



Decommissioning of Pyramid Mountain Microwave Facility

Masten Brolsma, P.Eng.
Senior Environmental Engineer

Court Sandau, Ph.D., P.Chem.
Senior Risk Assessor

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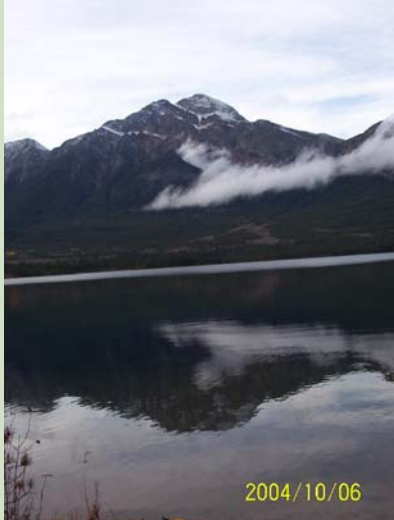


Presentation Overview



- Site Description
- Decommissioning and Assessment Activities
- Remedial Action Plan / Options
- Remediation
- Screening Level Risk Assessment

Site Description

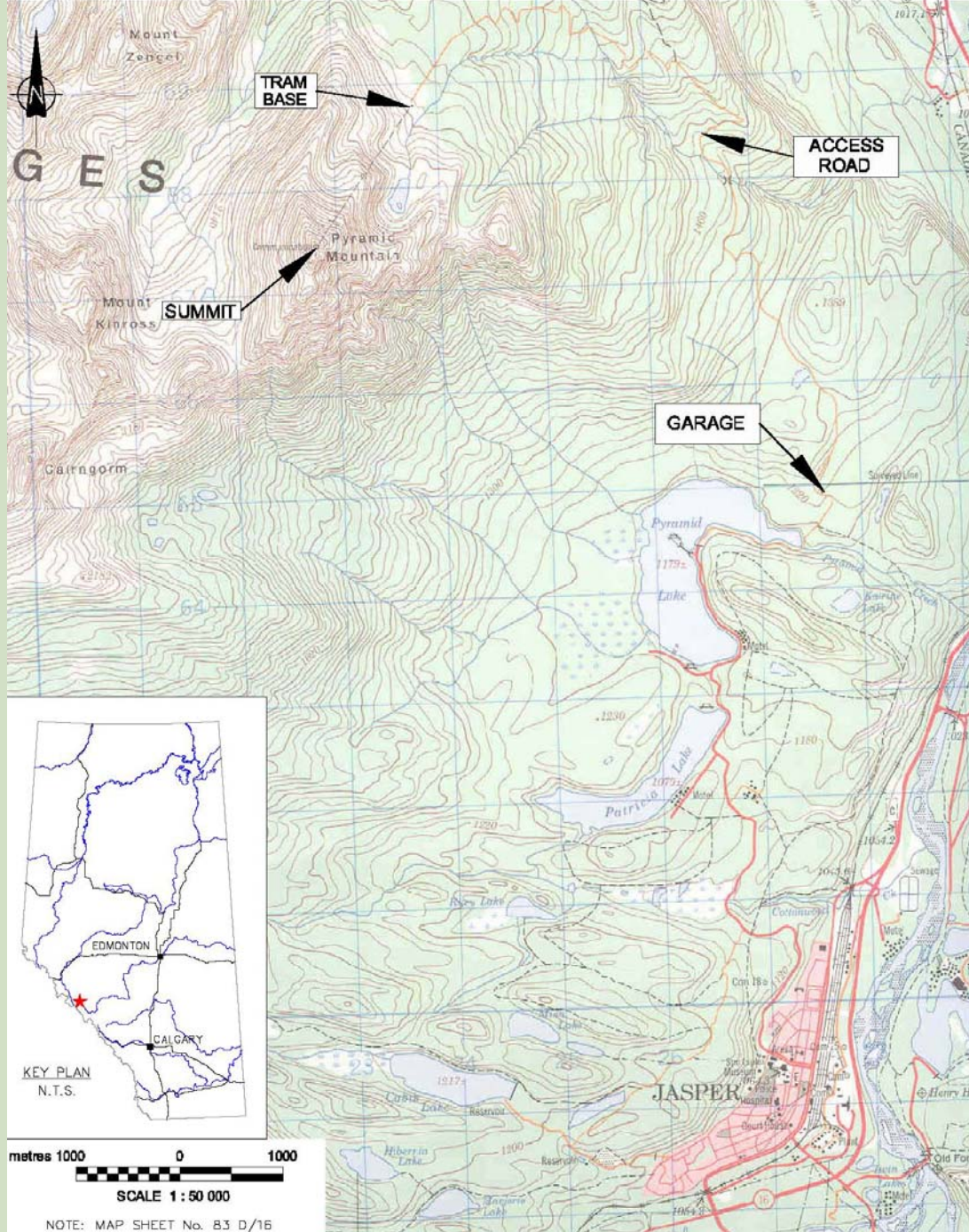


- Mountain top Microwave facility constructed 1960's
- Private tram to summit with associated support facilities
- Bulk storage of diesel fuel to run generators for tram and microwave tower

Site Description



- Located on leasehold within Jasper National Park
- Approximately 10 km northwest of the Town of Jasper, Alberta
- Access via 12 km fire road from Pyramid Lake



Site Description

SnoCat Garage (elev. 4000' / 1220 m)

- Approx. 250 m off Pyramid Lake
- Storage of SnoCat to plow road for all-season access
- Minor vehicle maintenance / lubricant storage

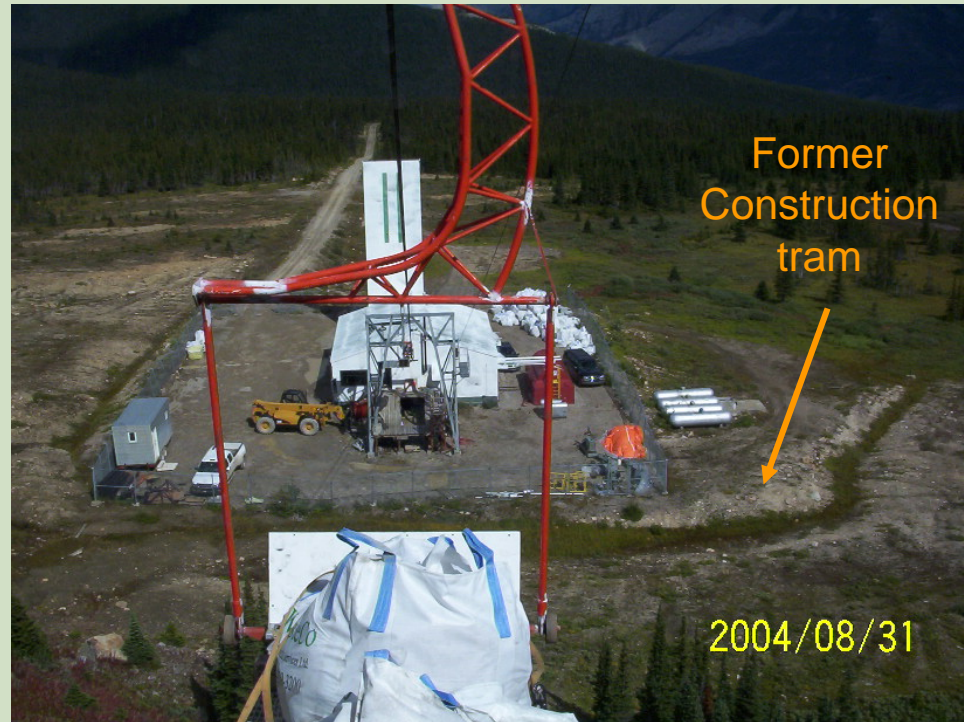


Site Description

Tram Base

(elev. 6529' / 1990 m)

- < 100 m from stream
- Bulk diesel storage
- UST Removed in 1994
- Generator / Tram Building
- 2 x 1200 L ASTs on tram for fuel transfer



Site Description

Summit

(elev. 9065' / 2763m)



- Generator for Microwave
- Bulk Fuel Storage
- 4 x 10,000 L USTs replaced with 3 x 9000L ASTs in 1994
- Remedial excavation of UST basin in 1994
- Tram ASTs for fuel transfer

Previous Environmental Assessments

- *Unitel Pyramid Mountain Microwave Facility Upgrading – Project Description and Environmental Screening Report*, February, 1994;
- *Unitel Pyramid Mountain Microwave Facility – Contamination Cleanup Monitoring Report*, report prepared for Unitel Communications Inc. September, 1994;
- *Phase I Environmental Site Assessment, Microwave Tower Site, Tramway Terminal Site and Tramway Right of Way, Locator Number 1029, Pyramid Mountain, Alberta*, dated September 26, 2002, prepared by Jacques Whitford Environment Limited
- *Environmental Screening Report, Allstream, Demolition of Facilities, Pyramid Mountain Site (ESR)*, dated June 15, 2004.



Remediation Criteria

- Federal Land / National Park
- Return Lease to condition “satisfactory” to Parks Canada
- Canadian Council of Ministers of the Environment (CCME) Canada Wide Standards based on Eco-soil and/or freshwater aquatic life pathways
- CCME Soil Quality Guidelines with Parkland settings
- CCME Freshwater Aquatic Life guidelines



Decommissioning and Remediation Objectives

- Removal of all site facilities (buildings, tram line, debris on mountain)
- Remediate any contamination to “satisfaction” of Parks Canada
- Revegetation of tram base area
- Removal of culverts and reduce road width to hiking trail (last 4 km of access road)

Summit – Assessment

Insulation interstitial space



AST Area

- Hand augers
- Testpitting with mini-excavator
- Visible staining and elevated soil vapours

Summit – Assessment



Results

- Visible staining and elevated soil vapours
- Diesel impacts identified in AST nest
- Probable impacts under slab



Hydrocarbon staining in interstitial space

Summit - Assessment

Tower #3 →



Slope Below Tram Station

- Surface Sampling
- Visible staining
- Waste Oil impacts (F3 & F4 Petroleum Hydrocarbons and barium)



Surface Staining

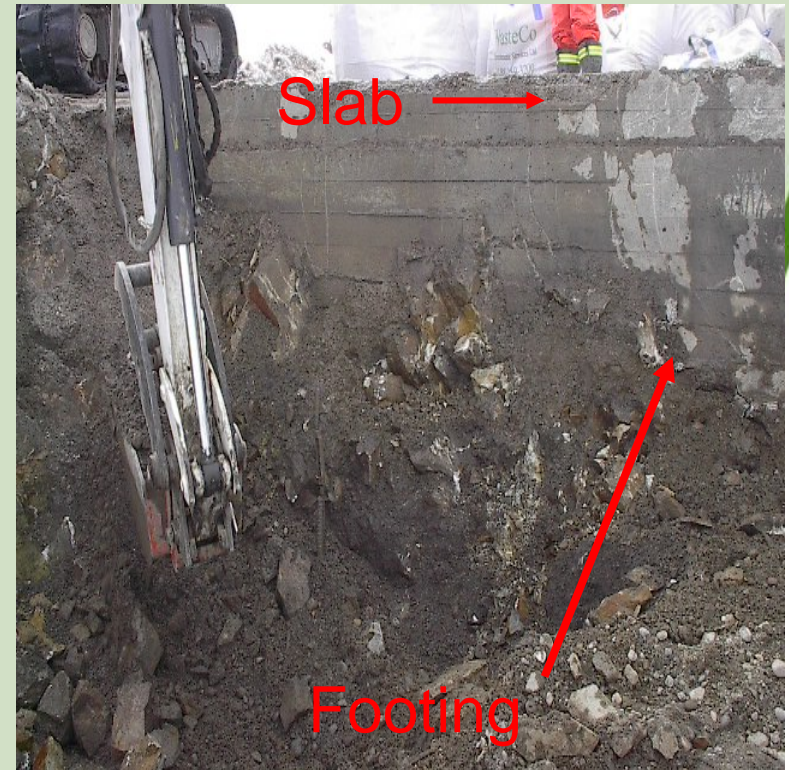
Summit – Remedial Action Plan

AST Area

Slab to remain for future use
Economics of Removing Slab
Footings

Excavate Accessible Soils

Screening Level Risk Assessment
&
Risk Manage Residual Impacts



Summit – Remedial Action Plan



Slope Area

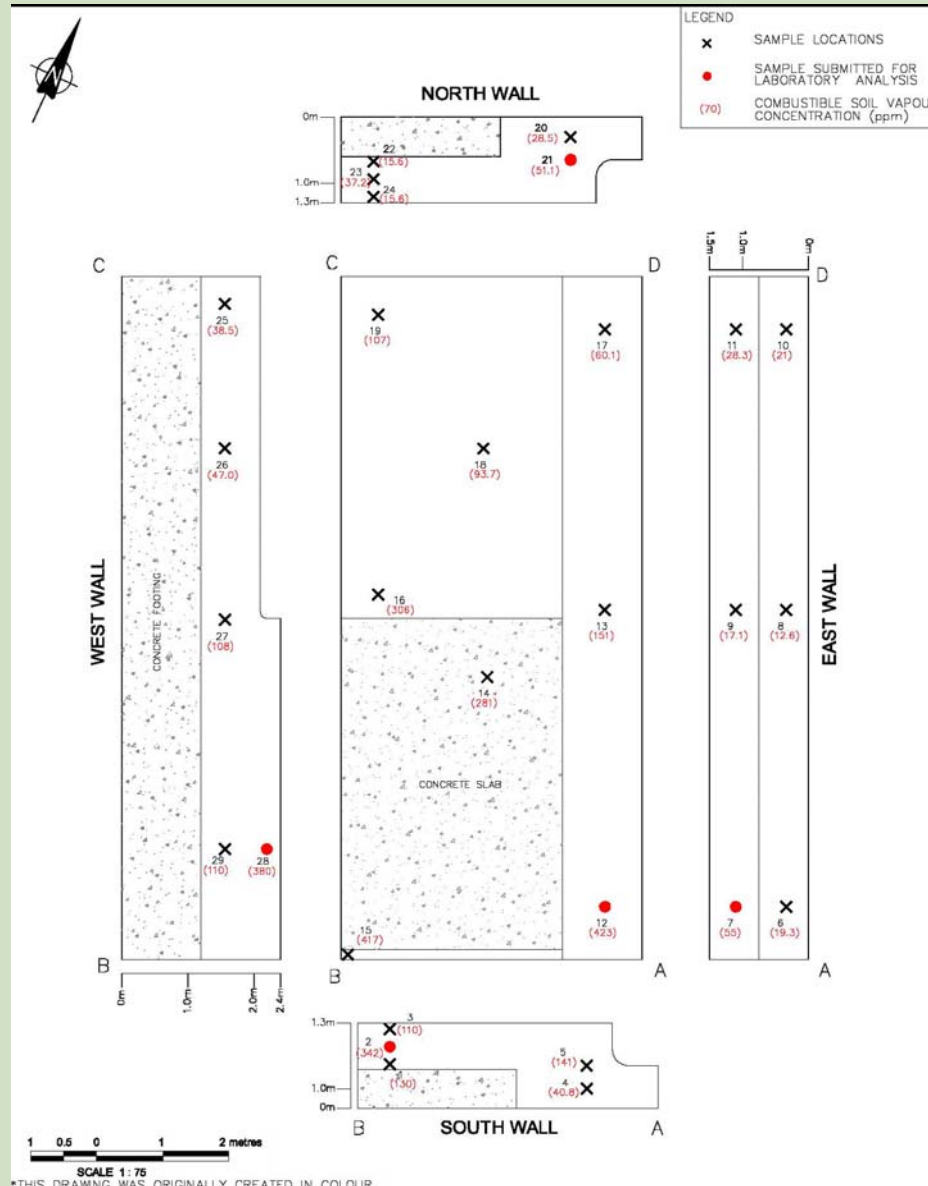
- Limited Access due to slope angle
- Limited ecological or human exposure pathways
- Screening Level Risk Assessment
- Cover with Clean Backfill

Summit – AST Remediation



- 80 m³ (160 tonnes) excavated
- 900 kg (2000 lbs) per/ tram load to base
- Tandem trucks to landfill outside Jasper National Park

Summit – AST Remedial Excavation



Summit – AST Remediation



- Confirmatory Soil Sampling finds residual F1, F2, F3 > CCME CWS
- Regulatory Update
- Environmental Liner Installation then Backfilling

Table 1 – Summary of Confirmatory Results from Summit AST Excavation

Location (Sample No.)	Depth (m)	Date	Vapour (ppm) ¹	Benzene	Toluene	Ethyl-benzene	Xylenes	F1	F2	F3	F4
South Wall (2)	0.6	10-Sep-04	342	< 0.04	< 0.10	< 0.10	< 0.10	240	4200	1000	< 10
North Wall (21)	0.8	10-Sep-04	51.1	< 0.04	< 0.10	< 0.10	< 0.10	64	550	800	44
West Wall (28)	2.20	10-Sep-04	380	< 0.04	< 0.10	< 0.10	0.3	370	4800	2200	430
East Wall (7)	1.20	10-Sep-04	55	< 0.04	< 0.10	< 0.10	< 0.10	97	1500	2800	260
Base (12)	2.40	10-Sep-04	423.0	< 0.04	< 0.10	0.14	< 0.10	110	4700	1900	22
Reference Criteria											
CCME (2002) Soil Quality Guidelines ²		Parkland	NA	0.5	0.8	1.2	1	NA	NA	NA	NA
CCME (2001) CWS for coarse-grained surface soils ³	Park-land	Soil Ingestion		NA	NA	NA	NA	RES	8,000	18,000	25,000
		Protection of Groundwater for Aquatic Life ⁴		NA	NA	NA	NA	230	150	NA	NA
		Eco Soil Contact (plants and invertebrates)		NA	NA	NA	NA	130	450	400	2,800

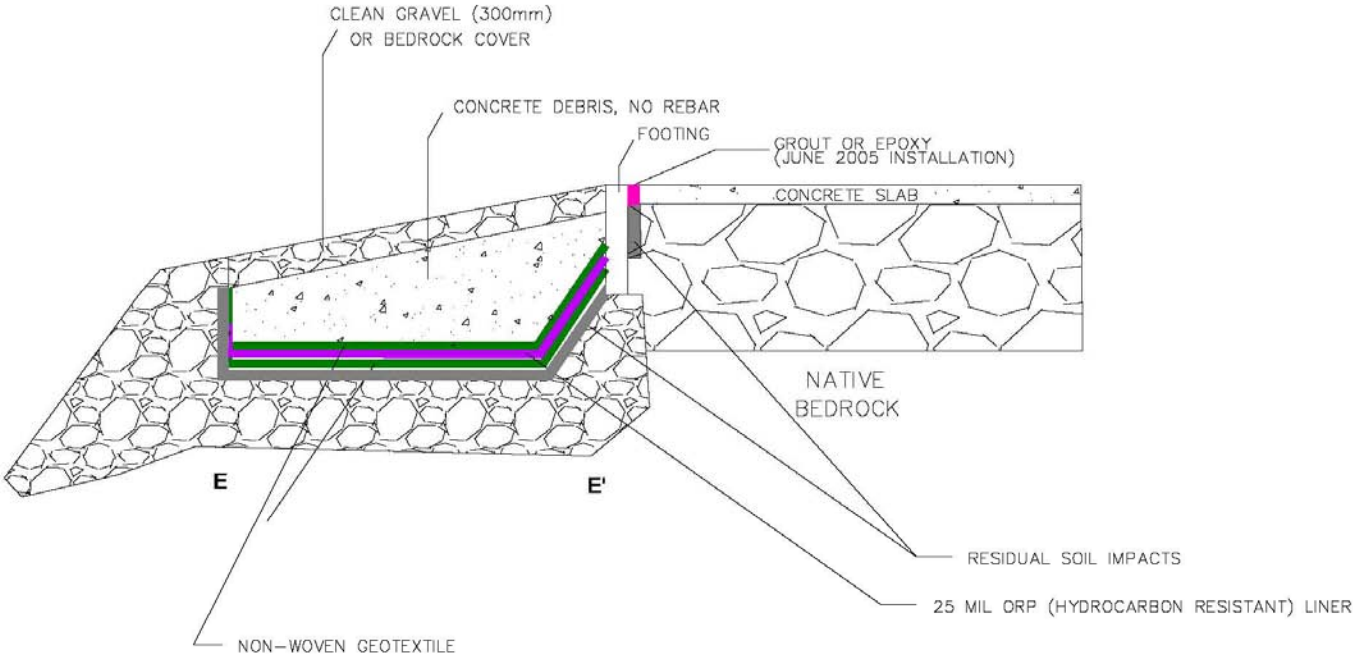
¹ - soils vapours measured with MiniRae 2000 photoionization detector (PID)

² - Canadian Council of Ministers of the Environment (CCME) Canadian Environmental Quality Guidelines: Soil Quality Guidelines (1991, Updated 2003)

³ - Canadian Council of Ministers of the Environment "Canada-Wide Standards for Petroleum Hydrocarbons (PHC) in Soil" (May 2001)



Summit – Liner Installation



1 0.5 0 1 2 metres
SCALE 1:75



Summit – AST Area Remediation



Summit – AST Area Remediation

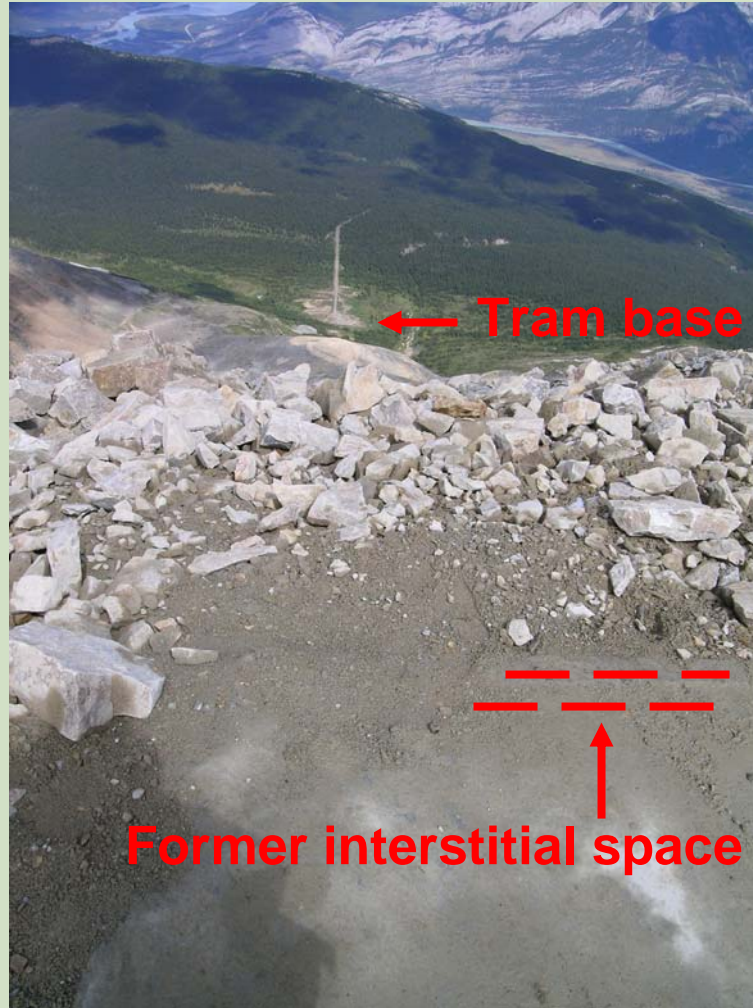


Former UST Area



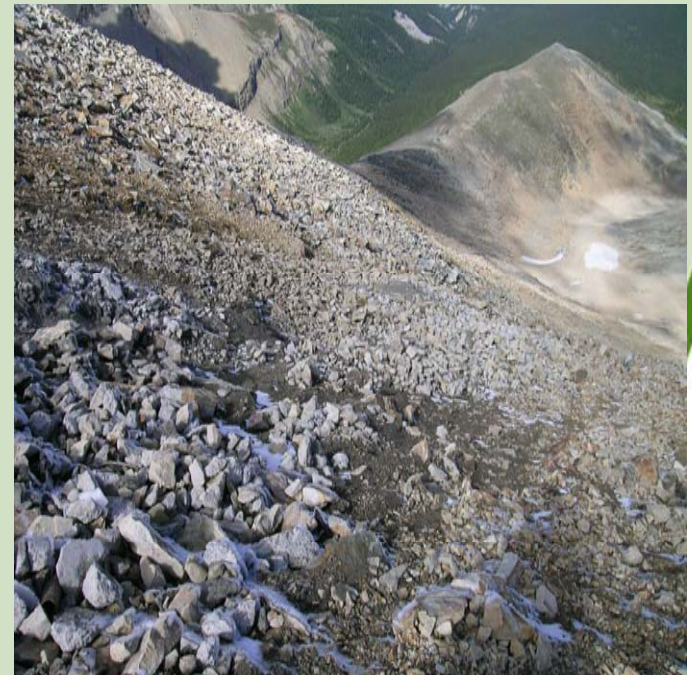
Drainage from Excavation
Cover of Liner with Clean Backfill

Summit – AST Remediation



Grouting of Interstitial Space

Summit – Slope Remediation



Minimum 0.5 m of clean cover

No rebar in concrete backfill or visible debris

Risk Assessment

A process that evaluates the likelihood that adverse:

- Human/ecological effects may occur or are occurring as a result of
- exposure to one or more stressors

Screening Level Risk Assessments

- are conservative in nature
- incorporate uncertainty in a precautionary manner

Purpose:

to assess the need, and if required, the level of effort necessary, to conduct a detailed or “baseline” human health or ecological risk assessment for a particular site or facility

- SLRAs can be designed to provide definitive estimates of actual risk, only if they are based upon site-specific assumptions



Purpose of SLRAs

provide a general indication of the *potential* for risk (or lack thereof) and may be conducted for several purposes including:

- 1) to estimate the likelihood that a particular risk exists,
- 2) to identify the need for site-specific data collection efforts,
- 3) to focus site-specific risk assessments where warranted



Screening Level Tasks

- Screen media concentrations against environmental guidelines (ie. CCME)
- Identify site-specific human/ecological receptors
- Identify complete and incomplete exposure pathways
- Evaluate impacts to receptors

Screen in CoPCs

Summary of CoPCs in Soil – Parkland Land Use			
Chemicals of Potential Concern	Maximum Soil Concentration (ppm)	CCME (2003) SQG – Residential/ Parkland (ppm)	CCME (2001) CWS for coarse-grained surface soils Residential/ Parkland (ppm)
Barium	632	500	nv
Zinc	350	200	nv
Naphthalene	0.67	0.67	nv
F1 (C ₆ – C ₁₀)	370	nv	130
F2 (>C ₁₀ - C ₁₆)	4800	nv	450
F3 (>C ₁₆ – C ₃₂)	23000	nv	400
F4 (>C ₃₂)	12000	nv	2800

Potential Receptors



Pathways



Ingestion/Dermal contact – soil/dust

Ingestion/Dermal contact – ground/surface water

Ingestion of vegetation

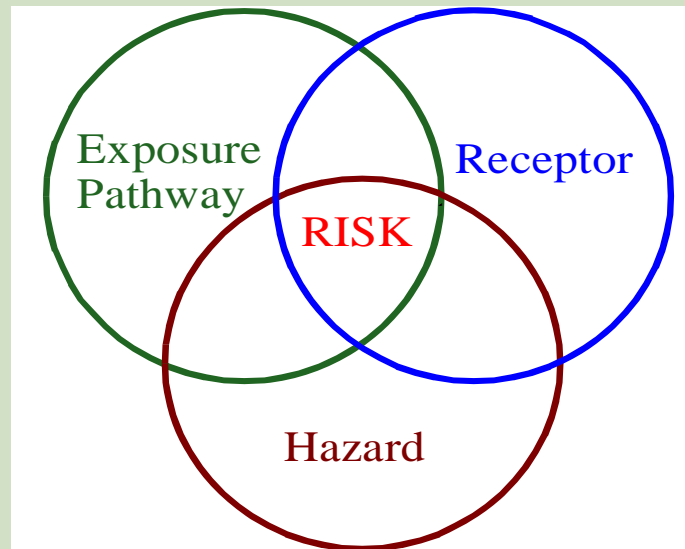
Pathways



Inhalation of vapours (indoor and outdoor air)

SLRA

No exposure pathways = no risk



Canadian Council of Ministers of the Environment (CCME), 1996

SLRA Results

Potential on-site pathways do not pose significant health risk:

- CoPCs have been covered and are not accessible to human or ecological receptors
- Site located on mountain summit, edible vegetation very limited
- High dilution potential for soil vapours to outdoor air (environmental liner and grouting to isolate residual soil impacts)

Tram Base – Assessment



- Hand Augers for Surface Stained Areas
- Testpitting for Deeper Impacts
- Monitoring Well Installation with Excavator

Tram Base – Remedial Action Plan



- Cold Climate
- Long Term Liability and Monitoring Costs
- Potential Freshwater Exposure Pathway
- Quantitative Risk Assessment / Site Specific Target Levels vs. Generic Criteria Based Remediation
- Owner Decides on Criteria Based Remedial Excavation

Garage – Remediation



- Surficial sampling → Hydrocarbon Impacts
- Excavation → Confirmatory sampling
- Impacted Soils to landfill

Summary - Challenges



- Contractor Logistics
- Short construction season
- Weather
- Ecological Setting (National Park)
- Access (road and air)

Company Profile

Jacques Whitford Limited

An Environment of Exceptional Solutions!

- One of Canada's Largest Multidisciplinary Risk Management, Environmental Sciences & Engineering Consulting Firms
- Established in 1972
- Corporate headquartered in Dartmouth, NS
- Calgary Office: Western head office
- Recent joining of Axys Environmental Consulting Ltd. to become the premier environmental consultants in Western Canada
- More than 45 offices across Canada, USA and Internationally with near 1,400 highly qualified professionals worldwide
- Over 40 Risk Assessment Professionals across the country
- ISO9001 / 14001 Registered QMS

