

Coeur d'Alene Lake Water Quality

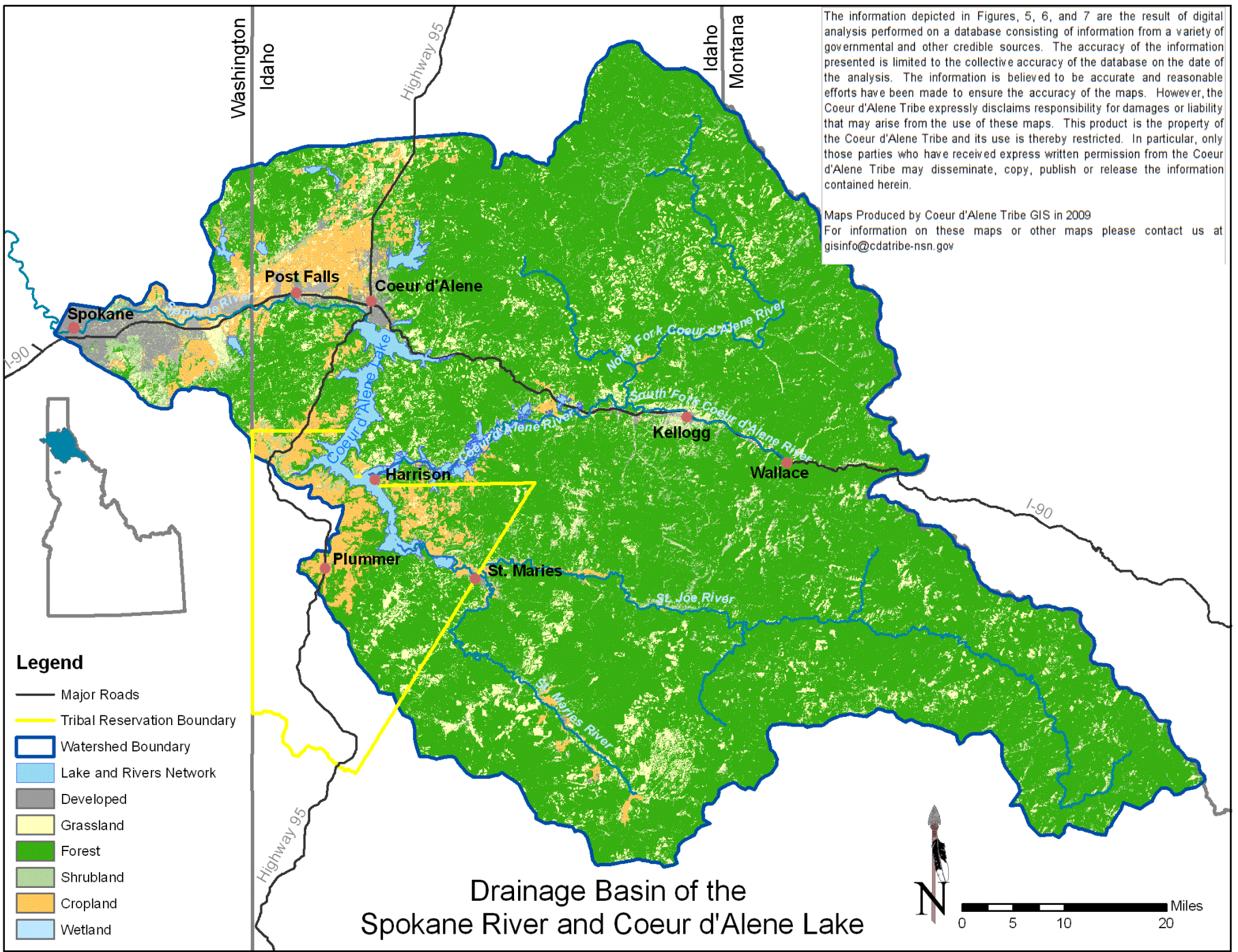
Presented to the Citizen Coordinating Council
Jamie Brunner, Idaho Department of Environmental Quality
Rebecca Stevens, Coeur d'Alene Tribe

April 3, 2024



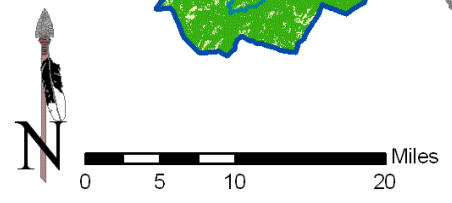
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Maps Produced by Coeur d'Alene Tribe GIS in 2009
 For information on these maps or other maps please contact us at gisinfo@cdatribe-nsn.gov



Drainage Basin of the
 Spokane River and Coeur d'Alene Lake

- Legend**
- Major Roads
 - Tribal Reservation Boundary
 - ▭ Watershed Boundary
 - ▭ Lake and Rivers Network
 - ▭ Developed
 - ▭ Grassland
 - ▭ Forest
 - ▭ Shrubland
 - ▭ Cropland
 - ▭ Wetland





Historical Land Uses

- 1880's Silver and Gold discovered near Prichard, ID
- Logging surrounding hill sides for mines and railroads
- 1886-1992 UPRR hauled ore down river, across the Lake and along lakeshore; tailings used in rail bed
- Mine tailings discharged directly into floodplains

Mining in the Silver Valley





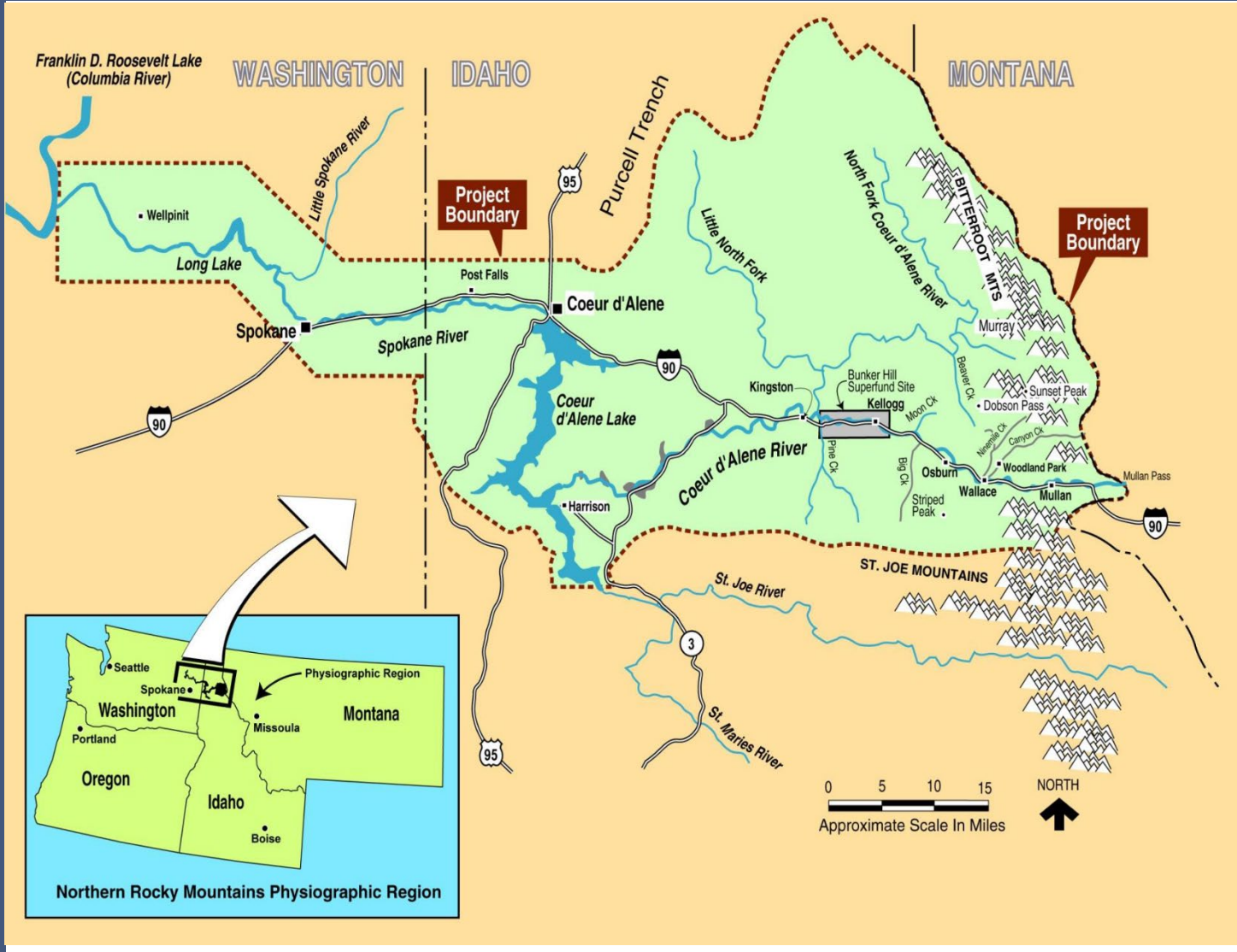
Osbourne tailings dam, 1920



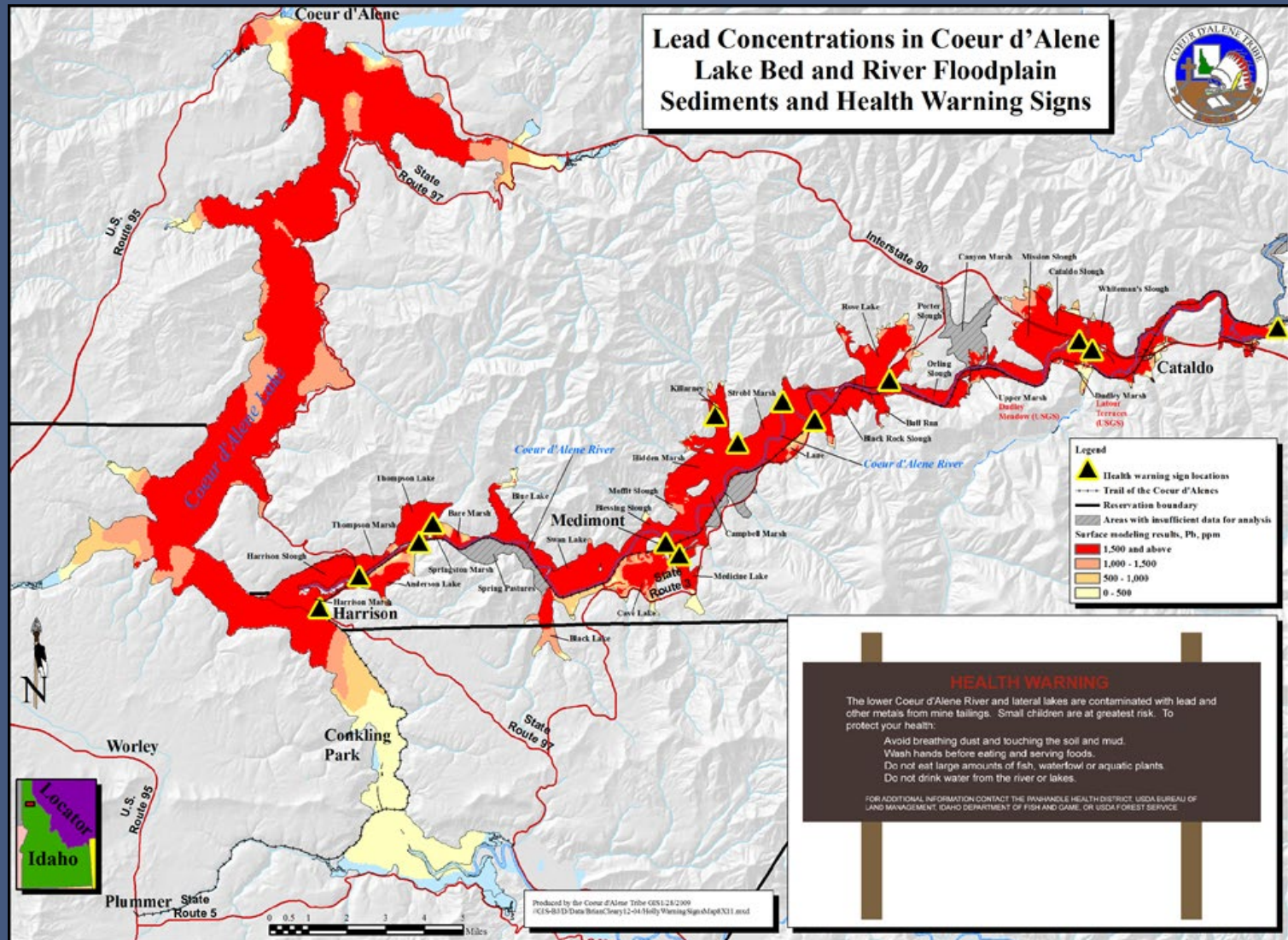
Bunker Hill Mining and Metallurgical Complex Superfund Site

- Congress enacted the Comprehensive Environmental Response and Liability Act (CERCLA) in 1980
 - Bunker Hill placed on National Priorities List 1983
 - Also known as “Superfund”
- Allows the Federal Government to respond to releases of hazardous substances in the environment





Coeur d'Alene Lake Legacy Impacts



Metals Are Still Moving into the Lake



Coeur d'Alene Lake

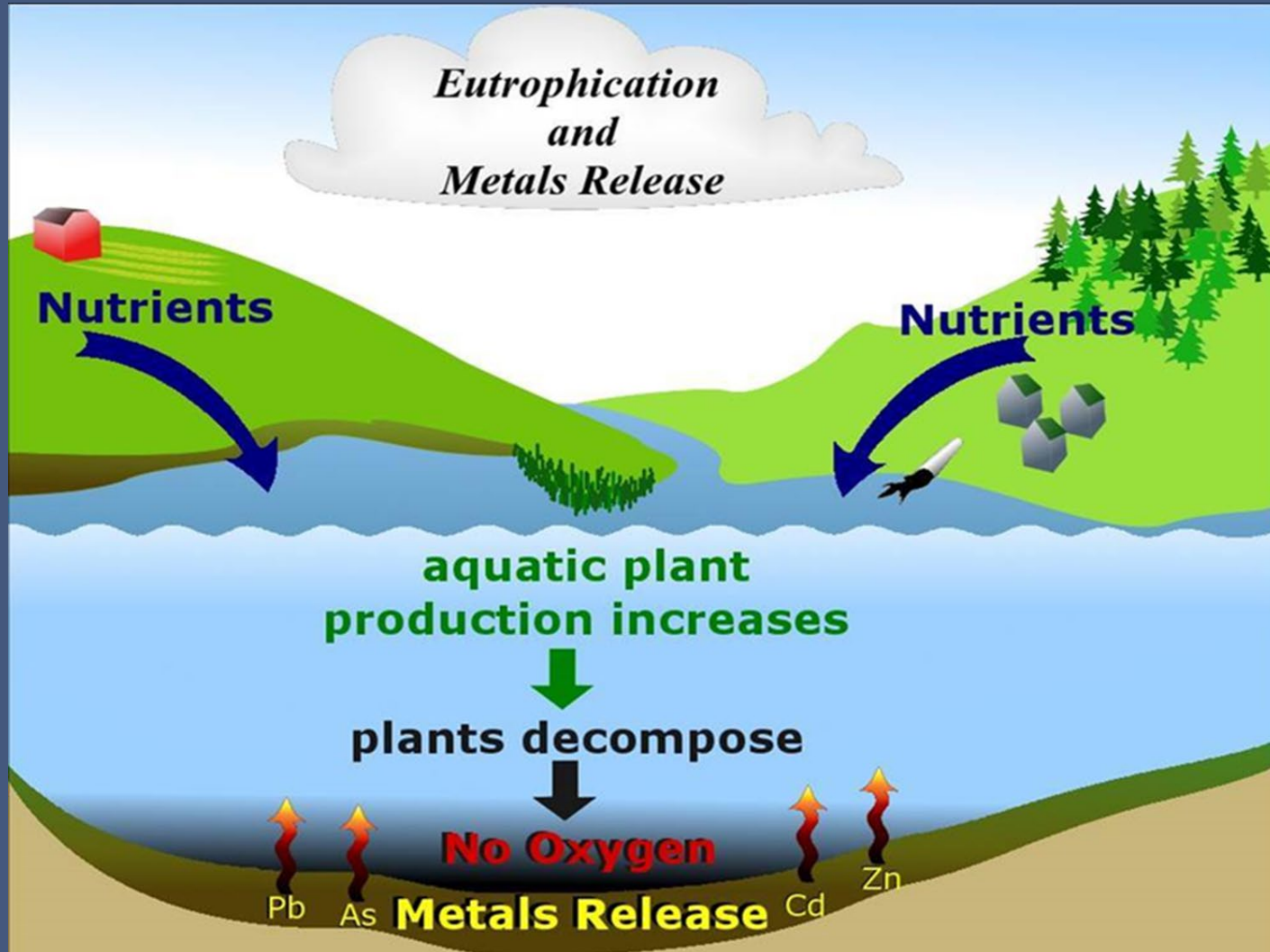
Under CERCLA (Superfund), contaminated areas have “remedies” identified to address contaminants.

EPA deferred a remedy for the Lake under CERCLA.

The Tribe and State of Idaho jointly manage water quality monitoring and outreach efforts under their respective Clean Water Act authorities.

Lake Management Plan 2009

Manage contaminated lakebed sediments in place by managing lake productivity (via phosphorus inputs)



Plan Objectives

1. Improve Scientific Understanding of Lake Conditions through Monitoring, Modeling and Special Studies
2. Establish and Strengthen Partnerships to Maximize Benefits of Actions under Existing Regulatory Frameworks
3. Develop and Implement a Nutrient Reduction Action Plan
4. Increase Public Awareness of Lake Conditions and Influences on Water Quality
5. Establish Funding Mechanisms to Support the LMP goal, objective and strategies

Lake Management Plan 2009



Coeur d'Alene Lake Management Plan 2009

Water quality “triggers” identified to serve as early warnings:

- Phosphorus and nitrogen
- Dissolved Oxygen
- Chlorophyll *a*
- Heavy metals
- pH

Lake Monitoring

- **Monitoring Sites**

- C1, Northern Pool
- C4, Central Pool
- C5, C6 Southern Pool

- **Metals**

- Cadmium
- Lead
- Zinc

- **Trophic Status**

- Chlorophyll-a
- Nutrients (*Nitrogen, Phosphorus*)
- Oxygen in bottom waters
- Plankton ecology
- Water clarity



- colder
- deeper
- oligotrophic
- less nutrients
- more metals



- warmer
- shallower
- mesotrophic
- more nutrients
- less metals

Lead Trends, 1991-2022



total lead is ~50% lower than in 1991 – 1992
dissolved metal trends are since 2004

Fast forward 10 years:

- Triggers exceedances
- Undesirable trends
- Tribe Asserts LMP not sufficient for lake protection
- State of Idaho calls for third-party review of lake data (2019 Our Gem CdA Lake Symposium)

“In the event that monitoring data reveals trends that approach a trigger level for one or more constituents, this will prompt a comprehensive review to identify the causes of the trend and guide development of a corrective management response.”

Where we are today

- National Academy of Science 3rd party review of Coeur d'Alene Lake data (2020)
- Leading Idaho Initiative & Coeur d'Alene Lake Advisory Committee (2021)



National Academies of Science, Engineering, and Medicine (NAS)

- 3rd party review of Coeur d'Alene Lake data
- Sponsors: Idaho DEQ, Kootenai County, EPA
- Scope
 - Current water quality
 - Impacts of:
 - low dissolved oxygen
 - zinc levels on algal growth
 - Future implications
 - Relevance of metals release



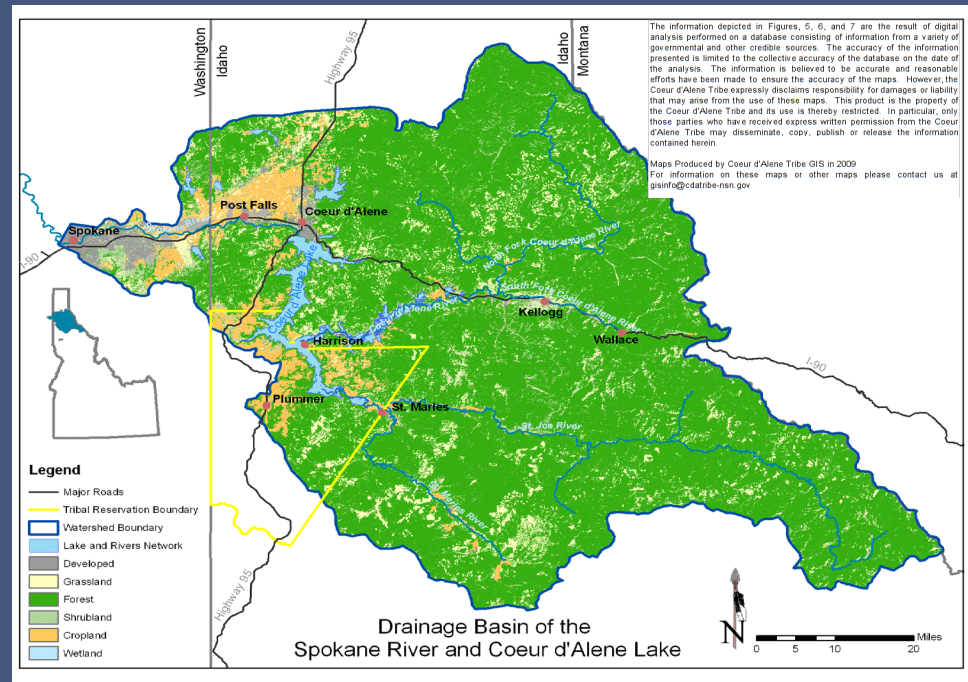
National Academies of Science, Engineering, and Medicine (NAS)

- Final report issued September 30, 2022
- Our Gem Collaborative hosted NAS:
Hagadone Event Center, November 15, 2022



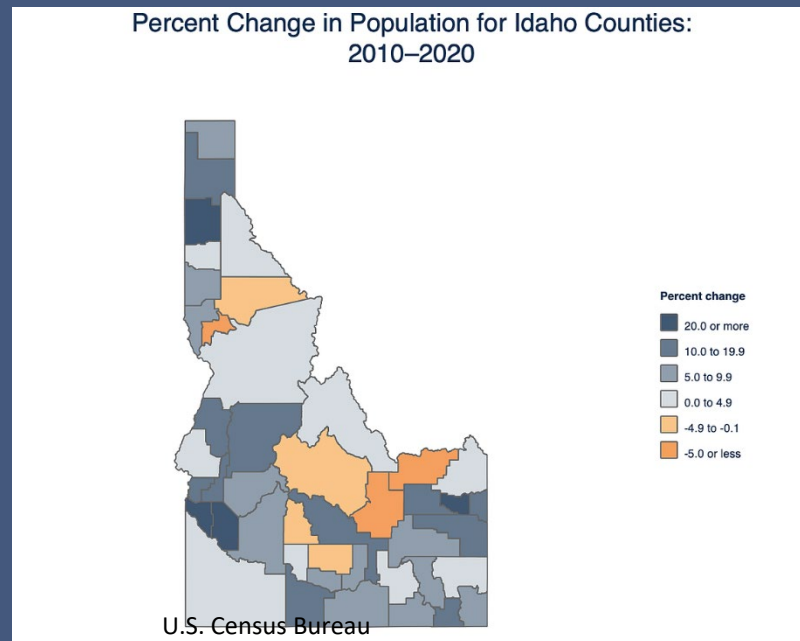
National Academy of Science Report

- Metals, nutrients concentrations from major inputs declined over last decade
- Lower Basin contains large amounts of contaminated sediments
- In their review of 10 years worth of data, In-lake metals are declining



NAS Report

- Total in lake phosphorus in the last 10 years shifted from a long-term increase to no trend; **still approximately double the level from the 1990's**
- **Future water quality considerations: climate change, population influx may slow or reverse desirable trends**
- **Monitoring improvements needed**



NAS Recommendations

- Science coordination team
- Watershed monitoring (incoming rivers and streams)
- Bays and shallower areas
- Human health risks
- Wastewater treatment upgrades

Publications



2022

The Future of Water Quality in Coeur d'Alene Lake

Coeur d'Alene Lake in northern Idaho is an invaluable natural, recreational, and economic resource for communities in Idaho and eastern Washington. Starting in the late 1880s, mining in the Lake's watershed sent heavy metals and other mining wastes into the Lake, resulting in contamination of lake sediments with lead, cadmium, arsenic, and zinc that persists today. The watershed was designated a Superfund site and cleanup has been ongoing for 30 years. However, the Lake's environmental quality and cleanup is overseen by a Lake Management Plan, originally implemented by the Coeur d'Alene Tribe and the state of Idaho. A major focus of that plan is whether lakeshore development might promote low-oxygen (anoxic) conditions that could release toxic metals from lake sediments back into the water column.

[Read Full Description](#)

RESOURCES

 [Report Highlights](#)

 [Press Release](#)

[View Report](#)

[www.nationalacademies.org/
our-work/
the-future-of-water-quality-in-
coeur-dalene-lake](https://www.nationalacademies.org/our-work/the-future-of-water-quality-in-coeur-dalene-lake)

NAS Recommendations

- What we've been doing is worthwhile.
- There's still a lot of work ahead of us.

Publications



2022

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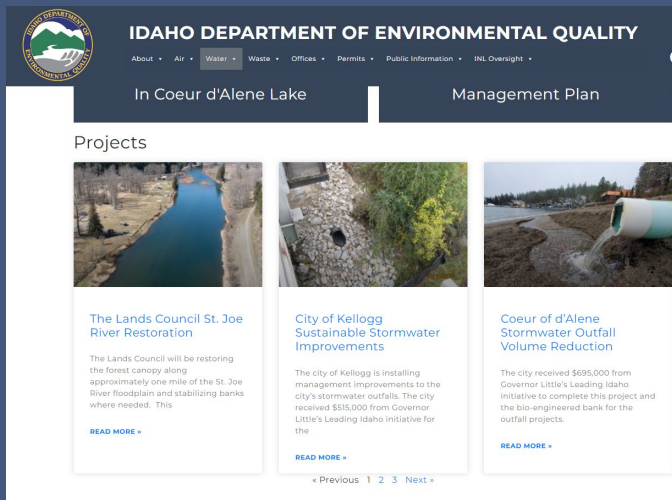
Leading Idaho

- \$2 million for Coeur d'Alene Lake State 2021
- ARPA Leading Idaho 2022
 - \$31 million (2023-2026)
 - CLAC meeting March 2023
 - Stormwater treatment
 - Wastewater upgrades
 - NAS CdA Lake report recommendations



Leading Idaho

- First \$2 million
 - Stormwater
 - City of Coeur d'Alene
 - City of Kellogg
 - East Side Hwy District
 - Nonpoint Source
 - Mica Creek bank stabilization

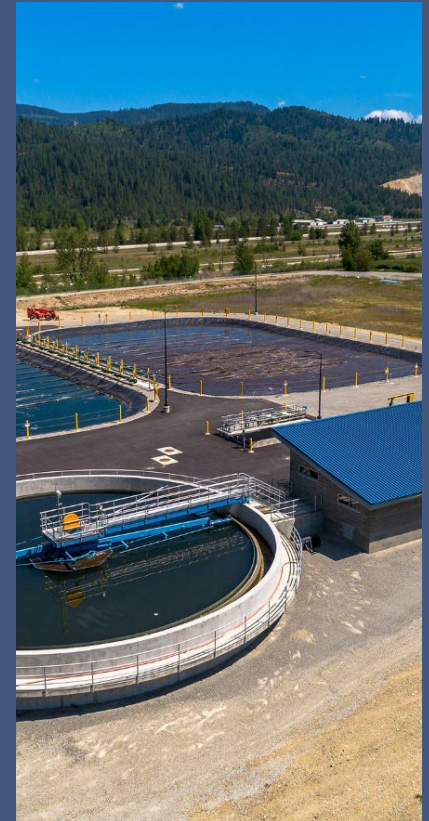


<https://www.deq.idaho.gov/leading-idaho-and-the-coeur-dalene-lake/>



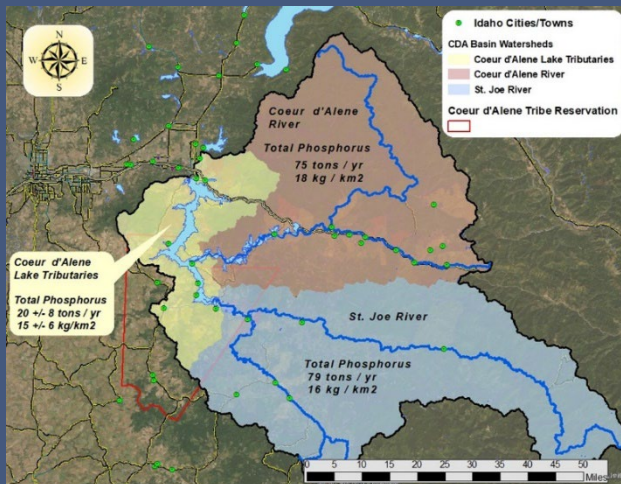
Leading Idaho ARPA Projects

- Page wastewater treatment plant
- Santa-Fernwood wastewater treatment upgrades
- Kellogg & City of Coeur d'Alene stormwater
- Road runoff/erosion improvements
- Nonpoint sources (soil erosion)
 - NF Coeur d'Alene River
 - Schlagel Draw
 - Mica Creek



Leading Idaho ARPA Projects (cont.)

- NAS Recommendations
 - Science coordination team
 - Risk-based evaluation of CdA Lake & Spokane River recreational areas
 - St. Joe River watershed assessment



<https://www.deq.idaho.gov/leading-idaho-and-the-coeur-dalene-lake/>





Restoration Partnership Lake projects

- Lake Monitoring/Modeling
- Cougar Bay Stream/wetland restoration
- Lake Creek
- Benewah Creek
- Riverbank stabilization
- NFK and St. Joe Stream



Coeur d'Alene Lake Information

Idaho DEQ's CdA Lake Management Page:

<https://www.deq.idaho.gov/water-quality/surface-water/coeur-dalene-lake-management/>

Coeur d'Alene Lake Collaborative

(Idaho DEQ, Coeur d'Alene Tribe, University of Idaho CdA, Basin Environmental Improvement Project Commission, Coeur d'Alene Regional Chamber of Commerce, Kootenai County, Kootenai Environmental Alliance)

uidaho.edu/OurGem

Restoration Partnership

www.restorationpartnership.org

Thank you

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