





Ministry of
Environment

Groundwater Policy Development – Update on Current Policy Initiatives

Stakeholder Workshop

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Five Groundwater Policy Initiatives Underway

2009-05-21

- Groundwater Investigation and Characterization Guidance
- Groundwater Use Determination
- Groundwater Model Update
- Groundwater Characterization in Fractured Rock
- Compliance Point for Protection of Aquatic Receiving Environments

Purpose:

- To ensure that hydrogeological investigations are consistent, representative and scientifically defensible.
- To provide clear guidance regarding expectations for groundwater investigations and assist CSAP society during performance reviews and audits.

Scope:

- Provide clear direction on the framework for groundwater investigation.
- Present expectations for each stage of groundwater investigation.
- Acceptable methods and approaches for use at contaminated sites in BC.

Groundwater Investigation and Characterization Guidance

2009-05-21

Outline:

- Requirement for Groundwater Investigation
- The Hydrogeological Conceptual Site Model
- Designing the Field Program
- Acceptable Methods and Approaches
- Groundwater Investigations: PSI–Stage 2 and DSI
- NAPL Investigation
- Reporting
- Remediation Confirmation Groundwater Monitoring
- Long Term Monitoring
- Well Deactivation and Closure
- Appended Standard Operating Practices for Data Acquisition.

Progress Report:

- Contract has been completed - Guy Patrick presenting today.
- Guidance now posted on ministry website as Technical Guidance Document #8.
- Comment period closed March 27th. Several comments received and are under consideration.



Groundwater Investigation and Characterization at Contaminated Sites

Introduction

This document provides guidance for qualified professionals for the investigation and characterization of groundwater at sites in British Columbia that may be, or are contaminated. While it is not applicable to every site, it is the responsibility of the site owner or operator to retain a qualified professional with demonstrable experience, as required under Section 63 of the *Environmental Management Act's* Contaminated Sites Regulation (the Regulation), to ensure that groundwater is properly characterized and remediated while adhering to applicable B.C. laws, regulations, standards, protocols, procedures and guidance.

This guidance is based on the ministry's full length document entitled "Groundwater Investigation in Site Assessment" dated March 31, 2008. [insert link.](#)

When is groundwater investigation necessary?

Site investigation stages

The Regulation contains requirements to ensure

determine the general location and degree of contamination, including any migration which may have occurred to adjoining properties. The PSI comprises a Stage 1 review and a concurrent or subsequent Stage 2 where relevant environmental media are sampled for potential contaminants of concern (PCOCs). If contamination is identified or suspected then a detailed site investigation (DSI) must be undertaken in accordance with Section 59(2) of the Regulation to define the extent of contamination, and to provide information necessary for conducting a risk assessment, if applicable, and developing a remediation plan.

Groundwater investigation triggers

Groundwater investigation is necessary if the potential exists for the quality of groundwater to be unsuitable for direct use or may not be adequate to protect adjacent uses. Groundwater investigation is also necessary where groundwater is acting as a source of contamination in other environmental media such as vapour. In practice, where areas of potential environmental concern (APECs) are identified by a Stage 1 PSI, a subsequent

Background:

- Concern around the existing travel time (50 and 100 year) requirement for the determination of groundwater use at a site.
- Protection for future groundwater use was also identified by the Ministry as a priority issue.
- Technical Guidance 6 required amendment to address these issues.

Purpose/Scope:

- 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.

Technical Guidance 6 - Groundwater Use Determination

2009-05-21

Outline:

- Current drinking water use at or near a site.
- Future drinking water use. Based on hydrogeological properties of water-bearing formations and water quality.
- Multiple aquifer systems. Water use designation for each aquifer.
- Aquatic, Irrigation and Livestock Watering groundwater use.
- Exemptions for industrial areas, municipalities where water management plans exist.

Progress Report:

- Several drafts of Technical Guidance 6 has been completed by Ministry staff.
- CSAPS have Provided Formal Review – John Balfour and team.
- Lavinia Zanini is project lead.
- Expected draft for public comment this summer.

Background:

- Groundwater model was developed in 1996.
- Simulates the fate and transport of chemical substances from a soil source to a water-specific receptor.
- Model used to develop CSR Schedule 5 soil matrix standards and for calculating Site Specific standards.
- SAB was contracted to review the model relative to science of the day and provided recommendations in July 2005 report.

Purpose/Scope:

- Review SAB recommendations.
- Update/refine model.
- Intent is to harmonize the updated groundwater model used in SLRA and CSST.
- CSAPs were queried about their needs/preferences for improvement of the SSS model.

Progress Report:

- Review of SAB recommendations has been concluded.
- Steve Dankevy is project lead.
- Contract dollars are not available for model development and preparation of supporting documentation. In-house development?

Background:

- Fractured rock characterization at contaminated sites is difficult/complex and no specific ministry guidance is currently available.
- SAB initiated a request for funding for this fiscal year.

Purpose/Scope:

- To provide guidance to practitioners when dealing with contaminants entering fractured bedrock aquifers.
- Scope of the RFP:
 - Review of the circumstances under which fractured bedrock field investigations are necessary.
 - Field techniques and analytical tools to characterize the nature, extent and fate of contaminants in bedrock aquifers.
 - Identification of potential instances in which fractured bedrock can be treated as an equivalent porous medium.

Progress Report:

- Grant awarded to the SAB.
- An RFP (by SAB) was posted in October, 2008.
- Golder Associates won the proposal.
- Draft report anticipated to be completed by fall 2009.
- To be posted on the SAB website.

Background:

- Schedule 6 footnote refers to a 10 times dilution provision.
- Uncertainty/Questions around the applicable water use near aquatic receiving environments.
- Formal policy development required.

Purpose/Scope:

- Clarification of point of compliance for application of Schedule 6, CSR AW standards.
- Establish when to compare data collected from groundwater monitoring wells to CSR AW standards and when to compare to BC WWQG.
- Aid to assessment of remediation strategies.

Outline:

- Definitions
- Schedule 6 aquatic life standards
- Groundwater-surface water interaction and the CSR-AW standards
- Ecologically active zone
- Surface water

Progress Report:

- Lavinia Zanini to present today.
- Draft is ready for posting to ministry web site for stakeholder comment.
- CSAPs have not had input as yet.

Questions?