

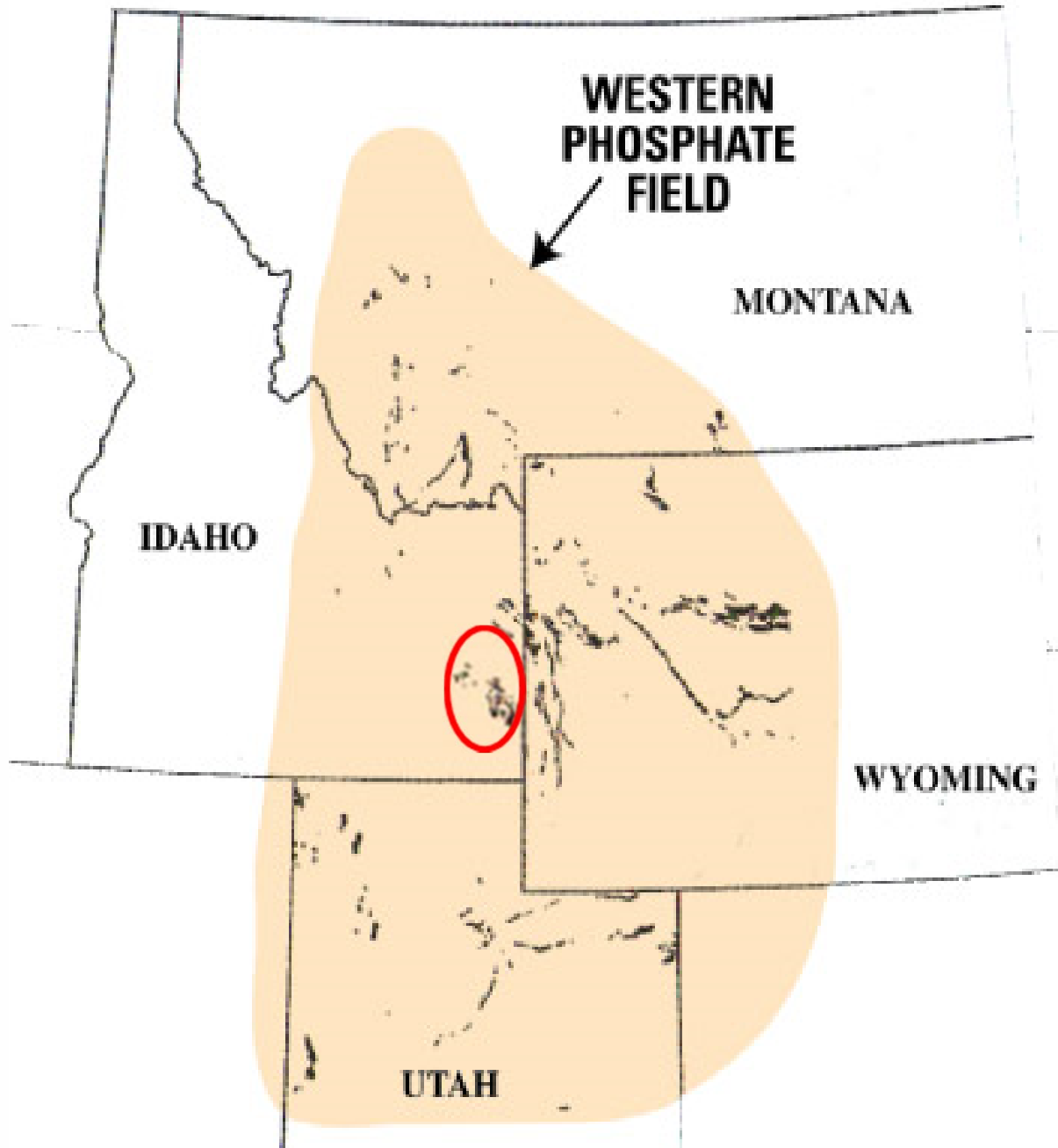
Southeast Idaho Phosphate Program Overview





EXIT 170

Phosphate
↗



From U.S. Geological Survey Fact Sheet 100-02

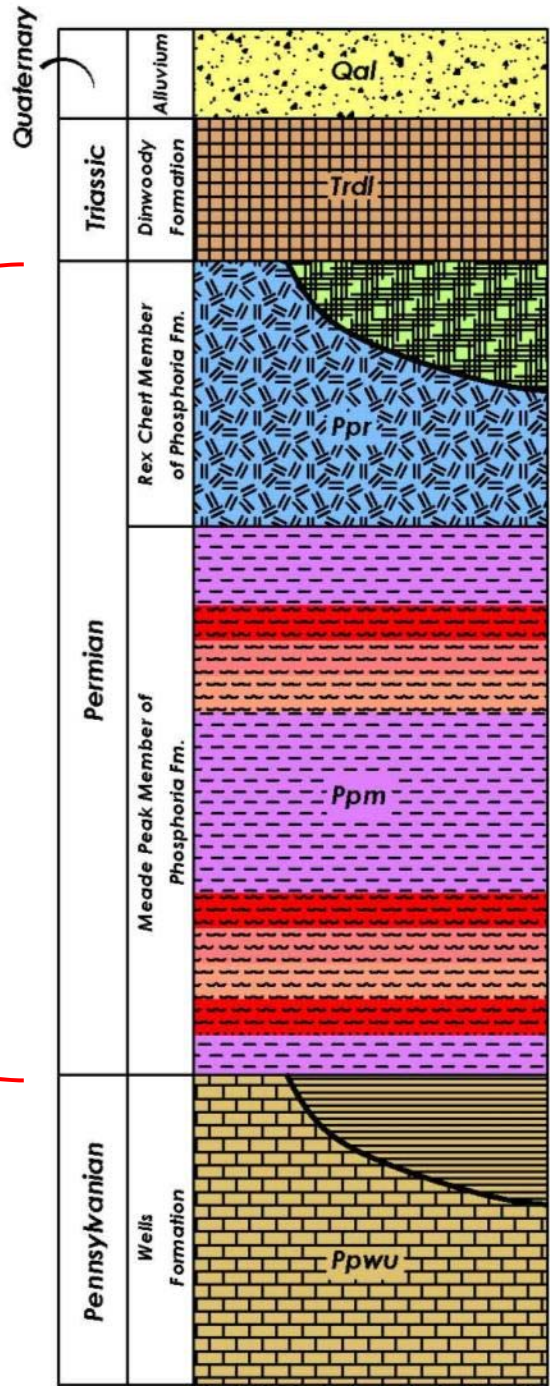


Phosphoria Formation

- Depositional environment = wide continental trench that sloped to a basin, underwater
- Represents approximately 15 million years of deposition
- Deposited about 250 million years ago (Early Permian)
- Phosphate was derived from organic matter
- Interbedded chert, limestone, and shales
- Shale of the Meade Peak Member is ore-bearing unit in SE Idaho
- Movable units have an average P_2O_5 concentration of 28%



Phosphoria Formation



Alluvium and Colluvium - 0-50 ft.
(Unconsolidated Silt, Sand and Gravel)

Lower Dinwoody
(Siltstone, Limestone and Shale)

Frandsen Limestone

Rex Chert - 150-160 ft.
(Cherty Mudstone and Limestone)

Hanging Wall Mudstone - 15-30 ft.

Upper Rich Bed - 2-5 ft.

Lower Rich Bed - 2-5 ft.

Hanging Wall Shale - 2-6 ft.

Center Waste Shale - 75-120 ft.

Hot Bed - 5-10 ft.

Upper Footwall Shale - 2-5 ft.

Lower Footwall Shale - 5-10 ft.

Main Bed Footwall - 4-5 ft.

Footwall Mudstone - 5-10 ft.

Grandeur Limestone - 100 ft.

Wells Sandstone and Limestone - 500-1500 ft.





CHERTY SHALE AND
REX CHERT MEMBERS

MEADE PEAKE MEMBER
MEADE PEAKE MEMBER

WELLS FM

DINWOODY FM
(OFF PHOTO)

UPPER
ORE

CENTER
WASTE
SHALES

LOWER
ORE

Phosphate Uses

Phosphate is used in many applications and products, including...

- Herbicides (Roundup®)
- Fertilizer
- Animal feed
- Metal finishing
- Flame retardants
- Water based paints and coatings
- Aviation fluids
- Potable water treatment
- Leavening agents
- Carbonated beverages
- Toothpaste



Administration

- Leasable mineral under the Mineral Leasing Act of 1920
 - Oversight by the BLM Pocatello Field Office
- One of the largest and most complex leasable minerals programs in BLM and USFS
 - 83 phosphate leases that encompass 43,000 acres
 - 51% on the Caribou-Targhee National Forest
 - Also significant split estates
 - 17,000 disturbed acres (23 square miles)
 - 5 active mines (3 mining ore and 2 in reclamation)
 - 15 inactive or closed mines





SE Idaho Historic and Active Phosphate Mines

(Acres of Surface Disturbance in 2013)

<u>Mine</u>	<u>Acres</u>
Ballard (P)	635
Blackfoot Bridge (P, B)	339
Champ (F)	460
Conda (P, B)	1,506
Diamond Gulch (F)	32
Dry Valley, Agrium (F, P, B)	560
Dry Valley, Astaris (F, P, B)	522
Enoch Valley (F, P)	581
Gay (T)	4,736
Georgetown Canyon (F, P)	251
Henry (I, B)	1,074
Lanes Creek (P)	29
Mountain Fuel (F)	716
Smoky Canyon (F)	2,550
North and South Maybe (F)	926
Rasmussen Ridge (F, I)	817
South Rasmussen (I, F)	389
Trail Canyon (P)	68
Waterloo (P)	196
Wooley Valley (F, B, P)	808

Status:

Active Operation

Inactive Mine

CERCLA Orders Signed

Land Ownership:

B = BLM

F = National Forest System

I = State of Idaho

P = Private Surface

T = Tribal

Operators:

Monsanto (P4 Production, Solutia)

Agrium (Nu-West Industries, Nu-West
Mining, Conda Phosphate Operations)

J.R. Simplot Co.

FMC (Astaris)

Solvay (Rhodia)



Current Mine Plan Applications



Smoky Canyon Mine, Modification

Simplot • 160 acres • FEIS summer 2015

Rasmussen Valley Mine

Agrium • 420 acres • DEIS summer 2015

Dairy Syncline Mine

Simplot • 2,100 acres • DEIS winter 2015

Smoky Canyon Mine, East Smoky

Simplot • 847 acres • DEIS summer 2016

Caldwell Canyon

Monsanto • 847 acres • DEIS winter 2016





Rasmussen Ridge Mine



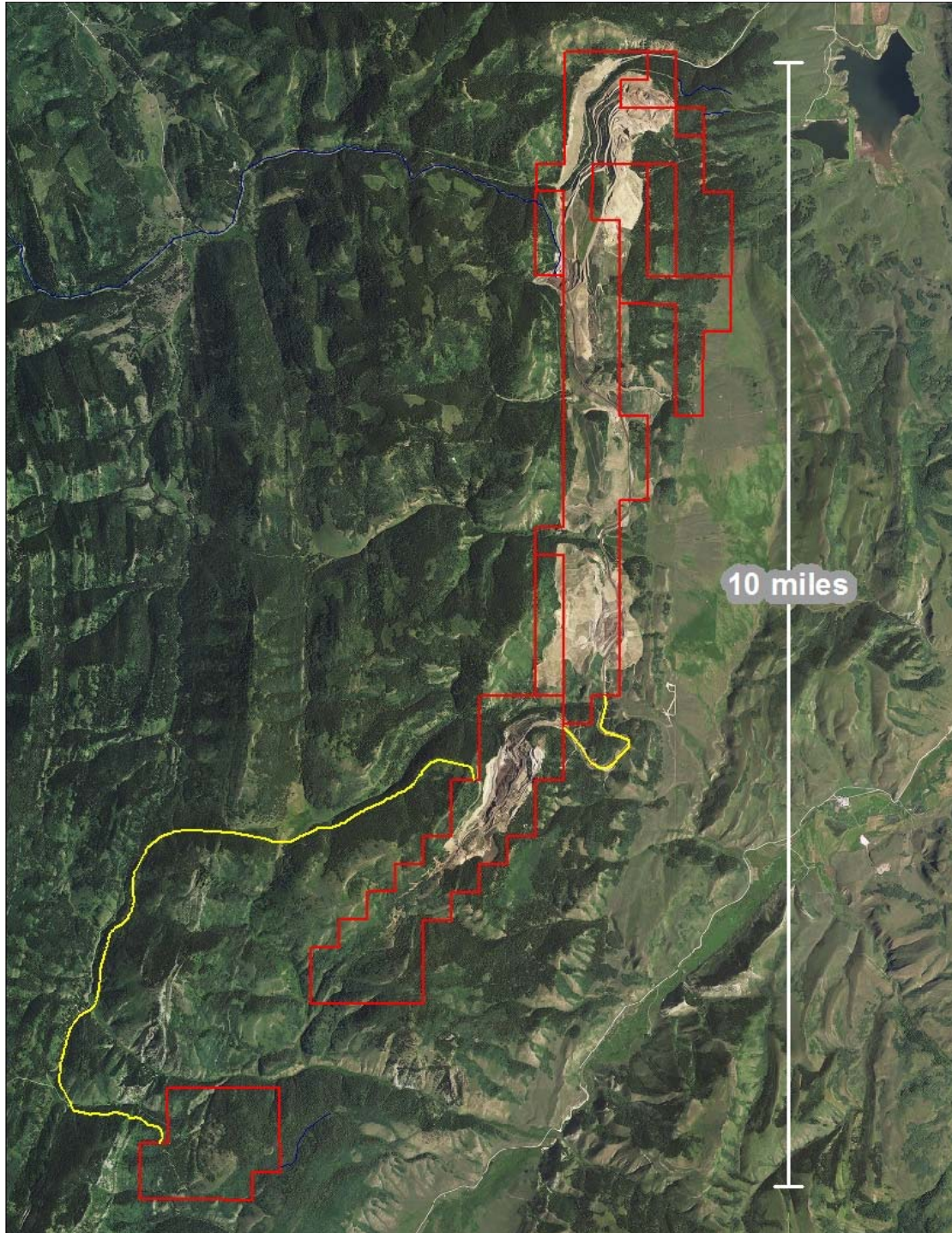
Blackfoot Bridge Mine



North Rasmussen Mine

Smoky Canyon Mine





Smoky Canyon Haul Road





Dry Valley Mine

Dry Valley Mine





Dry Valley Mine

Dry Valley Mine









Importance of Phosphate Mining in SE Idaho

- Significant socioeconomic impacts¹
 - \$10 million in phosphate production royalties, rent, and bonus bids collected by U.S.; 50% dispersed to Idaho
 - \$500 million in value-added products to the U.S.
 - Direct employment of over 1,800 individuals in rural southeast Idaho
- SE Idaho phosphate mines supply 17% of U.S. and 3% of world phosphate use
- Idaho to see increased emphasis
- No substitutes for phosphorus in agriculture

¹As reported in the BLM “Idaho FY 2013 Highlights” report.



Agencies and Other Stakeholders



BLM/FS Service First



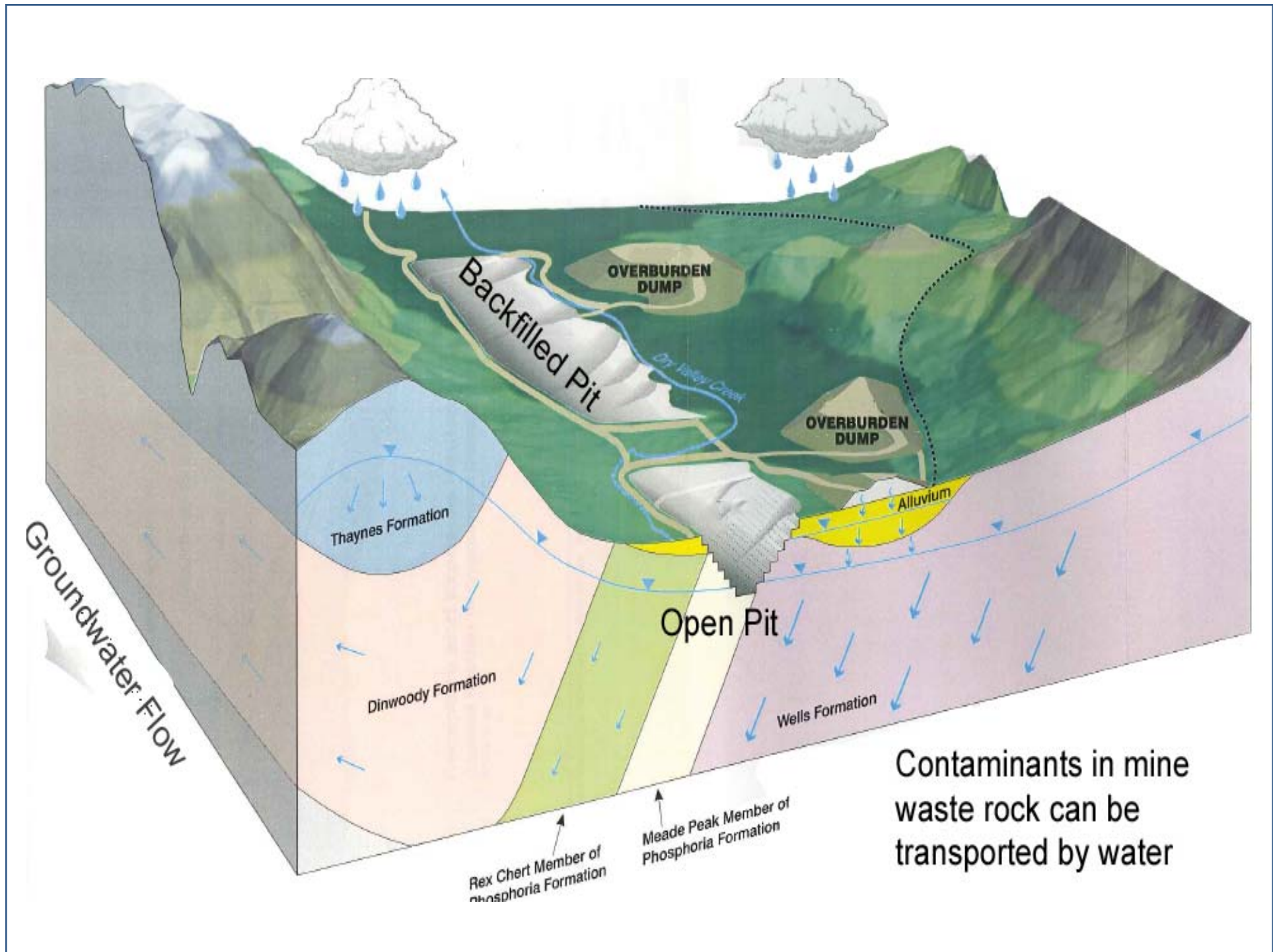
- Permitting/NEPA
- Administration
- Inspection/enforcement
 - Smoky Canyon Mine
2,800 acres
 - Blackfoot Bridge Mine
339 acres
 - Rasmussen Ridge Mine
756 acres
 - South Rasmussen Mine
389 acres, in reclamation
 - Dry Valley Mine
1,082 acres in reclamation





Selenium





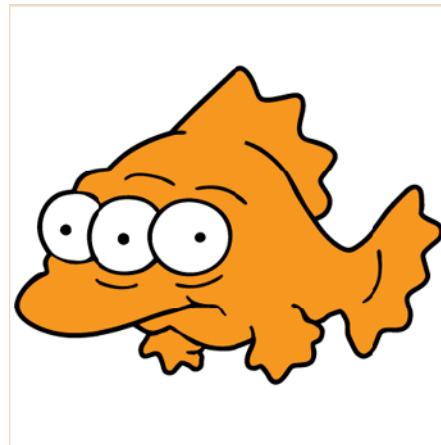


Mitigation, Best Management Practices, and Adaptive Management

Want this...



...not this

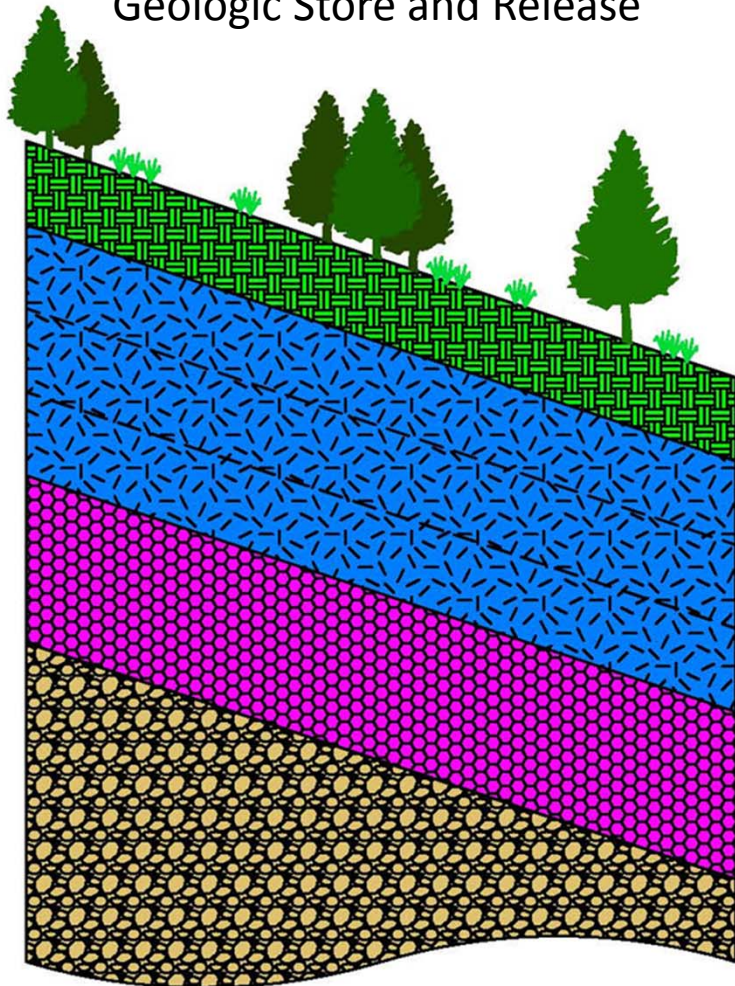










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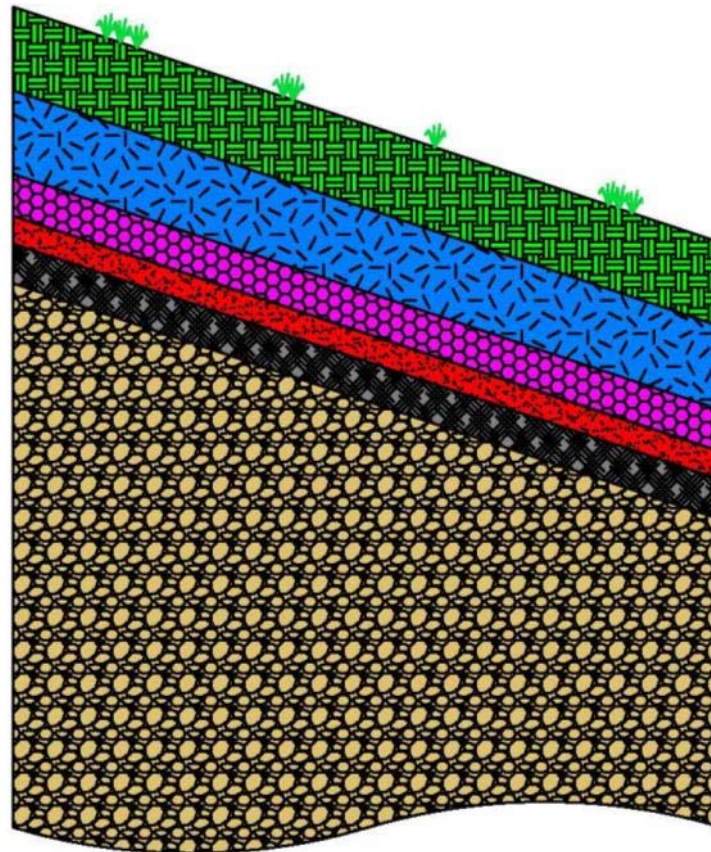
Covers







Geologic Store and Release



- | | | | |
|---|--------------------|---|---|
|  | 12" Topsoil |  | 24" Drainage Layer (Crushed Chert or Limestone) |
|  | 12" Upper Dinwoody |  | Run of Mine Overburden |
|  | 12" Lower Dinwoody | | |
|  | 12" Deep Dinwoody | | |
- Note: Vegetation not to Scale

Geosynthetic Clay Laminate Liner (GCLL)



- | | | | |
|--|--|---|--|
|  | 12" Topsoil |  | GCLL |
|  | 12" Dinwoody |  | Prepared Subgrade Surface (depth would vary) |
|  | 6" Drainage Layer (Crushed Chert or Limestone) |  | Run of Mine Overburden |









2014/7/20





Questions?

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