An Innovative Remediation Approach to an Emergency Spill Response - Part One

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Sheri Gilmour
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Presentation Summary and Key Items

Review the Incident History
  Site setting, CoCs, oiling
distribution, containment,
wildlife deterrents

Initial Remediation
  5 Primary Ways of PSC Recovery

ESA results to date
  Review soil, groundwater,
surface water and sediment
data
Incident Overview and Site Setting
Contaminants of Concern (CoCs)

CoCs were identified by:

• Sampling and analysis of raw PSC product, recovered product, soil, groundwater, surface water and sediment analysis
• CoCs: BTEX, PHC F1 to F4, and PAHs
• Metals were not present in the analytical results and were not considered in additional sampling
Initial SCATOiling Distribution Mapping
Containment and Wildlife Deterrents
Primary Objectives
Containment and Wildlife Deterrents
Primary Objectives
The objective of the remediation program is to reduce the concentration of the CoCs in the media, to levels that are protective of long-term human and ecological health, while minimizing additional impacts to the environment.
Initial Remediation - Five Primary Ways
PSC Recovered

Removal of Free Phase Product from the Lake
Initial Remediation - Five Primary Ways PSC Recovered

Surface soil excavation
Initial Remediation - Five Primary Ways
PSC Recovered

Fen remediation: Targeted and Broad Flushing
Targeted and Broad Flushing in the fen

Increase water flow through the fen:
Targeted and Broad Flushing in the Fen

Increase water flow through the fen:
Targeted and Broad Flushing in the Fen

Increase water flow through the fen:
Initial Remediation - Five Primary Ways
PSC Recovered

Surface Sediment Excavation
Initial Remediation – Five Primary Ways PSC Recovered

Three Phase Water Treatment System
Oiling Distribution Through Time
Evolution of Oiling Conditions

South Section of the fen
Evolution of Oiling Conditions

West Shore of the lake
Site Conditions, Oct. 2013 - Lake

Hard boom construction and deployment
Oiling Distribution Through Time - June 2014
Evolution of Oiling Conditions Through Time
Evolution of Oiling Conditions

Southeast shore of the lake
Evolution of Oiling Conditions

Northeast shore of the lake
Evolution of Oiling Conditions

West shore of the lake
Summary of Assessments - 2013

• Surface water sampling
• Air monitoring and sampling
• Two ESAs (soil and groundwater)
• Sediment assessment
• Aquatic sampling programs (stickleback)
• Vegetation survey
• Wetland assessment and delineation
Summary of Assessments - 2014

- Delineation drilling (soil and groundwater)
- Sediment and baseline assessment
- MNA Program
- Hydraulic conductivity testing
- Surface watersampling
- Vegetation survey
Soil Characterization - ROW

Soil: surface to 0.6 mbg

Soil: 0.6 to 1.5 mbg
Soil Characterization - ROW

Soil: 1.5 to 3.0 mbg

Soil: > 3.0 mbg
Soil Characterization - Fen

Fen: 0 to 0.6 mbg

Fen: 0.6 to 1.5 mbg
Groundwater and Surface Water Characterization

Surface water

Groundwater
Sediment Characterization

Sediment: 0 to 0.45 mbg
Pathway to Closure

Summary of Initial Remediation:

- Removed approximately 193 m³ of the released PSC (approximately 93% of the oil released)
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- 350 + Stantec staff across Canada and US (over 25 offices)
Discussion and Questions

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