
Understanding BC Contaminated Site Regime: Interpreting Requirements under New Policies and Guidance

GeoEnviroLogic Professional Development Workshop

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Agenda

MORNING:

8:00 - Registration

8:15 – Refreshments and Introductions

8:30-10:00 Investigating and remediation considerations for soil vapour

- Peter Kickham, MOE: Technical Guidance #4 Update and Issues
- Ian Hers, Golder and Reidar Zapf-Gilje, GeoEnviroLogic: PCOC selection, lateral migration, dups, ambient air sampling and other issues

10:00 – 10:15 Refreshments

10:15 – 11:00 – (Continued from above)

- Ross Wilson, Wilson Scientific: Considerations for soil vapour risk assessment
- Brent Mussato, Caro: Update on soil vapour analyses
- Group Discussion

11:00 -12:00 – Dealing with new provincial guidance for groundwater

- Lavinia Zanini, MOE: TG4 – Water Use Determination
- Guy Patrick, Golder: Implications for site investigations

12:00 – 1:00 Lunch Break

Agenda

AFTERNOON

12:00 – 1:00 Lunch Break

13:00 – 14:15 – (Continued from before lunch)

- Guy Patrick, Golder: Implications for site investigations
- Reidar Zapf-Gilje, GeoEnviroLogic: Finding Solutions
- Group Discussion

14:15 - 14:30 Refreshments

14:45 – 16:00 – Other Relevant Guidance and Procedure

- Kelli Larsen, MOE: Site Profile and Requesting Release for Local Government Approvals
- Tyler O’Grady, MOE: High Risk Classification and Reclassification
- John Wiens, SLR Consulting: Role of Approved Professional wrt: Release Requests, Monitoring Report requirements of Schedule B of COC, P6 and Request for MOE Pre-approval.
- Group Discussion

16:00 – 16:15: Wrap up

16:15 and beyond: Networking – Get to know your peers over munchies

Report 8: December 2010

AN AUDIT OF THE MANAGEMENT
OF GROUNDWATER RESOURCES
IN BRITISH COLUMBIA

www.bcauditor.com



OFFICE OF THE
Auditor General
of British Columbia

Drinking Water Standards

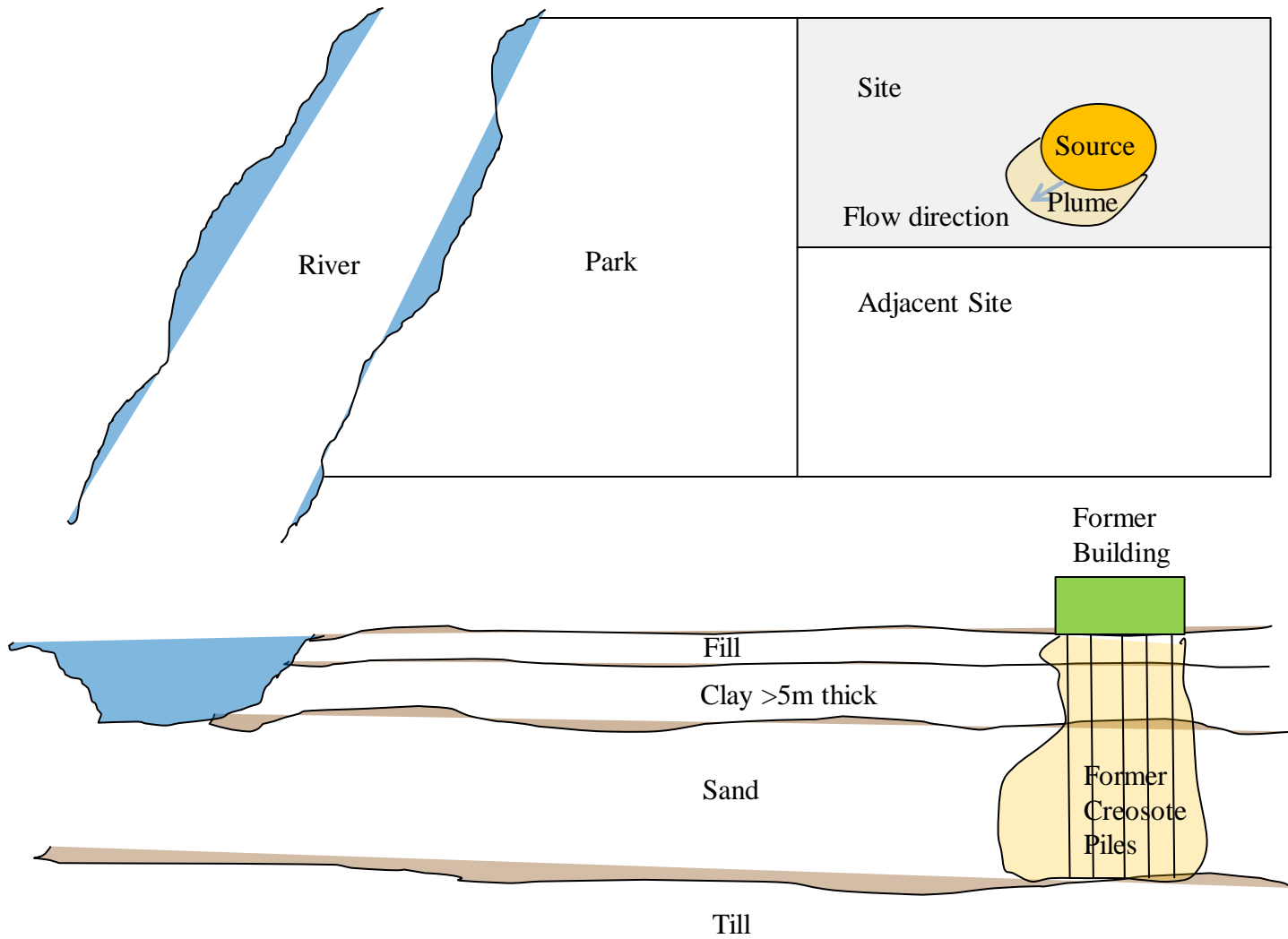
Finding Solutions to
Obtaining COC

Reidar Zapf-Gilje

SUMMARY OF RECOMMENDATIONS

WE RECOMMEND THAT THE MINISTRY OF ENVIRONMENT:

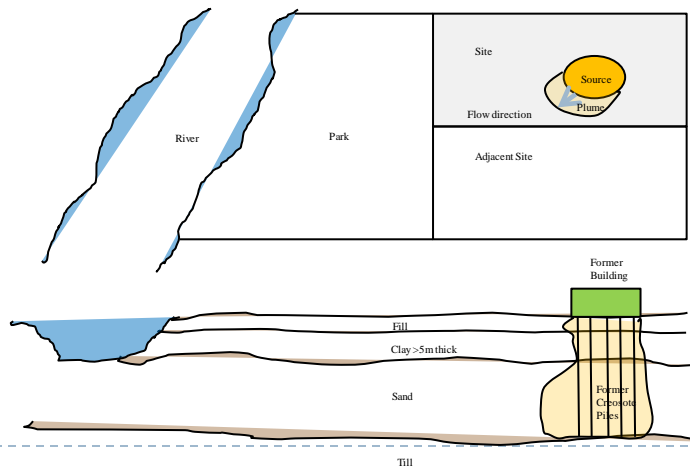
- 1** ensure that classification of the province's aquifers is completed for all priority areas and that the WELLS database is kept up to date. The ministry should also ensure that aquifers are characterized, starting with those classified as having the highest priority.
- 2** expand the Provincial Observation Wells Network and review the Provincial Ambient Groundwater Quality Monitoring Network to ensure there is sufficient monitoring of groundwater levels and quality across the province.
- 3** take the lead on coordinating the consolidation of all of the groundwater monitoring information collected by provincial ministries and other agencies to reduce duplication of effort and to ensure the best use of limited resources.
- 4** develop a groundwater information management strategy that takes into account detailed scientific information and identified trends, and ensure that the information required to support this strategy is collected, analyzed and available through one location.
- 5** develop and deploy systems to protect groundwater from depletion and contamination and to ensure the viability of the ecosystems it supports.
- 6** develop a framework that clearly outlines the roles and responsibilities for managing groundwater provincially and locally, and ensure that agencies are able to take responsibility for groundwater in their area.
- 7** ensure that integrated watershed management plans are developed for all priority watersheds.



On-site plume

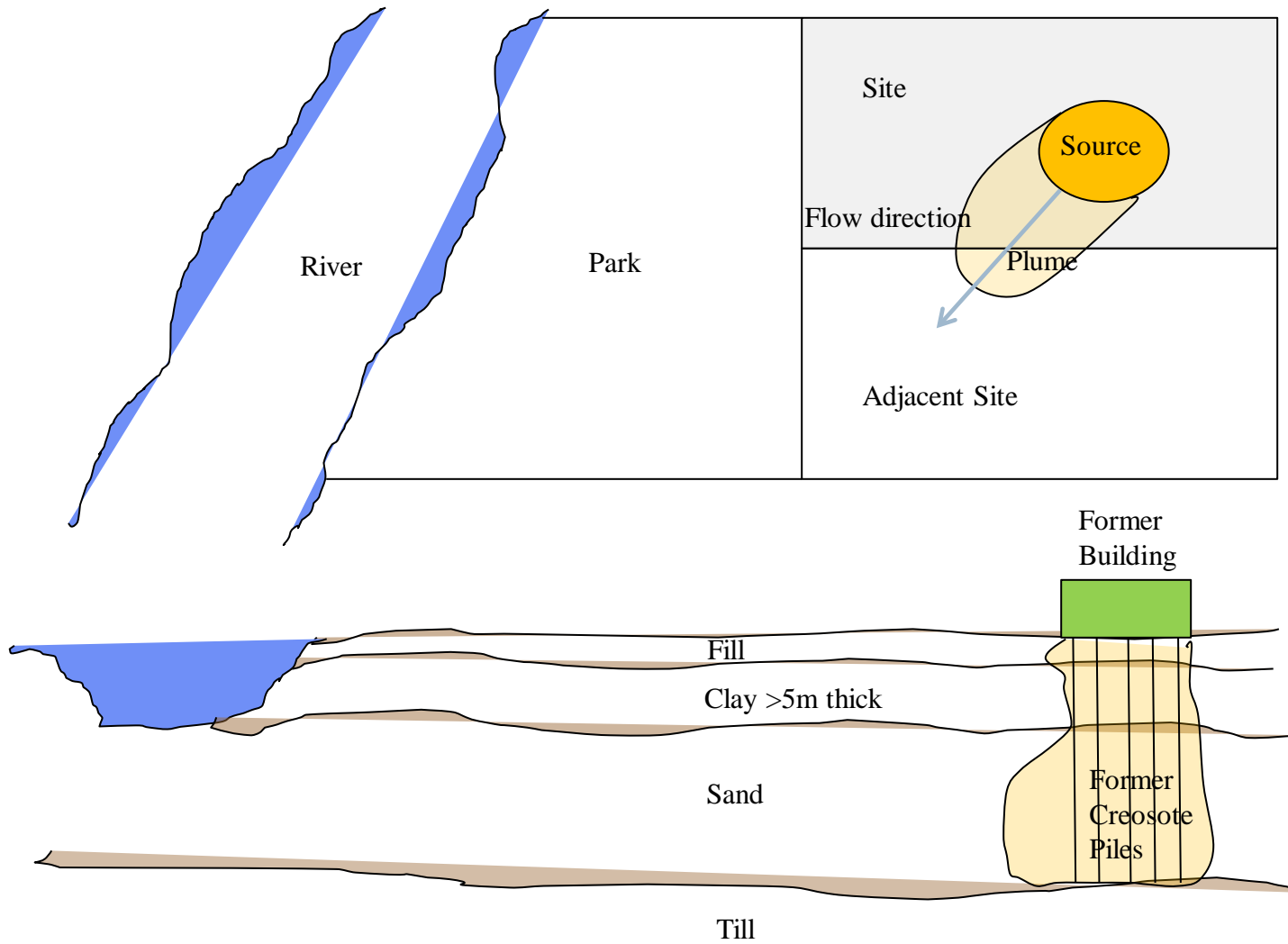
If.....

- ▶ Creosote pilings were removed
- ▶ The dissolved PAH plume remain on site; and
- ▶ The plume is at steady state or shrinking;



Then.....

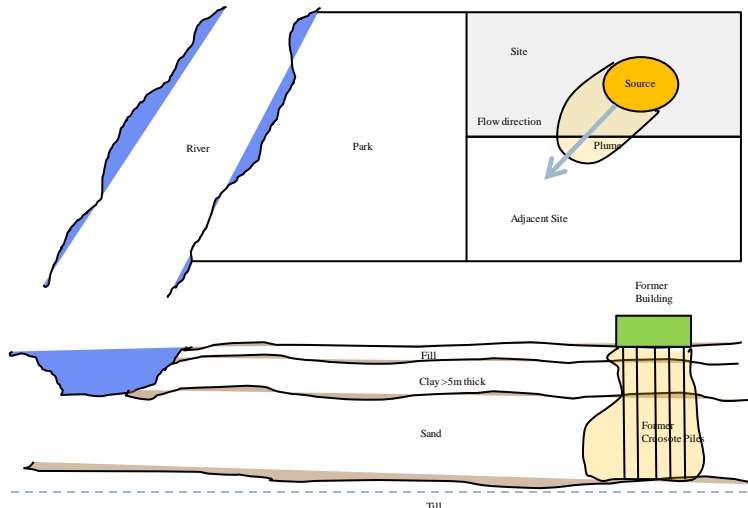
- ▶ Risk-based COC can be obtained
- ▶ Schedule B conditions:
 - No drinking water well on site
 - Groundwater monitoring to confirm that the plume is stable or shrinking
- ▶ What about other groundwater uses?



Off-site Plume in Unconfined and Confined Aquifer

If.....

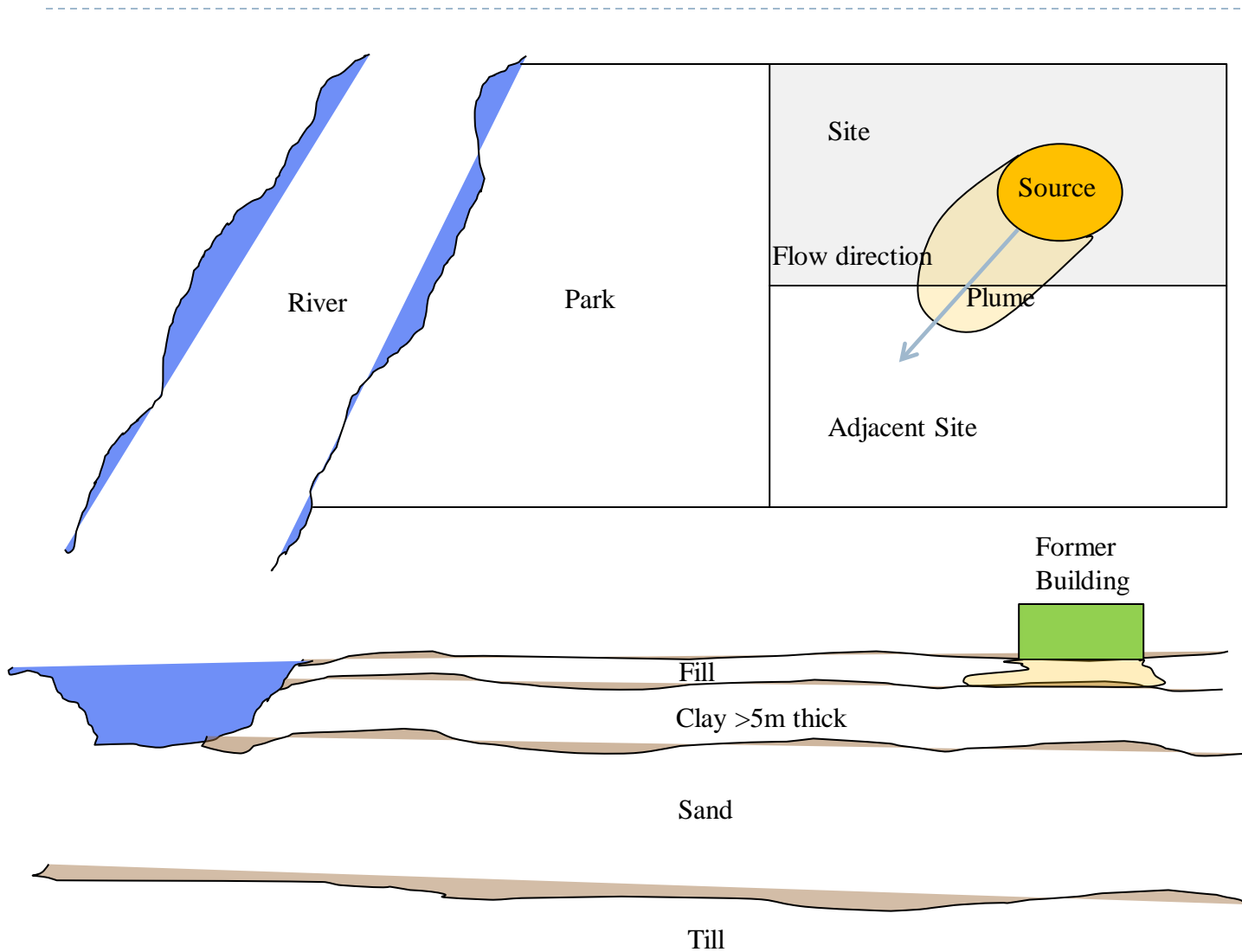
- ▶ Creosote pilings were removed
- ▶ The dissolved PAH plume has migrated off site; and
- ▶ The plume is at steady state or shrinking;



Then.....

- ▶ Risk-based COC can be obtained, but only if:
 - ▶ Reasonable remediation effort to remove source
 - ▶ Supporting information that plume will diminish so that the DW standards will be met at the property line within several years (20 years?)
 - ▶ The supporting information could include projected effectiveness of MNA, treatment or control
- ▶ **Schedule B conditions :**
 - No drinking water wells on site or off site
 - Groundwater monitoring to confirm that the plume is stable or shrinking

Off-site plume in unconfined aquifer



Off-site Plume in Unconfined Aquifer Only

If.....

- ▶ Contamination in unconfined aquifer only
- ▶ The dissolved PAH plume has migrated off site
- ▶ The plume is at steady state or shrinking;
- ▶ Unconfined aquifer:
 - ▶ Saturated thickness of unconfined aquifer is $< 1\text{ m}$
 - ▶ $K > 1 \times 10^{-6}\text{ m/s}$
 - ▶ Yield $< 1.3\text{ l/min}$
- ▶ Confined aquifer is a DW source

Then.....

- ▶ Risk-based COC can be obtained, but requires pre-approval by MOE
- ▶ confining layer must be protective:
 - ▶ $K < 1 \times 10^{-7}\text{ m/s}$
 - ▶ Thickness $> 5\text{ m}$
 - ▶ Competent clay
- ▶ Schedule B conditions :
 - Groundwater monitoring to confirm that the plume is stable or shrinking

