth, diameter or screen assembly.
[2]Applies to water supply wells constructed since Nov. 1, 2005 and applies to all water systems.
[3]Refer to Public Health Act, Health Hazards Regulation

1 meter = 3.28 feet	1 cm = 0.39 inches	1 inch = 2.54 cm	1 cm = 10 mm	1 US gallon = 3.785 litres

Well Inspection Quick Reference Card

Well Inspection Form Descriptions

Inspection Form Heading	Description	
Site Coordinates	For Lat/Long enter degrees, minutes, seconds (e.g., 50 2' 21.037") or decimal degrees (e.g., 50.039175°)	
Well Tag Number	The Well Tag Number is found in the WELLs database record of a registered well. Also called the well database number. This is not the same as the Well ID plate number.	
Well ID Plate Number	The number shown on the steel plate attached to or near a well.	
Construction Date	May be provided in the well record if the well is registered. Note, a date of Jan 1, 1950 is a default used for unknown construction dates.	
Construction Method	Drilled, driven, jetted, dug, other	
Class/Subclass of Well	**Class**	**Subclasses/Intended Water Uses**
	Water Supply	Private Domestic; Water Supply System; Irrigation; Commercial or Industrial; Open-Loop Exchange; Other
	Monitoring	Temporary; Permanent
	Dewatering or Drainage	Temporary; Permanent
	Remediation	Temporary; Permanent
	Geotechnical	Borehole; Test Pit
	Recharge or Injection	Temporary; Permanent
	Closed-Loop Geoexchange	
Driller/Pump Installer Registered	Work must be carried out by, or directly supervised by, a registered individual. Registered individuals are listed on the MoE registry.	
Driller Class	Water Well – can construct all wells except closed-loop geoexchange wells. Geoexchange – can construct closed loop geoexchange wells. Geotechnical/Environmental – can construct monitoring, geotechnical and remediation wells.	
Well Status	Active – currently in use (consistently or periodically) Deactivated – out of service temporarily Decommissioned – out of service permanently	
Well Pit	A well pit is an excavated artificial opening in the ground containing a wellhead that is below the ground surface. Pits can be shallow vaults (<1 m deep) or deep vaults accessed by a ladder. **Do not enter if it is a confined space.** A drain to convey water away from the wellhead inside the pit is required.	
Secure Well Cap/Cover	A cap or cover must be installed to prevent vermin, contaminants, debris or other foreign objects or substances from entering the well.	
Type of Cap	See page 3.	
Casing Stick-up	Height of well casing above ground surface or floor of a well pit or pump house.	
Pitless Adapter	A water-tight coupling attached to the casing below ground surface to convey water underground. Commonly used in frost prone areas to prevent freezing of water lines.	
Surface Seal	A low permeability sealant (e.g., clay or grout) that is installed within the annular space between the exterior casing and surrounding ground to prevent entry of contaminants to the well. May extend from ~30 cm beneath ground surface to a prescribed depth depending on well class. Usually absent in wells constructed pre-2005.	
Flowing (artesian) Well	Water within the well naturally flows above the height of the well casing, either seasonally or year-round, as a result of artesian pressure in the aquifer. Artesian wells have special requirements for construction and maintenance.	



How to find a well (record/construction report)?

Option 1 BC Water Resource Atlas

1. Go to http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-science-data/water-data-tools
2. Open the BC Water Resource Atlas
3. Turn Map Layers On/Off: Click on + beside layer (layer will expand): click on the layer you wish to turn on/off (layer on - a check mark will appear; layer off – check mark will disappear)
4. Query: Locate Parcel: enter PID (9 digit number without the dashes): Search
5. Navigation: highlight i Point Identity: place cursor over a feature: left click: Results will appear on left hand side of the page.
    - Highlight the "Point Identity" (blue i) top menu bar
    - Click on the blue dot (for a well info), if nothing happens, turn on the water well layer
6. For a well record, click on Water Well: an information table will appear: click on Link: Well Record (well record should pop up): print well record

Option 2 Wells Database

Wells Database search:

1. Go to http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-science-data/water-data-tools
2. Best to start with a broader search then narrow the search down for the Well Database search. The database is dependent on the information that the driller provides on the well record. Submission of the well record is voluntary.
3. Open *Well Database* then open *Report 2 Search by Water Well Data Output*
4. Check the boxes that you wish to retrieve information for.
5. Example if you wish to search by Lot # put the Lot # in the box provided
6. Then select *Lot* in the *Sort by:* drop down menu. (PID is a poor search choice)
7. Check the box *Show # of Wells Found*
8. Select *Display on the screen as a table* from the drop down menu for *Data Output/Export*
9. Click on the *Search* button.

Option 3 Wells Database

1. Go to http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/water-science-data/water-data-tools
2. If you locate a well with at well id plate, stamped metal plate, attached to the well.
3. Use the Wells Database Report 1:
    - Option 1, well identification number – enter the number and search.
    - Option 2, well tag number (WTN) – enter the number and search.

Option 4 iMapBC

1. Go to: http://www2.gov.bc.ca/gov/content/governments/about-the-bc-government/databc/geographic-data-and-services/imapbc
2. Follow the instruction on the in the iMap quick start document.

BRITISH COLUMBIA

Report 1 - Detailed Well Record

Well Tag Number: 79639

Owner: TIM PORTER

Address: PERKINS RD

Area:

WELL LOCATION:
LILLOOET Land District
District Lot: 2965 Plan: Lot: 13
Township: Section: Range:
Indian Reserve: Meridian: Block:
Quarter:
Island:
BCGS Number (NAD 83): 092P075112 Well: 7

Class of Well:
Subclass of Well:
Orientation of Well:
Status of Well: New
Licence General Status: UNLICENSED
Well Use: Private Domestic
Observation Well Number:
Observation Well Status:
Construction Method:
Diameter: 6 inches
Casing drive shoe:
Well Depth: 220 feet
Elevation: 0 feet (ASL)
Final Casing Stick Up: inches
Well Cap Type:
Bedrock Depth: feet
Lithology Info Flag: N
File Info Flag: N
Sieve Info Flag: N
Screen Info Flag: N

Site Info Details:
Other Info Flag:
Other Info Details:

Construction Date: 1994-11-11 00:00:00

Driller: Weston Water Wells
Well Identification Plate Number:
Plate Attached By:
Where Plate Attached:

PRODUCTION DATA AT TIME OF DRILLING:
Well Yield: 0 (Driller's Estimate)
Development Method:
Pump Test Info Flag: N
Artesian Flow:
Artesian Pressure (ft):
Static Level:

WATER QUALITY:
Character:
Colour:
Odour:
Well Disinfected: N
EMS ID:
Water Chemistry Info Flag:
Field Chemistry Info Flag:
Site Info (SEAM):

Water Utility:
Water Supply System Name:
Water Supply System Well Name:

SURFACE SEAL:
Flag: N
Material:
Method:
Depth (ft):
Thickness (in):

WELL CLOSURE INFORMATION:
Reason For Closure:
Method of Closure:
Closure Sealant Material:
Closure Backfill Material:
Details of Closure:

Screen from	to feet	Type	Slot Size
0	0		0
0	0		0

Casing from	to feet	Diameter	Material	Drive Shoe
null	null	0	null	null

GENERAL REMARKS:
NO WATER, DRILLING STOPPED UNTIL LATER DATE

BRITISH COLUMBIA

Report 1 - Detailed Well Record

Well Tag Number: 98757

Owner: SIMON

Address: 2400 MCGORAN PLACE

Area: MERRITT

WELL LOCATION:
KAMLOOPS (KDYD) Land District
District Lot: 124 Plan: B873 Lot:
Township: Section: Range:
Indian Reserve: Meridian: Block:
Quarter:
Island:
BCGS Number (NAD 83): 092I017113 Well:

Class of Well: Water supply
Subclass of Well: Domestic
Orientation of Well: Vertical
Status of Well: New
Licence General Status: UNLICENSED
Well Use: Irrigation
Observation Well Number:
Observation Well Status:
Construction Method:
Diameter: inches
Casing drive shoe: Y Y
Well Depth: 360 feet
Elevation: feet (ASL)
Final Casing Stick Up: 18 inches
Well Cap Type: WELDED
Bedrock Depth: feet
Lithology Info Flag: Y
File Info Flag: N
Sieve Info Flag: N
Screen Info Flag: Y

Site Info Details:
Other Info Flag:
Other Info Details:

Construction Date: 2008-11-02 00:00:00

Driller: J. R. Drilling Central Ltd. Partnership
Well Identification Plate Number: 24140
Plate Attached By: JERRY OPPER
Where Plate Attached: CASING

PRODUCTION DATA AT TIME OF DRILLING:
Well Yield: 500 (Driller's Estimate) U.S. Gallons per Minute
Development Method: Air lifting
Pump Test Info Flag: N
Artesian Flow:
Artesian Pressure (ft):
Static Level: 18 feet

WATER QUALITY:
Character:
Colour:
Odour:
Well Disinfected: N
EMS ID:
Water Chemistry Info Flag: N
Field Chemistry Info Flag:
Site Info (SEAM):

Water Utility:
Water Supply System Name:
Water Supply System Well Name:

SURFACE SEAL:
Flag: Y
Material: Bentonite clay
Method:
Depth (ft): 20 feet
Thickness (in):
Liner from To: feet

WELL CLOSURE INFORMATION:
Reason For Closure:
Method of Closure:
Closure Sealant Material:
Closure Backfill Material:
Details of Closure:

Screen from	to feet	Type	Slot Size
143	146		null
146	151		20
151	161		60

Casing from	to feet	Diameter	Material	Drive Shoe
0	345	8	Steel	Y
0	20	10	Steel	Y

GENERAL REMARKS:

LITHOLOGY INFORMATION:

From	0	to	15	Ft.	Loose SILT SAND WITH CLAY/SILT brown
From	15	to	37	Ft.	Loose SAND WITH GRAVEL WET brown
From	37	to	50	Ft.	DENSE/STIFF LIGHT GREY MOIST grey
From	50	to	57	Ft.	Loose SAND WITH GRAVEL WET brown
From	57	to	105	Ft.	DENSE/STIFF MOIST brown
From	105	to	150	Ft.	DENSE/STIFF MOIST WITH TRACES OF ROCK brown
From	150	to	154	Ft.	DENSE/STIFF MOIST WITH TRACES OF ROCK brown
From	154	to	185	Ft.	DENSE/STIFF WET brown
From	185	to	210	Ft.	DENSE/STIFF MOIST brown
From	210	to	228	Ft.	Loose SAND WITH CLAY/SILT LIGHT GREY WET grey
From	228	to	238	Ft.	Loose FINE MEDIUM SAND & SAND WITH GRAVEL HIGH PRODUCTION

BRITISH COLUMBIA

Report 1 - Detailed Well Record

Well Tag Number: 83868

Owner: ACTIVE MOUNTAIN ENTERTAINMENT CORP

Address:

Area: MERRITT

WELL LOCATION:
KAMLOOPS (KDYD) Land District
District Lot: Plan: Lot:
Township: 91 Section: 4 Range:
Indian Reserve: Meridian: Block:
Quarter:
Island:
BCGS Number (NAD 83): 092I007331 Well:

Class of Well:
Subclass of Well:
Orientation of Well:
Status of Well: New
Licence General Status: UNLICENSED
Well Use: Other
Observation Well Number:
Observation Well Status:
Construction Method: Drilled
Diameter: 6.00 inches
Casing drive shoe:
Well Depth: 400 feet
Elevation: feet (ASL)
Final Casing Stick Up: inches
Well Cap Type:
Bedrock Depth: feet
Lithology Info Flag: Y
File Info Flag: N
Sieve Info Flag: N
Screen Info Flag: N

Site Info Details:
Other Info Flag:
Other Info Details:

Construction Date: 2002-02-15 00:00:00

Driller: Bud's Water Wells
Well Identification Plate Number:
Plate Attached By:
Where Plate Attached:

PRODUCTION DATA AT TIME OF DRILLING:
Well Yield: 600 (Driller's Estimate) U.S. Gallons per Minute
Development Method:
Pump Test Info Flag: N
Artesian Flow:
Artesian Pressure (ft):
Static Level:

WATER QUALITY:
Character:
Colour:
Odour:
Well Disinfected: N
EMS ID:
Water Chemistry Info Flag: N
Field Chemistry Info Flag:
Site Info (SEAM):

Water Utility:
Water Supply System Name:
Water Supply System Well Name:

SURFACE SEAL:
Flag: Y
Material: Bentonite clay and drill cuttings
Method:
Depth (ft):
Thickness (in):

WELL CLOSURE INFORMATION:
Reason For Closure:
Method of Closure:
Closure Sealant Material:
Closure Backfill Material:
Details of Closure:

Screen from	to feet	Type	Slot Size

Casing from	to feet	Diameter	Material	Drive Shoe
null	null	null	null	null

GENERAL REMARKS:
UNIFLANGE T

LITHOLOGY INFORMATION:

From	0	to	3 Ft.	MED BROWN SAND & GRAVEL
From	3	to	14 Ft.	COARSE BROWN SAND & GRAVEL & COBBLES
From	14	to	28 Ft.	BROWN SAND & GRAVEL WB
From	28	to	29 Ft.	GREY CLAY
From	29	to	34 Ft.	DIRTY BROWN SAND & GR WB
From	34	to	57 Ft.	GREY SILTY CLAY
From	57	to	58 Ft.	SILTY S & G WB
From	58	to	99 Ft.	GREY SILTY CLAY
From	99	to	100 Ft.	WET SILTY S & GR WB
From	100	to	153 Ft.	STICKY GREY CLAY
From	153	to	154 Ft.	SILTY S & G WB
From	154	to	300 Ft.	STICKY GREY CLAY (HARD) WITH WET SILT LAYERS
From	300	to	399 Ft.	SOFTER SILTY CLAY WITH WATER BEARING STRINGERS
From	399	to	Ft.	WATER BEARING S & GRAVEL

- Return to Main
- Return to Search Options

wtn 83868

BRITISH COLUMBIA

BC Environment

Water Management Division

WATER WELL RECORD

Date 02/02/15 (YR MO DY)

N T S MAP 092I[illegible] WELL No. ____ ELEV ____ Location Accuracy 2

UTM Z 10 E 658000 N 5[illegible] UTM Date 19__ Well Type ____

Owners Name & Address: Active Mountain Entertainment Corp.

Legal Description & Address: PID 013-033-[illegible] [illegible] KDYD

Descriptive Location: Merritt. (Music Festival Site)

1. TYPE OF WORK: 1 ☑ New Well 2 ☐ Reconditioned 3 ☐ Deepened 4 ☐ Abandoned

2. WORK METHOD: 1 ☐ Cable tool 2 ☐ Bored 3 ☐ Jetted 4 ☑ Rotary a ☐ mud b ☑ air c ☐ reverse ☐ Other ____

3. WATER WELL USE: 1 ☐ Domestic 2 ☐ Municipal 3 ☐ Irrigation 4 ☐ Comm. & Ind. ☑ Other ____

4. DRILLING ADDITIVES: None

5. MEASUREMENTS from 1 ☑ ground level 2 ☐ top of casing; casing height above ground level 2 1/2 ft.

FROM ft	TO ft	6. WELL LOG DESCRIPTION	SWL ft
0	3	red brown sand + gravel	
3	14	coarse brown sand + gravel + cobbles	
14	28	brown sand + gravel	WB
28	29	Grey Clay	
29	34	Dirty brown sand + gr.	WB
34	57	Grey silty clay	
57	58	silty S + G	WB
58	99	Grey silty clay	
99	100	wet silty S + G	WB
100	153	sticky grey clay	
153	154 1/2	silty S + G	WB
154 1/2	300	sticky grey clay (hard) with wet silt layers	
300	399	softer silty clay with water bearing stringers	
399		water bearing S + GRAVEL	

7. CONSULTANT ____

Address ____

8. WELL LOCATION SKETCH

9. CASING: Materials 1 ☑ Steel 2 ☐ Galvanized 3 ☐ Wood 4 ☐ Plastic 5 ☐ Concrete ☐ Other ____

							units
Hole Diameter	6 3/4						ins
Diameter	6 5/8						ins
from	0						ft
to	398'						ft
Thickness	.188						ins
Weight							lb/ft

Pitless unit ____ ft 1 ☐ above 2 ☐ below ground level

1 ☐ Welded 2 ☐ Cemented 3 ☐ Threaded | 1 ☐ New 2 ☐ Used

Perforations: ____

Shoe(s): welded on

Open hole, from ____ to ____ ft Diameter ____ ins

Grout: bentonite chips + cuttings

10. SCREEN: 1 ☐ Nominal (Telescope) 2 ☐ Pipe Size

Type 1 ☐ Continuous Slot 2 ☐ Perforated 3 ☐ Louvre ☐ Other ____

Material 1 ☐ Stainless Steel 2 ☐ Plastic ☐ Other ____

Set from ____ to ____ ft below ground level

RISER, SCREEN & BLANKS							units
Length							ft
Diam. I.D.							ins
Slot Size							ins
from							ft
to							ft

Fittings, top ____ bottom ____

Gravel Pack ____

11. DEVELOPED BY: 1 ☐ Surging 2 ☐ Jetting 3 ☐ Air 4 ☐ Bailing 5 ☐ Pumping ☐ Other ____

12. TEST 1 ☐ Pump 2 ☐ Bail 3 ☐ Air Date ____ (YR MO DY)

Rate ____ USgpm Temp ____ °C SWL before test ____ ft

Water Level ____ ft after test of ____ hrs

DRAWDOWN in ft				RECOVERY in ft			
mins	WL	mins	WL	mins	WL	mins	WL

13. RECOMMENDED PUMP TYPE ____ RECOMMENDED PUMP SETTING ____ ft RECOMMENDED PUMPING RATE ____ USgpm

14. WATER TYPE: 1 ☑ fresh 2 ☐ salty 3 ☑ clear 4 ☐ cloudy

colour ____ smell ____; gas 1 ☐ yes 2 ☐ no

15. WATER ANALYSIS: 1 Hardness ____ mg/L 2 Iron ____ mg/L 3 Chloride ____ mg/L 4 pH ____

Field Date ____ Lab Date ____ (YR MO DY)

SITE I.D. No. ____

16. FINAL WELL COMPLETION DATA

Well Depth 400 ft Well Yield 600 US gpm estimate only

Static Water Level ____ ft Artesian Flow 600 US gpm Pressure Head ____ ft

Back filled ____

Well Head Completion: uni flange T

17. DRILLER (PLEASE PRINT) SURNAME: BACHIK FIRST NAME: Duane

Signature: [signature]

18. CONTRACTOR, Address

Bud's Water Wells Ltd.
Box 3276
Kamloops, B.C.
V2C 6B8

Member, BCWWA ☐ no;

BRITISH COLUMBIA

Report 1 - Detailed Well Record

Well Tag Number: 98214	Construction Date:
Owner: River Ranch	Driller: Field Drilling Contractors
Address:	Well Identification Plate Number:
Area:	Plate Attached By:
WELL LOCATION:	Where Plate Attached:
KAMLOOPS (KDYD) Land District	PRODUCTION DATA AT TIME OF DRILLING:
District Lot: Plan: Lot:	Well Yield: (Driller's Estimate)
Township: 91 Section: 24 Range:	Development Method:
Indian Reserve: Meridian: Block:	Pump Test Info Flag: N
Quarter:	Artesian Flow:
Island:	Artesian Pressure (ft):
BCGS Number (NAD 83): 092I017123 Well:	Static Level:
Class of Well: Water supply	WATER QUALITY:
Subclass of Well: Non-domestic	Character:
Orientation of Well: Vertical	Colour:
Status of Well: Closure	Odour:
Licence General Status: UNLICENSED	Well Disinfected: N
Well Use:	EMS ID:
Observation Well Number:	Water Chemistry Info Flag: N
Observation Well Status:	Field Chemistry Info Flag:
Construction Method:	Site Info (SEAM):
Diameter: inches	Water Utility:
Casing drive shoe:	Water Supply System Name:
Well Depth: feet	Water Supply System Well Name:
Elevation: feet (ASL)	SURFACE SEAL:
Final Casing Stick Up: inches	Flag: N
Well Cap Type:	Material:
Bedrock Depth: feet	Method:
Lithology Info Flag: N	Depth (ft):
File Info Flag: N	Thickness (in):
Sieve Info Flag: N	Liner from To: feet
Screen Info Flag: N	WELL CLOSURE INFORMATION:
	Reason For Closure: Not producing enough wate
Site Info Details:	Method of Closure: Poured
Other Info Flag:	Closure Sealant Material:
Other Info Details:	Closure Backfill Material:
	Details of Closure: Bentonite & cement from 300 ft to 1 ft below ground level, welded lid

Screen from	to feet	Type	Slot Size	
Casing from	to feet	Diameter	Material	Drive Shoe

GENERAL REMARKS:
WELL INSPECTION REPORT AVAILABLE FROM KAMLOOPS REGIONAL OFFICE.

LITHOLOGY INFORMATION:
From 1 to 300 Ft. bentonite and cement

- Return to Main
- Return to Search Options
- Return to Search Criteria

BRITISH COLUMBIA

Report 1 - Detailed Well Record

Well Tag Number: 44137 Owner: BOB HART Address: EAST LAKE RD Area: BARRIERE WELL LOCATION: KAMLOOPS (KDYD) Land District District Lot: 2317 Plan: 29060 Lot: 3 Township: Section: Range: Indian Reserve: Meridian: Block: Quarter: Island: BCGS Number (NAD 83): 082M021133 Well: 2 Class of Well: Subclass of Well: Orientation of Well: Status of Well: New Licence General Status: UNLICENSED Well Use: Unknown Well Use Observation Well Number: Observation Well Status: Construction Method: Dug Diameter: 0.0 inches Casing drive shoe: Well Depth: 15 feet Elevation: 0 feet (ASL) Final Casing Stick Up: inches Well Cap Type: Bedrock Depth: feet Lithology Info Flag: File Info Flag: Sieve Info Flag: Screen Info Flag: Site Info Details: Other Info Flag: Other Info Details:	Construction Date: 1980-01-01 00:00:00 Driller: Unknown Well Identification Plate Number: Plate Attached By: Where Plate Attached: PRODUCTION DATA AT TIME OF DRILLING: Well Yield: 1.5 (Driller's Estimate) Gallons per Minute (U.S./Imperial) Development Method: Pump Test Info Flag: Y Artesian Flow: Artesian Pressure (ft): Static Level: WATER QUALITY: Character: Colour: Odour: Well Disinfected: N EMS ID: Water Chemistry Info Flag: Y Field Chemistry Info Flag: Site Info (SEAM): Water Utility: Water Supply System Name: Water Supply System Well Name: SURFACE SEAL: Flag: Material: Method: Depth (ft): Thickness (in): WELL CLOSURE INFORMATION: Reason For Closure: Method of Closure: Closure Sealant Material: Closure Backfill Material: Details of Closure:

Screen from	to feet	Type	Slot Size	
Casing from	to feet	Diameter	Material	Drive Shoe

GENERAL REMARKS:
YIELD: 1.5 GPM

LITHOLOGY INFORMATION:
From 1.5 to 4 Ft. OVERBURDEN SANDY GRAVEL,BOULDER MATERIAL
From 0 to 0 Ft. TO WATER SUPPLY.

- Return to Main
- Return to Search Options
- Return to Search Criteria

BRITISH COLUMBIA

MINISTRY OF FORESTS, LANDS AND NATURAL RESOURCE OPERATIONS

38000-25 / Water Precinct_____

Inspection Date (YYYY/MM/DD) / Time (hh:mm):_____ **Inspector:**_____

Site or water system name: _____

Well owner: _____ **Phone No.:** _____

Mailing address:_____

Site contact: _____ **Phone No.:** _____

Site coordinates (NAD 83, Zone & UTM or Lat/Long ddd.ddddd): _____

Location address:_____

Legal property description (e.g. PID, lot):_____

Well location description:_____

Well Tag Number[1] _____
Well ID Plate No. _____

ID plate location ☐ Attached to casing ☐ Other _____

Construction date _____

Construction method _____

Class of well _____

Subclass of well _____

Driller name _____

Driller company _____

Driller registered ☐ Yes ☐ No ☐ Supervised[2]

Driller class ☐ Water well ☐ Geoexchange ☐ Geotechnical/Environmental

Pump installer name _____

Pump installer company _____

Pump installer registered ☐ Yes ☐ No ☐ Supervised[2]

Well status ☐ Active ☐ Deactivated ☐ Decommissioned ☐ Not in Use (see comments)

Well head location ☐ Outside ☐ Pump house ☐ Well pit ☐ Other See comments

Well pit drained ☐ Yes ☐ No ☐ See comments

Estimated distance to nearest water well _____ m ☐ Unknown ☐ NA

Secure well cap/cover ☐ Yes ☐ No ☐ See comments

Type of cap ☐ Sanitary seal ☐ Bolted (pitless adapter style) ☐ Other (e.g. hand pump) See comments

Well depth (below ground surface) _____ m _____ ft ☐ Unknown

Well diameter _____ cm _____ inches

Casing stick-up _____ cm _____ inches

Pumping rate (if known) _____ USgpm Igpm L/s L/min m^3/d Other____ (circle correct units)

Surface seal ☐ Yes ☐ No ☐ Unknown ☐ See comments

Well maintenance ☐ Clear access to well ☐ No foreign matter stored within 3 m ☐ Grading promotes drainage away from wellhead

Flowing well ☐ Yes ☐ No ☐ See comments

[1]Attach well construction record (if available) [2]If work supervised by a registered person, provide name of supervisor

PHOTOGRAPHS TAKEN: ☐ YES ☐ NO

ISSUES IDENTIFIED FOR FOLLOW UP BASED ON *WATER SUSTAINABILITY ACT* & GROUNDWATER PROTECTION REGULATION REQUIREMENTS: ☐ YES ☐ NO

Definition of a Well

Definition of a "well" in the *Water Sustainability Act*:

> A **"well"** means an artificial opening in the ground made for the purpose of
>
> (a) exploring for or diverting groundwater,
>
> (b) testing or measuring groundwater,
>
> (c) recharging or dewatering an aquifer,
>
> (d) groundwater remediation,
>
> (e) use as a monitoring well,
>
> (f) use as a closed-loop geoexchange well, or
>
> (g) use as a geotechnical well,
>
> but does not include
>
> (h) an artificial opening, other than a water source well, to which the *Geothermal Resources Act* or the *Oil and Gas Activities Act* applies, or
>
> (i) an artificial opening of a prescribed class, made for a prescribed purpose or in prescribed circumstances [read = check the regs].

Further exclusions within the Groundwater Protection Regulation:

> **Exclusions from definition of "well"**

3 The following artificial openings in the ground are excluded from the definition of "well" in section 1 *[definitions]* of the Act:

(a) the following artificial openings made for the purpose of drainage:

(i) drains, including building perimeter drains, curtain drains, French drains and backfilled soakaway pits;

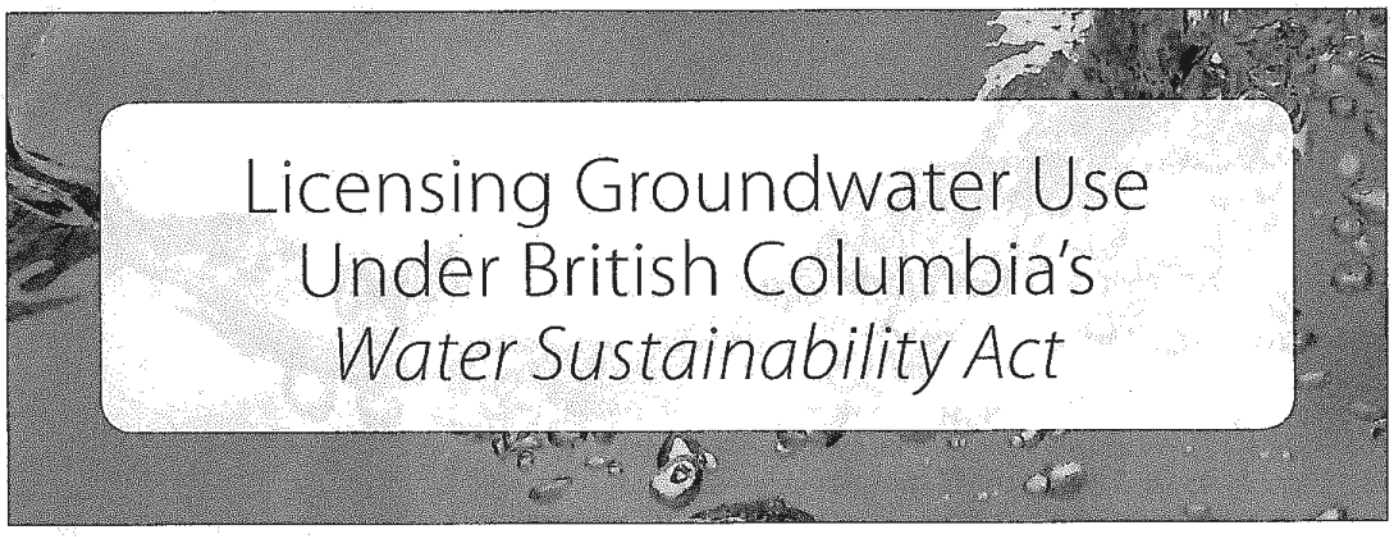
(ii) sumps in buildings that are part of the drainage systems of the buildings;

(iii) ditches or infiltration trenches of a shallow and linear nature;

(b) prefabricated vertical drains, vertical strip drains, wick drains and sand drains made for the purpose of facilitating soil consolidation prior to building construction;

(c) seismic relief holes, including stone columns and stone densification points, made for the purpose of dissipating excess water pressure caused by seismic activity;

(d) drill holes made for the purpose of mineral exploration.



Licensing Groundwater Use Under British Columbia's *Water Sustainability Act*

Introduction

B.C.'s new ***Water Sustainability Act*** received Royal Assent in May 2014, after more than four years of public engagement and policy development. Government plans to bring the new act into force early in 2016, at which time the existing *Water Act* — and regulations under the ***Water Act*** — will be repealed.

The *Water Sustainability Act* will provide new tools to help ensure that water stays healthy and secure for future generations of British Columbians. These tools include — for the first time in British Columbia — the requirement that individuals and businesses who extract groundwater for non-domestic purposes obtain and pay for a water licence.

In the past, government charged for stream water use but not for groundwater use. During the development of the *Water Sustainability Act*, British Columbians communicated clearly that they supported groundwater licensing. Many emphasized the need to manage groundwater and stream water as one interconnected resource.

Groundwater licensing will establish equity between stream water and groundwater users, and provide additional benefits.

- For groundwater users, licensing will clarify how much they can legally use, and increase the security of their access. It will establish rights to groundwater based on the same priority scheme that currently exists for stream water (see box on water rights), and thus help to reduce conflicts between water users in times of scarcity.
- For government water managers, licensing will increase information about the use of water within specific aquifers, and contribute to improved groundwater protection, allocation and management.
- Where stream water and groundwater are interconnected — for example where groundwater contributes to stream flow — licensing will allow government to manage water in an integrated way.

WHAT IS THE DIFFERENCE BETWEEN AN ACT AND A REGULATION?

An Act is a law that has been introduced in the Legislative Assembly as a Bill, has passed three readings and committee-study by the Legislative Assembly, and has received Royal Assent. Acts typically state legal requirements to advance the Acts' intent and objectives and establish the overall framework within which the government is expected to act.

A Regulation is "subordinate legislation" (made under the authority of an Act) that provides the details of how the requirements laid out in legislation are to be applied, and must remain inside the boundaries established by the Act. In B.C., the Lieutenant Governor in Council approves regulations.

BRITISH COLUMBIA

In order to implement the *Water Sustainability Act* government is replacing regulations associated with the *Water Act*, updating other regulations, and developing new regulations to be phased in over the next several years. This paper describes some of the proposed new policies related to groundwater licensing that government will consider for inclusion in a new regulation under the *Water Sustainability Act*.

Why is Government Developing a New Water Sustainability Regulation?

The existing Water Regulation under the *Water Act* prescribes procedures for the acquisition of a water right and for the calculation and payment of water fees and rentals to government. Government proposes to replace this regulation with a new Water Sustainability Regulation that would incorporate most existing policies related to water rights, align with the new *Water Sustainability Act*, and include new provisions for groundwater licensing.

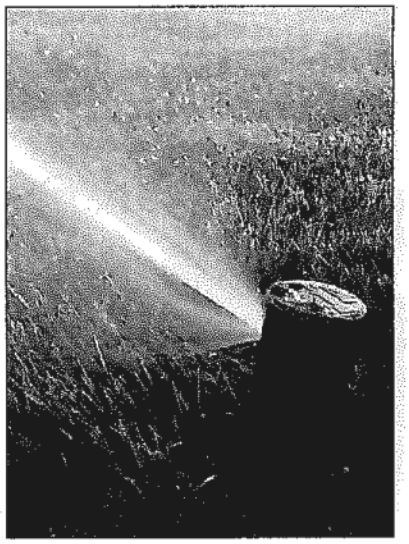
The Water Sustainability Act and Ground Water Licensing

LICENSING GROUNDWATER USES

When the *Water Sustainability Act* comes into force in 2016, irrigators, industries, waterworks and others who use groundwater for non-domestic purposes will need to obtain a water licence and to start paying water fees and rentals. They will also for the first time have defined water rights, and greater clarity regarding their priority of use. Stream water and groundwater rights will be integrated, to enable management of water as one resource. The *Water Sustainability Act* allows people and businesses to drill a new well without a groundwater licence. It requires them, however, to obtain a licence before using water from that well for a non-domestic purpose.

About 80,000 existing wells in B.C. provide water for domestic uses only. The owners of these wells cannot obtain a licence, and are not expected to pay water fees and rentals. The *Water Sustainability Act* enables the statutory decision maker to consider potential impacts on existing domestic use of an aquifer when reviewing licence applications for existing non-domestic uses of the same aquifer. When considering potential impacts on domestic use, government deems the owners of domestic wells to have a water right of up to 2,000 litres per day. The Water Sustainability Act also makes it possible in future to licence domestic use in areas of the province where there are water shortages or conflicts.

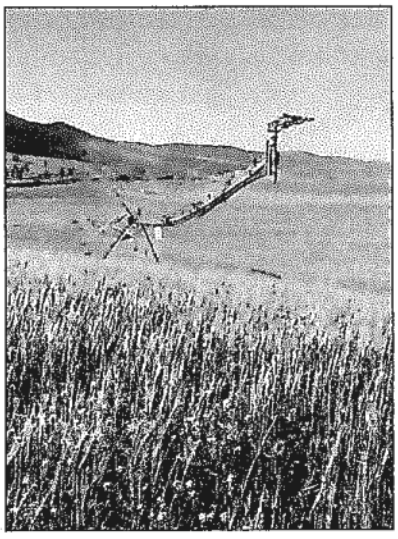
All well owners — whether they use water for domestic or non-domestic purposes — will have to comply with regulations regarding groundwater protection.



DOMESTIC & NON-DOMESTIC WATER USE

The *Water Sustainability Act* identifies domestic water use purposes as: the use of water in a private dwelling for drinking, food preparation, sanitation, and fire prevention; water for pets and household animals or poultry; and irrigating a garden adjoining the dwelling.

Non-domestic water use purposes include: conservation; industrial; irrigation; land improvement (e.g., drainage); mineralized water; mining; oil & gas; power production; storage; and waterworks.



APPLYING SURFACE AND GROUNDWATER RIGHTS

British Columbia applies the historic First-in-Time, First-in-Right (FITFIR) system, in which senior licensees — those with the earliest priority dates — have precedence over junior licensees, regardless of the purpose for which the water is used. During times of water scarcity, senior licensees are entitled to use their full allocation of water, even if this means that junior licensees cannot use any of their licensed allocation. The *Water Sustainability Act* recognizes three exceptions to FITFIR:

- Even though they lack precedence, during times of water scarcity those who use stream water and groundwater for domestic purposes are allowed to divert water for 'essential household uses' — established as 250 litres per day for each private dwelling.
- Under a temporary Critical Environmental Flow Protection Order, the Comptroller defines a minimum flow required to avoid significant or irreversible harm to a specific stream. That minimum flow has precedence over licensed water uses of the stream and any hydraulically connected aquifer. Any water in excess of this minimum flow can be used by licensed water users according to their precedence in the FITFIR scheme.
- Under a Fish Population Protection Order, the Minister can order any licensee — no matter what their priority date — to temporarily reduce or stop water use in order to save a population of fish.

HYDRAULIC CONNECTIVITY AND LICENSING

In many regions of British Columbia, and particularly in shallow sand and gravel aquifers, surface and groundwater are connected. They interact in the following ways:

- Groundwater discharges into a stream channel when the level of the water table close to the stream is higher than the elevation of the stream surface;
- Stream water seeps into an aquifer when the level of the water table is lower than the elevation of the stream water surface; and/or
- A stream can receive groundwater from an aquifer in one reach and lose water to an aquifer in another reach.

The extraction and use of groundwater can therefore affect the availability of stream water for other users and for aquatic ecosystems, particularly during natural periods of low flow.

The *Water Sustainability Act* recognizes the concept of hydraulic connectivity. It directs the statutory decision maker to consider the environmental flow needs of a stream when reviewing an application for the use of water from an aquifer that is reasonably likely to be hydraulically connected to the stream. It also stipulates that the precedence of water use is established relative to the priority dates of all other uses of the stream, a tributary of that stream, and any aquifer reasonably likely to be hydraulically connected to the stream.

WATER RIGHTS & PRECEDENCE

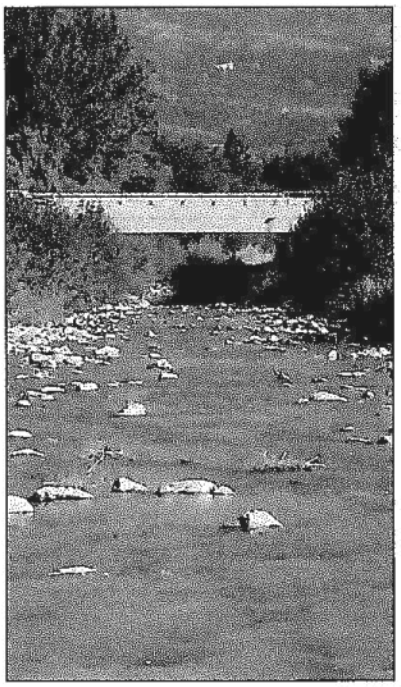
A water licence grants the licensee the right to use a specific volume of water for a specific purpose, at a specific location, or for a specific mine or undertaking.

A water licence specifies a priority date — typically the date the licensee filed the licence application — and establishes the licensee's precedence.

Water rights in B.C. are attached to a piece of land, a mine, or an undertaking and pass with the conveyance or disposition of the land, mine or undertaking.

HYDRAULIC CONNECTIVITY

is the reasonable likelihood that the pumping of groundwater from a well will eventually result in a change in the flow of a stream or spring or change in the level of a lake that overlies or borders the aquifer, over a time period of interest to the statutory decision-maker.



Proposed Policies Related to Groundwater Licensing

WAIVING OF APPLICATION FEES

Approximately 20,000 existing wells in British Columbia supply groundwater for non-domestic uses. The owners of these wells will have three years from the date the *Water Sustainability Act* comes into force in which to apply for a water licence. While their licence application is under review they will be able to continue to divert, use, and store groundwater.

Government wants to encourage owners of existing wells to apply early for a licence. The transition of thousands of existing wells into the provincial water licensing scheme and the FITFIR priority system represents a substantial workload for government, and early submission of applications will help government manage this workload. In addition, because licence applications include information about water use, early submission of applications means that government can start earlier to collect information about groundwater use and demand across B.C.

The proposed new Water Sustainability Regulation would therefore waive the application fee for owners of existing wells who apply for a licence within 12 months of the *Water Sustainability Act* coming into force. Owners of existing wells who apply after this 12-month period would pay the full application fee. Owners of new wells who apply for a groundwater licence during the first 12 months would pay the full application fee.

ESTABLISHING PRIORITY DATES

The proposed new Water Sustainability Regulation would allow existing well owners who apply for a licence within the three-year transition period to seek a priority date based on their historic date of first use and their ongoing use of groundwater for a non-domestic purpose. These well owners would be asked to provide evidence of their date of first use for the consideration of the statutory decision maker. Records related to the construction of wells and other works, Environmental Assessment certificates, well maintenance records, photographs, or other corroborating information would be recognized as evidence of historic use.

The new regulation would also recognize that the quantity of water used from a particular well may have changed over time. It would enable the statutory decision maker, in such a case, to assign more than one licence, each with a different priority date and enabling use of a different quantity of water.

Owners of existing wells who apply after the three-year transition period would not qualify for a historic priority date based on date of first use. They would be treated as new applicants and receive a new priority date, generally based on their date of application. Owners of new wells would receive a new priority date based on their date of application.

WATER FEES AND RENTALS

Government announced new water fees and rental rates in February 2015. These will take effect in 2016 when the *Water Sustainability Act* comes into force.

An application fee is a one-time payment made when one applies for a water licence, and is typically based on the purpose of water use and the quantity of water requested. Such fees apply to water use approvals, change approvals, drilling authorizations, permits over Crown land, and any amendments to these, as well as to water licences.

A water rental is a yearly payment for water use. In most cases, government bills clients for the amount of water authorized in a water licence; however some water uses (e.g., waterworks, pulp mills) are billed for the amount of water they actually use. Clients who hold a use approval – allowing them to divert or use water for up to 24 months – also pay an annual water rental.

ESTABLISHING THE START DATE FOR PAYMENT OF WATER RENTALS

When the *Water Sustainability Act* comes into force in 2016, existing non-domestic groundwater users will also be required for the first time to pay annual water rentals. The proposed new Water Sustainability Regulation would stipulate that existing non-domestic groundwater users who apply for a water licence during the three-year transition period would pay water rentals calculated from the date the *Water Sustainability Act* comes into force. Those who apply after the transition period would pay water rentals calculated from the date government issues their licences. In both cases, well owners would not receive a water rental bill until after government issues their licences.

	APPLICATION PERIOD – FOR LICENSING OF EXISTING NON-DOMESTIC GROUNDWATER USERS ONLY			
	Year 1	*Year 2*	*Year 3*	*Year 4 and later*
Application Fee	Exempted	Required ($250 to $10,000)		Required ($250 to $10,000)
Priority Date	Applicants would be able to obtain a priority date based on date of first use of groundwater.			Priority date is generally the date of application. All users treated as 'new' users (regardless of how long they have actually used groundwater).
Water Rentals	Licensees would pay water rentals from the date the *Water Sustainability Act* comes into force.			Licensees would pay water rentals from the date government issues their licence.

LICENCE APPLICATION FORMS FOR EXISTING GROUNDWATER USES

The proposed new Water Sustainability Regulation would require owners of existing non-domestic wells to provide the following information, if available, when applying for a groundwater licence:

- Name or description of the aquifer, and of any streams known to be hydraulically connected with it;
- Details of the reservoir, if storage is proposed;
- Water use purpose or purposes and the quantity and period of use for each water use purpose;
- Legal description of the land, mine or location where the water is to be used, including the applicant's title or other interest in it;
- Area of land irrigated;
- Description of works, including the location of the well, the well record, construction report, well ID number or tag number;
- Legal description of any lands affected by works;
- An accurate labelled drawing (standards) of the proposed works; and
- Consent for the collection, use and verification of public personal information, including permission to contact relevant third parties.

Next Steps

This paper describes some of the new groundwater licensing policies that government proposes to incorporate into a new Water Sustainability Regulation under the *Water Sustainability Act*. Government will consider these policies in the fall of 2015. The policies are therefore subject to change, depending on government direction. Pending government review and approval, the new Water Sustainability Regulation would be brought into force along with the *Water Sustainability Act* in 2016.

To support implementation of the new act, government is replacing or updating existing regulations related to essential water management activities, including authorizing stream water and groundwater use, water fees and rentals, changes in and about a stream, well construction and maintenance, dam safety, and compliance and enforcement. Once work on these initial regulations is completed, government expects to start work on other regulatory components required to fully implement the *Water Sustainability Act*.

We invite you to share your ideas about the proposed new groundwater licensing policies and the new Water Sustainability Regulation by visiting the *Water Sustainability Act* blog at:
http://engage.gov.bc.ca/watersustainabilityact/

You may also send related questions and comments to government by email at **livingwatersmart@gov.bc.ca**.

FOR MORE INFORMATION

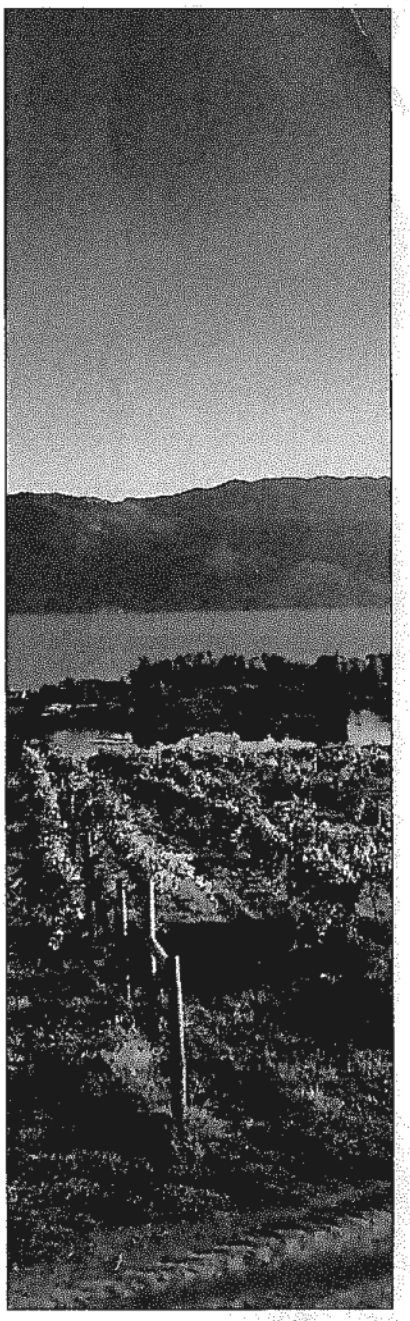
General Information About the *Water Sustainability Act* and Engagement
http://engage.gov.bc.ca/watersustainabilityact/

The *Water Sustainability Act*
http://leg.bc.ca/40th2nd/3rd_read/gov18-3.htm

The *Water Act*
http://www.bclaws.ca/civix/document/id/complete/statreg/96483_01

Water Rights and Legislation
http://www.env.gov.bc.ca/wsd/water_rights/index.html

Water Licences and Approvals
http://www.env.gov.bc.ca/wsd/water_rights/licence_application/index.html



This paper describes proposed policies related to compliance and enforcement and is not intended to support interpretation of the Water Sustainability Act or the Violation Ticket Administration and Fines Regulation. The policies described are subject to review and approval by government.

BRITISH COLUMBIA

IF YOU...

ARE BUYING A HOUSE or FARM WITH A WELL...

Ask for the well construction report, pumping test record, and water quality tests. If water quality tests are not available you may consider doing a test yourself. Have the well inspected to ensure good construction and maintenance.

ARE INSTALLING A NEW WELL...

Choose a good location and have the well properly constructed by a provincially registered qualified well driller and pump installer. It may be necessary to ensure that the well has adequate capacity with a pumping test completed by a qualified professional.

Check with your local public health inspector for naturally occurring chemicals and minerals in local ground water. Have the well water tested for bacteria and chemical quality.

Keep your records and provide a copy of the well construction report to the Ministry of Environment (MoE) well database.

Note:
New wells constructed after **November 1, 2005** must meet the minimum standards outlined in the ***B.C. Ground Water Protection Regulation.***

HAVE AN EXISTING WELL...

Ensure well is capped and flood proof. If a well is poorly constructed, either have the well retrofitted or have it properly closed by a provincially registered qualified well driller and install a new well.

Note:
Refer to the ***B.C. Ground Water Protection Regulation*** for requirements concerning existing well capping, flood proofing, deactivation and closure.

FOR ALL WELLS...

Use good maintenance practices, practice water conservation in your house, on your property and use a provincially registered qualified well driller or pump installer for all work.

Contacts:

B.C. Ministry of Environment Regional Offices

Lower Mainland Region
Surrey (604) 582-5200

Vancouver Island Region
Nanaimo (250) 751-3100

Thompson and Caribou Region
Kamloops (250) 371-6200

Omineca Peace and Skeena Regions
Prince George (250) 565-6135

Kootenay and Okanagan Regions
Nelson (250) 354-6333
Penticton (250) 490-8200

Enquiry B.C. (toll free) 1-800-663-7867

Ministry of Environment Ground Water home -page:
www.env.gov.bc.ca/wsd/plan_protect_sustain/groundwater/index.html

Publications:

Well Protection and Ground Water Stewardship for Rural Areas

Safe water supply vital to your health:
www.healthservices.gov.bc.ca/protect/pdf/PHI052.pdf

Construction and maintenance of private wells
www.healthservices.gov.bc.ca/protect/pdf/PHI081.PDF

Guidelines for Canadian Drinking Water Quality
www.hc-sc.gc.ca/ewh-semt/water-eau/drink-potab/guide/guide/index_e.html

Should I get my well water tested?
www.bchealthguide.org/healthfiles/hfile45.stm

Ground Water Quality Fact Sheets
www.env.gov.bc.ca/wsd/plan_protect_sustain/groundwater/library.html

How to disinfect drinking water
www.bchealthguide.org/healthfiles/hfile49b.stm

Maintenance and operation of sewage and disposal systems:
www.bchealthguide.org/healthfiles/pdf/hfile21.pdf

B.C.'s Ground Water Protection Regulation

Water Act and GWPR:
www.env.gov.bc.ca/wsd/plan_protect_sustain/groundwater/index.html#leg.

Organizations:

BC Ground Water Association
www.bcgwa.org

Canadian Ground Water Association
www.cgwa.org

Well Aware
www.wellaware.ca

Agriculture and Agri-Food Canada
www.agr.gc.ca

Environment Canada Freshwater
www.ec.gc.ca/water/

WATER STEWARDSHIP INFORMATION SERIES

Well Protection and Ground Water Stewardship for Rural Areas

NOW and for the FUTURE

Printed: March 2007

BRITISH COLUMBIA Ministry of Environment

How well do you know your well?

THE QUIZ

Answer the following questions about your well.....

	YES ●	NO ■	? unknown
Is your well...			
- A minimum 30m /100ft from potential sources of contamination, such as a septic field, dog run, chicken coop, animal range, compost pile, garbage cans, refuse piles, herbicide or fertilizer use or storage, above and below ground storage tanks, parking areas?			
- In a high, dry location?			
- Easily accessible for maintenance?			
Well Construction			
- Is the ground mounded around your well to deflect runoff?			
- Is the top of the well at least 30cm / 12" above ground and does it have a watertight cap? *			
- If your well is drilled, do you have a copy of the driller's log?			
- Is the space around well casing sealed and watertight to a depth of at least 5 m (15 ft)?			
- Does your water system include backflow prevention devices?			
Well Maintenance & Water Quality			
- Are hazardous materials, like pesticides, stored away from the well and not in the pumphouse?			
- Has your well been tested for bacteria within the last 6 months?			
- Have you pumped your septic system within the last 3 years?			
- If your lot is smaller than 1ha (2.5 acres), has your neighbour pumped their septic system within the last 3 years?			
- If your well water is filtered or treated, is the filtration and treatment system regularly inspected and maintained?			
Abandoned Wells			
- Is your and your neighbour's property free of abandoned well(s) or unused well(s)?			
- If there are abandoned wells, are they filled and sealed? *			
Well Water Quantity			
- Do you have adequate water all year round?			
- Do you use low water use fixtures?			
- Do you practice low water use gardening?			

* Refer to the B.C. Ministry of Environment ***Ground Water Protection Regulation*** for details

If you answered **"NO"** or **"unknown"** to one or more questions, your well water may be at risk of contamination.

? You are encouraged to get more information which is on **Contacts / Publications / Organizations** panel on the back of brochure ?

The Basics for...

DRINKING WATER

QUALITY
QUANTITY
PROTECTION
CONSERVATION

WELLS

LOCATION
CONSTRUCTION
WELL TYPE
MAINTENANCE & TESTING
PROPER ABANDONMENT

GROUND WATER

UNDERSTANDING GROUND WATER
CONSERVING QUANTITY
PROTECTING QUALITY

IF YOU...

ARE BUYING A HOUSE or FARM WITH A WELL...

Ask for the well construction report, pumping test record, and water quality tests. If water quality tests are not available you may consider doing a test yourself. Have the well inspected to ensure good construction and maintenance.

ARE INSTALLING A NEW WELL...

Choose a good location and have the well properly constructed by a provincially registered qualified well driller and pump installer. It may be necessary to ensure that the well has adequate capacity with a pumping test completed by a qualified professional.

Check with your local public health inspector for naturally occurring chemicals and minerals in local ground water. Have the well water tested for bacteria and chemical quality.

Keep your records and provide a copy of the well construction report to the Ministry of Environment (MoE) well database.

Note:
New wells constructed after **November 1, 2005** must meet the minimum standards outlined in the ***B.C. Ground Water Protection Regulation.***

HAVE AN EXISTING WELL...

Ensure well is capped and flood proof. If a well is poorly constructed, either have the well retrofitted or have it properly closed by a provincially registered qualified well driller and install a new well.

Note:
Refer to the ***B.C. Ground Water Protection Regulation*** for requirements concerning existing well capping, flood proofing, deactivation and closure.

FOR ALL WELLS...

Use good maintenance practices, practice water conservation in your house, on your property and use a provincially registered qualified well driller or pump installer for all work.

Contacts:

B.C. Ministry of Environment Regional Offices

Lower Mainland Region
Surrey (604) 582-5200

Vancouver Island Region
Nanaimo (250) 751-3100

Thompson and Caribou Region
Kamloops (250) 371-6200

Omineca Peace and Skeena Regions
Prince George (250) 565-6135

Kootenay and Okanagan Regions
Nelson (250) 354-6333
Penticton (250) 490-8200

Enquiry B.C. (toll free) 1-800-663-7867

Ministry of Environment Ground Water home -page:
www.env.gov.bc.ca/wsd/plan_protect_sustain/groundwater/index.html

Publications:

Well Protection and Ground Water Stewardship for Rural Areas

Safe water supply vital to your health:
www.healthservices.gov.bc.ca/protect/pdf/PHI052.pdf

Construction and maintenance of private wells
www.healthservices.gov.bc.ca/protect/pdf/PHI081.PDF

Guidelines for Canadian Drinking Water Quality
www.hc-sc.gc.ca/ewh-semt/water-eau/drink-potab/guide/guide/index_e.html

Should I get my well water tested?
www.bchealthguide.org/healthfiles/hfile45.stm

Ground Water Quality Fact Sheets
www.env.gov.bc.ca/wsd/plan_protect_sustain/groundwater/library.html

How to disinfect drinking water
www.bchealthguide.org/healthfiles/hfile49b.stm

Maintenance and operation of sewage and disposal systems:
www.bchealthguide.org/healthfiles/pdf/hfile21.pdf

B.C.'s Ground Water Protection Regulation

Water Act and GWPR:
www.env.gov.bc.ca/wsd/plan_protect_sustain/groundwater/index.html#leg.

Organizations:

BC Ground Water Association
www.bcgwa.org

Canadian Ground Water Association
www.cgwa.org

Well Aware
www.wellaware.ca

Agriculture and Agri-Food Canada
www.agr.gc.ca

Environment Canada Freshwater
www.ec.gc.ca/water/

WATER STEWARDSHIP INFORMATION SERIES

Well Protection and Ground Water Stewardship for Rural Areas

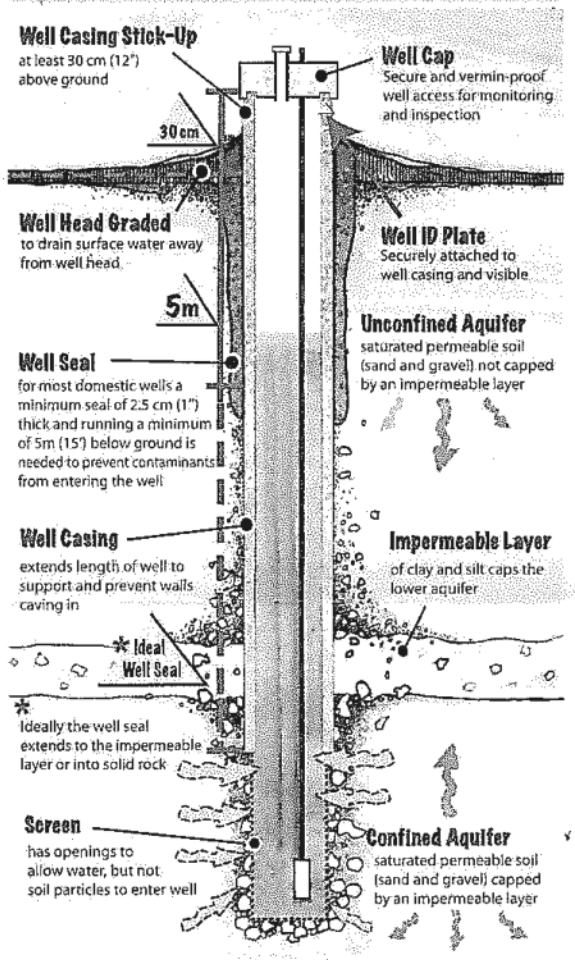
NOW and for the FUTURE

Printed: March 2007

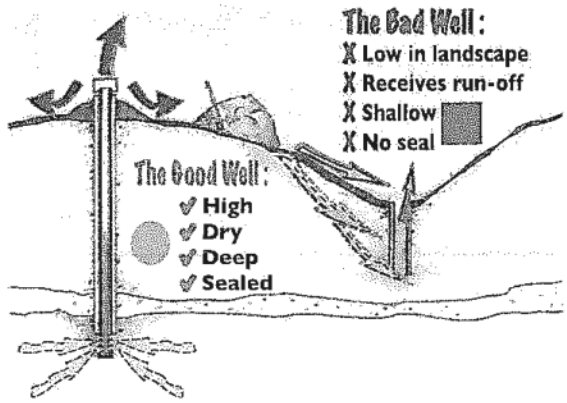
BRITISH COLUMBIA | Ministry of Environment

Well Protection a

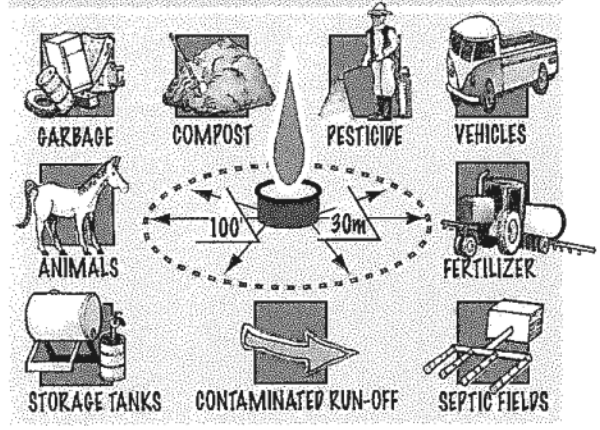
Good Well Construction...



Things to consider...



Risks to be aware of...



WELL PROTECTION STEPS...

1. LOCATION, LOCATION, LOCATION

- Locate well on high ground to protect from flooding
- Locate 30 m / 100 ft or more from potential contamination sources (this includes yours and your neighbours)

2. EXCELLENT CONSTRUCTION AND SETUP

- Constructed by a provincially registered qualified well driller
- Casing seal or grouted to a minimum depth of 5m /15 ft below ground is needed to prevent contaminants from entering the well
- Pump installed by a provincially registered qualified pump installer

3. CHOOSE THE BEST WELL TYPE

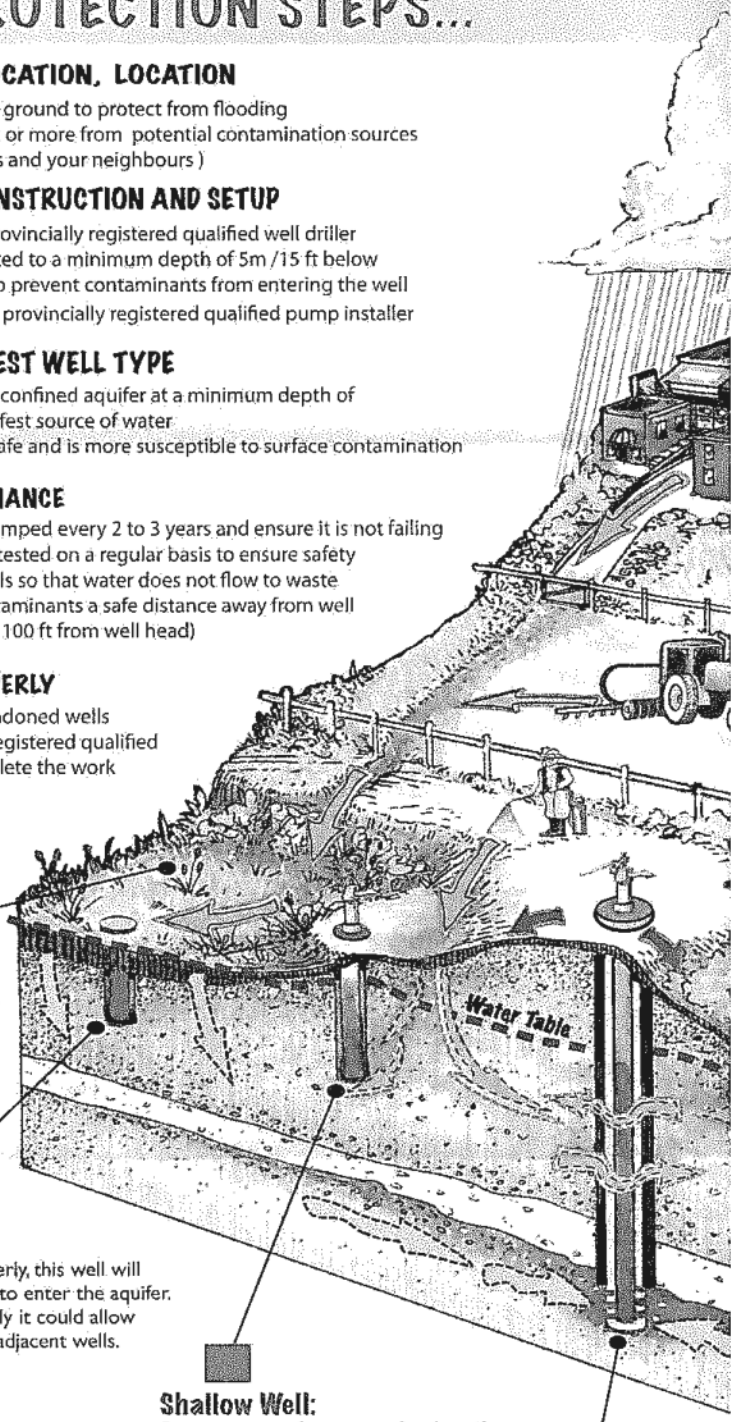
- A drilled well into a confined aquifer at a minimum depth of 15 m / 50 ft is the safest source of water
- A dug well is least safe and is more susceptible to surface contamination

4. GOOD MAINTENANCE

- Have septic tank pumped every 2 to 3 years and ensure it is not failing
- Have water quality tested on a regular basis to ensure safety
- Control flowing wells so that water does not flow to waste
- Keep potential contaminants a safe distance away from well (a minimum 30 m / 100 ft from well head)

5. ABANDON PROPERLY

- Close and seal abandoned wells
- Use a provincially registered qualified well driller to complete the work



Wetlands:
This area acts as a catch basin for contaminants on surface and as a filter at the subsurface levels.

Abandoned Well:
Closed and sealed properly, this well will not allow contaminants to enter the aquifer. If it is not sealed properly it could allow contaminants to enter adjacent wells.

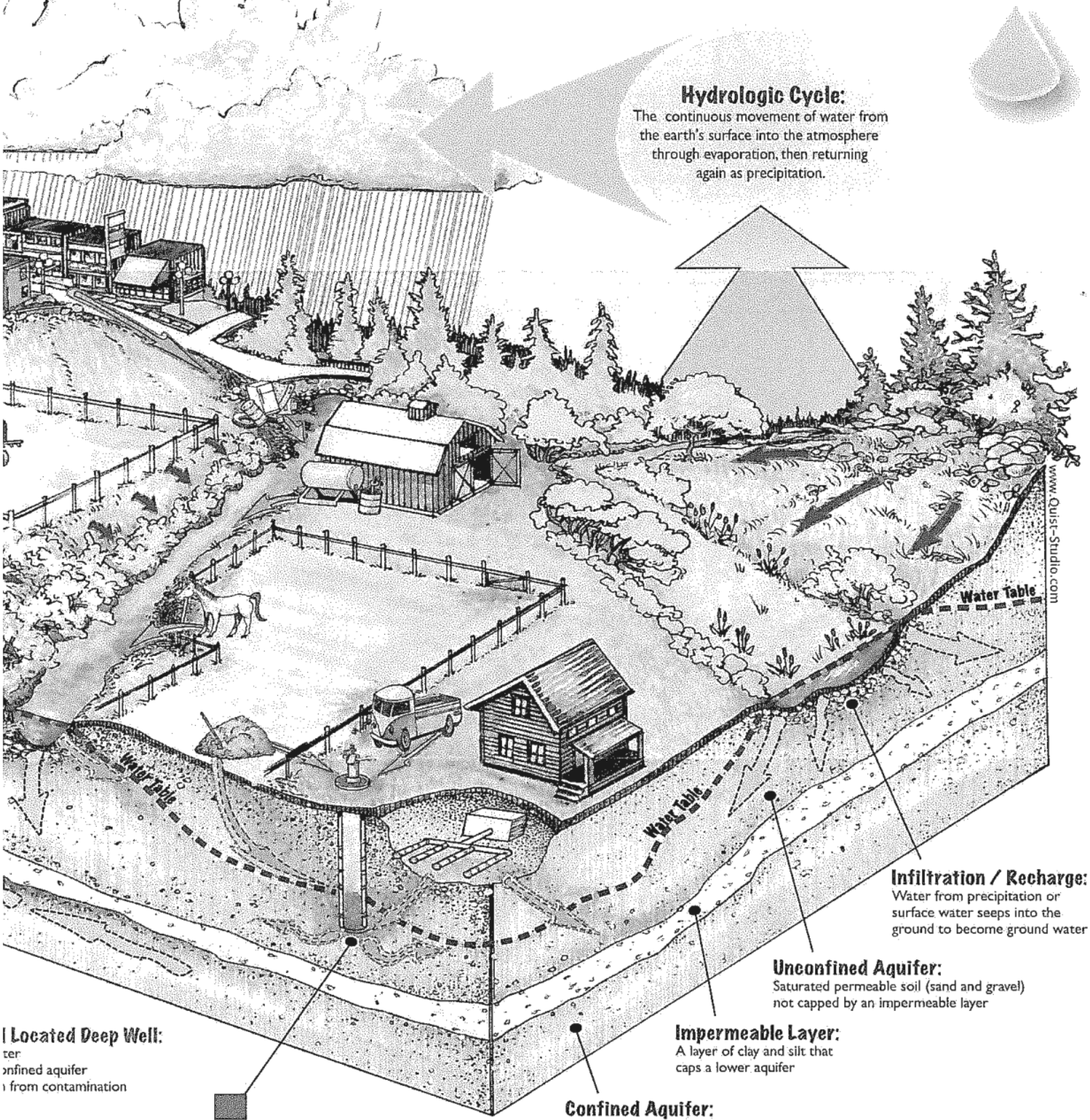
Shallow Well:
Receives water from unconfined aquifer with greater chance of contamination

Properly Constructed a
Does not allow contaminants to the well and receives water from where water has greater protect

Contaminants:
Contaminants can get into groundwater via surface run-off or percolation through the soil. Soil cleans and filters some contaminants but needs space and time to do so. To protect well water keep possible sources of contamination away from wells and surface water.

Runoff Contaminated Runoff Ground Water Contaminated Ground Water

nd Ground Water Stewardship for Rural Areas



- **PROTECTING THE WELL** – maintain the area around the well so the wellhead is accessible, water does not pond around the wellhead, no foreign matter or contaminants can get into the well (e.g., pesticides, fertilizers, refuse, human or animal waste, or construction materials) and foreign matter or potential contaminants are kept from getting within three metres from the wellhead.
- **CASINGS** – maintain the minimum casing stick-up of 30 cm (12 inches) and protect thermoplastic casings from damage and material breakdown to help floodproof and prevent material from entering the well.
- **SURFACE SEALING** – promptly undertake repairs to the well or wellhead when needed, including filling any visible spaces around the well casing with sealant.
- **OPERATING THE WELL** in a manner that does not adversely impact water quality or existing uses of water in other wells or hydraulically connected streams.
- **DEACTIVATING AND DECOMMISSIONING THE WELL** – a well owner can deactivate their own well if the well has not been in service for five years. This involves capping, securing, protecting and maintaining the well in a safe and sanitary condition while it is out of service. Five years after a well is deactivated, a well owner must hire a registered well driller, registered well pump installer or professional to decommission a well that is no longer to be used. A well owner can decommission a drilled well that is less than five metres or a dug well less than 15 metres except if the well is a flowing artesian well.
- **RETAINING RECORDS FOR THE WELL** – a well owner must retain information and records related to the well, including reports on well construction, decommissioning and flow tests.

What can I do without hiring a contractor?

A private well owner can undertake the following if they own the well and the work is completed in accordance with the GWPR and *Water Sustainability Act:*

- Disinfect the pump and well.
- Take water quality samples to ensure the well water is potable.
- Install a flow meter, well cap or well cover.
- Excavate a well up to 15 metres deep.
- Deactivate the well.

For more information:

Questions related to the Groundwater Protection Regulation should be directed to the nearest regional office. Contact information can be found at: *http://www2.gov.bc.ca/gov/content/environment/air-land-water/water/groundwater-wells/regional-groundwater-contacts*.

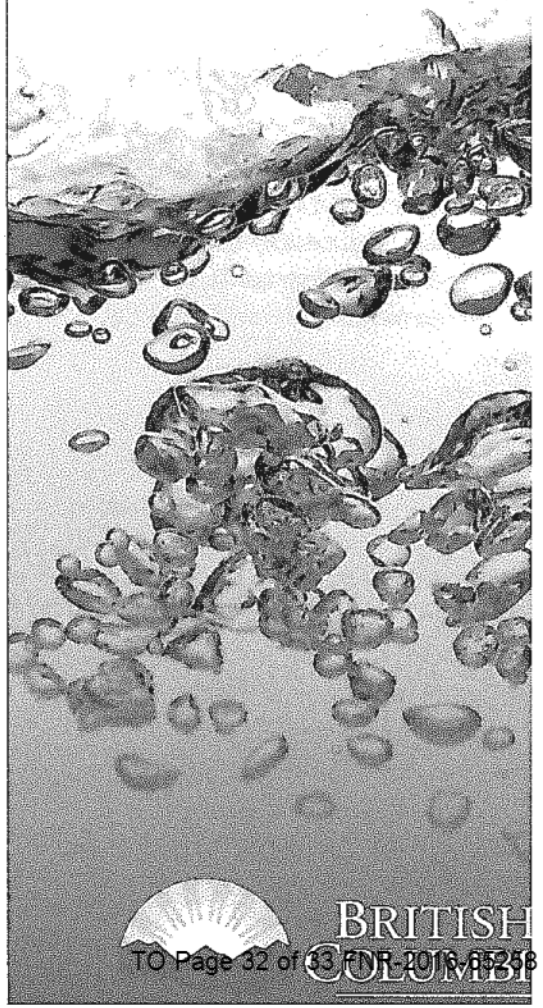
For more information on the Groundwater Protection Regulation (GWPR) and groundwater in B.C., or to access this brochure online visit: *www.gov.bc.ca/water*.

For more on applying for licences and approvals contact FrontCounter BC at **1-877-855-3222** or visit: *www.frontcounterbc.gov.bc.ca*.

Groundwat
Protection

INFORMATION FOR **WELL OW**

NEW REQUIREMENTS IN EFF
February 29, 2016



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What is the Groundwater Protection Regulation?

The Groundwater Protection Regulation (GWPR) under the *Water Sustainability Act* requires water wells in B.C. to be properly constructed, maintained, and, at the end of their service, deactivated and decommissioned to protect the quality and safety of our groundwater resources. The regulation came into force on February 29, 2016 and replaces the former Ground Water Protection Regulation under the old *Water Act*.

Why is it important to follow the regulation?

By following the regulation, well owners can protect their own water supplies and those of their neighbours, and help to keep groundwater resources healthy and clean for future generations.

Ministry of Forests, Lands and Natural Resource Operations officials are responsible for administering the regulation and may order certain types of work to be done on private wells under particular circumstances.

Hiring a registered well driller and well pump installer

All water supply wells, except for dug wells less than 15 metres deep, must be constructed by or under the direct supervision of a registered well driller or a professional hydrogeologist or geotechnical engineer. Well decommissioning can be completed by a registered well driller, registered well pump installer (except for flowing wells) or under the direct supervision of a registered well driller, registered well pump installer or a professional hydrogeologist or geotechnical engineer. Pumps for water supply wells must be installed by or under the direct supervision of a registered well pump installer, registered well driller or a professional hydrogeologist or

Registered well drillers and well pump installers have identification cards issued by the Ministry of Environment and, when requested, are required to show these cards as proof that they are qualified to work with wells and well pumps. The identification card for registered well drillers will include their classification as a water well driller, geoexchange driller and/or geotechnical/environmental driller. A well pump installer identification card does not include a classification.

A register of ***registered well drillers*** and ***registered well pump installers*** is maintained by the Province and can be accessed by visiting: ***www.gov.bc.ca/water.***

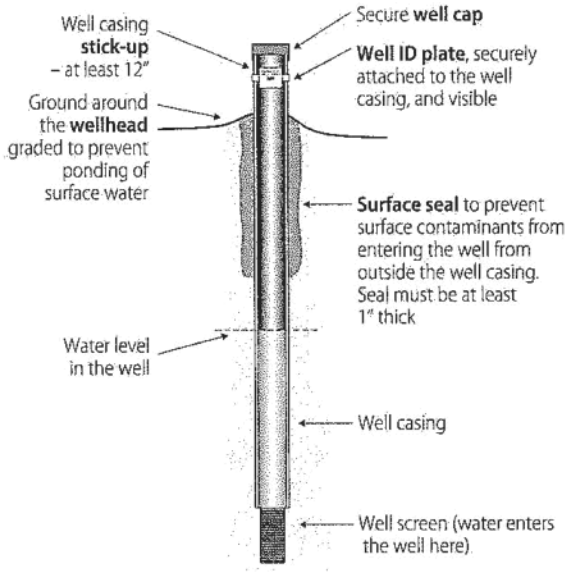
When hiring a registered well driller or registered well pump installer, a private well owner should ask for:

- Proof of classification and qualification of the well driller and qualification of the well pump installer.
- Information related to the requirements that must be followed in order to construct, alter or decommission a well or install a well pump in a well.
- Information related to the likelihood of encountering a flowing artesian well and a plan for how it will be managed if encountered.
- An estimate of well yield and what will happen if the well is dry.
- A written report on the work completed.

New requirements for water supply wells

The person responsible for constructing, altering, decommissioning or installing a well pump in a water supply well is legally required to ensure the well meets the minimum requirements of the GWPR. These requirements include well siting, casings and liners, stopping or controlling artesian flow, pump

Example of a water supply well



Well owner responsibilities

Private well owners should ensure that they hire registered well drillers and registered well pump installers to construct or decommission a well or to install a well pump. Well owners must also operate and maintain their wells, even if the well is not being used, in a manner that meets the requirements of the *Water Sustainability Act* and the GWPR to ensure the well is sanitary and groundwater is protected. This includes, but is not limited to:

- **STOPPING OR CONTROLLING ARTESIAN FLOW** – hire a registered well driller or professional.
- **SECURING A WELL CAP** to the top of the well casing or a well cover to the opening of a well pit to prevent direct and unintended entry into the well of any water, foreign matter and animals.
- **MAINTAINING THE WELL IDENTIFICATION PLATE** attached to the well and replacing it if it is damaged or lost. For a replacement well identification plate, contact: