

# *A Tale of Two Rivers*





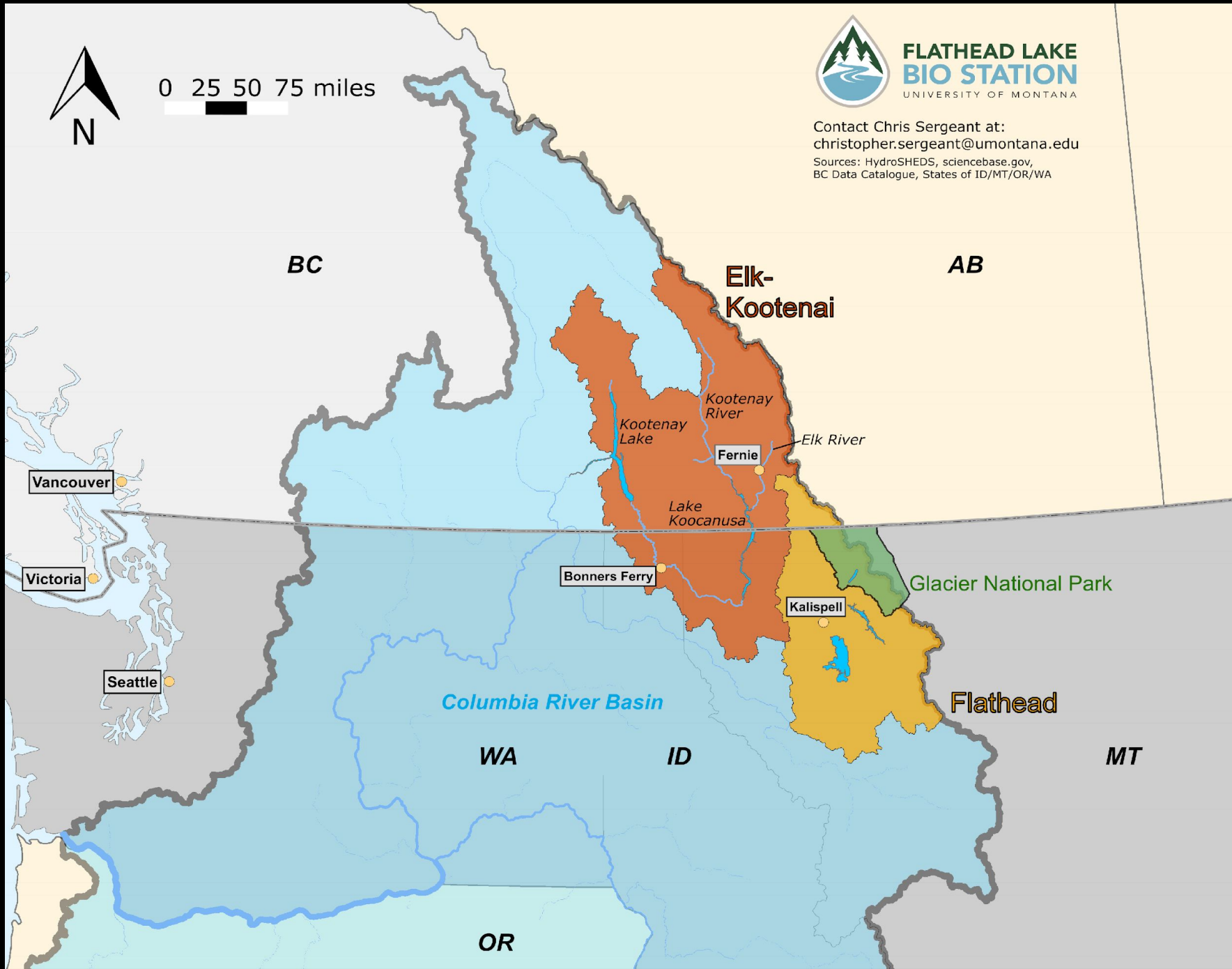
0 25 50 75 miles



**FLATHEAD LAKE  
BIO STATION**  
UNIVERSITY OF MONTANA

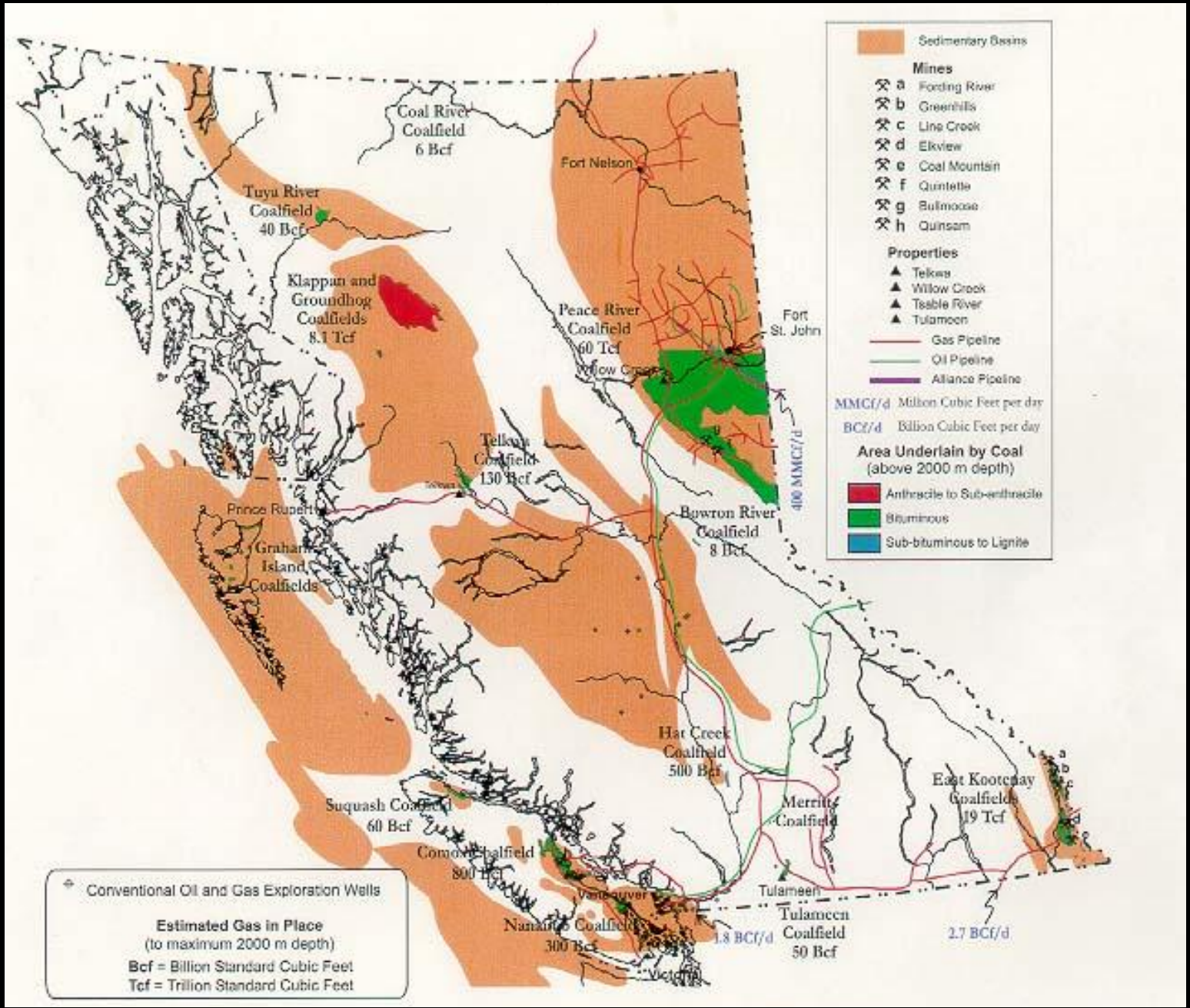
Contact Chris Sergeant at:  
[christopher.sergeant@umontana.edu](mailto:christopher.sergeant@umontana.edu)

Sources: HydroSHEDS, sciencebase.gov,  
BC Data Catalogue, States of ID/MT/OR/WA

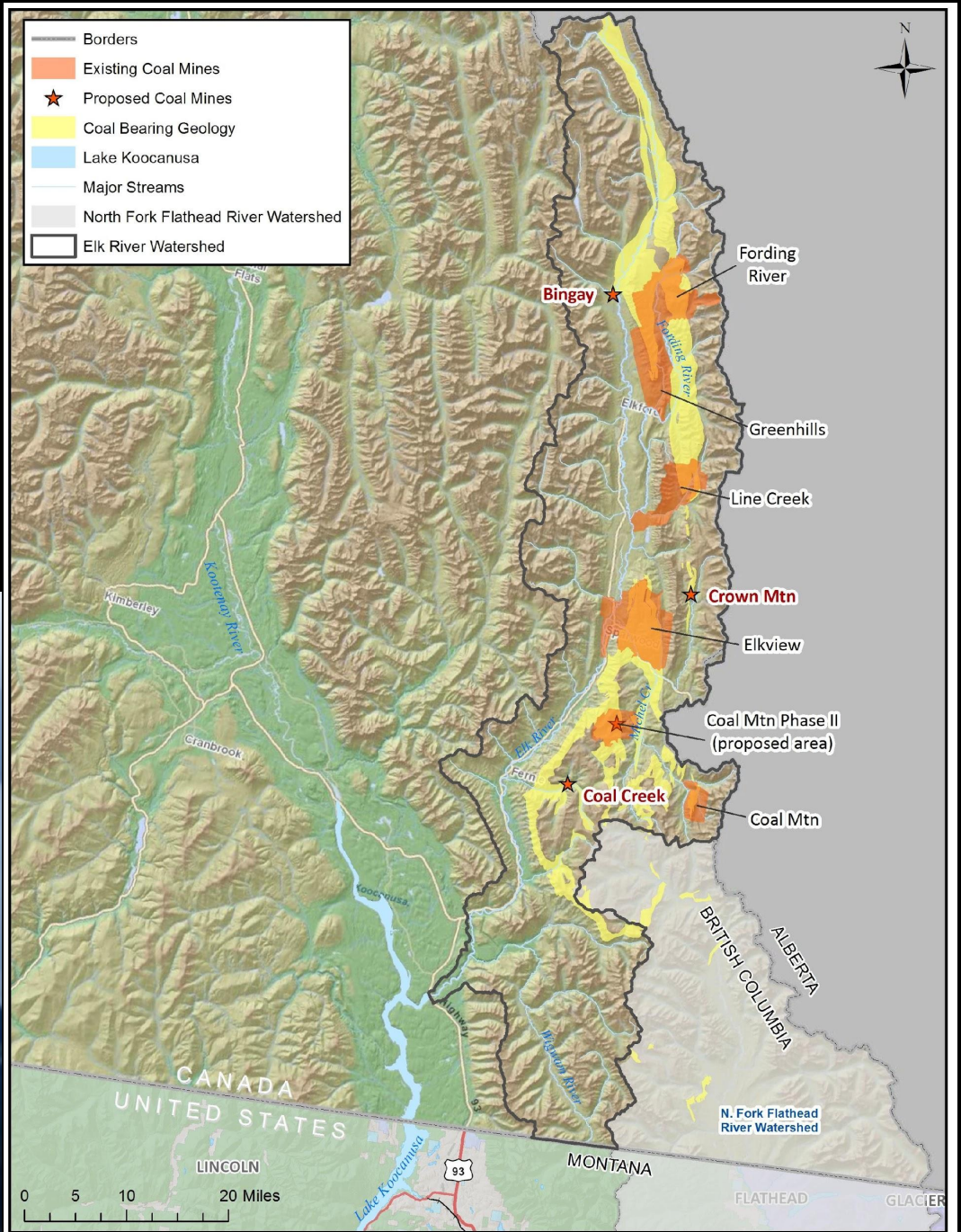




# Coalfield Potential in British Columbia

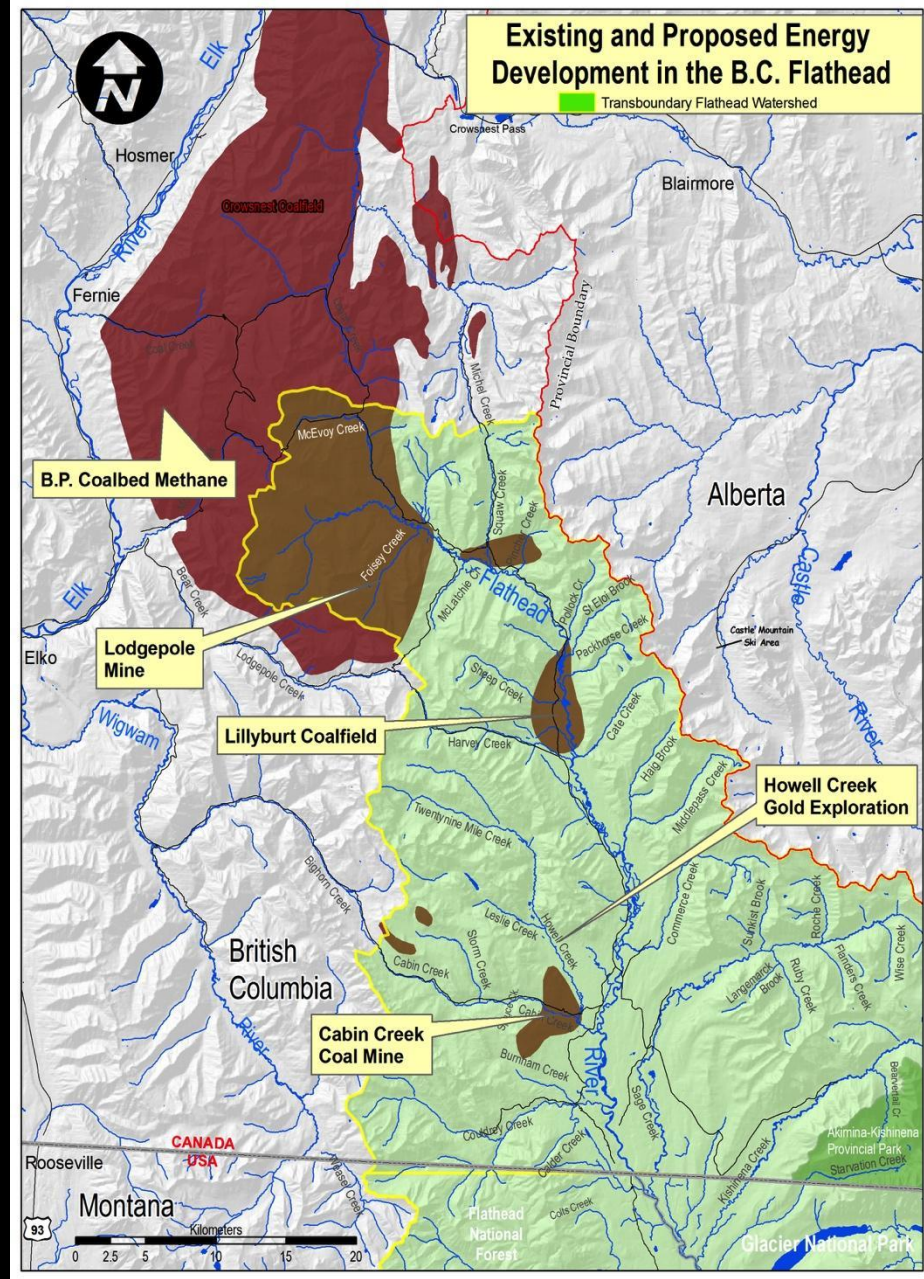








# Two Rivers – Multiple Land Uses



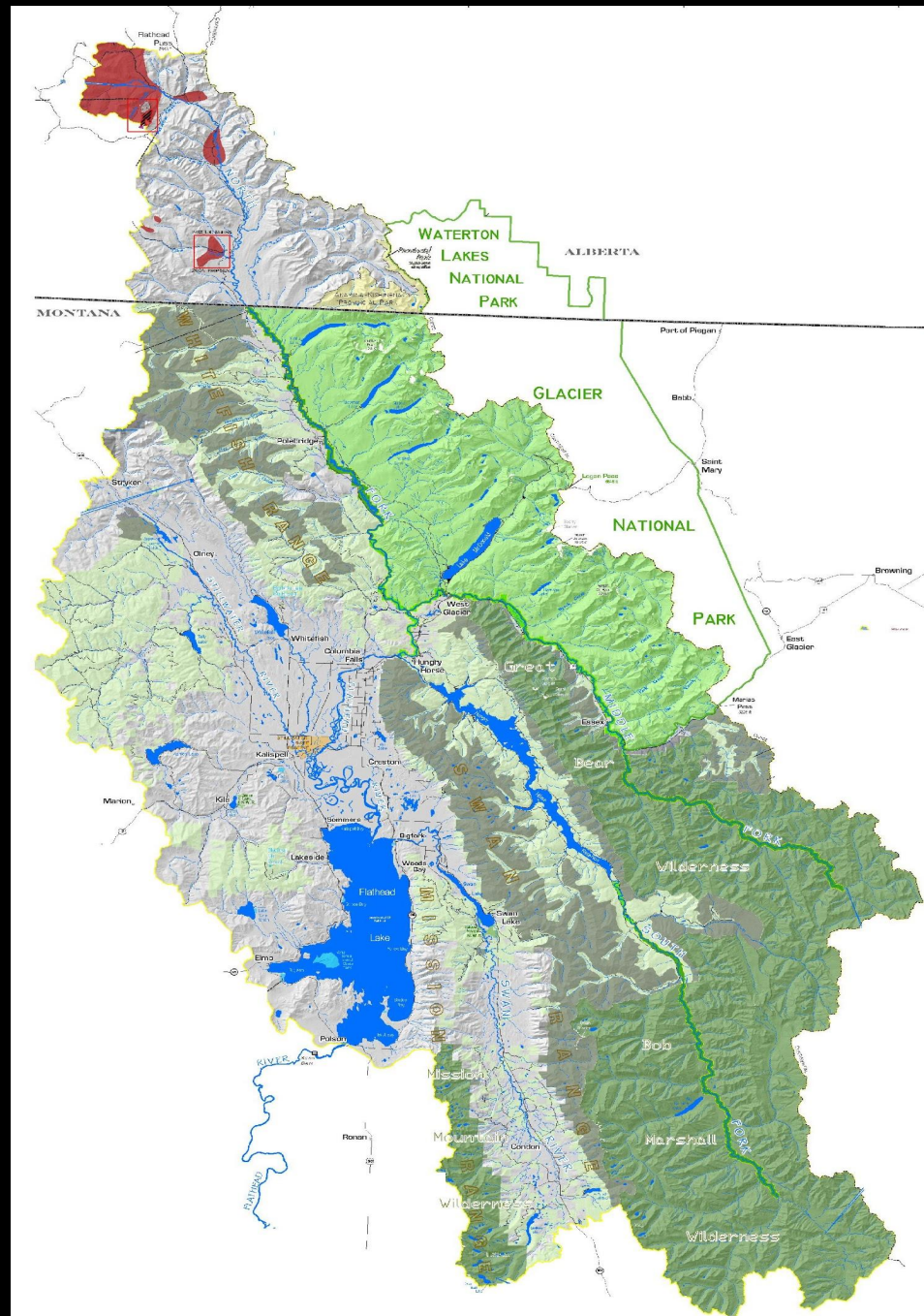




*G. Lenz*



Permitted in BC  
and Canada

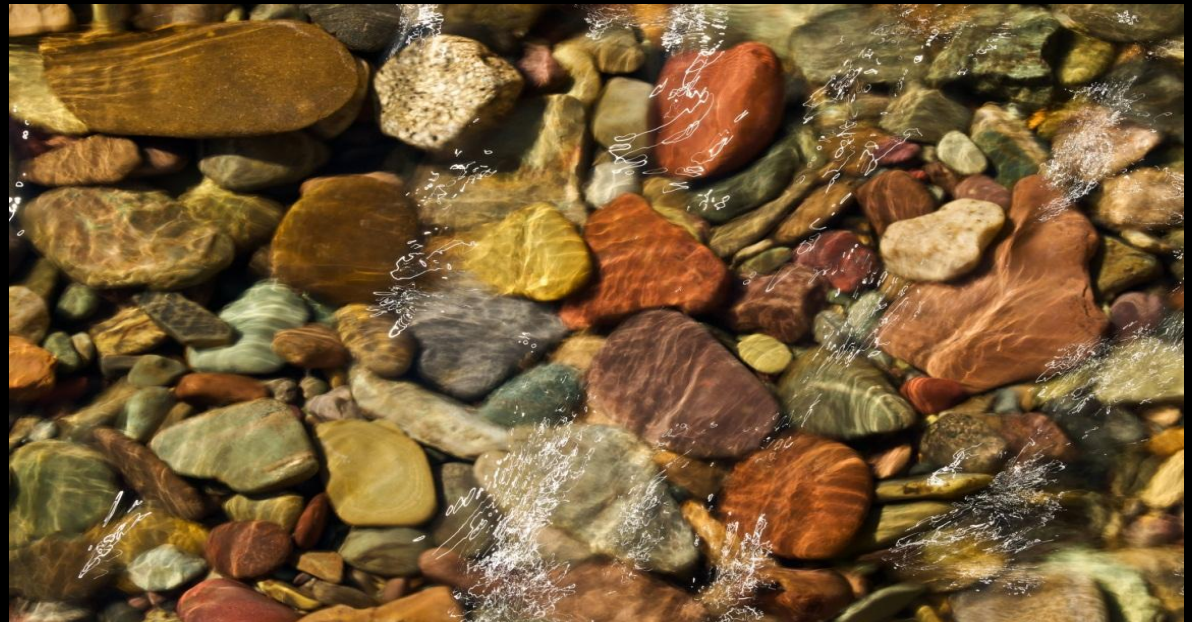


Impacts in US, MT,  
Flathead River  
and Lake

# What is the risk of mining the headwaters of the Transboundary Flathead River?



© Garth Lenz



© Michael Ready



# Key Uncertainties and Critical Data Gaps

- Baseline condition
- Fish and wildlife
- WQ and Aquatic life
- Cumulative Effects versus piece-meal assessment of individual mines



© Joe Riis



© Erin Sexton

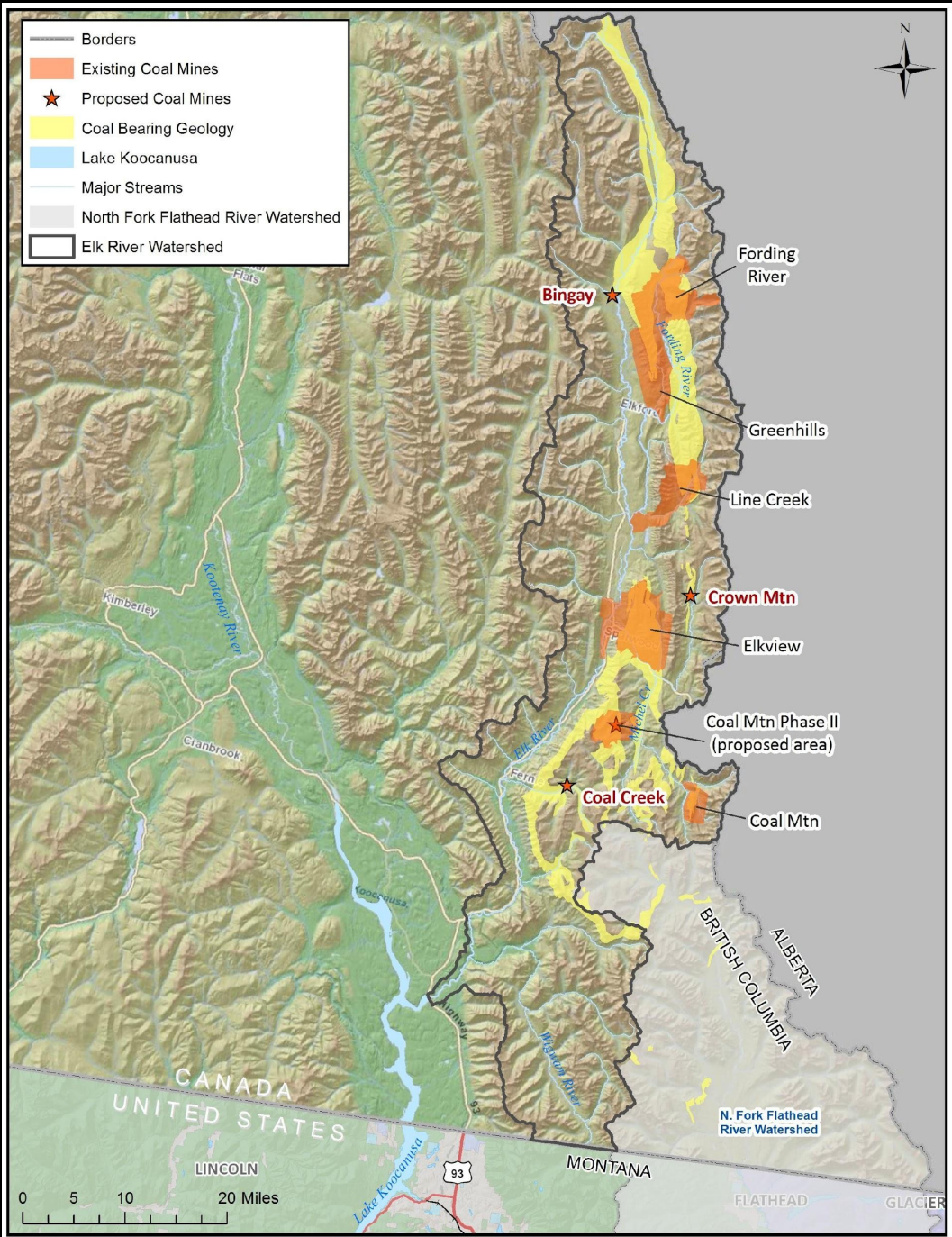


# Baseline Data Collection Efforts 2005-2011

- Water Quality
- Fisheries
- Aquatic Life

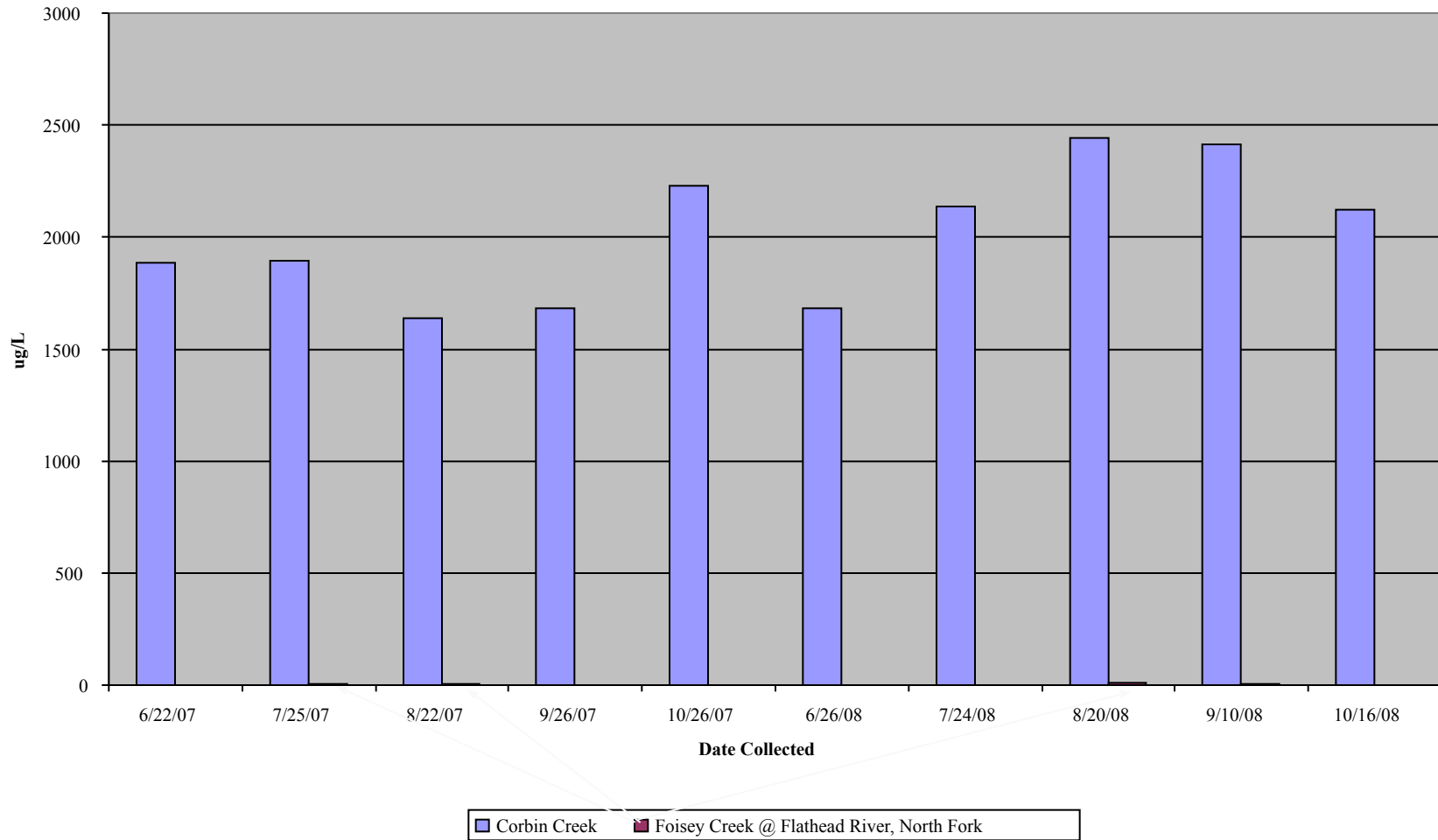






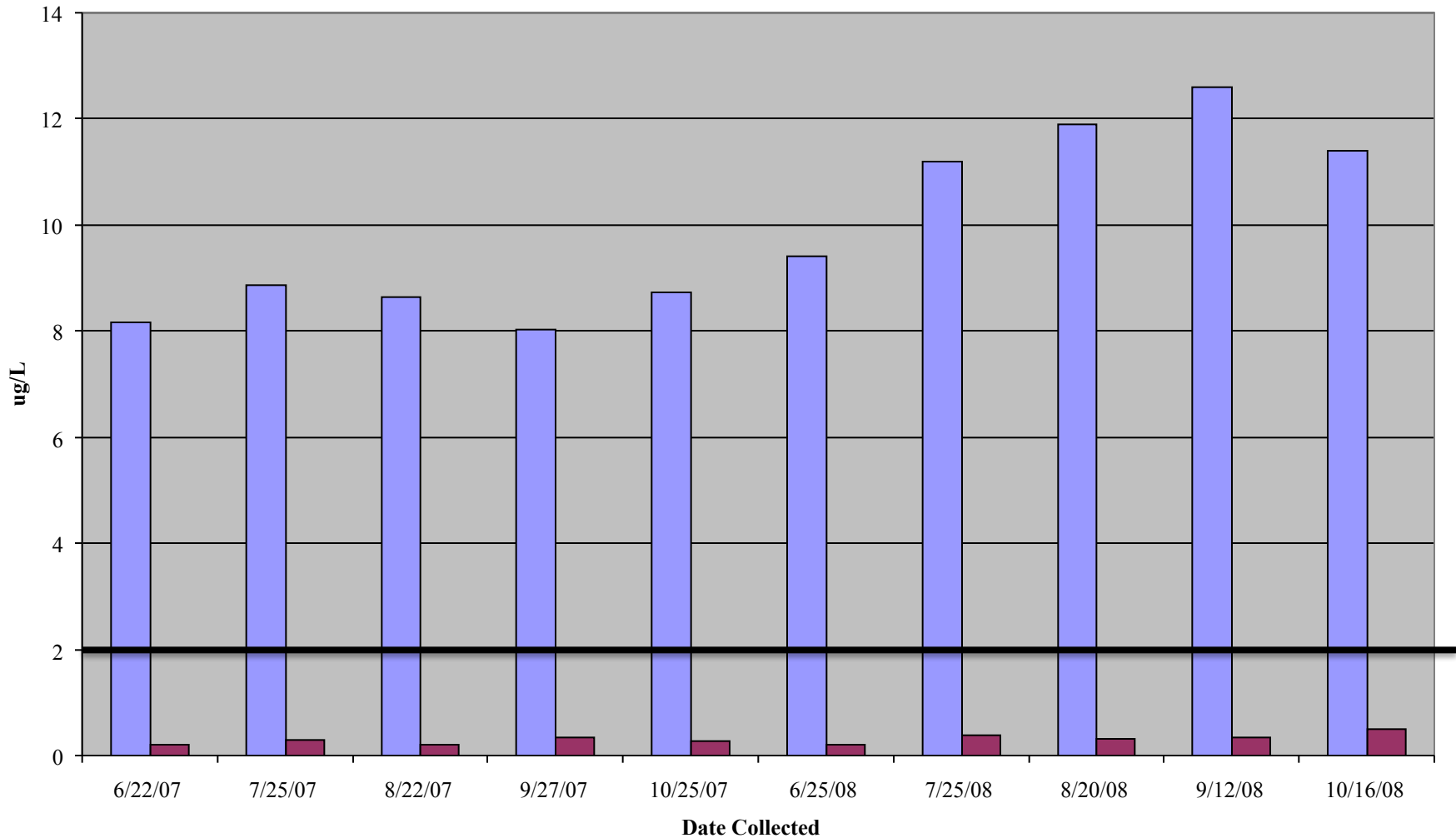


# Nitrogen ( $\text{NO}_3$ ) in Elk Tributaries Draining the Mines versus Baseline in the Flathead





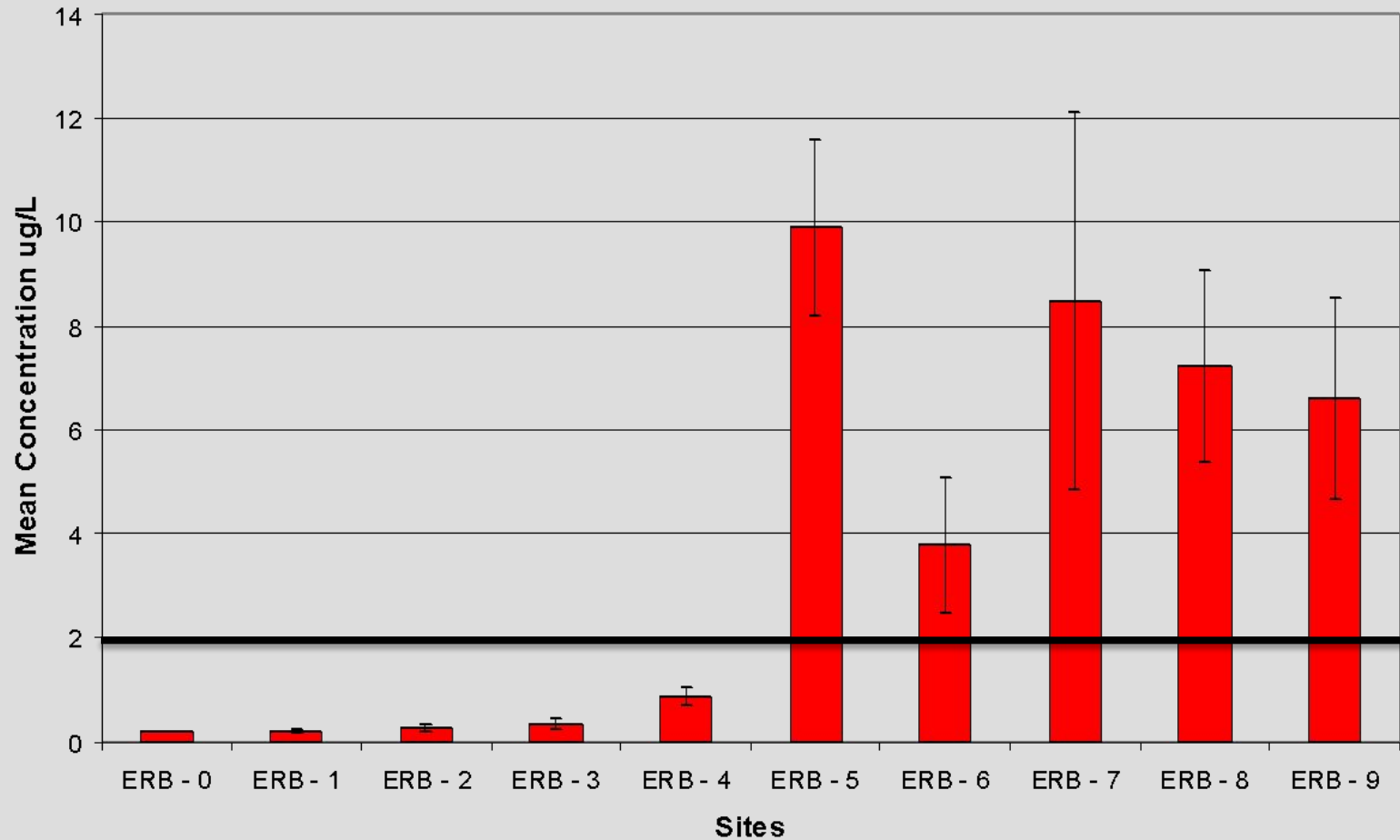
# Selenium in Elk Tributaries Draining the Mines versus Baseline in the Flathead



■ Corbin Creek ■ Foisey Creek @ Flathead River, North Fork



# Selenium (Se) Above and Below the Elk Valley Mines



Above

Below





Elk River vs Flathead River

NITRATES 2000 X higher

SULFATES 500 X higher

SELENIUM 15-30X higher



# Aquatic Life

- Changes in aquatic community structure
- Decreases in species richness



Caddisfly - Trichoptera



NABS ([www.benthos.org](http://www.benthos.org))

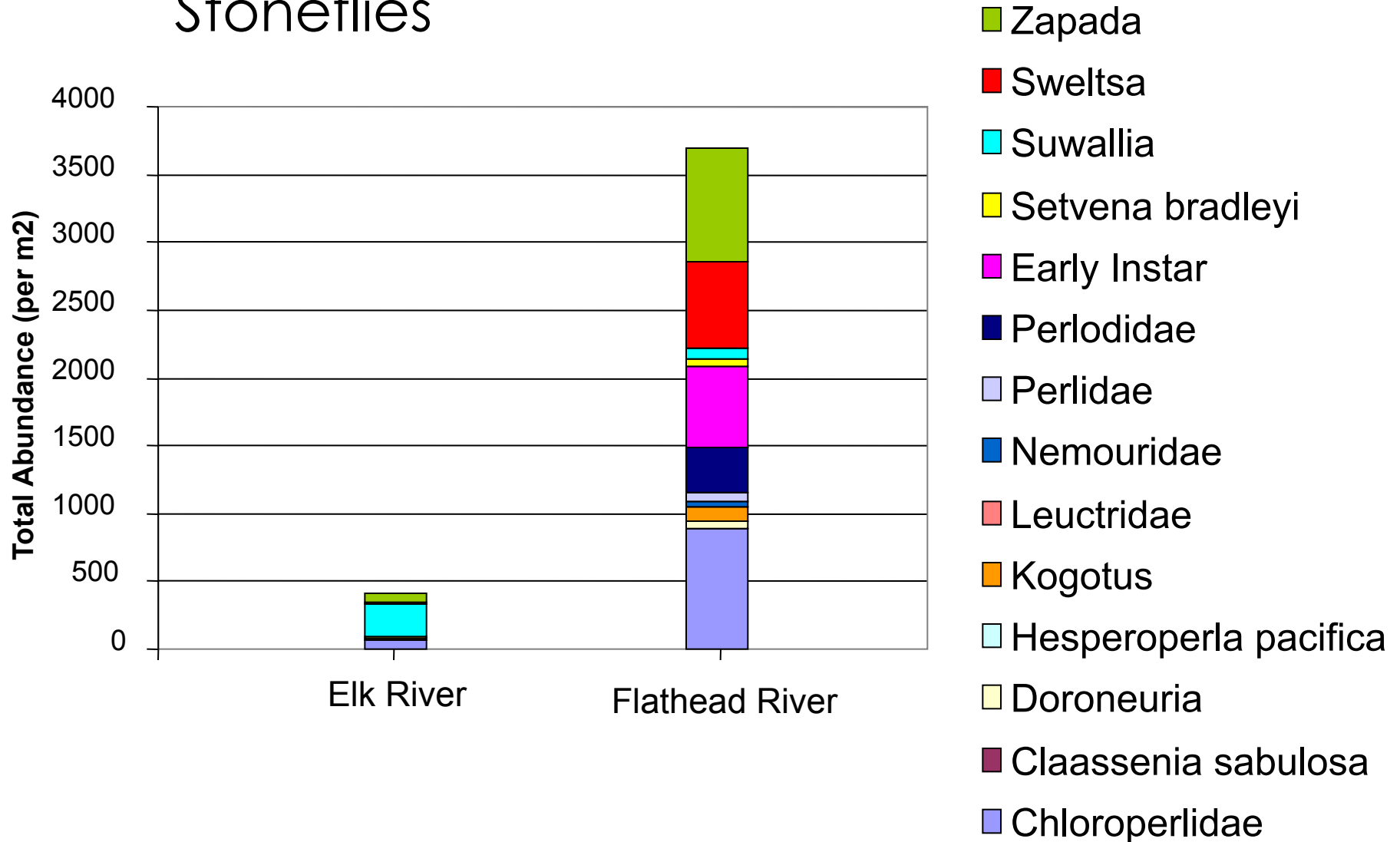
Stonefly - Plecoptera



Mayfly - Ephemeroptera



# Stoneflies



Composition of the Order Plecoptera

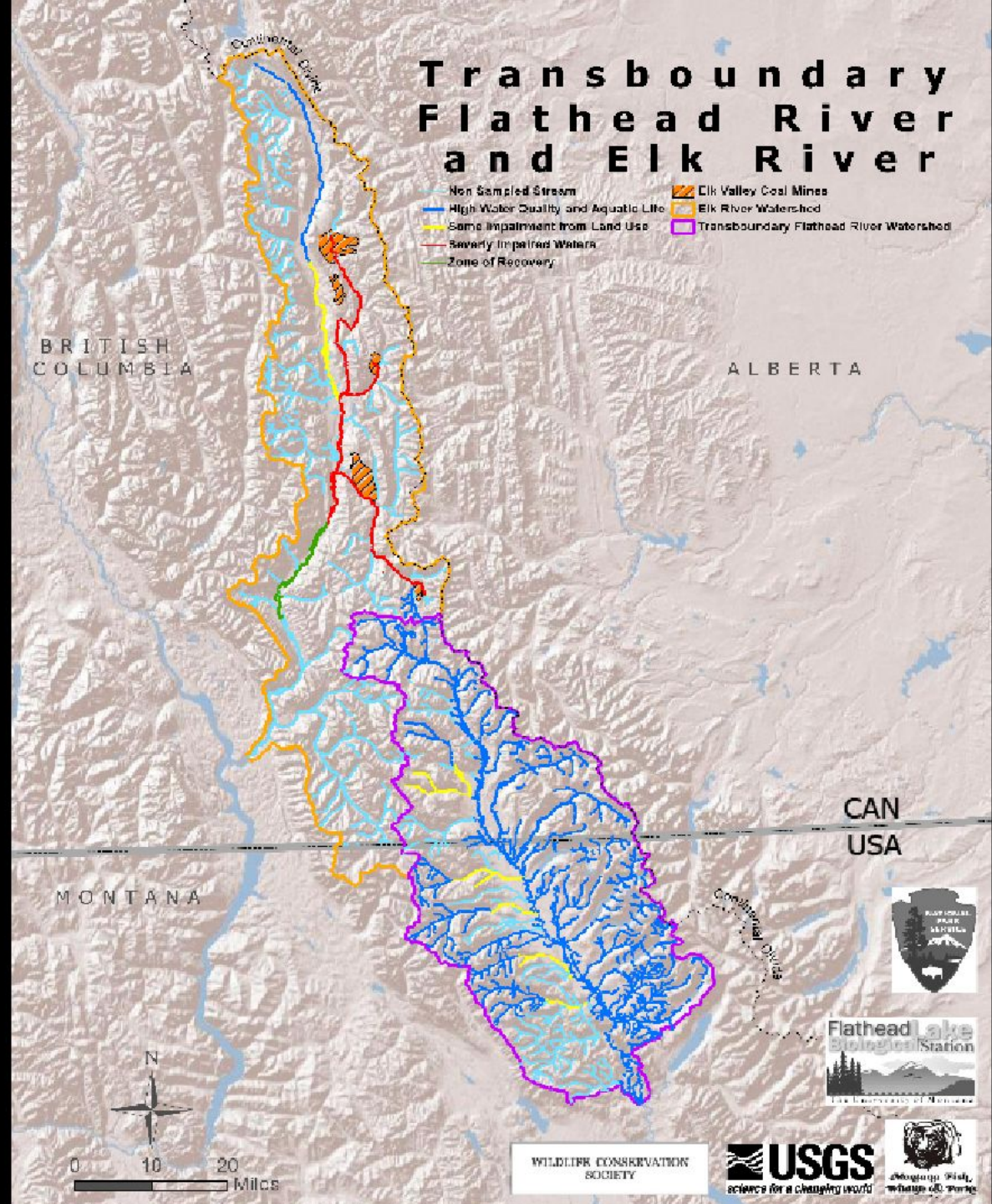


# Watershed Condition

       Severely impaired water quality and aquatic life

       Some impairment from land-use

       High water quality and aquatic life diversity





INTRODUCING OUR  
**WHEAT SHEET**  
See page 11

ANNUAL ENVIRONMENT ISSUE

# CANADIAN Geographic

JUNE 2008 \$5.95  
www.canadiangeographic.ca

## STRIP-MINE THIS?

This is B.C.'s pristine Flathead valley. Its upper reaches may become an open-pit coal mine. Who is fighting hardest to save it? Our American neighbours.

### SCAR SANDS

Five fixes for Alberta's carbon time bomb

### GREATEST LAKE

A giant step toward protecting Superior

### BIOLOGY BROTHERS

Environmental scientists of the year

**LAST STANDS: THE WORLD'S SHRINKING FORESTS**





# B.C. – MT Memorandum of Understanding and Cooperation

Memorandum of Understanding and Cooperation on

## ENVIRONMENTAL PROTECTION, CLIMATE ACTION AND ENERGY

between

The Province of British Columbia

and

The State of Montana



### TITLE PROVINCE OF BRITISH COLUMBIA AND THE STATE OF MONTANA,

Sharing a common border and desiring to enhance and deepen our longstanding relationship of friendship and trust

Noting as the obligation of our *Provincional Compact Agreement* of 2003 to identify, coordinate and promote our joint efforts to ensure the protection, conservation and enhancement of our shared environment for the benefit of current and future generations and to "enter into specific arrangements necessary to effectively address shared environmental goals"

Recognizing the shared commitment of British Columbia and Montana to sustaining environmental values in the Halhead, Flathead River Basin, including its existing high water quality and aquatic biodiversity, and riparian and ecological species and species of special concern listed under United States and Canadian Law;

Recognizing that the transboundary Flathead River Basin includes within its area Greater National Park and Riparian Reserve which is part of the world's first transnational Peace Park and a World Heritage Site, and that this unique area merits special protection in particular from risks posed by drilling, mining and other commercial mineral and oil and gas development

Recognizing that the transboundary riparian system of riparian, wetland, wildlife, and fish habitat is home to the highest density of large and mid-sized canyons and the highest diversity of rare and sensitive plant species in the United States, and offers superior opportunities to science, document and preserve species diversity as changing climate conditions and shrinking glaciers present adaptation challenges

Recognizing that the Halhead River Basin in British Columbia is located within that portion of the Kootenai territory known as Kamahmish or the Kootenai, a traditional and historical connection to the Flathead, discussed and continue to use the Flathead for hunting, fishing, trapping, gathering, recreation and as a travel corridor, we hold an important cultural and historical connection to the Halhead River Basin. The Kootenai Nation is a signatory to the *Canada-Kootenai Treaty* and the *Canada-Kootenai Treaty Act, 1984* within that portion of the Kootenai territory that is within the New Relationship with First Nations. British Columbia's working relationship with the Kootenai Nation is engaged in treaty negotiations with Canada and British Columbia which may result in Kootenai Nation owning lands and having assembly powers in relation to both the Flathead River Basin in Canada and that this Memorandum of Understanding and Cooperation (MOU) and Kootenai Nation's support of its participation in activities under this MOU is without prejudice to any negotiations with the Kootenai Nation or any other agreements that may be negotiated between Kootenai Nation and British Columbia;

Recognizing that the Flathead River flows through the state boundaries of the Halhead Reservation and adjacent territories, and that a large portion of Flathead Lake lies within the exterior boundaries of the Flathead Reservation, and that Flathead Lake is the largest freshwater lake in the western continental United States and one of the cleanest in the world; and that the bathy, Kootenai, and Pend d'Oreille peoples highly value this land and these waters and their quality and purity, and that their Indigenous Peoples actively manage these waters and lands for thousands of years previously in a sustainable and non-polluting manner;

Recognizing that the Flathead River Basin is rich in riparian resources that are important to local residents, and that for approximately 70 years the British Columbia Flathead River Valley has been successfully managed for logging, recreation, golfing and farming, and trapping that has maintained its healthy and diverse ecosystem that exists today;

Concerned that climate change is having and will have severe environmental and economic impacts on our shared waters, ecosystems, protected areas and jurisdictions in coming decades, and agreed that both jurisdictions are both a moral and economic imperative;

Committed to partnering to ensure for our citizens the new employment and investment opportunities that action on climate change will create in the areas of renewable and low carbon energy, energy conservation, and clean transportation

Agreed that the full engagement of our provincial and state governments with our respective federal governments, Kootenai Nation, Cowichan, Salish and Kootenai Tribes, and local government and the support of local residents and citizens is critical to achieving these aims and enhancing collaborative conservation ethics and

Committed to sharing information and communicating regularly to improve understanding, protect regulations of water quality and lead to mutually beneficial outcomes on environmental protection, climate action and clean and renewable energy

### NOW THEREFORE DESIRE TO ENTER INTO THIS MEMORANDUM OF UNDERSTANDING AND COOPERATION AND HEREBY AGREE AS FOLLOWS:

#### Environmental Protection

1. British Columbia and Montana commit to work together to:

A. Remove mining, oil and gas, and coal development as permissible land uses in the Flathead River Basin. British Columbia and Montana, either working with the United States as necessary, will implement measures necessary to prohibit the exploration for and development of mining, oil and gas, and coal in the British Columbia Flathead and the Montana North Fork Flathead River Basin, with such to be completed by July 1, 2010, and subject to agreement on the practical disposition of the land and jurisdiction of this region for the Province of British Columbia respecting existing mining and coal tenement holds.

B. Cooperate on fish and wildlife management. In collaboration with Kootenai Nation and Confederated Salish and Kootenai Tribes, develop baseline resource indicators, identify potential riparian sensitive corridors to fish and wildlife, energy events, and, where possible, coordinate provincial and state management activities in the transboundary system. Areas for consideration include: noxious weed management; management of alien invasive species; and management efforts related to species at risk and DIFE.

C. Collaborate on environmental assessment of any project of cross border significance that has potential to degrade land or water resources. On a reciprocal basis, provide for ongoing involvement of interested federal, provincial, state, and First Nations or American Indian Tribes and their assigned scientists, in environmental assessments triggered under provincial or state law or regulation with respect to any development in the British Columbia and Montana transboundary area which holds potential to cause degradation of water quality or land resources, including:

- British Columbia will invite one or more representatives from state, federal, and tribal governmental agencies, as appropriate, or participants in Working Groups established for its environmental assessments. Appropriate agencies may include: The Montana Department of Environmental Quality, Fish, Wildlife and Parks, and Natural Resources and Conservation of the United States Environmental Protection Agency and Department of the Interior, and the Confederated Salish and Kootenai Tribes.
- Montana will invite one or more representatives from provincial, federal, and Kootenai Nation governmental agencies to participate in its environmental assessments. Appropriate agencies may include the British Columbia Ministry of Environment, Ministry of Forestry and Range, Integrated Land Management Bureau, Ministry of Agriculture and Landcare, Ministry of Energy, Mines and Petroleum Resources (or such successor Ministry bearing such responsibilities), and Kootenai Nation Land and Resources Council.

D. Share information proactively. Share information proactively subject to relevant laws and regulations, exchange authorizations, permits, approvals, licenses, bonds and other planning documents on proposed projects that have potential to degrade water quality or land quality, topography and develop early notification procedures to identify problems or areas of concern to residents, First Nations, Tribes, or governmental entities in transboundary areas.

E. Collaborate in responding to emergencies. Establish procedures to cooperatively respond to emergencies that have the potential for environmental harm, especially in transboundary areas

#### Climate Action

II. British Columbia and Montana commit to work together to:

A. Facilitate adaptation to climate change. Build regional capacity to understand and address the challenges posed by climate change, to Western North American jurisdictions by enhancing and coordinating climate monitoring networks, regional centers of applied climate science and regional scenario planning within our jurisdictions.

B. Promote a wood building culture for climate action. Recognizing that a sustainable forest management strategy aimed at both increasing forest stocks and producing an annual sustained yield of timber for wood construction will generate the largest sustained carbon mitigation and economic benefits, enable enhanced building technologies in structures, wood designs for residential and industrial construction and wood products in interior and exterior finishing by seeking and supporting appropriate incentives to building codes and encouraging the use of wood in public housing and public building projects.

C. Measure progress in reducing greenhouse gas emissions. Participate in The Climate Registry, a collaboration between states, provinces and Tribes aimed at developing and managing common greenhouse gas emissions reporting system with high integrity that will provide an accurate, complete, consistent, transparent and verified set of greenhouse gas emissions data from reporting entities, supported by a robust accounting and verification infrastructure.

D. Reduce greenhouse gas emissions. British Columbia and Montana are signatories to the regional goal set by the Western Climate Initiative of reducing greenhouse gas emissions by 15 percent below 2005 levels by 2020, as well as ambitious individual provincial and state goals for reducing greenhouse gas emissions by 2020 of 33 percent below 2007 levels by British Columbia and to 1990 levels by 2020 for Montana.

#### Renewable and Low Carbon Energy

III. British Columbia and Montana commit to work together to:

A. Pursue cooperative clean and renewable transboundary energy policies. Support and seek adoption of cooperative transboundary approaches to creating mini-grids and low carbon energy development in western and continental North America including hydro power, solar, wind, geothermal, biomass, and tidal/wave energy.

B. Harmonize definitions of low impact renewable resources. Seek and support common definitions of renewable and low carbon resources to state, provincial, and federal legislation and regulations that facilitate trading of renewable energy from hydropower, solar, wind, geothermal, biomass, and tidal/wave energy between all jurisdictions within western and continental North America.

C. Support the Western Renewable Energy Zones (WREZ) Project. Collaborate to ensure the successful and environmentally sensitive development and transmission of renewable and low carbon energy through participation in the Western Governors' Association Western Renewable Energy Zones (WREZ) Project.

D. Encourage a "Conservation First" Utility Framework. Encourage electricity and natural gas utilities to undertake comprehensive conservation potential audits and programs for implementing demand side management (DSM) programs. Utilities will be encouraged to prioritize DSM measures to address energy demand growth. British Columbia and Montana shall share information on DSM program performance and will cooperate on the development of harmonized approaches for measurement and evaluation.

E. Leverage energy efficiency through building codes. Share information on energy performance standards in building codes, with a view to developing collaborative strategies to improve energy efficiency requirements.

F. Enable clean transportation solutions. Support policies and state information on standards and best practices for automotive biofuels, natural gas, hydrogen, and electricity as transportation fuels, and promote convenient, reusable signage for alternative fuel stations.

#### Partnerships

British Columbia and Montana commit to work together with Kootenai Nation, Confederated Salish and Kootenai Tribes, federal and local governments, and with leaders from business, environmental advocates, and scientists to assist with the accomplishment of these goals.

#### Definitions

For further clarity, "mining" as referred to in this MOU does not include small quarry and sand or gravel operations where the area of activity is two hectares or less, and where less than 20,000 tonnes per annum is removed or to be removed.

#### Reference Parties

The Parties to British Columbia and the Government of Montana are responsible for the right and implementation of this MOU.

A. The International Relations Secretariat, a branch of the Office of the Premier, is designated lead entity for British Columbia. The Secretariat will act as the lead and coordinating entity, and will notify provincial agencies for implementation.

B. The Governor's Office is designated lead entity for Montana. The Governor's Office will act as the lead and coordinating entity, and will call upon state agencies for implementation.

#### Term and Amendment

This Memorandum of Understanding and Cooperation is effective when signed by both the Premier and the Governor and as specifically provided for in this MOU. It may be amended at any time by agreement between the parties and may be terminated by either party upon one year written notice to the other.

AGREED as to form and content and signed and dated in two (2) duplicate originals in Vancouver, British Columbia this 18th day of February 2010.

GORDON CAMPBELL  
Premier of British Columbia

BRIAN SCHWEITZER  
Governor of Montana

WITNESSED this 18th day of February, 2010:

KATHRYN TESESE  
Chair of Kootenai Nation Council

MICHEL KENMILLE  
Council Member, Confederated Salish and Kootenai Tribes

# BC - Montana Memorandum of Understanding February, 2010

A new partnership with Montana will sustain the environmental values in the Flathead River Basin in a manner consistent with current forestry, recreation, guide outfitting and trapping uses.

It will identify permissible land uses and establish new collaborative approaches to transboundary issues.

Mining, oil and gas development and coalbed gas extraction will not be permitted in British Columbia's Flathead Valley.





# BUT...What about the Kootenai?

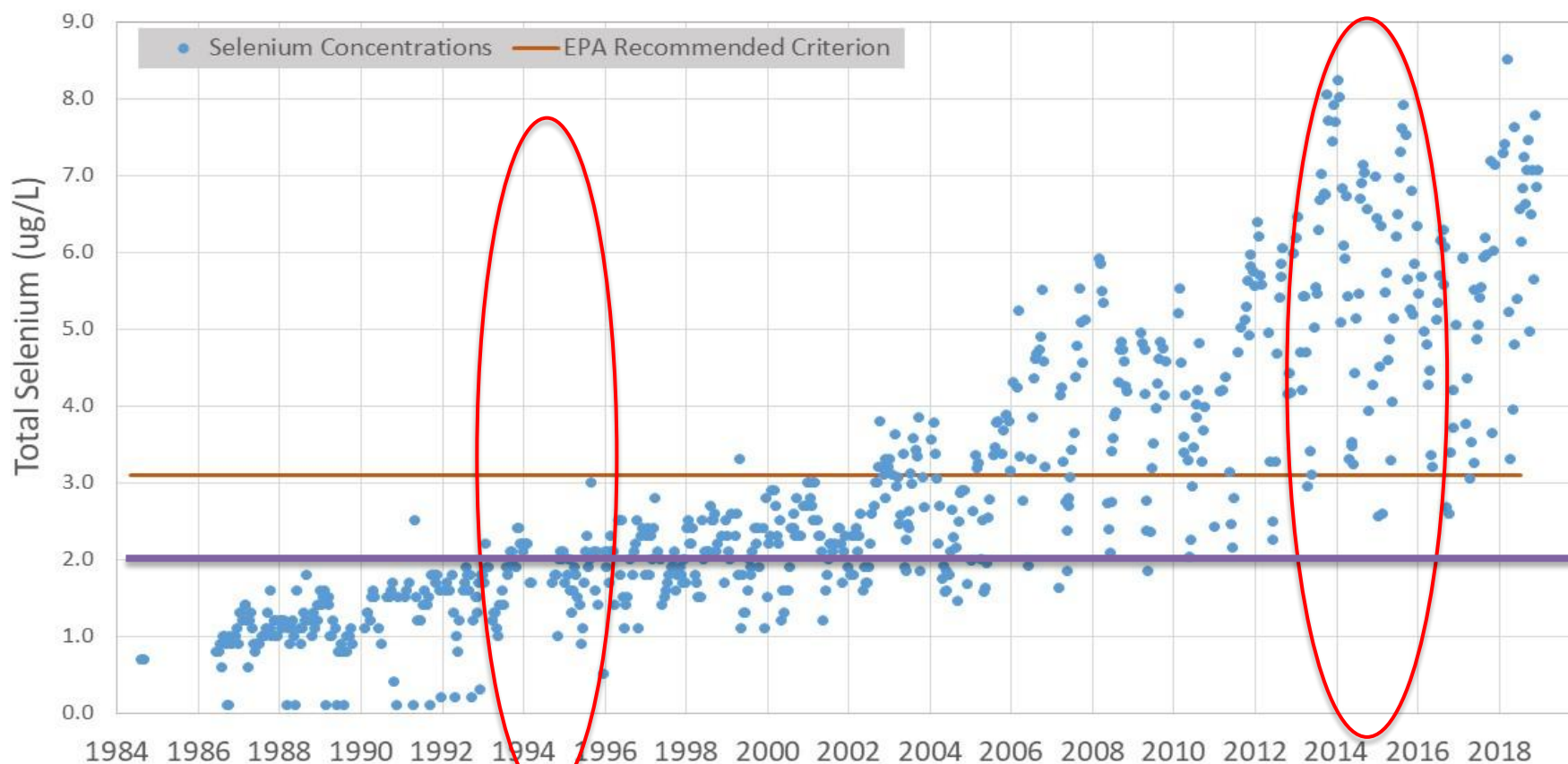




# Water Quality Trend for Total Selenium in the Elk River; 1984-2015

*2 ug/L = BC threshold for protection of aquatic life*

Elk River at Hwy 93 Crossing (near confluence with Lake Kocanusa)  
Environment and Climate Change Canada (ECCC) Long-term Monitoring Station



Data download from <http://aquatic.pyr.ec.gc.ca/webdataonlinenational/en/Measurements/ChooseVariables/Sites/BC08NK0003/Projects/PYLTM/Regions/0>  
on Aug 1, 2019



# Selenium



- Tendency to bioaccumulate
- Toxic at low concentrations
- Physical deformities and reproductive failure  
(Lemly, 2002)
- 'Invisible contaminant'

# 2014: Permits issued to Teck Coal to Expand the Elk Valley Mines

Table 8-16. Summary of long-term water-quality targets.

Management Unit	Order stations	Selenium ( $\mu\text{g/L}$ ) <sup>1</sup>	Nitrate ( $\text{mg/L NO}_3\text{-N}$ ) <sup>2</sup>	Sulphate ( $\text{mg/L}$ ) <sup>3</sup>	Cadmium ( $\mu\text{g/L}$ ) <sup>4</sup>
1	FR4	57	11	429	0.39
2	FR5	40	11	429	0.39
3	ER1	19	3	429	0.24
4	ER2	19	3	429	0.24
5	ER3, ER4	19	3	429	0.24
6	LK2	2	3	308	0.19



# Challenges with Active Water Treatment



- 2014  
74 westslope cutthroat trout killed at outlet of the facility
- 2016- 2018  
Shut down due to plant concentrating selenium rather than reducing it downstream
- Additional plant construction delayed by 3-5 years

# Challenges with Active Water Treatment



*Short term "Solution" to a Long-term problem*





### *Where are we today...*

- Should there be a moratorium on new mines and mine expansions in the Elk River?
- How will we address the selenium and other contaminants after the mines are no longer operating?
- Who will be accountable for damages to fish, water quality and aquatic life in the entire Elk/Kootenay watershed?
- Who will pay for the long-term monitoring and mitigation in the Kootenai watershed?