Agriculture Water Assessment & Community Irrigation Feasibility Study for the Vanderhoof Area

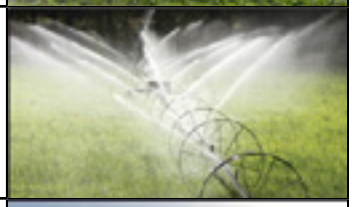
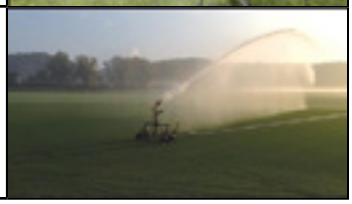
What is a Community Irrigation System?

A community irrigation system is when two or more producers share infrastructure to deliver water to their farms/ranches, reducing overall costs.

A water licence must first be obtained for each property. A shared written agreement, outlining responsibilities for shared infrastructure (e.g. pump house, pumps, and pipes) may be drafted and signed. Each producer uses their own irrigation equipment.

This project assessed the feasibility of community irrigation systems for the Vanderhoof area. Collaborative systems can help multiple producers share the overhead and the costs incurred to design and build irrigation systems. The project report outlines how to collect data and make decisions about the suitability of community irrigation systems, with methods that can be applied across the region. The following steps were undertaken.

- Collecting existing data on local surface water and groundwater, documenting gaps, and consulting local knowledge-keepers and provincial experts.
- Identifying hypothetical sites within the study area that may be suitable for community irrigation infrastructure.
- Engaging irrigation experts to estimate potential water volumes needed and to design irrigation system examples.
- Exploring water access options and key factors affecting site selection.
- Considering system scale, governance needs, and administration requirements such as water licensing.

Irrigation Type	Advantages	Limitations	Best Suited	
Centre Pivot	Highly efficient, low labour, automated, supports fertigation, good water and energy savings.	Most expensive, needs reliable power, not easily moved.	Large, flat or gently rolling fields (100s of acres).	
Wheel Line	Moderately expensive, mobile, suitable for smaller field blocks.	Labour-intensive, unveven distribution on slopes.	Relatively level fields that are small-medium in size.	
Travelling Gun	Least expensive, good on irregular field shapes and steeper slopes, versatile.	High pressure demand, higher energy & maintenance costs, poor efficiency/ water conservation.	Fields with irregular shapes, hills or where a portable system is needed.	

Interested in Developing a Community Irrigation System?

The following steps outline the process for evaluating and developing a community irrigation system. Further guidance is provided in Community Irrigation Systems: A User's Guide for the Vanderhoof Area.

Step 1 – Early Planning and Feasibility

- **Preliminary discussions**: meet with potential partners to explore approaches.
- **Water availability**: determine volume of water required using BC Agriculture Water Calculator. Confirm licensing through FrontCounter BC.
- **Technical input:** engage an irrigation specialist to design the community irrigation system.
- **Check land status**: confirm whether proposed infrastructure will cross Crown land or roads.
- **Funding**: identify cost-share opportunities.

Step 2 – Licensing and Approvals

- **Water licence**: if necessary, apply for new or amended licence(s).
- **Additional approvals**: secure any permits needed through FrontCounter BC .
- **Consultation**: if a new water licence is required the Province of B.C. will consult with First Nations.

Step 3 – System Design and Organizational Setup

- **Finalize design details**: work with an engineer or irrigation specialist to finalize plans & quotes.
- **Choose an organizational structure**: decide whether an unincorporated partnership, corporation, or co-operative association is most appropriate.
- **Draft governance agreements**: clearly outline roles, responsibilities, voting, dispute resolution, and succession planning a Joint Works Agreement or bylaws.
- **Source funding or loans**: apply for funding or obtain loans to cover capital infrastructure costs.

Step 4 – Construction and Compliance

- **Timing**: build intake and conveyance works to protect fish habitat (as per permits).
- **Infrastructure**: install pumps, pipelines, ditches, and on-farm connections.
- **Compliance**: meet licence and permitting conditions, including withdrawal periods, at all times.

Step 5 – Long-Term Operations and Maintenance

- **Financial management**: pay annual water fees and maintain fair cost-sharing arrangements.
- **System upkeep**: inspect infrastructure regularly, keep records of maintenance and expenses.
- **Governance**: update as membership changes, ensure roles and responsibilities remain clear.
- **Succession**: plan for smooth transfer of responsibilities when farms are sold or if new producers wish to join the system.

Photo (left) is an example of pump and connection to main water pipeline at the farm parcel level.

Photo (right) is an existing pumphouse on the streambank of the Nechako River.

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