Webinar

Oct 6, 2016

CSAP
Society of Contaminated Sites Approved Professionals of British Columbia

WEBINAR FORMAT:

- The Webinar consists of a Adobe Connect website portal which was supplied to you as a link and where the presentations can be viewed.
- Should you wish, your computer speakers can be used to hear the presentation.
- Should you not be able to hear the presentation please also dial in to the conference call line supplied to you (please note your line will be muted) Phone Number **1-855-747-8824 - PASSWORD 728369.**
- Questions should be typed in in the chatbox and will be answered by the presenters.

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SPEAKERS

Moderator - Bob Symington, P.Geo., Principal and AP at Gandalf Consulting Ltd.

AP – **Duncan MacDonald**, P.Eng. – Vice President at PGL Environmental Consultants.

AP – **Paul Webb,** P.Geo. Standards at Hemmera Envirochem Inc.

AP – Tara Kennedy, M.E.T. PChem., Senior Project Specialist, Environment Toxicologist at SNC-Lavalin.

MoE – Annette Mortensen, MSc, PhD, P.Eng Senior Contaminated Sites Officer, Land Remediation Section at Ministry of Environment.

Amy Sloma, M.E.Sc., P.Eng. Senior Contaminated Sites Officer, Land Remediation Section at Ministry of Environment.

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REMINDER

-Use the ANNOTATED SoSC (Updated July 2016)

- Available on the CSAP Website at:

  http://csapsociety.bc.ca/members/make-a-submission/summarysitecondition-csap-annotateion-revised-july-6-2016/ (Google Search CSAP Annotated SoSC)

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Soil Vapour Assessment – Required Information

-If an SVA has been conducted, check ‘OTHER’ in table in Section 4.4 of SoSC

4.4 Applicable Numerical Concentration Standards and Criteria

Property	CSR Land Use						
		AL	PL	RL	CL	IL	Other
Subject site	Current	☐	☐	☐	☐	☐	☒
	Proposed	☐	☐	☐	☐	☐	☒
Receiving site *(if completed in support of a Contaminated Soil Relocation Agreement)*		☐	☐	☐	☐	☐	☐
Offsite impacted property / management area[1]		☐	☐	☐	☐	☐	☒

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Soil Vapour Assessment – Required Information

-If VAFs have been used, include SVA assumptions below the table

If Other is specified above, please explain: *(applicable or excluded guidance, protocols or policies specific to the site)*

_____

_____

_____

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Soil Vapour Assessment – Required Information

-If SVA relies on indoor air sampling:

- as per TG 4, indoor air samples are only representative of the building they are collected from, unless information is presented that demonstrates otherwise

- Assumption should be listed in Clause 1 of Schedule B of the CofC

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Risk Type and Risk Controls

-As per the Annotated SoSC, the Risk Type should be listed:

- in the notes below the Table in Section 4.6
- in the notes below the Table in Section 5.1

-For 1B, 2 and 3 sites, include risk controls in Section 5.2 and ensure they are consistent with those in Schedule B and in the PVP

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AG 11 Communications

-Reminder that Communication Records are reviewed as part of the Detailed Screening

- Communications are required as per Appendix 2 of AG 11

- DS checklist covers all items in Appendix 2; ensure records clearly indicate that requirements have been met

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Listing of Substances on SoSC and CofC

- Ensure substances listed in Section 7.2 and on the Draft CofC are the same
- Spellings should match the CSR
  - -Common spelling errors:
    - -Xylene for soil; xylenes (total) for gw; xylenes (mixture) for vapour
    - -Use square brackets for PAHs (e.g., benzo[a]pyrene)
    - - VPHs and LEPHs for soil; VPHw and LEPHw for gw

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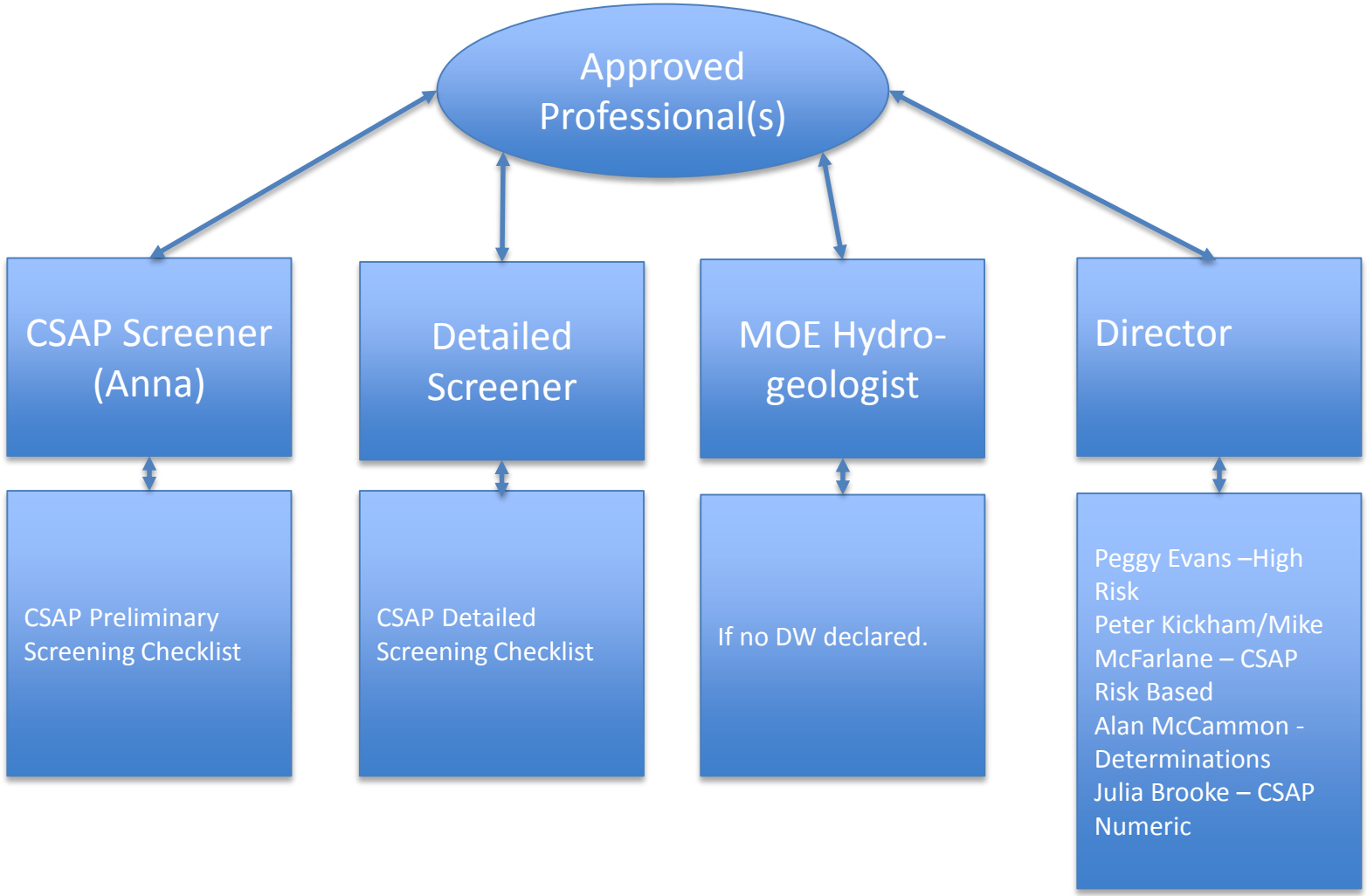
Approved Professional(s)
CSAP Screener (Anna)
Detailed Screener
MOE Hydro-geologist
Director
CSAP Preliminary Screening Checklist
CSAP Detailed Screening Checklist
If no DW declared.
Peggy Evans –High Risk
Peter Kickham/Mike McFarlane – CSAP Risk Based
Alan McCammon - Determinations
Julia Brooke – CSAP Numeric

CSAP RESOURCES FOR THE SUBMITTING AP

Make a Submission – CSAP WEBSITE

CSAP Submissions 101

CSAP Screening Deficiencies 2012 – 2013

CSAP Submission transmittal letter

CSAP Annotated SoSC

CSAP AG 11 Communications Template (doc)

Arms Length Review of Submission Template

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MOE RESOURCES FOR THE SUBMITTING AP

Make a Submission – MOE website

Admin Guidance 3 - Applying for Contaminated Sites Services

Admin Guidance 5 - AP Recommendations Relating to Low and Moderate Risk Sites

Admin Guidance 11 - Expectations and Requirements for Contaminant Migration

Protocol 6 – Eligibility of Applications for Review by APs

Procedure 6: Establishing the Boundaries of a Site

Procedure 12 - Procedures for Preparing and Issuing Contaminated Sites Legal Instruments

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CSAP RESOURCES FOR THE SUBMITTING AP

Submission Screening

Administrative Screening

The administrative screening is undertaken by CSAP office staff the preliminary administrative screener, PAS

Submissions Checklist

Detailed Screening

The detailed screening is undertaken by an approved professional the detailed administrative screener, DS.

Detailed Screening Process

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Describing Hydrogeology on SoSC

- groundwater **levels**
- **confining** / semi-confining **layers**
- flow **direction**
- flow **velocity**
- hydraulic conductivity – K

- Describe hydrogeology Conceptual Site Model

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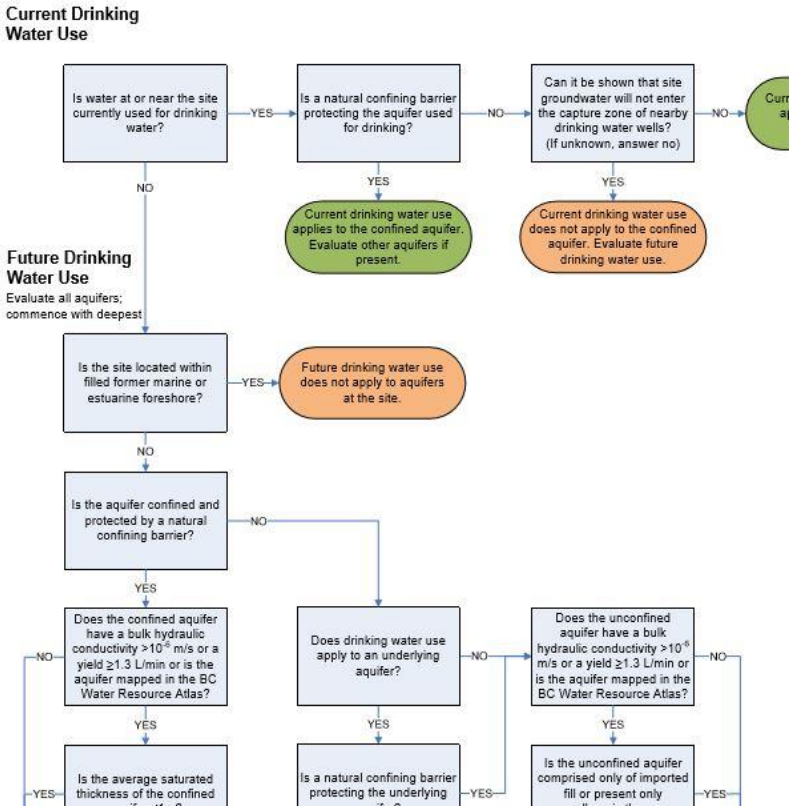
Describing Hydrogeology on SoSC



- 4 Flow Charts in P21 for water use evaluation
  - Current and future drinking water use for **unconsolidated** aquifers
  - Irrigation and livestock water use
  - Aquatic water use
  - Current and future drinking water use for **bedrock** aquifers.

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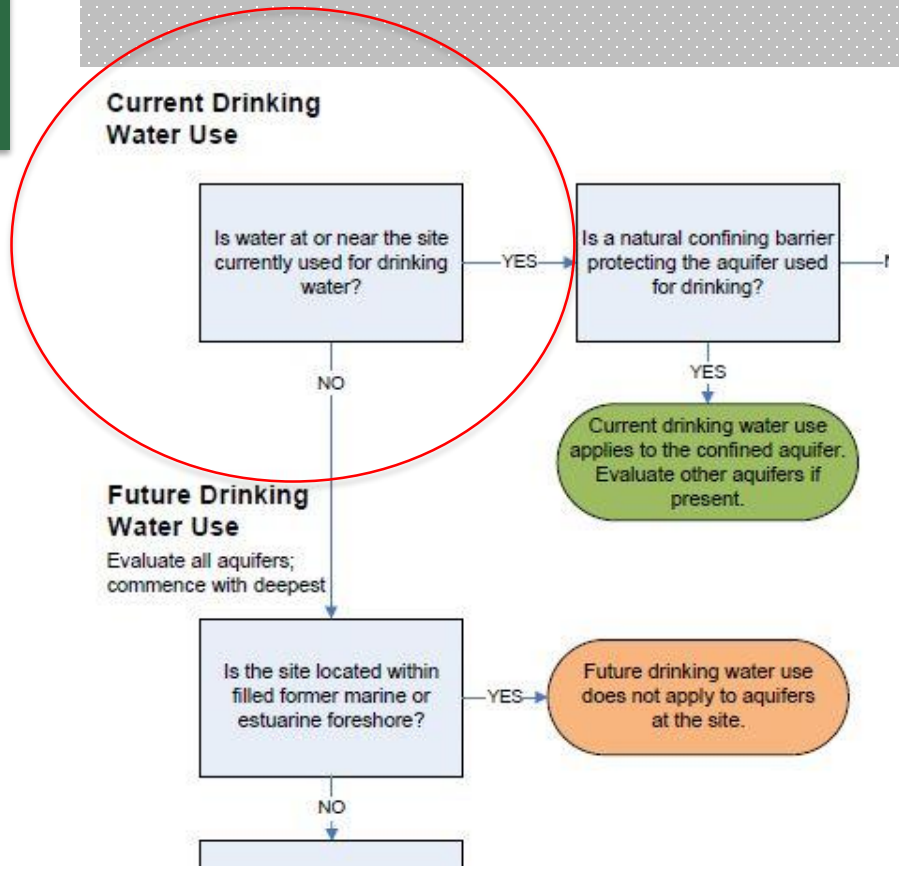
SoSC P21 DW Notations – No Current DW use



For no **Current DW Use** need to describe:

- No water use or receptor (DW, AW, IW or LW) within 500 m (or within 100 m upgradient and 500 m downgradient with confirmed flow direction or well capture for DW, IW or LW);

  or

- Proof of natural confining barrier (NCB) protecting an underlying aquifer.

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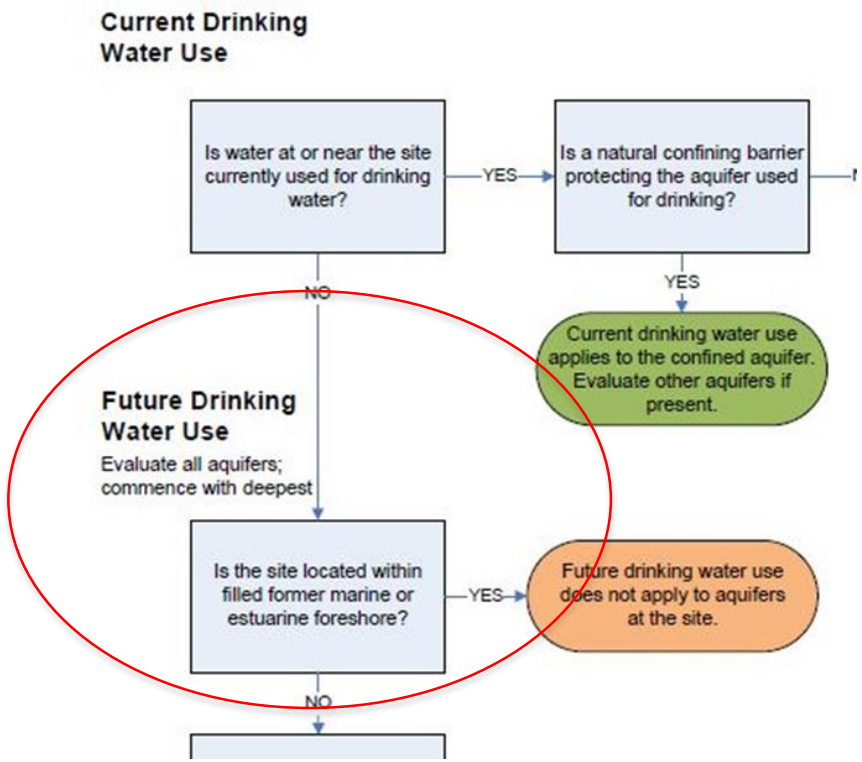
SoSC P21 DW Notations – No Future DW use



Is the site aquifer:

- located within filled former marine or estuarine foreshore?

  or

- located within 500 metres of a marine and estuarine foreshore; **and**
- contains natural chloride and sodium concentrations > DW standards?

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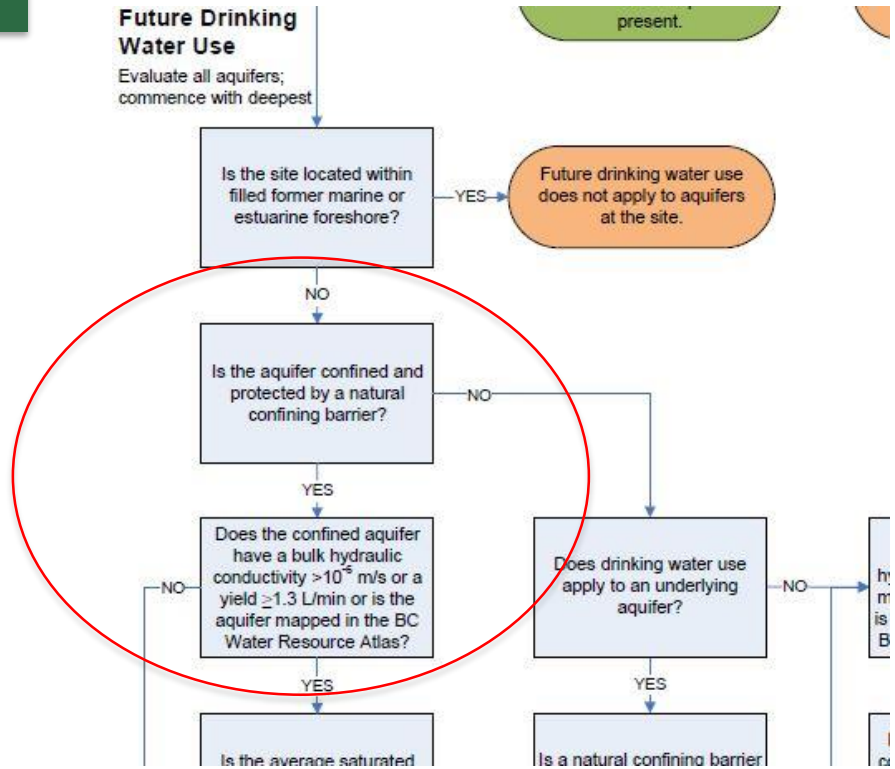
SoSC P21 DW Notations – No Future DW use



- Is the aquifer confined and protected by a **natural confining barrier**?
- Does the confined aquifer have:
  - a **bulk hydraulic conductivity >10-6 m/s**
    or
  - a **yield ≥1.3 L/min**
    or
  - is the aquifer **mapped** in the BC Water Resource Atlas?

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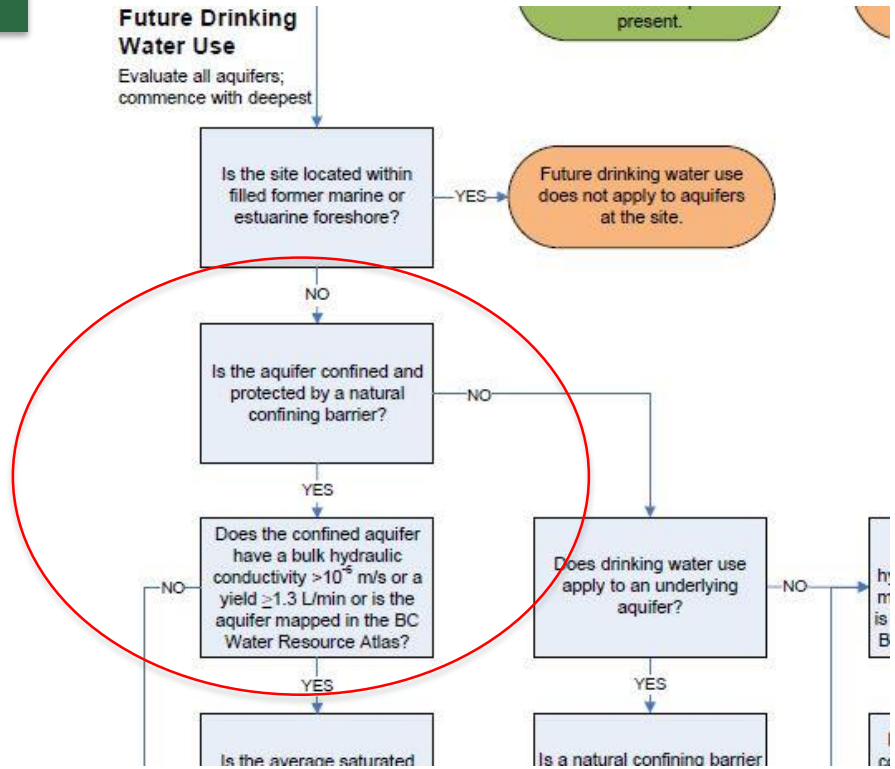
SoSC P21 DW Notations – No Future DW use



For confirming a viable aquifer, how is **bulk hydraulic conductivity** >10-6 m/s determined?

- if **< 6** wells: **Maximum** K-value (Kmax)

  or

- if **≥ 6** wells **Geometric Mean** K-value

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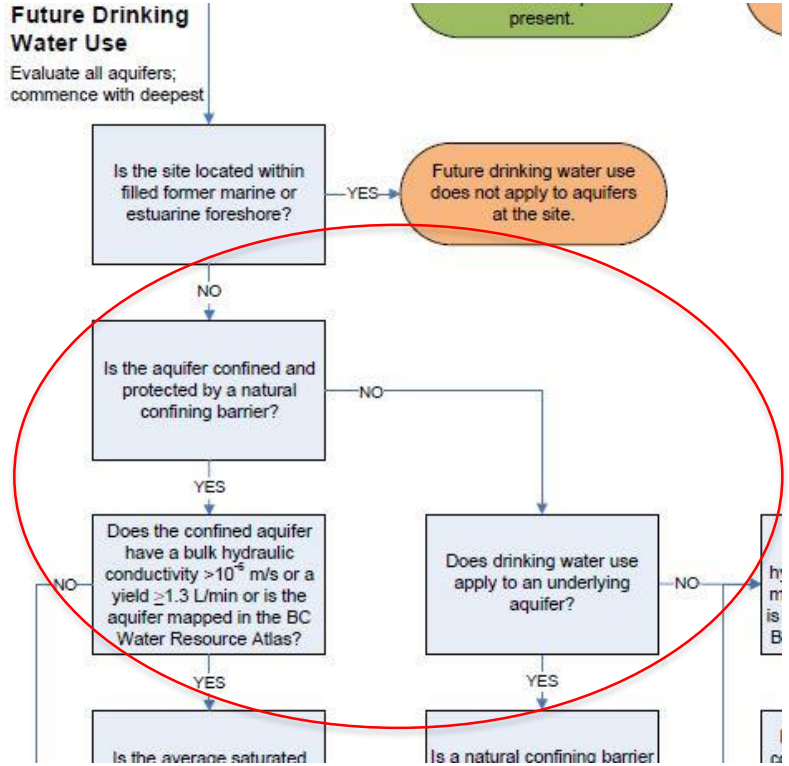
SoSC P21 DW Notations – No Future DW use



Confined vs unconfined aquifer

If unconfined (surficial) assume DW aquifer underlies

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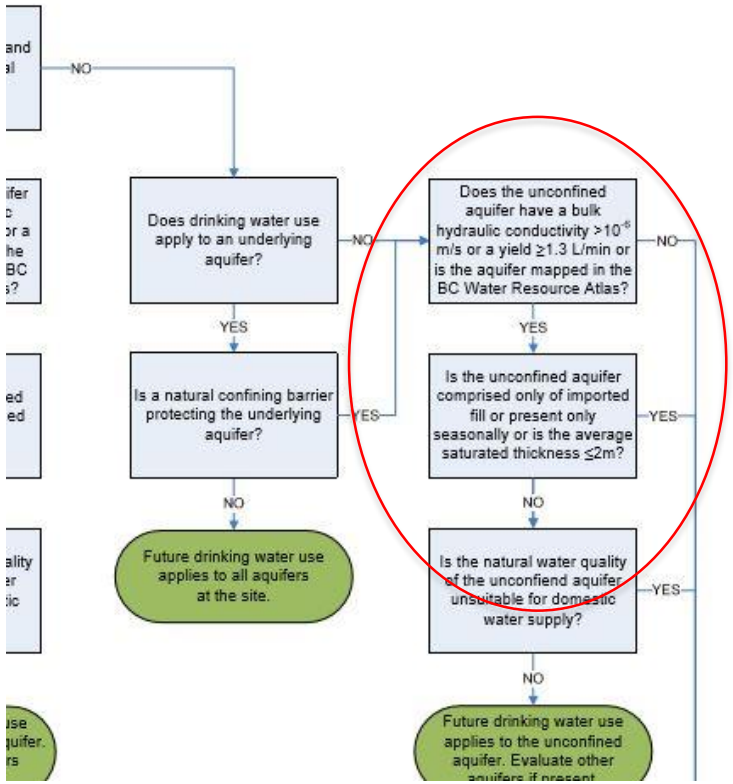
SoSC P21 DW Notations – No Future DW use



Exemption of shallow aquifers:

- Provide proof unit is not hydraulically connected to underlying viable aquifer;(i.e. show underlying NCB or no underlying viable aquifers); and

Include comments on related exemption criteria:

- **Not viable** aquifer; include K-value and/or aquifer yield (see below for details);
- Saturated thickness **less than 2 m**; (<1m for confined aquifer)
- Aquifer is **seasonal**;
- Aquifer in **imported fill**;
- Aquifer in **peat**; include organic content (% organic matter by weight); or
- Aquifer has **poor natural water quality**; include TDS (>4000 mg/L).

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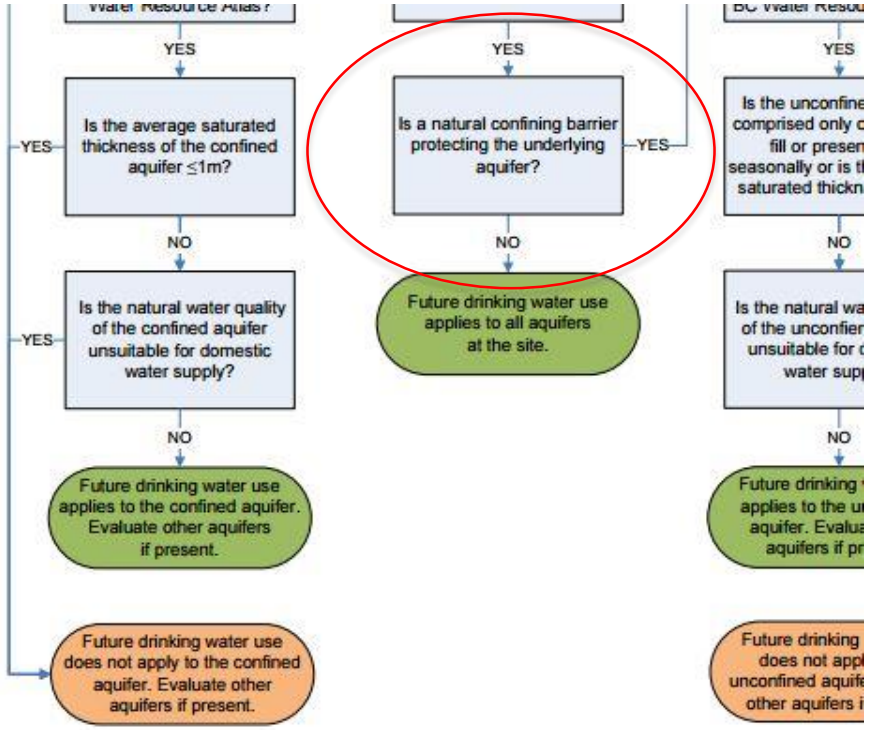
SoSC P21 DW Notations – No Future DW use



Is a **Natural Confining Barrier** protecting the underlying aquifer**?**

If a unit qualifies as a natural confining barrier(NCB):

- Include NCB **type** (Type **A** or Type **B**);
- Include **K-value** (Kmax if <6 wells or K90th percentile if ≥6 wells);
- Include proof of **sufficient thickness** (depending on NCB type);
- Include proof of **contaminant free** (depending on NCB type); indicate the depth at which the sample has substance concentrations in soil or water (soil and water for DNAPL) that are less than standards,

  and

- Include statement regarding unit being **continuous**, **uniform** and **fracture free**.

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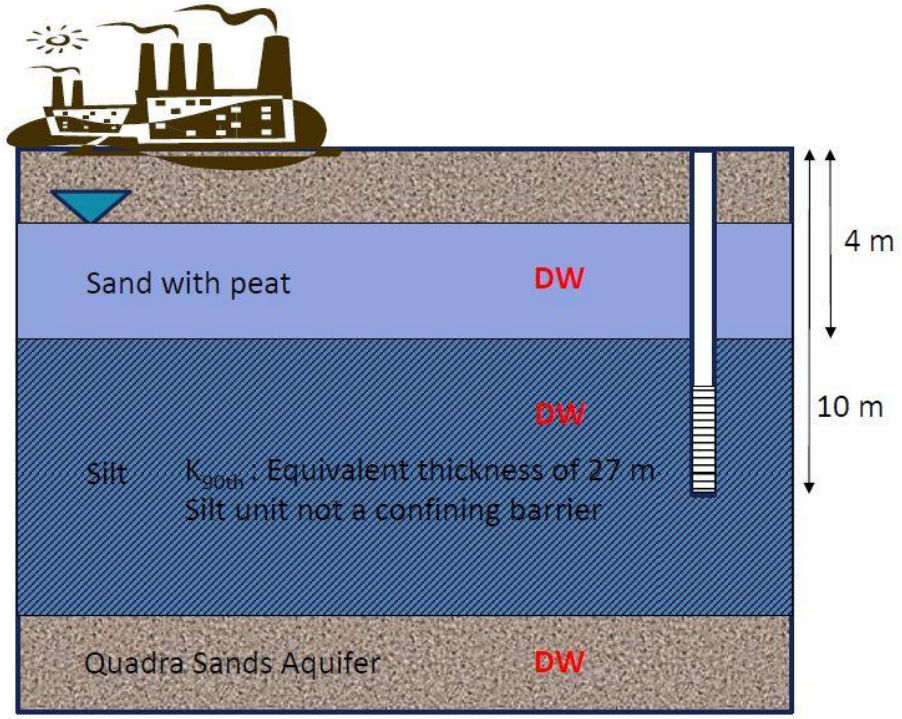
SoSC P21 DW Notations – No Future DW use



- NCB Type **A**
  - bulk hydraulic conductivity less than 1 x 10^{-7} m/s;
  - minimum thickness 5 metres;
  - free of contamination based on substance concentrations in soil **or** water
- NCB Type **B**
  - Bulk K between 1 x 10^{-7} m/s and 1 x 10^{-6} m/s;
  - ratio of **thickness** to **K** greater than 5 x 10^{7} s;
  - free of contamination based on substance concentrations in soil **and** water

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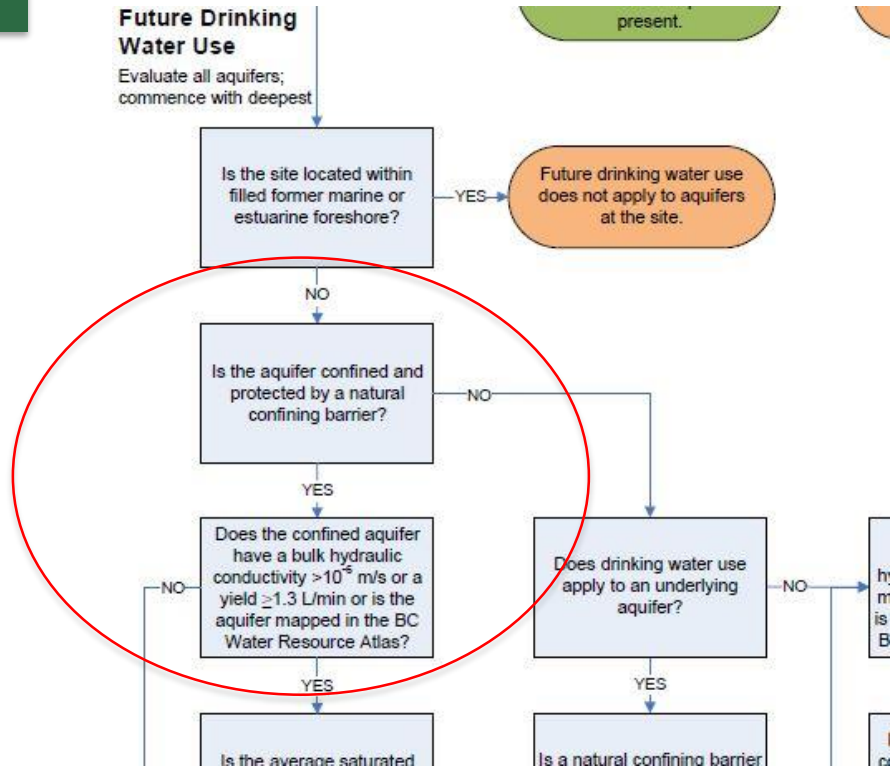
SoSC P21 DW Notations – No Future DW use



For a natural confining barrier, how is **bulk hydraulic conductivity** <10-7 m/s and >10-6 m/s determined?

- if **< 6** wells: **Maximum** measured K-value (Kmax)

  or

- if **≥ 6** wells: **90th percentile** of K-value measurements

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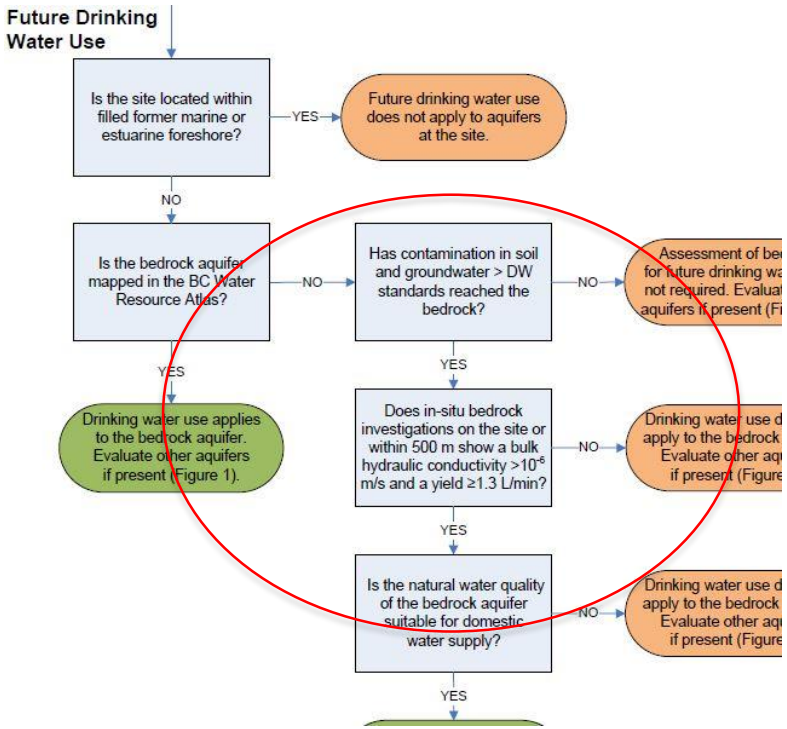
SoSC P21 DW – Bedrock DW use



For Current **Bedrock:**

- State if a Natural Barrier is protecting
- In capture zone for nearby wells?

If **no current use** in bedrock, evaluate **Future** use**:**

- located within filled former marine or estuarine foreshore?
- mapped in BC Water Atlas?

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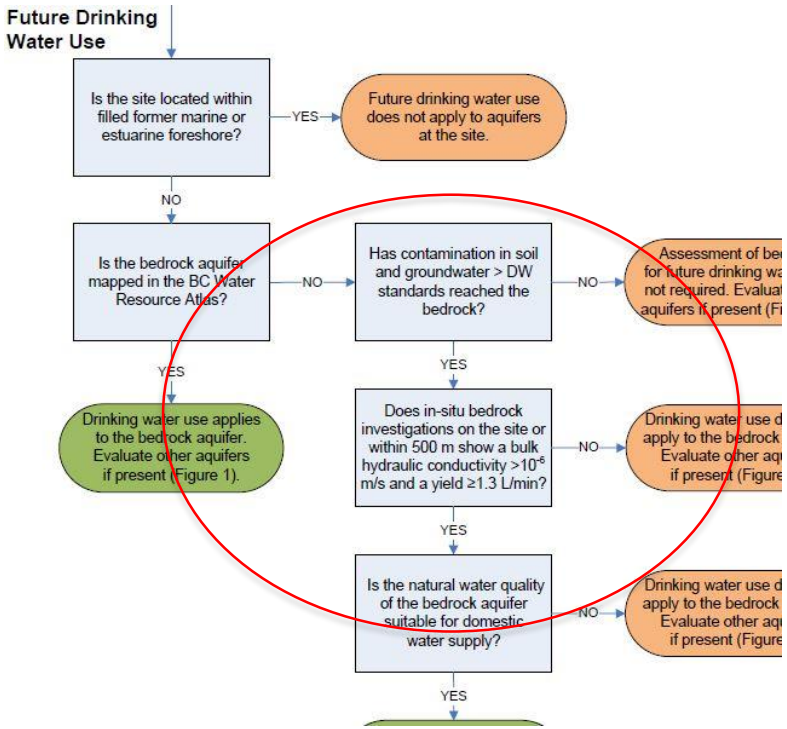
SoSC P21 DW – No Future Bedrock DW use



For **Bedrock** (not mapped in BC Water Atlas):

- include both

  K-value

  and

  yield

  (measured in-situ)

- State if >DW soil or groundwater extend to bedrock.

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SCREENING FEEDBACK DW DETERMINATION

In addition, statements indicating that the till functions as a confining unit are incomplete/incorrect. As required in Section 7.0 of P21, there is no thickness, comment whether contaminant free (provide depth it meets DW), comment on uniformity, continuity or lack of fractures to support this statement. These statements need to be removed or adequate information provided in the SOSC to support it.

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SCREENING FEEDBACK DW DETERMINATION

A well with unknown use within 225 m cross and upgradient of the site, which is not further evaluated due to the distance being greater than 100 m. The 100 m distance is only for wells located directly upgradient of the site where the groundwater flow direction has been satisfactorily determined.

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SCREENING FEEDBACK DW DETERMINATION

The 90th percentile is not the appropriate calculation for the k in the confining unit since there were <6 wells tested - the maximum value should be reported.

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SCREENING FEEDBACK DW DETERMINATION

Provide comment as to *which* standards the confining layer was determined to be 'free of contamination'.

Indicate whether the aquitard is Type A or Type B

Indicate whether the aquitard is continuous, unfractured, and uniform

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SCREENING FEEDBACK DW DETERMINATION

Please note that in order to use the geometric mean for calculating the hydraulic conductivity you need data from six or more wells located in the same unit, not five as referenced in the SOSCs. Please update the SOSC to include the correct value (I do note that the till unit appear to be exempt based on average thickness less than 2 m, however we want to make sure that the information in the SOSCs is correct).

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SCREENING FEEDBACK DW DETERMINATION

Please provide a yield measurement for the bedrock unit as described in P21 Section 6.0 and TG6.

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Thanks for Your Participation

Please look for information on our upcoming webinar:

"The Application of SLRAs and Groundwater Models."

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