



October 2014

Contaminated Sites 101

British Columbia

Expropriation Association

Environmental Consulting

> Engineering Solutions

Assessment & Protection

KeystoneEnviro.com

Overview

- Stage 1 PSI
 Stage 2 PSI
 Dotail Site Invest
 - Detail Site Investigation
 - Sampling Techniques



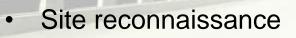
Stage 1 PSI vs Phase 1 ESA

Stage 1 Preliminary Site Investigation Vs Phase 1 Environmental Site Assessment



>>>> Stage 1 Preliminary Site Investigation

- Non-intrusive no drilling or sampling
- Historical records review street directories, air photos, fire insurance, and land use maps





>>> Site History



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Aerial Photographs

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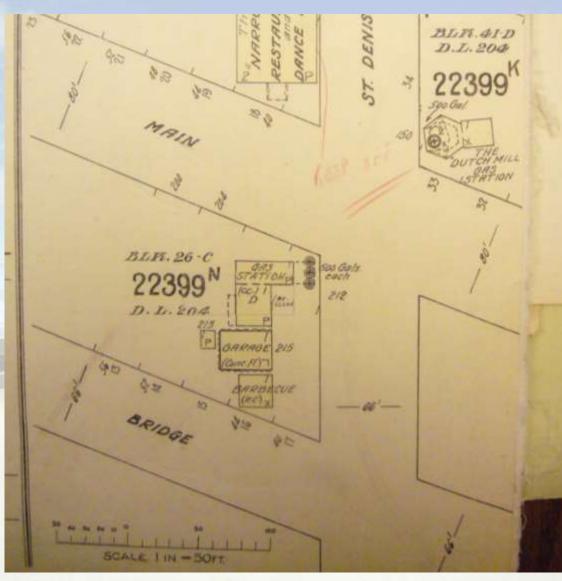
>>> Fire Insurance Maps

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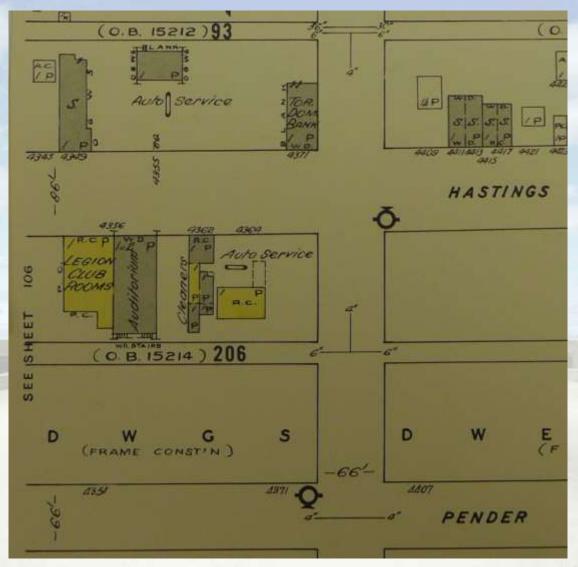
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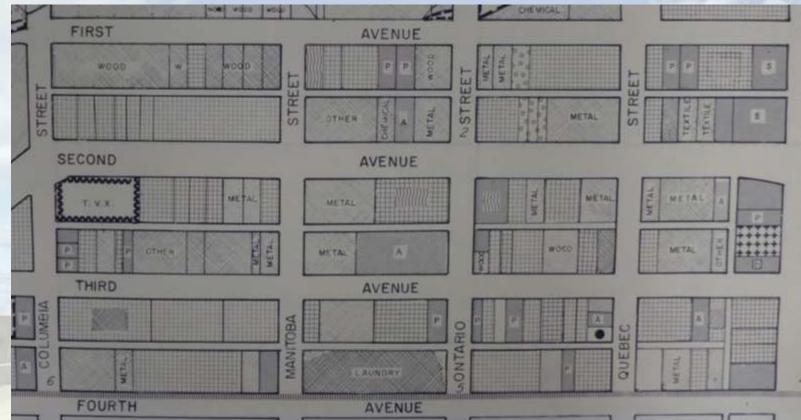
>>> Fire Insurance Maps

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>>>> Historical Records Review

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>>> APEC – Area of Potential Environmental Concern

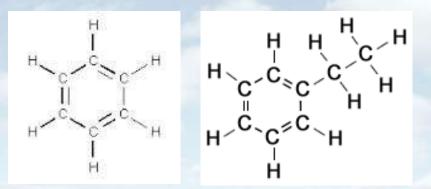
Consideration Factors:

- Distance From Site
- Location (and gradient)
- Duration of Operation
- Size/Scale of Operation
- Subsurface Geology

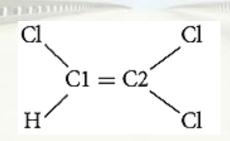


>>>> Typical Contaminants

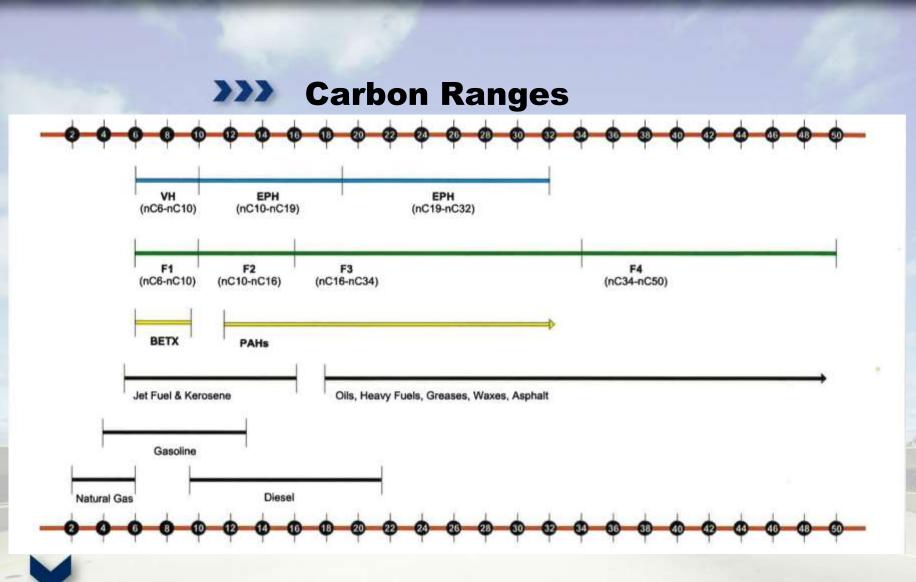
Hydrocarbons (gasoline, diesel, motor oil)



Chlorinated Solvents (dry cleaning and oil solvents)



Metals



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>>>> Stage 2 Preliminary Site Investigation

- Intrusive investigation based on Phase 1 ESA findings
- Sampling and monitoring subsurface media (soil, groundwater, soil vapour)
- Determine presence or absence of contaminants



>>> Detailed Site Investigation

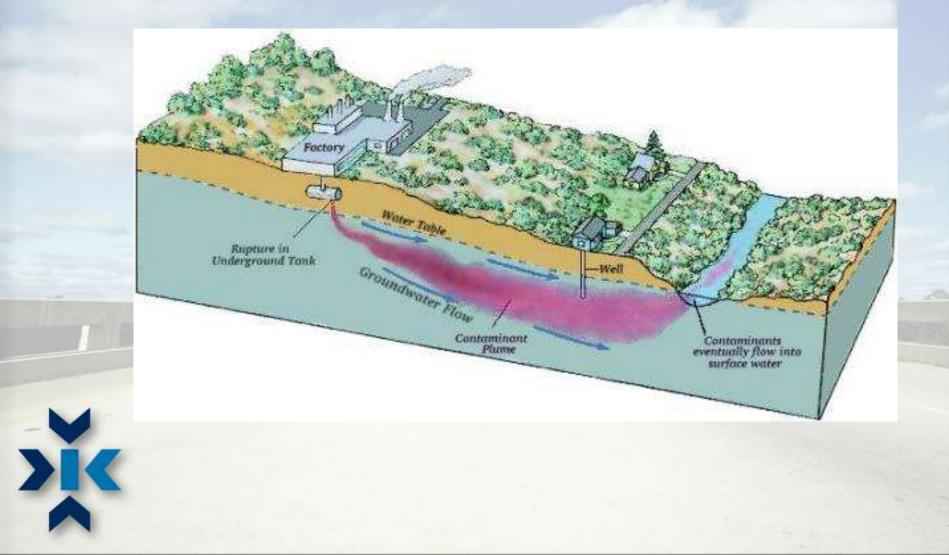
- Determines the lateral and vertical extent of contamination
- Conceptual Site Model

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Conceptual Site Model

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Sampling Techniques

- Test Pits (TP) soil only
- Boreholes (BH) soil only
- Monitoring Wells (MW) Soil and Groundwater only
- Soil Vapour Probes (SV) Soil Vapour only



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Drilling Methods

Hollow-Stem Auger





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Drilling Methods

• Solid-Stem Auger

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>>>> Types of Drill Rigs

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>>>> Types of Drill Rigs

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>>>> Sonic Drill Rig

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>>> Questions?

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