

Burnaby Refinery
Area 2 Hydrocarbon Seep
Community Advisory Panel (CAP)
October 21, 2010



Objective of this presentation

To provide an update to CAP of progress made in addressing the Area 2 Hydrocarbon Seep



Recap: Seep discovered and reported April 21, 2010



Mitigation started same day

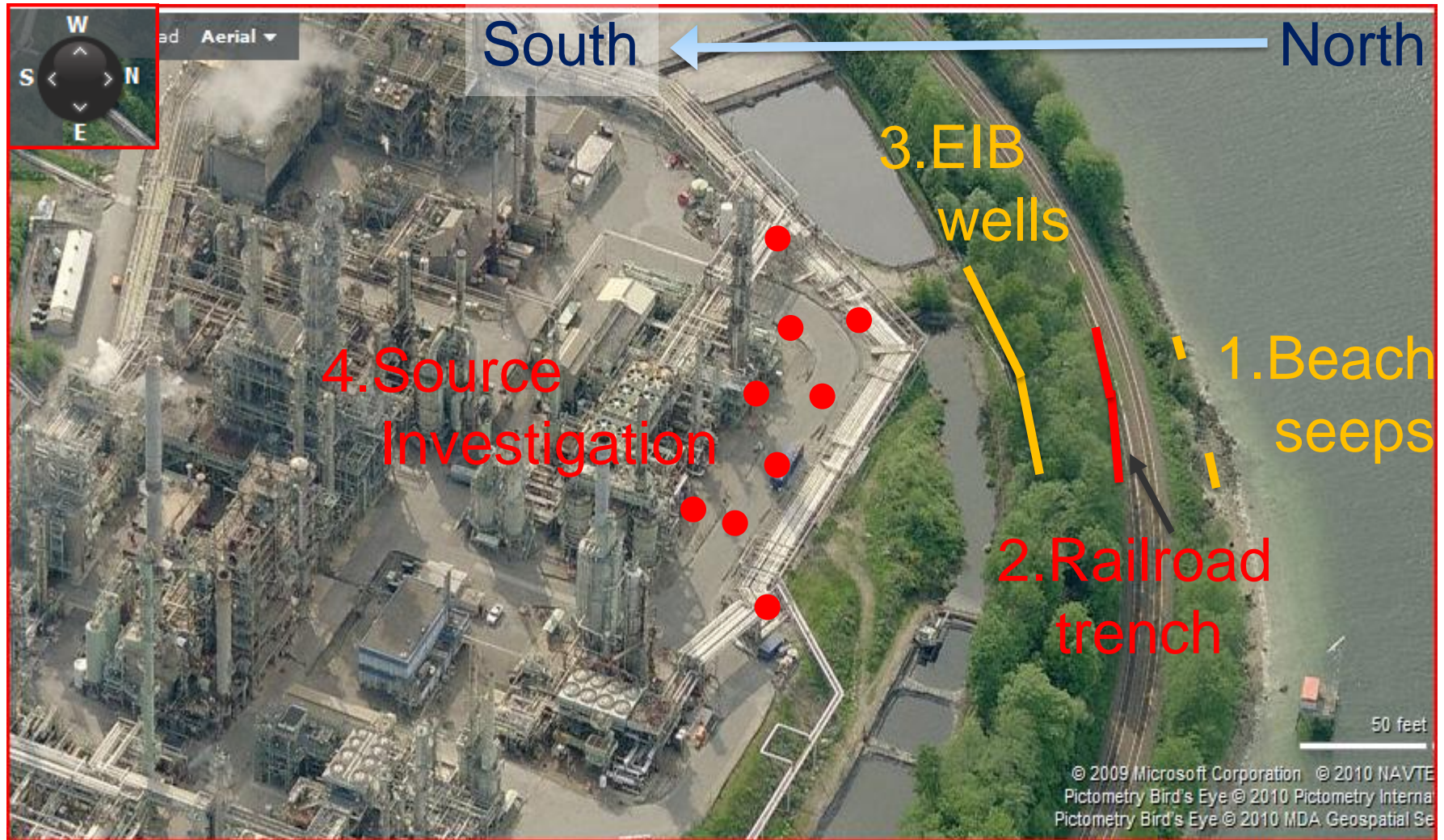


Burrard Clean deploys boom
Observed volume of material
estimated to be 5-7 tablespoons
per day at beach



Railroad trench – April 22, 2010

Response progress



1. Beach Seeps



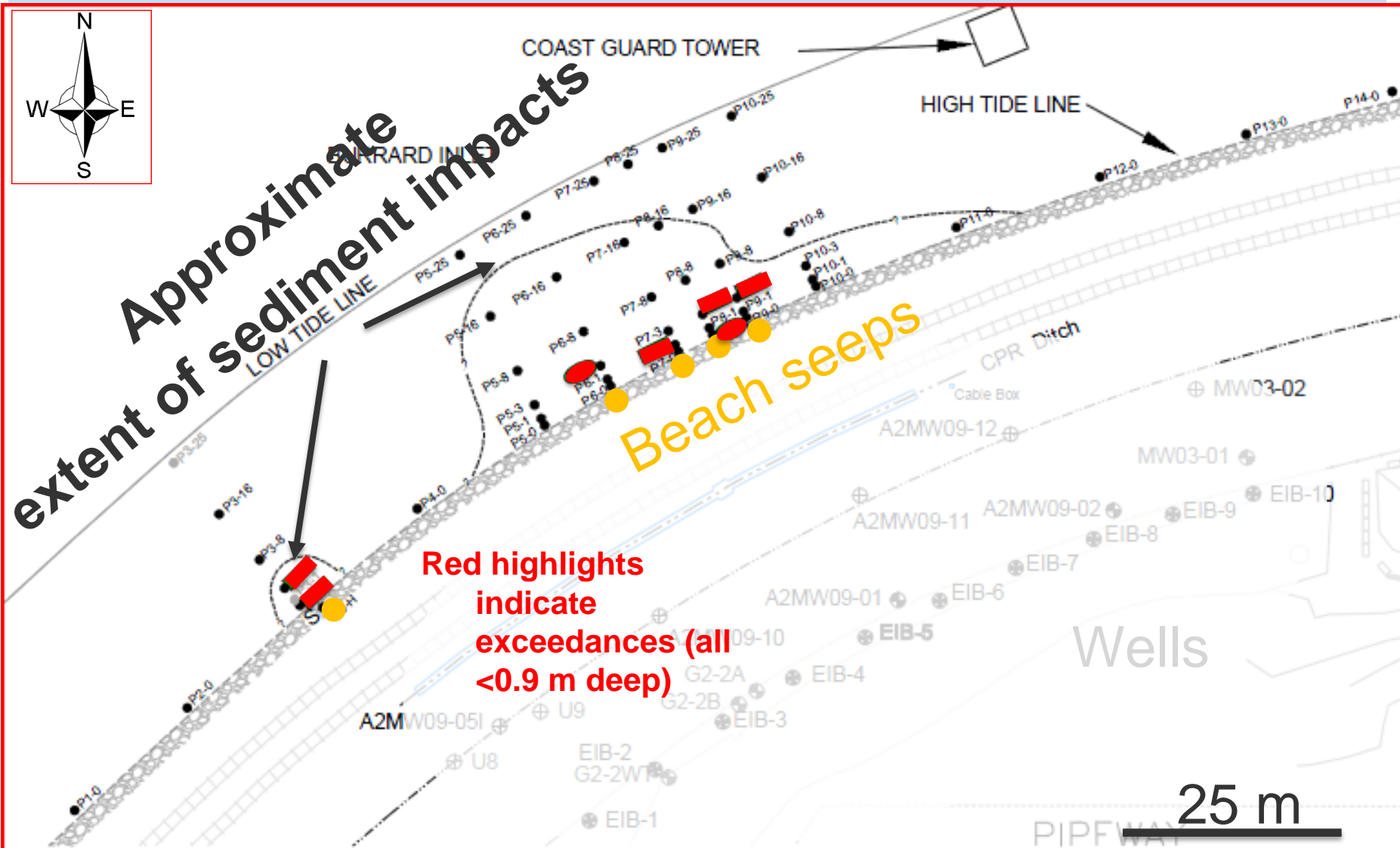
Coast Guard tower

locations of seeps

Goals:

1. Understand extent
2. Contain and recover as much liquid hydrocarbon as possible
3. Respect external interests and meet associated obligations

Beach Investigation



Beach



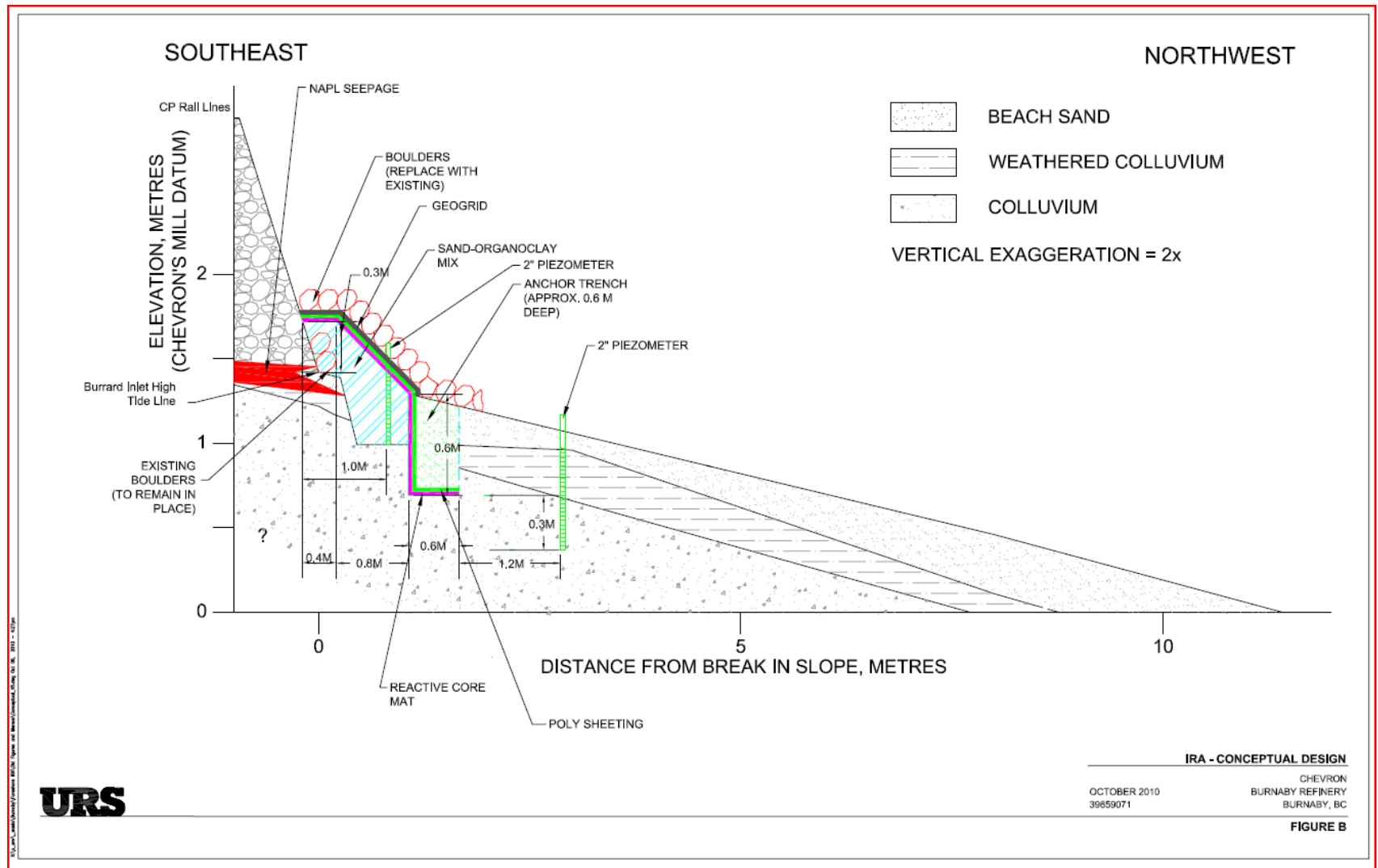
Progress and Current Status

- Initial sampling investigation complete – approximately 85% delineated
- Booming and surveillance is ongoing – daily site visits

Next Steps (proposed)

- A plan for a Detailed Site Investigation (DSI) nearing completion; focus is on finding extent of contamination in pore-water
- Absorbent mats to intercept and recover any liquid hydrocarbons
 - Plan submitted to BERC and Environment Canada
- Archaeological permits pending and field study to be completed before any work can continue on beach
- Installation of mats and DSI anticipated for late-November/December

Beach: Next Steps – Absorption Mats (subject to approval)



2. Railroad

Goals:

1. Understand extent
2. Capture as much liquid hydrocarbon as possible
3. Ensure safety and slope stability
4. No impact on CP Rail schedule



Railroad



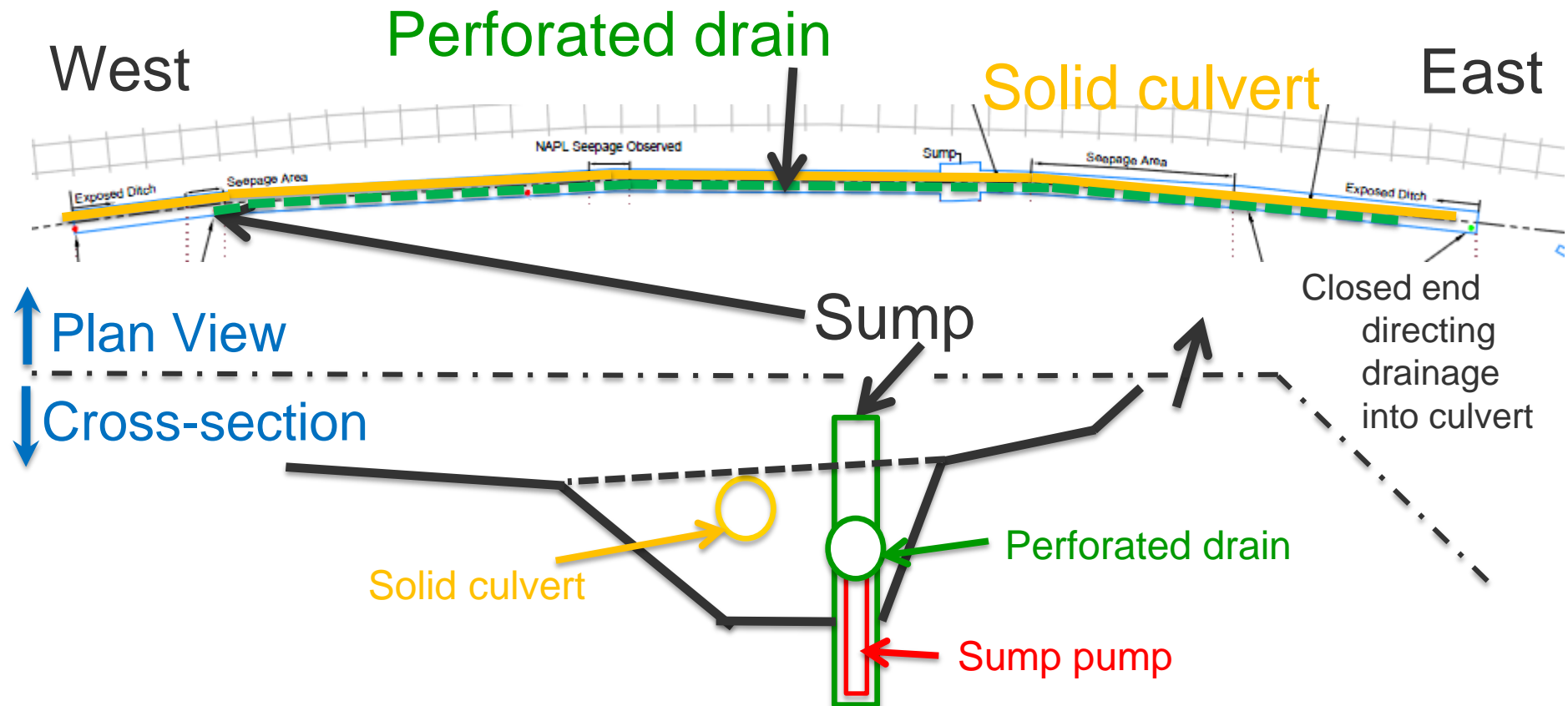
Progress and Current Status

- Shallow investigations complete along trench
- Geotechnical assessment complete
- Safe site access complete
- Daily removal of liquids

Next Steps (proposed)

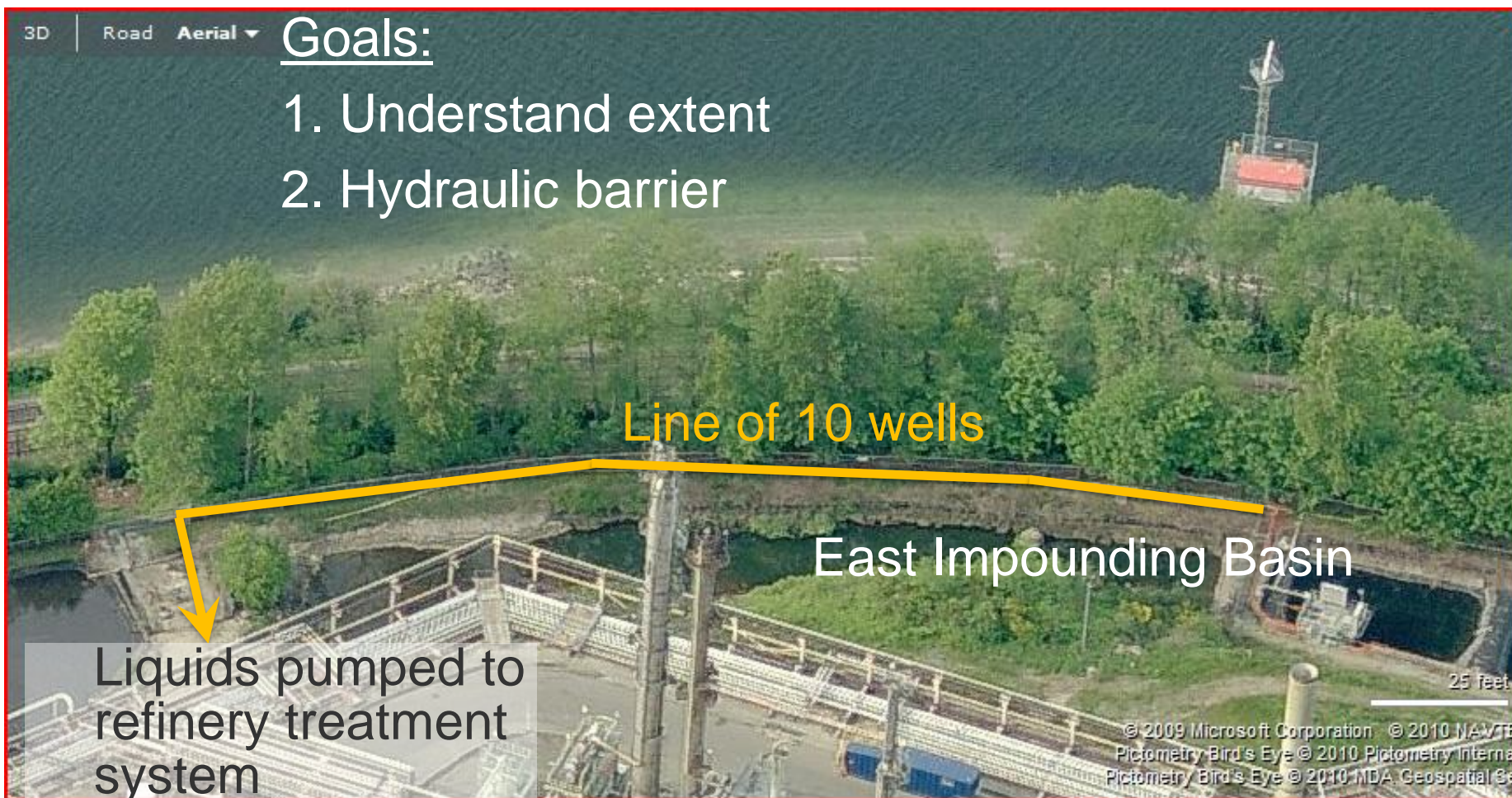
- Install pipe to safely divert rainwater running in trench past the seep area
- Install 1 or 2 extraction points to remove hydrocarbon and water
- System design being developed in collaboration with CP Rail.

Railroad Next Steps – Potential Trench Design



Flow is from east to west. The object of this design is to divert clean flow from upgradient portions of the trench past the seepage area, and to allow for monitoring and extraction of the seep material.

3. EIB (East Impounding Basin) Wells



View looking north

EIB Wells



Progress and Current Status

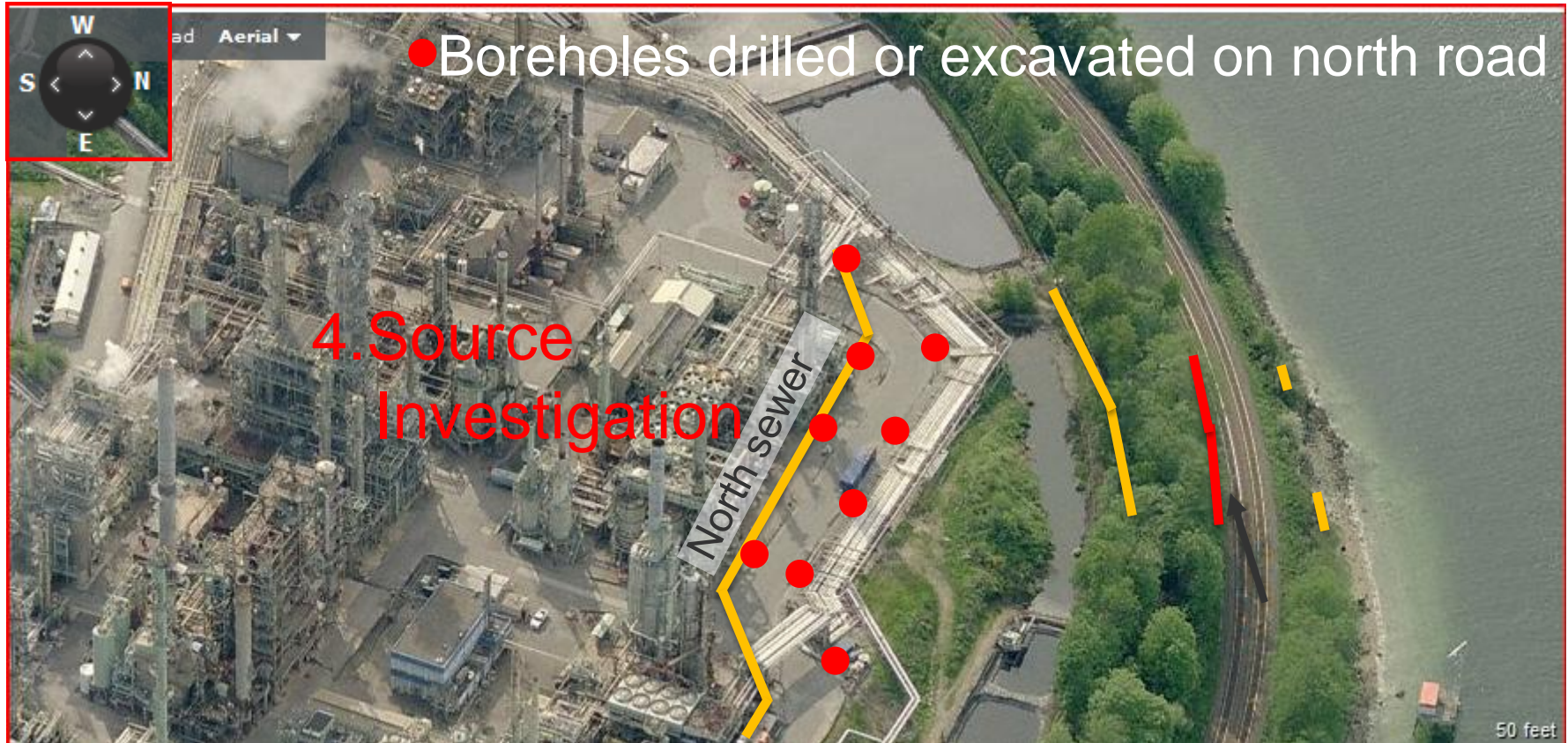
- Pumping from 10 wells started August 5th
- Results to date show drawdown, but we don't know yet if it's enough to overcome natural downhill flow in all locations along the existing line of wells

Next Steps –Testing Phase continues

- Continue with hydrogeological assessment of system effectiveness
- May need to explore alternatives or enhancements to current pumping system



4. Source Investigation



Goal:

1. Find any current contributing source to the seep

Source Investigation



- Liquid hydrocarbon sample analyses:
 - Approximately 25% diesel and remainder mostly heavier gasoline, also minor jet fuel and/or crude oil

- Investigation Results to date:
 - Splitter crude line pressure tested – no leaks
 - Refinery effluent and storm water sewer system
 - video inspection of north sewer – no breaks/failures detected to date
 - excavated test holes near several sewer joints and manholes

Source Investigation – Sewer Excavations



Sewer
excavation

Source Investigation



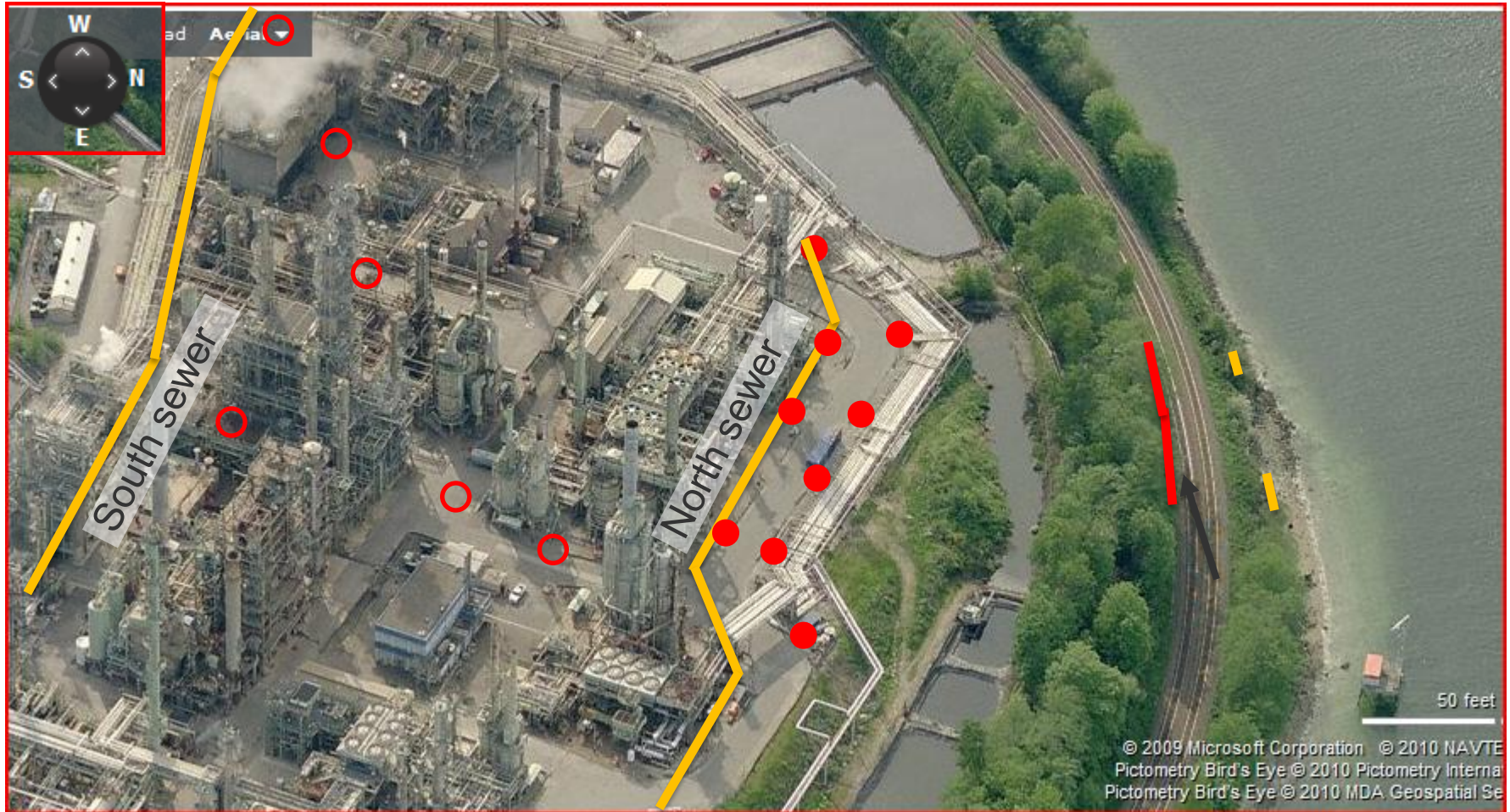
Progress and Current Status

- Drilled and installed 10 wells on north road
- 6 excavations along north sewer
- No obvious source found yet although some wells have small amounts of liquid hydrocarbons

Next Steps – More drilling

- Drill along south sewer; several locations have been identified.
 - After the refinery shutdown and startup are complete (early November), we will be able to safely access these locations.

Source Investigation Next Steps – More Drilling



○ Approximate location of proposed boreholes

Further Delineation

On-site:

- “Nested” exploratory drill holes to help define geology and potential sub-surface migration pathways

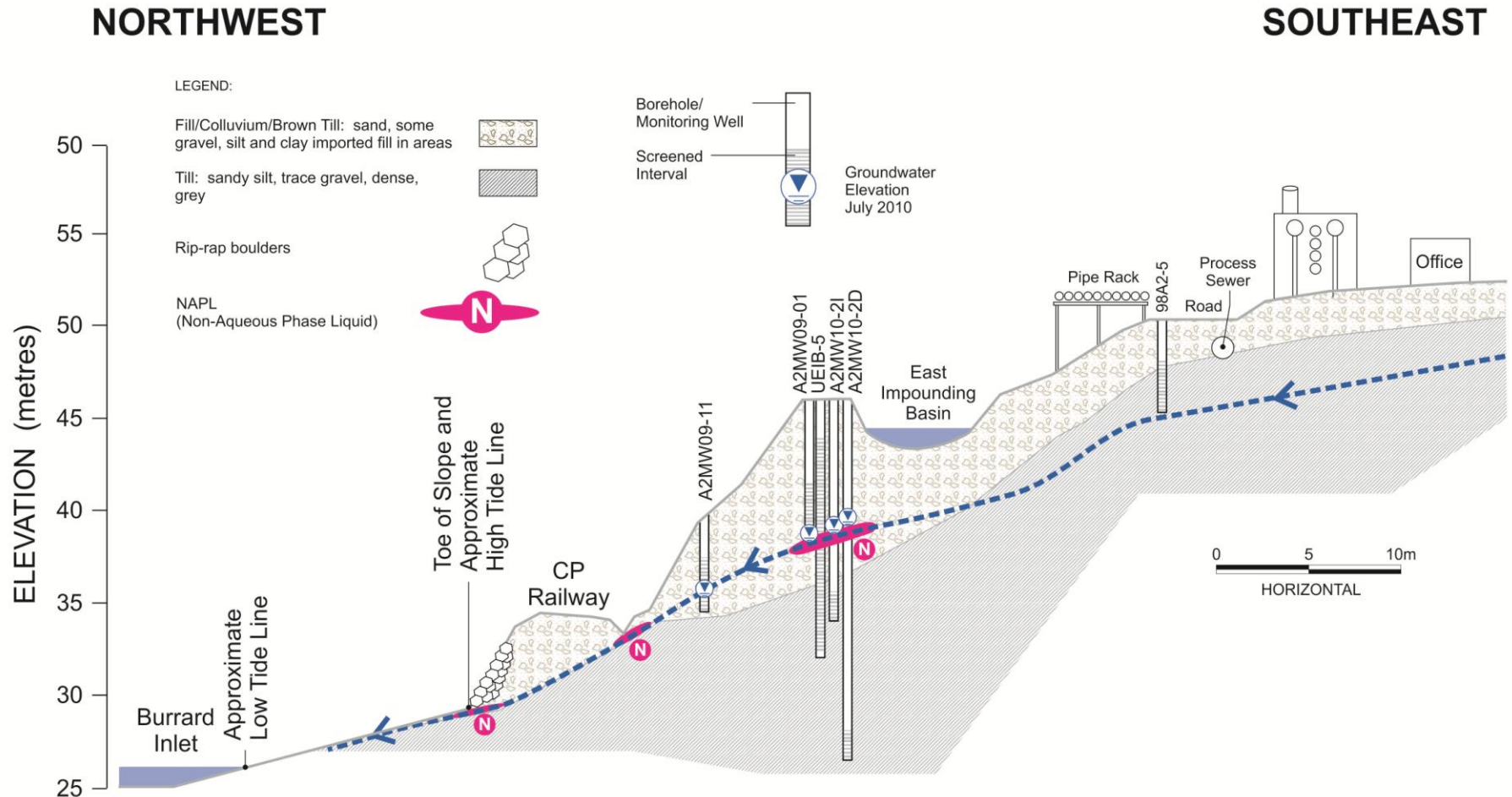
Beach:

- A Stage 2 Preliminary Site Investigation (PSI) is complete.

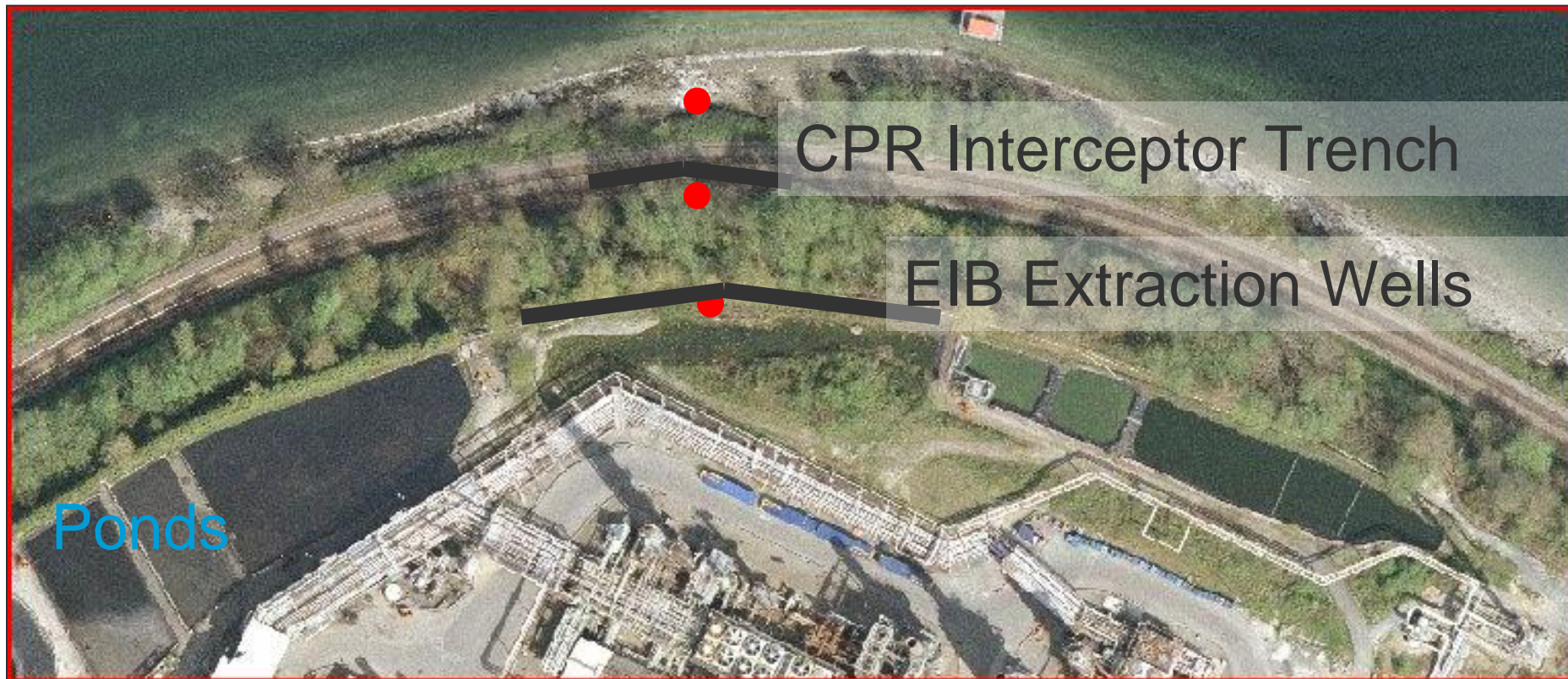
Timeline:

- Data collection, analysis, fill-in sampling (Detailed Site Investigation plan) and interpretation by December/January

Cross Section



Remediation – 2 lines of extraction



EIB = East Impounding Basin

Commitment

- Chevron is committed to ensuring that we protect our local environment, and mitigate and contain any potential impacts relating to this seepage.
- Our priority is to contain and prevent material from leaving our site, with oversight by the designated regulator.



Questions and Answers