

Decontamination and Deconstruction of the Giant Mine Roaster Complex: Risks, Challenges, Lessons Learned and Successes

Gordon Woollett, P.Eng. - AECOM Canada Ltd.

Sarah Preston, G.I.T. - Parsons Canada Ltd.



Presentation Outline

- Context
- Introduction
- Project Driver
- Sources of Risks, Challenges and Lessons
 - Assessment
 - Worker Exposure
 - Decontamination
 - Deconstruction
- Summary of Accomplishments
- Conclusion

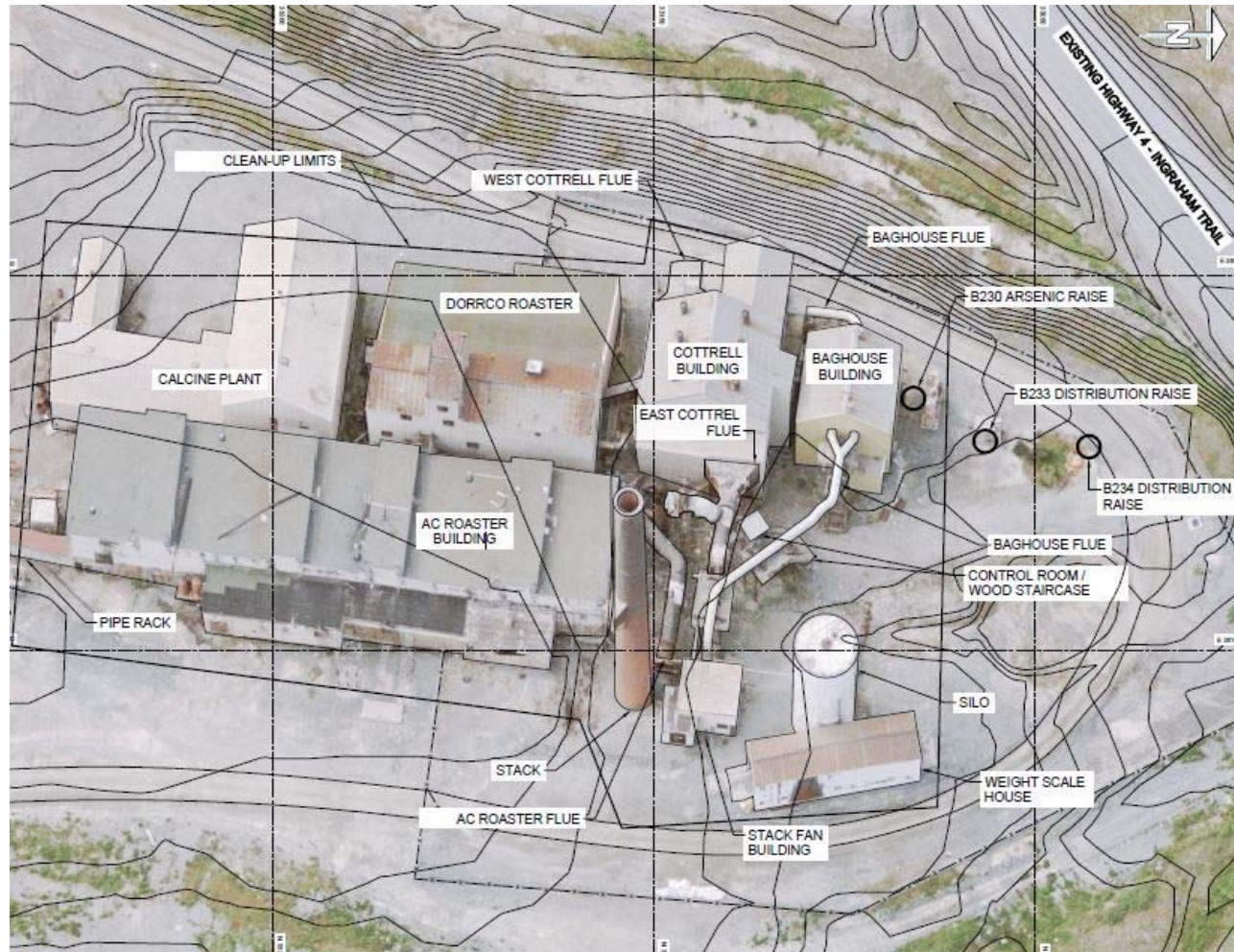


Context: Site History





Introduction: Roaster Complex





Project Driver: Risk

- Roaster Complex
Decontamination and
Deconstruction
 - Part of Advanced Site
Stabilization Plan (SSP)
 - Driver: risk of physical
injury and of contaminant
exposure to on-site
workers, neighbouring
communities and the
environment





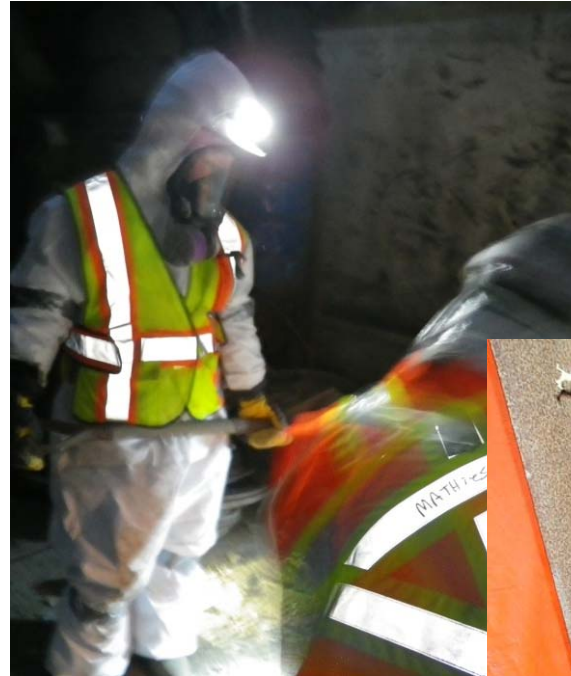
Project Driver: Risk

- A detailed waste audit of the Roaster Complex completed in 2012 identified:
 - ~1,400 m³ (in-situ) of arsenic trioxide hazardous waste in the kilns, tanks, reactors, air handling infrastructure and on building internal surfaces
 - ~850 m³ of porous structural materials (such as bricks, wood) impregnated with hazardous concentrations of arsenic
 - ~1,300 m³ (in-situ) of arsenic-dust impacted asbestos-containing material
 - cyanide compounds mixed with arsenic (in some process vessels) and with asbestos
 - residual sodium cyanide and cyanide-containing liquids
 - ~60 m³ of other hazardous wastes (PCBs, mercury, chemicals, fuel and oil)



Assessment: Risks and Challenges

- Emergency work done in the winter.
- Exposure (arsenic trioxide, asbestos, cyanide)
- Exposure (cold)
- Limitations imposed by structural conditions
- Darkness





Worker Exposure: Risks and Challenges

- Changing regulatory requirements for assessing worker exposure and risk from medical monitoring results
- “Interference” from non-occupational sources of arsenic (food, cigarettes)
- Problematic identification of source of exposure





Worker Exposure: Lessons Learned

- Good housekeeping, good hygiene practices and appropriate PPE are the best first line of defense
- Medical monitoring is a very valuable second line of defense for the protection of workers' health
- Good documentation is essential when non-occupational sources of exposure interfere with medical monitoring results





Decontamination: Risks and Challenges

- Hazardous Materials Abatement: Arsenic, Cyanide, Asbestos
- Worker Protection
- Waste Volume and State





Decontamination: Lessons Learned

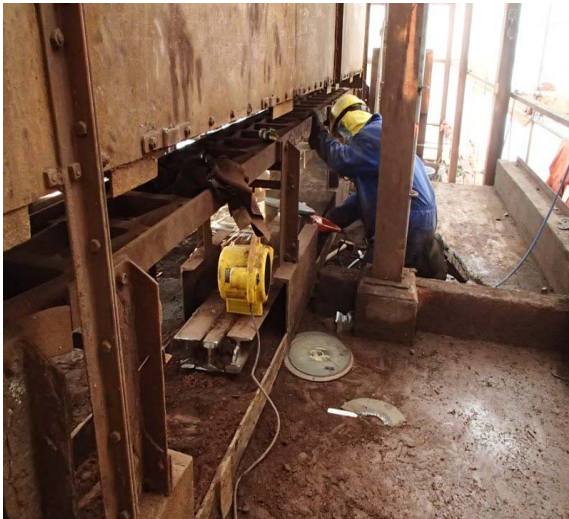
- Established controls for simultaneous abatement of arsenic, asbestos and cyanide
- Increased PPE Standards
- Dust Suppression





Deconstruction: Risks and Challenges

- Structural Disrepair
- Chimney Stack (46 m)
- Internal Equipment





Deconstruction: Lessons Learned

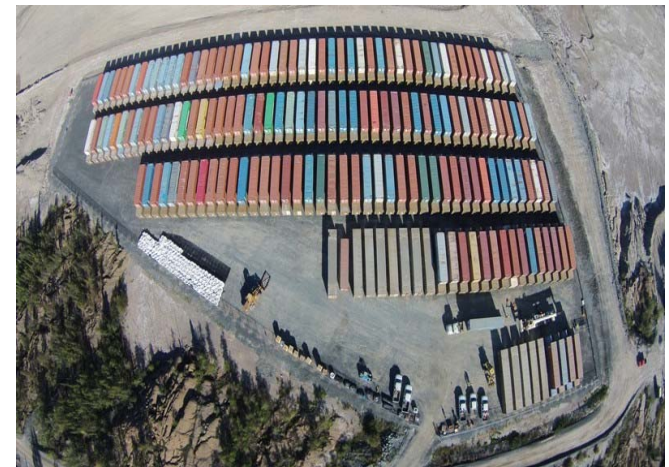
- Engineered Plans and Innovative Approaches
- Modified Deconstruction
- Secondary Decontamination





Summary of Accomplishments

- The Roaster Complex was decontaminated and deconstructed over two work seasons, thus eliminating significant risks to on-site workers, neighbouring communities and the environment
- Approx. 2,200 m³ of non-hazardous waste was segregated
- Approx. 22,200 kg of non-arsenic hazardous waste was containerized and disposed off-site
- Approx. 9,200 m³ of arsenic hazardous waste was safely containerized





Conclusion

- We accomplished what we set out to do.
- The immediate risks to site workers, neighbouring communities and the environment have been eliminated.
- Next challenge

Before



After





Questions



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