

# Elliot Lake City Council

## December 9, 2013

Rio Algom Limited  
Denison Mines Inc.



Rio Algom



# Introduction

- **Ian Ludgate**
  - Manager, Denison Mines Inc.
- **Debbie Berthelot**
  - Reclamation Manager, Rio Algom Limited

# Overview

- **Denison Mines Inc. Activities**
- **Rio Algom Limited Activities**
- **Monitoring Program Review**



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# Denison Activities

- Denison ETP relocation
- Beaver Lake Siphon Work
- Dam Safety Review
- CNSC Licence Changes



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# ETP Relocation

- ETP relocation Project completed over the last year
- New location providing more effective treatment
- Top – Prior to construction
- Bottom – In progress



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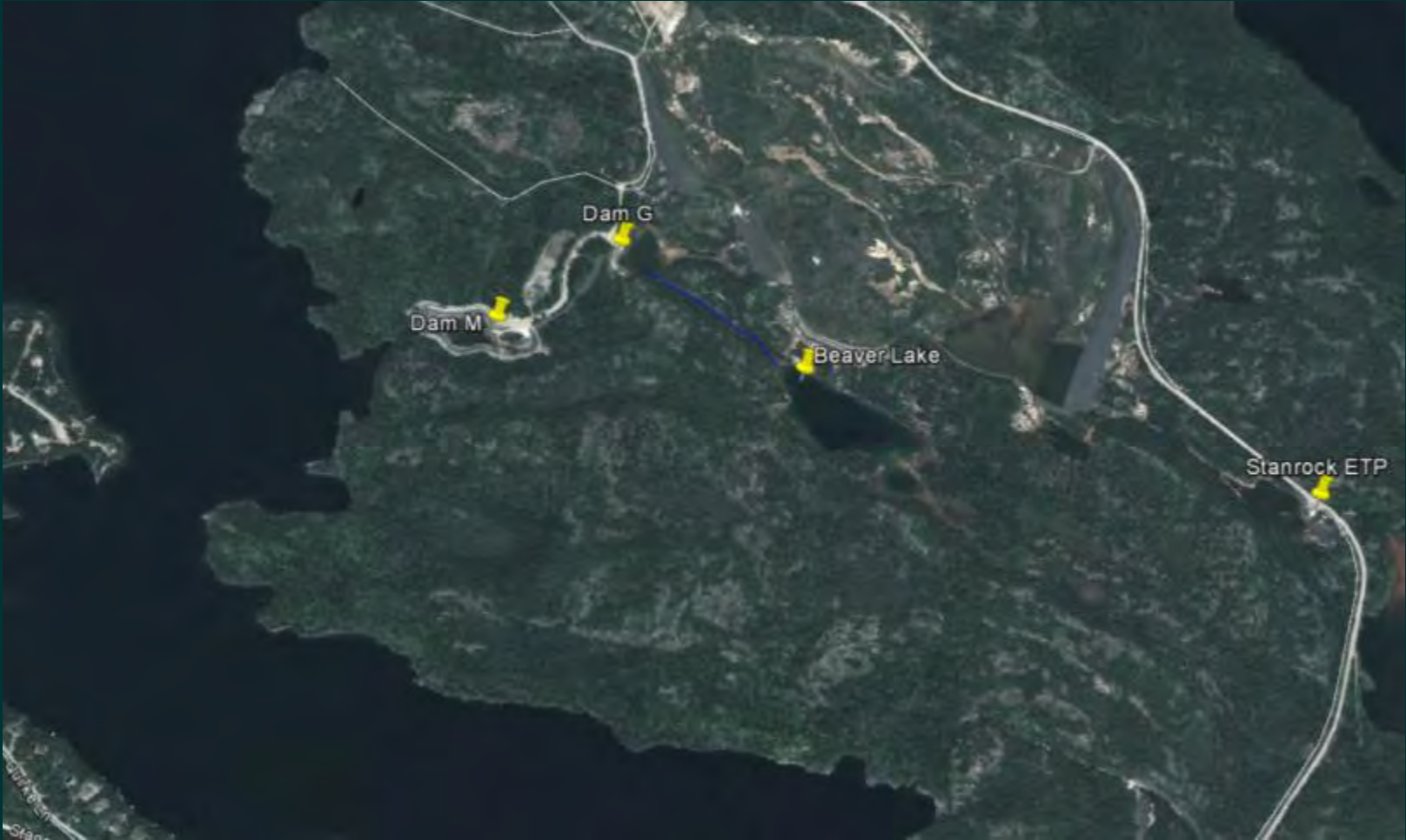
# ETP Relocation



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# Beaver Lake Siphon



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# Beaver Lake Siphon

- New deep sump location dug at siphon intake in Beaver Lake
- Regrading of the siphon line also completed



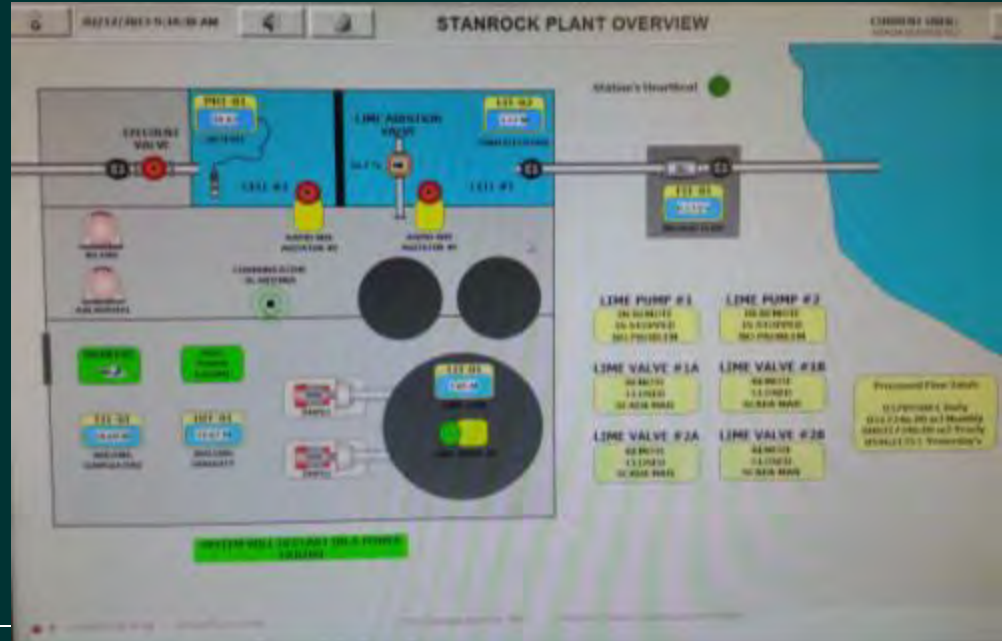
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# Communication Upgrade

- Communication upgrades for remote monitoring of the water treatment systems at both Denison and Stanrock sites have been completed
- Supervisory Control and Data Acquisition System (SCADA) allows Remote control and monitoring of ETPs and Pump Stations;



# Dam Safety Review

- **Knight Piesold awarded contract to perform Dam Safety Review (DSR) for Denison sites.**
  - DSR uses guidelines established by the CDA and the MNR Lakes and Rivers Improvement Act (LRIA)
- **Site visit and draft hazard assessments have been completed.**
- **Final draft report expected by the end of the year.**



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# CNSC Licence Changes for Denison

- Denison currently has two UMDL licences - one each for Denison and Stanrock
- A single new licence will consolidate the two UMDL's into one WFOL
- The change is primarily administrative and reflects the change from “decommissioning the sites” to “decommissioned sites”

# Rio Algom Activities

- **Quirke Settling Pond Maintenance**
- **Dam Safety Review**

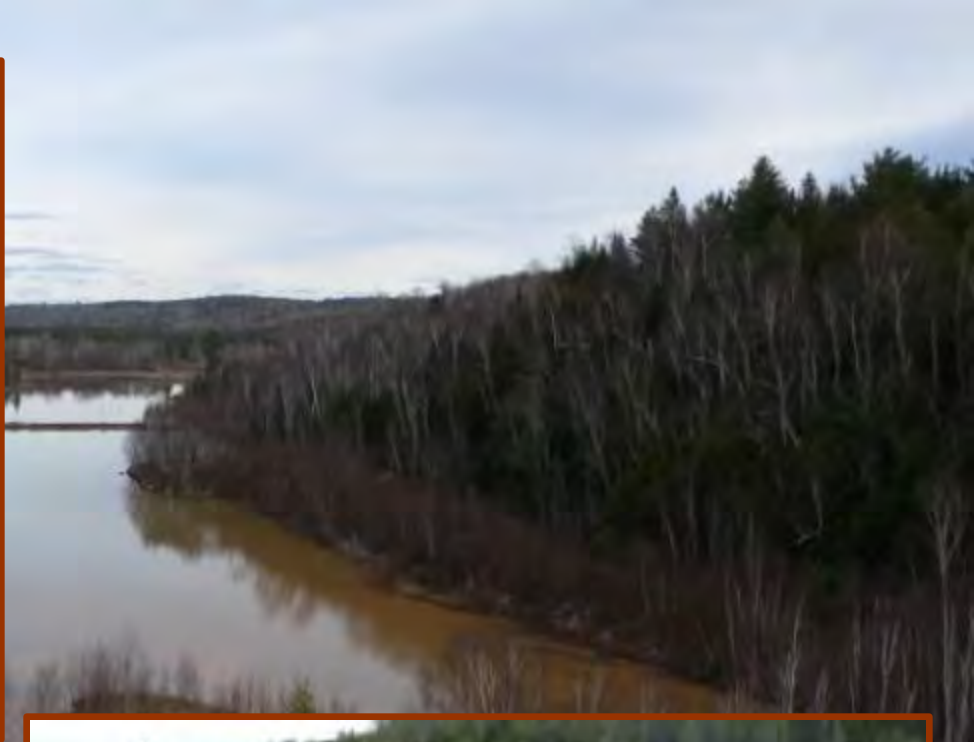


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# F14 Quirke TMA Maintenance







# Dam Safety Review

- Conducted in conformance with Canadian Dam Association *Dam Safety Guidelines* and Ministry of Natural Resources *Dam Safety Review Best Management Practices*
- Performed by third party geotechnical engineering firm: Klohn Crippen Berger
- Key findings
  - Earthquake and flood design events are consistent with current standards
  - All structures conform with current design criteria
  - Monitoring and maintenance programs are effective in maintaining structures



# Environmental Monitoring



- On-going water quality monitoring at 16 locations and environmental effects monitoring program conducted in 1999, 2004, 2009
- July 2011 Denison and Rio Algom issued the State of the Environment Report to regulators and stakeholders
- Next five year review scheduled for 2014; program design submission to regulators January 2014

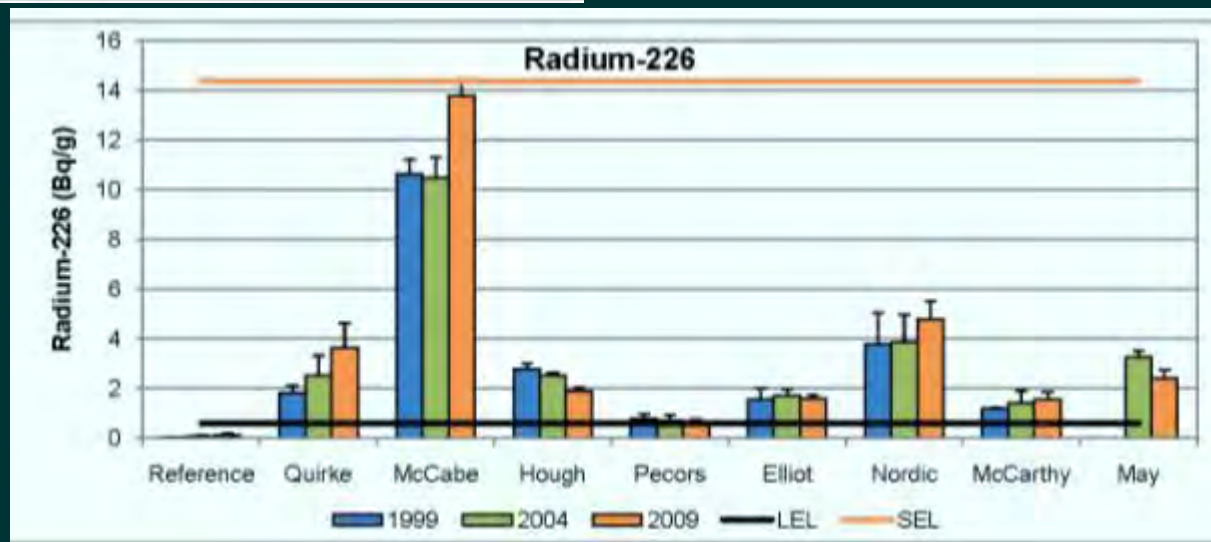
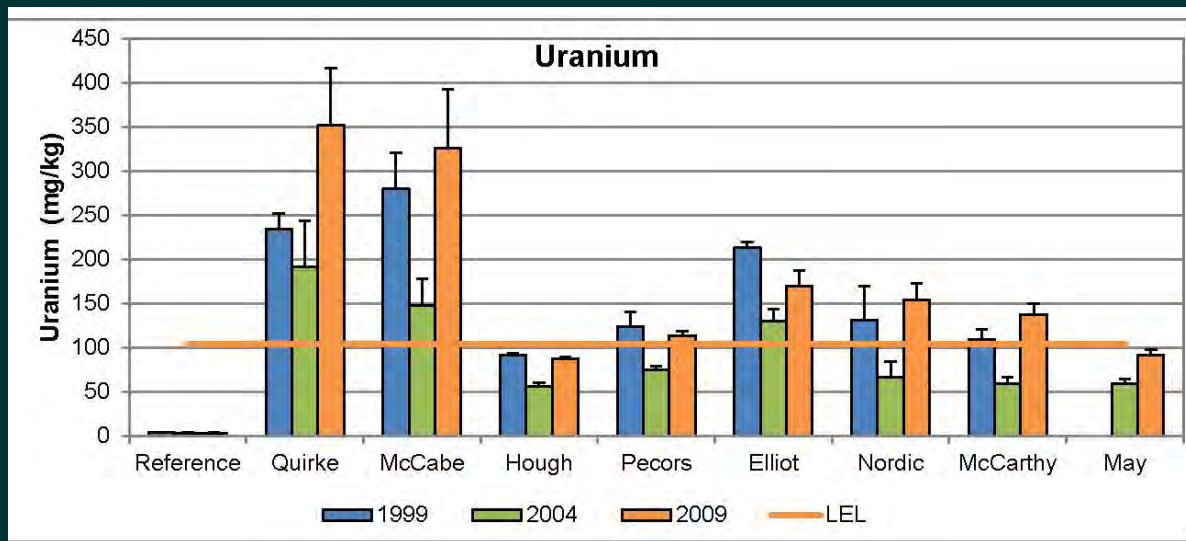
# 2013 Water Quality

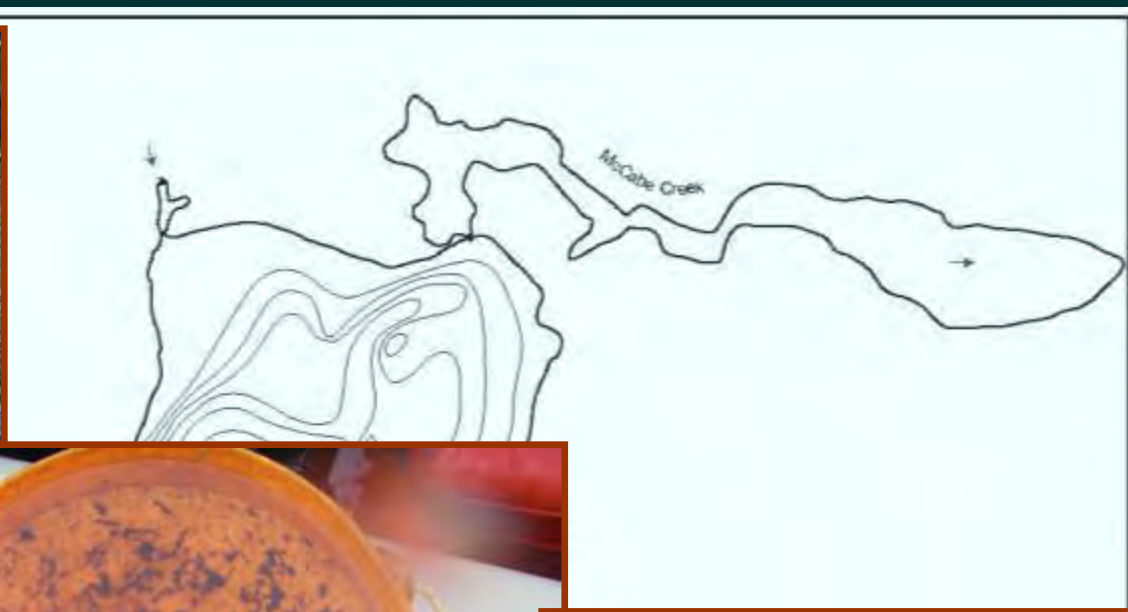
		Barium <sup>3</sup>	Cobalt <sup>2</sup>	Iron <sup>1</sup>	<sup>3</sup> Radium <sup>226</sup>	Sulphate <sup>4</sup>	Uranium <sup>2</sup>
Benchmark	Unit	1	0.0025	0.47	1	128-429	0.015
Lake	Unit	(mg/L)	(mg/L)	(mg/L)	(Bq/L)	(mg/L)	(mg/L)
Dunlop		0.013	<0.0005	0.04	<0.005	4.3	<0.0005
Ten Mile		0.011	<0.0005	<0.02	<0.005	4.4	<0.0005
Quirke		0.038	<0.0005	-	0.025	39.0	0.0012
Sheriff Crk		0.017	0.0005	0.56	0.022	13.0	0.0035
Westner		0.012	<0.0005	0.12	<0.005	23.0	<0.0005
Nordic		0.020	<0.0005	-	0.025	171.0	0.0010
McCabe		0.274	<0.0005	-	0.052	58.5	0.0010

## Notes:

1. Upper limit of background based on 2005 -2009 reference stations
2. Canadian Water Quality Guidelines
3. Ontario water quality objective for protection aquatic life
4. British Columbia water quality objective for protection of aquatic life

# Sediment Quality





# Rate of New Sediment Formation

Lake	15 m Benthic Station		Deepest Part of Lake		
	Unit	(mm/y)	(y/1 cm)	(mm/y)	(y/1 cm)
Quirke				0.3	33
Nordic		0.6 - 1.1	10 - 18	0.7	13.5
McCabe		0.40 - 0.44	22	0.6	16.5

Questions?



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