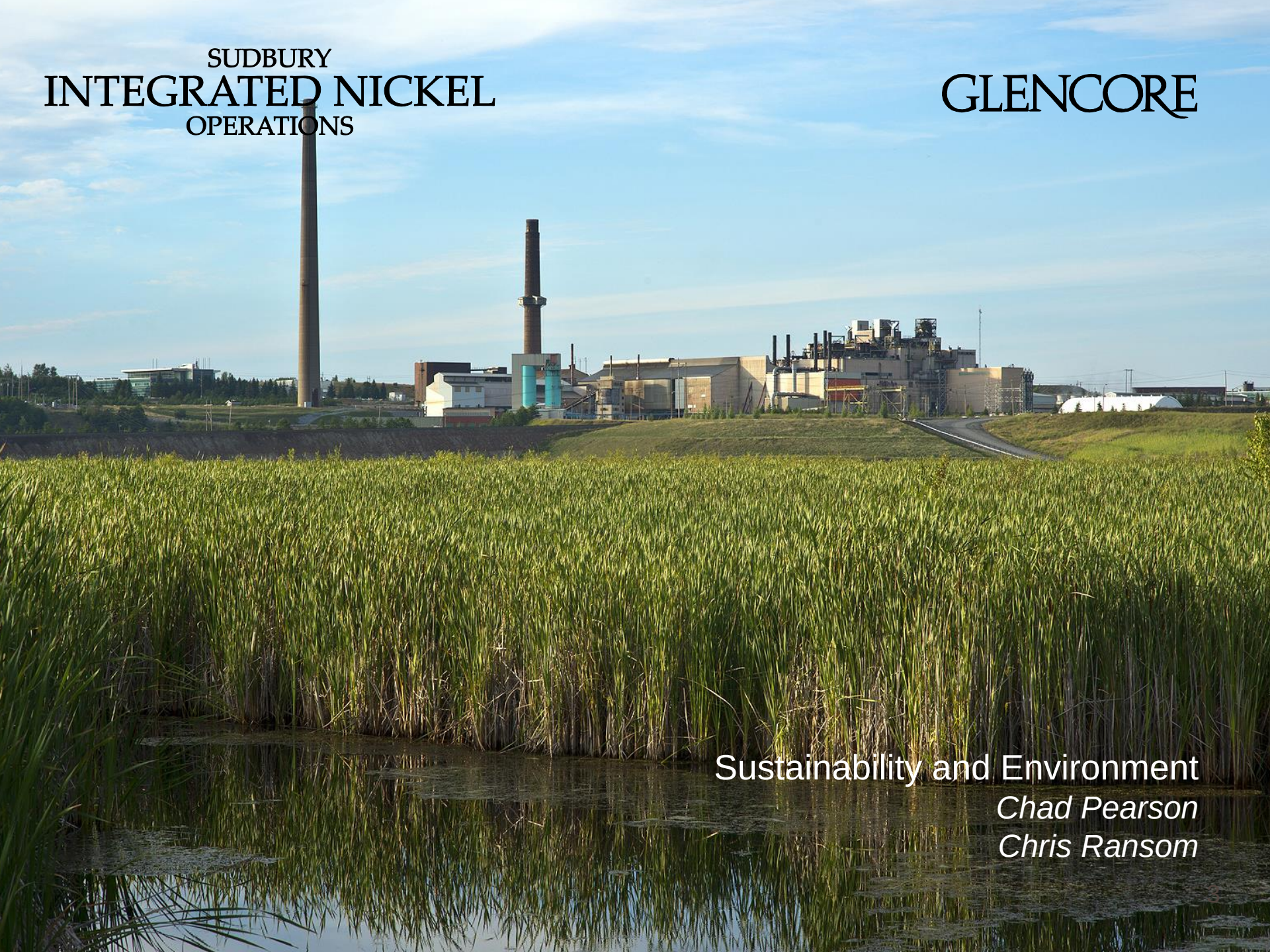
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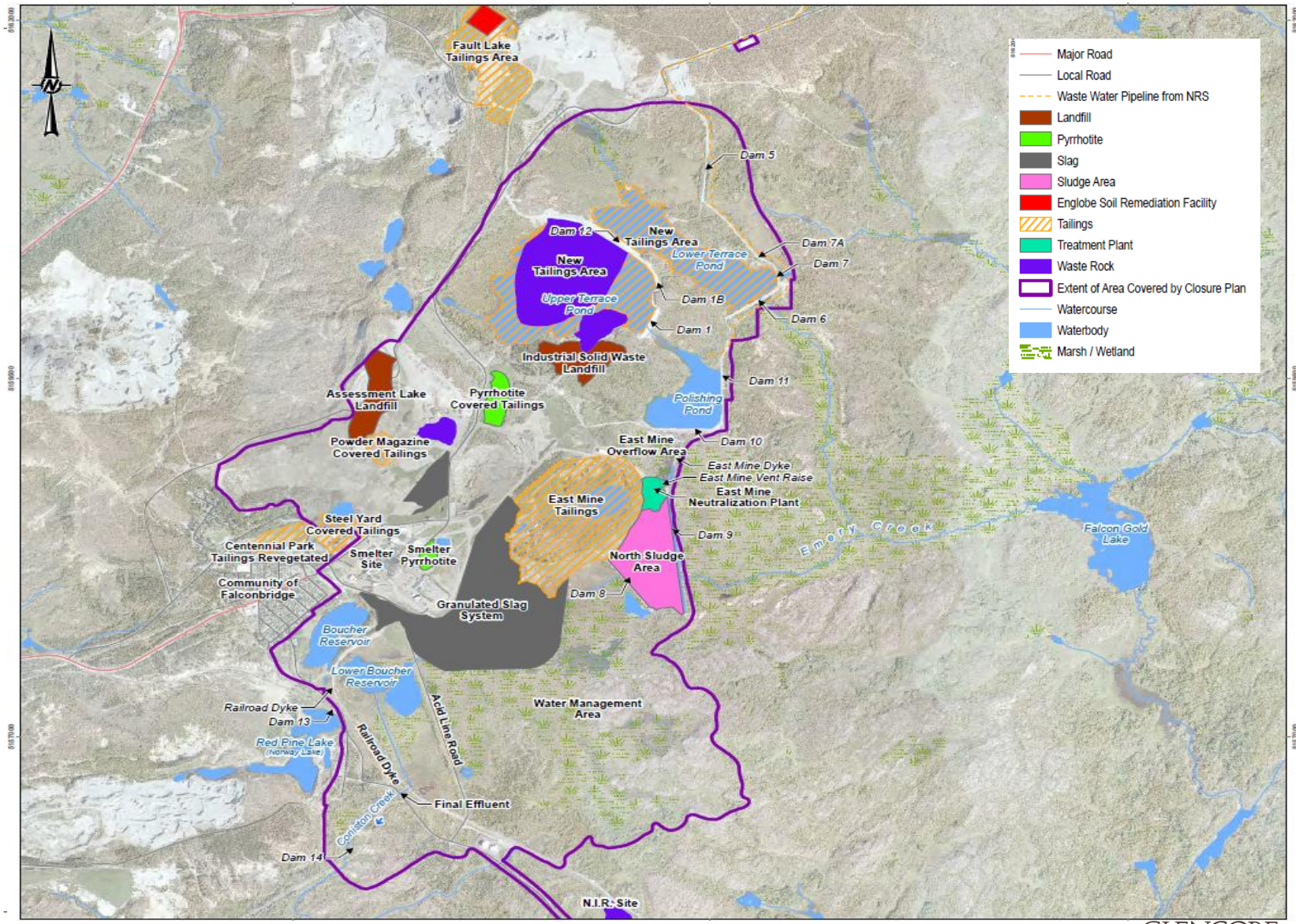
Sustainability and Environment
Chad Pearson
Chris Ransom

Sudbury Smelter

Smelter Site



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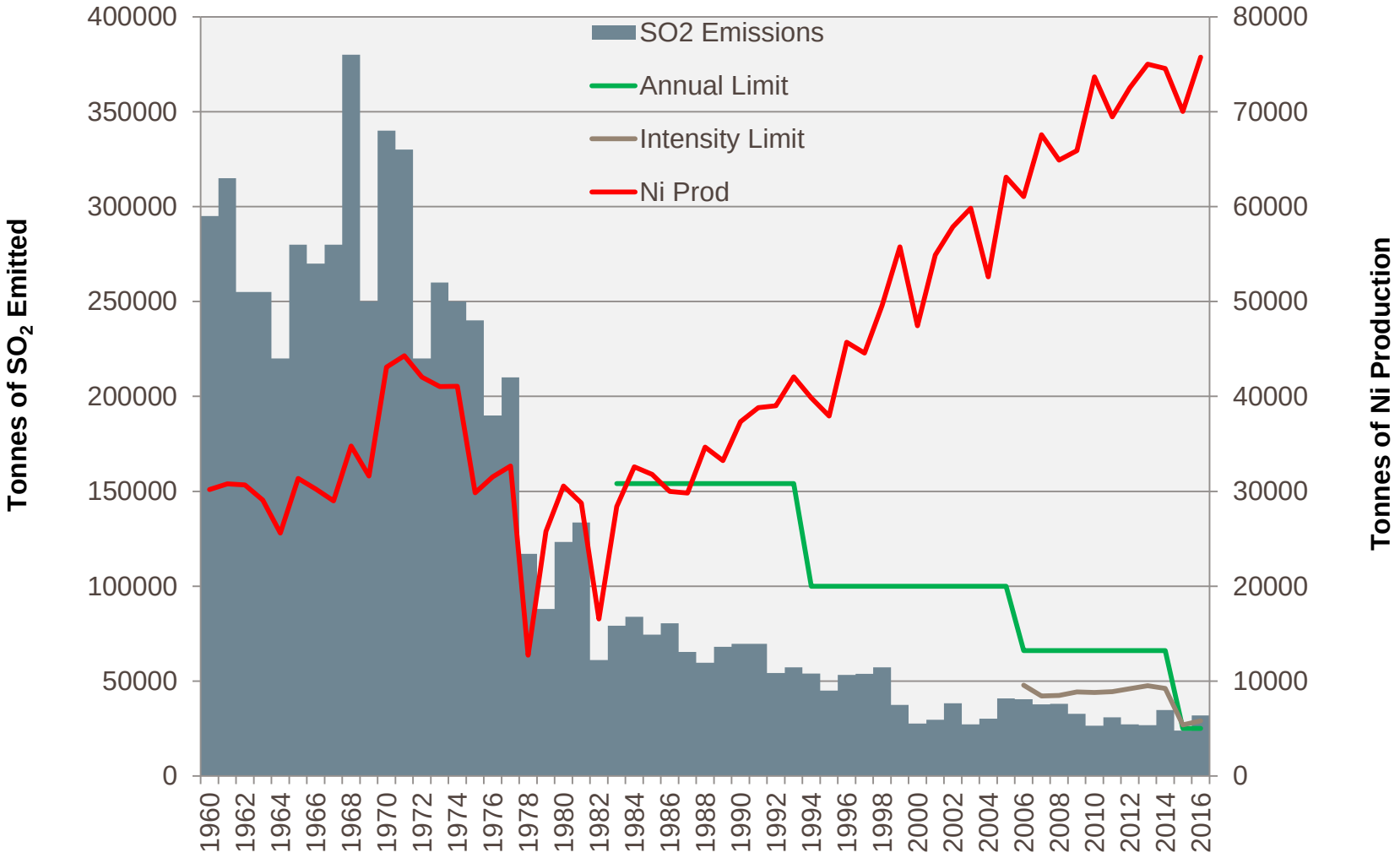
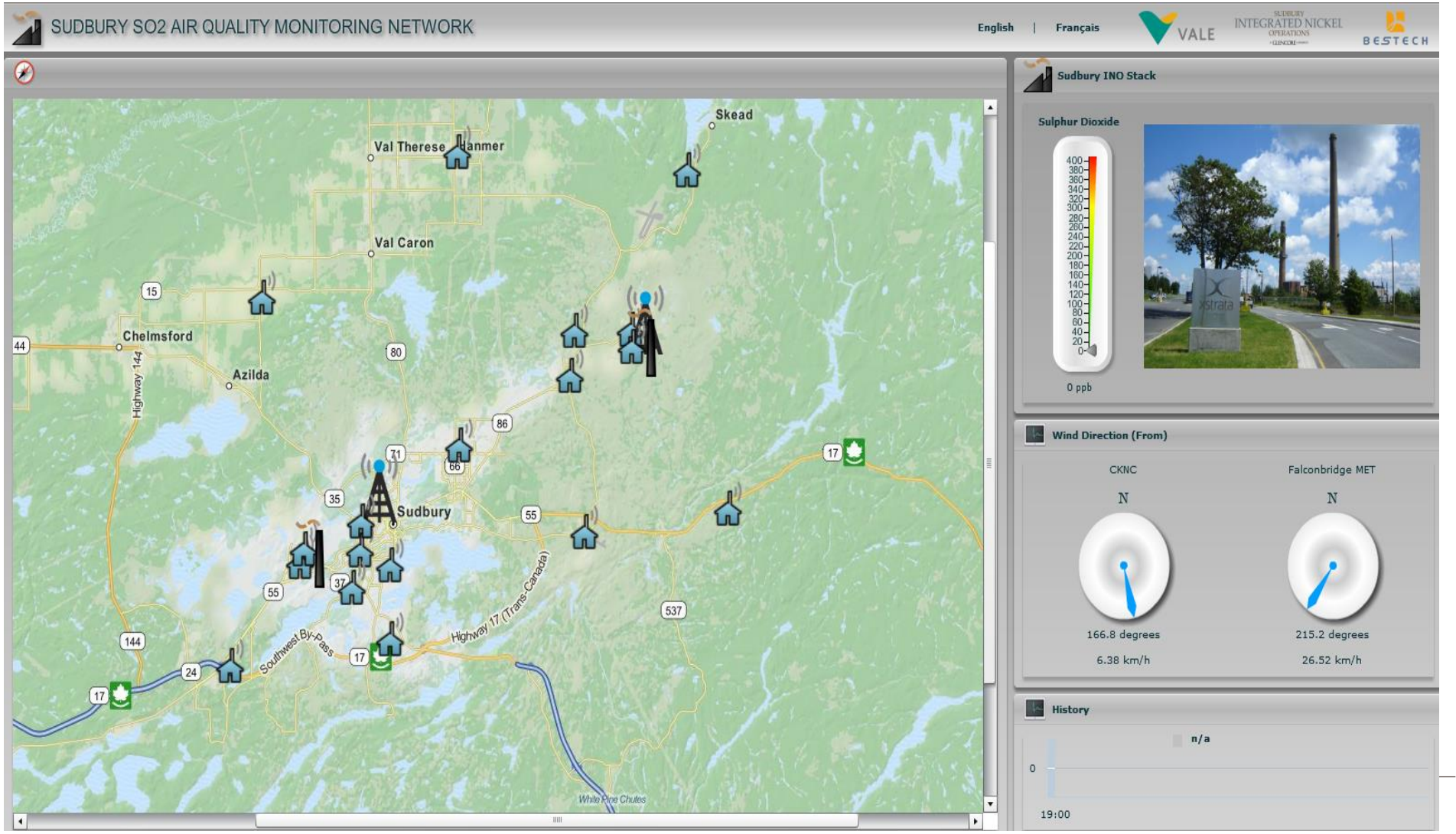
Sudbury INO Smelter
SO_2 Emission Reductions 1960 -2016



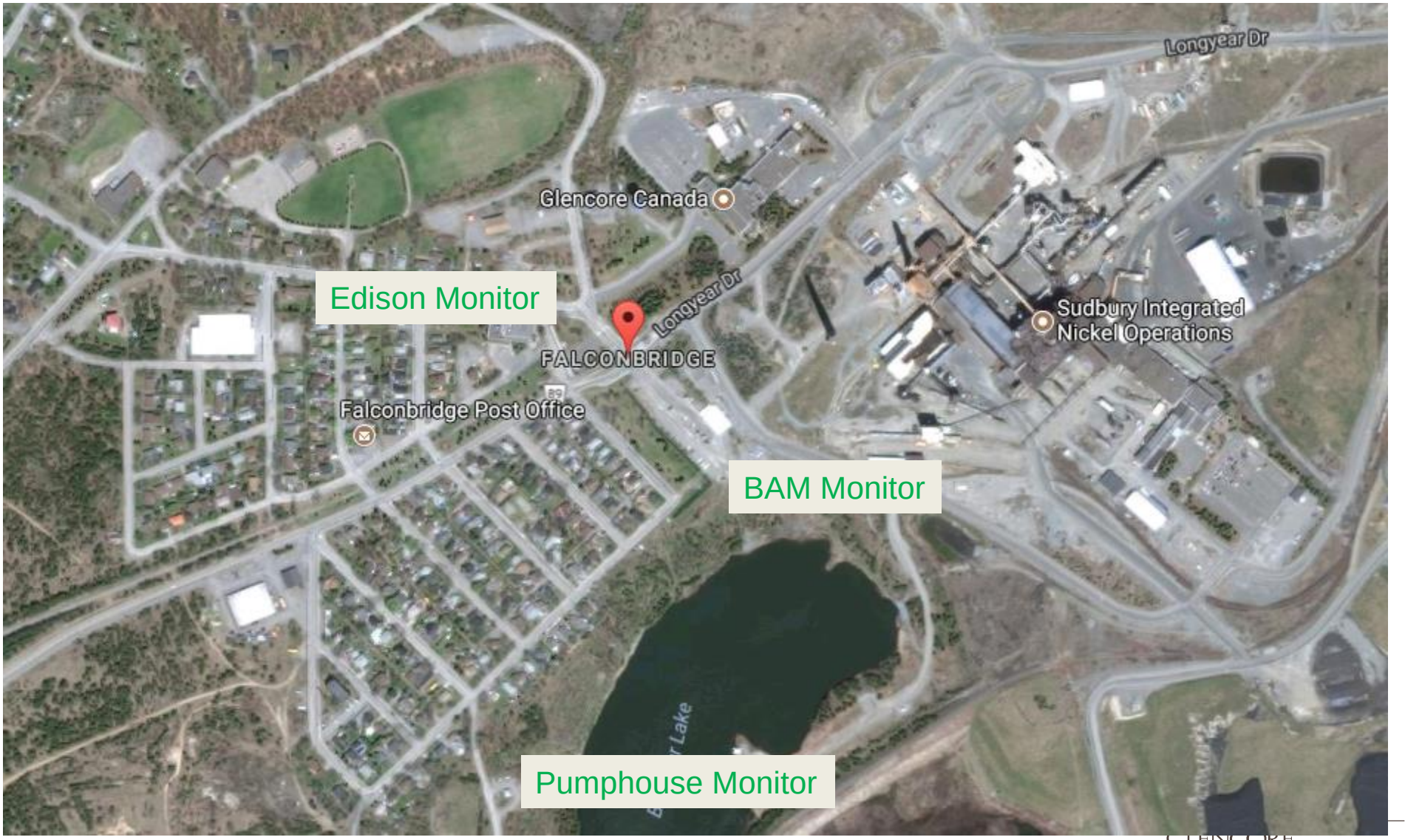
Sulphur Dioxide Monitoring System Overview (CAPs)



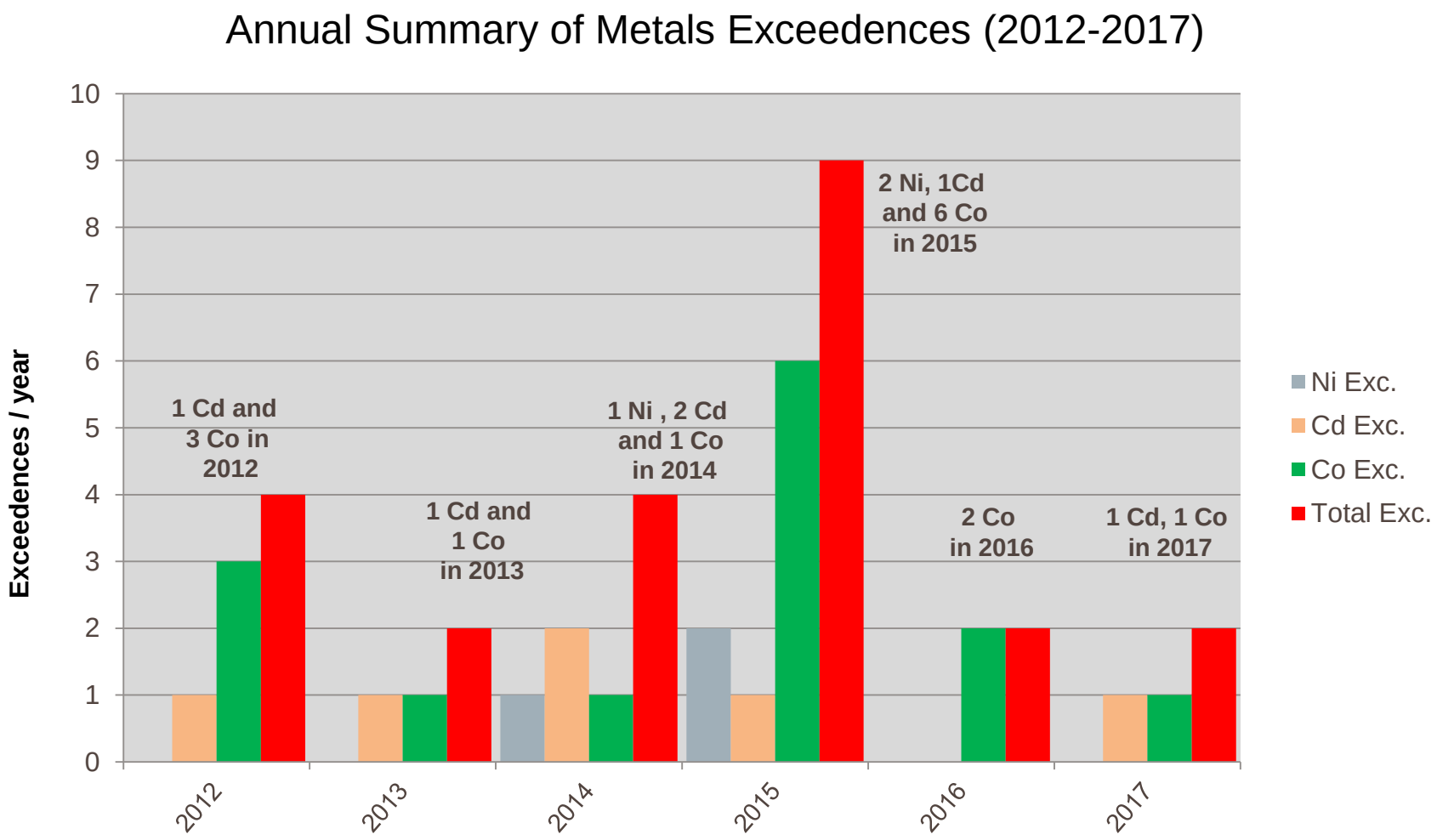
Sulphur Dioxide Monitoring & Auditing

- **Ontario Regulation 194 regarding total Sulphur Dioxide emissions is audited by a third party annually.**
- **Ontario Regulation 419 regarding ground level concentrations.**
  - Monitors operate 24/7
  - Monitors managed by a third party
  - Network shared between Vale and Glencore
  - Each monitor is audited by the Ministry of Environment & Climate Change (MOECC) annually
  - All data collected is submitted to the MOECC an annual basis.
- **All Standard Operating Procedures regarding Sulphur Dioxide are audited on a three year cycle.**

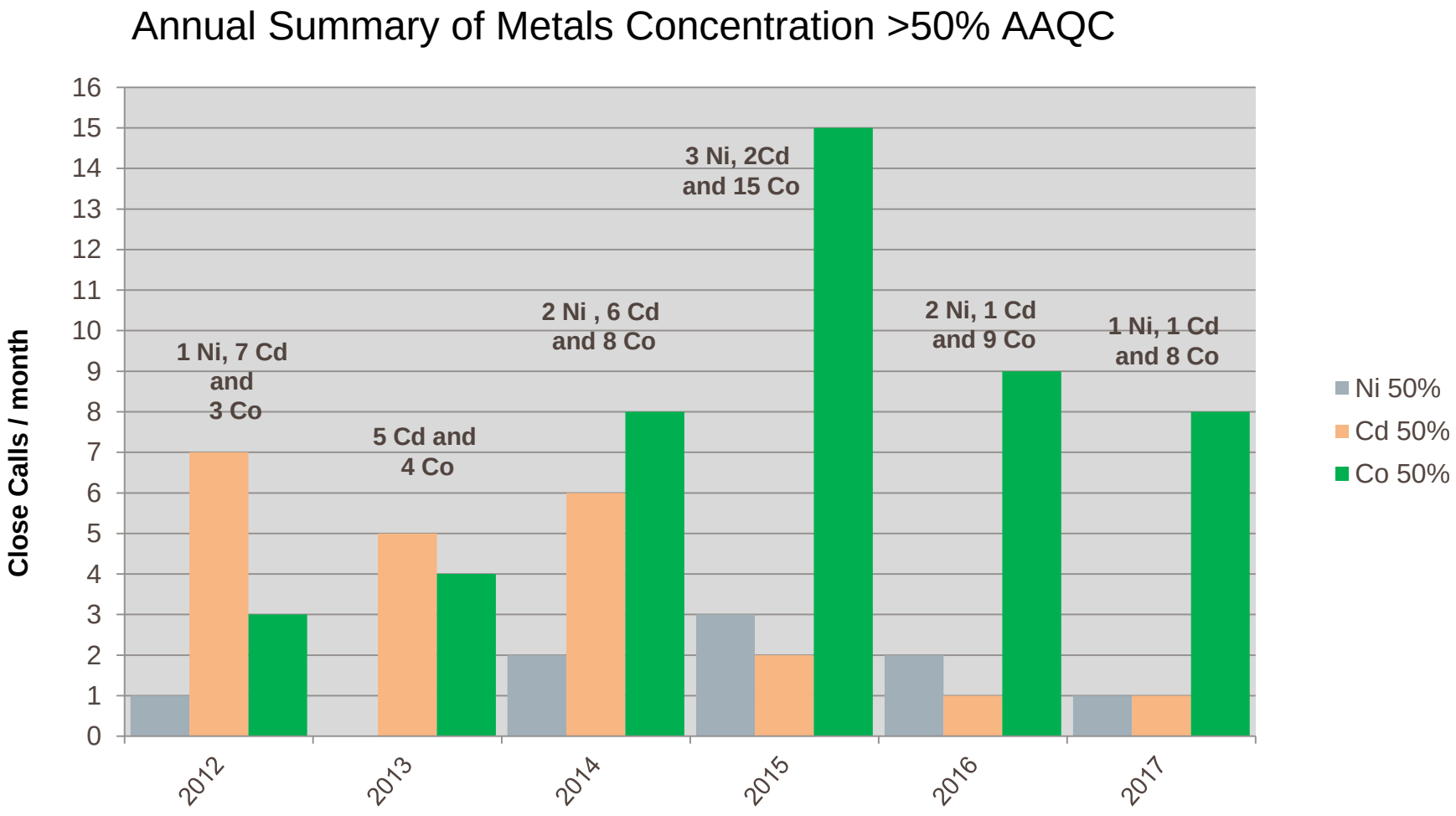
Metals Monitoring Network



Annual Summary of Metals Exceedance



Annual Summary of Metals > 50% of AAQS



TSP/Metals Monitoring and Auditing

- **Samples are taken every three days and filters are sent to Glencore's lab for analysis (24 hour)**
- **O Reg. 419 regarding ground level concentrations.**
  - Monitors managed by Glencore
  - Each monitor is audited by the MOECC annually
  - All data collected is submitted to the MOECC a quarterly and annual basis.
- **All SOPs regarding TSP/Metals are audited on a three year cycle.**

Noise Mitigation: “Living Wall” Noise Barrier



Fall 2012

August 2013



Noise Complaints In 2017

- There were 2 noise complaints in 2017.
- Administrative controls in place around the process causing the complaints. Engineered solutions are being developed
- Annual noise assessment performed by a third party

Fugitive Dust Management



Increased concentrate storage capacity



Road dust control



Two regenerative road vacuum trucks (TYMCO)

Reporting / Auditing Requirements

Air Reporting Requirements 2017	
	Deadline
1) Site Specific Standards for Cd, Ni and SO2 ANNUAL Report	March 31
2) Regulation 194	
Section 49 Report	Mar 1
Application for Reporting and Retirement	Mar 31
Application for 2016 SO2 allowance	June 1
3) ECA Air (Feb 6, 2013)	
SO2 Audit - Auditor report	March 31
ECA Quarterly Report - written summary of each modification - % availability of CEM system - complaints summary - SO2 Emission Summary (ECA says Mar 31 and Sept 30)	March 31
Environmental Management System and Community Engagement Report	March 31
Summary of 5 min SO2 data for previous year with statistics	March 31
EMT Meeting	May 31
EMT Meeting Minutes, newsletters and presentations	May 31
Annual Written Summary Smelter	June 1
Annual Written Summary NRS Mine	June 1 (current ECA)
Source testing reports - compliance stack testing and RATA	4 months after testing
source testing plan for converter aisle	Aug 6
4) HiVols	
Quarterly reports	45 days after quarter
Annual Report	May 15
5) SO2 Stations	
Quarterly reports	45 days after quarter
Annual Report	May 15
6) Federal and Provincial Reports via SWIM	
NPRI Smelter	June 1
NPRI & GHG Screening Nickel Rim South	June 1
TRA Annual Report	June 1
TRA Reduction Plans	Dec 31
P2 Report	June 1
GHG provincial	June 1
GHG federal	June 1
GHG audit verification	Sept 1

Smelter Water Management Area



Smelter Water Management Area



Fault Lake Aggregate Pit (Flux Source)



Nickel Rim South Waste Rock Management Area (New Tailings Area)



Slag Management Area



Water Management Program

- Water monitoring program under Provincial (MISA) and Federal (MMER) regulations
- Zero Final Effluent exceedances since August 2011
- Extensive groundwater monitoring network
- Operation, Maintenance, Surveillance Manual in place, updated 2016 (follows the Mining Association of Canada framework)
- Internal and third party inspection programs


Questions

Nickel Rim South Mine

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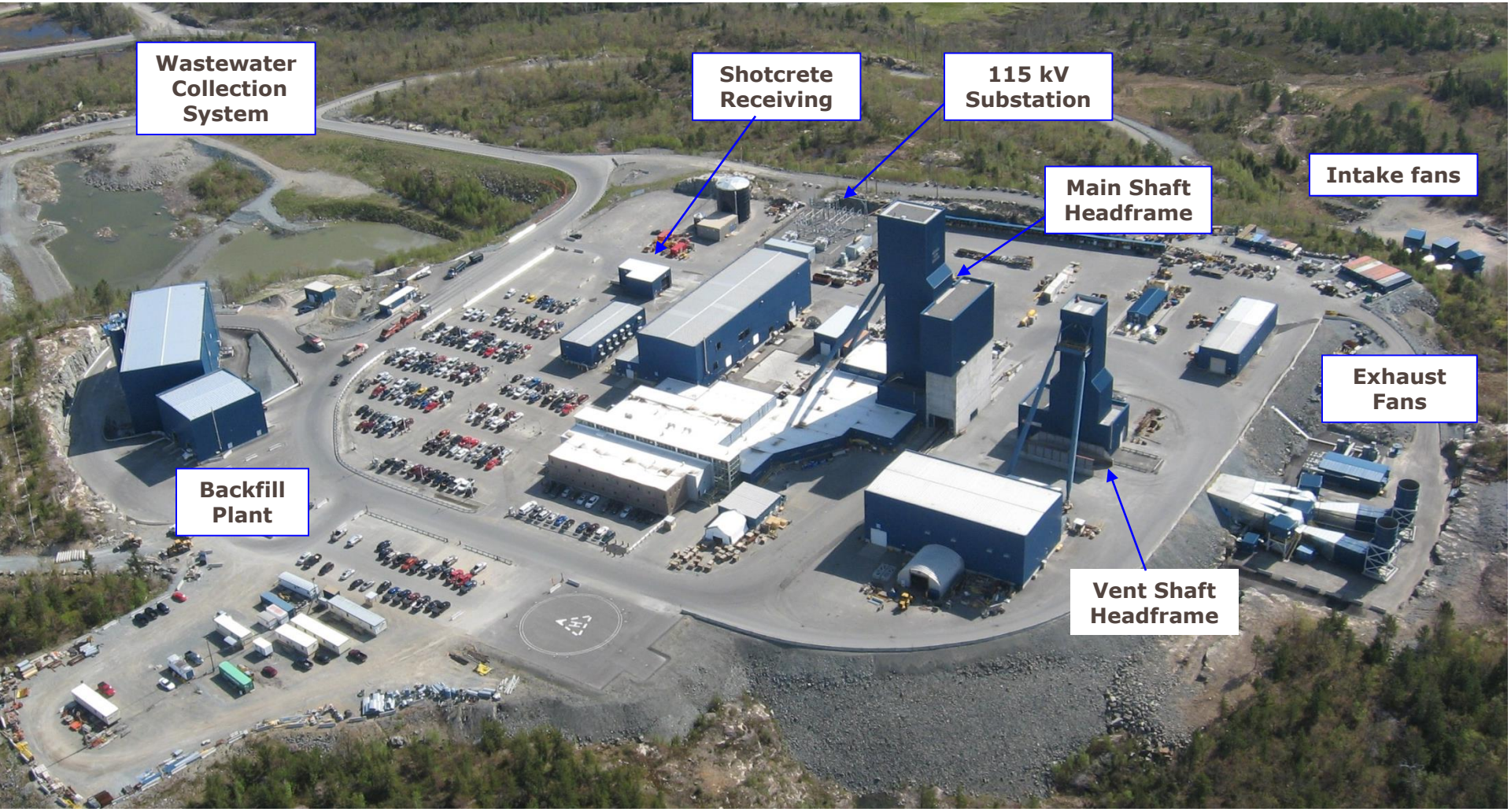
Nickel Rim South Mine
Overview

Nickel Rim South - Footprint



Permanent Office/Dry
Shop Complex



New Admin/Dry Building

- Modular steel pre-fab 630m^2 floor area
- Accommodation for 500 in Drys and 75 office staff
- Finished and trucked in 130 units
- Leadership in Energy & Environmental Design (LEED) gold standard(Design & Construction)
- Designed and fabricated by NRB, Grimsby ON
- Design, fabricate & erect period – 12 months

Ventilation on Demand

Objectives:

- Optimize quality & usage of the limited fresh air supply volume, while supporting the level of activity required to achieve planned production rates.
    - Operation is limited to 570m3/s (1.2mcfm) due to velocity in main shaft.
    - Increased heat with depth.
- Potential for reduction in power consumption.
- Potential for reduction in natural gas consumption.

Ventilation System



Exhaust Fans Installation

- **Intake fans 3x 450hp Howden, vent via adit down MS.**
- **Exhaust 2x 4000hp Howden fans, up VS.**
- **Ventilating capacity 1.2M cfm.**
  - 80% production capacity sustainable from single fan
- **Installed spare VFD provided for the exhaust side.**

Environmental Management Nickel Rim South Mine

Paved Site Surface Liner

- Surface water collected reducing impacts to ground and surface water
- Reduced closure costs
- Improved site cleaning and management of fugitive dust emissions

Water Collection & Treatment

- Site surface & underground mine water collected and transferred to an approved treatment system

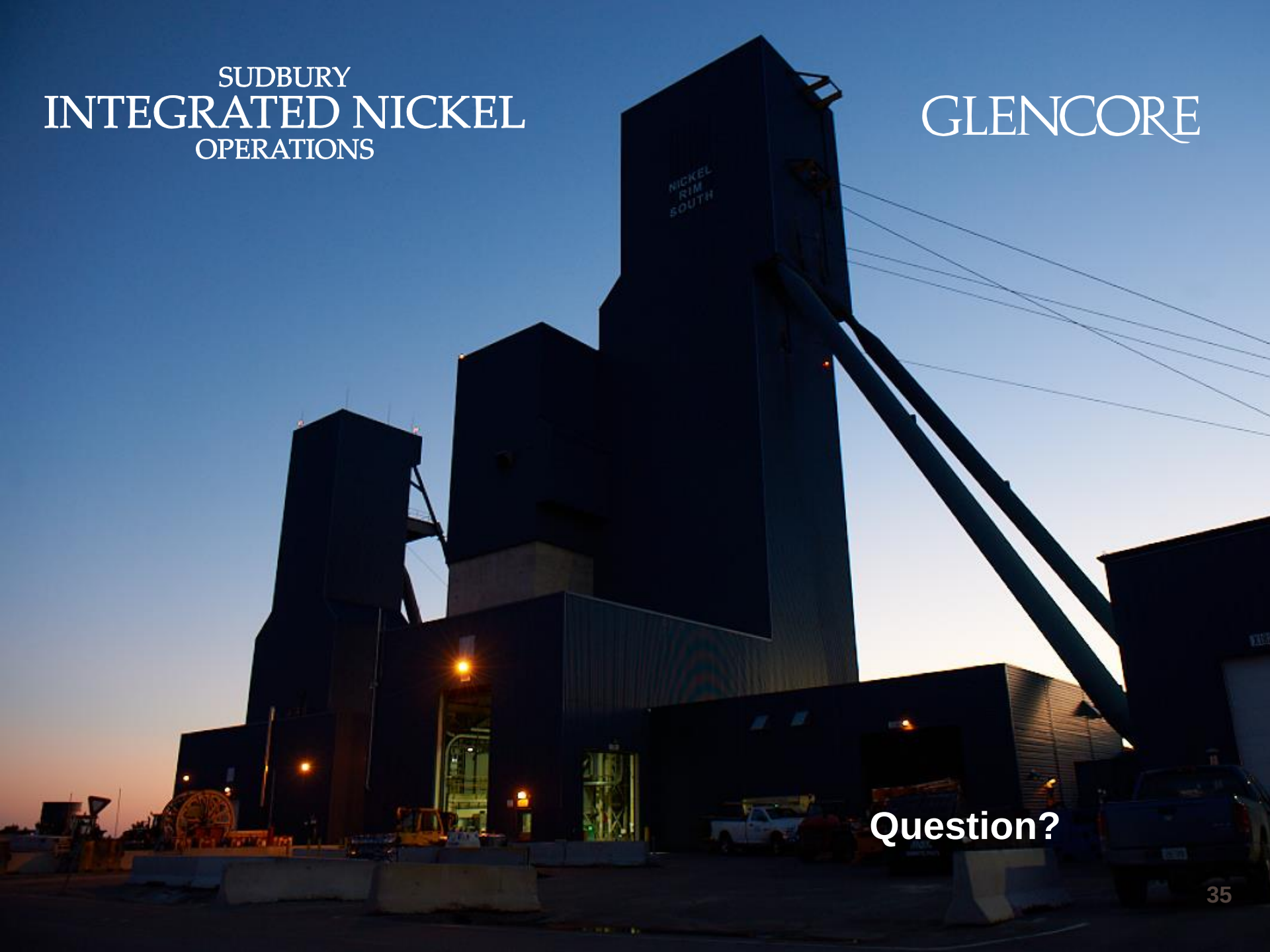
Mine Waste Rock Management

- Potentially acid generating waste rock is deposited within an approved treatment system (sub-aqueous disposal)
- No storage of acid generating waste rock onsite

Environmental Management– con't

Air & Noise Management

- Material Handling & Storage Best Practices in place mitigating fugitive emissions
- Water Particle separation from mine air exhaust reducing hydrocarbon and metals emissions
- Noise dampening systems installed on mine air exhaust system & site emergency back-up generator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NICKEL
RIM
SOUTH
Question?