THE COALBED METHANE INDUSTRY:

PRODUCED WATER AND TOXICS ISSUES

TWO PRIMARY WASTEWATER DISPOSAL METHODS

- **INJECTION/RE-INJECTION**
- **SURFACE DISPOSAL**

SURFACE DISCHARGE:

UNCERTAINTY and VARIATION

- **QUANTITY**

20-200 gpm/well

- **QUALITY**

Metals

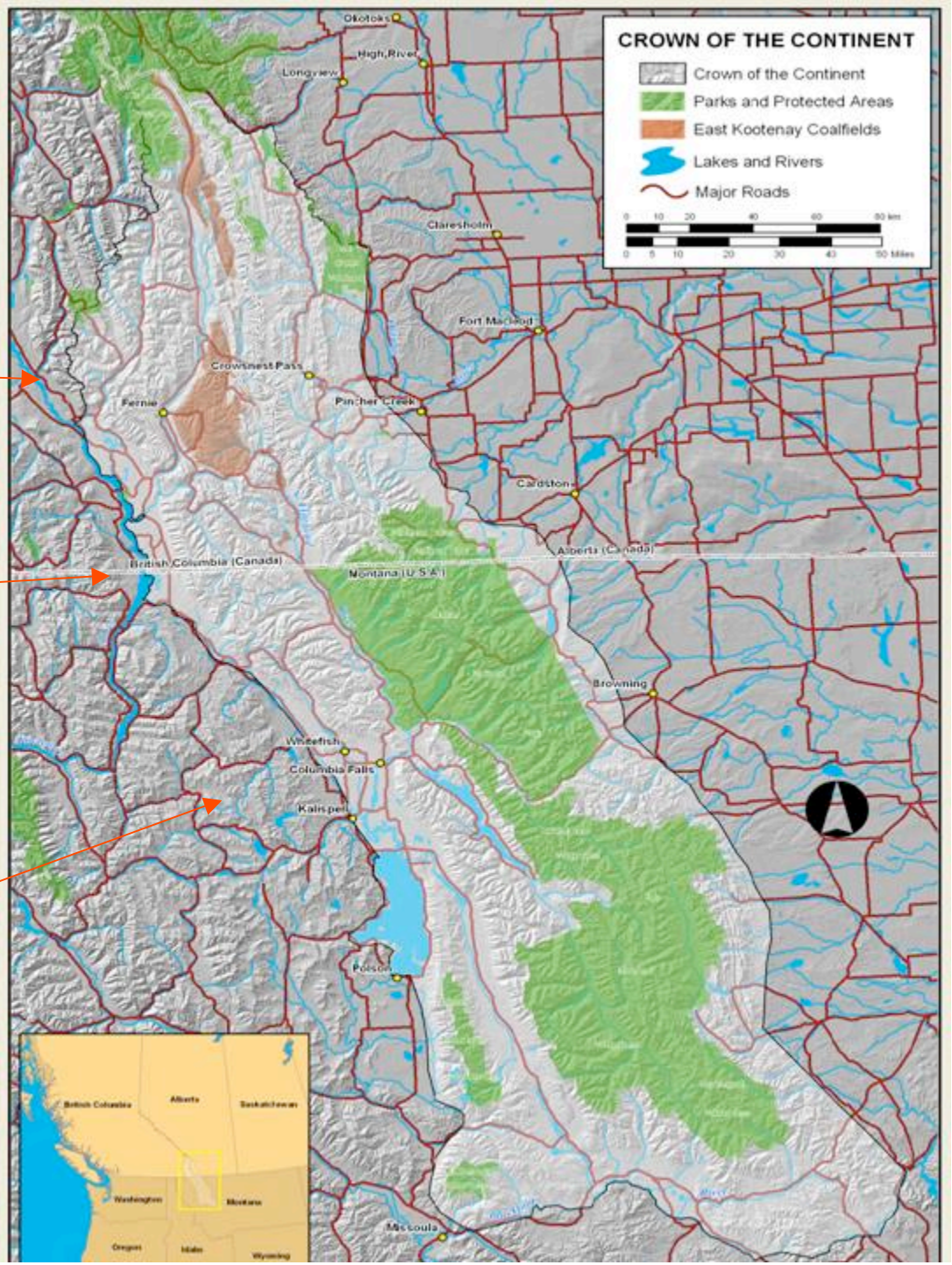
Ions

Hydrocarbons

ENCANA ELK VALLEY CBM PILOT PROJECT

THE CROWN of the CONTINENT

- **BRITISH COLUMBIA**
- **U.S. – CANADA BORDER**
- **MONTANA**

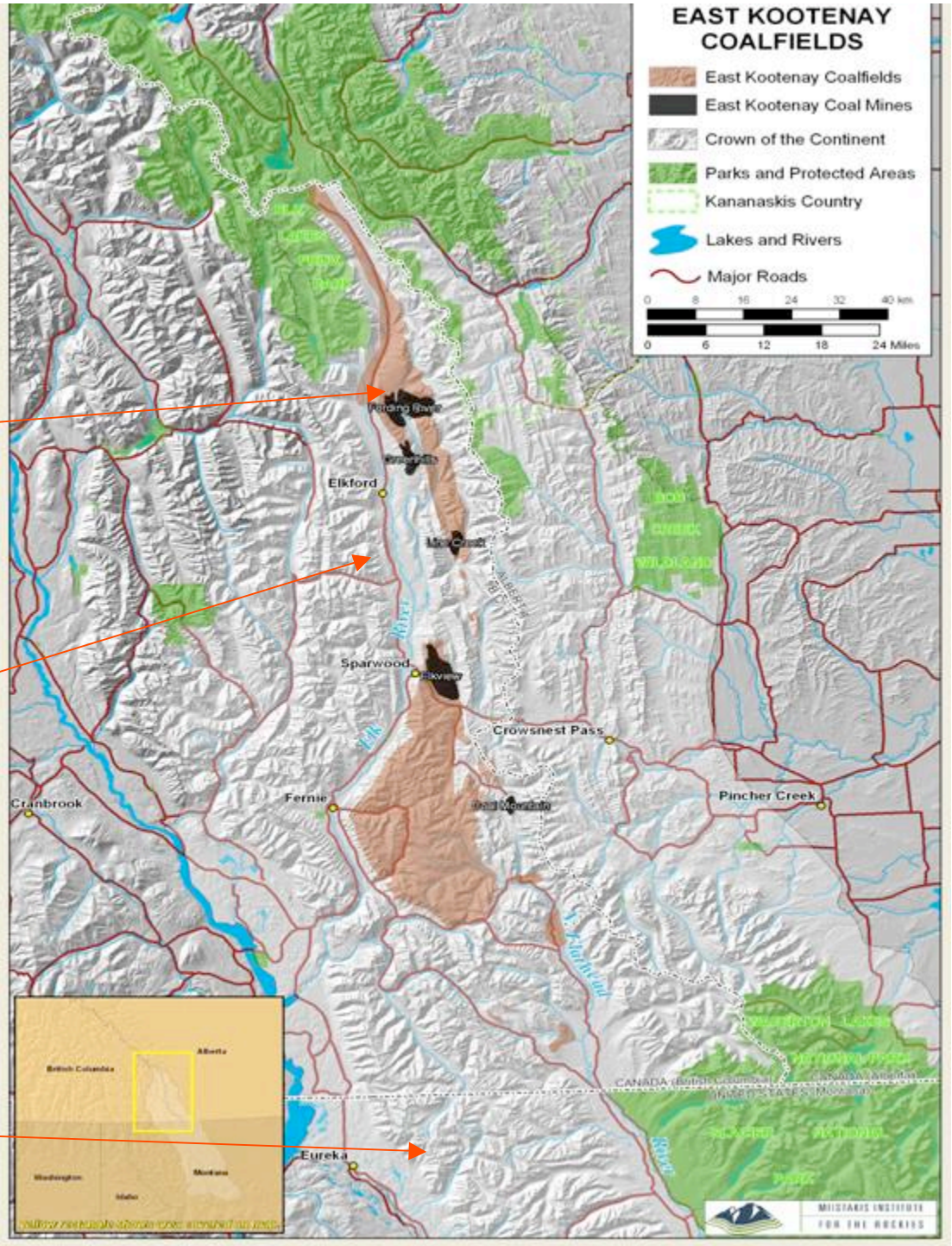


THE EAST KOOTENAY COALFIELDS, British Columbia

EnCana Inc. CBM Pilot Project

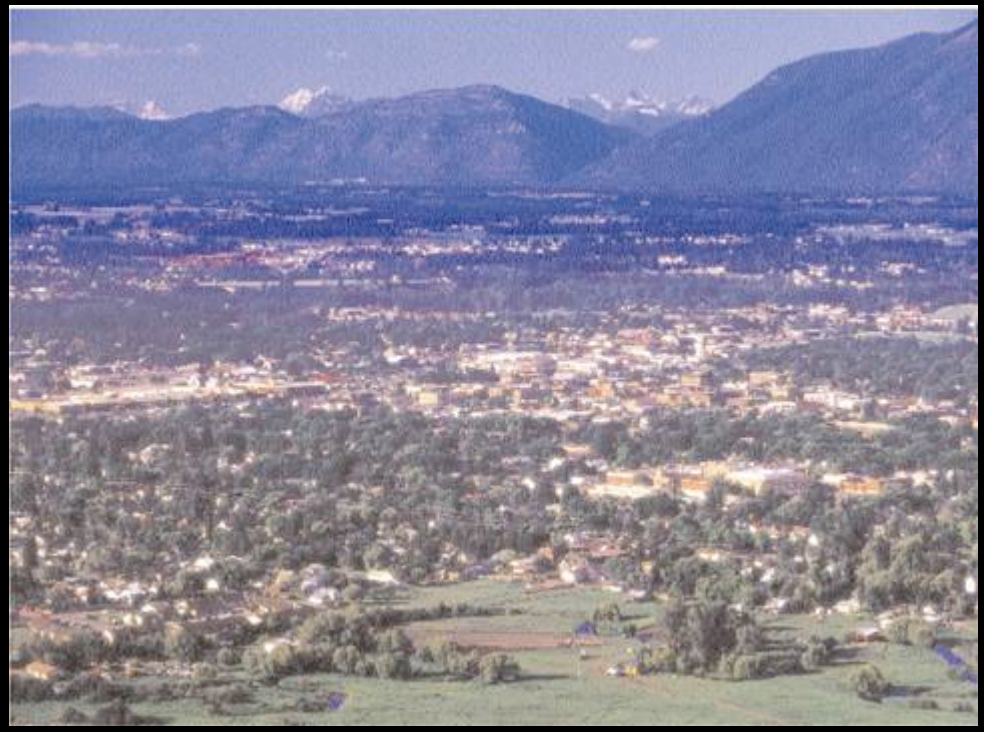
East Kootenay Coalfields

Montana



NEARBY COMMMUNITIES:

FERNIE, ELKFORD and SPARWOOD, B.C.
FLATHEAD VALLEY, MT



PROJECT OVERVIEW

- **FIRST CBM PILOT IN PROVINCE OF B.C.**
- **17 WELLS OPERATING OVER A THREE-YEAR PERIOD**
- **SURFACE DISPOSAL**

WASTEWATER TREATMENT

- **CARBON FILTER SYSTEM**
- **AERATION IN SETTLING PONDS**
- **DIRECT DISCHARGE TO ELK and FORDING RIVERS**

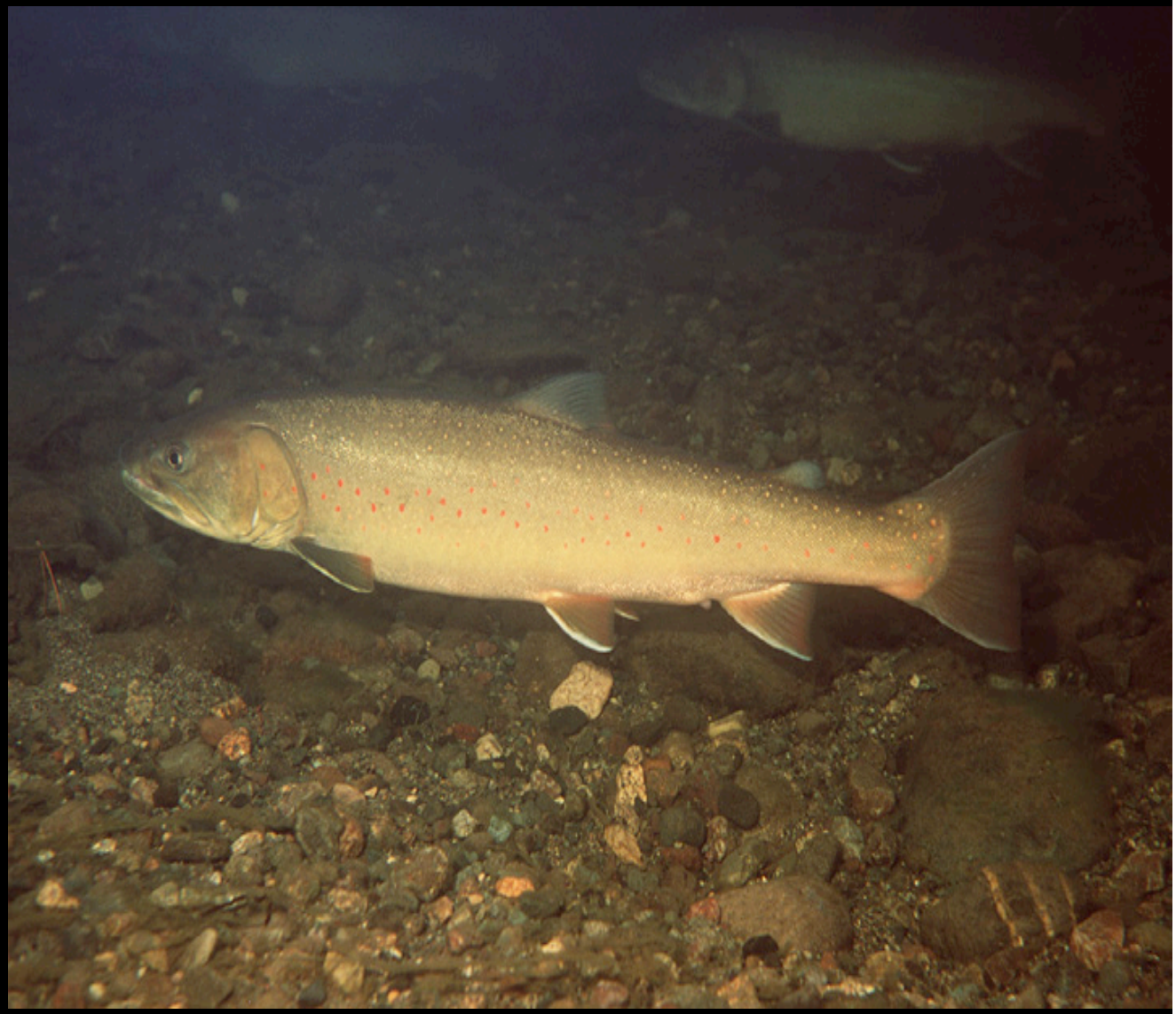
CBM WASTEWATER COMPOSITION

- **ELEVATED HYDROCARBONS**
- **HIGH AMMONIUM**
- **HIGH BARIUM, IRON, CALCIUM, MAGNESIUM and COPPER**

BIOASSAY TOXICITY TESTS

- **TOXIC LEVELS OF AMMONIUM, FATAL TO RAINBOW TROUT**

- **100% FISH MORTALITY WITHIN 48 HOURS OF TESTING**



ADDITIONAL CONCERNS

- **FLARING**
- **UN-LINED WASTE PITS**
- **FRAC'ING**

REGULATORY NEGLIGENCE

- Project launched with no Provincial regs. in place for CBM
- Discharge permitted with no wastewater regs. in place
- Communities unaware of discharge into local watersheds

REGULATORY NEGLIGENCE

- **Wastewater data proprietary, not available for public review**
- **No policies on waste pits, frac'ing or flaring**
- **EnCana never penalized for failure of toxicity tests, wastewater discharge continues, pilot project expanding**

BASELINE DATA

- **WITHOUT BASELINE DATA, IT IS DIFFICULT TO DETERMINE THE IMPACTS OF DEVELOPMENT**
- **INSUFFICIENT LONG-TERM DATA ON THE IMPACTS OF CBM DEVELOPMENT ON HUMAN HEALTH and the ENVIRONMENT**

CBM IS AN UNPRECEDENTED EXPERIMENT on HUMANS and the ENVIRONMENT

- **AIR QUALITY: VOC'S, PAC'S, H2S**
- **WATER QUALITY: GROUND AND SURFACE**
- **AMMONIUM TOXICITY: ESCALATING FOOD WEB EFFECTS**

Therefore. . .

PRECAUTIONARY PRINCIPLE