



# Mining and Great Lakes Communities:

## Past, Present and Future Concerns for the Environment

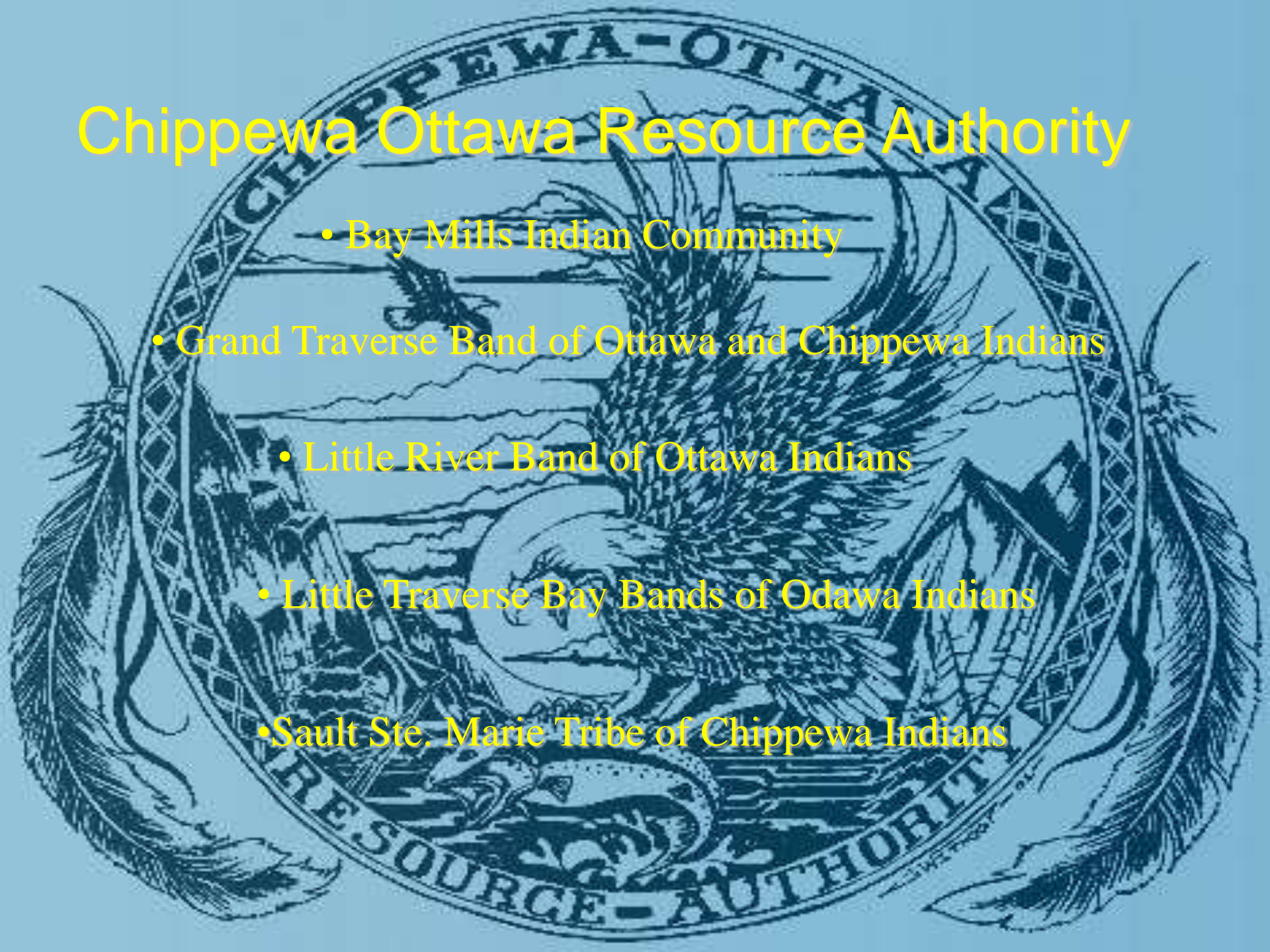
By Mike Ripley  
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For the Great Lakes Cities Initiative  
Marquette, MI  
June 20, 2013





# Chippewa Ottawa Resource Authority

- Bay Mills Indian Community
- Grand Traverse Band of Ottawa and Chippewa Indians
- Little River Band of Ottawa Indians
- Little Traverse Bay Bands of Odawa Indians
- Sault Ste. Marie Tribe of Chippewa Indians





Ceded waters of Chippewa-Ottawa Treaty of 1836

Figure 1

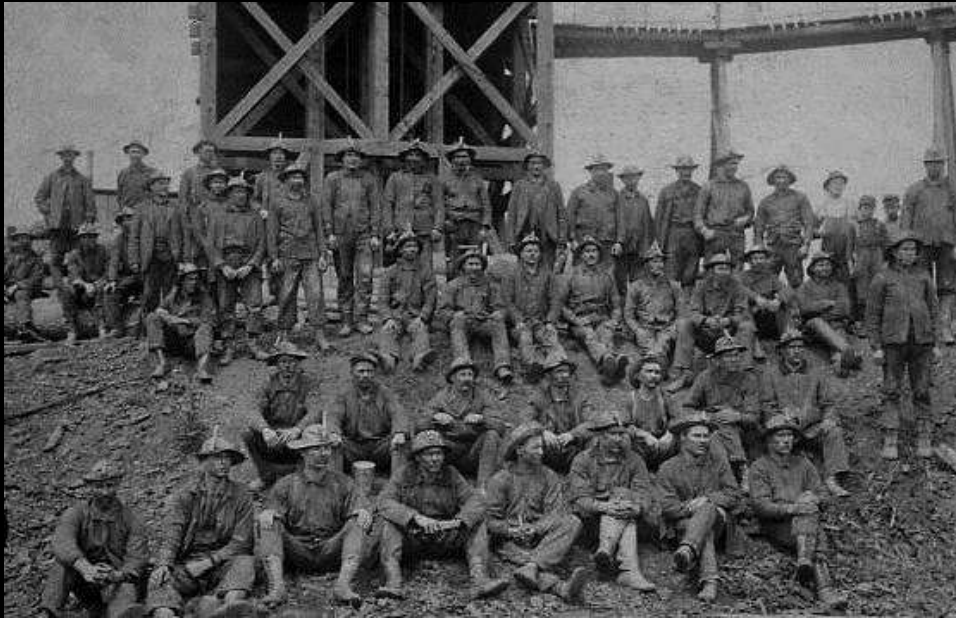


# The Lake Superior Binational Program

- Created Under the Great Lakes Water Quality Agreement between Canada and the United States.
- The Agreement Requires Lakewide Management Plans to “reduce loadings of Critical Pollutants in order to restore beneficial uses”
- Mining Committee created because there was realization that the goals could be compromised by large scale proposals



# Mines Once Employed Thousands in U.P.



Now We Have Highest Unemployment in State

# The Economic Anomaly of Mining

- The Economic Promise
  - Tremendous Wealth Extracted
  - High Wages Paid
- The Economic Outcome:
  - Depressed and Rundown Towns & Regions
  - Lower Average Incomes, Higher Unemployment and Higher Poverty
  - Mining Regions Are Economically Depressed Regions



# Our Communities are also Burdened with the Environmental Legacy of Mining





# Stamp Sands in Keweenaw Peninsula Still Impacting Lake Superior

- Estimated 360 million metric tons of stamp sands dumped into Lake Superior and inland waters
- This material may also contain large amounts of mercury – is it contributing to high levels in fish?
- Torch Lake Superfund site is also Lake Superior Area of Concern (AOC)





# Reserve Mining Company Discharged Directly to Lake Superior at Silver Bay, MN

- Over 500 million metric tons of pulverized iron tailings dumped into Lake Superior
- Tailings contained asbestos-like minerals that contaminated Duluth and Superior drinking water
- Landmark EPA case in 1970' s



# White Pine Copper Mine Was Major Contributor to Mercury in the Lake Superior Basin

- Smelter contributed 550 Kg/Yr of Mercury to the basin
- Over 14,000 acres of land in the Upper Peninsula was impacted due to the mine including wetland destruction and contamination with copper, mercury and industrial chemicals
- Mine was closed in 1995





# Wawa Sintering Plant was the largest contributor of Mercury on the Canadian Side of Lake Superior

- Plant processed high sulfur and arsenic bearing iron ore
- Contributed about 600 kg/yr of mercury
- The extremely high levels of  $\text{SO}_2$  and arsenic led to a “fume kill” zone that extended for 40 km
- Mine was shut down in 1998



# Taconite Mining Continues to Contribute Mercury

- Taconite processing on Minnesota's North Shore contributes about 380 Kg/Yr of mercury to the basin
- Expansion and additional mining and refining of ore could doom Zero Discharge Program to failure?

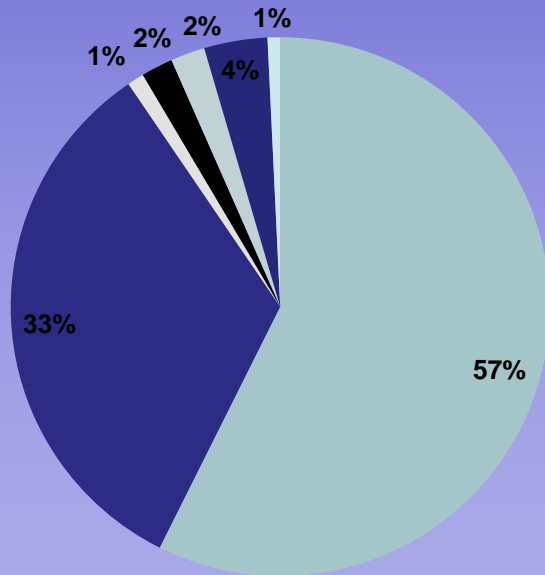




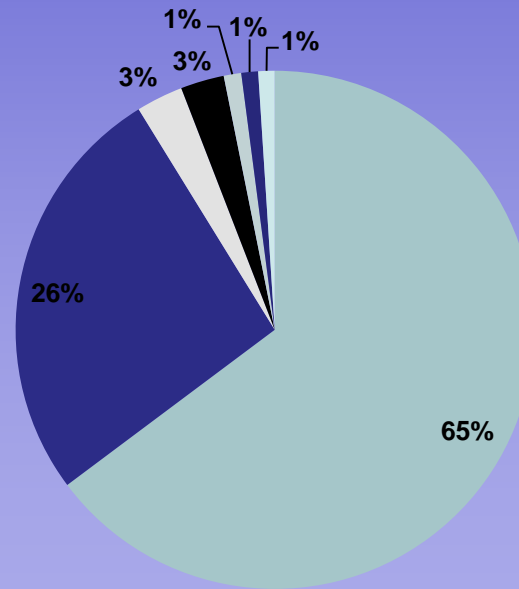
# Mercury Discharges and Emissions (kg/yr) from Sources in the Lake Superior Basin

## Percentage of Mercury Discharges and Emissions

**2005** (total 635 kg)



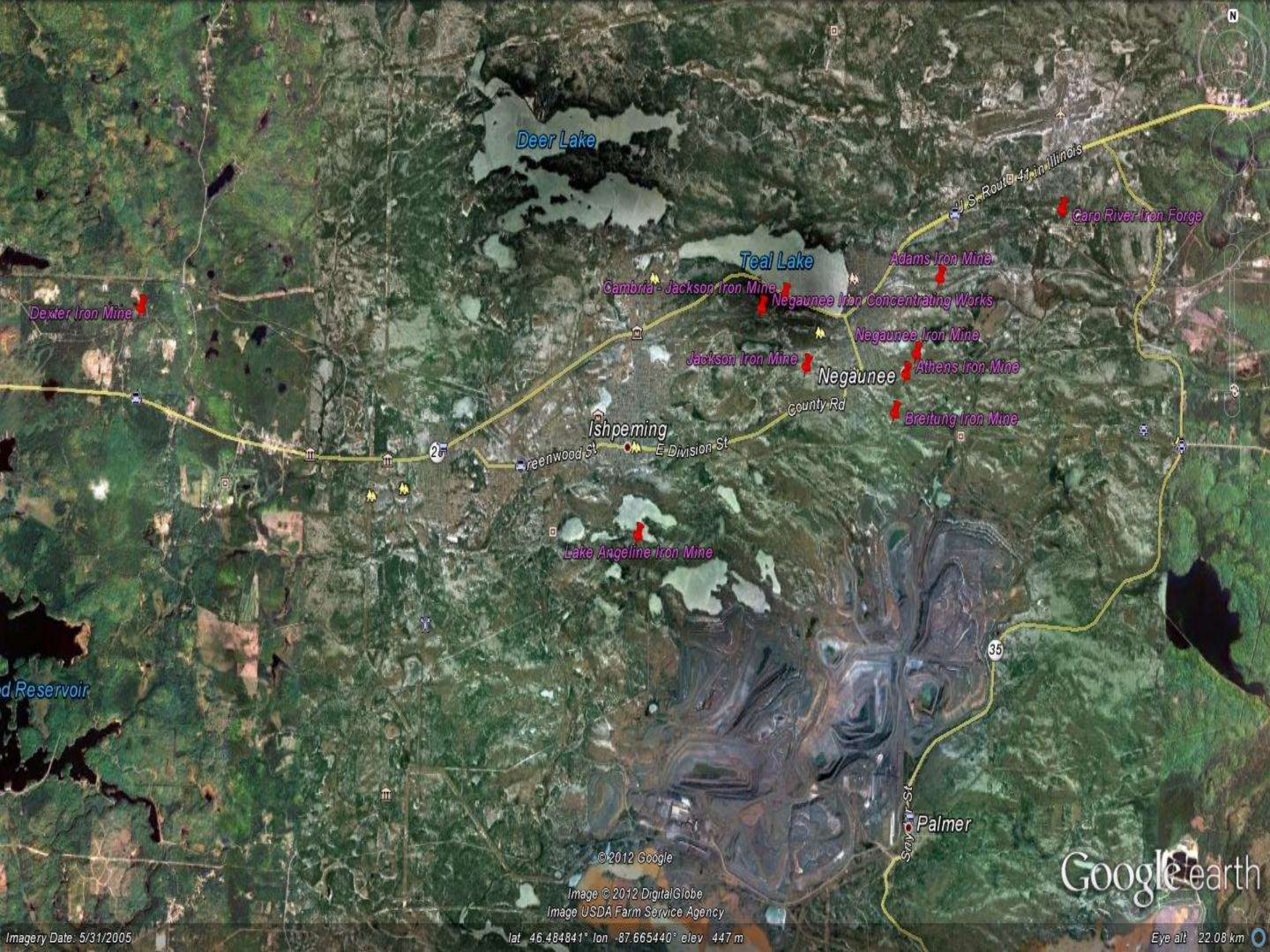
**2010** (total 431 kg)



- Mining/ Metals Production
- Fuel Combustion
- Incineration
- Waste Handling/ Landfills
- Municipal/ Institutional
- Product Volatilization
- Industrial







Deer Lake

Teal Lake

Dexter Iron Mine

Cambria-Jackson Iron Mine

Adams Iron Mine

Carp River Iron Forge

Negaunee Iron Concentrating Works

Negaunee Iron Mine

Jackson Iron Mine

Negaunee

Athens Iron Mine

Ishpeming

County Rd

Breitung Iron Mine

Greenwood St

E Division St

Lake Angeline Iron Mine

d Reservoir

35

Sayre St

Palmer

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Image USDA Farm Service Agency

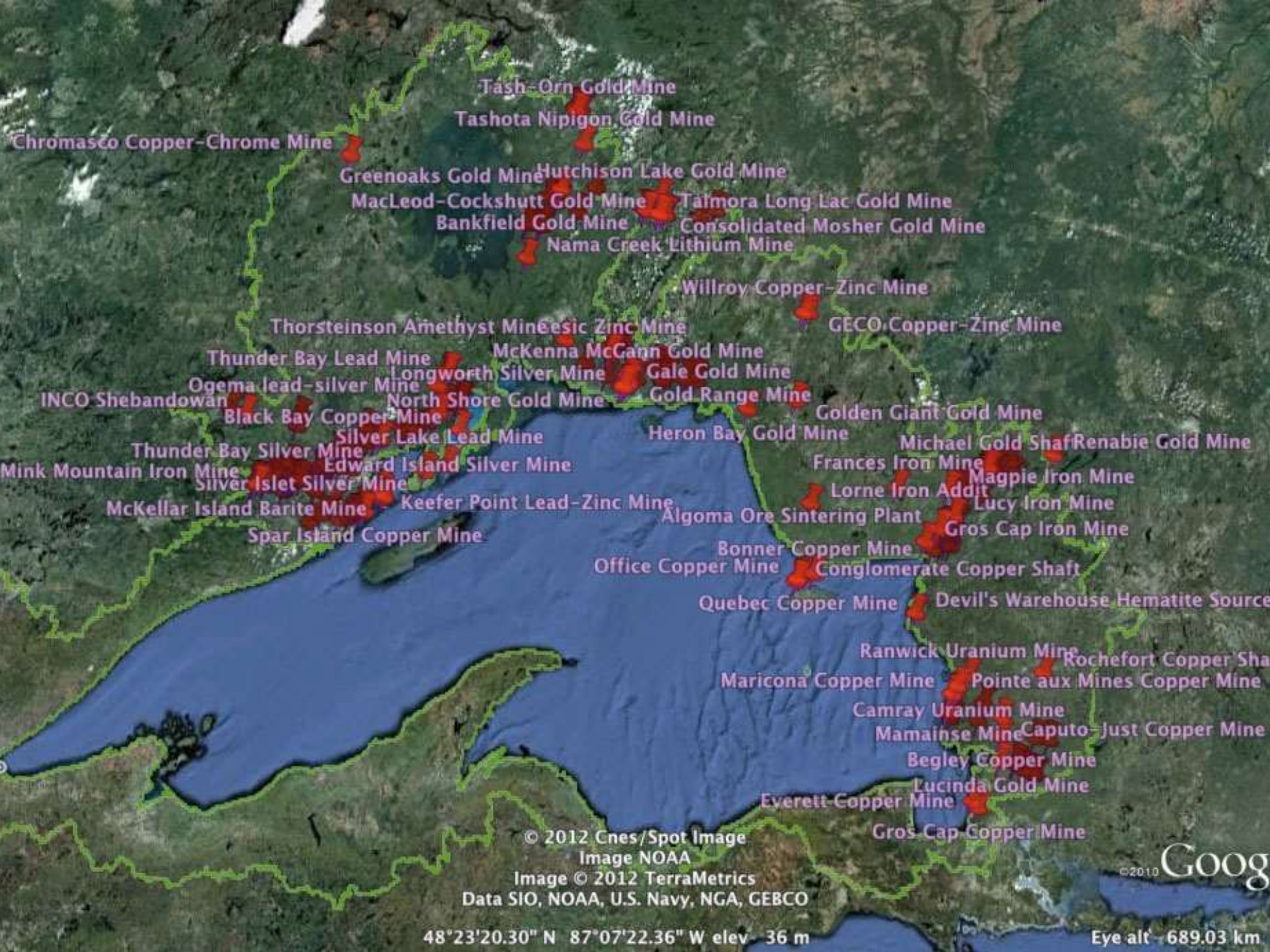
Google earth

Imagery Date: 5/31/2005

lat 46.484841° lon -87.665440° elev 447 m

Eye alt 22.08 km





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Image NOAA  
Image © 2012 TerraMetrics  
Data SIO, NOAA, U.S. Navy, NGA, GEBCO

48°23'20.30" N 87°07'22.36" W elev 36 m

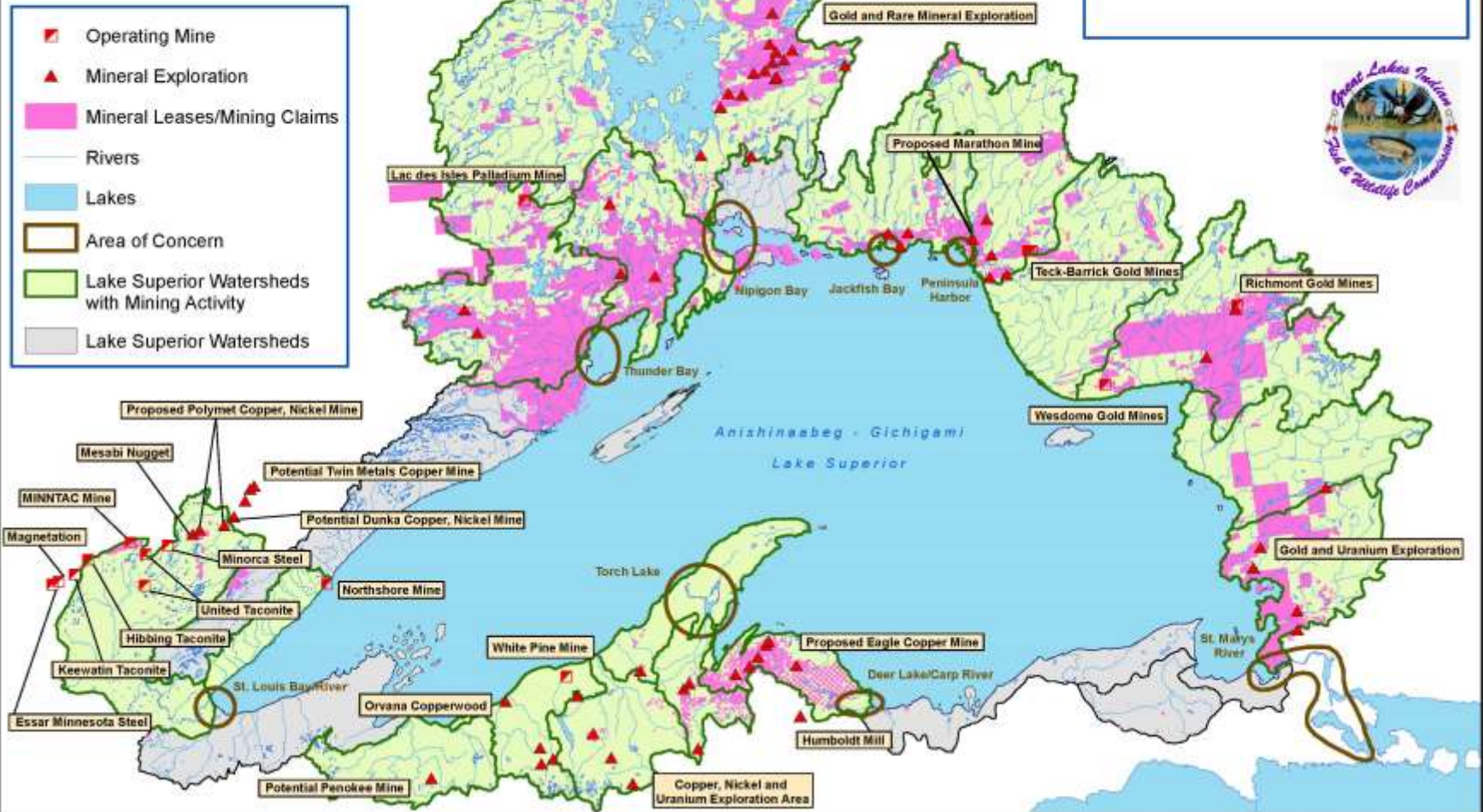
©2010 Google  
Eye alt 689.03 km



# Mines, Mineral Exploration and Mineral Leasing in the Lake Superior Watershed

Lake Superior Ad Hoc Mining Committee

Date: June 21, 2011



Current, Proposed Mines and Exploration



# What are the Main Concerns?

- **Habitat Loss from Large Scale Open Pit Mining**
- **Acid Mine Drainage**
- **Air Emissions from New Smelters or Processing Plants**
- **Perpetual Maintenance**

