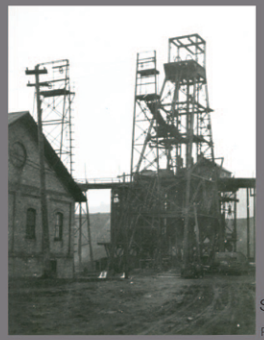
Open, Under, Open - Evolution of Mining Methods

IRON ORE HERITAGE TRAIL



Section 16 Mine head frame, Ishpeming.
Photo: Superior View

OPEN PIT MINING, UNDERGROUND MINING, OPEN PIT MINING

Following the Veins of Ore

Mining evolved from surface to underground back to open pit.

Like a little girl overwhelmed by a large blueberry patch, the early miners must have thought the iron ore would last forever. They worked the exposed outcrops with picks and shovels.

Within decades, however, shafts and tunnels were dug into the ore body to follow the high content ore. Drilling, electricity, and explosives aided in the development of underground mining. In the 20th century, underground miners delved to depths of 3500 feet in their continuing quest to extract the ore.

As the high grade iron became too costly to mine, advances in technologies in lower iron content ore allowed for large open pit mining to become the preferred mining process.

You are looking at the flooded Section 16 mine pit. In the distance you can see the mine waste rock from the modern Tilden Mine. Waste rock is discarded during the iron ore separation process.

Photo:Leo LaFond

Double Jacking by underground miners in 1887.

Photo: Superior View

Lake Superior Mine, Ishpeming - ca. 1863
One of the three original mines that shipped iron ore during the Civil War.

Photo: Jeff Johnson, Cliffs Natural Resources

Modern Mining Operation - ca. 2011 The ore hauling truck is 52'-0" long, 27'-4" wide and 24'-2" high, with a 320 ton payload capacity.

Photo: Superior View

First Tilden
open pit mine - 1899.

Tilden Mine in 2011.

Photo: Cliffs Natural Resources - Michigan Mining

Photo: Superior View

Underground scaffold
Cliffs Shaft Mine, Ishpeming