

Oil, Gas, Minerals, Mining Program and Policy Update

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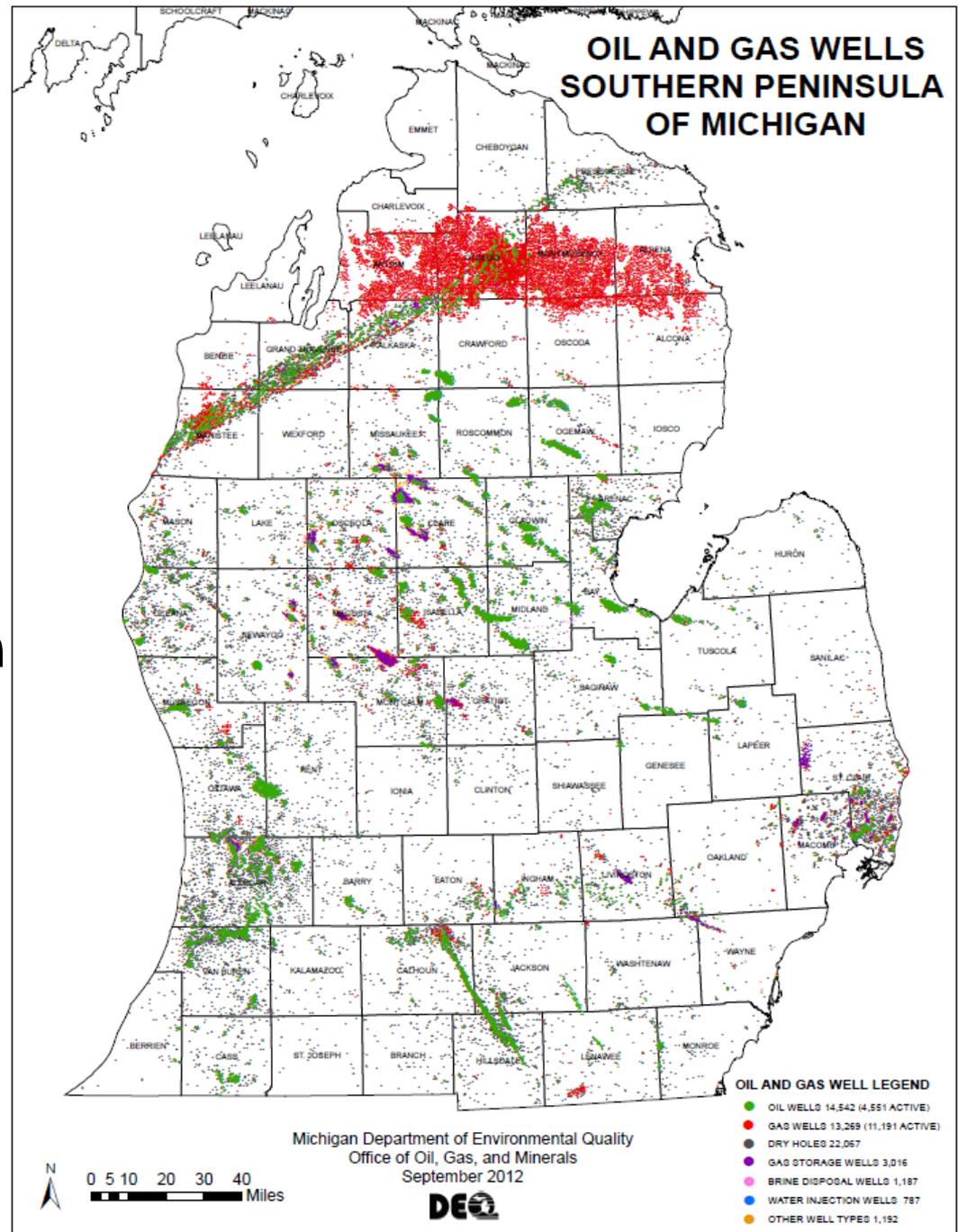
PRIORITIES AND ISSUES

- **Urban Drilling**
- **Hydraulic Fracturing**
- **Underground Injection Control**
- **Air Emissions at Oil & Gas Sites**
- **Mining and Potential New Mines**

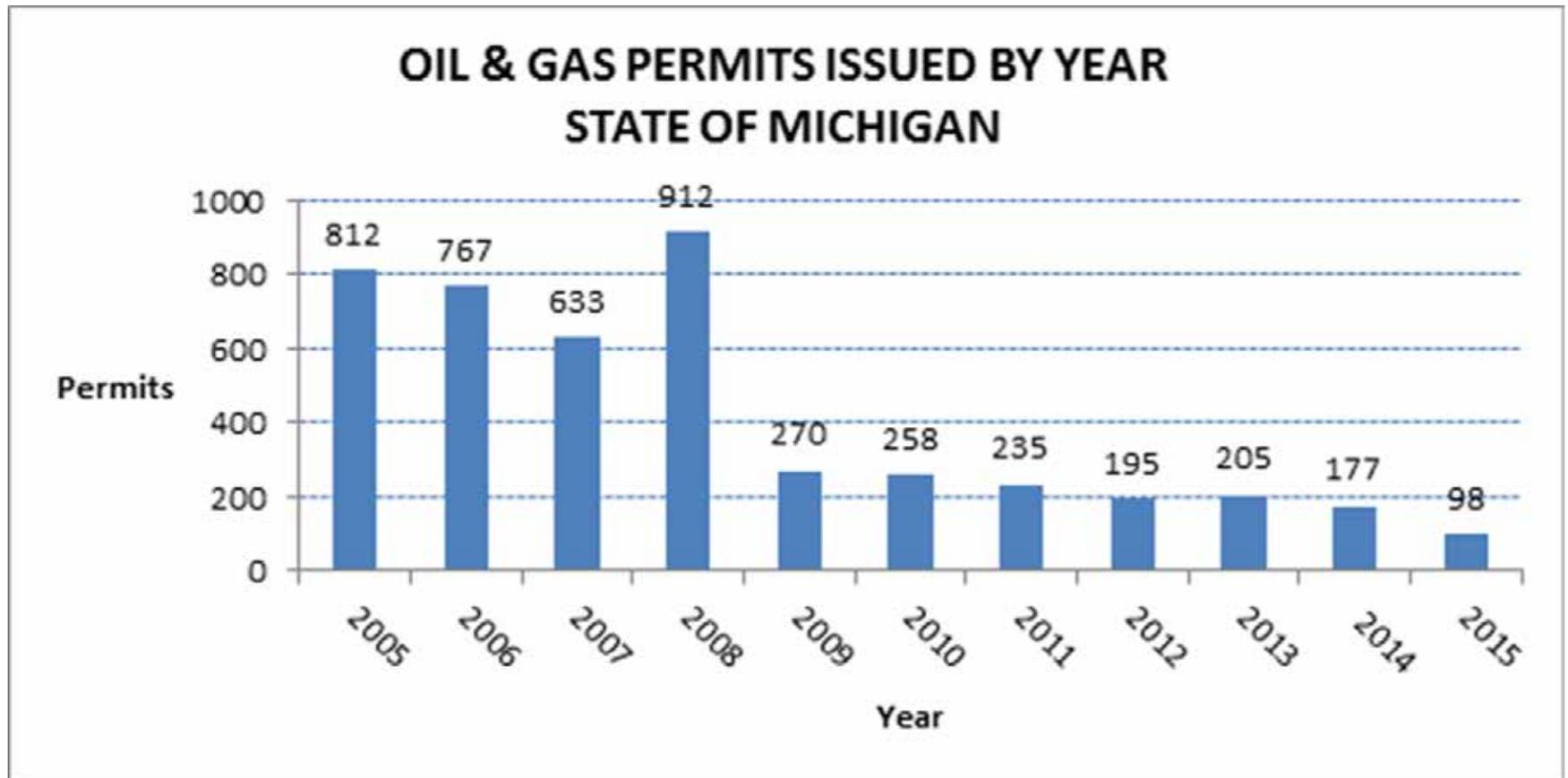
60,000 Oil & Gas Wells since 1925

Active Wells:

- 4200 oil
- 11,000 gas
- 1300 water injection & disposal
- 2800 gas storage



OIL & GAS PERMITS ISSUED BY OOGM



URBAN DRILLING



URBAN DRILLING

- Recent Concerns
- Mandate: Balance property rights with protection of residents
- DEQ Response: SOW Instruction
 - Alternatives Analysis
 - Notification
 - Nuisance Protections

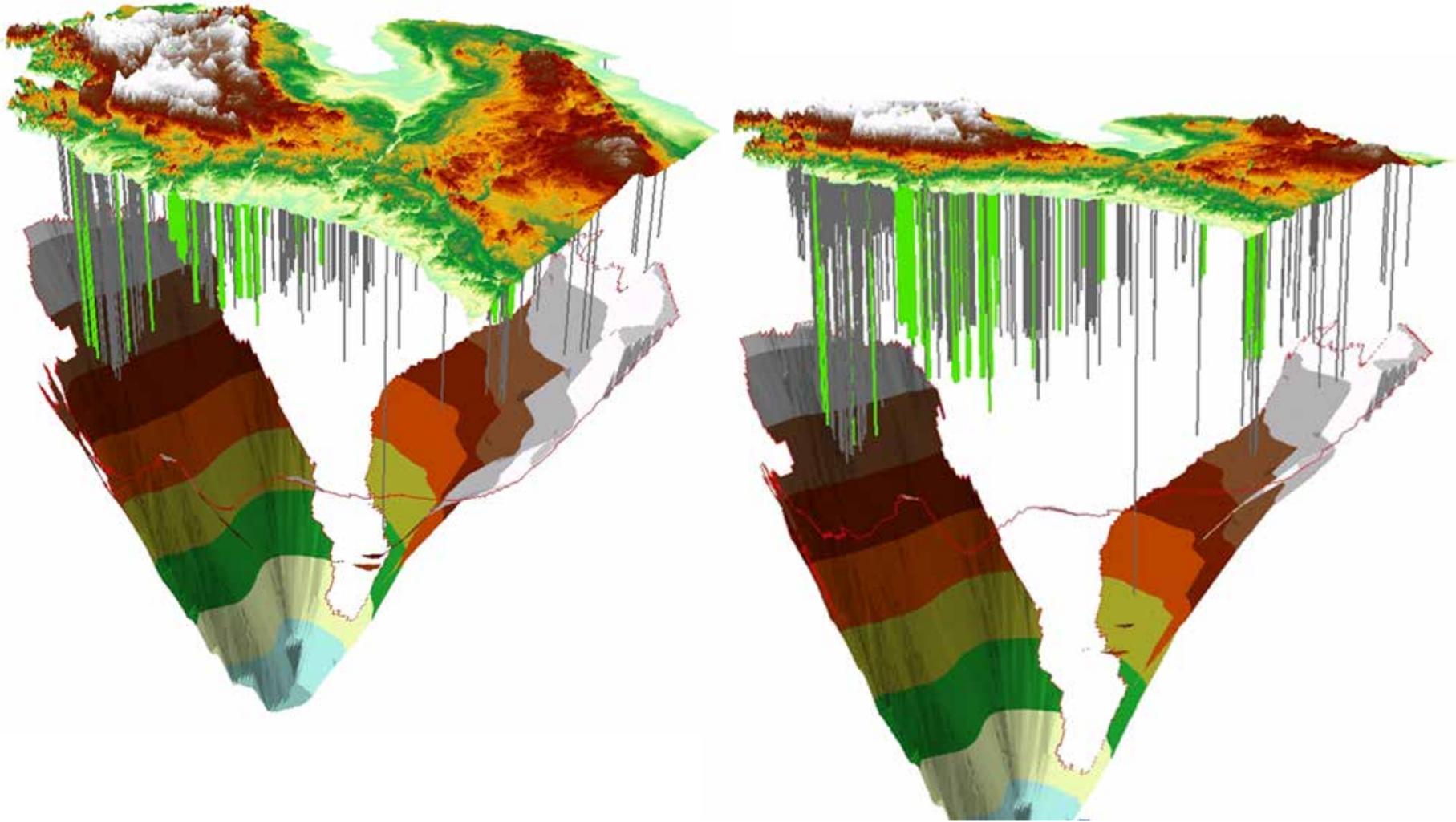
HYDRAULIC FRACTURING

- Rules
 - Water use
 - Monitoring & reporting
 - Chemical disclosure
 - Baseline groundwater sampling
- UM Report and EPA Study

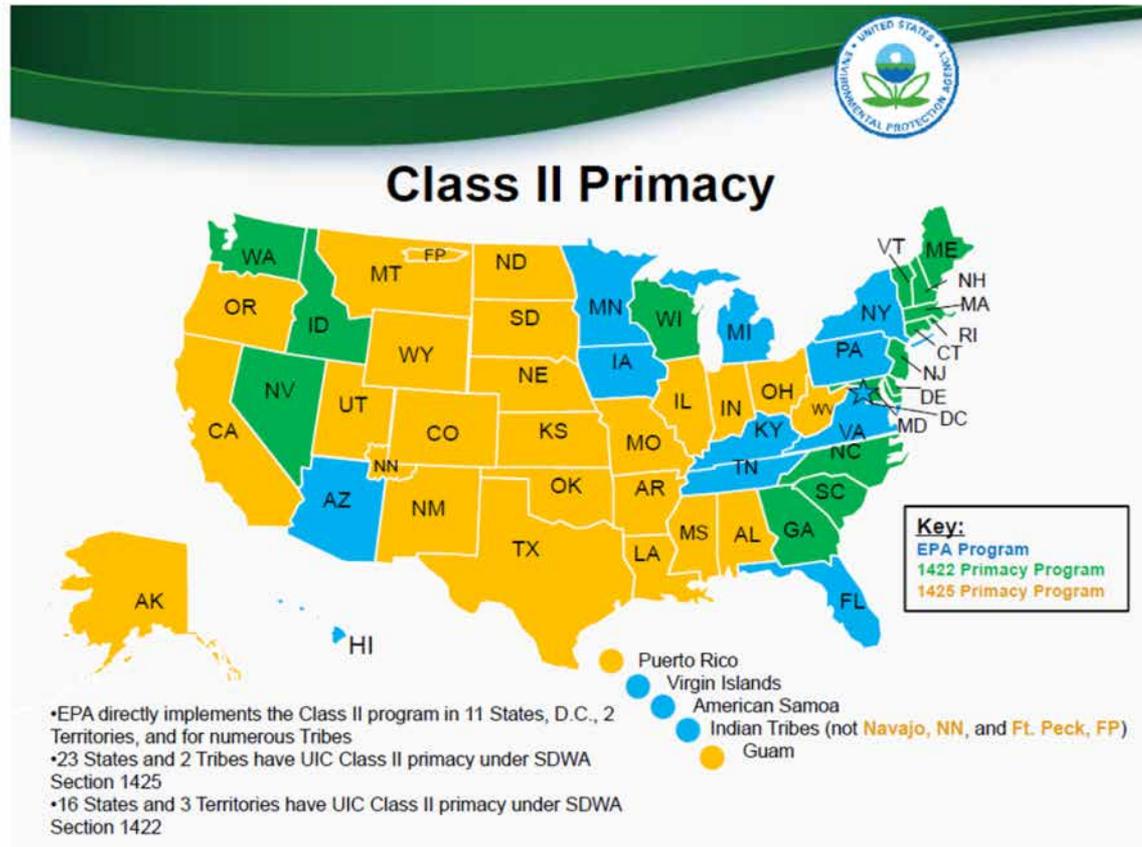
UNDERGROUND INJECTION CONTROL

- Well Classes I - VI
- Regulated by EPA & OOGM
- 1300 Class II wells in Michigan
 - Brine disposal
 - Secondary Recovery
- Michigan seeking primacy

MICHIGAN INJECTION WELLS



UNDERGROUND INJECTION CONTROL



AIR EMISSIONS AT OIL & GAS SITES

Methane, VOCs, H₂S

- Greenhouse Gases
- Odors
- Potential health impacts
- New EPA regulations



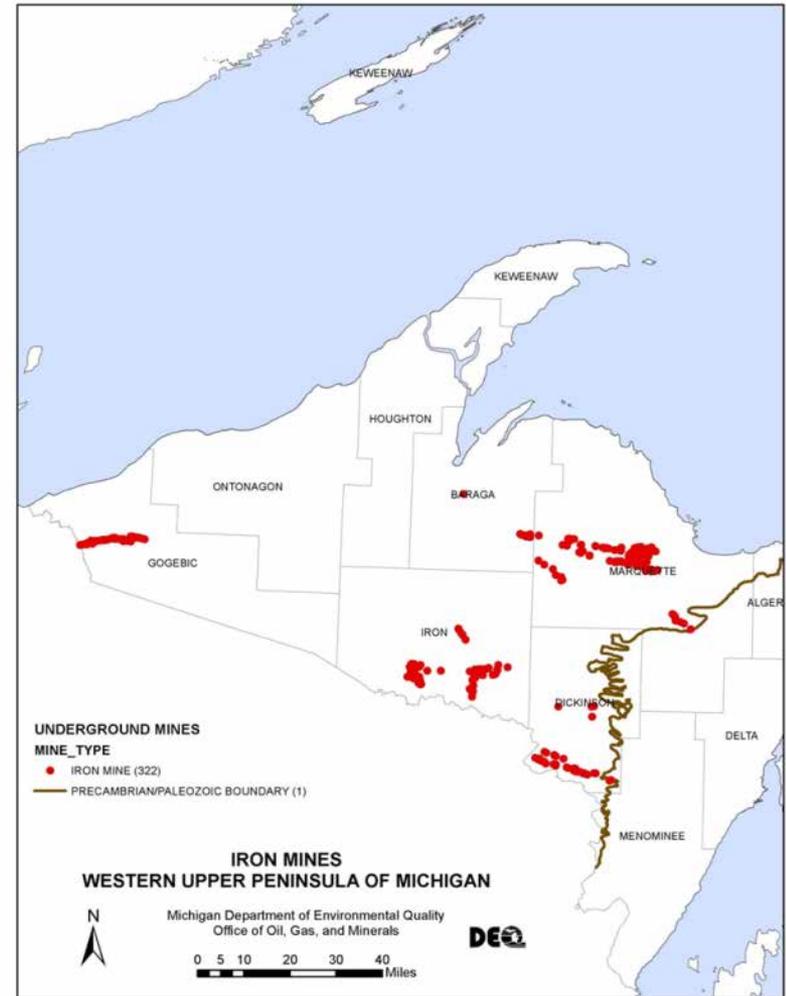
Mining and Potential New Mines

- **Part 631 – Ferrous Mineral Mining**
 - Nothing new, minor change to administrative rule name
- **Part 632 – Non-Ferrous Metallic Mineral Mining**
 - SB591 Moving
- **Part 637 – Sand Dune Mining**
 - No new policy changes but renewed interest

Part 631 Ferrous Mining

Michigan's iron mining began in the Marquette Range in 1845, There are four main Iron Ranges in Michigan.

Two iron mines remain active: Cliffs Natural Resources (Empire/Tilden Mines).





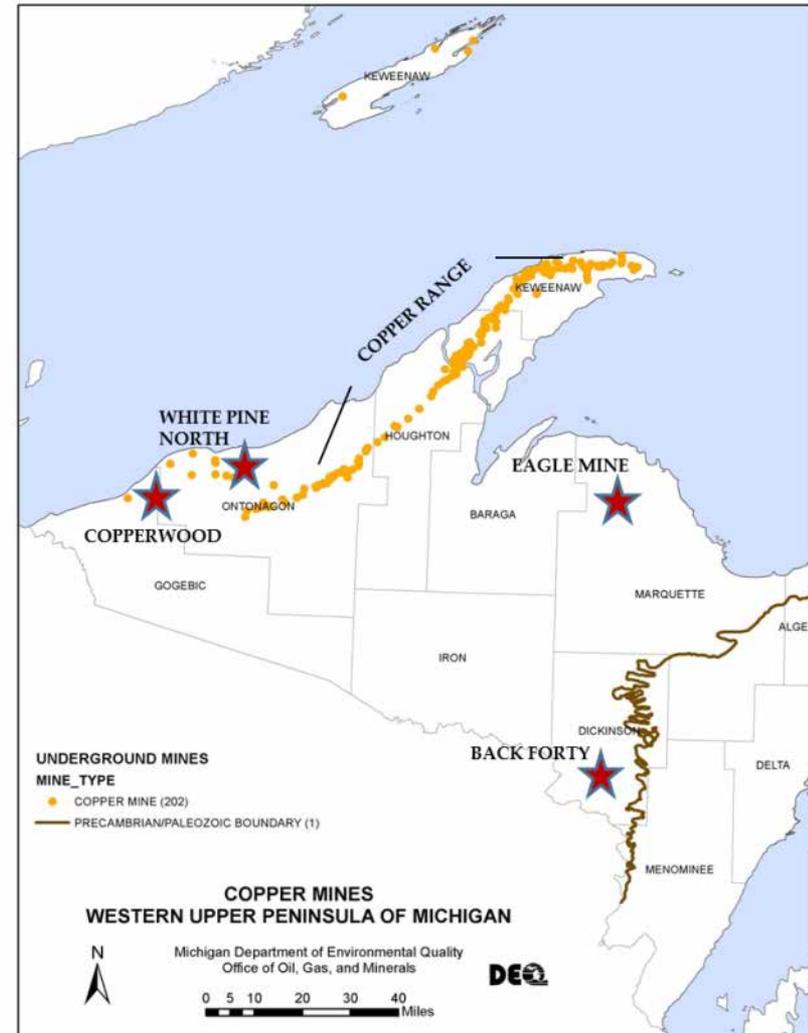
Bing Maps

Part 631 Ferrous Mining

Part 632 Non-Ferrous Metallic Mining

Industrial copper mining began in the 1860s, during the early years of copper mining, Michigan produced up to 90% of the nations copper. Recently there has been renewed interests in Michigan's nonferrous metallic minerals.

Lundin - Eagle Mine (Nickel – Copper)
Aquila - Back Forty Project (Zinc – Gold)
Highland - Copperwood Project (Copper-Silver) & White Pine North (Copper - Silver) Project





Part 632 Non-Ferrous Metallic Mining

Part 637 Sand Dune Mining

There are 14 designated sand dune mining areas. 8 sites are active.

Areas are designated in rules. Include sand dunes areas that are up to 2 miles inland from Great Lakes Shoreline.

Statute establishes requirements for permitting, reporting, and reclamation of sand dune mines.



RECLAMATION



80% Cover With Native Vegetation

1 on 3 Slopes
1 on 6 Slopes
1 on 10 Slopes



Root Development
For Sustainable Growth

32-8-4



The Office of Oil, Gas, and Minerals

