

CLEANS – Gunnar Uranium Mine

Presentation by:
Lois Miller (SRC)
Jason Kruczko (QMLP)
October 17, 2012

Saskatchewan Research Council

- Environmental Remediation Consulting
 - Environmental Analysis Testing
 - Ecological Risk Assessment
- Groundwater & Surface Water Quality Assessment
 - Water treatment
- Organic & Inorganic Radiochemical Analysis
 - Toxicity Testing
- Carbon Accounting & Life Cycle Assessments
 - Process Improvements
 - Revegetation
 - Ecological Surveying

Quantum Murray LP

- Environmental Contractor
- HazMat Abatement Services
 - Demolition Services
 - Metal Recycling
 - Waste Management
 - Remediation Services
- Emergency Response Services

Project CLEANS (Cleanup of Abandoned Northern Sites)

is a multi-year project to assess and remediate the Gunnar Uranium Mine and Mill Site, Lorado Mill Site as well as 36 satellite Mine Sites in northern Saskatchewan. SRC's Environmental Remediation Team is managing the project on behalf of the Governments of Saskatchewan and Canada.

PROJECT OBJECTIVES

1. Eliminate or reduce public safety hazards at the site and minimize the risks to the public in the future.
2. Eliminate or reduce environmental hazards at the site and minimize the risks to the environment in the future.
3. Develop options that are technically and economically practical.
4. Ensure long-term environmental monitoring at the cleaned up sites

LEGEND / LÉGENDE

- Provincial capital / Capitale provinciale
- Other populated places / Autres lieux habités
- ✶ Trans-Canada Highway / La Transcanadienne
- Major road / Route principale
- - - International boundary / Frontière internationale
- - - Provincial boundary / Limite provinciale

Scale / Echelle

75 0 75 150 225 km



★ Gunnar



- Athabasca basin
- Cracking stone Peninsula
- Uranium city
- Gunnar Site

Location

- The former Gunnar Mine is located on the north shore of Lake Athabasca, approximately 25 kilometers south of Uranium City, Saskatchewan
- When the mine was closed a narrow trench was blasted in the rock, between the pit and Lake Athabasca to flood the pit and underground workings.

Gunnar Site History:

- ➔ Uranium mines operated in 1953-1964
- ➔ Average grade of deposit was 0.18% U_3O_8
- ➔ Uranium Mill with capacity of 2,000 tonnes per day
- ➔ Total ~8.5 million tons of rock mined and processed
- ➔ Open pit - over 100 m deep, up to 3 million m^3 volume
- ➔ Underground mine - 600 m deep
- ➔ Uranium mill, acid plant, other utility, structures, and buildings
- ➔ Over 5 million tons of unconfined tailings
- ➔ Mining ceased in 1964
- ➔ The pit and subsurface workings were flooded, shaft plugged with concrete, and mine site abandoned
- ➔ All buildings, tailings, and waste rock piles were left on site “as is”

Gunnar Uranium Mine and Mill Site

- 4,400,000 tonnes of tailings
- 2,700,000 tonnes of waste rock

GUNNAR MINE SITE COMPONENTS



Securing the Buildings and Structures on the Gunnar Site



- In July 2010, SRC was permitted to initiate work to take down buildings and structures on the Gunnar Site to address public safety concerns on the Site.

Objectives of Demolition Work:



Safety Surveillance by SRC

- To take down buildings on the Gunnar Mine site that fail a structural safety assessment.
- To address risks on the site related to hazardous substances and materials (including asbestos).
- To address safety issues related to site maintenance (e.g., old sumps, tripping hazards, etc.)

2010 Work was Focused On:



Before



After

- ✓ Development of safe work plans, including:
 - Occupational Health and Safety Plan
 - Structural Safety Assessment
 - Hazardous Substances and Materials Inventory
 - Demolition Plan
 - Waste Management Plan
- ✓ Establishment of barriers
- ✓ Removal of overhead hazards
- ✓ Abatement and demolition of non-process buildings (e.g., wooden structures)
- ✓ Securing the site

2010 Demolition Work:



Before



After

Summary of Buildings Down:

- ✓ 2 wooden barges
- ✓ 4 bunkhouses
- ✓ 2 Married Quarters
- ✓ Mine Manager's Residence (Lodge)
- ✓ Wooden fishing shacks
- ✓ Small wooden residences
- ✓ School
- ✓ Curling rink (as shown in photos)

Bunkhouses: Before



Bunkhouses: After



2010 Demolition: School

Before:



After:



Addressing Other Safety Issues:

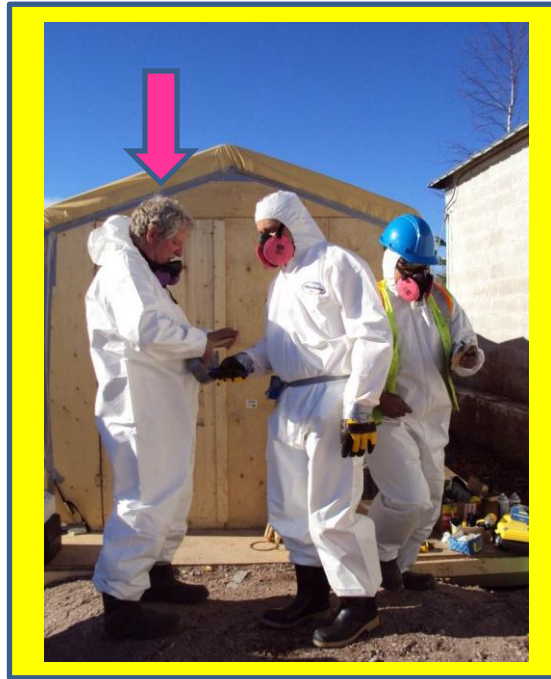
(some examples)

- ✓ Filling in old sumps
- ✓ Construction of berm as barrier around Gunnar Pit
- ✓ Clean-up of site debris
- ✓ Low- and moderate-risk asbestos abatement in the Community Centre



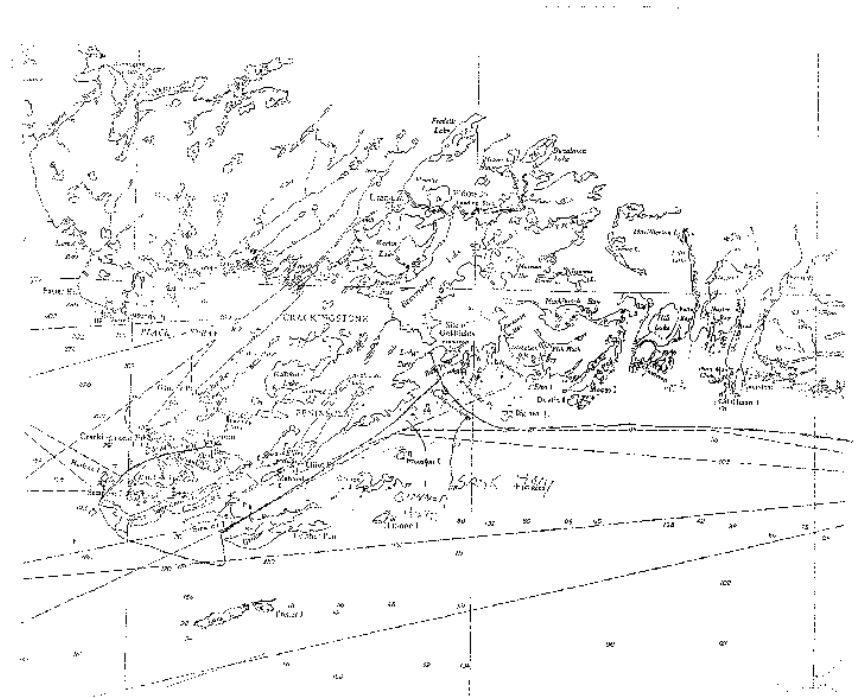
Asbestos Abatement:

SRC's Asbestos Expert



Prep Work 2011 – Ice Road

- Preparation:
- Constructing Ice Road



Camp Location and Set Up

- Choosing a camp location took into account NORMS, location to the worksite, location to water.



Permitting & Start Up

- Training
- Safety Plans
- Specialized Plans
- Air Strip



Focus of the 2011 Demolition Work:

- ✓ Mobilization to the Gunnar Mine Site on the ice road.
- ✓ Establishment of a camp.
- ✓ Development of safe work plans.
- ✓ Establishment of a temporary hazardous materials storage facility.
- ✓ Abatement and demolition of process buildings (including mill, acid plants, water tank, head-frame and others).
- ✓ Planning transport of hazardous materials off-site.
- ✓ Maintaining site security.



2011 Demolition Work: Summary of Buildings Down



Before



After

- ✓ Maintenance Warehouse
- ✓ Geology Mine Dry
- ✓ Administrative/Engineering Building
- ✓ 2 Acid Plants
- ✓ Fine Crushed Waste Bin and Surge Bin Transfer Towers
- ✓ Powerhouse
- ✓ Water Tank
- ✓ Two Acid Tanks
- ✓ Mill (with exception of the north wall, as shown in the photos)
- ✓ Small Buildings and Structures
- ✓ Head-frame

Demolition of the Gunnar Head-frame:



Demolition of the Gunnar Head-frame: Action













Mill Complex: Before



Mill Complex: After



Sulphur Pad:



Before



After

Acid Plants: Before



Acid Plants: After



Due Diligence: Inspections of Demolition Footprints at Gunnar



Off Site Waste Disposal



2011 Progress: Summary of Demolished Buildings



2011 Progress: Summary of Demolished Buildings



Before



After

2011 Progress: Summary of Demolished Buildings



Before



After

Training in Preparation for Work at Gunnar:



Practicing Hand Signals



Writing a Quiz



Posing in Tyvek in Black Lake

Joint Training Partnerships:

SRC, PAGC and QMLP

- 50% funded by the Government of Canada's Aboriginal Skills and Employment Partnership.
- Objective: To provide capacity building and employment opportunities in the Athabasca Basin Region.
- Seven communities: Hatcher Lake First Nation, Wollaston Lake, Black Lake First Nation, Stony Rapids, Fond du Lac First Nation, Uranium City and Camsell Portage.



FRANÇAIS CONTACT US

MEMBER LOG IN NOT A MEMBER?
Email: JOIN NOW
Password:
LOG IN Forgot your login info?

ABOUT US PROJECTS CERTIFICATION PUBLICATIONS MEDIA LINKS EMPLOYERS PROFESSIONALS EDUCATORS STUDENTS

ECO CANADA
Environmental Careers Organization

CRTOC
Contaminates Remediation Training Organization of Canada (CRTOC)

The Contaminates Remediation Training Organization of Canada (CRTOC) is a federally incorporated, not-for-profit organization representing a consortium of Aboriginal organizations, Aboriginal businesses, sector councils, and private sector businesses across Canada.

About our Training Fund
Administered by ECO Canada (Environmental Careers Organization) with supporting funds from the Aboriginal Skills and Employment Partnership Program, the objective of the Caring for the Land Project is to promote the

ECO COMMUNITY

JOB BOARD
LATEST POSTINGS

Intermediate/Senior Project Manager
Vancouver, BC
Posted: 11/29/2011

Intermediate/Senior Civil Engineer (Water Resources)
Abbotsford, BC
Posted: 11/29/2011

Civil or Environmental Technician/Technologist
Edmonton, AB

Training Opportunities:

- Curriculum consisted of the following modules:
 - Construction Basics (Ladder & Safety Awareness, Hand & Power Tools, Working Around Heavy Equipment, Hand Signals, Pumps & Compressors)
 - Confined Space Entry Awareness
 - TDG (Transportation of Dangerous Goods Clear Language C.E. Value 0.3)
 - WHMIS (Workplace Hazardous Materials Information System)
 - RPE (Respiratory Protective Equipment)
 - PPE (Personal Protective Equipment)
 - Asbestos abatement and awareness
 - Radiation Protection
 - First aid and CPR
- 109 Athabasca-basin residents participated in the training.



Wrapping up training with the Fond du Lac class



Class Cheer



Small Group Work



Meters and Monitors



Posing in Tyvex in Fond du Lac



Team Exercises



Corrosive Liquids Discussion



Part of the Wollaston Class

Northern Hiring:

- Northern training and capacity building
- Development of an SRC northern vendors and workers database.
- Inclusion of the database in tender packages.
- Setting statistics for hiring of Athabasca-basin workers.
- Tracking by numbers of workers and hours worked.
- Development of both short- and long-term opportunities in the north.



Summary of Hiring Statistics:

- Half of the workforce for the 2011 Gunnar demolition consisted of Athabasca-basin workers.
- The remaining workers were QMLP employees from other parts of Canada, including Ontario, Alberta and British Columbia.
- The workforce included residents of Uranium City, Camsell Portage, Black Lake, Stony Rapids and Fond du Lac.
- Community and Environmental Monitors were hired as community contacts for the CLEANS Project.
- Training and employment opportunities will be provided throughout the CLEANS Project.



Recycling at Gunnar: A 'Homegrown' Initiative



Closure & Work Completed

- In 1996, the channel was filled with waste rock as a barrier between the pit and Athabasca Lake
- HazMat Abatement & Demolition Project (2010 – 2012)
- Extensive Asbestos Abatement of Buildings
- Demolition of more than 80 Buildings
- Construction of Barrier around the Open Pit
- Removal of physical, chemical and biological hazards
- Disposal of Demolition Debris
- Off Site Disposal of Hazardous Waste

Work remaining to be Completed

- Cover of Mine Tailings
- Water Treatment
- Handling of Waste Rock
- Re-Vegetation
- Ongoing Monitoring

Thank You!



Any Questions?

For more info – www.saskcleans.ca
www.quantummurray.ca
tamara.yankovich@src.sk.ca
jasonk@quantumgroup.ca