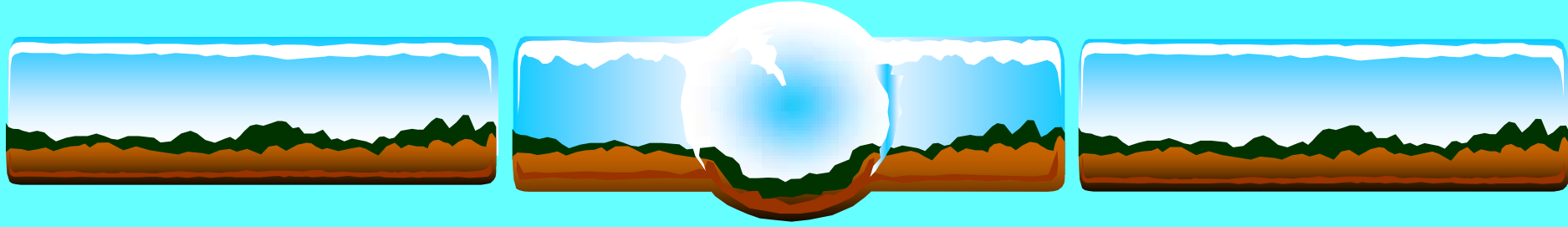


# Minnesota Department of Natural Resources

Division of Lands and Minerals



# DNR Permits Mining

- Permit to Mine (Lands and Minerals)
  - Chapter 6130, promulgated in 1980
  - Seven Active Taconite Permits
  - One Active Scram Permit (Magnetation)
  - One Closure Plan (Cliffs Erie) - portion assigned to Mesabi Nugget
  - One Taconite Permit Released (Butler)
  - Three Draft Applications (Polymet, Mesabi Nugget and Keetac)
- Other DNR Permits and Approvals
  - Wetland Replacement Plan (Lands and Minerals)
  - Waters Appropriation (Waters)
  - Public Waters (Waters)
  - Dam Safety (Waters)



# Environmental Review Current Mining Projects

Polymet

Keewatin Taconite

Mesabi Nugget



# Permit to Mine Requirements

- ❖ Permit Application
- ❖ Mining and Reclamation Plan
- ❖ Wetland Replacement Plan
- ❖ Financial Assurance
- ❖ Annual Report and Operating Plan



# Mining and Reclamation Plan

- ❖ Life of the Mine
- ❖ Mining activities (types, amounts, schedule, and sequence)
- ❖ Mining maps (intervals during mining)
- ❖ First year plan
- ❖ Reclamation schedule



# Reclamation Standards

- ❖ Siting (Exclusions, setbacks, and restricted)
- ❖ Sloping of pitwalls and stockpiles (2.5:1)
- ❖ Tailing basin dams (engineered design)
- ❖ Vegetation (90% cover)
- ❖ Blasting (air overpressure and vibration)
- ❖ Closure (2 years prior)

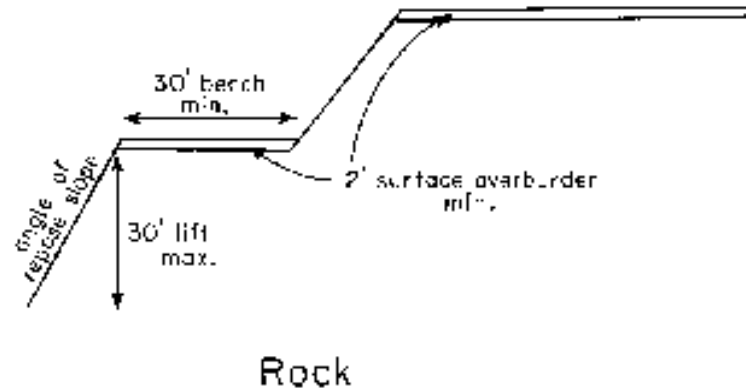
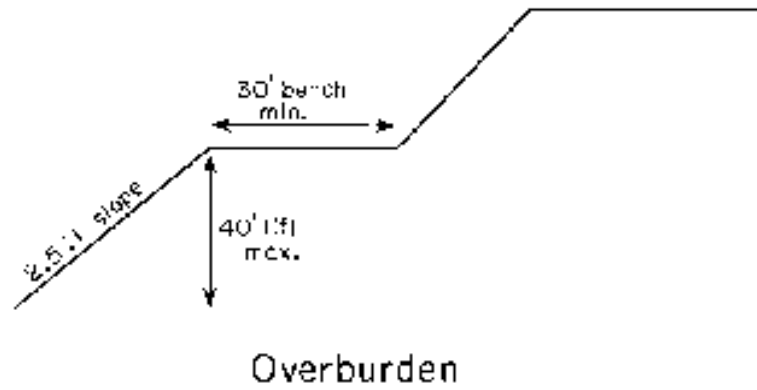




# Sloping

- ❖ Sloping is essential part of reclamation
  - ❖ Aesthetics
  - ❖ Revegetation
  - ❖ Erosion control
  - ❖ Eliminate hazards, such as landsliding or high cliffs on pits
  - ❖ Land use potential

## Typical Section Views of Reclaimed Surface Overburden and Rock Dumps





# Why In-Pit Stockpile?

Public safety

Minimize land disturbance

Improve land use potential

Recreation

Wetland creation (<6 feet)

Aquatic enhancement (<15 feet)

Other Considerations

Ownership of minerals

Mineral values

Feasibility



2007 9 12



2007 9 12



# Closure Plan

- Removal of equipment, roads, facilities, transmission lines, debris (in 1-3 years)
- Area stable
- Free of hazards
- Minimizes need for fencing
- Minimizes hydrologic impacts
- Land use potential
- Monitoring and Maintenance



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# DEPARTMENT OF NATURAL RESOURCES

## MINELAND RECLAMATION RULES

### CHAPTER 6130

[www.revisor.leg.state.mn.us/arule/6130](http://www.revisor.leg.state.mn.us/arule/6130)