



# Creston Valley Alternate Water Supply Feasibility Study

Stakeholder Engagement Meeting

**Presented by:** Chris Gainham – Utility Services Manager RDCK  
Matt Lozie P.Eng – Associated Engineering  
Melanie Piorecky P.Ag. – Associated Environmental  
Lynne Betts – Facilitator  
**Date:** November 7<sup>th</sup>, 2024

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## Outline/Meeting Agenda

- 1** Introduction and Territorial Acknowledgement
- 2** Project Purpose, Background, Scope and Drivers
- 3** Project Team
- 4** Technical Presentation – Agricultural Water Demand, Supply and Concerns
- 5** Infrastructure Design Concept
- 6** Questions

## Traditional Territory

We acknowledge and respect the indigenous peoples within whose traditional lands we are meeting today.

Creston Valley is located on the unceded traditional territory of the Lower Kootenay Band, locally known as Yaqan Nu?kiy “where the rock stands”.

- Lower Kootenay Band is part of the Ktunaxa Nations.





## Purpose of the Project


- The purpose of the project is to review and assess the feasibility of an alternative long-term water supply for the Creston Valley.
- The intent is to support agricultural water needs and to secure additional water supply for resilience against drought and water scarcity.
- The intent of the Stakeholder Meeting is to present the project and gather input from Agricultural Producers in the Valley.
- *Funding for this project was received through the Agricultural Water Infrastructure Program, which is funded by the Government of BC through the Ministry of Agriculture and Food and delivered by the Investment in Agriculture Foundation of BC.*
- *Additional grant funding is provided by the Community Works Grant funds.*



## Some Background

At the June 21, 2023 Erickson Water Service Public Meeting we discussed Issues and Challenges related to Water Supply & Drought

- Treatment plant has limited capacity and water licenses
- Arrow Creek flow can be low during hot dry weather
- Potential Economic and Environmental losses

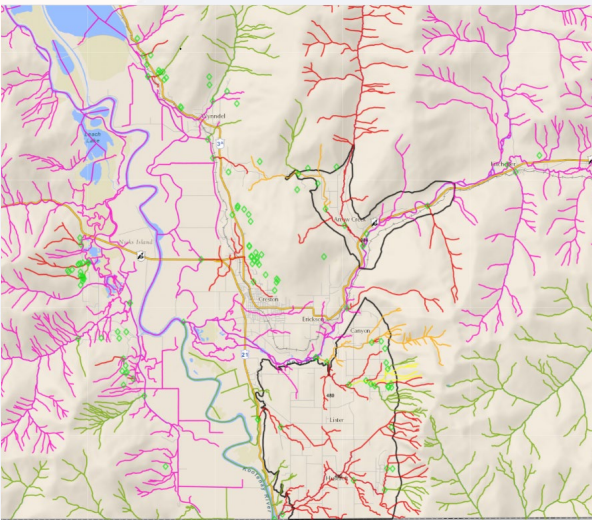
Option	Pros	Cons	Actions
Increase Supply from Arrow Creek	- More supply most of the year	- Arrow Creek has “Fully Recorded” notation by the Province – likelihood of further significant allocation approval from Arrow or the Goat is unlikely - Very expensive treatment plant and pumping upgrades - Creek flows may not keep up with warm weather demands - Environmental Flow Needs: Low creek base flow impacting the proper functioning of the aquatic ecosystem	Current engineering study is addressing heating and energy efficiency upgrades.
Alternate Supply	- More supply potentially all year	- Very expensive treatment plant, pumping, and distribution upgrades - Groundwater supply is a concern in the area - Supply from Goat River or tributaries would be harmful to flow levels	2019 Erickson Agricultural Water Demand Study  This Study
Water Demand Management	- Possibly the least expensive option	- Potentially limited demand reduction - Likely requires universal metering	Erickson Water Metering Project





## Project Drivers

- Water scarcity concerns in the Goat River watershed – Including Arrow Creek
  - Environmental Flow Needs
  - Drought and climate resilience
  - Provincial approval for future significant allocation from Goat or tributaries is unlikely
- Drinking Water Conservation
  - Currently treated drinking water from the Arrow Creek WTP is used to irrigate crops



*Provincial Water Allocation Notations*



## Project Team and Stakeholders



Uli Wolf – GM Environmental Services  
Chris Gainham – Manager of Utility Services (Project Sponsor)  
Eileen Senyk – Water Services Liaison (Project Manager)  
Alex Divlakovski – Manager of Water Operations

Lynne Betts - Facilitator  
Engagement  
and Communications



Matt Lozie P.Eng – Project Manager  
Melanie Piorecky P.Ag. - Agrologist

### Internal Stakeholders

Area Directors for Electoral Areas A, B and C  
RDCK Staff – Development Services and Sustainability

### Government Partners

Lower Kootenay Band (Yaqa Nukiy), the Ministry of Agriculture, Ministry of Water, Lands & Resource Stewardship and the Town of Creston

### External Stakeholders

Water User Groups in the Creston Valley  
Improvement and Diking Districts  
Agricultural Sector



## What's In-Scope and Out of Scope

### In-Scope

- Define water supply areas that are currently at risk and may require a new water supply in the near future.
- Identify the interested parties, water purveyors, and First Nations governments with interests and rights in each area of interest.
- Summarize current agricultural land uses and how agriculture in the areas of interest could change in response to climate change, market forces, and food trends, based on available information.
- Establish and define future condition scenarios to form the basis of predictive water demand.
- Explore options to centralize water supply on the Kootenay River that would reduce pressure from over-allocated waterbodies and at-risk supply areas.
- Identify potential intake and water conveyance options for the proposed Kootenay River water supply system

### Out of Scope

- This project is a desktop screening level study of options for irrigation water supply for agriculture in the Creston Valley.
- Detailed study of any water sources is out of scope. Identification of water sources for uses other than agriculture is also out of scope.





# Creston Valley Alternative Water Supply

## High-level Feasibility Study

**Melanie Piorecky, P. Ag.**

**Matt Lozie, P.Eng.**

**November 7, 2024**



# Background

- Water demand > than water supply
- Climate change = drought, unpredictable, reduced snowpack, longer growing season
- Intermingling supply



Look at a centralized water supply to reduce pressure from over-allocated and at-risk supply areas





# Steps Taken

What is current agricultural water use?

Crops types + soils + climate + total areas  
= Irrigation demand

What is supply?

Sources, allocation, issues



# Information Sources

Agricultural land use inventory – crop types

Agricultural Water Demand Model – by crop type

Water purveyor data, past reports

Yaqan Nuʔkiy

## **In the works**

Creston Valley Drought Assessment - BC WLRS

Creston Valley Aquifer Vulnerability Assessment – Living Lakes





# Agricultural Water Use in the Region

- Fruit trees, grapes, berries
- Forage
- Cereal and oil crops
- Grass/turf
- Vegetables
- “Cultivated”





# Variation in Agricultural Crop Demands

- Turf
- Hay/Forage
- Fruit trees
- Vegetables
- Berry
- Corn, cereal and oil crops
- Grapes



# Variation in Agricultural Crop Demands

Agriculture	Average mm
Alfalfa	694
Apple	717
Berry	651
Cherry	759
Corn	468
Forage	892
Fruit	822
Grape	427
Nursery	859
Turf Farm	966
Vegetable	706



**How can you be more efficient with water use?**

# Water Supply in the Region

Arrow Creek\*

Duck Creek

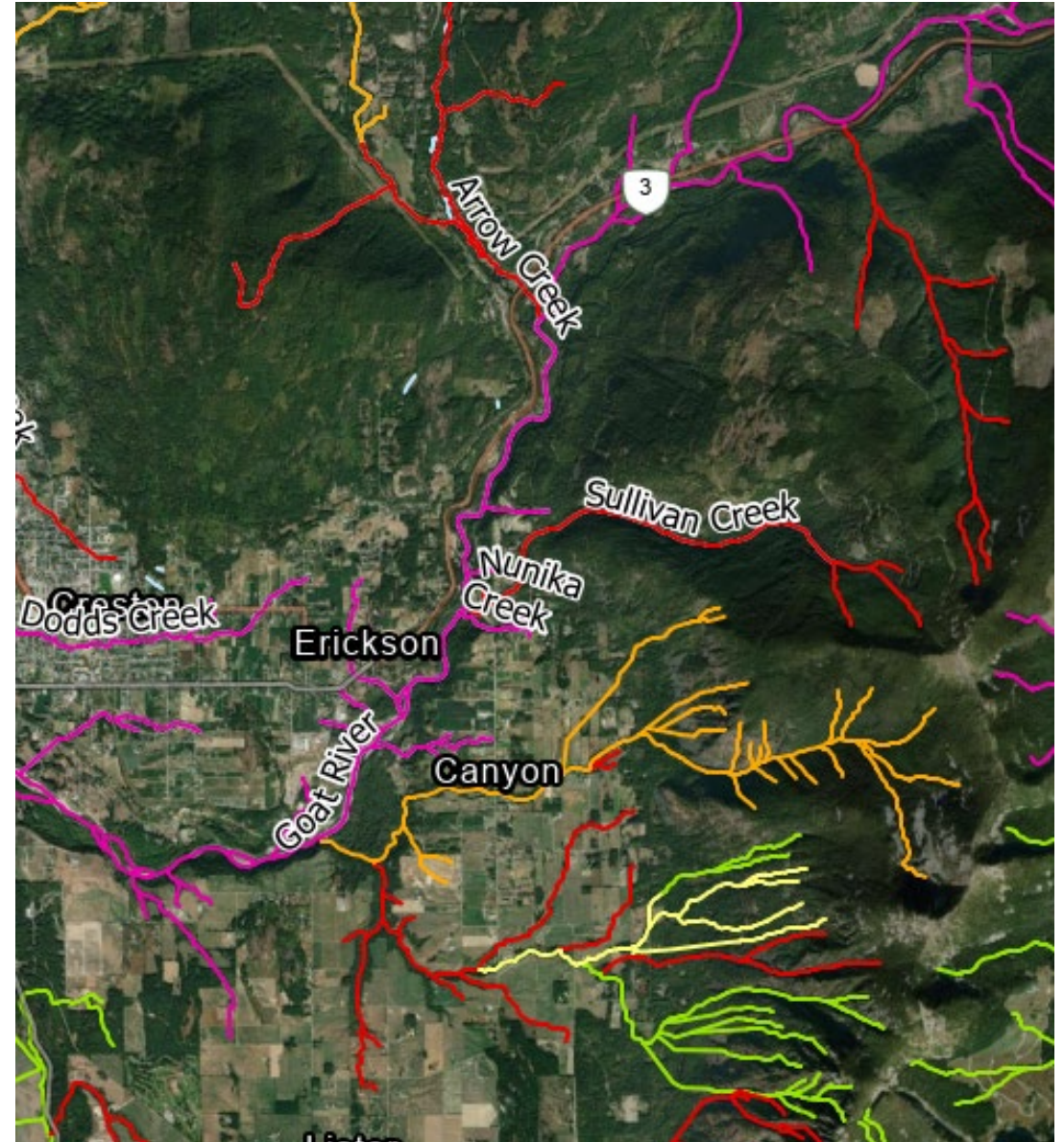
Floyd Creek

Orde Creek

South Rykerts Creek

Groundwater Wells

Goat River Watershed





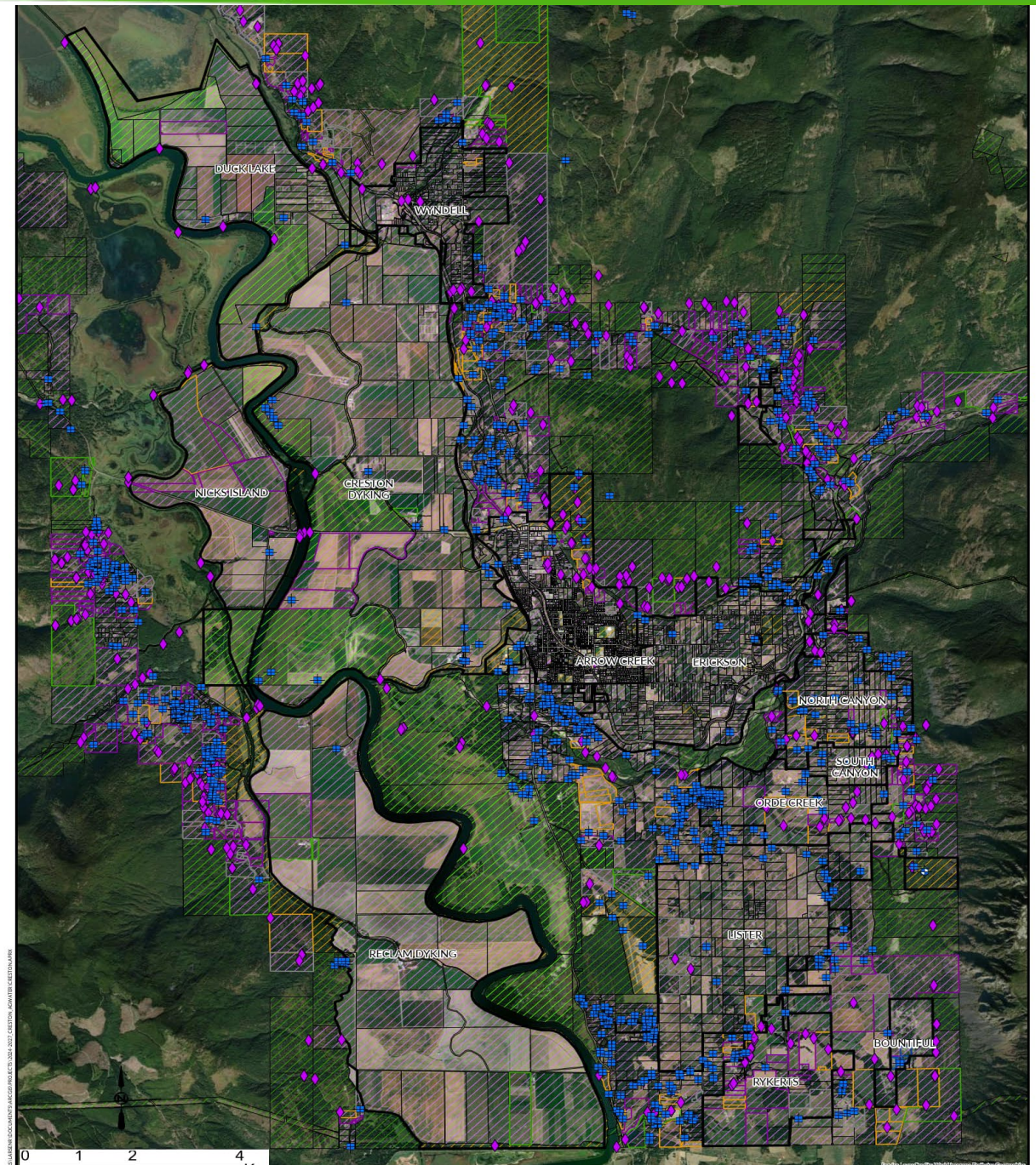
# Water Supply in the Region

Licensed ●

Unlicensed ■

Well Diversion ◆

Surface water diversion ◆





# Water Supply Concerns

- South Canyon Imp. Dist. (Floyd Creek) – concerns wells pulling from surface flows
- North Canyon Imp. Dist. (groundwater) – flow management plan in place
- Lister Water System (groundwater) – aging infrastructure
- Arrow Creek Water Treatment – major capacity concerns
- Goat River Watershed – groundwater connectivity, stress to tributaries, not meeting environmental flow needs



Questions?

# Agricultural Water Demand

- Based on 4.5 USGPM/Acre from BC Irrigation Management Guide Table 3.3

Table 3.3 Estimated Peak Irrigation Flow Rate Requirements for B.C. Locations <sup>1,2</sup>					
Location	Flow Rate [US gpm/acre] <sup>3</sup>	Location	Flow Rate [US gpm/acre] <sup>3</sup>	Location	Flow Rate [US gpm/acre] <sup>3</sup>
Cloverdale	4.0	Langley	4.0	Sumas	4.5
Comox	5.0	Lillooet	7.5	Summerland	6.5
Creston	4.5	Lister	5.0	Terrace	5.5
Dawson Creek	4.0	Lumby	5.5	Vancouver	4.5



# Agricultural Water Demand

- Future Agricultural Water Demand under full build out scenario
  - Within existing system boundaries
  - Excluded “Low or No” Irrigation land
  - Summer peak day flow (Maximum Day Demand)
    - ~ 2400 L/s (38000 USGPM) allocated demand
    - ~ 1800 L/s (28500 USGPM) actual demand



# Kootenay River Source

- Summer flows typically above 100 cms
- Required agricultural demand below 2 cms
- Transborder river subject to flow requirements
- Locate intake upstream of the Goat River confluence
- Water quality is typically good. Low suspended solids / turbidity.





Questions?

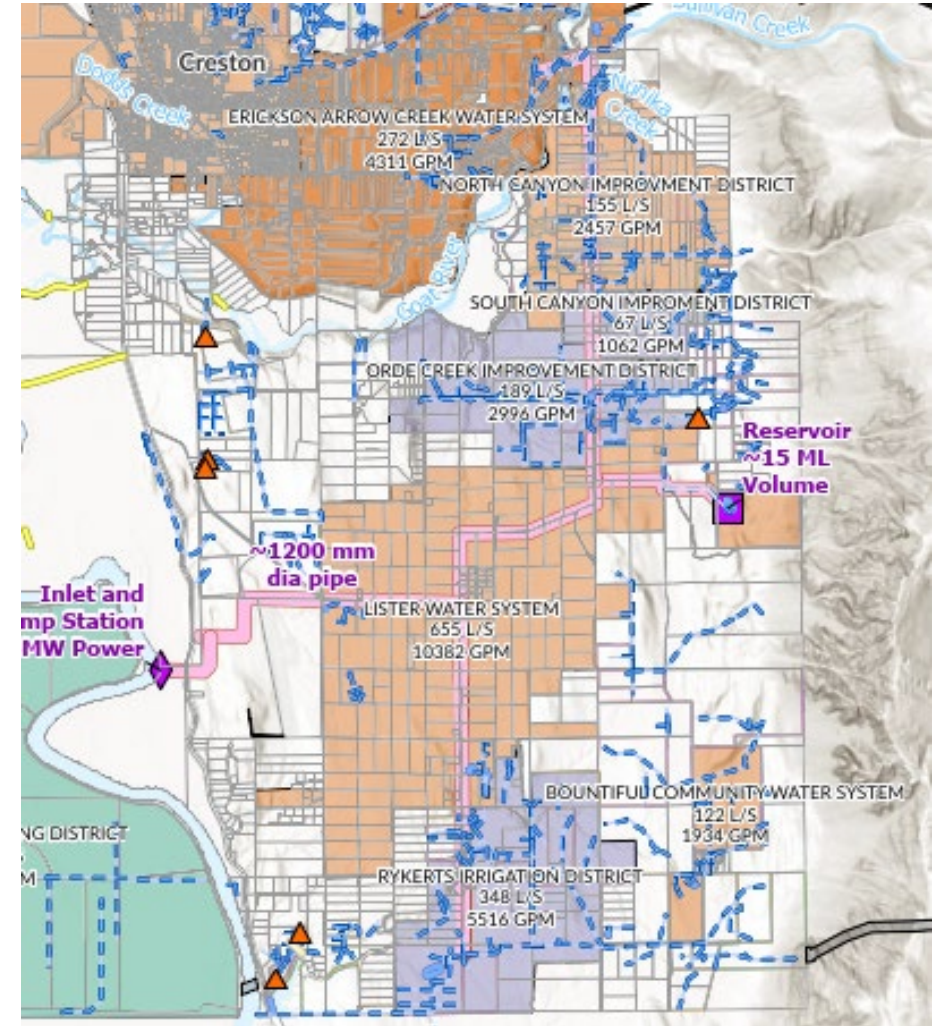
# Kootenay River Pump Station

- Pump station located on Kootenay River bank
- Pump from 535m up to reservoir at 720m elevation
- Reservoir for balancing daily water use fluctuations
- Could be phased



# Agricultural Transmission System

- Large diameter transmission main to convey water
- Most direct route chosen
- New piping required for irrigation water
- Maintain existing piping for potable drinking water
- Phased approach



# Treatment

- BC Working Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture
- Not a potable system, so not IHA jurisdiction
- Small amount of disinfection to limit bacteriological regrowth in pipelines
- Some river intakes use sedimentation ponds



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# Nest Steps

- Final Engineering Report Submission – December 31, 2024
- Stay Engaged – Visit [engage.rdck.ca](https://engage.rdck.ca) and navigate to the study page:
- Project Survey
- Staff Contacts

## Creston Valley Alternate Water Supply Feasibility Study

Facebook Twitter LinkedIn

The purpose of this project is to review the feasibility of alternative long-term water supply for agriculture in the Creston Valley. The intent is to support agriculture and to secure additional water supply for drought resilience. In 2019, the Regional Board adopted a Drinking Water Conservation Plan. Presently, treated drinking water from Arrow Creek is used to irrigate agricultural crops in the Creston Valley. This project aims to explore alternative water sources and infrastructure required for crop irrigation – leading to sustain agriculture in the Creston Valley. By securing a separate water source for irrigation, the project also promotes drinking water conservation, preserving Arrow Creek's treated water for domestic use and alleviating pressure on the sensitive Gooch River watershed.

### Funding Source

Funding for this project was received through the Agricultural Water Infrastructure Program, which is funded by the Government of BC through the Ministry of Agriculture and Food and delivered by the Investment Agriculture Foundation of BC.

### Project Outcomes

The project is a necessary first step in securing a sustainable source of water for agriculture in the Creston Valley, thereby decreasing the pressure on the Arrow Creek water supply and the Gooch River watershed. The goals of the project are as follows:

- Define water supply areas that are currently in use and may require a new water supply in the near future.
- Identify the interested parties, water purchasers, and First Nations governments with interests, and rights in each area of interest.
- Summarize current agricultural land uses and how agriculture in the study area could evolve in response to changes to precipitation and hydrological regimes, current flows, and food trends, based on available information. Establish and define future conditions scenarios based on the basis of predicted water demand.
- Explore potential alternative water supply on the Gooch River that would reduce pressure from over-allocated water bodies and provide supply areas.
- Identify potential infrastructure requirements including intake, treatment, storage and water conveyance options for a proposed Kootenay River water supply system. The study will present and evaluate these infrastructure options and provide high-level cost estimates for each.
- Assess agricultural potential and the cost-benefit ratio of water supply and reliability in increased.

Understanding current and future agricultural use and water needs in the Creston Valley is important for this project and your feedback is valuable. Please take a few moments to fill out the short survey and have your voice heard. Your response is important to us, and will help determine the size and scale of infrastructure that is needed and that residents are willing to support.



## Survey

### Current and Future Agricultural Use

The Regional District of Central Kootenay is assessing the feasibility of providing an alternative long-term water supply for agricultural needs in the Creston Valley. You are invited to complete this survey which will help us understand future agricultural water demand in the Creston Valley. Your input will be used to inform the project and to develop a water supply plan for the Creston Valley. The survey is available in English and French. Please contact us if you need assistance.

### Who's Listening

#### Eileen Senyk

Water Services Liaison  
Regional District of Central Kootenay  
Phone: (250) 352-8171  
Email: [esenyk@rdck.bc.ca](mailto:esenyk@rdck.bc.ca)



#### Chris Gainham

Utility Services Manager  
RDCK  
Phone: (250) 551-7388  
Email: [cgainham@rdck.bc.ca](mailto:cgainham@rdck.bc.ca)





Questions?