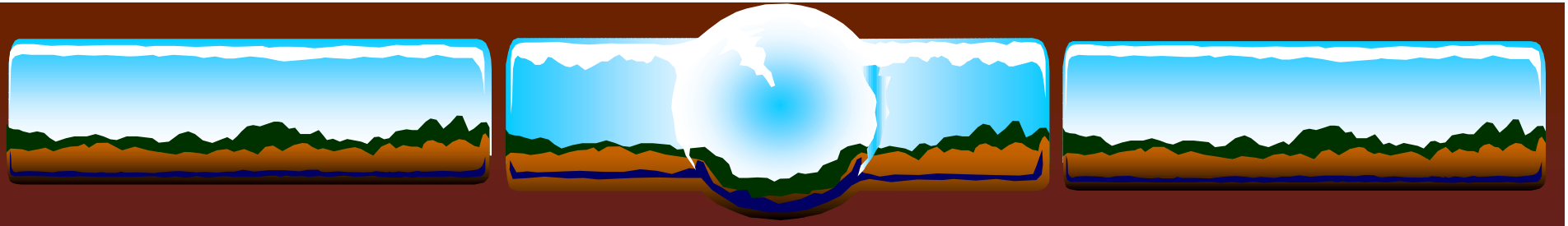


Dealing with the Failure of Royal Oak Mines in the Northwest Territories, Canada

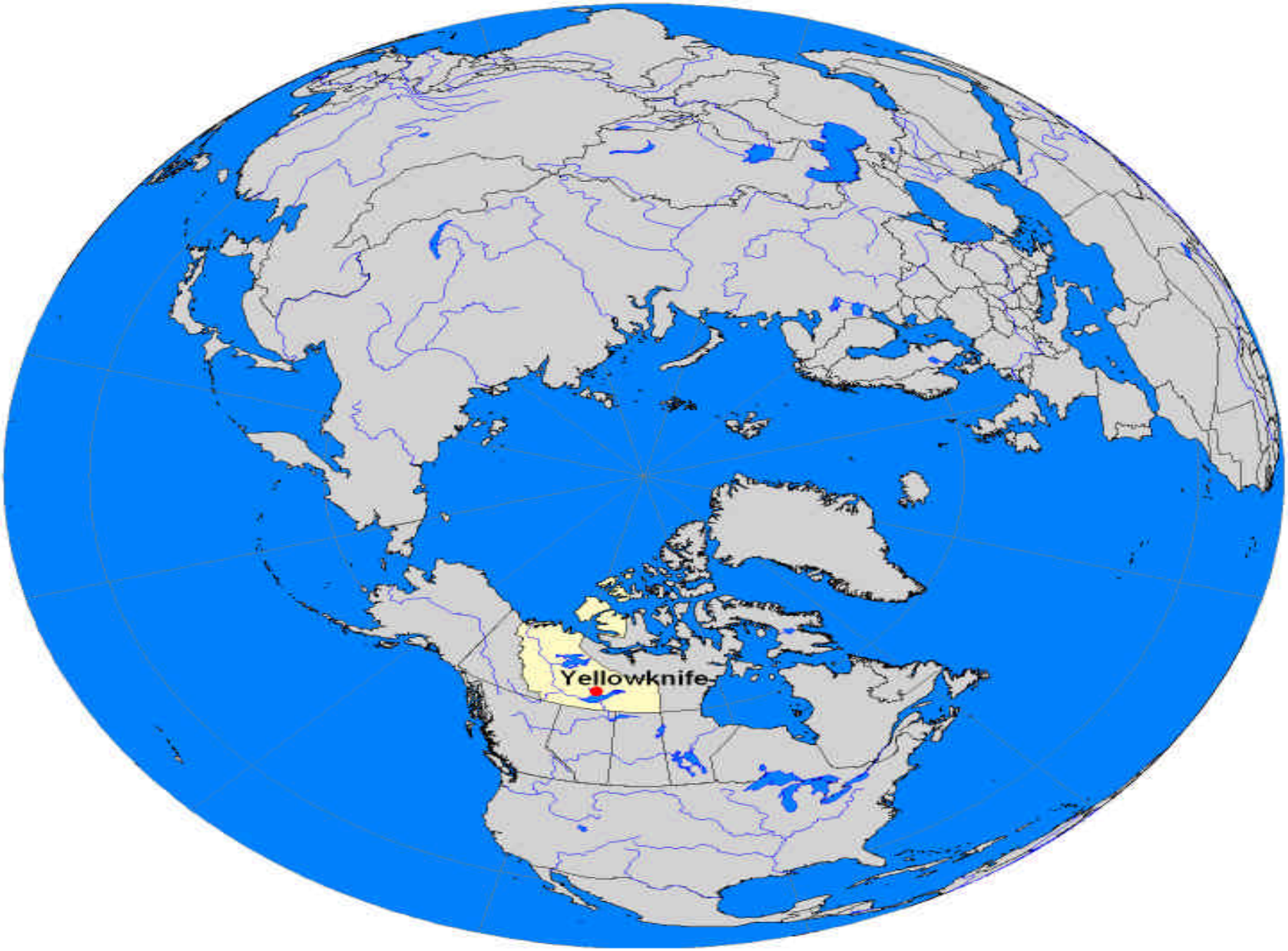
Dave Nutter

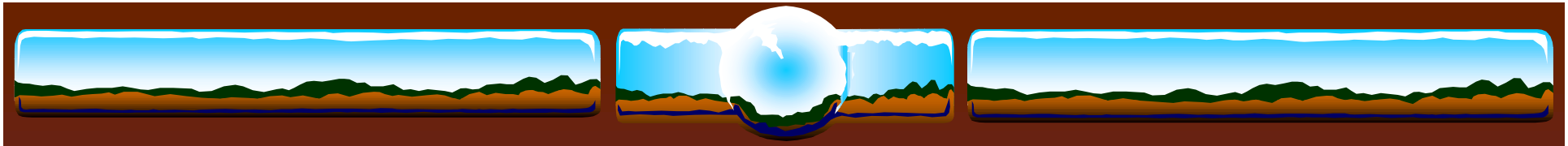
Special Advisor, Giant Mine Project Team

Department of Indian Affairs and Northern Development

Government of Canada

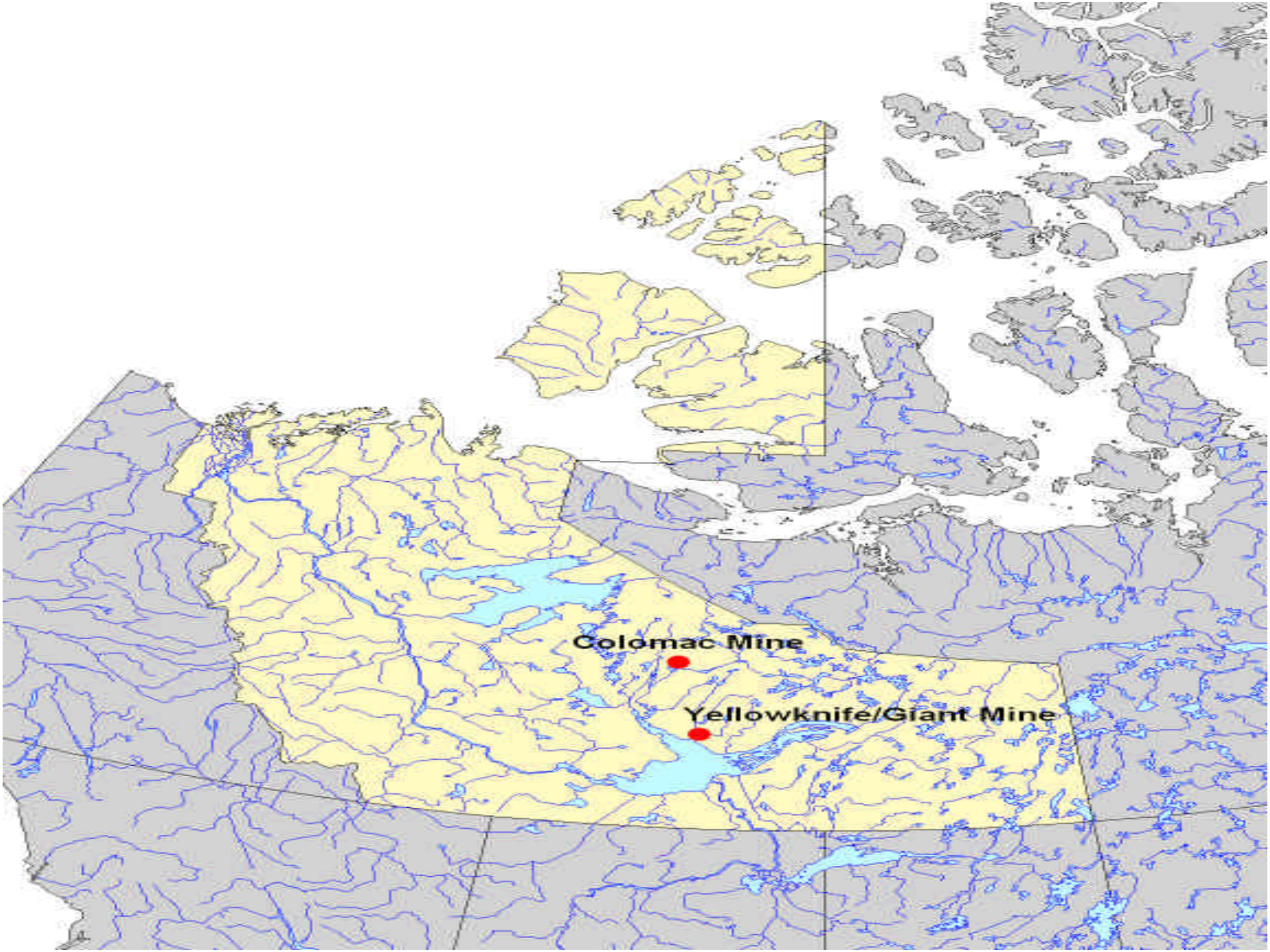
June, 2001

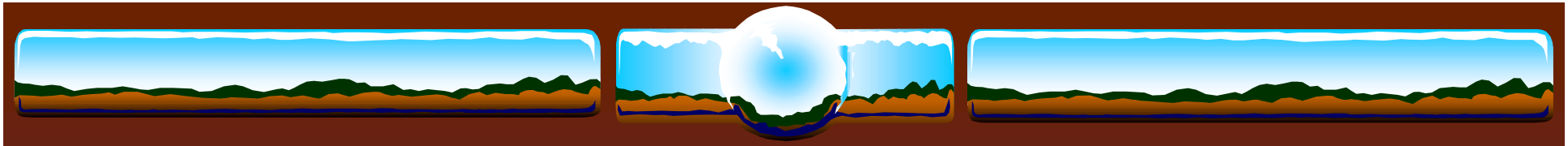

Yellowknife



Royal Oak Mines Inc.

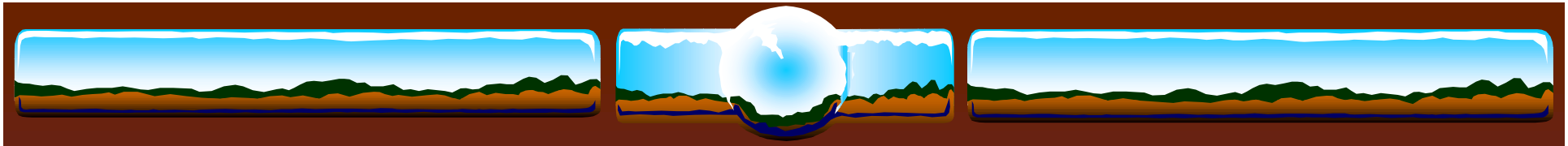
- Mid-sized mining company with properties across Canada
- Two gold mines in Northwest Territories
  - Giant Mine
  - Colomac Mine
- 1999
  - $600,000 debt
  - Court-ordered liquidation of assets


Colomac Mine
Yellowknife/Giant Mine



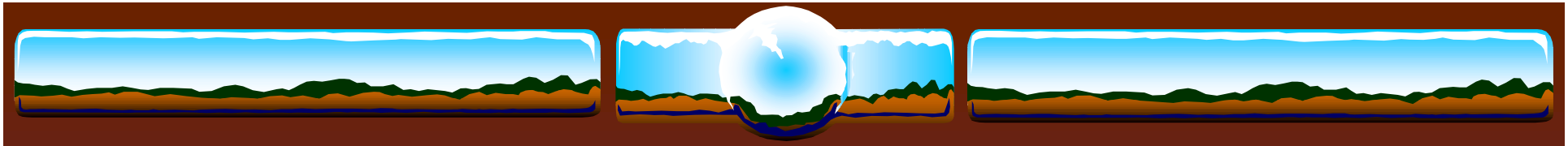
Giant Mine - 1999

- Within Yellowknife city limits
- Began operating in 1948
- 1,000 ton per day, underground gold mine
- Still in full production
- >300 workers



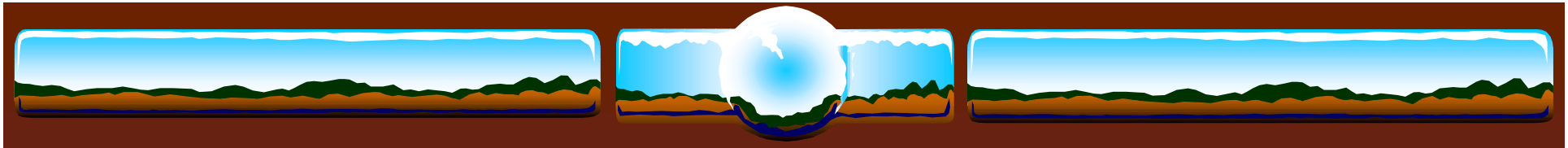
Colomac Mine - 1999

- 220 km northwest of Yellowknife
- Accessed only by air and winter road
- Began operating in 1990
- 10,000 ton per day, low grade open pit gold mine
- Placed on care and maintenance in 1997
- No mineable gold reserves



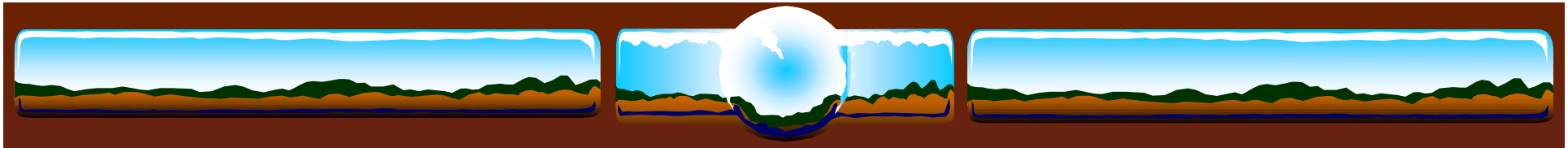
Role of DIAND

- In the NWT, most public land is administered by the federal government through the Department of Indian Affairs and Northern Development (DIAND)
- Responsible for:
  - Administration of land and water
  - Disposition of mineral rights



Challenges for DIAND

Insolvency of Royal Oak Mines Inc. posed a number of significant environmental, financial, regulatory and political challenges for the federal government

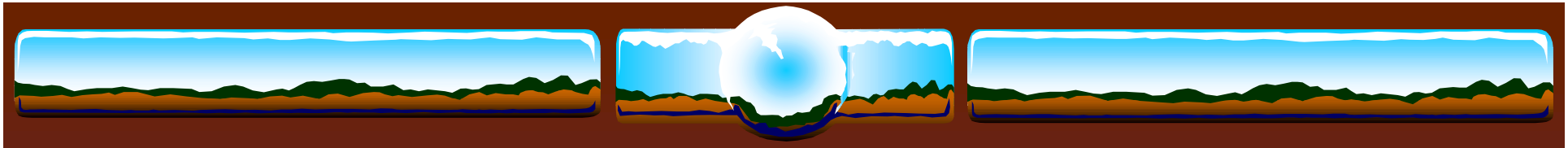


Environmental Challenges - Giant

ARSENIC TRIOXIDE

- Roasting of refractory ore
- Arsenic trioxide and sulphur dioxide emissions
- Highly toxic, soluble
- 265,000 tons of arsenic trioxide dust stored in 15 underground chambers
  - Assumptions – permafrost / low groundwater movement / competent host rock
- Arsenic trioxide leaching out of chambers
- Contaminated water captured in sumps; pumped to treatment plant on surface

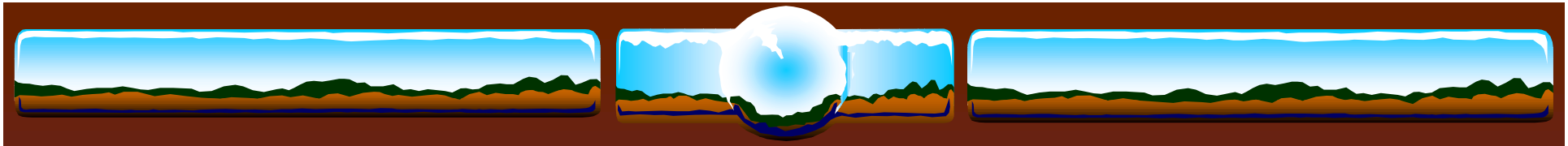

#50



Environmental Challenges - Giant

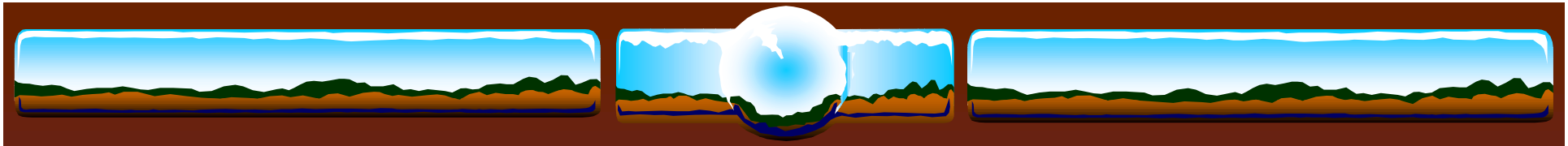
SURFACE CONTAMINATION

- 50 year old industrial site
- Arsenic and hydrocarbon-contaminated soils
- Asbestos
- Abandoned materials and equipment
- Several large tailings containment areas
- Fuel and waste oil storage sites
- Numerous industrial and residential structures
- Limited progressive reclamation



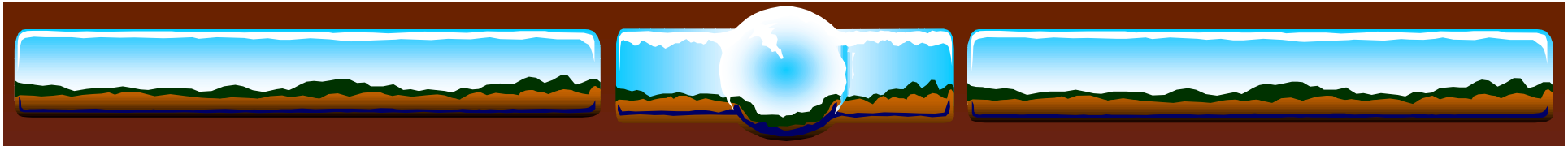
Environmental Challenges - Colomac

- Tailings management – zero discharge design, but positive water balance
  - Tailings contain cyanide, ammonia and metals
  - Recurring risk of uncontrolled release of tailings water during spring runoff
- Hydrocarbon-contaminated soils
- Numerous hazardous and non-hazardous waste sites



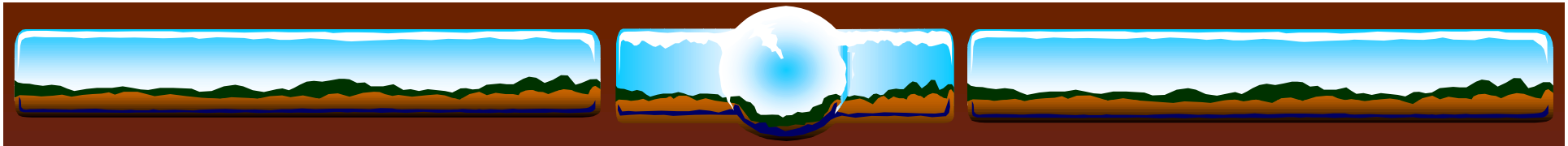
Financial Challenges

- Environmental liabilities far exceed value of assets at Giant or Colomac
- Interim Receiver's right to abandon – DIAND liability
- Inadequate security deposits



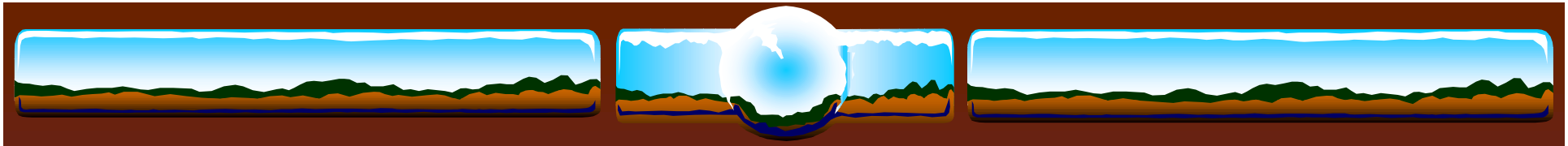
Regulatory Challenges

- Dual roles of regulator and operator
- Insolvency legislation protects creditors
- Access to security deposits
- When is a site “abandoned”?



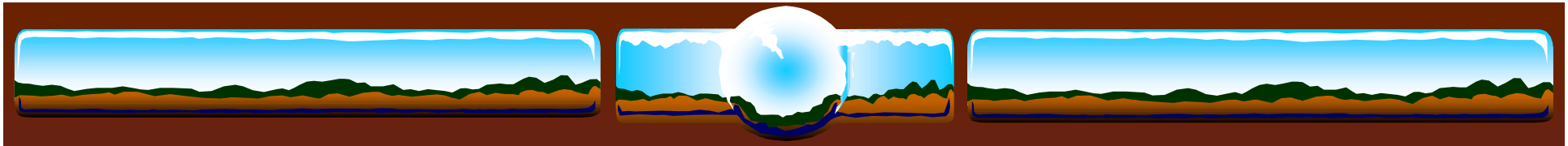
Political Challenges

- Impact of Giant closure on community
- Pension plan and severance shortfalls
- Surface reclamation: federal/territorial roles?
- Municipal tax liability



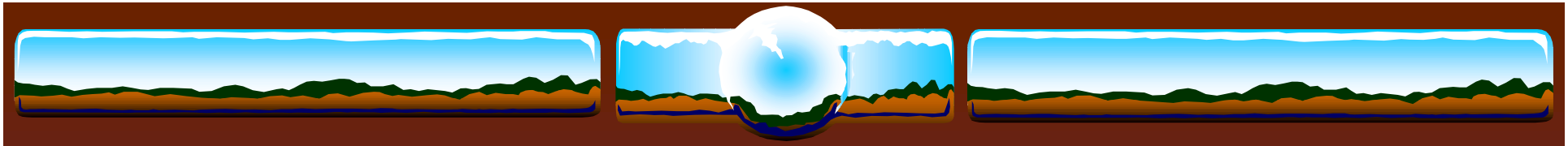
DIAND Commitments

- Safeguard public health and safety
- Environmental protection
- Minimize cost to the Canadian taxpayer



‘Solutions’

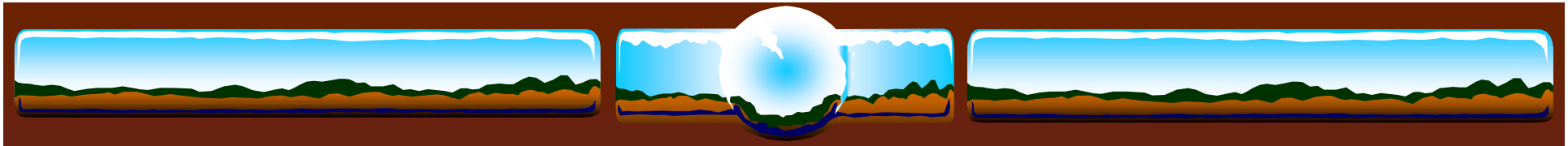
- Contingency planning
- Federal insolvency legislation gives DIAND first charge over assets
- Distinct approach for each property



‘Solutions’ – Giant

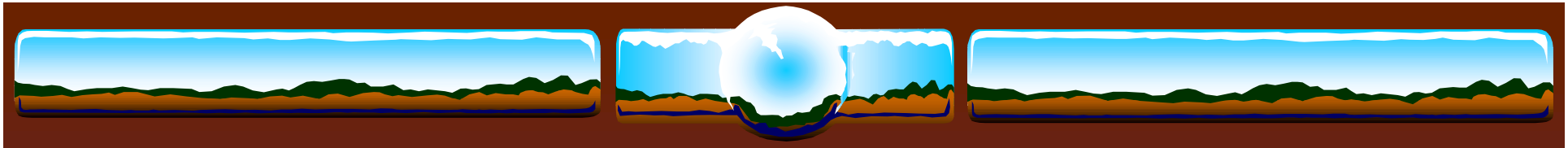
(current situation)

- Sale to Miramar Mining group (MGML)
- Terms:
  - Close roaster
  - MGML maintains environmental compliance
  - Insulate Miramar parent from environmental liability
  - Honour Collective Agreement
  - Reclamation Security Trust
  - 2 year agreement



Miramar Agreement

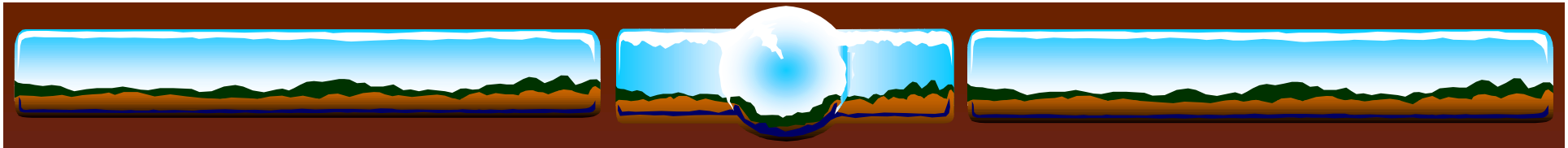
- Advantages for DIAND
  - Experienced operator
  - Roaster closed – no arsenic trioxide production
  - Cost savings (environmental compliance)
  - Continued employment
  - Revenues for reclamation?
  - Opportunity for long term planning



Miramar Agreement

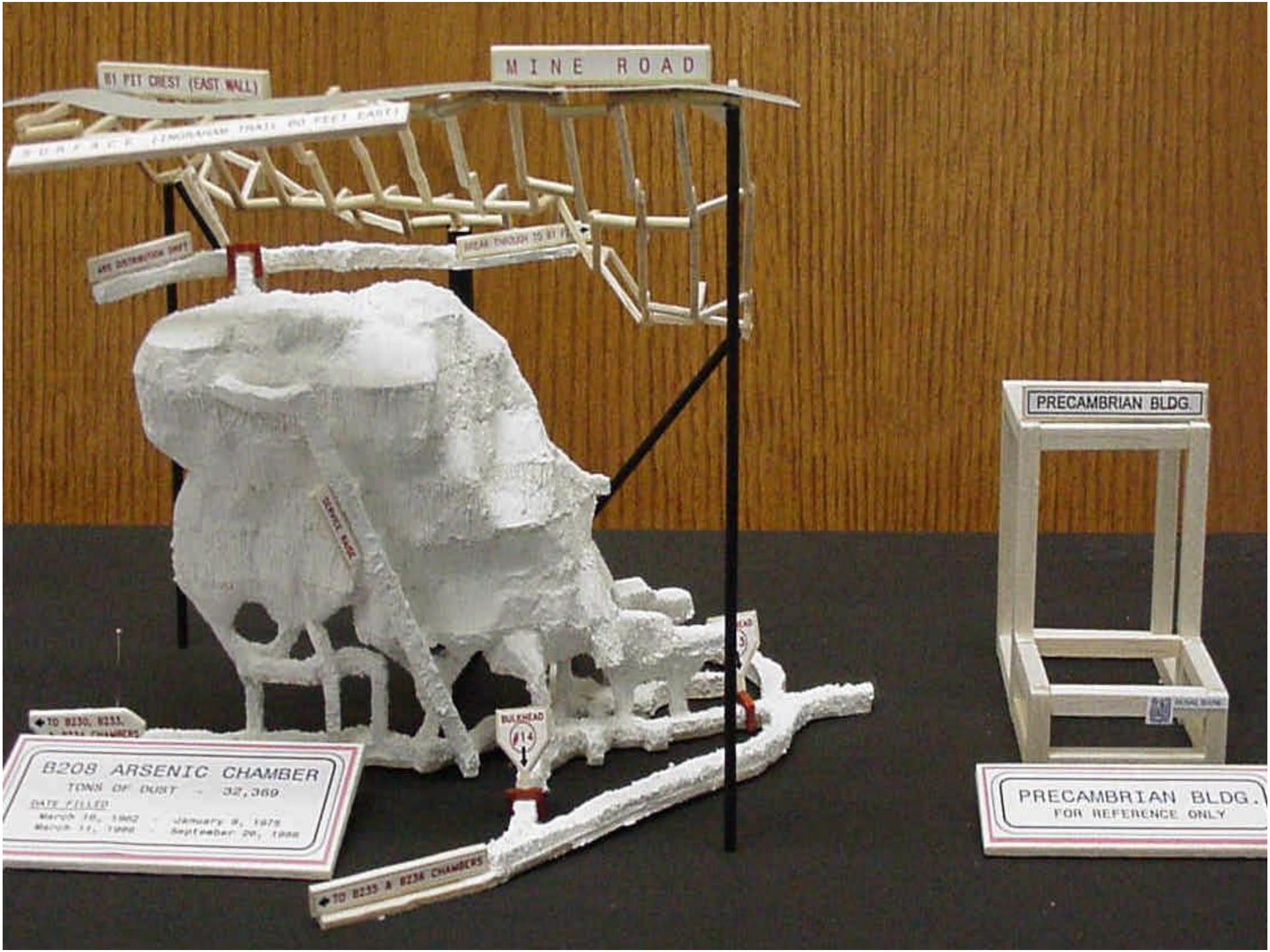
- Advantages for Miramar
  - Ore for core operations (Con Mine)
  - Participation in long range arsenic trioxide management planning

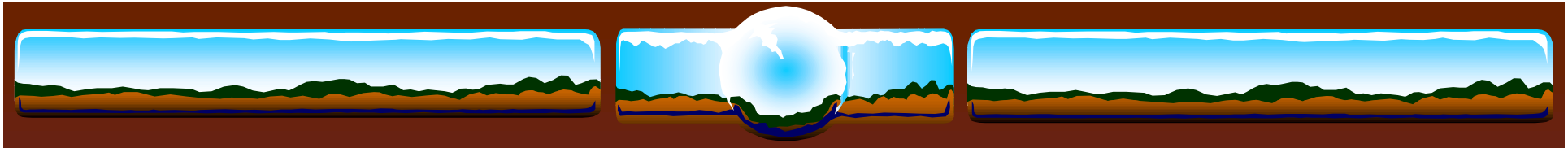
RESULT: Unique public/private sector partnership with roles for both Miramar and DIAND



Giant – Next Steps

- Develop long term arsenic trioxide management plan / environmental assessment / regulatory approvals
- Monitor arsenic trioxide containment
- Ongoing surface reclamation

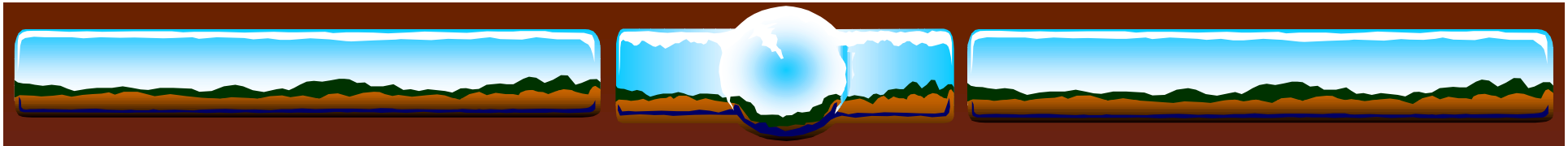

MINE ROAD
B1 PIT CREST (EAST WALL)
PRECAMBRIAN BLDG.
B208 ARSENIC CHAMBER
TONN OF DUST - 32,369
DATE FILLED
March 10, 1962 - January 8, 1975
March 11, 1980 - September 20, 1988
BULKHEAD
#14
PRECAMBRIAN BLDG.
FOR REFERENCE ONLY



‘Solutions’ – Colomac

- Orderly transition from Interim Receiver to DIAND
- Develop water treatment system (complex water chemistry)
- Manage water balance (2-3 year capacity)

Next Steps: Develop Site Remediation Plan / environmental assessment and regulatory approvals



Lessons Learned

- Anticipate
- Be pro-active
- Be creative
- Collaborate
- Know and use your legislation