



# FOOTHILLS STREAM CROSSING PARTNERSHIP

**A SUCCESS STORY**

An aerial photograph showing a winding river or stream flowing through a lush green landscape. The river starts in the upper left, meanders through a grassy area, and then flows through a dense forest. The surrounding land is covered in green vegetation, with some areas appearing more open and others more densely wooded.

# Agenda

Adam Sprott



Intro to the FSCP



Overall Workflow



Successes



Challenges and  
Opportunities



Conclusion



# Intro to the FSCP

## History

Formed in 2005 as a partnership of energy and forestry companies with fRI Research, grown province wide

## Focus

- Data collection and inventory management
- Prioritization tools and support
- Development of remediation plans
- Training and knowledge
- Partner driven regulator engagement
- Stream crossing mitigation

## Mandate

“Improve watershed health through inventorying, prioritizing and mitigating stream crossings”

# Advisory Support and Collaborative Partners



Alberta Environment and Parks



Alberta Energy Regulator



Fisheries and Oceans Canada



Alberta Conservation Association



Trout Unlimited



Aseniwuche Development Corp



Alberta Backcountry Hunters and  
Anglers Association



1. Arc Resources
2. Athabasca Oil Corp
3. Baytex Energy
4. Canfor
5. Cardinal Energy
6. Canlin
7. Chevron
8. Cenovus
9. Hammerhead Resources
10. Keyera
11. NuVista Energy
12. Outlier Resources
13. Paramount
14. Petrus
15. Peyto
16. Pieridae Energy
17. Repsol
18. Shell Canada
19. Spartan Delta - 2022
20. Strathcona
21. HWN Energy (Tangle Creek)
22. Taqa
23. Tidewater Midstream
24. West Fraser
  1. Slave Lake Pulp
  2. Blue Ridge
  3. Hinton Wood Products
25. Weyerhaeuser



**Foothills Stream  
Crossing Partnership**

An aerial photograph showing a stream meandering through a vast, dense forest. The stream is a light blue-grey color, contrasting with the deep green of the surrounding trees. The forest appears to be a mix of deciduous and coniferous trees. The stream flows from the upper left towards the lower right, with several small loops and bends.

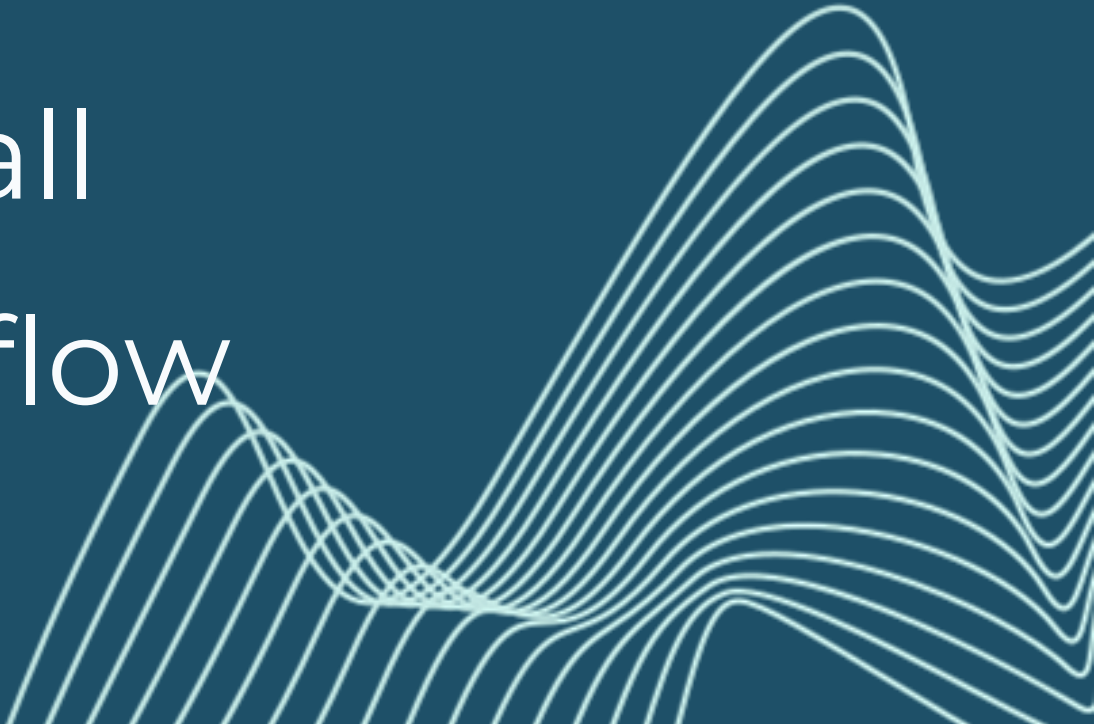
## **FOOTHILLS STREAM CROSSING PARTNERSHIP**

# **Mission**

To improve the condition  
and performance of stream  
crossings on the landscape.



# Overall Workflow





# Watershed Remediation Process


FSCP identifies inspections that are outstanding and provides maps and details per region

Training sessions for inspectors and are held across the province on inspection protocols and general crossing mitigation strategies

Stream crossing data collected during snow free periods and compile the inventory within the FSCP database

Crossing data is summarized, prioritized and compiled into watershed scale plans that span multiple industries

Crossing owners prioritize repairs and schedule crossing repair. Completed plans are submitted to the regulators



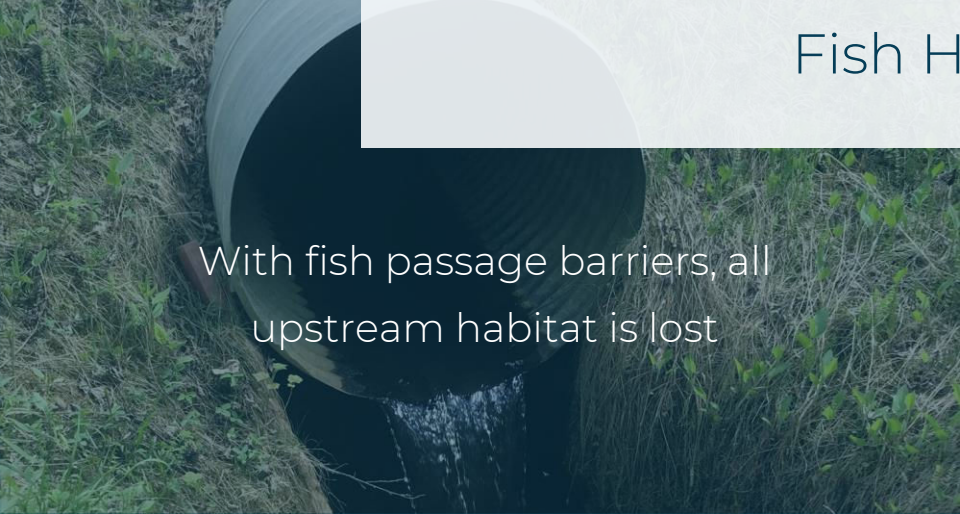
The whole stream is used at  
different times of year



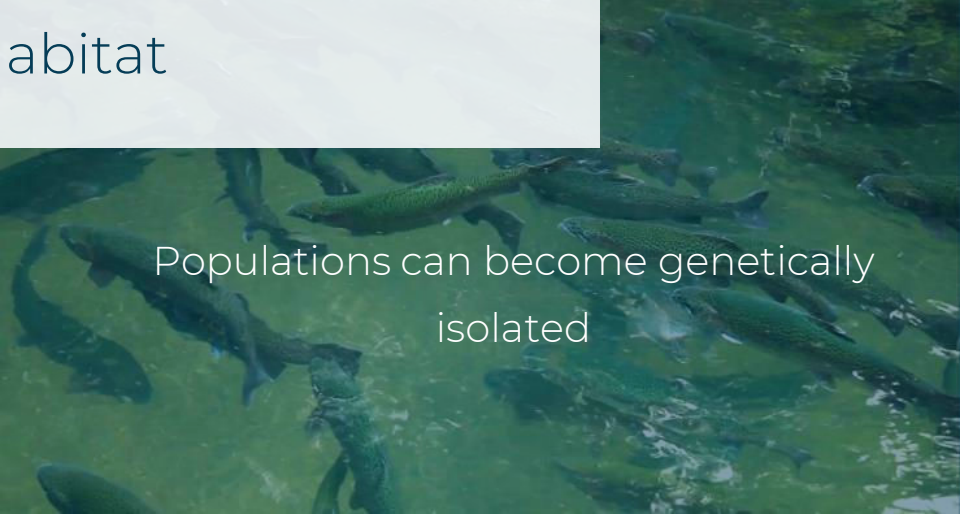
Fish travel upstream to spawn

# Inspection Priorities

## Fish Habitat



With fish passage barriers, all  
upstream habitat is lost

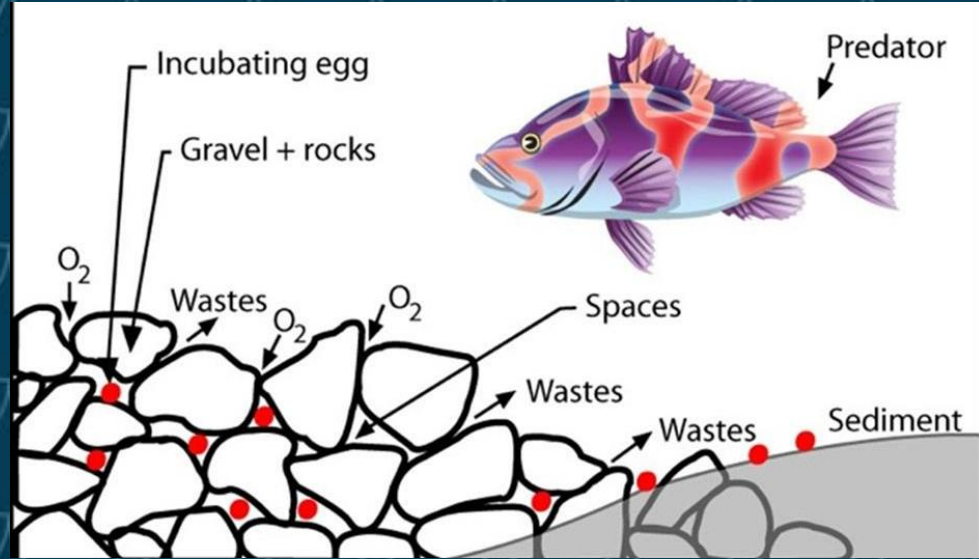


Populations can become genetically  
isolated

# Inspection Priorities:

## Sediment and Fish

- ◆ Sediment reduces the abundance of insect larvae and smothers those that live on the bottom
- ◆ The suspended sediment can damage gills
- ◆ Effects of several crossings can add up
- ◆ Dirt in the water will change fish feeding behavior, since prey is less visible
- ◆ Fish avoid areas of high sediment—leaving them with less space to live in





# Data Management

- ◆ Application is designed according to most recent data requirements
- ◆ Extensive data validation
- ◆ Camera, GPS and datalogger all in one
- ◆ Easy transfer to outside groups conducting inspections
- ◆ Immediate upload of data to online tool

Culvert 01/0401064056 on PAD 2 ROAD (2016-07-1...

### Structure Parameters

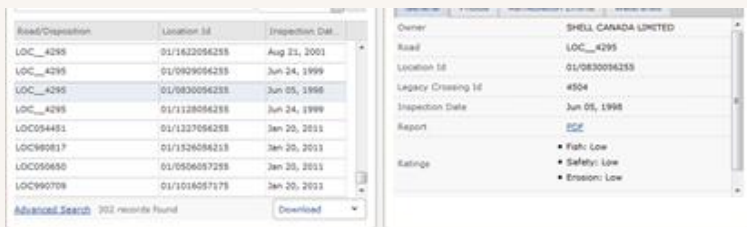
Tag	Type
A	Round
Material	
Steel	
Length (m)	Diameter (0.01m)
26	0.90
Height of Fill Over Culvert (0.1m)	
5.0	
Grader Markers	
No	
Percent of Opening Blocked	Cause of Blockage
0	None
Armour Inflow	
Vegetation	
Armour Outflow	
Vegetation	

### Fish Parameters

Riffle Crest (0.01m)	Outlet Drop
0.10	1.30
Backwater in Culvert (%)	
0	
Substrate Type	
None	



# Data Interaction: Operational



Advanced Search 302 records found

Road/Crossing	Location ID	Inspection Date
LOC_4295	01/162096255	Aug 21, 2001
LOC_4295	01/0929596255	Jun 24, 1999
LOC_4295	01/0830096255	Jun 05, 1998
LOC_4295	01/1128096255	Jun 24, 1998
LOC054451	01/1137096255	Jan 20, 2011
LOC980817	01/1326096255	Jan 20, 2011
LOC050650	01/0506097255	Jan 20, 2011
LOC990708	01/1016057175	Jan 20, 2011

Download



Owner	SHELL CANADA LIMITED
Road	LOC_4295
Location ID	01/0830096255
Legacy Crossing ID	4504
Inspection Date	Jun 05, 1998
Report	<a href="#">SCE</a>
Ratings	<ul style="list-style-type: none"><li>Fish: Low</li><li>Safety: Low</li><li>Erosion: Low</li></ul>

Companies can access data at anytime

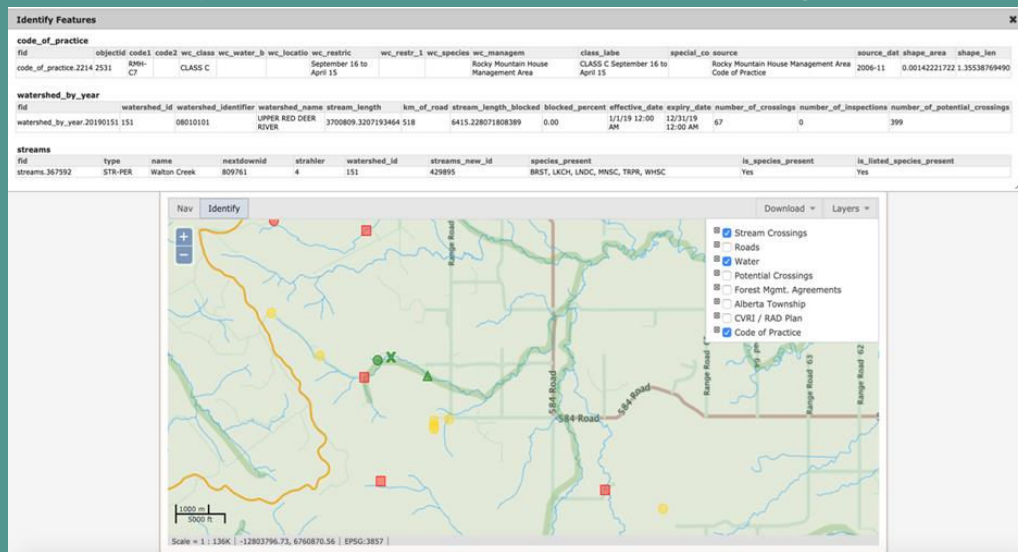
Search data by attributes of the crossings

Can download spatial data and PDF reports and photos

Watershed views of connectivity and sedimentation (over time)

Multi level passwords available per company









# Data Management and Accessibility

- Aseniwuche Development Corporation
- Training for Indigenous communities located in remote locations
- Backcountry Hunters and Anglers
- Citizen Science projects of ATV trail crossings
- ATV trail inventory – Habitat Offset Banking Project

# Watershed Scale Remediation

The solution is prioritizing  
in two ways:



**By crossings in  
watershed**



**By watershed**

There are over 50,000 road and stream crossings in the province and many of these crossings were installed before the impacts of barriers on fish movement and sedimentation were identified. Many different industries, government agencies and private citizens own these crossings.

# WATERSHED SCALE REMEDIATION - CHALLENGES

## FSCP MEMBERS ATTEMPTED TO PRIORITIZE CROSSING REPAIR

However, one-off compliance letters from regulators made budgeting very difficult. Funds were being pulled from priority projects to low benefit crossing

## EXISTING LEGISLATION

Did not allow regulators to ignore non-compliant crossings or assign priority based on environmental risk.


## REQUEST FOR SUPPORT

FSCP believes strongly in the environmental and operational benefits of Watershed Scale Remediation. They requested support for their methodologies from the regulators.

## THE SOLUTION

Was a new multi-regulator policy Roadway Watercourse Crossings Remediation Directive





# **ROADWAY WATERCOURSE CROSSINGS REMEDICATION DIRECTIVE - PURPOSE**

- To uphold regulatory mandate of AEP and AER
- Optimize compliance performance and enhance environmental stewardship through prioritizing
- A cooperative approach to planning remediation priorities between crossing owners and regulators.

# About the Directive



EFFECTIVE  
MARCH 4, 2015




Recognition that  
many crossings  
impede fish  
passage



Fragmentation of  
watercourses and  
decline in fish  
populations limits  
our ability to meet  
overall fish  
management



This is an alternative  
regulatory strategy  
for crossings  
authorized by AEP  
and AER

The background of the slide is a scenic photograph of a dense evergreen forest in the foreground, with rolling hills and snow-capped mountains in the distance under a clear sky. A dark blue semi-transparent rectangle is overlaid on the left side, containing the title text in white.

# **DIRECTIVE - BENEFITS TO FSCP**

- Managed approach to stream crossing remediation over a longer period of time
- Access to a developed inspection protocol and data management system
- Remediation based on agreed to priorities by watersheds and by crossings within watersheds
- Cooperative approach between crossing owners and with the regulators
- More stable, predictive funding over time for remediation
- A positive, proactive approach
- Improved environmental performance





## Fish and Habitat

- Increased habitat connectivity
- Channel size
- Listed species

## Prioritization Methodology - Simplicity

### Operational and Safety

- Cost and benefit of repair
- Life cycle of road
- Human safety





# Prioritization Methods and Success

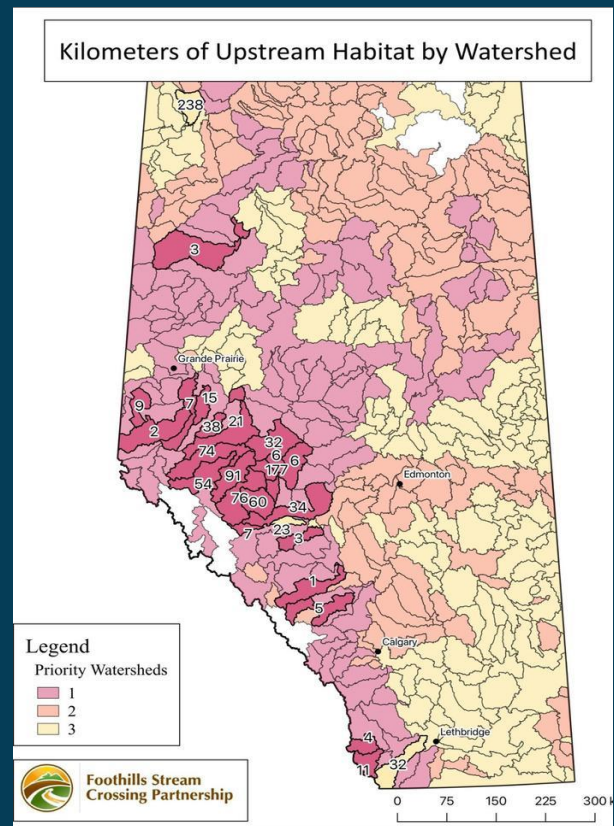


An aerial photograph of a town nestled in a valley. A river flows through the landscape on the right side. In the background, a range of mountains is visible under a blue sky with scattered white clouds. A dark teal rectangular box is superimposed over the center of the image, containing the word 'SUCCESSES' in white capital letters.


# SUCCESSES

# Fish Passage Mitigation - Through Time

Years	Barriers Removed	KMs
2008 - 2018	268	886
2019	21	30
2020	32	86
2021	250	561
2022	175	284
<b>All Years</b>	<b>746</b>	<b>1847</b>







1,850 km's of fish habitat  
connected over 750 stream  
crossings



# Watershed Scale



SPECIES AT RISK



## Athabasca Rainbow Trout



**STATUS:** Threatened

**KEY CHARACTERISTICS:**

- Black spots across the body, dorsal fin, tail and adipose fin.
- No pale halo around spots
- No red slash under jaw



Habitat Range

## Bull Trout



**STATUS:** Threatened

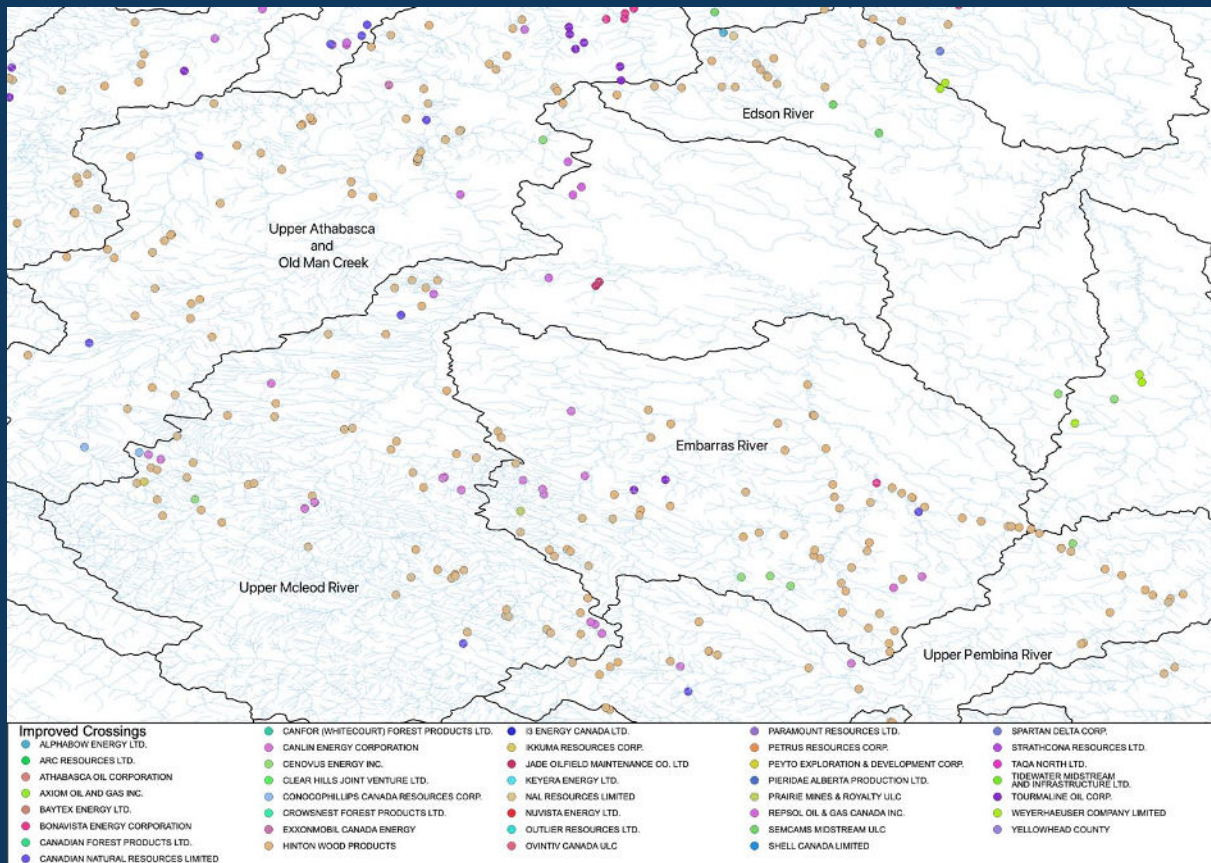
**KEY CHARACTERISTICS:**

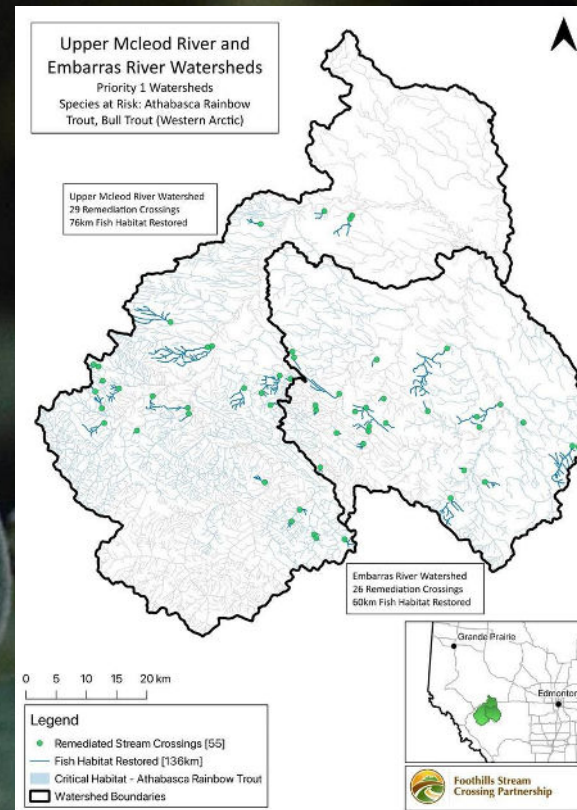
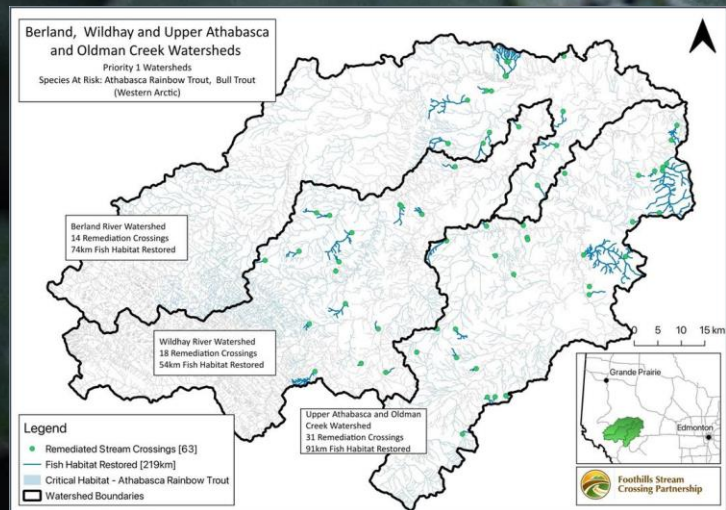
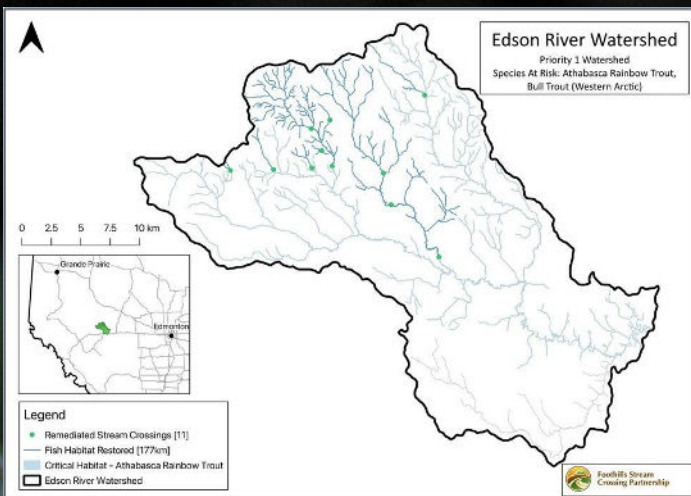
- Light spots on the body
- No spots or markings on the dorsal fin or tail



Habitat Range

# Improved Crossings



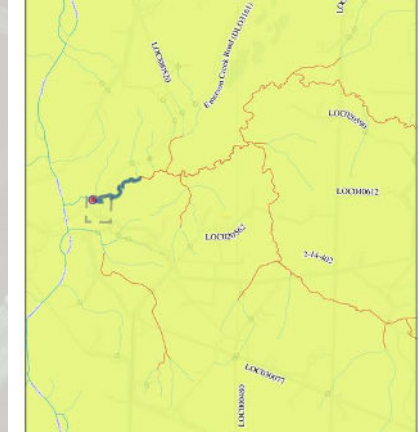




# Remediation Snapshot

## EMERSON CREEK

- ◆ 85 km's of upstream habitat
- ◆ Critical habitat for Athabasca Rainbow trout and Bull trout
- ◆ 0.5km from the Athabasca River





# Stream Scale

Quigley Creek Learning Centre ♦ Upper McLeod ♦  
Athabasca Rainbow Trout Habitat Collaboration with  
Trout Unlimited



# LOOKING FORWARD



## Planned Remediation 2022-2026

72 crossings and 204km fish habitat restored

### Legend

FSCP Remediation Plans

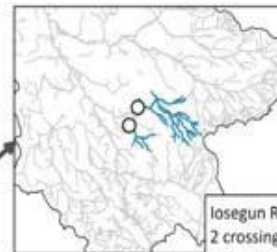
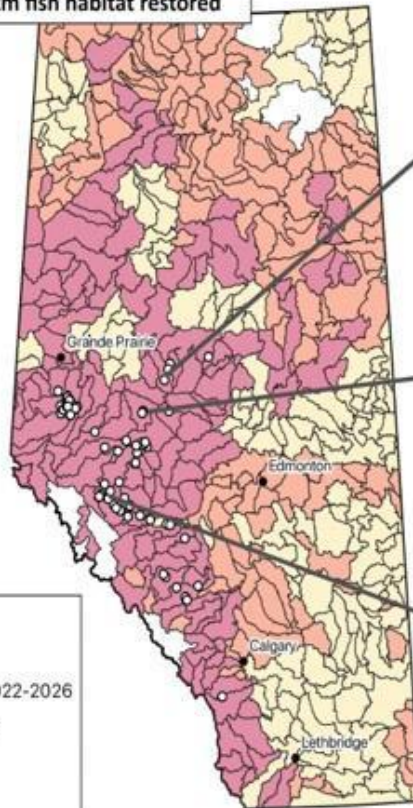
○ Planned Remediation 2022-2026

Provincial Priority Watersheds

1

2

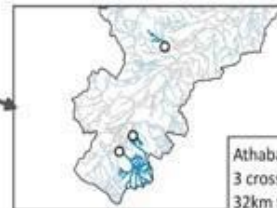
3



Iosegun River Watershed  
2 crossings planned  
47km fish habitat restored



Athabasca Above Whitecourt  
8 crossings planned  
34km fish habitat restored  
Critical Habitat - ARTR



Athabasca and Oldman Creek  
3 crossings planned  
32km fish habitat restored  
Critical Habitat - ARTR





# Looking forward

## BC INSPECTIONS

- Partnering our members with BC Operations
- Minor tweaks to inspection app and different governing regulations
- Communicating to potential partners and existing members w/ BC infrastructure

## BOREAL INSPECTIONS

- Winter access roads and a shift in environmental priorities
- Training local inspectors
- Partnering with indigenous communities

COMMUNICATION WITH  
POTENTIAL AND  
CURRENT PARTNERS,  
REGULATORS, PUBLIC &  
COLLABORATORS



# Concluding thoughts

- For the past 17 years, The Foothills Stream Crossing Partnership has been improving Alberta's watersheds one inspection at a time.
- Many of Alberta's fish species are listed as threatened or endangered provincially and federally and populations continue to decline
- The FSCP's prioritized approach addresses concerns at crossings located at streams known to be high quality habitat for these species making measurable improvements to habitat.



# **Regulatory Approach To Watercourse Crossing Management**

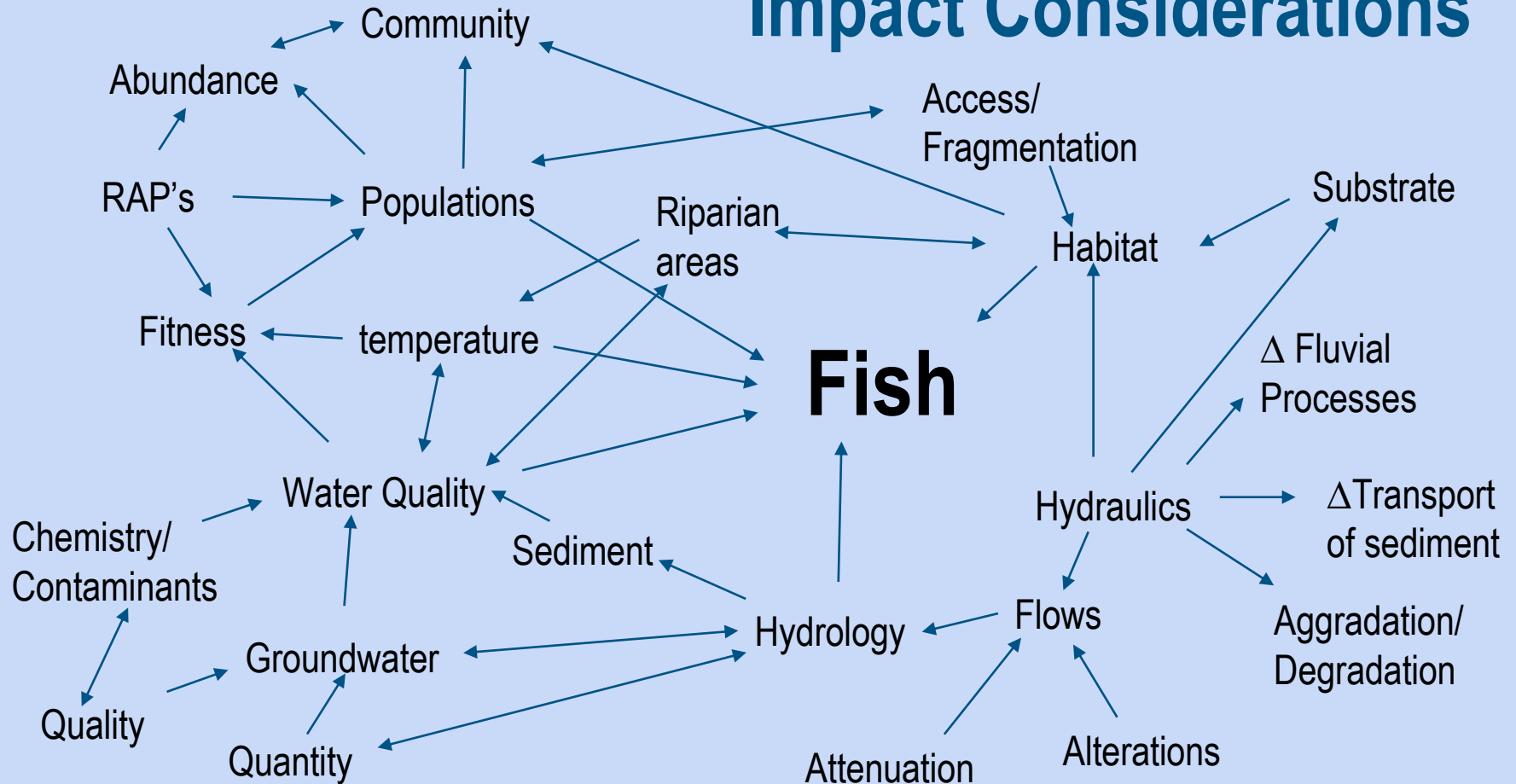


# Outline

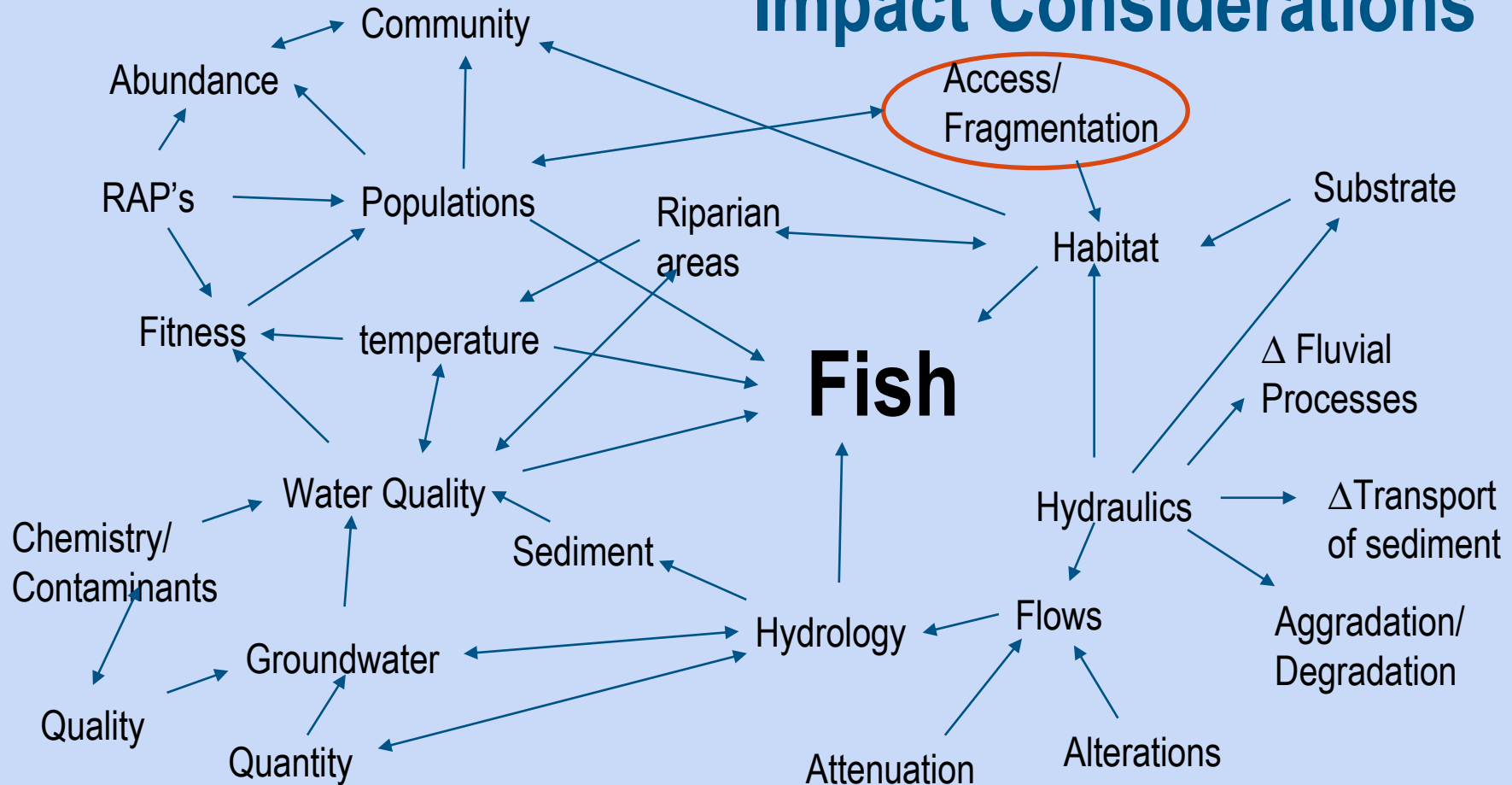
- Impact Considerations
- Current State of Alberta's Fisheries
- Causes of Declines
- Roadway Watercourse Crossing Inspection Manual
- Roadway Watercourse Crossings Remediation Directive
- Watercourse Crossings Management Directive



# Impact Considerations



# Impact Considerations



# Current State of Alberta's Fisheries

- The Fish Sustainability Index (FSI) is Alberta Fish and Wildlife's method of assessing fish stocks on a provincial scale.
- The FSI was developed to bring consistency to individual fish stock assessments and provide a province-wide evaluation of the status and sustainability of Alberta fish species.





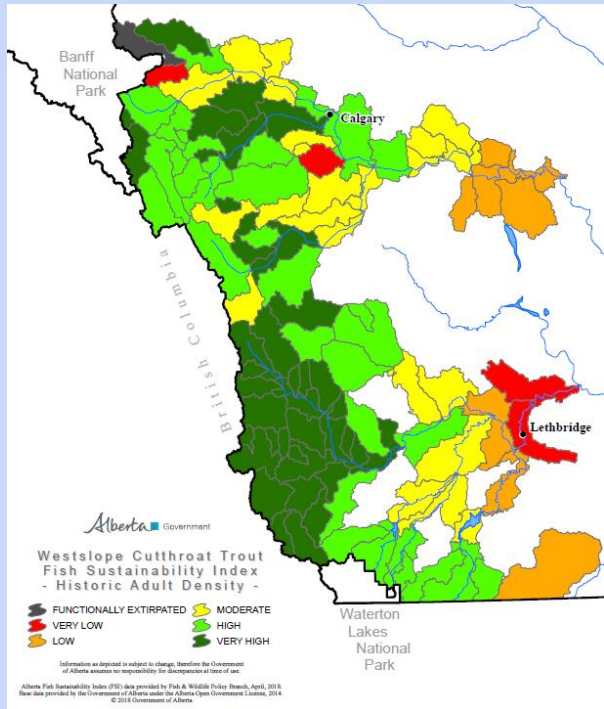
# Current State of Alberta's Fisheries

- Alberta currently has 3 fish species listed under the federal *Species at Risk Act*
  - Westslope Cutthroat Trout
    - Threatened
  - Athabasca Rainbow Trout
    - Endangered
  - Bull Trout\*
    - Threatened (Sask-Nelson)
- Arctic Grayling\*

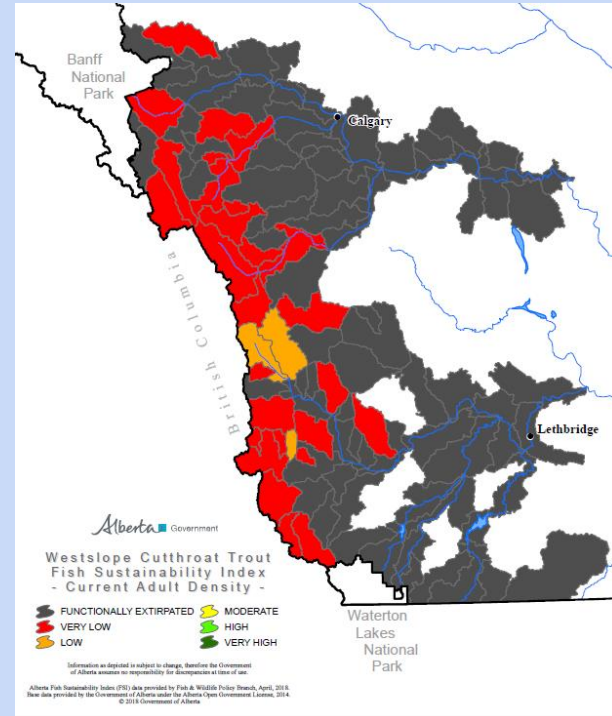


# Current State of Alberta's Fisheries

## Historic Density

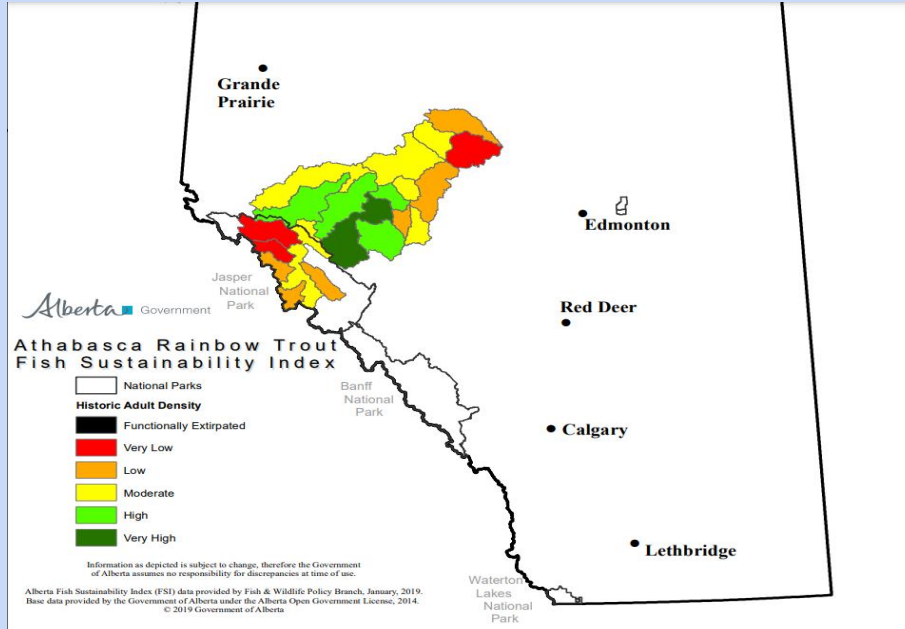


## Current Density

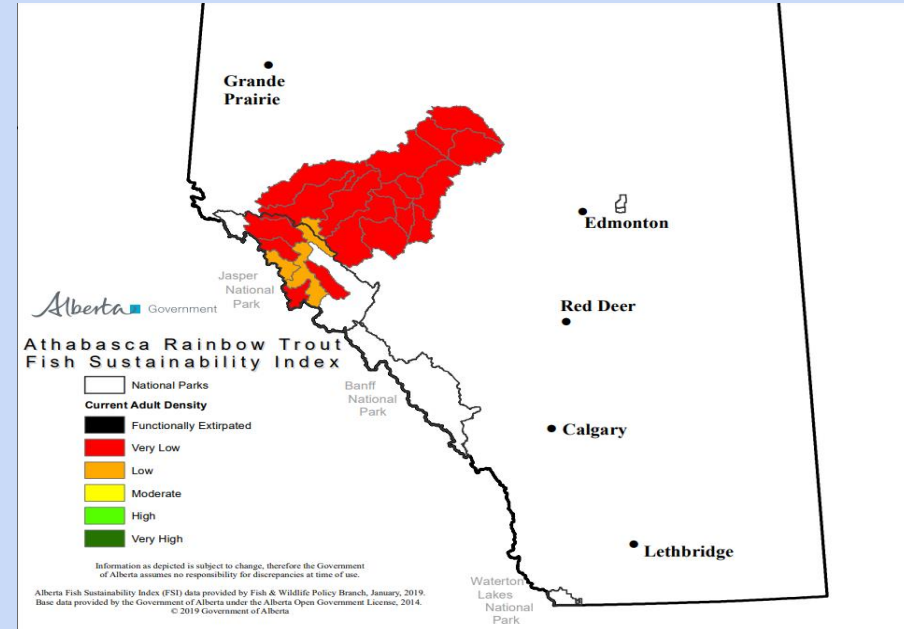


# Current State of Alberta's Fisheries

## Historic Density



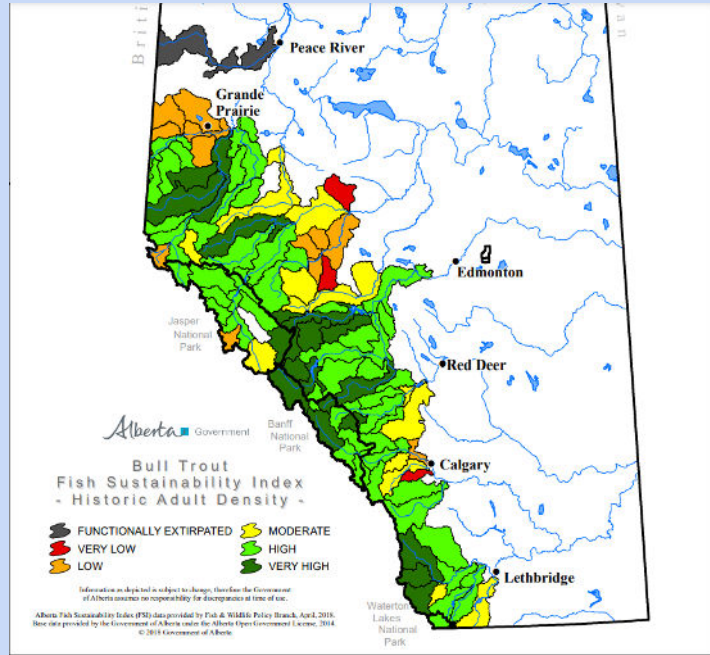
## Current Density



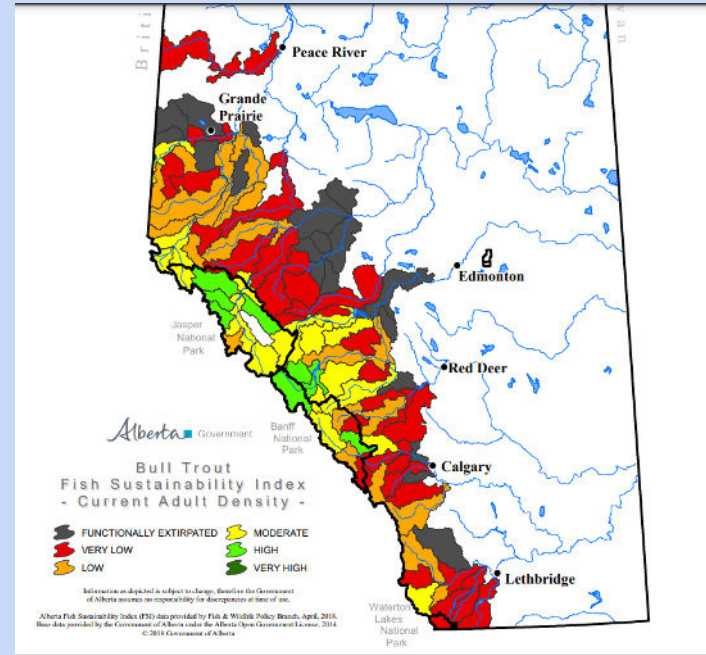


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## Historic Density

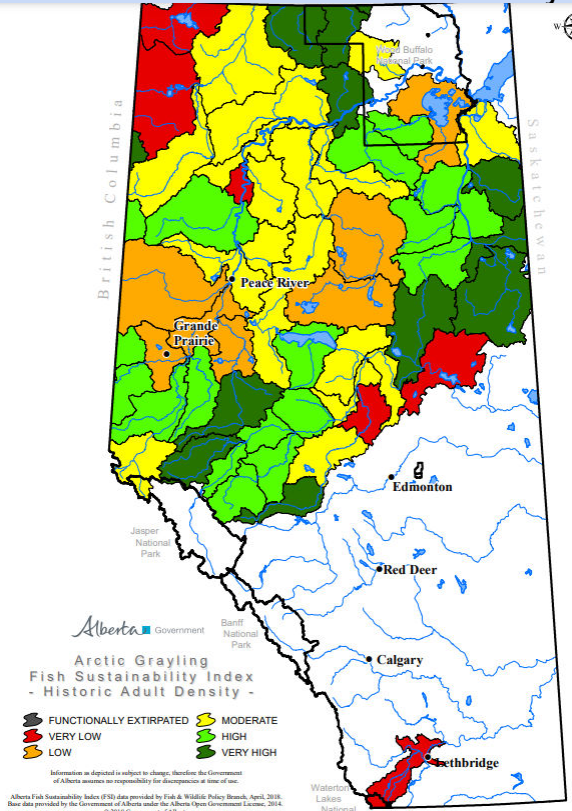


## Current Density

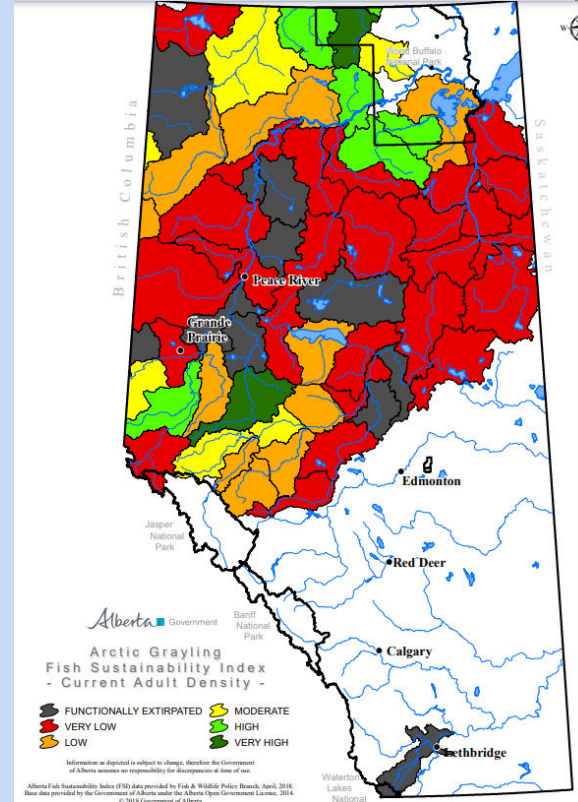


# Current State of Alberta's Fisheries

## Historic Density



## Current Density



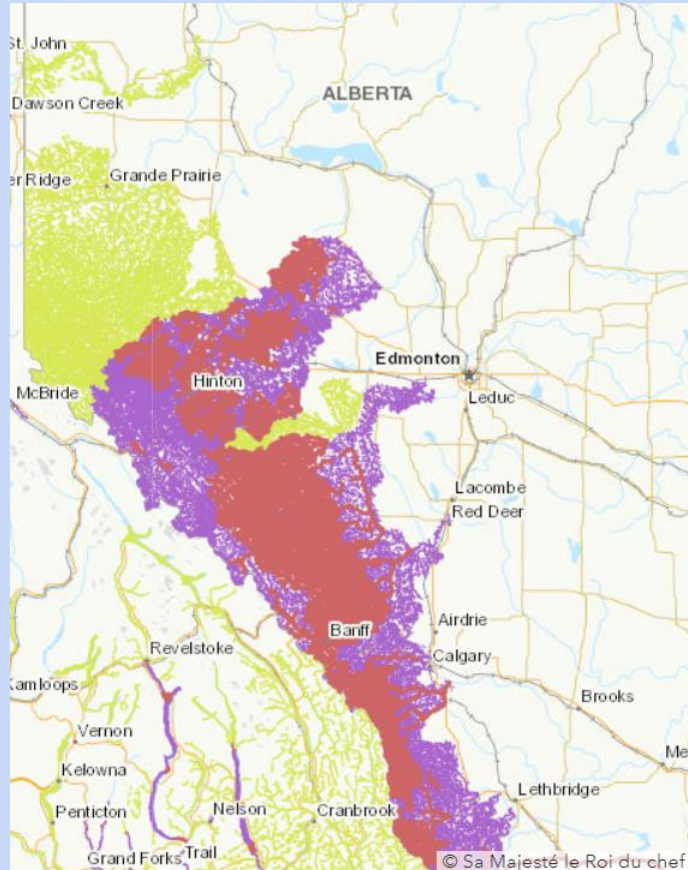
# SARA Listed Critical Habitat in Alberta

The current extent of Critical habitats in Alberta based on the presence of SARA listed Species

## Legend

One or more aquatic species listed under the Species at Risk Act are found (or potentially found) within the coloured areas.

-  Critical Habitat
-  Extirpated, Endangered, or Threatened
-  Special Concern



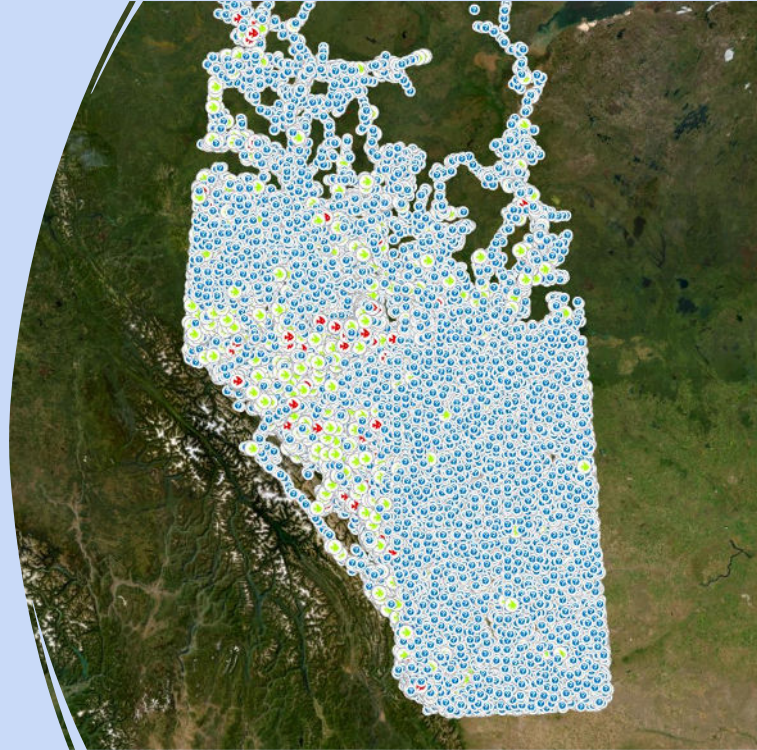


# Causes of Fisheries Declines

- Causes of declines of native Salmonids in Alberta can be found in Recovery Plans
  - Common causes among all salmonids include:
    - Invasive species/competition/inbreeding(stocking)
    - Habitat loss and degradation
    - Mortality/over-exploitation
    - Changes in Water Quality/pollution/Climate Change
    - Habitat Fragmentation

# Predicted crossings

- 110,373 predicted watercourse crossings
- Based on data from ESRD and ACA, failure rates of culverts were between 30-60% dependent on watershed



the establishment of a defined monitoring and reporting system to collect data and information around watershed health, connectivity and inform priority remediation work

# Addressing Habitat Fragmentation

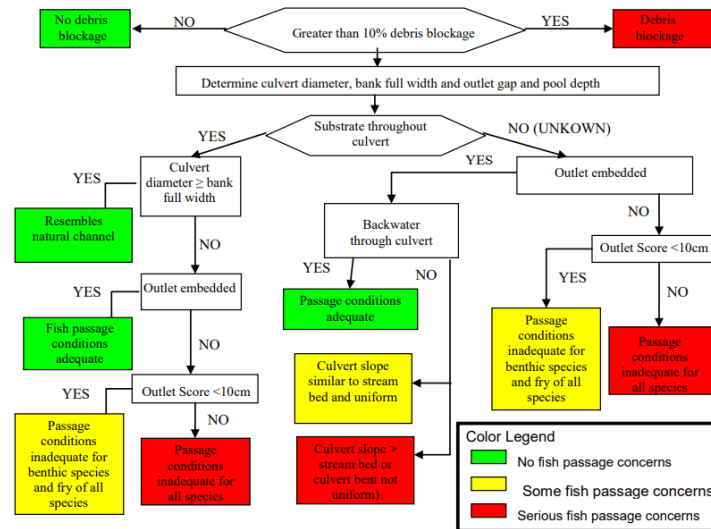
- In the late 2000's, Regulators began looking at addressing the issue of Habitat Fragmentation
- Resulted in the creation of several initiatives:
  - Roadway Watercourse Crossing Inspection Manual (2012)
  - Roadway Watercourse Crossings Remediation Directive (2015)
  - Watercourse Crossings Management Directive (2020)



# Roadway Watercourse Crossing Inspection Manual

- Released in 2012
- Collaboration between ERSD and DFO
- Standardized assessment protocol
- Focused on fluvial habitats in the east slopes
- Regulator-focused**

## 10.1 Fish Passage Evaluation Criteria for Culvert Stream Crossings



# Roadway Watercourse Crossing Inspection Manual

- While standardized data collection resulted in consistency among assessors, forms were still manual and no central repository existed to assess the data holistically

*Alberta* Government Environment and Sustainable Resource Development

### Watercourse Crossing Inspection Form

Water Crossing Name of ID (ex. # spray painted on or around culvert)		Disposition No.
Watercourse Name:		
GPS Co-ordinates (UTM):	Easting:	Northing:

Stream Classification: <input type="checkbox"/> Ephemeral <input type="checkbox"/> Non-Fluvial (in non-fluvial, omit shaded section)	
<input type="checkbox"/> Fluvial & either: <input type="checkbox"/> Intermittent, or <input type="checkbox"/> Permanent – Small, or <input type="checkbox"/> Permanent – Large	
Bankfull width: ____m ( <input type="checkbox"/> measured or <input type="checkbox"/> estimated to nearest metre)	

Crossing Type:	<input type="checkbox"/> Bridge – Permanent <input type="checkbox"/> Bridge – Temporary <input type="checkbox"/> Culvert – Single
	<input type="checkbox"/> Culvert – Multiple <input type="checkbox"/> Culvert – Open Bottom
	<input type="checkbox"/> Fill - Log <input type="checkbox"/> Ford <input type="checkbox"/> Suspended <input type="checkbox"/> Reclaimed

Erosion at site? <input type="checkbox"/> Yes <input type="checkbox"/> Potential <input type="checkbox"/> No	<input type="checkbox"/> Inlet <input type="checkbox"/> Outlet <input type="checkbox"/> Both
If Yes or Potential, identify source (check all that apply): <input type="checkbox"/> Ditch Gully <input type="checkbox"/> Bank Slump <input type="checkbox"/> Fill Slope <input type="checkbox"/> Road Surface <input type="checkbox"/> Bridge Deck <input type="checkbox"/> Other	
Extent: <input type="checkbox"/> Low <input type="checkbox"/> High-unsatisfactory	Total Erosion Area (m <sup>2</sup> ) _____
Culvert(s) diameter: ____m ____m ____m ____m (primary)	

Greater than 10 % of diameter blocked by debris? <input type="checkbox"/> Yes <input type="checkbox"/> No (note cause in comments)	
Substrate in the culvert? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	
If yes, what type? <input type="checkbox"/> Sand <input type="checkbox"/> Gravel <input type="checkbox"/> Cobble <input type="checkbox"/> Boulder <input type="checkbox"/> Other:	
For what length of culvert? <input type="checkbox"/> 25% or less <input type="checkbox"/> 50% <input type="checkbox"/> 75% <input type="checkbox"/> 100%	
What proportion has backwater? <input type="checkbox"/> 0% <input type="checkbox"/> 25% <input type="checkbox"/> 50% <input type="checkbox"/> 75% <input type="checkbox"/> 100%	
Culvert slope: <input type="checkbox"/> Level and Uniform <input type="checkbox"/> Slope > or Vertically Bent	
Outlet Gap: ____m (for lowest, if more than one culvert) <input type="checkbox"/> Embedded	
+Pool Depth: ____m = Score: _____ Scour pool apparent? <input type="checkbox"/> Yes <input type="checkbox"/> No	

Fish Passage Assessment (optional)

<input type="checkbox"/> No Concerns <input type="checkbox"/> Concerns <input type="checkbox"/> Inadequate / Unsatisfactory
If concerns or inadequate, specify fish category: <input type="checkbox"/> Weak Swimmers <input type="checkbox"/> All

Inspector's Name:	Inspection Date:
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# Roadway Watercourse Crossings Remediation Directive

- Released in 2015
- To uphold Alberta Environment and Sustainable Resource Development (ESRD) and the Alberta Energy Regulator's (AER) regulatory mandate
- To protect or restore fisheries habitat through effective stream crossing practices
- To promote and support a **watershed-based approach** to effective, **collaborative watercourse crossing inspection**, monitoring, management and remediation.



# Roadway Watercourse Crossings Remediation Directive

- Focus shift to Watershed scale
- Collaborative approach
- Proactive vs. Reactive
- Identification of Priorities
- Established the framework for overseeing implementation
- Voluntary
- Lacked central database for Inspections

# Watercourse Crossings Management Directive

- Released in 2020
- Formalization of the Roadway Watercourse Crossings Remediation Directive
- Recognized Mortality, Habitat Fragmentation and Reduced Water Quality as main drivers of population declines
- Establishment of High Risk Watersheds and prioritization

# Watercourse Crossings Management Directive

- Transition Regulators to Audit Role
- Recognized need for Life-cycle approach
- Requirement of Type 1 or 2 crossing structures for new or replacement crossings
- Requirement to submit data annually
- Development of Watercourse Crossing Inspection App
- Development of centralized database



# Watercourse Crossings Management Directive



## Inspect

Crossing owners must have an inspection program for the watercourse crossings that they own.



## Report


Watercourse crossing inspection data must be submitted to the applicable regulator by November 30. Watercourse crossing inspections capture information such as:

- crossing location and crossing type
- structure sizing
- fish passage
- water quality (erosion or sedimentation)
- presence of barriers
- any structural issues of the crossing itself that contribute to the potential failure of the crossing



## Remediate

By March 31 of each year, crossing owners must submit a plan to address all crossings that are not in compliance.


Priority watersheds and what you need to know if you are a crossing owner can be found in the [Alberta Watercourse Crossing Owner Information Package](#) 



## Watershed-based collaboration for priority remediation

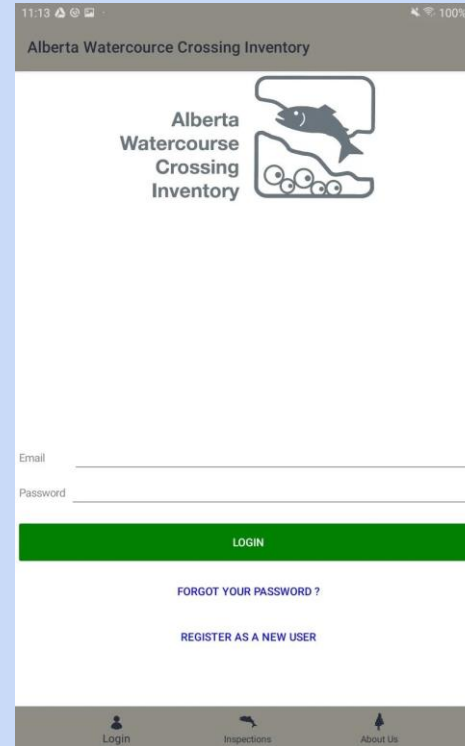
[Contact us](#) to become involved with the:

- Crossing Owner Stakeholder Advisory Committee
- Native Trout Coordination Committee

Collaborative Watershed-based approach to crossing management in priority order for non-compliant crossings can be found in the [Watercourse Crossings Management Directive](#) 

# ABWCI App

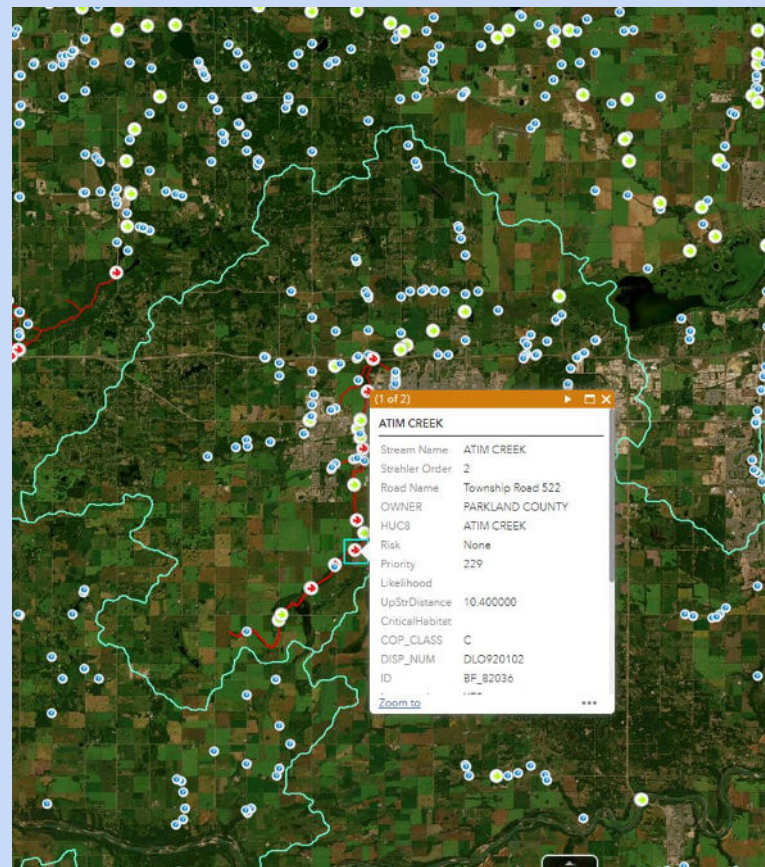
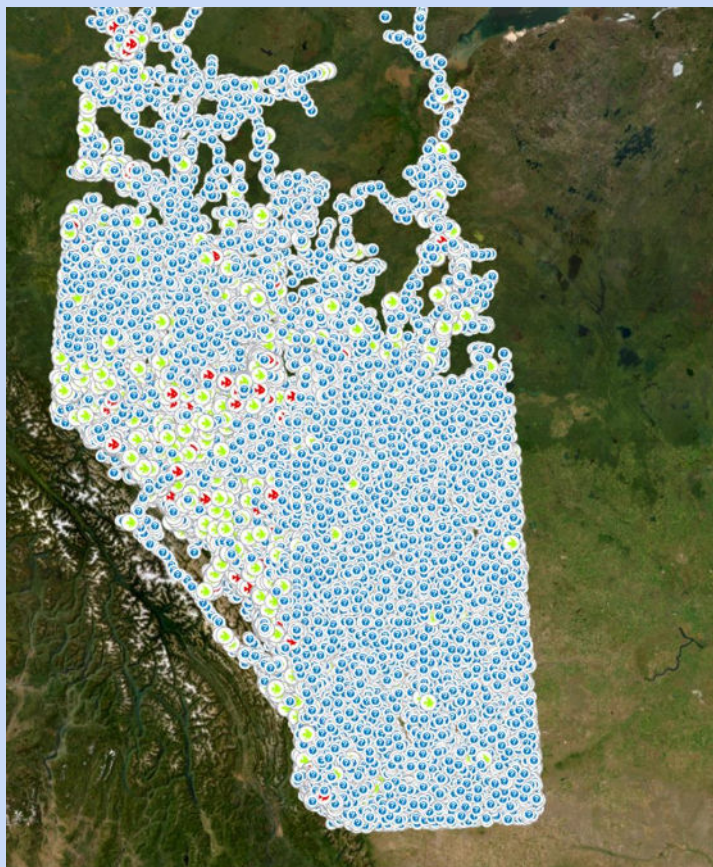
- Standardized watercourse crossing assessment
- Available to anyone
- Allows collection of inspection data and photos digitally
- Automatically updates Watercourse Crossing Database

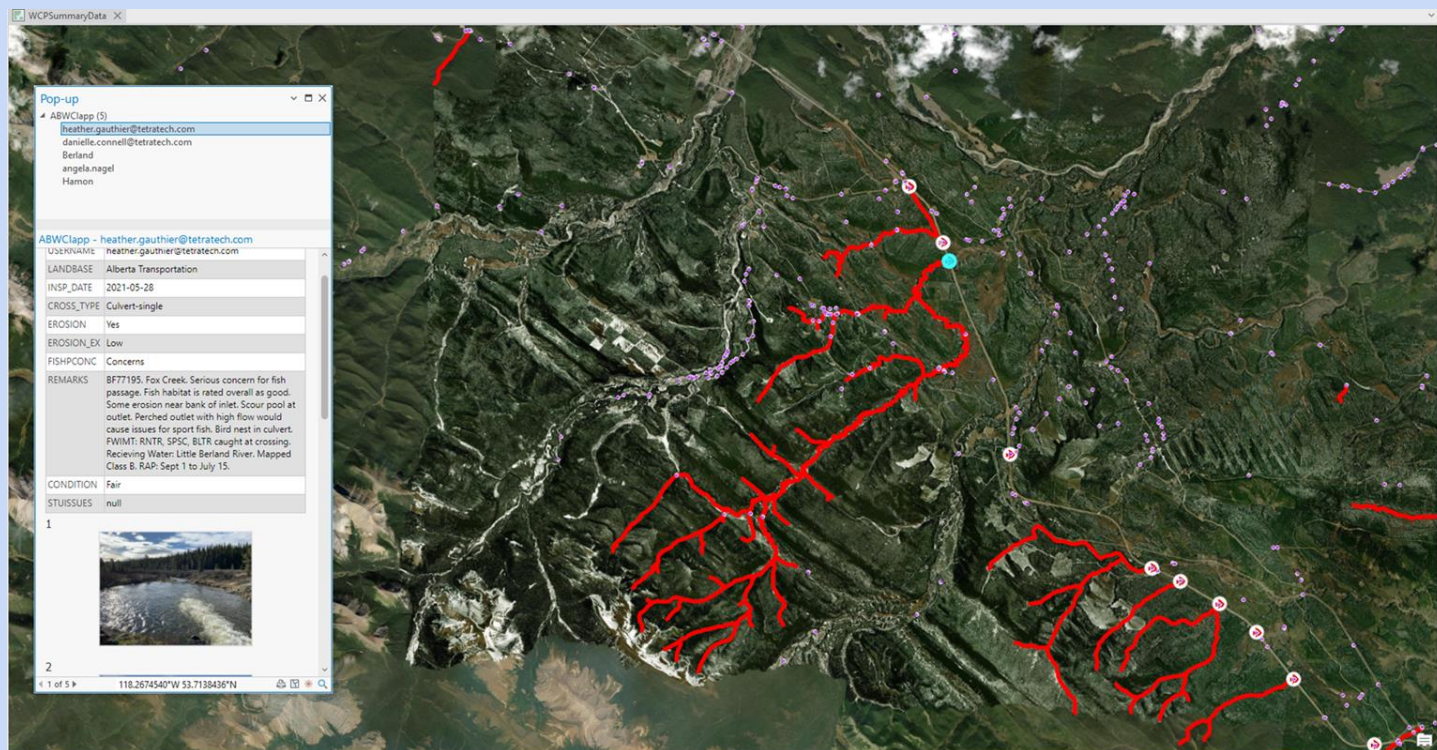


# Watercourse Crossing Program Dashboard

- Established
- Centralized database with all Inspection and Remediation data
- Supports watershed remediation planning
- Supports prioritization of remediation works
- Tracks timelines to achieve connectivity across the watersheds
- Crossing owner summaries









# Crossing Owner Summaries

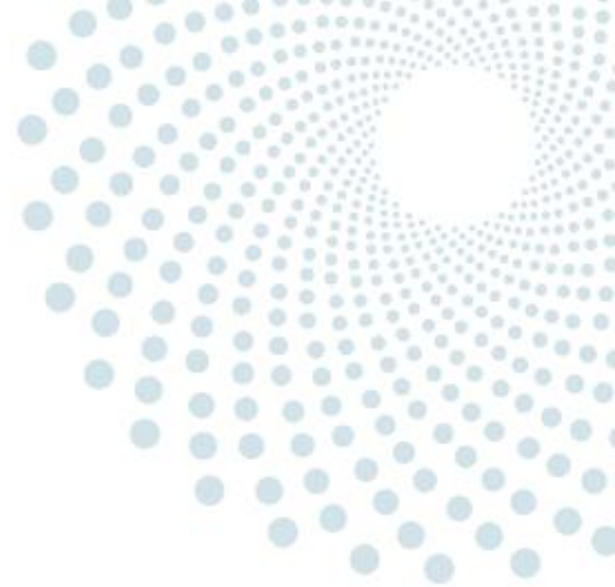
PRIORITY	HUC8	PERCENT_INSPECTED	CROSSINGS	INSPECTION_RECEIVED	CONCERNS	CULVERTS	BRIDGES	RECLAIMED	OTHER	UNKNOWN_STRUCTURE	KM_TOTAL	KM_UNKNOWN	KM_CONCERN	KM_2015	KM_2020	KM_2025	KM_2030	PERCENT_PLANNED
	5 CASTLE_RIVER	83	12	10	4	8	2	0	0	2	0	11.1	6.5	6.5	6.5	6.5	6.5	0
	7 UPPER_OLDMAN_RIVER	75	16	12	4	10	1	0	1	4	0	6.8	16.3	16.3	16.3	16.3	16.3	0
	38 CROWSNEST_RIVER	100	5	5	2	5	0	0	0	0	0	15.7	6.2	6.2	6.2	6.2	6.2	0

HUC8	Risk	Priority	STR_ORDER	UpStrDistance	COP_CLASS	CriticalHabitat	CrossingType
CASTLE RIVER	HIGH	5	2	0.9 B		BLTR	Culvert-single
CASTLE RIVER	HIGH	5	2	1.2 B		BLTR	Culvert-single
CASTLE RIVER	HIGH	5	2	1.7 B		BLTR	Culvert-single
CASTLE RIVER	HIGH	5	3	2.6 B		BLTR	Culvert-single
UPPER OLDMAN RIVER	HIGH	7	2	0.2 B		BLTR	Culvert-single
UPPER OLDMAN RIVER	HIGH	7	2	0.7 B		BLTR	Culvert-single
UPPER OLDMAN RIVER	HIGH	7	3	4.9 B		BLTR	Culvert-single
UPPER OLDMAN RIVER	HIGH	7	4	10.5 B		BLTR	Culvert-multiple
CROWSNEST RIVER	HIGH	38	2	0.5 D			Culvert-single
CROWSNEST RIVER	HIGH	38	3	6.2 C			Culvert-single

the establishment of a defined monitoring and reporting system to collect data and information around watershed health, connectivity and inform priority remediation work



**QUESTIONS...**



# WATERCOURSE CROSSING PROGRAM

Andy Taylor  
April 14, 2023

**cenovus**  
ENERGY

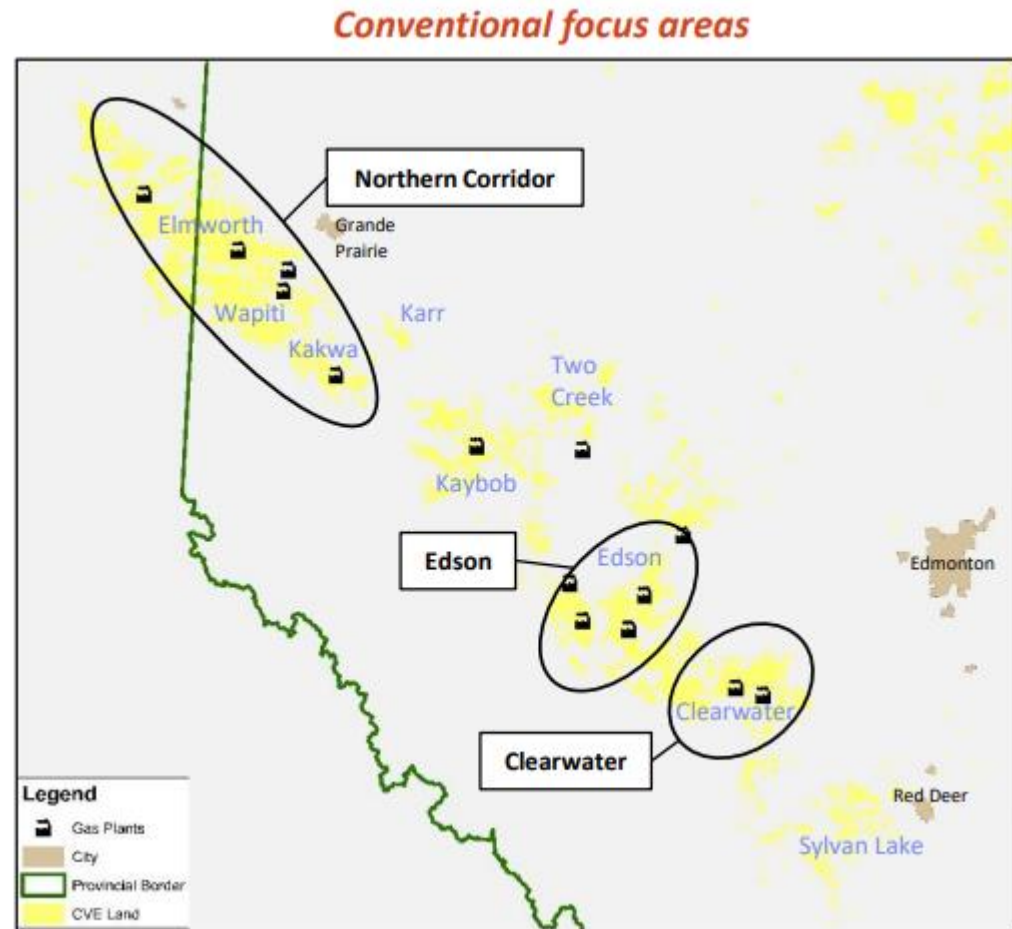
# DISCUSSION OUTLINE

1. Cenovus Watercourse Crossing Context
2. Cenovus Purpose & Values
3. Protect What Matters
4. Do it Right
5. Field Execution
6. Do it Together
7. Make it Better
8. Discussion and Questions



# 1. CENOVUS WATERCOURSE CROSSING CONTEXT

- Canadian-based integrated energy company headquartered in Calgary
- Focus for discussion is on Conventional assets
- Total watercourse crossings number in the thousands





## 2. CENOVUS PURPOSE & VALUES



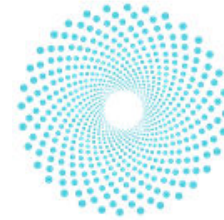
We **energize** the  
world to make  
people's lives better.



Protect what  
**matters.**



Do it  
**right.**



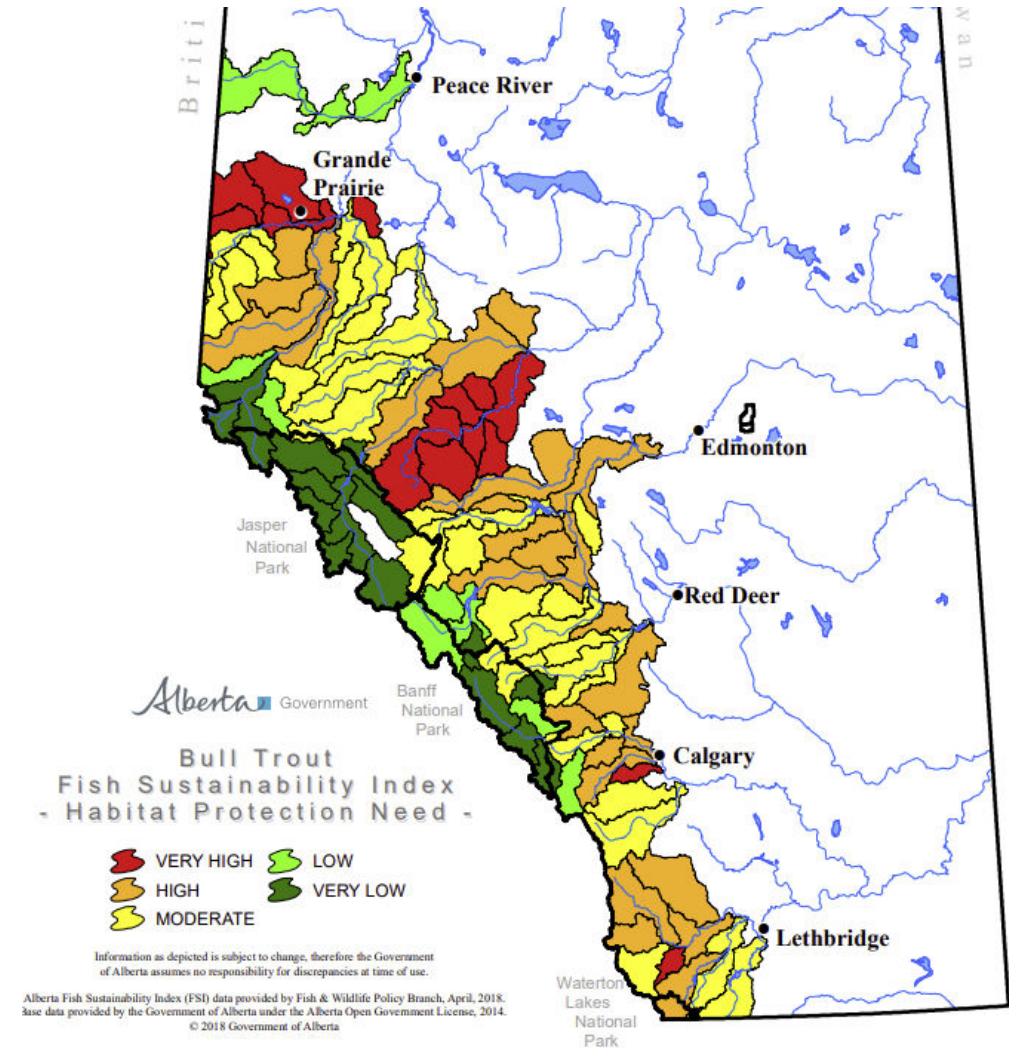
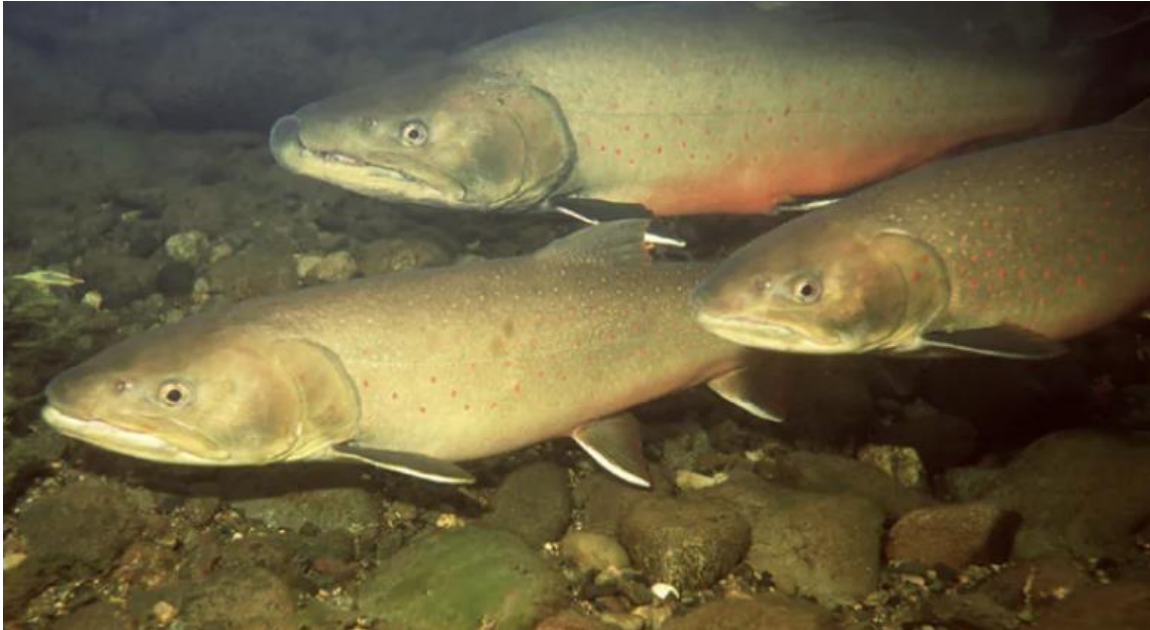
Make it  
**better.**



Do it  
**together.**

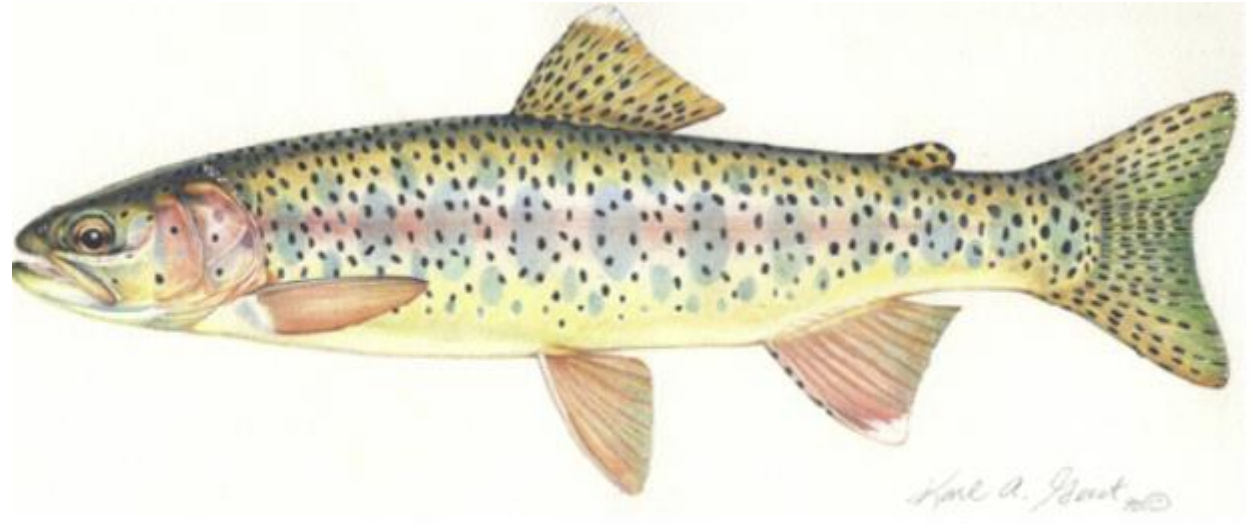
### 3. PROTECT WHAT MATTERS

- Species at risk (Bull Trout, Athabasca Rainbow Trout, Arctic Greyling, Westslope Cutthroat Trout)



## 4. DO IT RIGHT

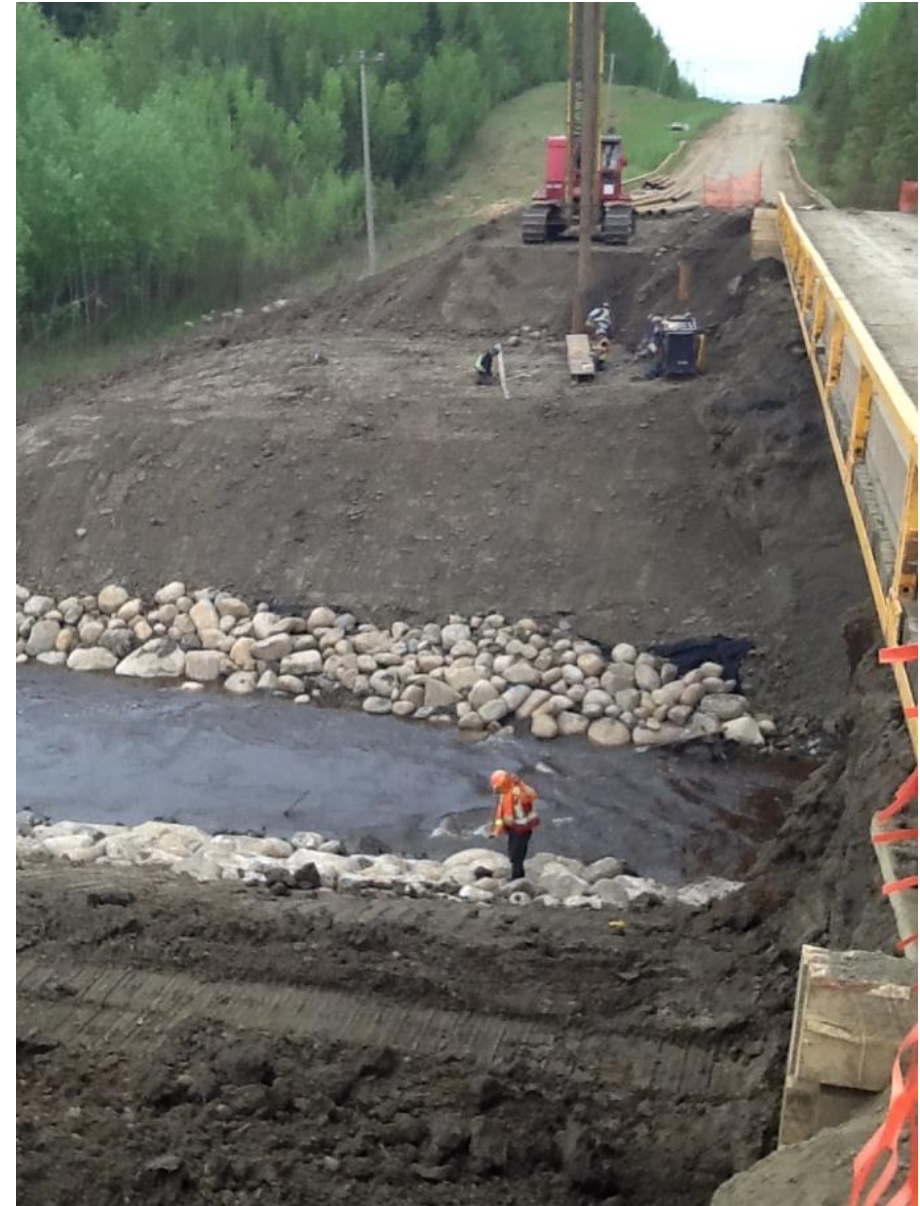
- Voluntary member of AER Roadway Watercourse Crossing Remediation Directive
  - Enables crossing owner collaboration with stakeholders on inspection and remediation focus and schedule
- Foothills Stream Crossing Partnership
  - Non-profit multi-industry partnership
  - Share best practices
  - Data QA/QC
- Alberta Watercourse Crossing Collaborative
  - Best practices and guidance





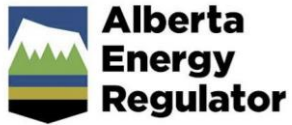
## 5. FIELD PROGRAM

- Inspect high priority crossings annually on a 5-year rotating basis
- Catalogue deficient crossings and develop remediation plans
  - Inspect in year N and remediate in year N+1
- Remediate crossings (KPI's)
  - Fragmented fish habitat improvement in km's (58kms in 2022)
  - Number of crossings repaired/replaced (19 culverts and 16 bridges in 2022)
  - Inventory of deficient crossings (year over year reduction)





## 6. DO IT TOGETHER



Fisheries and Oceans  
Canada

- Internal Collaboration

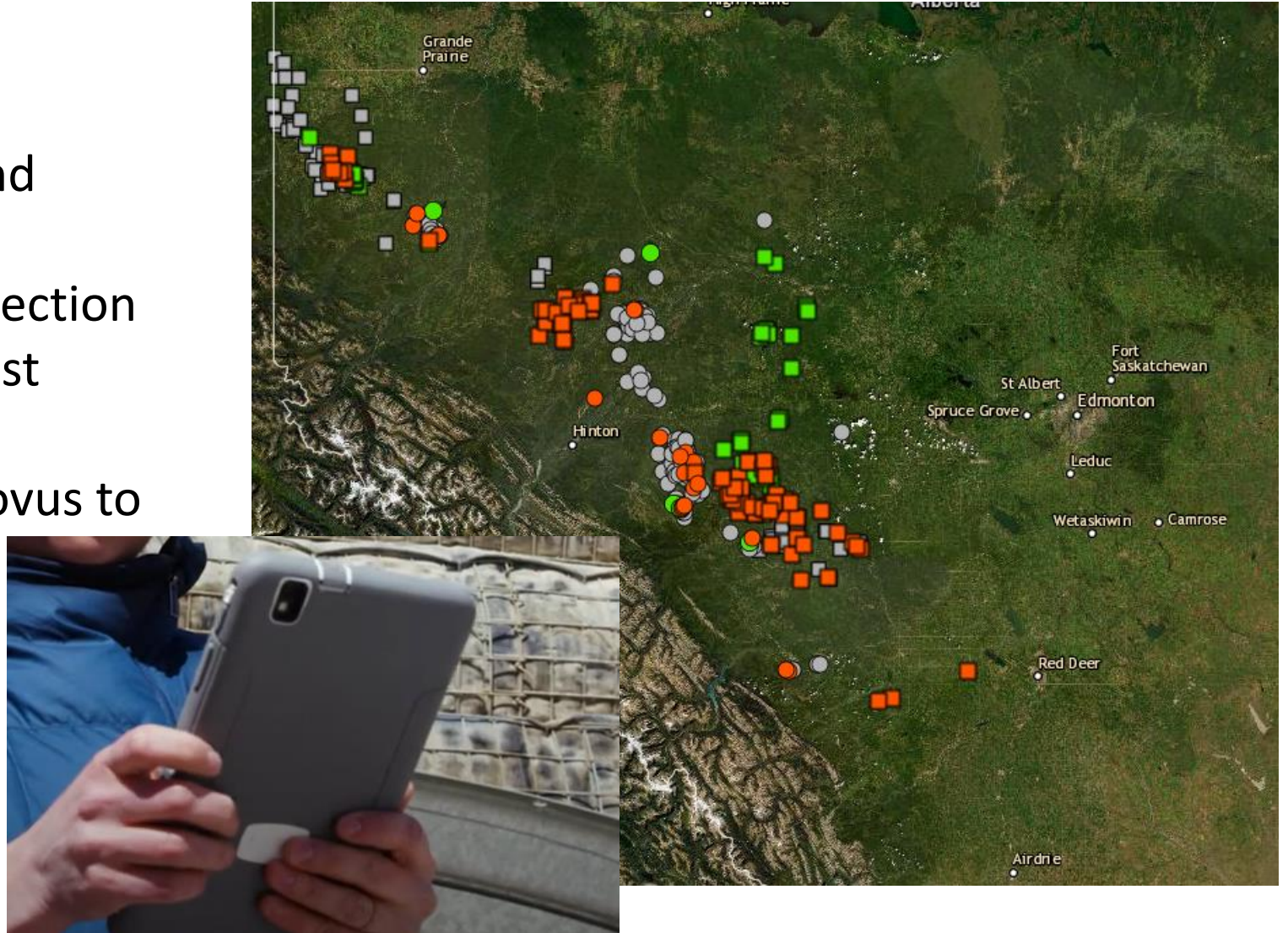
- Teams - Operations, Earthworks, Land, ARO, E&R, Communications, Community and Indigenous Affairs Departments
- Tasks - Inspection, Remediation, Reporting, Advocacy, Compliance, Communication and Innovation

- External Collaboration

- AER, AEP, DFO, FSCP, AWC3, Energy Owners, Forestry Owners, Non-profit groups, Stakeholders
- Frequent collaborative meetings between GoA and crossing owners for alignment and advancement

## 7. MAKE IT BETTER

- Electronic data collection and management
- GIS Database for inspection and remediation tracking
- Piloting BC electronic data collection
- Supporting AWC3 group on best practice guidance information
- Scalable approach across Cenovus to right size for asset base





**THANK YOU FOR YOUR PARTICIPATION.**

**PLEASE FEEL FREE TO CONTINUE THE DISCUSSION  
AND QUESTIONS ARE WELCOMED.**

***cenovus***  
ENERGY