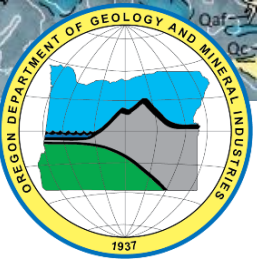


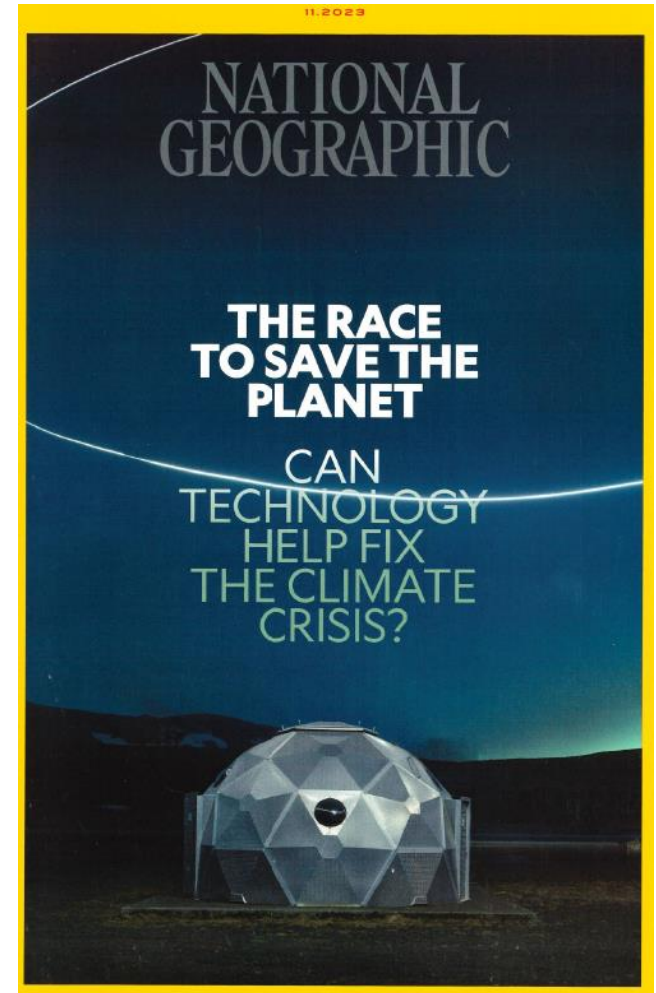
# Geologic Carbon Sequestration in Oregon

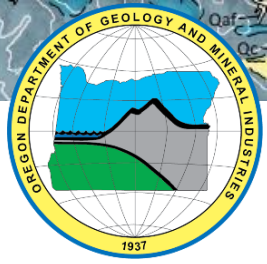
Oregon Dept. of Geology and Mineral Industries  
& Department of State Lands  
January 2025



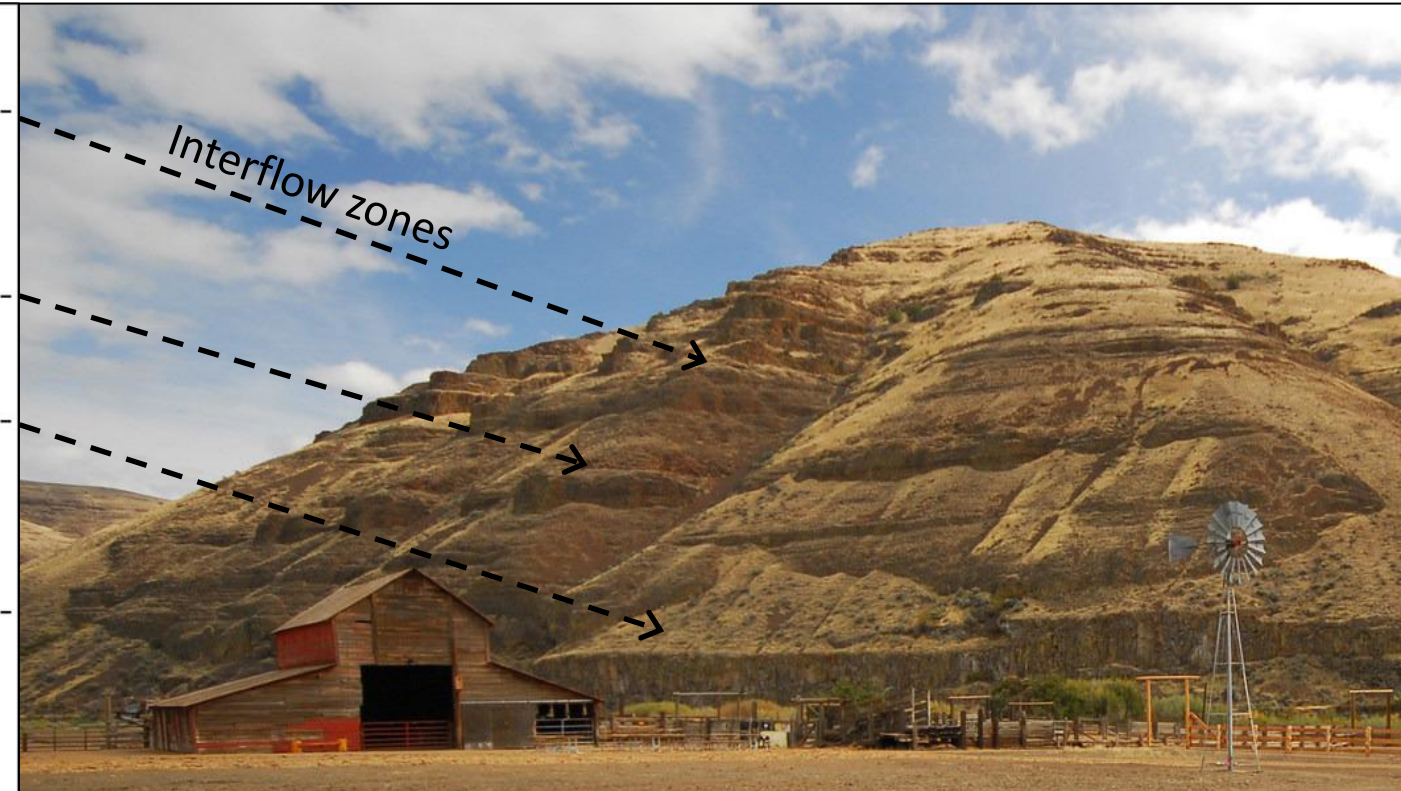
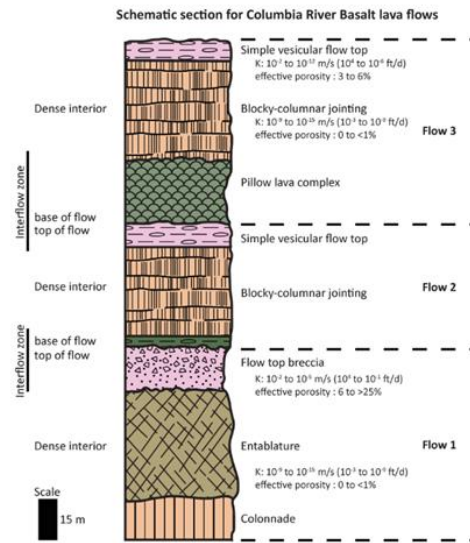
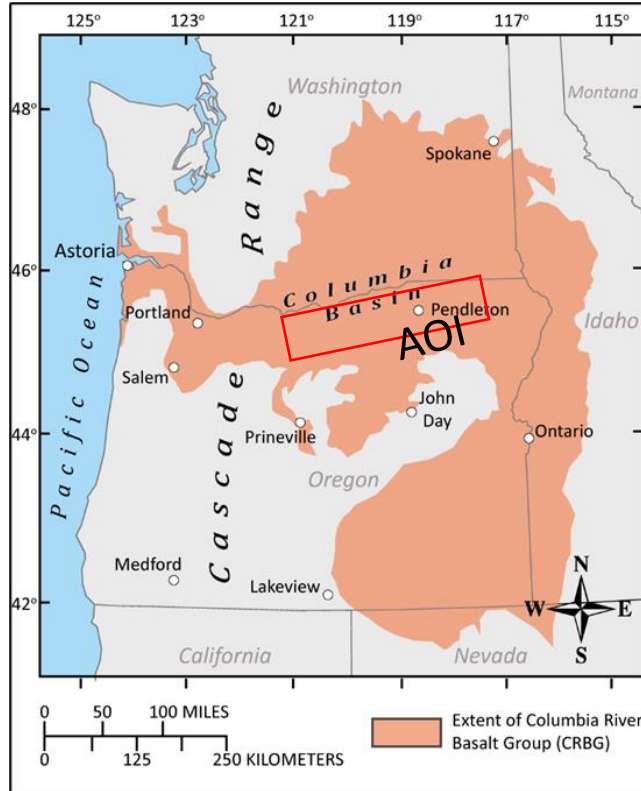
# Potential for Geologic Carbon Sequestration in Oregon

- Carbon Sequestration Overview
- Oregon Basalts and Geologic Carbon Sequestration
- State Lands Opportunities
- Regulatory Framework
- Community Engagement



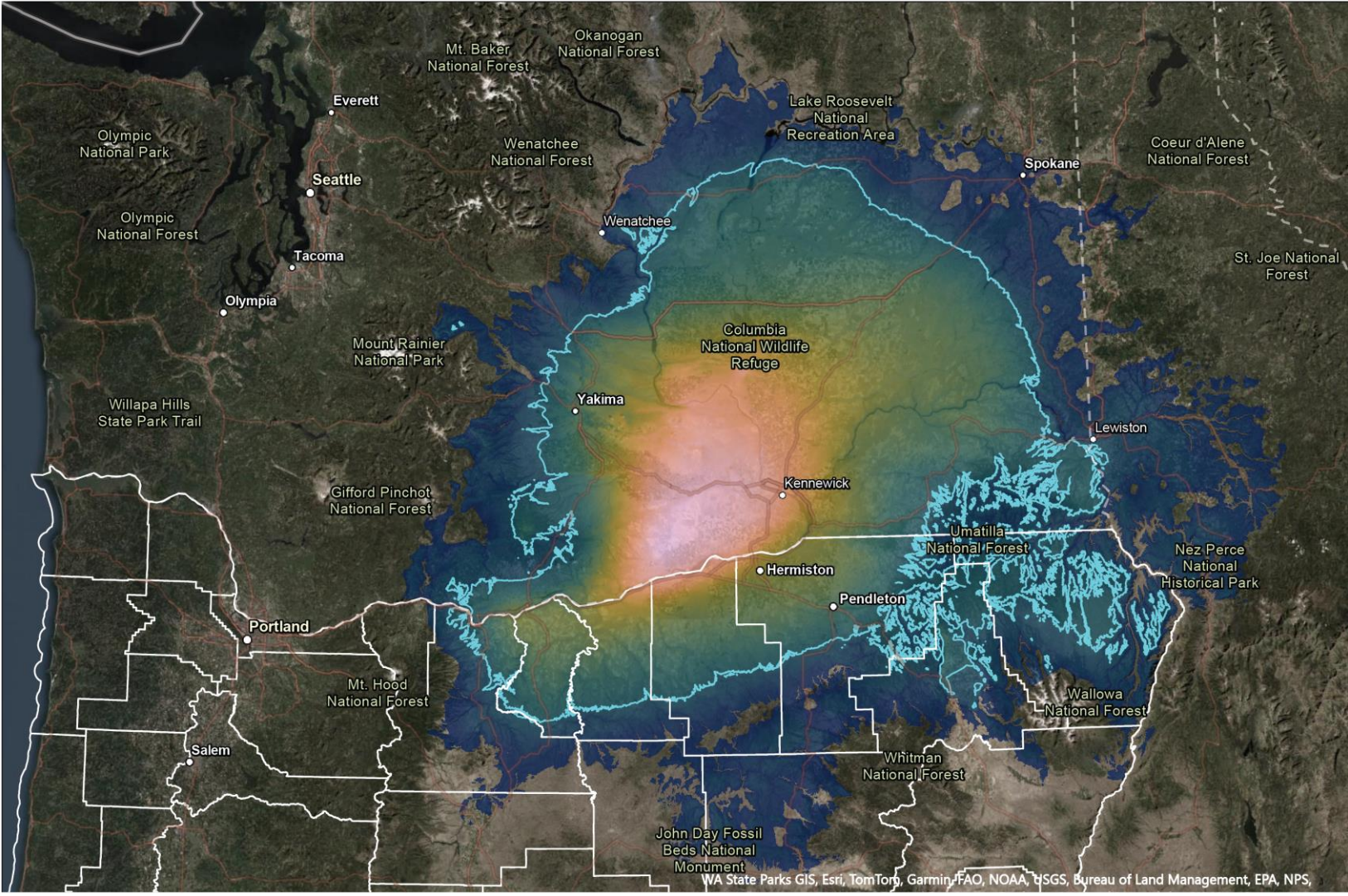
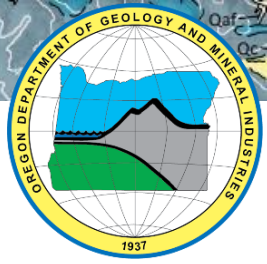


# Where could CO<sub>2</sub> be stored in the PNW? – Columbia River Basalt, north-central Oregon



**An important step is to understand the subsurface geology**

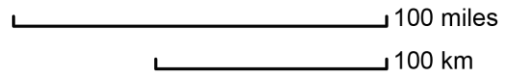
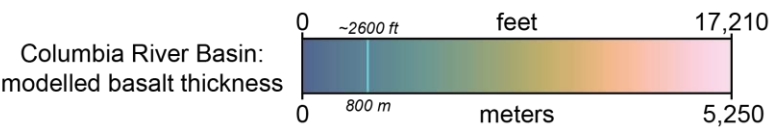
Cao et al. (2024) estimate that the Columbia River Basalt Group could store up to 40 Gigatons of CO<sub>2</sub>



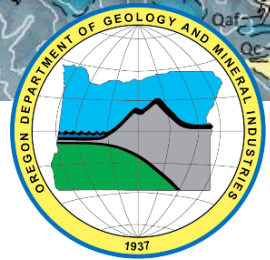
How deep are the rocks and how big is the opportunity?

Modeled thickness of the Columbia River Basalt across the Columbia Plateau

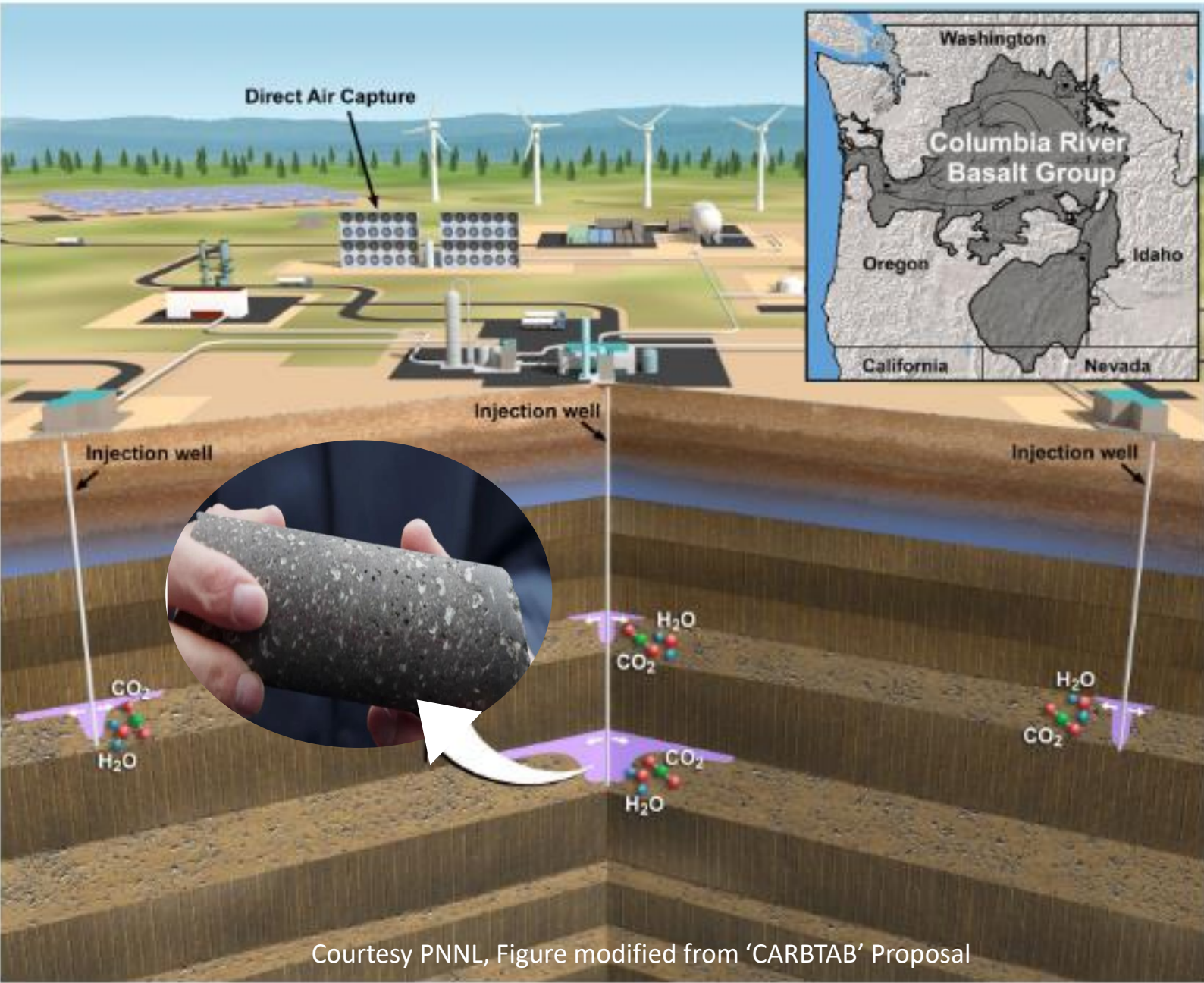
The blue line represents a basalt thickness of 2,600 ft



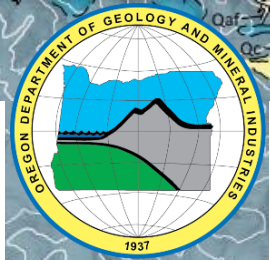
WA State Parks GIS, Esri, TomTom, Garmin, FAO, NOAA, USGS, Bureau of Land Management, EPA, NPS



# CO<sub>2</sub> Storage in Columbia River Basalt

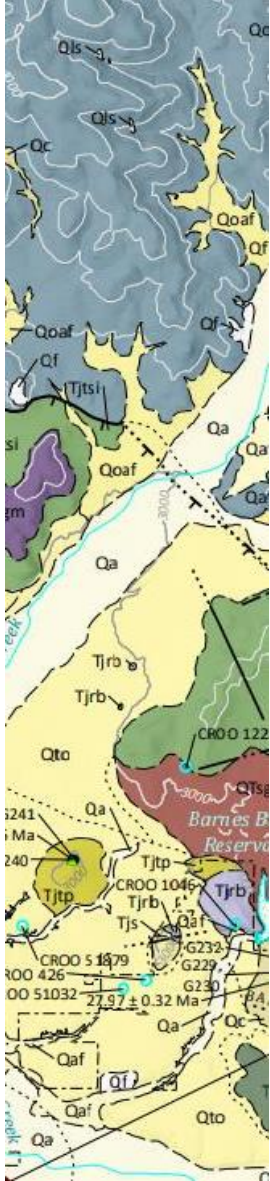
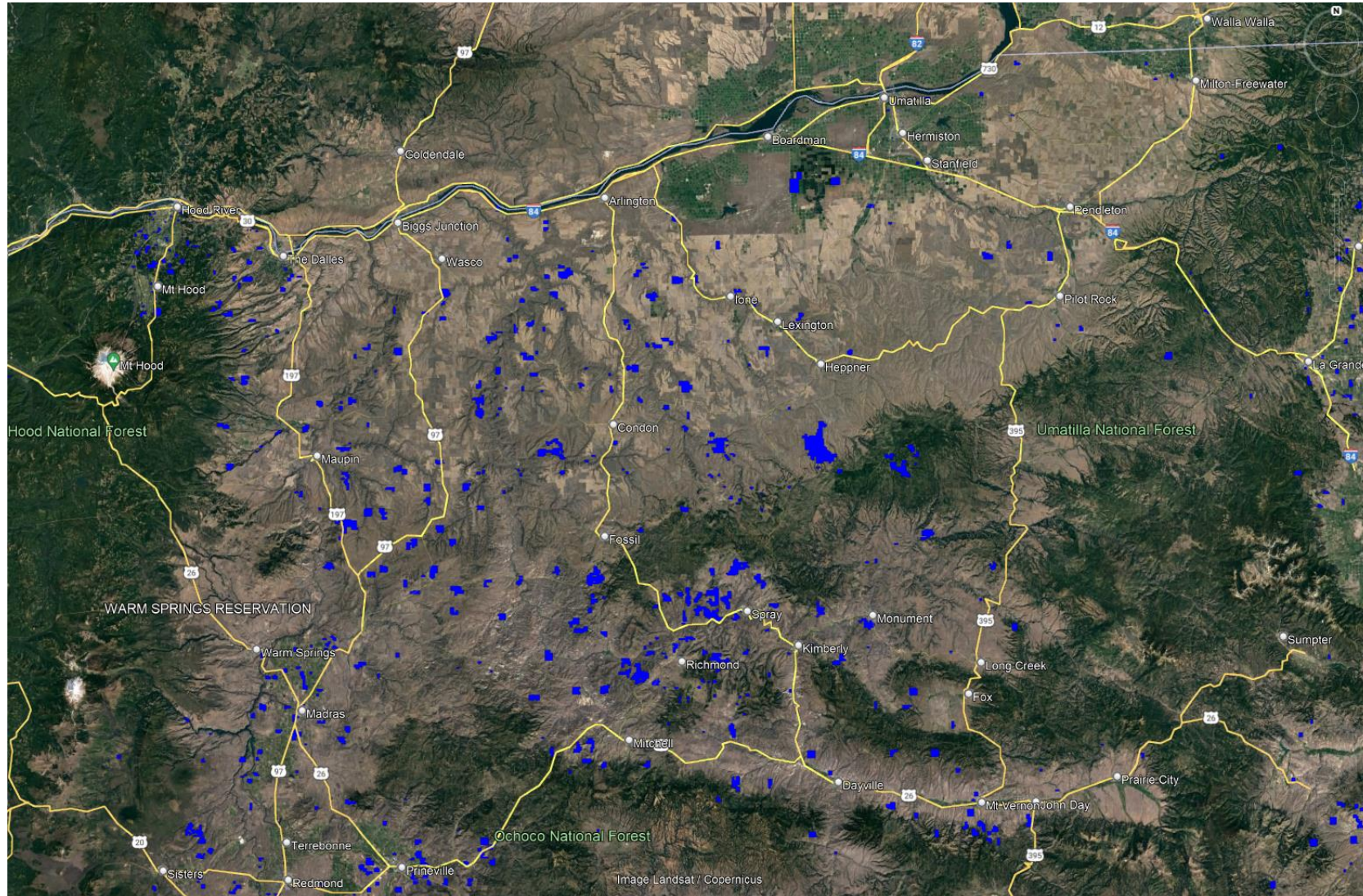


Courtesy PNNL, Figure modified from 'CARBTAB' Proposal

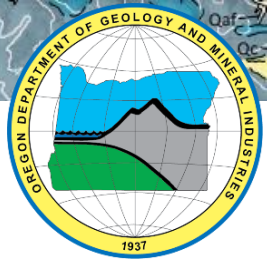


## 2. Carbon Capture and Sequestration (CCS)

State Lands in NE Oregon




State Lands in NE Oregon are underlain by Columbia River Basalt lava flows.




## State Lands Opportunities

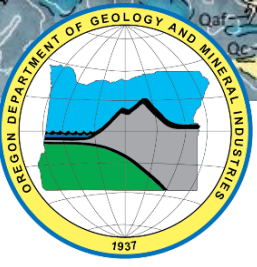
- Royalties on surface rights, pore space
- Facility siting and leasing
- 25-27 Policy Package 217 – *supporting important first steps*
  - Up to \$10 million from Land Revolving Account
  - Legislative approval requested for limitation
- Land Revolving Account available only for suitable investments in school lands
  - State Land Board will consult with Oregon Investment Council and decide whether to invest

 OREGONLIVE  
The Oregonian

### Tech group will pay \$40 million to capture carbon dioxide in Oregon, fight climate change

Updated: Jul. 15, 2024, 7:06 a.m. | Published: Jul. 11, 2024, 5:36 p.m.





# State of Oregon Opportunities

- State of Oregon decarbonization
  - Treasury decarbonization
- Economic Development
  - Non-agricultural
- Climate Change Mitigation
  - DAC mitigates:
    - CO<sub>2</sub> already in atmosphere
    - Hard to abate economy sectors

**Newsweek** SUBSCRIBE FOR \$1 Login

News | Carbon Dioxide | Greenhouse Gas Emissions | Greenhouse Gases | Climate Char

## Oregon's Volcanic Rocks Could Unlock Major Carbon Storage Potential

Published Nov 21, 2024 at 12:16 PM EST

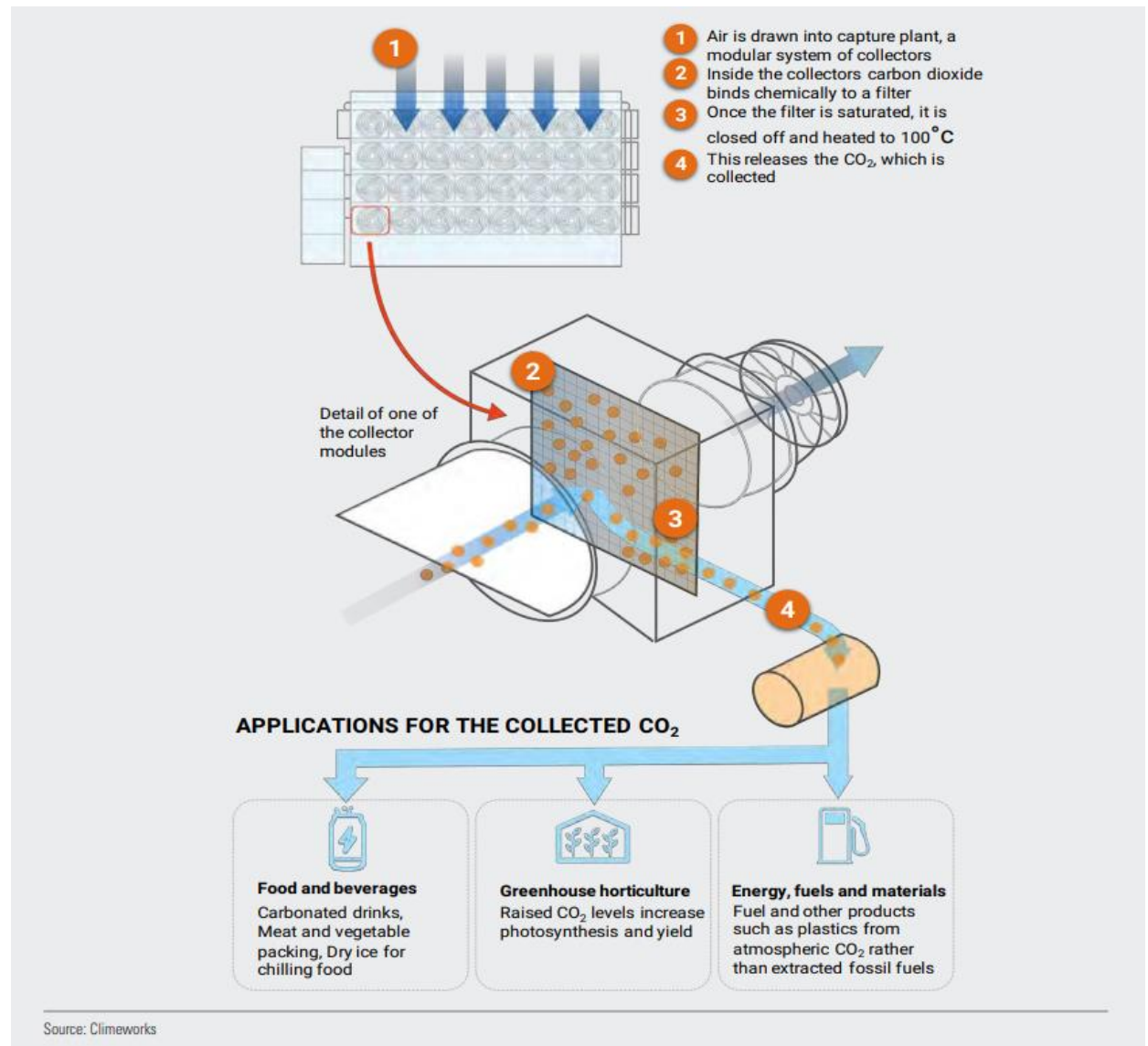
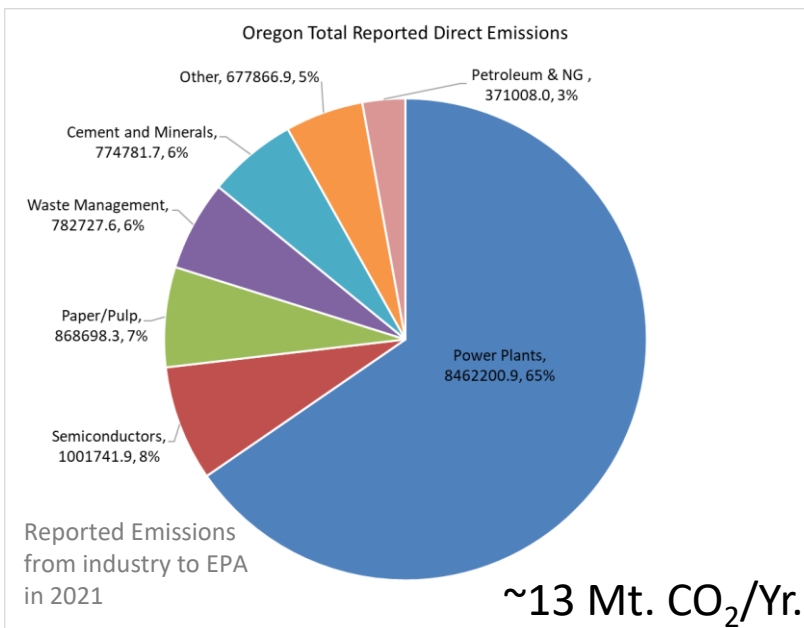
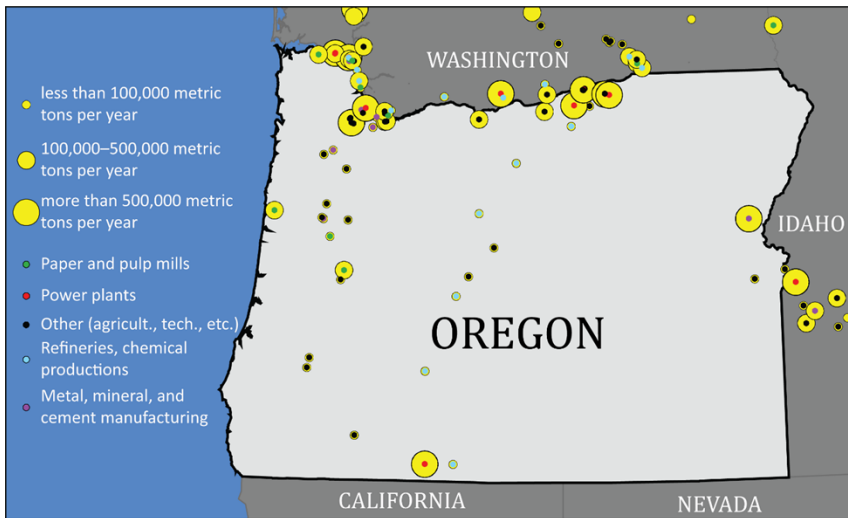


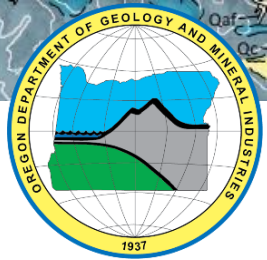
By **Tom Howarth**  
Science Reporter (Nature)

FOLLOW



# PNW: CO<sub>2</sub> Point Source Capture or Direct Air Capture?





# Demonstration Project in Iceland



Capture



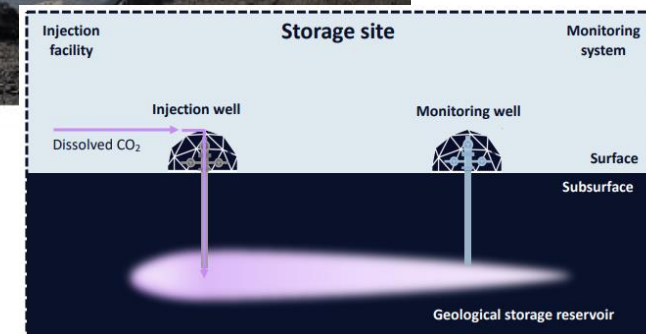
Mineralization

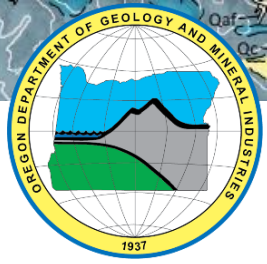
**climeworks**  
4,000 tCO<sub>2</sub>/yr capacity

RMI – Energy. Transformed.

**Carbfix**

Injected to 400-2,000m depth  
Mineralization verified using chemical tracers





# Projects in PNW

## DOE Funded Projects

- HERO Basalt CarbonSAFE – University of Wyoming
- Ankeron Carbon Management Hub — Rocky Mountain Institute (RMI)

## DOE Proposals Selected

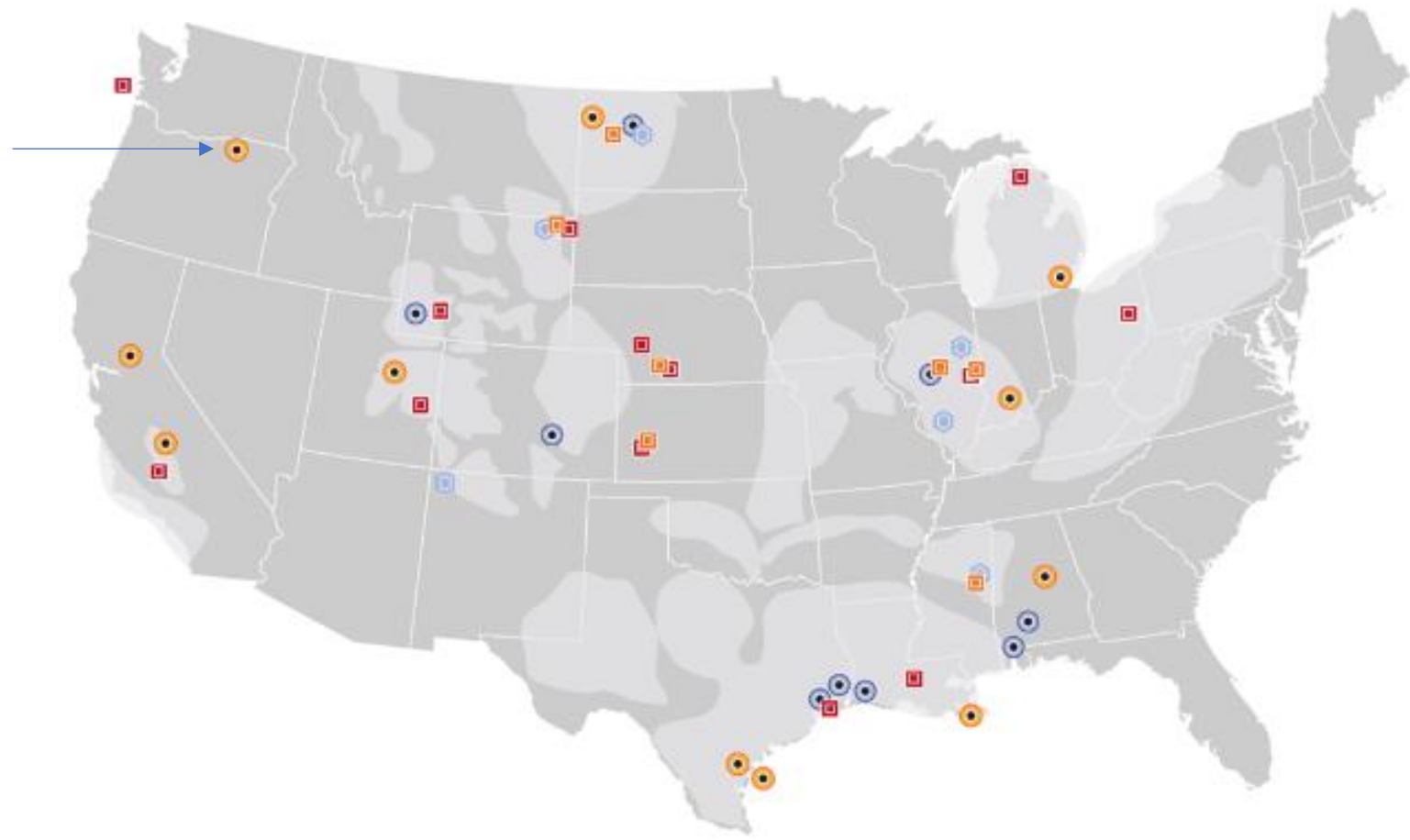
- CARBTAB - Carbon Solutions LLC

## DOE Future Funding Announcements

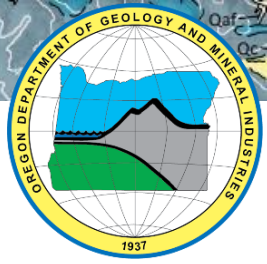
- CarbonBASE

## Directed Air Capture (DAC) Facility

- The Dalles



U.S. DOE CarbonSAFE funding 2023



# Geologic Carbon Sequestration in Oregon – *Project Goals (0-3 years)*

Initial community  
and Tribal  
engagement

Geologic modeling and  
installation of research  
well on DSL managed land

Application for EPA  
funding for pursuing  
regulatory primacy



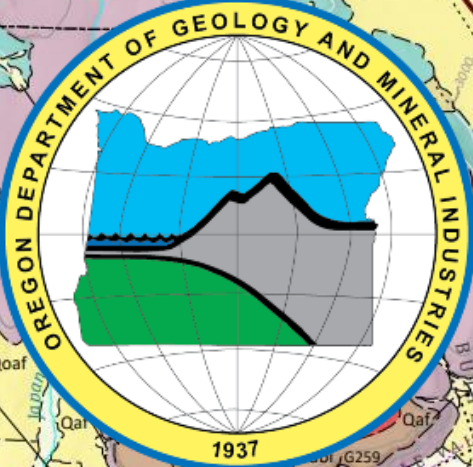
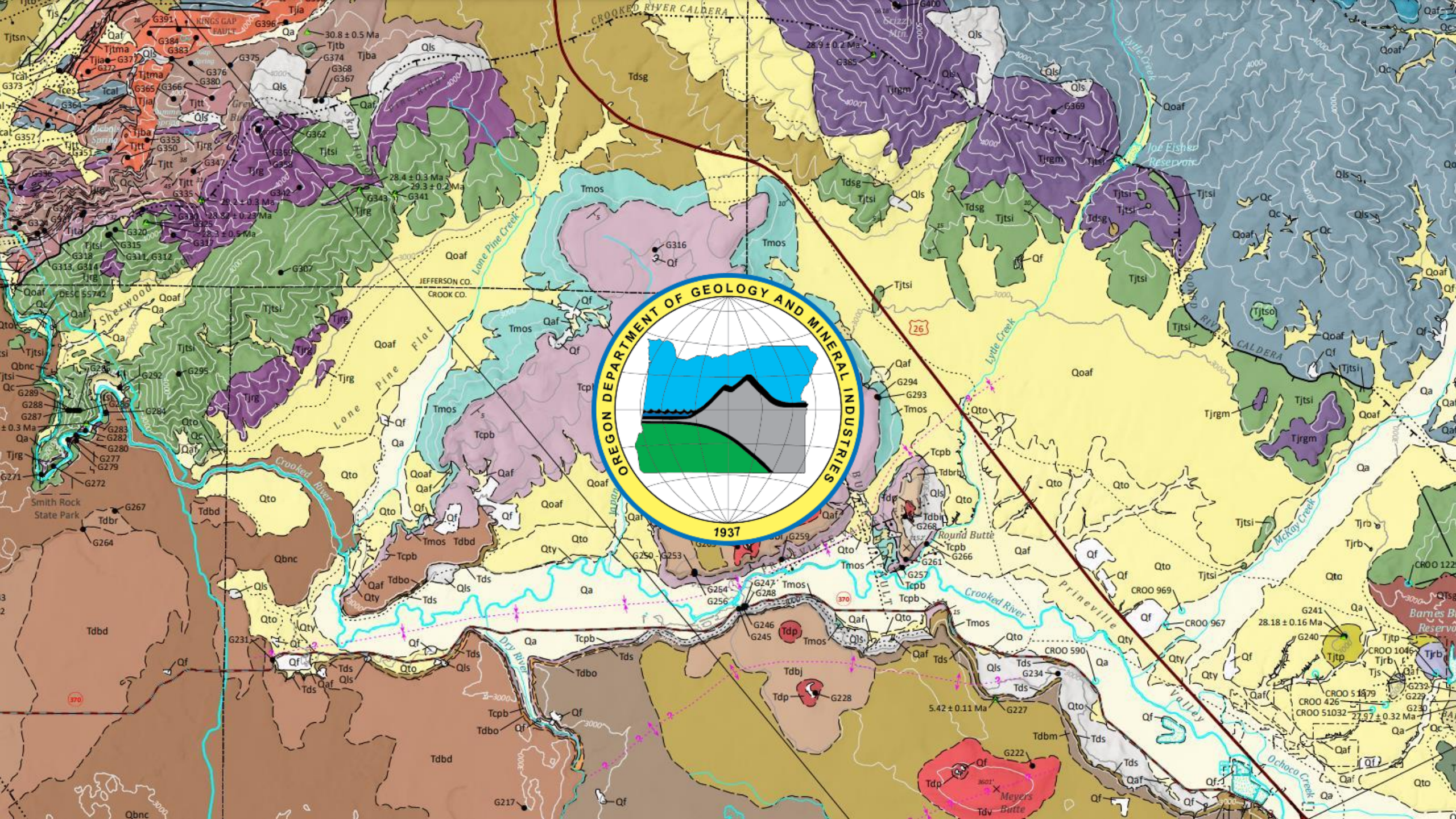
Community  
Engagement



Technical  
Feasibility



Regulatory  
Structure



CROOKED RIVER CALDERA

JOE FISHER RESERVOIR

ROUND BUTTE

Meyers Butte

JEFFERSON CO.  
CROOK CO.

Lone Pine Creek

Crooked River

prineville

Valley

Ochoco Creek

Smith Rock State Park

Sherwood

Gray Butte

Skull Hill

Round Butte

Meyers Butte

Joe Fisher Reservoir

Crooked River

Lone Pine Creek

Lytle Creek

McKay Creek

Ochoco Creek

Jefferson River

Snake River

Wallowa River

Umpqua River

Clatsop River

Willamette River

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