oldmanwatershed.ca

Watershed Considerations for the Grassy Mountain Coal Project

Joint Review Panel
October 2020

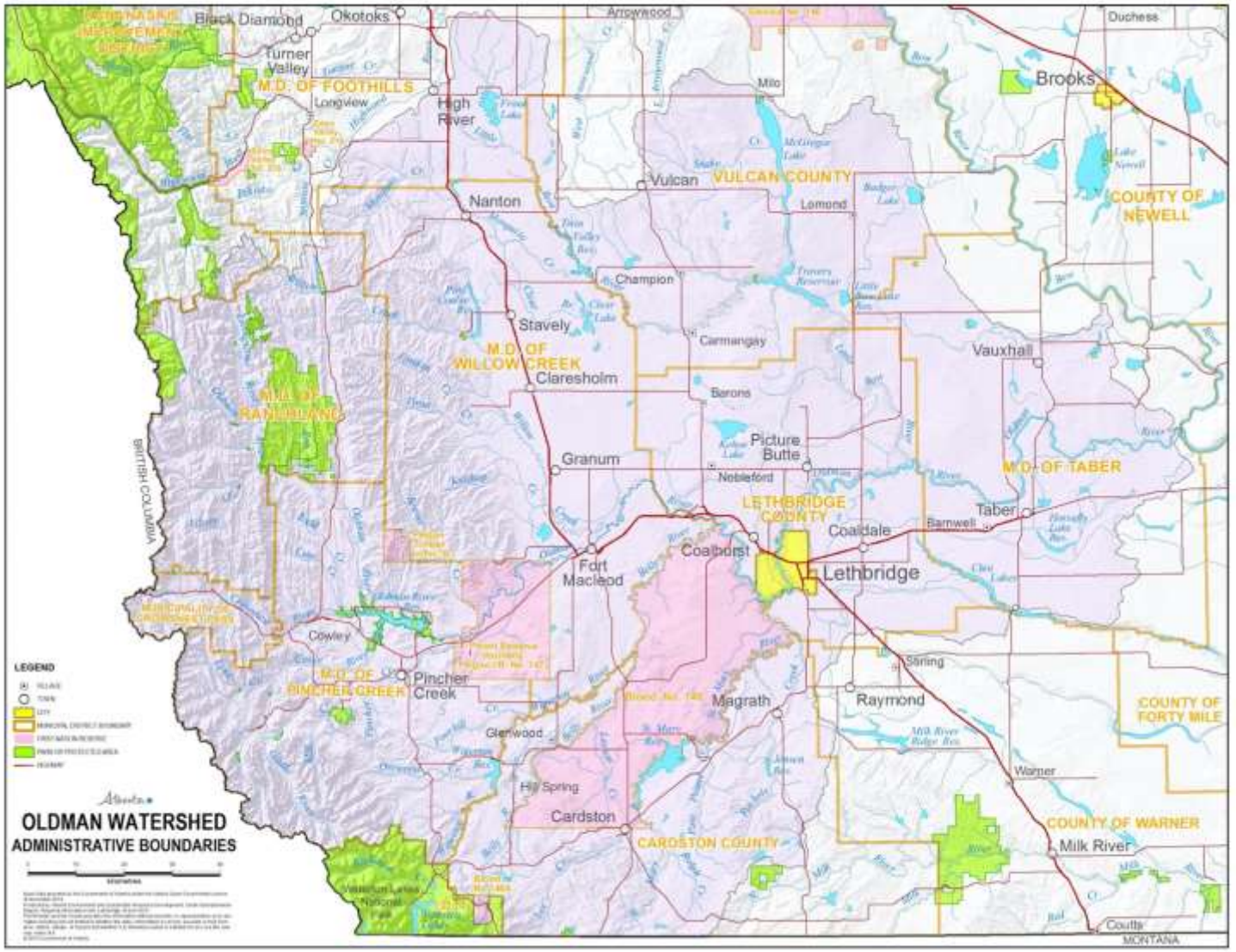
Who we are

Presenters

Shannon Frank

Andy Hurly, PhD

The Oldman watershed



All Sector Board of Directors - 19 seats

Board of Directors

Municipality of Crowsnest Pass

City of Lethbridge

Piikani Nation

Kainai Nation

Cardston County

University of Lethbridge

Alberta Health Services

Montem Resources

Spray Lake Sawmills

Lethbridge Northern Irrigation District

Alberta Environment and Parks

Alberta Agriculture and Forestry

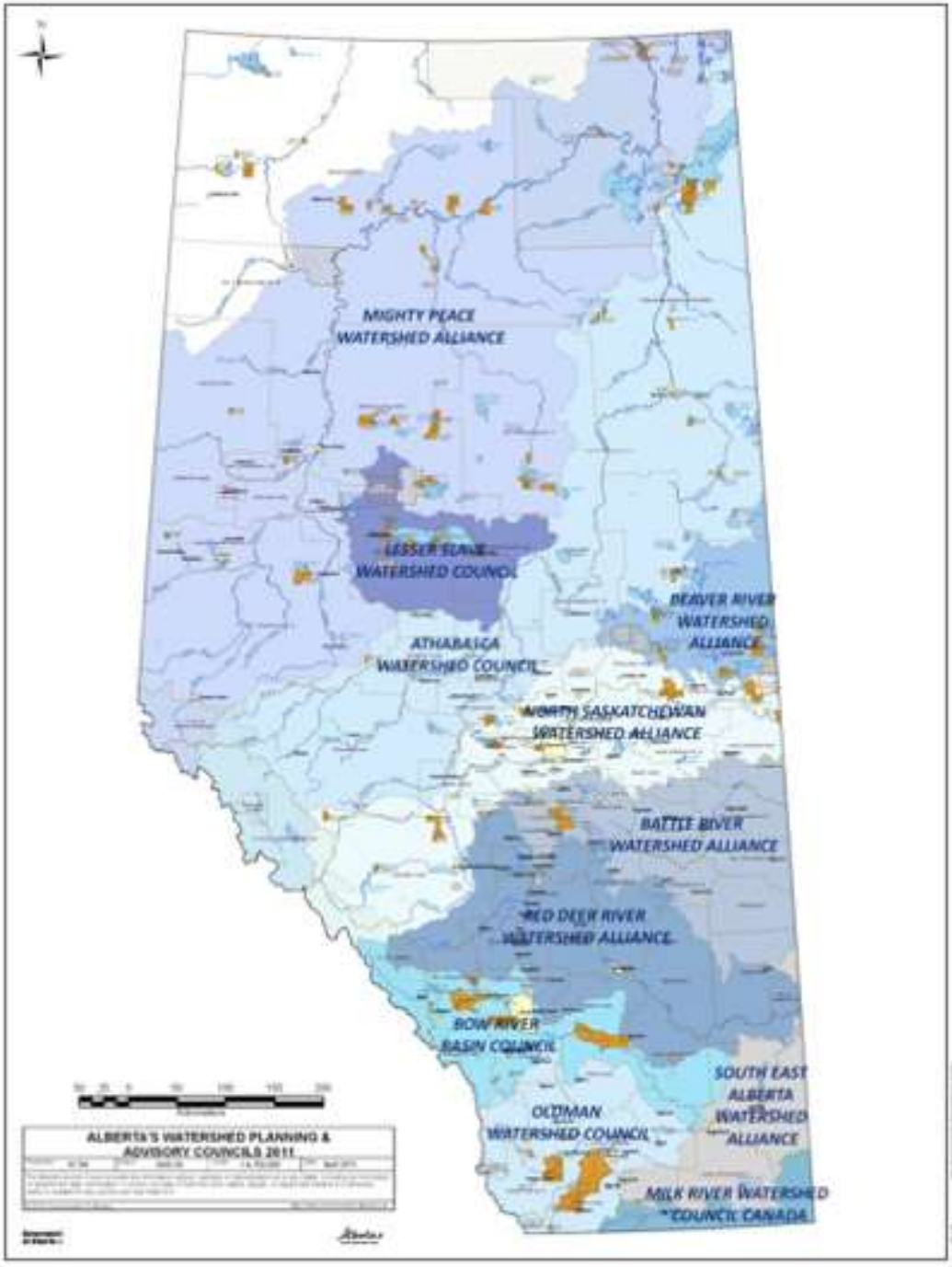
Lethbridge County

Hays Stock Grazing Association

Southern Alberta Group for the Environment

Water Conservation Trust of Canada

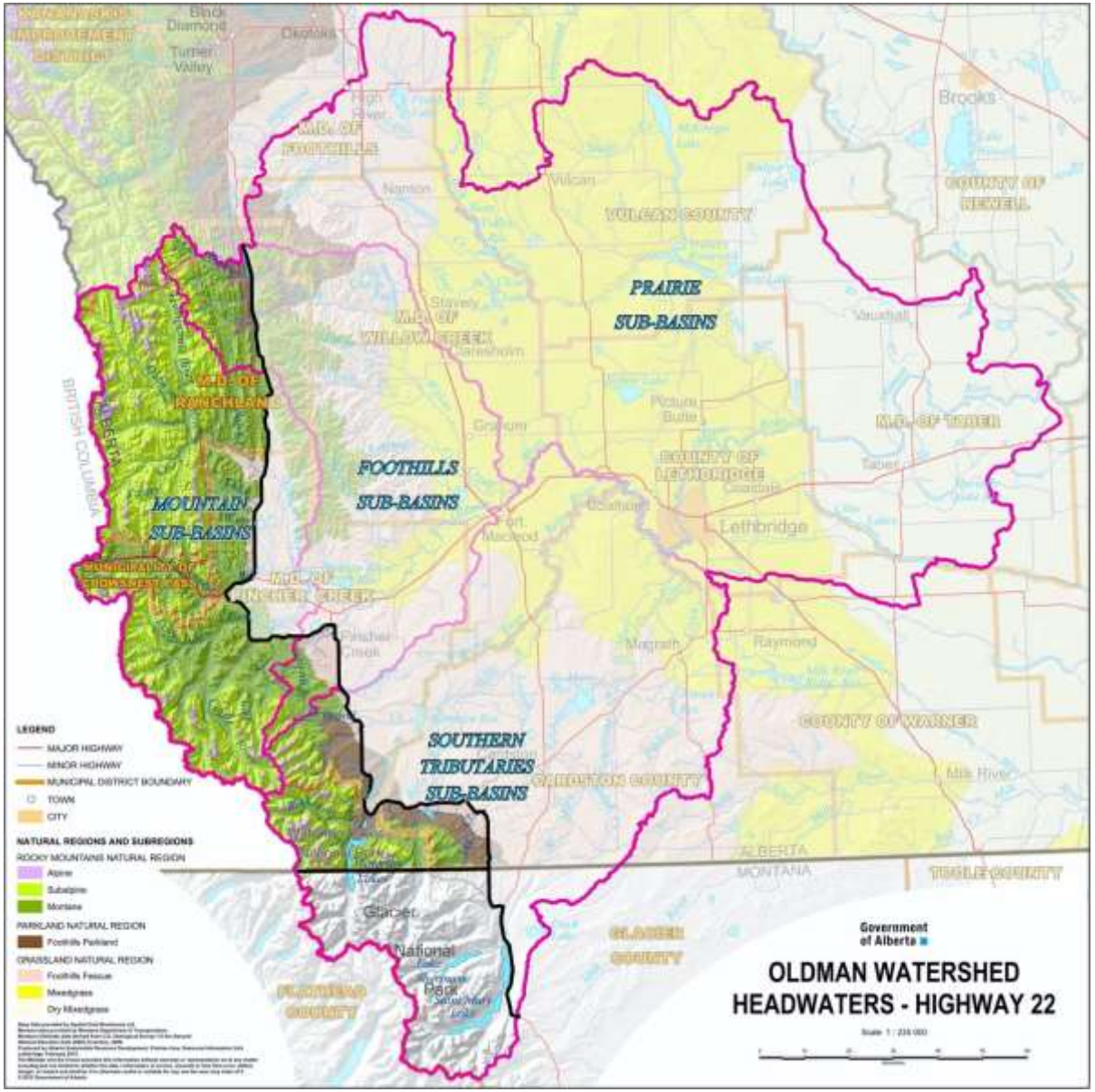
4 individual members at large



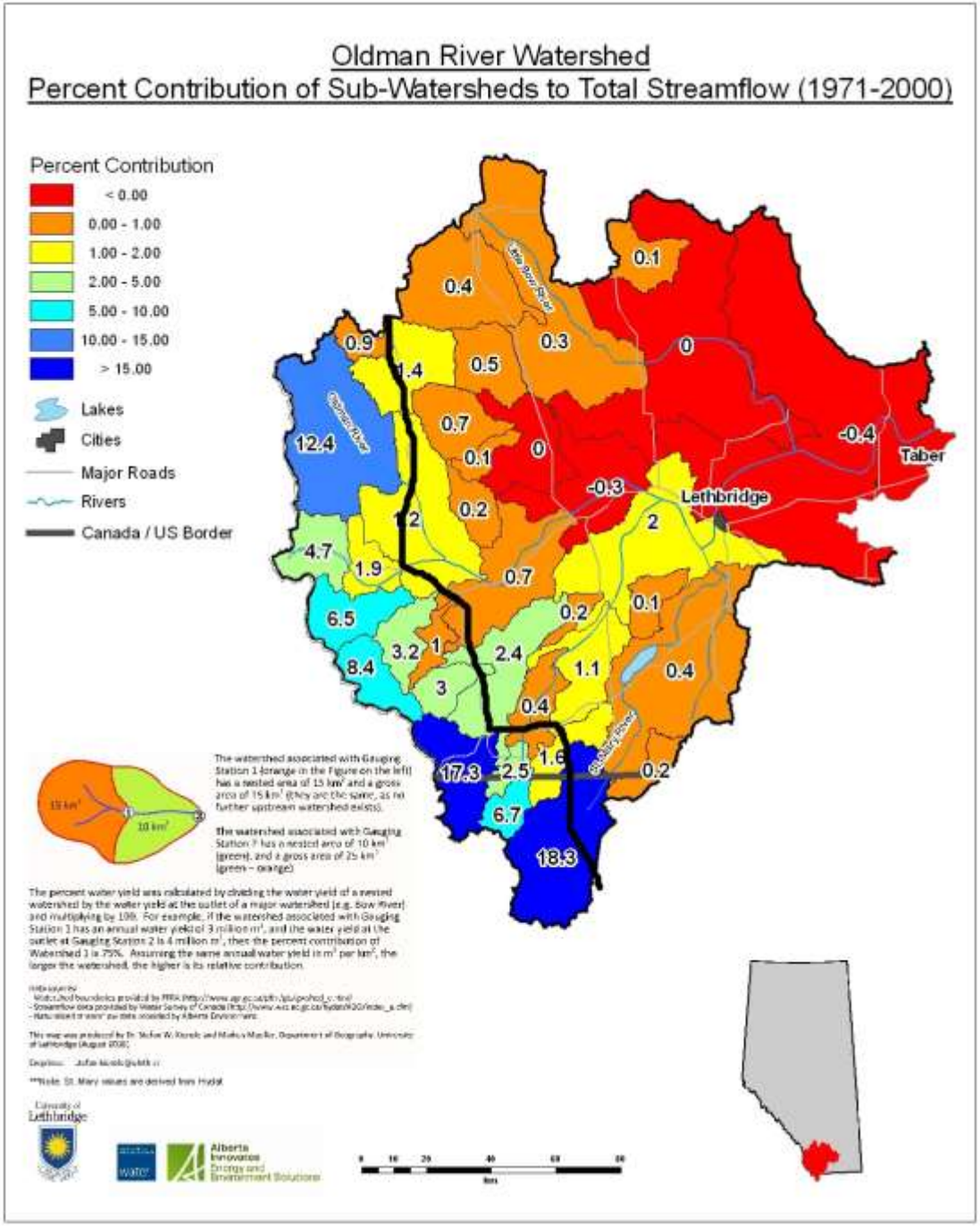
11 Watershed Planning and Advisory Councils (WPACs)


Our experience and knowledge of the area

The Oldman headwaters - the rocky mountains



Approximately 90% of the water in the Oldman River comes from the headwaters



15 Years of Assessments and Planning with all Stakeholders

Scientific assessments:

- State of the Watershed Report 2010
- Crowsnest River groundwater study 2013
- Oldman Headwaters Indicators Project 2013

Planning reports:

- Integrated Watershed Management Plan 2009-2011
- Headwaters Action Plan 2014

Extensive community engagement:

- Surveys
- Focus groups
- Interviews
- Town halls
- Workshops
- Presentations

All sectors participated:

- Residents
- Farmers
- Ranchers
- Irrigation districts
- Cities, towns, villages
- Forestry
- Oil and gas
- Electricity
- Health
- Academia
- Government of Canada
- Government of Alberta
- First Nations
- Counties and MDs
- Environmental groups
- Scientists
- Industry associations
- Community groups

First restoration event in Dutch Creek with 50+ volunteers, October 2015

The decision we want and why

A forum for all voices

- Not advocating for approval or rejection.
- Want a science-based decision that has broad community support.
- Providing scientific information and stakeholder views.
- Speaking for all residents of the watershed - wild and domesticated.
- Suggesting areas that need more work to address concerns of local community.
- Note this project is precedent setting for the region.

How we will be affected

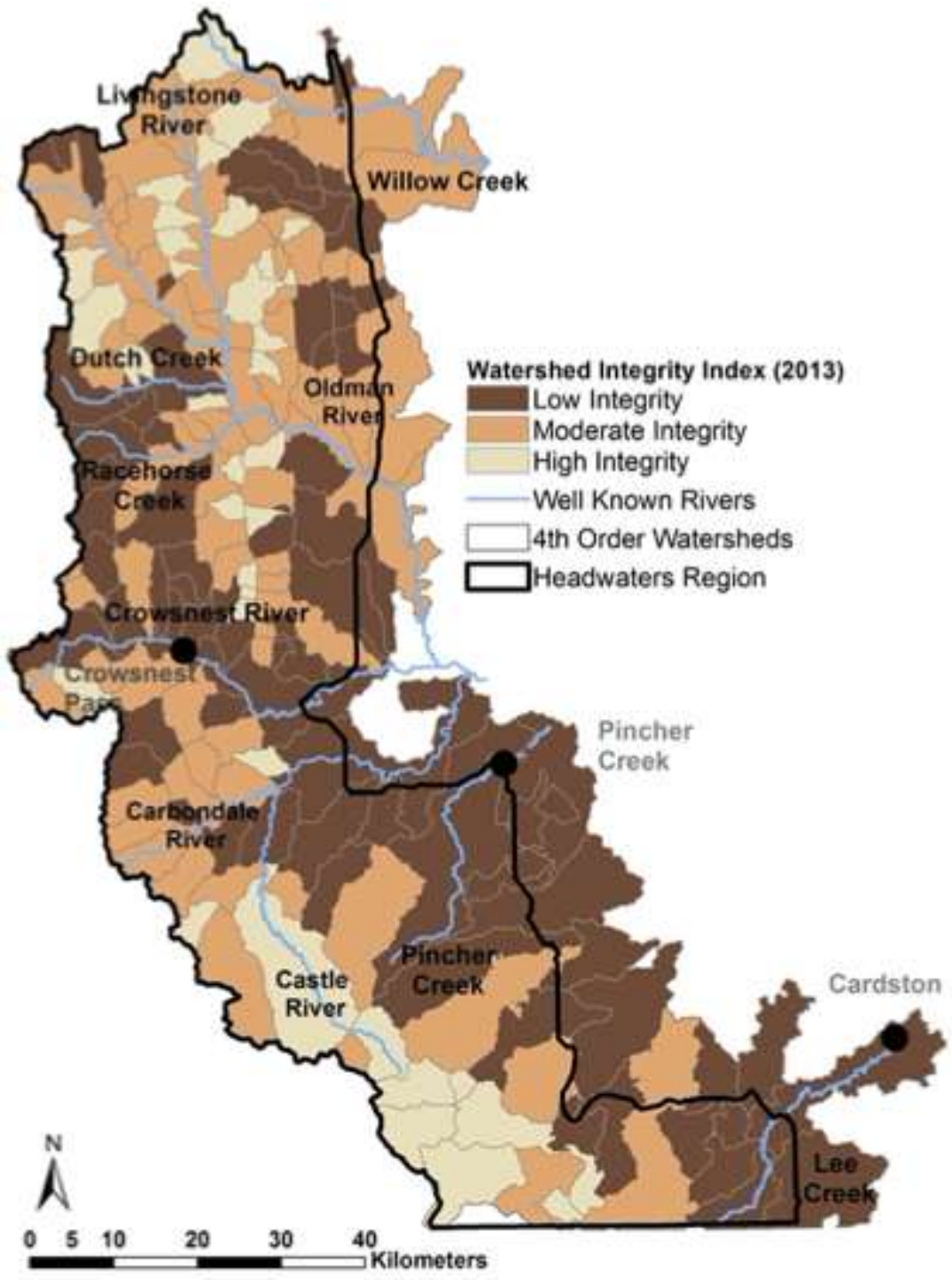
We speak for all

- Speak for the watershed, people, wild species.
- Impacts negative for the watershed and wild species.
- Impacts negative and positive for people.
- Focus our comments on the key watershed issues that are a top priority for our members.


Watershed Issues of Concern

Critical headwaters area

- 90% of the water in the Oldman River is from the headwaters area.
- Source of water for at least 200,000 people downstream.
- Semi-arid grasslands downstream are highly dependent on mountain snowpack.
- Drought is always a possibility.



Watershed Integrity Index

95% of headwaters have low to moderate integrity

Selenium

Se

- Top concern of stakeholders.
- Crowsnest River is a blue ribbon trout stream and selenium is known to cause collapse of fish populations.
- Seeing major challenges in nearby Elk Valley, we don’t want to see a repeat here.
- Contaminated drinking water well had to be shut down in Sparwood.
- Groundwater wells near Blairmore already exceeding guidelines from past mines.

Municipal water treatment

- Key concern is whether selenium is likely to travel downstream to Oldman Reservoir and Oldman River below.
- City of Lethbridge, Fort Macleod, Taber and many other communities draw their water from the Oldman River and have no alternative source.
- We do not have other rivers to draw from like they have in the Elk Valley so our risk is higher.
- Our water treatment plants are not set up to treat selenium.

Agriculture industry

- Downstream of Project is one of Canada's most valuable agricultural regions.
- Near billion dollar primary production and agri-food processing industry.
- Irrigated specialty crops and intensive livestock operations depend on clean water.
- Reputation for high quality Rocky Mountain water important to reputation on international markets.
- Agricultural stakeholders are concerned about the impacts of the Project on the water supply.
- If water contamination led to loss of agricultural production in Southern Alberta, this would have a devastating impact on the livelihood of local residents as well as the economy of Alberta.

Irrigation

- Economy of Southwest Alberta highly dependent on irrigation sector.
- Irrigation adds $3.6 billion annually to provincial GDP, including sales and processing.
- 7X as valuable, compared to dryland.
- Every cubic metre of water delivered for irrigation and other related uses generated about $3.00 to the provincial GDP and $2.00 in labour income.
- Billions of dollars of public and private investment over the last century.

Baseline level of selenium

Irrigation district water quality testing over 7 years from the Oldman River at Fort Macleod showed an mean value for selenium at 0.6 ug/L and a median value of 0.5 ug/L.

Unproven water treatment processes

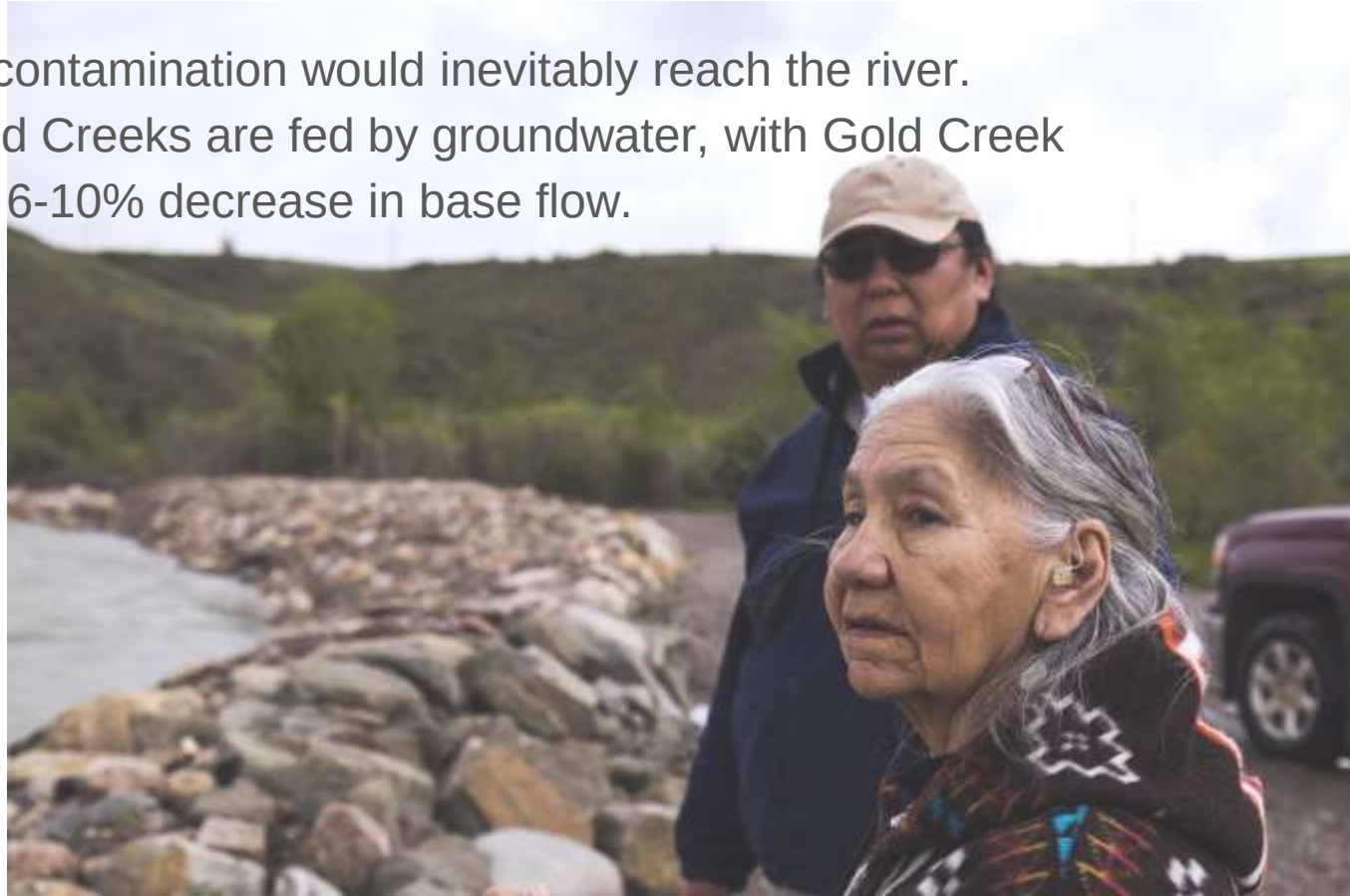
- Saturated rock fill is an unproven treatment process, which is very concerning to our stakeholders.
- Unlikely that all contaminated water will remain onsite.
- Assumption that solutions can be developed over the next decade is not reassuring.
- Risky to approve a project knowing these uncertainties.
- Especially when we are already water limited and we have only one river to draw from.
- Especially given what is happening in the Elk Valley, Koocanusa Reservoir and Kootnai River.
- Research shows that even with selenium removal, high levels of nitrogen and phosphorus remain which also significantly degrade water qualiy.
- We suggest further investigation and demonstration of effective mitigation strategies be required.

Water quality

- 6 water quality variables are expected to exceed guidelines at certain times for 24 years.
- There will be impacts but the magnitude of them is unclear.
- Stakeholders are very concerned about these exceedances and the long term implications of declining water quality over such a long period of time (24 years).
- Our Rocky Mountain water is invaluable and irreplaceable.
- Lifeblood of the whole region and for many people and wild species downstream.
- Impacts could be worse than predicted as we have seen in the past.

Groundwater

- We completed a study in 2013 and found that data is extremely limited in the Crowsnest watershed and the groundwater system is highly complex.
- Mountainous geology with extensive folding and faulting makes it very difficult to predict how groundwater interacts with surface water.
- Generally, groundwater flows towards the Crowsnest River and the two are highly connected.
- Any groundwater contamination would inevitably reach the river.
- Blairmore and Gold Creeks are fed by groundwater, with Gold Creek expected to see a 6-10% decrease in base flow.



Groundwater quality

- There are 35 domestic wells and 11 industrial wells in the local study area and 175 in the regional study area.
- Some wells already exceed guidelines, mostly for metals.
- Project could exacerbate this existing problem.
- We suggest more investigation is needed to ensure drinking water wells will not be put at risk.
- Monitoring plan is inadequate – must not move wells, need to sample more often.
- Frequent, comprehensive monitoring would increase confidence of residents, would permit rapid response if problems arise.
- Transparent, public reporting of data would increase confidence.

Water quantity

- New water withdrawals likely to impact other water users and aquatic environment in dry years.
- Climate change adds considerable additional uncertainty.
- Semi-arid, prairie climate downstream has higher risk of water shortage.
- Stakeholders are very concerned about impacts, there are already contentious debates about water use.

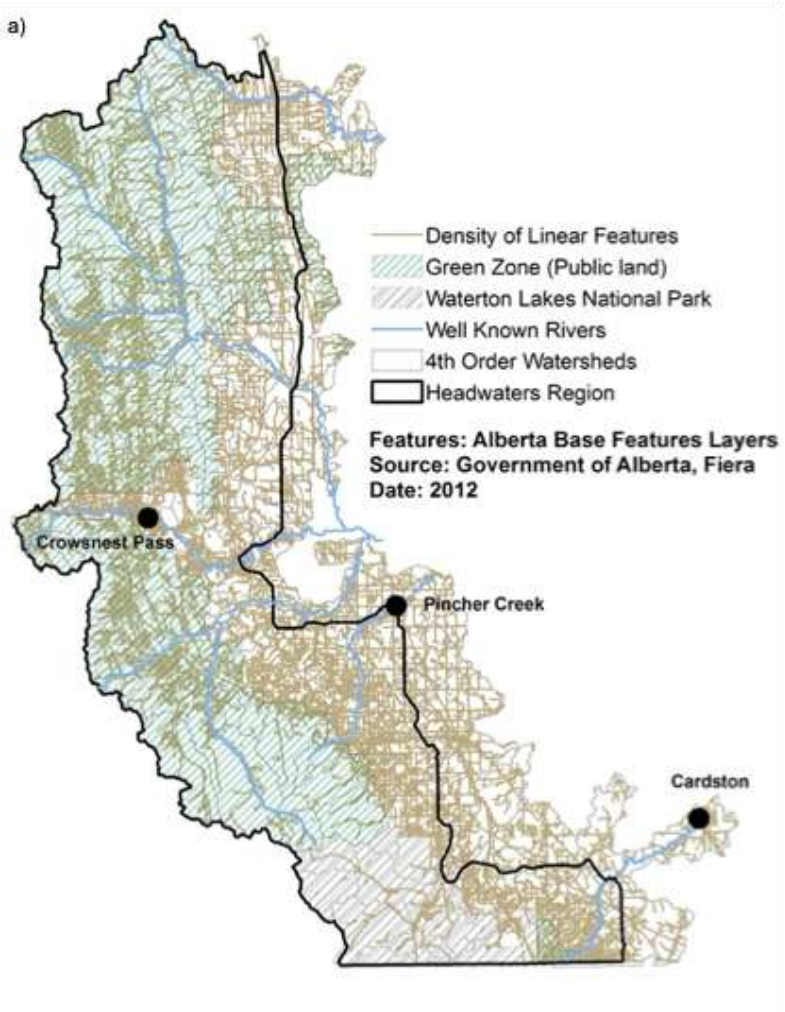
Water quantity

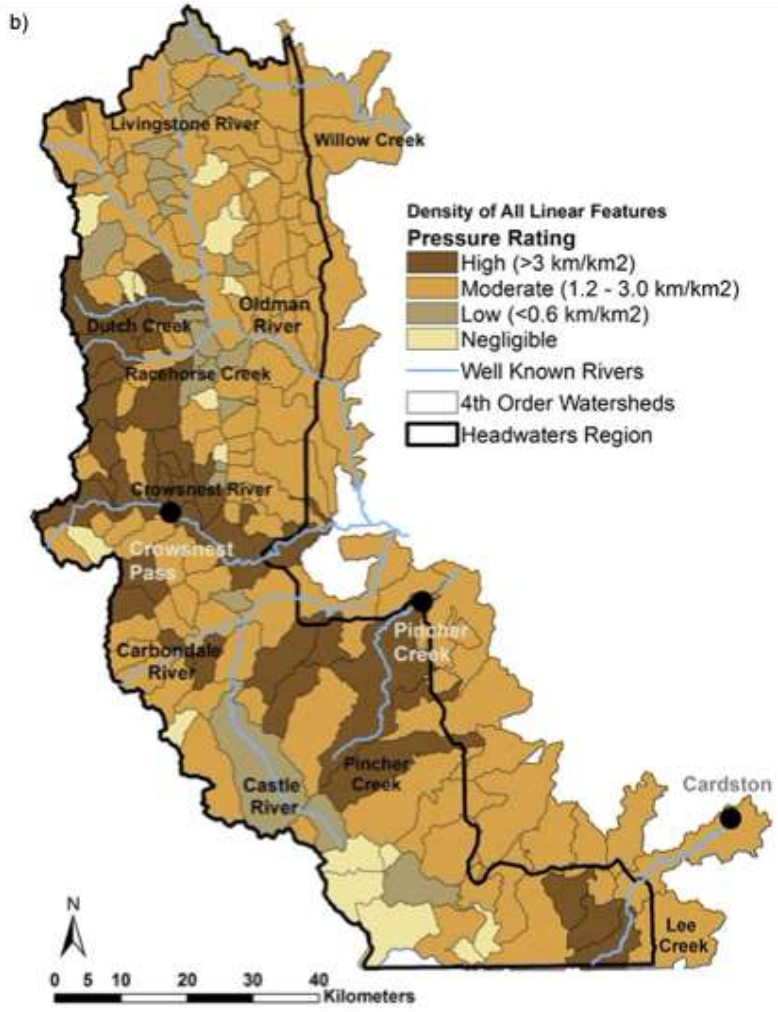
- York Creek licence application is confusing since York Creek is not within the mine area.
- Concerned about withdrawal from Gold Creek and impact on westslope cutthroat trout.
- Suggest an updated water model be required, that takes into account climate change, long periods of drought, First Nations rights, impacts on downstream users, and aquatic environment.
- Modelling needs to be shared publicly to address concerns.

Linear features

- High level of roads, trails, pipelines, etc. in the area already.
- As linear features density increase, fish and wildlife populations and water quality decline.
- Project will create more roads in a region already above thresholds for healthy fish and wildlife populations.
- The critical issue identified by Oldman Watershed Council and Government of Alberta, both have set targets to reduce density.
- Our target is to mitigate the impacts by improving connectivity across highway 3, reducing collisions with wildlife.
- Project will make it more difficult to reach this target because of added fragmentation.

Linear features



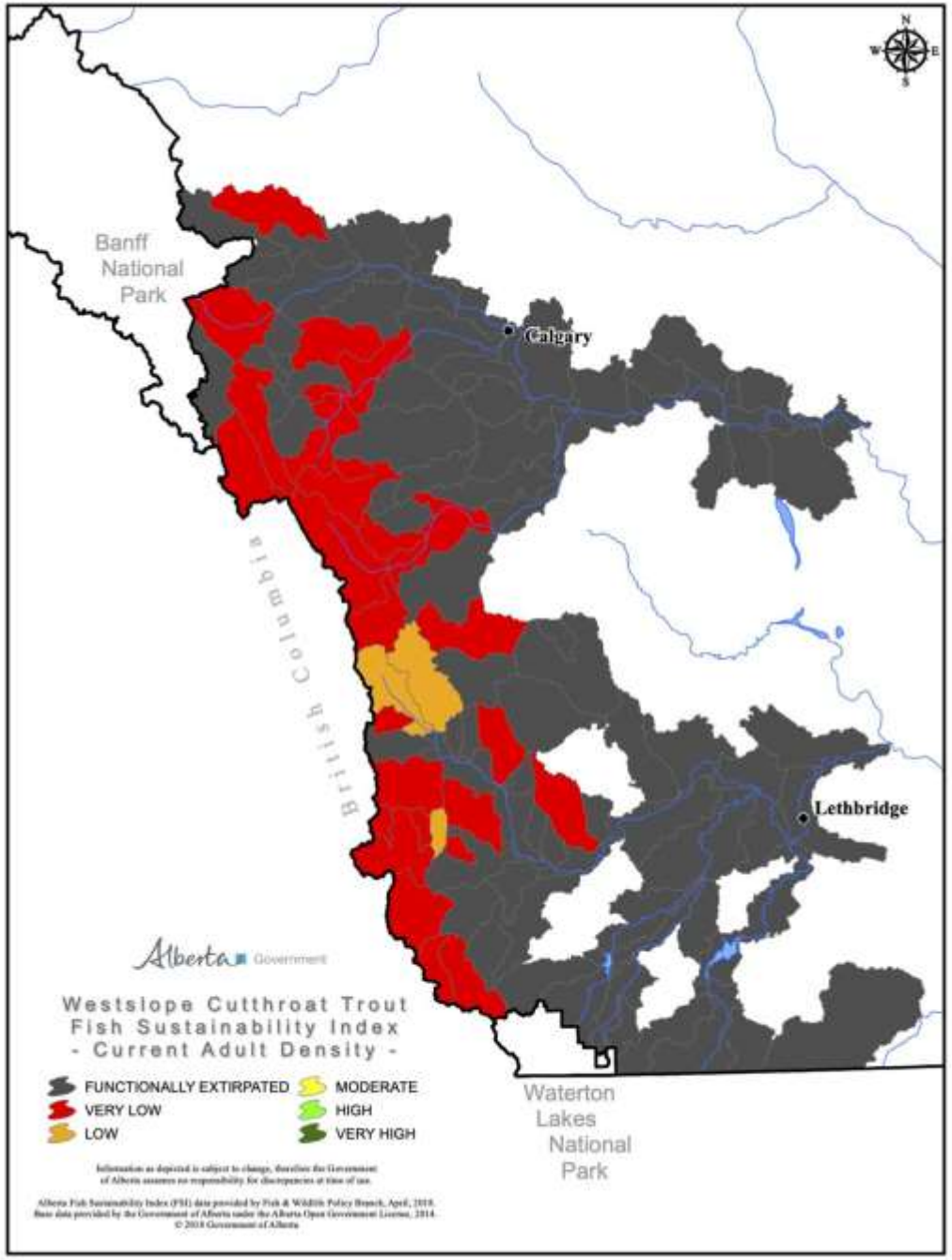


Soil erosion and stream sedimentation

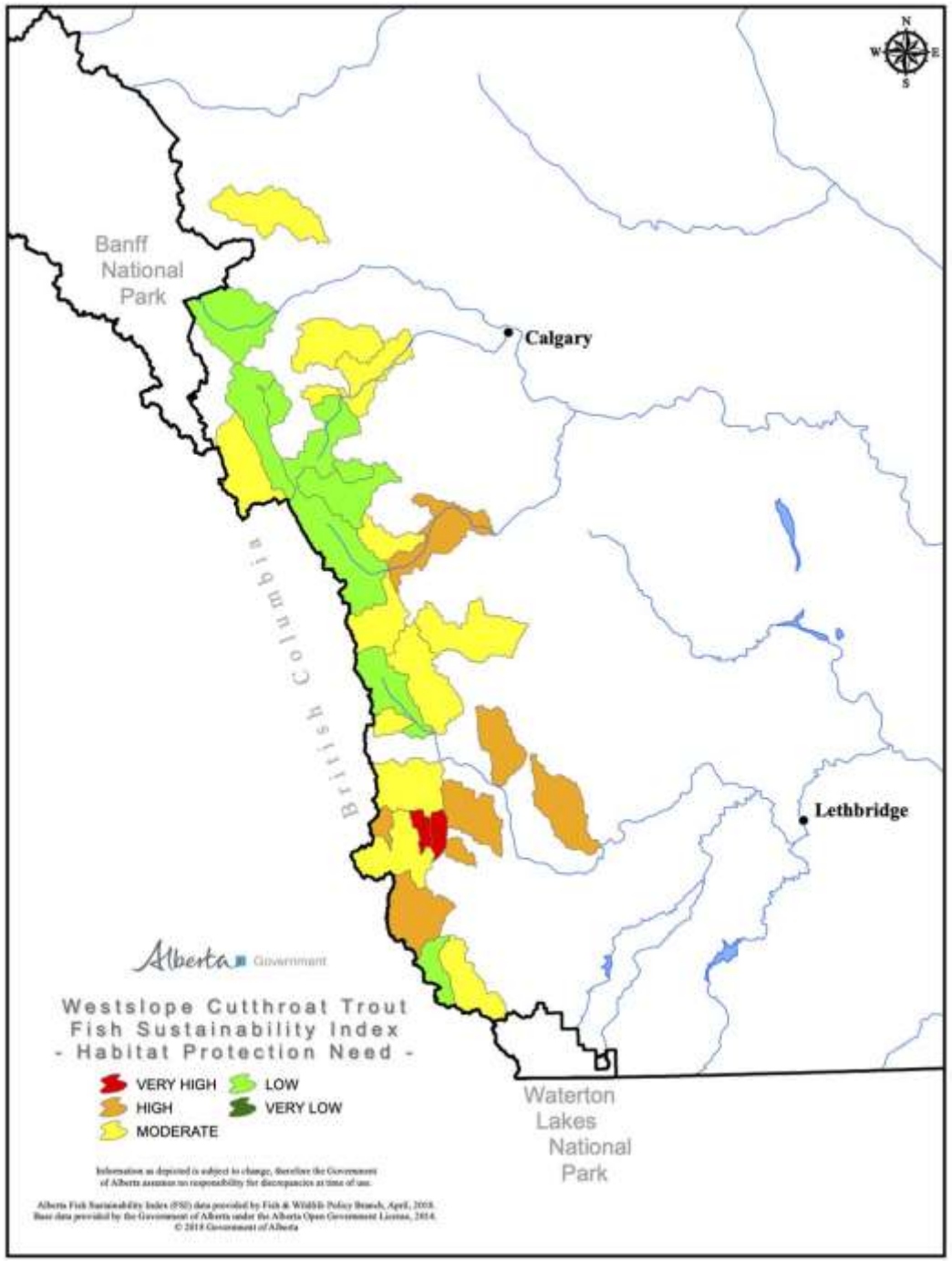
- Very likely when millions of tonnes of soil, rock and coal are disturbed in a steep, mountainous environment.
- Higher risk than other types of land use.
- EIA admits that additional monitoring is needed to validate the prediction that the surface water management program will work for TSS, Se.
- Very concerned that management ponds will not perform as hoped and water quality will be degraded.
- If approved, would like to see conditions around regular, independent monitoring and public reporting.
- Monitoring must ensure ponds are of adequate size to manage high runoff events, are not vulnerable to breach, effluents are not impacting nearby creeks and rivers.

Native and naturalized fish

- Reaches of Gold and Blairmore Creeks, their tributaries and the Crowsnest River are critical habitat for the westslope cutthroat trout (*Oncorhychus clarki lewisi*), a federally threatened species and subject to a critical habitat order issued by the Federal Government.
- Gold Creek is 1 of only 3 streams left in the Oldman watershed that have a ‘low’ adult density - all other streams are ‘very low’ or ‘functionally extirpated’ as shown on the Government of Alberta map below.



Lower watershed in orange is Gold Creek - 1 of 3 with ‘low’ adult densities.



Gold and Blairmore Creeks are also the only creeks given the highest habitat protection need of ‘very high’ as shown on the Government of Alberta map below.

Photo by Joel Sartore, National Geographic

Native and naturalized fish

- Bull trout, mountain whitefish, brook, rainbow trout important sport fish that support angling industry.
- The EIA predicts 758 m^2 loss of aquatic habitat and 530 m^2 of altered habitat on Gold Creek which will have a negative effect, of unknown magnitude, on fish populations.
- Whirling disease was detected in the Crowsnest River in April, 2017 placing additional pressures on native fish downstream of Gold and Blairmore Creeks.
- The Crowsnest River is a fly-fishing destination in Alberta, touted as second only to the Bow River for spectacular trout populations. This fishery supports an important economic driver for the region that could be put at risk by the Project.
- Our stakeholders are concerned that the Project could result in native trout extirpation from Gold and Blairmore Creeks. Westslope cutthroat trout in particular are barely hanging on and may not be able to survive any additional habitat changes.

Biodiversity

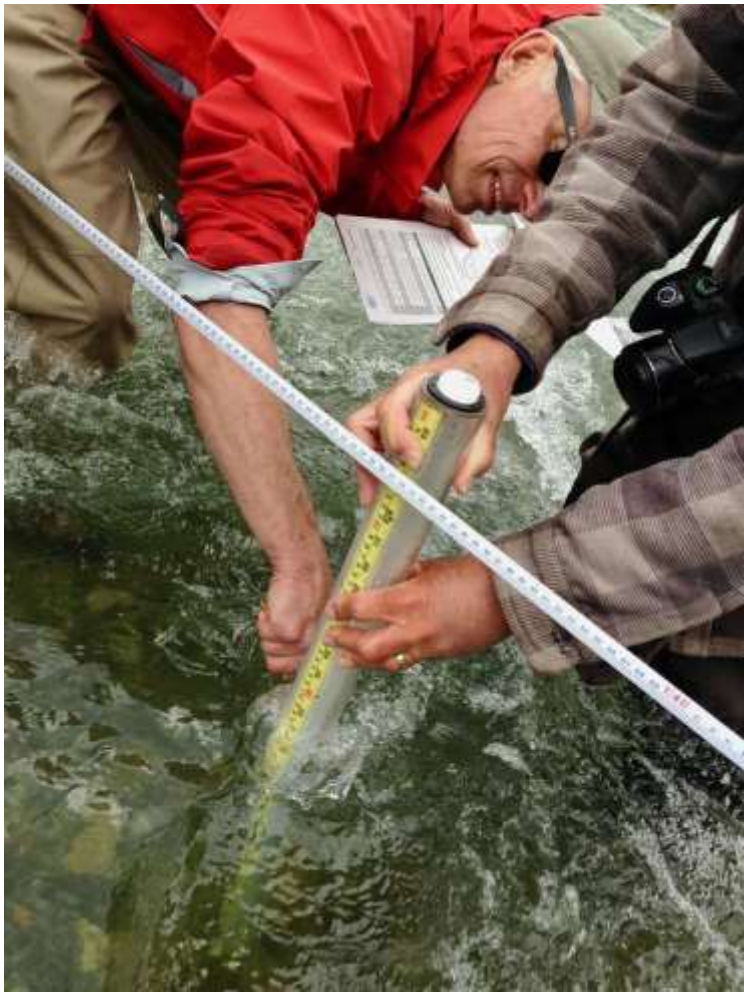
- Project would remove 27 species of rare plants, including endangered whitebark pine, limber pine.
- Project would remove 7.8 ha of shrubby open fens, 168.8 ha of old growth forest, impacting many wildlife species including grizzly bears (provincially threatened), olive-sided flycatcher, common nighthawk, short-eared owl and little brown myotis.
- Project would remove 56.3 ha of native montane grassland, 104.3 ha of native subalpine grasslands, which includes rough fescue grasslands that are extremely difficult to reclaim and known for their high value for carbon storage, livestock forage and wildlife habitat.
- Grasslands are the most endangered ecosystems on the planet and only 26% of them remain in Alberta.
- Our stakeholders are concerned about the loss of this habitat, its impact on rare species and how these seemingly small, incremental losses will add up over time.

Cumulative effects

- Area already at risk because of cumulative effects of multiple use and this project will further contribute to its decline by increasing linear features density, removing intact forests, grasslands and wetlands, changing groundwater and surface water hydrology and degrading water quality.
- Our stakeholders are concerned that our headwaters are becoming overly stressed by the ever increasing demands placed on the land and water.
- The region is already facing serious threats including climate change, declining biodiversity, sedimentation of streams, whirling disease, mountain pine beetle, fragmentation and habitat loss from multiple land uses.
- We are fortunate to have this world renowned rocky mountain ecosystem and as the current stewards of this land, it is our responsibility to manage it well for future generations.
- An overarching cumulative effects assessment is lacking in the EIA, with some sections stating that one is not necessary. We suggest a more robust cumulative effects assessment is undertaken which includes empirical data and modelling of the known multiple uses in the Local Study Area and Regional Study Area and also includes potential downstream effects beyond these areas.
- Our stakeholders deserve accurate information on cumulative effects because they are either local or downstream residents.

Capacity for monitoring, evaluation and enforcement

- A large project like this will require significant capacity to adequately monitor and evaluate the ongoing operations and if necessary, enforce permit conditions and existing legal requirements.
- Given tight fiscal realities and current workloads we have concerns about the Government of Alberta's capacity, or the capacity of independent monitoring parties, to regularly monitor this project over the next 24 years.
- This concern partly stems from the fact that according to the EIA, there are currently 288.7 ha of unreclaimed lands within the proposed project footprint from previous mining operations.
- What new measures are in place to ensure this won't happen again and leave even more unreclaimed land?



Reclamation and offsets

- There is an estimated riparian loss of 18,868 m^2 on Gold Creek and 402 m^2 on Blairmore Creek.
- Offsets can be a useful tool, but only if equivalent areas are actually restored to the original ecological function of the damaged areas.
- If existing environmentally valuable areas are simply designated as offset areas, the net effect is still a loss.
- If the restored areas are not as ecologically functional the net effect is also still a loss.
- Keeping what we have is much more economical and effective than having to reclaim afterwards, or attempt to restore other damaged areas.
- We do not have the ability to recreate what nature has created over time and reclamation has proven to be very difficult, expensive and sometimes impossible.
- The project is located in an area that is very difficult to reclaim because of shallow soils and we have seen past reclamation efforts nearby fail to establish groundcover.
- Given these past failings, it is difficult to see how adequate groundcover will be established to control erosion and how ecological function will be restored.

Summary

- Critical headwaters area that is the lifeblood of mountains, dry prairies downstream and everyone that depends on Oldman River.
- Selenium, water is top concern not adequately addressed in EIA.
- Oldman River is only drinking water source for at least 150,000 people - we have no other options.
- World renowned Rocky Mountain water is cornerstone of near billion dollar agricultural industry dependent on irrigation.
- Headwaters are already stressed and fragmented from cumulative effects, local and provincial efforts are focused on restoring function and connectivity.
- Many species at risk will be directly impacted, including westslope cutthroat trout that is on the brink of disappearing.
- Stakeholder confidence is low - more investigation, piloting and testing is needed.
- If approved, many strict conditions would be necessary to address stakeholder concerns.

Questions

The forks - where the Oldman River meets the Bow River