



Groundwater Policy Development

Amended Technical Guidance 6 – Groundwater Use Determination at Contaminated Sites

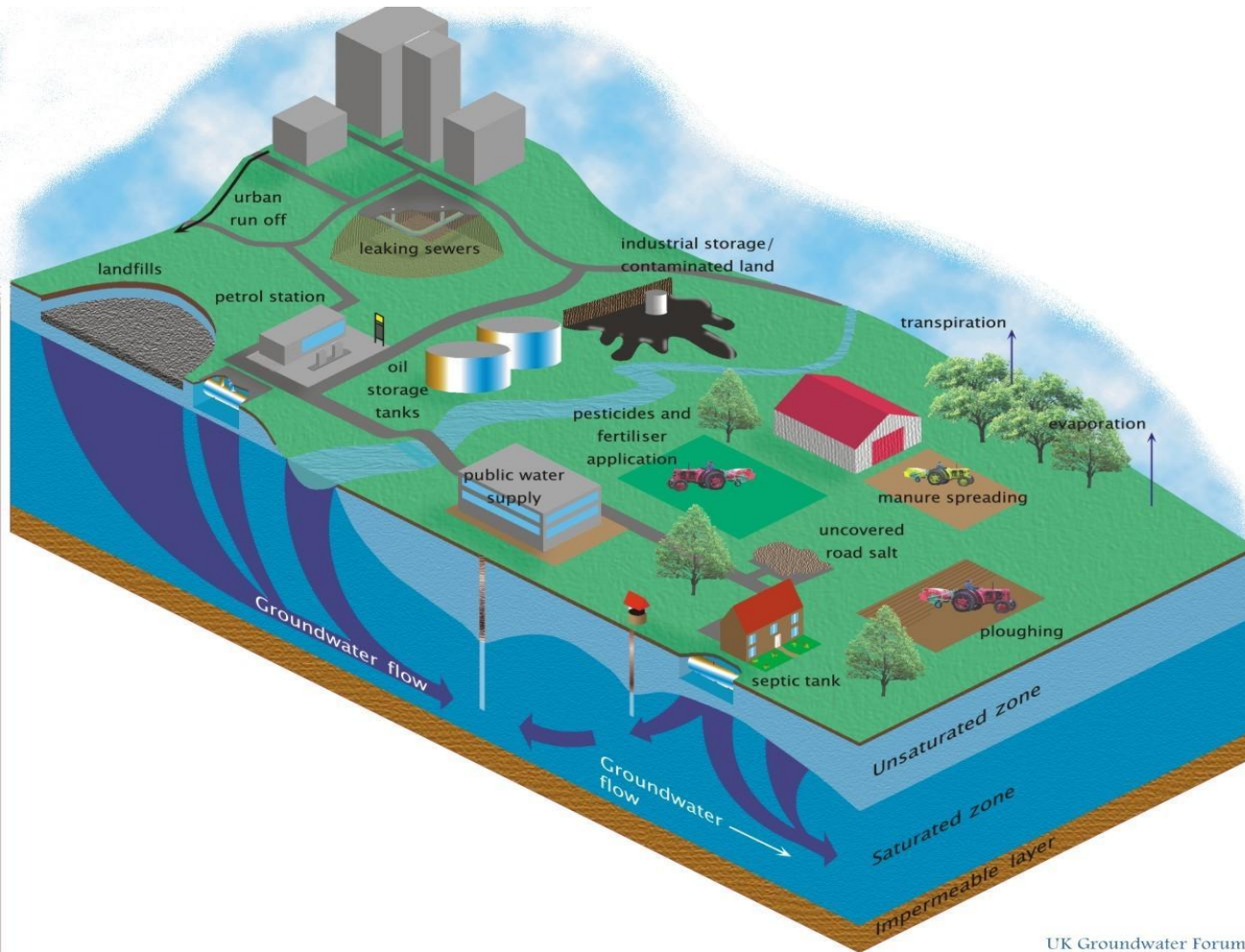
Steve Dankevy

May 21, 2009

Groundwater Use: Purpose

- To ensure that groundwater at a site is suitable for current and future use and is of adequate quality to protect adjacent uses.
- Provide clear reasoning and direction with respect to the procedure for establishing groundwater use at a site.

Groundwater Use: Overview



Groundwater Use : Overview

- There are four uses defined in the CSR for groundwater:
 - Drinking Water Use
 - Aquatic Life Water Use
 - Irrigation Water Use
 - Livestock Water Use
- TG6 helps the practitioner decide which water use will apply at a site, or even if “no water use” applies.
- Groundwater standards for clean up purposes are based on water use at a site.

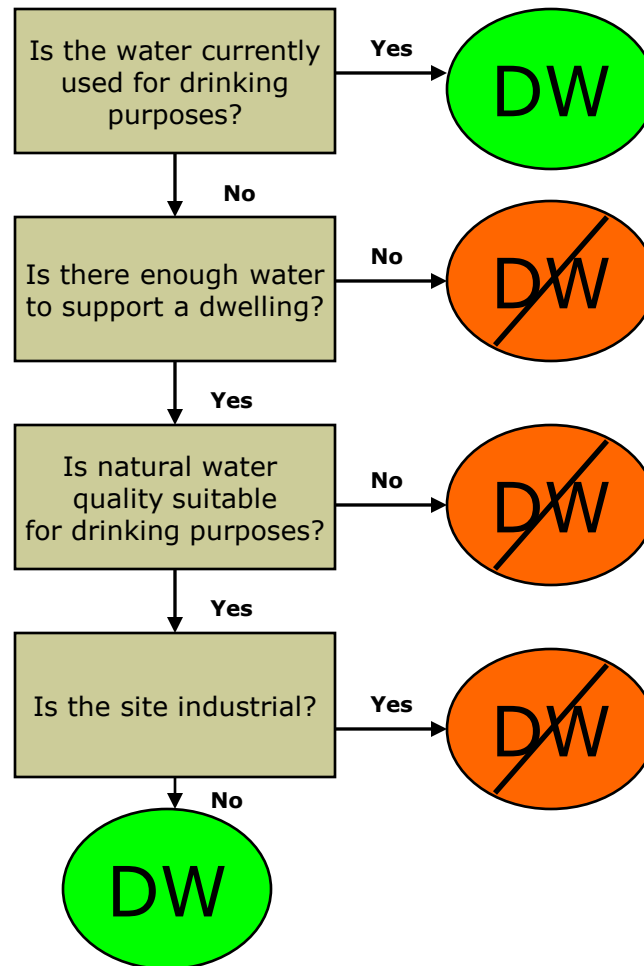
Groundwater Use: The “old” TG6

- Uses distance and travel times to receptors which can be overly conservative at times, at other times are not.
- Aquifer is considered “no water use” unless it is determined it has a use. e.g. if the aquifer is not currently used for DW, AW, IW, LW purposes... then it has no water use.
- Does not adequately address potential future groundwater use.

Groundwater Use: The “new” TG6

- Considers groundwater as a valuable future resource.
- Assumes that all groundwater uses apply at any given site until proven otherwise.
- Has more of a scientific basis, rather than arbitrary distance/travel time.
- Similar to Alberta, Washington, Ontario, US EPA, Health Canada draft policy for PQRA.

Groundwater Use: DW



Groundwater Use: DW

Is the aquifer currently used for drinking water?

- Drinking water use must apply at or near any site that currently uses its groundwater for drinking water purposes.
- The presence of drinking water wells (or surface water intake) must be established within 500 m of a contaminant source.
- Recommend: Refer to MoE database, door to door survey, local municipality.

Groundwater Use: DW

Can the aquifer produce enough water?

- Does the geological unit have a conductivity equal to or greater than 1×10^{-6} m/s?
- Can the geological unit yield enough water to supply a single family dwelling? (1.3 L/min or 500 gallons/day).
- If yes, then DW standards apply.

Groundwater Use: DW

Is the natural aquifer quality unsuitable for DW purposes?

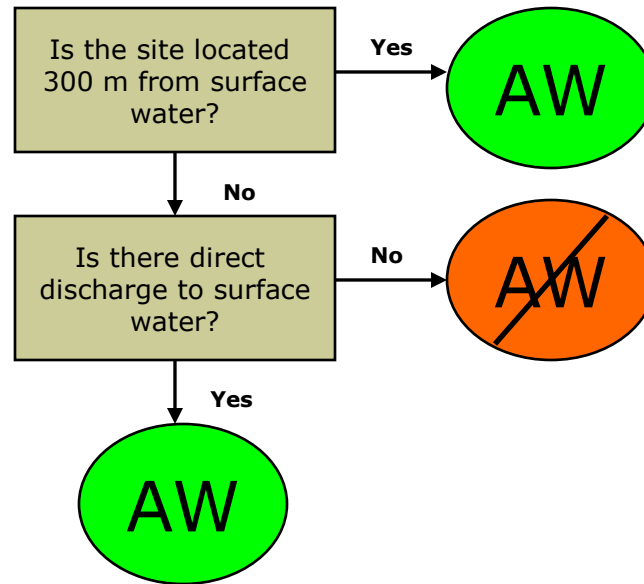
- Equal to or greater than 10,000 mg/L TDS is considered unsuitable for DW purposes.
- If commercially available technology can be reasonably employed to treat the water then the water is considered suitable for DW purposes.
- If groundwater quality is unsuitable for drinking water purposes, then DW does not apply.

Groundwater Use: DW

Is the site industrial?

- DW does not apply within the property lines of industrial areas unless groundwater is currently being used for drinking purposes.
- Drinking water use must be considered on neighbouring properties when contamination has migrated off-site.

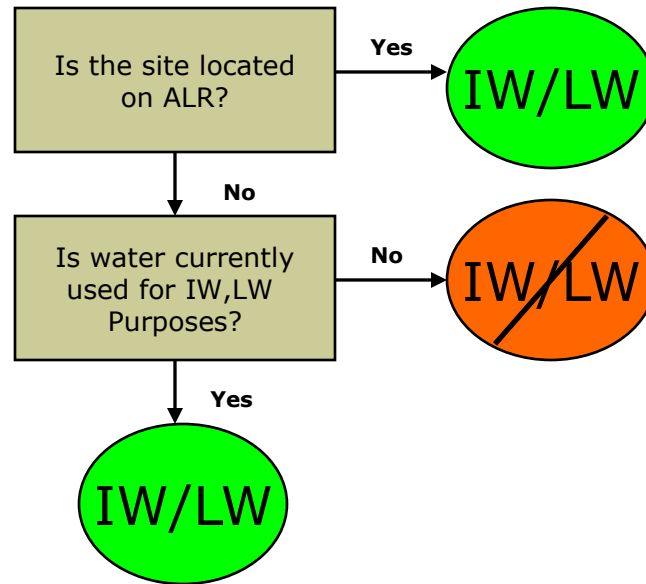
Groundwater Use: AW



Groundwater Use: AW

- AW applies to all groundwater located within 300 m of a surface water body.
- AW applies at sites where there is the potential for contaminated groundwater to discharge directly to a receiving water body (e.g. storm water discharge).
- Otherwise, AW does not apply.

Groundwater Use: IW, LW



Groundwater Use: IW and LW

- IW and LW applies if irrigation or livestock watering is located 500 m from contaminant source.
- If site is located on provincially zoned ALR then IW and LW applies.

Groundwater Use: Dual Use

- Differing groundwater uses at a site may be determined when multiple aquifers are present.
- If a deep aquifer exists below a shallow aquifer, it must be protected by natural confining unit (minimum of 5 m).

Groundwater Use: Water Management Plans

- Groundwater use designations by municipal governments will be given consideration when determining groundwater use at a site. (e.g. if local restrictions exist on the use of groundwater as a drinking source to protect human health from existing subsurface contamination).

Groundwater Use: Fractured Rock

- If groundwater contamination has penetrated the bedrock aquifer, field investigation for aquifer yield is required (to determine if DW applies).
- Calculations provided to determine yield in this policy may not be valid for fractured rock aquifers.
- Recommendation to obtain the services of a qualified professional with experience in fractured rock settings.

Groundwater Use:

Questions?

email:

lavinia.zanini@gov.bc.ca

stephen.dankevy@gov.bc.ca