

# Galloway Lands Development

## Risks to Water Quantity and Quality and Westslope Cutthroat Trout

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# Focus of this Presentation

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**Risks to surface and groundwater quantity and quality**

**Risks to Westslope Cutthroat Trout**

**...from the proposed development itself and from its contribution to cumulative effects**

# Credentials of Presenters

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## **Stella Swanson, Ph.D. Aquatic Biology and Aquatic Toxicology.**

- ❖ 45 years of experience in assessment and mitigation of effects of human activities on aquatic environments.
- ❖ Specific expertise in ecological risk assessment and cumulative effects assessment, including extensive work in the Elk Valley.
  - ❖ Chair of the Strategic Advisory Panel on Selenium Management.
  - ❖ Chair/Facilitator of Elk Valley Cumulative Effects Management Framework 2012-2016.

## **Leslie Frank, M.Sc., P, Eng. Acoustical Engineer.**

- ❖ 47 years of experience in environmental assessment, environmental impact statement preparation, regulatory hearings, and mitigation.

# Qualitative Risk Matrix Approach Was Used

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**Well established and widely used approach for screening-level risk assessments in support of industry and government decision making**

- How likely is it that sources of risk will exist and what are the consequences to valued components of the environment?
  - Risk = likelihood x consequence
- How sure are we?
- Is the risk acceptable? If not, can the risk be reduced?

**Water quality and quantity (supply and flow) and Westslope Cutthroat Trout** are always at the top of lists of what people value in the Elk Valley

# Risk to Water Quality and Quantity

The risk assessment provided in our Executive Summary was adjusted to reflect the last minute announcement from Galloway Lands re: commitment to wastewater treatment

Risk Source	Likelihood	Consequence	Risk
Tie-in to Fernie Alpine Resort Wastewater Treatment <b>exceeds current maximum allowable daily discharge and/or strains ability to meet discharge limits</b> (see FAR Wastewater Treatment Plant 2021 Annual Report)	L-M	L	L-M [risk is to Elk River]
Discharge of effluent from stand-alone wastewater treatment to Lizard Creek <b>causes nutrient enrichment, elevated turbidity, coliform contamination, elevated oxygen demand</b>	M	M	M
Groundwater withdrawals (including for fire suppression) cause <b>decreases in water supply and groundwater discharge to Lizard Creek</b> (important to maintain flow requirements for fish)	M	H	M-H
Erosion related to roads, stream crossings, and trails (including increases in informal trails in riparian zone) <b>increases turbidity and sedimentation</b>	M	L-M	M
Stormwater (especially during construction) <b>increases turbidity and conveys contaminants</b>	M	M	M

# Risk to Westslope Cutthroat Trout

Risk Source	Likelihood	Consequence	Risk
Decrease in water quality <b>affects fish health and habitat quality (e.g. invertebrate food sources)</b>	L-M	L	L in Elk River.
			M in Lizard Creek
Effects on riparian habitat in high-sensitivity zones <b>reduces habitat quality</b>	M	M	M
Withdrawals from aquifer reduce groundwater inflow to Lizard Creek, with <b>effects on instream flows required for spawning, rearing, or overwintering</b>	M	H	M-H
Increased access with associated <b>human-caused disturbance in Lizard Creek which reduces habitat quality</b> (e.g. bank erosion, direct streambed disturbance, garbage, deliberate removal of woody debris)	M	H	M-H
Increased access with associated increased fishing pressure causing <b>effects on fish health and fish behaviour</b> (e.g. due to hook scarring)	M	L-M	M-H

# How Sure are We About Risks to Water and Westslope Cutthroat Trout?

*The consequences of acting upon limited or poor-quality information can be severe and are often very difficult to reverse.*

## Available Information

- **Little to no meaningful analysis of potential for effects on surface or groundwater quantity and quality, yet the applicant describes the risk as “minimal”** (Galloway Lands Summary pdf pg. 9/15)
- **Almost complete reliance on 30m riparian setback for Lizard Creek and 15m setback for other creeks to justify the applicant’s conclusion that risk to Westslope cutthroat trout is “very low”** (Galloway Lands Summary pdf pg. 9/15)
  - Riparian setbacks are **not** a one size fits all solution. (BC Riparian Regulation Assessment Methods). For a stream as important to Westslope Cutthroat Trout as Lizard Creek, the setback should reflect the largest “Zone of Sensitivity” resulting from assessments of individual stream reaches.
  - **The RDEK staff recommends a ‘no disturbance’ covenant to prohibit any land disturbance, tree removal, new trails, and any other further development in the PG- 2 lands within 100 m of the ordinary high-water mark of Lizard Creek** (pdf page 65 of Agenda package)

# Are the Risks Acceptable?

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- ❖ ***Risk acceptability is in proportion to the sensitivity and vulnerability of water quantity, water quality and Westslope Cutthroat Trout.***
- ❖ **The fractured bedrock aquifer may be vulnerable to reductions in water level as well as contamination.**
- ❖ **Lizard Creek water quality can degrade very quickly in response to increased turbidity and nutrients.**
- ❖ **Westslope Cutthroat Trout are listed as at risk by the province - blue-listed, meriting additional levels of protection.**
- ❖ **The potential changes to water quality will impact the quality of trout habitat.**
- ❖ Risk acceptability goes beyond ***checking boxes*** regarding whether guidelines are met.
- ❖ **The total, cumulative risk to water and Westslope Cutthroat Trout must be considered.**

# Cumulative Effects

The applicant addresses cumulative effects by comparing projected built-up areas in the Elk Valley with and without the Galloway Lands and concludes that the Galloway Lands represent an additional 0.01% of built-up area (Galloway Lands March 25 Submission)

This approach is inappropriate because cumulative effects were minimized via the use of the entire Elk Valley as the spatial context, as well as the lack of consideration of current risks from all sources (including climate change).

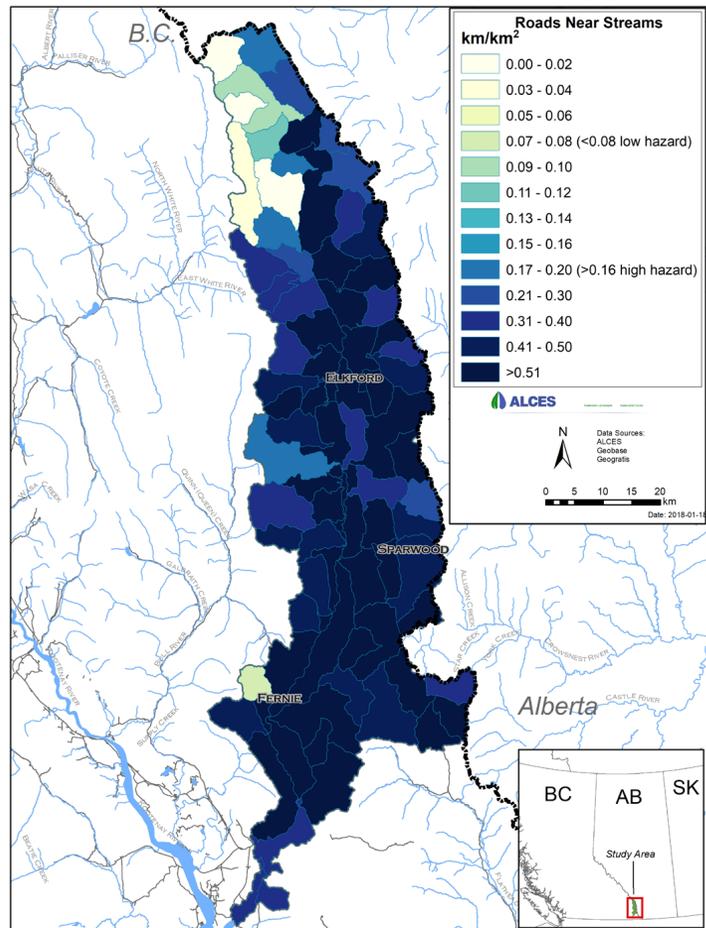
The appropriate spatial context is the Lizard Creek sub-basin, with an increasing number of sub-division developments in the lower portion of the sub-basin.

*“Cumulative effects can be characterized as ‘progressive nibbling’, ‘death by a thousand cuts’; or the ‘tyranny of small decisions’. In other words, cumulative effects are the combination of effects – many of which can be individually small and seemingly insignificant, such as ...water withdrawals or the incremental filling of wetlands. Over time, such seemingly insignificant effects can result in significant cumulative environmental change” (Noble, 2015).*

# Adding to Existing High Cumulative Effects

From Elk Valley Cumulative Effects and Management Report 2018

Information from Galloway Lands Submission March 25, 2022



•Acknowledgement that the development has “the potential to contribute to an increase in stream crossings, road density within 100 m of streams and road density on steep slopes”.

•BUT only three brief bullet points suggesting mitigations which “should avoid any contribution to cumulative effects on aquatic habitat...” (Appendix D to March 25 Galloway Lands submission, pdf pg. 136/197).

•This statement makes no reference to **existing** cumulative effects from road density and stream crossings, which have been assessed as being in the high hazard category for lower Lizard Creek (see map on left).

# Conclusions

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- ❖ Several risks to water quality and Westslope Cutthroat Trout are moderate-to-high
- ❖ Confidence in information provided by the applicant regarding risk factors is low
- ❖ Characterization of risk to water quality and quantity as well as Westslope Cutthroat Trout in the applicant's submission does not address their sensitivity and vulnerability, nor their high ecological, social and economic value
- ❖ Cumulative effects were not evaluated in an appropriate or credible manner

# Our Request from the RDEK Board

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## Reject the current application

- ❖ the application has significantly changed and keeps changing, yet it still has substantial weaknesses regarding risks to water, and Westslope cutthroat trout and contribution to cumulative effects
- ❖ a re-start of the application will require far more time than one month
- ❖ any new application must provide more complete and rigorous information regarding why the proposed development is the best and most sustainable use of the Galloway Lands