

Planning for Your Water



englishman river
WATER SERVICE

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Spring 2013 Program Update



An environmentally sensitive use of water to improve fish habitat and domestic water supply.



2013

- ASR testing
- Ongoing water quality analysis
- Engage design consultant
- Public consultation and finalize approvals
- Complete ASR feasibility analysis and conceptual plan
- Explore senior government funding
- Preliminary design and value engineering

2014 to 2016

- Detailed design of intake, water treatment plans and water transmission mains
- Funding approval
- Tender construction contracts
- Construction and commissioning
- Operation and maintenance of new facilities
- ASR implementation
- Additional capacities constructed in later stages



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ERWS continues to present information to stakeholder groups, senior government and local community organizations in an effort to convey future plans to the public. The website is a central repository with board agendas and minutes, studies, public information reports, plans and scheduled meetings.

For more detailed information and updates, please see the website

arrowsmithwaterservice.ca

"Less than 1% of the water in the world is drinkable"

"We LOVE water"

"Climate change – we need to change"

"More conflict in the future over water"

"Turn tap – get water"

"We think the problem is drought"

"No water – no future"

What is the Englishman River Water Service?

The Englishman River Water Service (ERWS) is a joint venture between the City of Parksville (74% share) and the Regional District of Nanaimo (26% share), formed to secure a bulk water supply from the Englishman River. This partnership will work to supplement existing well supply sources owned and operated by the individual jurisdictions, the City of Parksville and Nanoose Bay Peninsula Water Service Area. The ERWS, governed by appointed members from the City of Parksville and the RDN are moving forward to secure additional water intake capacity and improved surface water treatment.

Why is planning so important?

Drinking water is the public's principal natural resource which ensures our best security for the future. Protection and enhancement of the water supply is a priority for ERWS. Planning now for the future will guarantee a safe potable water supply, secure a supplementary water supply and reduce risk while providing enhancements to the environment.

Ongoing risks to our water supply include human contamination and naturally occurring organisms in the watershed such as viruses and parasites. Future plans envision innovative, cost-effective ways to harvest fresh water for year-round use and during peak demands while at the same time, reducing risks to health.

Declining aquifers

Current well production in the region is insufficient to sustain peak summer water demands.

The groundwater within the Parksville aquifer is a good, cost-effective source of year-round drinking water. However, denser development with increased water demand is causing stress to the aquifer. Declining groundwater levels in

the Parksville aquifer are attributed to the pumping effects of private and municipal production wells. The majority of the water extraction is outside the City of Parksville boundary and not within our control as current provincial regulation does not regulate groundwater extraction. Water demand versus estimated potential groundwater supply (recharge) ratios indicates concerns for future water supply in the Parksville aquifer.

The wells servicing the Nanoose Bay Peninsula Water Service Area aquifers although adequate for winter demands are insufficient for summer demands and some require treatment for aesthetic purposes.

Going forward, the City of Parksville and the RDN will continue to maintain their respective well systems. With declining aquifers and quality concerns, ERWS is looking at the surface water supply from the Englishman River and other sustainable technologies such as aquifer storage and recovery (ASR) to help mitigate aquifer decline and secure additional potable water supply sources for the future.

Significance of the Englishman River

The Englishman River is used primarily by the ERWS partners to supplement groundwater supplies during summer peak demands. The Englishman River provides surface water of generally high quality between May and October. We are fortunate to have two sources of water supply, from wells and from the Englishman River. Unfortunately, it is not possible to use the river source year-round as it becomes too muddy (turbid) in the fall and winter. Water treatment on the Englishman River will allow us to draw and treat water from the Englishman River year-round.



Future Water Supply System – How it Works

What's next for ERWS?

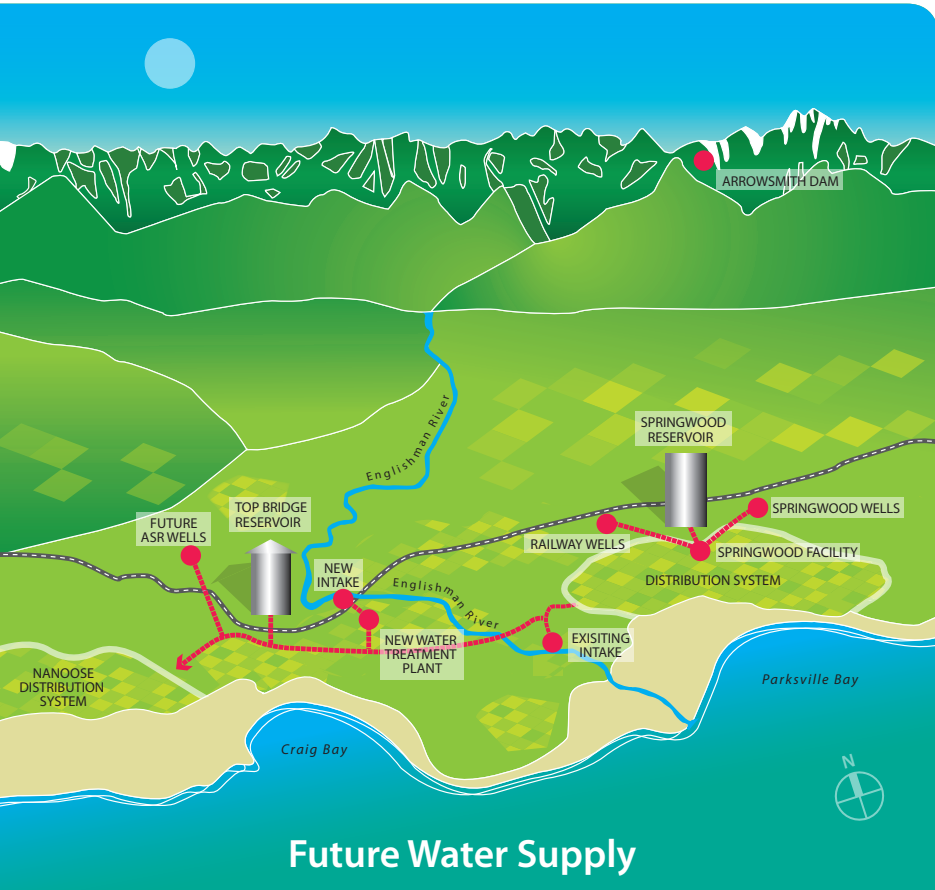
The first phase of work saw the construction of the Arrowsmith Dam in 1999. The purpose of the Arrowsmith reservoir is to collect and store water during the winter for use in the summer for fisheries enhancements and potable water extraction. The Englishman River serves as a natural waterway that conveys water released from the Arrowsmith Dam to the point of extraction. This is a more cost-effective solution than an upstream piped system and provides more water for fish habitat. Working cooperatively with federal

and provincial fisheries departments, additional flows augment and stabilize summer river flows helping to support aquatic life and reduce impacts on groundwater extraction.

The second phase includes expansion of the joint venture drinking water supply system with a new surface water intake and water treatment plant located upstream of urban development. This is necessary to reduce risk of contamination therefore ensuring an adequate supply which meets Canadian Drinking Water Guidelines and Vancouver Island Health Authority's disinfection requirements.

The ERWS will expand the joint venture drinking water supply system and provide surface water treatment as required by the Vancouver Island Health Authority through the following:

- New surface water intake and water treatment plant along the Englishman River
- Aquifer storage and recovery (ASR) system (should it be determined to be feasible)
- Water main upgrades and the installation of new water supply lines.



A Look at ASR

Aquifer storage and recovery or ASR is defined as the storage of water in a suitable aquifer when water is available and recovery of the same water later on when it is needed. An aquifer is a body of permeable rock that can contain or transmit groundwater.

The ERWS is now investigating ASR to determine if the concept is feasible and to confirm that a confined aquifer is available.

Incorporating ASR into our system involves extracting surface water from the Englishman River during the winter when there is excess supply, treating the extracted water to potable water standards, injecting that treated water into

the ASR storage aquifer and then withdrawing that same treated water from the ASR storage aquifer during the high demand period of the summer when traditional ground and surface supply sources are insufficient and/or at their lowest levels. This means that less water will need to be drawn from the Englishman River during the summer when river levels are at their yearly low. ASR will provide an additional year-round supply source thus, allowing ERWS greater flexibility in managing water resources should either of the traditional sources become unavailable.

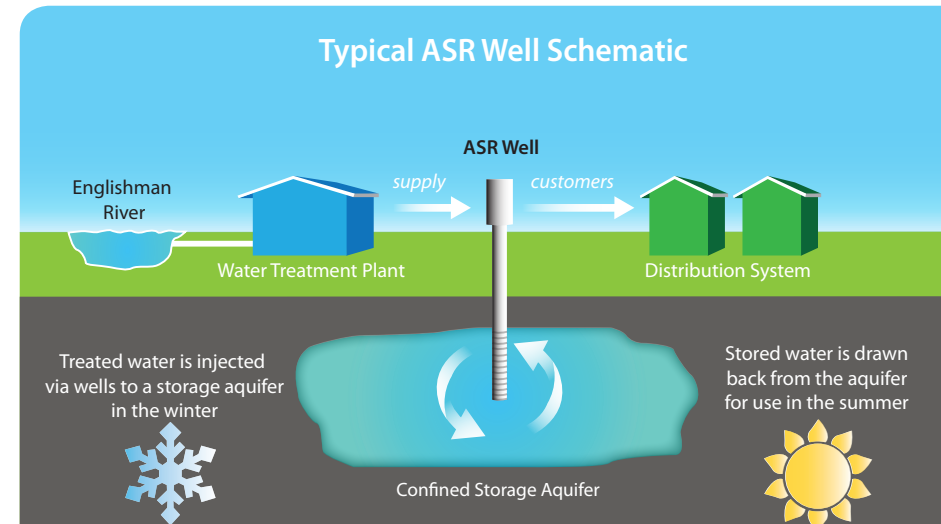
Further investigation is currently being conducted to determine if the concept of ASR is a feasible solution for the region's future water supply. ASR injection and extraction testing will be carried out over a number of months and is currently scheduled for May to October.

ERWS was awarded a \$1.3 million grant from Canada's Gas Tax Fund for ASR analysis.

Benefits of aquifer storage and recovery

- Provides a **third water supply**
- Potentially **reduce Englishman River water extraction** up to 50% in critical summer months
- Reduces size of the water treatment plant and **defers future infrastructure expansion**
- Provides a **balanced water supply**
- Treated water from winter months is **stored for use in the summer**
- Provides **cooler water** to consumers in the summer
- Can be **substantially lower cost** than above ground storage reservoir
- **Addresses climate change issues** such as reduced summer river flow augmentation from receding snow pack levels.

In an effort to be good stewards of the watershed, the jurisdictions within the ERWS are also partners in the Drinking Water and Watershed Protection Program overseen by the Regional District of Nanaimo. The Drinking Water and Watershed Protection program helps protect the RDN's water resources. Through the program's scientific studies and data collection, partners learn more about water in the RDN, use this information to make better land use decisions and help protect the environment.



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